Panasonic Industrial Company

Electronic Components

Aluminum Electrolytic Capacitors

Manufactured in
Knoxville, Tennessee

Panasonic ideas for life

Type/Series	Endurance (Load Life)	Voltage Range (WV)	Capacitance Range (μF)	Size Range D x L (mm)	Features	Page
TS-UQ	85°C 2000h	16 ~ 450	82 ~ 100,000	22 x 25 ~ 35 x 50 2 & 3 Pin	Highest CV, general purpose snap-in, 30% smaller than UP series	7
TS-UP	85°C 2000 - 3000h	16 ~ 500	33 ~ 68,000	22 x 20 ~ 35 x 50 2 & 3 Pin	Suitable for most general purpose industrial applications. Extended ratings.	14
T-UP	85°C 3000h	16 ~ 500	270 ~ 270,000	35 x 40 ~ 50 x 105 4 & 5 Pin	Suitable for most general purpose industrial applications. Extended ratings.	24
TS-HC	105°C 2000h	10 ~ 450	100 ~ 100,000	22 x 25 ~ 35 x 50 2 & 3 Pin	Highest CV, long life snap-in	30
TS-HA/HB	105°C 3000h	10 ~ 450	82 ~ 68,000	22 x 20 ~ 35 x 50 2 & 3 Pin	Long life with high ripple current capability	37
T-HA	105°C 3000h	16 ~ 450	330 ~ 250,000	35 x 40 ~ 50 x 105 4 & 5 Pin	Long life, extended ratings	44
TS-EE	105°C 3000h	200 ~ 450	75 ~ 1,800	22 x 25 ~ 35 x 50 2 & 3 Pin	Highest ripple current	49
TS-ED	105°C 3000h	200 ~ 450	56 ~ 2,200	22 x 25 ~ 35 x 50 2 & 3 Pin	Very high ripple current capability for demanding inverter applications	52
TS-XB	105°C 7000h	160 ~ 450	39 ~ 2,200	22 x 25 ~ 35 x 50 2 & 3 Pin	Longest life snap-in suitable for elevated ambient temperatures.	55

- **Application Guidelines - Page 4**

High Ripple		Miniature		Long Life	
EE	105°C, 3000H, 200~450V, 75 ~ 1,800 μF	**HC**	105°C, 2000H, 10~450V, 100 ~ 100,000 μF	**XB**	105°C, 7000H, 160~450V, 39 ~ 2,200 μF
ED	105°C, 3000H, 200~450V, 56 ~ 2,200 μF	**UQ**	85°C, 2000H, 16~450V, 82 ~ 100,000 μF	**HA**	105°C, 3000H, 16~450V, 330 ~ 250,000 μF
HB	105°C, 3000H, 10~450V, 82 ~ 6,800 μF			**UP**	85°C, 3000H, 16~450V, 33 ~ 68,000 μF

RoHS All parts are RoHS compliant.

1 General Specifications

Capacitance

Nominal capacitance is specified at a frequency of 120Hz and a temperature of 20°C. Unless specified otherwise, standard capacitance tolerance is ±20% of the nominal value.

Working Voltage

The maximum allowable sum of continuous DC voltage plus peak ripple voltage, which can be applied to the capacitor.

Surge Voltage

The maximum transient voltage level allowed for short periods of time without sustaining permanent damage to the capacitor. Values are listed in the standard product ratings.

Leakage Current

Imperfections in the capacitor dielectric allow a small current to flow. This resultant leakage current is specified as a maximum after 5 minutes application of rated voltage at 20°C. See individual series listings for leakage current equations.

ESR (Equivalent Series Resistance)

Equivalent series resistance causes heat generation within the capacitor when AC ripple current flows through the capacitor. Maximum ESR is normally specified at 120Hz, 20°C.

Ripple Current

Ripple current is the rms value of alternating current flowing through a capacitor. This current causes an internal temperature rise due to power losses within the capacitor.

The standard product tables list allowable ripple current limits at specified maximum operating temperatures.

Ripple current multipliers for other temperatures and frequencies are listed in the introductory page for each series.

Endurance Life Test

Endurance life is the minimum time a capacitor can operate under worst-case conditions.

Duration:	Specified hours of life
Ambient Temp.:	Maximum specified operating temperature
Ripple Current:	Maximum specified value
Applied voltage:	Rated DC voltage (the sum of the applied DC voltage plus the peak ripple voltage should not exceed rated working voltage.

Post test requirements at +20°C:

Leakage Current:	< Initial specified value
Cap. change:	<±20% of initial measured value
D.F./E.S.R.:	<200% of initial specified value

Shelf Life Test

Duration:	1000 hours
Ambient Temp.:	Maximum specified operating temperature
Applied Voltage:	None

Post test requirements at +20°C:

Same as the preceding Endurance Test requirements.

Measurements are to be performed after applying DC working voltage for 30 minutes.

2 Storage Life

Leakage current will increase during extended storage.

Capacitors should be stored in temperatures not to exceed +40°C and protected from direct exposure to sunlight.

Under normal conditions, storage life can exceed 10 years.

It is recommended that the leakage current be checked for conformance to the specified limit if the capacitor has been stored for four years or more.

Storage may require reforming of the capacitor to reduce leakage current below the specified limit. This can be accomplished by applying rated voltage in series with a 1000 resistor for a time period of 30 ~ 60 minutes.

The capacitor is acceptable for use if the capacitor leakage current is within the original specified limit or the capacitor is reformed to within the original specified limit.

Storage in high humidity conditions could cause oxidation of the terminal plating, which could adversely affect solderability.

3 Operation Life Expectancy

Aluminum electrolytic capacitors have a specified life at a maximum temperature and ripple current.

Operation Life Expectancy (continued)

Capacitor life at lower temperatures follows "The Doubling 10°C Rule" where life is doubled for each 10°C reduction in operating temperature. Voltage derating can also improve life expectancy and reliability. The following equations are useful for determining the life of the capacitor in the application;

For WV = 10~100VDC;

$$L_2 = L_1 \times 2^{(T1-(T2-\Delta T))/10}$$

For WV = 160~500VDC;

$$L_2 = L_1 \times 2^{(T1-(T2-\Delta T))/10} \times (V/WV)^{-6.5}$$

Where;

L_1 = Specified life (hours) at maximum operating temperature.

L_2 = Maximum specified operating temperature.

$T1$ = Maximum specified operating temperature.

$T2$ = Actual ambient temperature (°C)

ΔT = Ripple current temperature rise (°C).

WV = Rated Capacitor voltage (160~500VDC).

V = Applied voltage

NOTE: $WV \geq V \geq 0.9xWV$

Use of the ripple current temperature multipliers listed for each product series may limit life to the value originally specified for maximum operating temperature.

It is recommended that the ripple current heat rise be limited to 15°C at lower ambient temperatures to accomplish the maximum operating life in the application.

End of life is defined by the occurrence of one of the following:

- Capacitance change exceeds 20% of the initial measured value.
- Dissipation factor exceeds 200% of the initial specified value.
- Leakage current exceeds the initial specified value.

NOTE: Electrical measurements are taken after the capacitor is stabilized at 20°C.

4 Circuit Design Considerations

Operating Temperature and Frequency

Aluminum electrolytic capacitor electrical characteristics are normally specified at a temperature of 20°C and a frequency of 120Hz.

Electrical parameters are temperature and frequency dependent as follows:

(1) Effects of operating temperature

At higher temperatures capacitance and leakage current increase while ESR decreases.

At lower temperatures, capacitance and leakage current will decrease while ESR increases.

(2) Effects of frequency

Capacitance, impedance, and ESR will decrease as frequency increases.

At lower frequencies, ripple current generated temperature will rise due to increasing ESR.

Reverse Voltage

DC capacitors have polarity, which must be verified before insertion.

Avoid use in circuits with changing or uncertain polarity.

Ensure that allowable ripple currents super-imposed on DC voltage do not cause reverse voltage conditions.

Charge / Discharge applications

Standard capacitors are not suitable for use in strobe or photoflash applications.

Contact the factory for low duty cycle applications.

Capacitors Connected in Parallel

Circuit resistance can approximate the series resistance of the capacitor, resulting in ripple current load imbalances. Careful design of wiring methods can

minimize excessive ripple currents applied to a capacitor.

Capacitors Connected in Series

Normal DC leakage current variations among capacitors can cause voltage differences. The use of voltage dividing sharing resistors with consideration to leakage currents can compensate for voltage imbalances.

Circuit Design Considerations (continued)

Electrical Precautions

Transient recovery voltage may be generated in the capacitor due to dielectric absorption. Typical voltage levels are less than 10% of the rated capacitor voltage. If required, the voltage can be discharged with a resistor.

The aluminum case of the capacitor has an indeterminate resistance to the cathode terminal. The sleeve on the capacitor is for marking and identification purposes and is not meant to electrically isolate the capacitor.

When designing circuits, consider worst case capacitor failure modes such as open or short circuits.

The effects of hot, electrically conductive, combustible electrolyte liquid or vapor escaping from the safety vent should also be considered.

5 Capacitor Mounting Considerations

Circuit Board Design

Avoid wiring pattern runs, which pass between the mounted capacitor and the circuit board. When dipping into a solder bath, excessive solder may collect under the capacitor by capillary action and short circuit the anode and cathode terminals.

The sleeve of the capacitor can be damaged if solder passes through a lead hole for subsequently processed parts.

Electrically isolate the extra terminal(s) on 4 and 5 pin products from the anode terminal, cathode terminal, and other circuit paths.

Clearance Requirements

Case mounted pressure relief vents require a clearance of 3mm minimum above the top of the case to operate properly.

Circuit Board Cleaning

Aluminum electrolytic capacitors can withstand immersion or ultrasonic cleaning with “safe” cleaning solvents for up to 5 minutes and 60°C maximum temperatures.

Most aqueous based cleaning solvents and detergents are acceptable. Some solvent groups could damage capacitors as follows

Halogenated cleaning solvents may permeate the capacitor seal, causing internal corrosion and failure.

Alkali solvents may attack and dissolve the aluminum case.

Petroleum based solvents may deteriorate the rubber seal.

Xylene may deteriorate the rubber seal.

Acetone and some alcohols may remove sleeve ink

A thorough rinsing and drying process will prevent entrapment of residual solvents between the capacitor and the circuit board and the capacitor case and the sleeve. Excessive drying temperatures and / or radiant heat drying sources may result in splitting or excessive shrinkage of the sleeve.

Mounting Adhesives and Coating Agents

When using mounting adhesives or coating agents, avoid materials with halogenated solvents including chloroprene based polymers.

A thorough drying process for adhesives or coatings is required to prevent solvent entrapment between the capacitor and the circuit board.

Mounting adhesives or reinforcements clamps are recommended on 2 or 3 pin styles with case sizes of 35 x 45mm or larger. Additional mounting support is also recommended for 4 or 5 pin styles with lengths exceeding 63mm.

6 Safety Precautions

If the pressure relief vent of the capacitor should operate, immediately turn off the equipment and disconnect from the power source.

Avoid contact with the escaping electrolyte, which can exceed 100°C temperatures.

If electrolyte or vapors enter the eye, immediately flush the eye with large amounts of water and seek medical attention.

If electrolytes or vapors are ingested by mouth, gargle with water.

If electrolyte contacts the skin, wash with soap and water.

TS-UQ Series *85°C, 2000 hours*

- ***Highest capacitance version (30% smaller than UP series)***
- ***2 and 3 pin versions available***
- ***RoHS compliant PVC and RoHS compliant PET sleeve options***

Rated Working Voltage:	16 ~ 250 VDC	350 ~ 450 VDC
Operating Temperature:	-40 ~ +85°C	-25 ~ +85°C
Nominal Capacitance:	270 ~ 100000µF	82 ~ 1000µF
Capacitance Tolerance:	± 20%	

Dissipation Factor (120 Hz, +20°C):

Working Voltage [V]:	16	25	35	50	63	80	100	160 ~ 450
Max. D.F. (%):	50	40	35	30	25	20	20	15

For capacitance values > 33000µF, add the value of: $\frac{\text{(rated cap. [µF] - 33000)}}{1000}$

Leakage Current: $3\sqrt{CV}$ (µA) max. after 5 minutes; *C = Capacitance in µF, V = WV*

Ripple Current Multipliers:

Frequency(Hz):	50	60	100~120	500	1k	10k
16~100WV:	0.93	0.95	1.0	1.05	1.08	1.15
160~450WV:	0.75	0.8	1.0	1.2	1.25	1.4

Ripple Current Ambient Temperature Factors*				
Temperature (°C):	85°C	70°C	60°C	≤45°C
Multiplier:	1.0	1.3	1.4	1.5

Endurance: 2000 hours at +85°C with maximum specified ripple current (see page 4)

*Use of temperature ripple current multipliers may limit life to the hours specified for the maximum operating temperature.

Part Number System

E	E	T	U	Q	□	□	□	□	□	□	□
Common Code			Series Code		Voltage Code		Capacitance Code			Diameter	Sleeving Options

Voltage Code

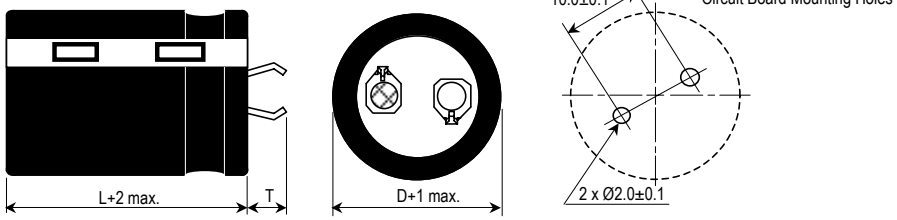
1C	1E	1V	1H	1J	1K	2A	2C	2D	2E	2V	2G	2S	2W
16	25	35	50	63	80	100	160	200	250	350	400	420	450

Diameter / Terminal Code

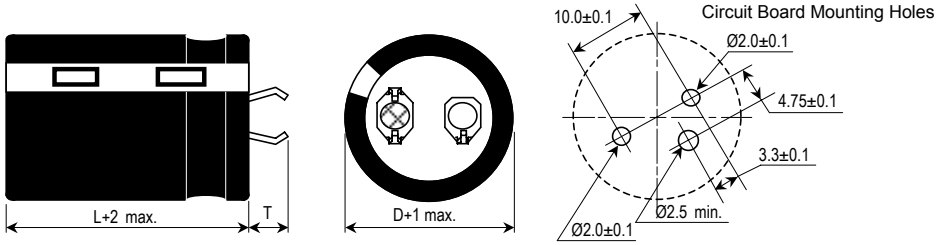
	# of pins:	2	3	2
	pin length "T":	4.0±0.5mm	4.0±0.5mm	6.3±1mm
Diameter	22mm	H	P	B
	25mm	J	Q	C
	30mm	K	R	D
	35mm	L	S	E

Dimensions in millimeters

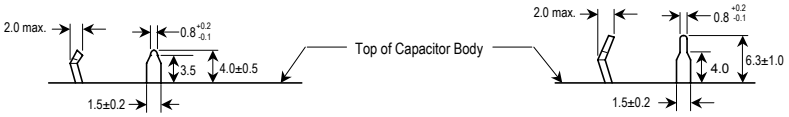
2 Pin Mounting Style



3 Pin Mounting Style



Pin Dimensions



4mm Length: Standard on 2 and 3 Pin Mounting Styles

6.3mm Length: Available on 2 Pin Mounting Style Only

TS-UQ Standard Ratings

Part numbers shown with 2 pins and 4.0mm length terminal

Cap. (µF)	Size (mm) D x L	Max 85°C R.C. (A_{rms}) 120Hz	Max 85°C R.C. (A_{rms}) 10kHz~	20°C ESR (Ω, max.) 120Hz	20°C ESR (Ω, max.) 20kHz	Panasonic Part Number (By Sleeving Style) PVC with Top Plate	Panasonic Part Number (By Sleeving Style) PET without Top Plate
16 VDC Working, 20 VDC Surge							
12000	22 x 25	4.52	5.20	0.069	0.059	**EETUQ1C123HA**	**EETUQ1C123HJ**
15000	22 x 30	5.26	6.05	0.055	0.047	**EETUQ1C153HA**	**EETUQ1C153HJ**
18000	22 x 35	5.57	6.41	0.046	0.039	**EETUQ1C183HA**	**EETUQ1C183HJ**
	25 x 25	5.57	6.41	0.046	0.039	**EETUQ1C183JA**	**EETUQ1C183JJ**
22000	22 x 40	6.10	7.02	0.038	0.032	**EETUQ1C223HA**	**EETUQ1C223HJ**
	25 x 30	6.10	7.02	0.038	0.032	**EETUQ1C223JA**	**EETUQ1C223JJ**
27000	22 x 45	6.31	7.26	0.031	0.026	**EETUQ1C273HA**	**EETUQ1C273HJ**
	25 x 35	6.31	7.26	0.031	0.026	**EETUQ1C273JA**	**EETUQ1C273JJ**
	30 x 25	6.31	7.26	0.031	0.026	**EETUQ1C273KA**	**EETUQ1C273KJ**
33000	22 x 50	6.84	7.87	0.025	0.021	**EETUQ1C333HA**	**EETUQ1C333HJ**
	25 x 40	6.84	7.87	0.025	0.021	**EETUQ1C333JA**	**EETUQ1C333JJ**
	30 x 30	6.84	7.87	0.025	0.021	**EETUQ1C333KA**	**EETUQ1C333KJ**
	35 x 25	6.84	7.87	0.025	0.021	**EETUQ1C333LA**	**EETUQ1C333LJ**
39000	25 x 45	6.94	7.98	0.024	0.020	**EETUQ1C393JA**	**EETUQ1C393JJ**
	30 x 35	6.94	7.98	0.024	0.020	**EETUQ1C393KA**	**EETUQ1C393KJ**
47000	25 x 50	7.47	8.59	0.023	0.019	**EETUQ1C473JA**	**EETUQ1C473JJ**
	30 x 40	7.47	8.59	0.023	0.019	**EETUQ1C473KA**	**EETUQ1C473KJ**
	35 x 30	7.47	8.59	0.023	0.019	**EETUQ1C473LA**	**EETUQ1C473LJ**
56000	30 x 45	8.73	10.04	0.022	0.019	**EETUQ1C563KA**	**EETUQ1C563KJ**
	35 x 35	8.73	10.04	0.022	0.019	**EETUQ1C563LA**	**EETUQ1C563LJ**
68000	30 x 50	9.05	10.41	0.021	0.018	**EETUQ1C683KA**	**EETUQ1C683KJ**
	35 x 40	9.05	10.41	0.021	0.018	**EETUQ1C683LA**	**EETUQ1C683LJ**
82000	35 x 45	9.49	10.91	0.020	0.018	**EETUQ1C823LA**	**EETUQ1C823LJ**
100000	35 x 50	10.18	11.71	0.019	0.018	**EETUQ1C104LA**	**EETUQ1C104LJ**
25 VDC Working, 32 VDC Surge							
8200	22 x 25	3.57	4.11	0.081	0.065	**EETUQ1E822HA**	**EETUQ1E822HJ**
12000	22 x 30	4.10	4.72	0.055	0.044	**EETUQ1E123HA**	**EETUQ1E123HJ**
	25 x 25	4.10	4.72	0.055	0.044	**EETUQ1E123JA**	**EETUQ1E123JJ**
15000	22 x 35	4.63	5.32	0.044	0.035	**EETUQ1E153HA**	**EETUQ1E153HJ**
	25 x 30	4.63	5.32	0.044	0.035	**EETUQ1E153JA**	**EETUQ1E153JJ**
18000	22 x 40	5.47	6.29	0.037	0.029	**EETUQ1E183HA**	**EETUQ1E183HJ**
	25 x 35	5.47	6.29	0.037	0.029	**EETUQ1E183JA**	**EETUQ1E183JJ**
	30 x 25	5.47	6.29	0.037	0.029	**EETUQ1E183KA**	**EETUQ1E183KJ**
22000	22 x 45	6.10	7.02	0.030	0.024	**EETUQ1E223HA**	**EETUQ1E223HJ**
	25 x 40	6.10	7.02	0.030	0.024	**EETUQ1E223JA**	**EETUQ1E223JJ**
	30 x 30	6.10	7.02	0.030	0.024	**EETUQ1E223KA**	**EETUQ1E223KJ**
	35 x 25	6.10	7.02	0.030	0.024	**EETUQ1E223LA**	**EETUQ1E223LJ**
27000	25 x 45	6.21	7.14	0.025	0.020	**EETUQ1E273JA**	**EETUQ1E273JJ**
	30 x 35	6.21	7.14	0.025	0.020	**EETUQ1E273KA**	**EETUQ1E273KJ**
33000	25 x 50	6.84	7.87	0.020	0.016	**EETUQ1E333JA**	**EETUQ1E333JJ**
	30 x 40	6.84	7.87	0.020	0.016	**EETUQ1E333KA**	**EETUQ1E333KJ**
	35 x 30	6.84	7.87	0.020	0.016	**EETUQ1E333LA**	**EETUQ1E333LJ**
39000	30 x 45	7.36	8.46	0.020	0.016	**EETUQ1E393KA**	**EETUQ1E393KJ**
	35 x 35	7.36	8.46	0.020	0.016	**EETUQ1E393LA**	**EETUQ1E393LJ**
47000	30 x 50	8.00	9.20	0.019	0.016	**EETUQ1E473KA**	**EETUQ1E473KJ**
	35 x 40	8.00	9.20	0.019	0.016	**EETUQ1E473LA**	**EETUQ1E473LJ**
56000	35 x 45	8.91	10.25	0.019	0.016	**EETUQ1E563LA**	**EETUQ1E563LJ**
68000	35 x 50	9.79	11.26	0.018	0.016	**EETUQ1E683LA**	**EETUQ1E683LJ**
35 VDC Working, 44 VDC Surge							
5600	22 x 25	3.36	3.86	0.104	0.078	**EETUQ1V562HA**	**EETUQ1V562HJ**
8200	22 x 30	4.00	4.60	0.071	0.053	**EETUQ1V822HA**	**EETUQ1V822HJ**
	25 x 25	4.00	4.60	0.071	0.053	**EETUQ1V822JA**	**EETUQ1V822JJ**
10000	22 x 35	4.42	5.08	0.058	0.044	**EETUQ1V103HA**	**EETUQ1V103HJ**
	25 x 30	4.42	5.08	0.058	0.044	**EETUQ1V103JA**	**EETUQ1V103JJ**
12000	22 x 40	5.05	5.81	0.048	0.036	**EETUQ1V123HA**	**EETUQ1V123HJ**
	25 x 35	5.05	5.81	0.048	0.036	**EETUQ1V123JA**	**EETUQ1V123JJ**
	30 x 25	5.05	5.81	0.048	0.036	**EETUQ1V123KA**	**EETUQ1V123KJ**
15000	22 x 45	5.57	6.41	0.039	0.029	**EETUQ1V153HA**	**EETUQ1V153HJ**
	25 x 40	5.57	6.41	0.039	0.029	**EETUQ1V153JA**	**EETUQ1V153JJ**
18000	25 x 45	5.68	6.53	0.032	0.024	**EETUQ1V183JA**	**EETUQ1V183JJ**
	30 x 30	5.68	6.53	0.032	0.024	**EETUQ1V183KA**	**EETUQ1V183KJ**
	35 x 25	5.68	6.53	0.032	0.024	**EETUQ1V183LA**	**EETUQ1V183LJ**

TS-UQ Standard Ratings (continued)

Part numbers shown with 2 pins and 4.0mm length terminal

Cap. (μF)	Size (mm) D x L	Max 85°C R.C. (A_{rms}) 120Hz	Max 85°C R.C. (A_{rms}) 10kHz~	20°C ESR (Ω, max.) 120Hz	20°C ESR (Ω, max.) 20kHz	Panasonic Part Number (By Sleeving Style) PVC with Top Plate	Panasonic Part Number (By Sleeving Style) PET without Top Plate
35 VDC Working, 44 VDC Surge (continued)							
22000	25 x 50	6.10	7.02	0.026	0.020	**EETUQ1V223JA**	**EETUQ1V223JJ**
	30 x 35	6.10	7.02	0.026	0.020	**EETUQ1V223KA**	**EETUQ1V223KJ**
	35 x 30	6.10	7.02	0.026	0.020	**EETUQ1V223LA**	**EETUQ1V223LJ**
27000	30 x 45	6.84	7.87	0.021	0.016	**EETUQ1V273KA**	**EETUQ1V273KJ**
	35 x 35	6.84	7.87	0.021	0.016	**EETUQ1V273LA**	**EETUQ1V273LJ**
33000	30 x 50	7.15	8.22	0.018	0.013	**EETUQ1V333KA**	**EETUQ1V333KJ**
	35 x 40	7.15	8.22	0.018	0.014	**EETUQ1V333LA**	**EETUQ1V333LJ**
39000	35 x 45	7.91	9.10	0.017	0.014	**EETUQ1V393LA**	**EETUQ1V393LJ**
47000	35 x 50	8.56	9.84	0.017	0.014	**EETUQ1V473LA**	**EETUQ1V473LJ**
50 VDC Working, 63 VDC Surge							
3300	22 x 25	2.73	3.14	0.151	0.113	**EETUQ1H332HA**	**EETUQ1H332HJ**
4700	22 x 30	3.03	3.48	0.106	0.079	**EETUQ1H472HA**	**EETUQ1H472HJ**
	25 x 25	3.03	3.48	0.106	0.079	**EETUQ1H472JA**	**EETUQ1H472JJ**
5600	22 x 35	3.42	3.93	0.089	0.067	**EETUQ1H562HA**	**EETUQ1H562HJ**
6800	22 x 40	3.85	4.43	0.073	0.055	**EETUQ1H682HA**	**EETUQ1H682HJ**
	25 x 30	3.85	4.43	0.073	0.055	**EETUQ1H682JA**	**EETUQ1H682JJ**
	30 x 25	3.85	4.43	0.073	0.055	**EETUQ1H682KA**	**EETUQ1H682KJ**
8200	22 x 45	4.41	5.07	0.061	0.045	**EETUQ1H822HA**	**EETUQ1H822HJ**
	25 x 35	4.41	5.07	0.061	0.045	**EETUQ1H822JA**	**EETUQ1H822JJ**
10000	22 x 50	4.97	5.72	0.050	0.037	**EETUQ1H103HA**	**EETUQ1H103HJ**
	25 x 40	4.97	5.72	0.050	0.037	**EETUQ1H103JA**	**EETUQ1H103JJ**
	30 x 30	4.97	5.72	0.050	0.037	**EETUQ1H103KA**	**EETUQ1H103KJ**
	35 x 25	4.97	5.72	0.050	0.037	**EETUQ1H103LA**	**EETUQ1H103LJ**
12000	25 x 45	5.58	6.42	0.041	0.031	**EETUQ1H123JA**	**EETUQ1H123JJ**
	30 x 35	5.58	6.42	0.041	0.031	**EETUQ1H123KA**	**EETUQ1H123KJ**
	35 x 30	5.58	6.42	0.041	0.031	**EETUQ1H123LA**	**EETUQ1H123LJ**
15000	30 x 40	6.44	7.41	0.033	0.025	**EETUQ1H153KA**	**EETUQ1H153KJ**
	35 x 35	6.44	7.41	0.033	0.025	**EETUQ1H153LA**	**EETUQ1H153LJ**
18000	30 x 45	6.94	7.98	0.028	0.021	**EETUQ1H183KA**	**EETUQ1H183KJ**
	35 x 40	6.94	7.98	0.028	0.021	**EETUQ1H183LA**	**EETUQ1H183LJ**
22000	35 x 45	7.57	8.71	0.023	0.018	**EETUQ1H223LA**	**EETUQ1H223LJ**
27000	35 x 50	8.96	10.30	0.018	0.015	**EETUQ1H273LA**	**EETUQ1H273LJ**
63 VDC Working, 79 VDC Surge							
2200	22 x 25	2.52	2.90	0.188	0.141	**EETUQ1J222HA**	**EETUQ1J222HJ**
3300	22 x 30	4.10	4.72	0.126	0.094	**EETUQ1J332HA**	**EETUQ1J332HJ**
	25 x 25	4.10	4.72	0.126	0.094	**EETUQ1J332JA**	**EETUQ1J332JJ**
3900	22 x 35	4.44	5.11	0.106	0.080	**EETUQ1J392HA**	**EETUQ1J392HJ**
	25 x 30	4.44	5.11	0.106	0.080	**EETUQ1J392JA**	**EETUQ1J392JJ**
4700	22 x 40	4.86	5.59	0.088	0.066	**EETUQ1J472HA**	**EETUQ1J472HJ**
	25 x 35	4.86	5.59	0.088	0.066	**EETUQ1J472JA**	**EETUQ1J472JJ**
	30 x 25	4.86	5.59	0.088	0.066	**EETUQ1J472KA**	**EETUQ1J472KJ**
5600	22 x 45	5.36	6.16	0.074	0.056	**EETUQ1J562HA**	**EETUQ1J562HJ**
	25 x 40	5.36	6.16	0.074	0.056	**EETUQ1J562JA**	**EETUQ1J562JJ**
6800	25 x 45	5.84	6.72	0.061	0.046	**EETUQ1J682JA**	**EETUQ1J682JJ**
	30 x 30	5.84	6.72	0.061	0.046	**EETUQ1J682KA**	**EETUQ1J682KJ**
	35 x 25	5.84	6.72	0.061	0.046	**EETUQ1J682LA**	**EETUQ1J682LJ**
8200	25 x 50	6.00	6.90	0.051	0.038	**EETUQ1J822JA**	**EETUQ1J822JJ**
	30 x 35	6.00	6.90	0.051	0.038	**EETUQ1J822KA**	**EETUQ1J822KJ**
	35 x 30	6.00	6.90	0.051	0.038	**EETUQ1J822LA**	**EETUQ1J822LJ**
10000	30 x 40	6.52	7.50	0.041	0.031	**EETUQ1J103KA**	**EETUQ1J103KJ**
	35 x 35	6.52	7.50	0.041	0.031	**EETUQ1J103LA**	**EETUQ1J103LJ**
12000	30 x 45	7.15	8.22	0.035	0.026	**EETUQ1J123KA**	**EETUQ1J123KJ**
	35 x 40	7.15	8.22	0.035	0.026	**EETUQ1J123LA**	**EETUQ1J123LJ**
15000	35 x 45	7.91	9.10	0.028	0.021	**EETUQ1J153LA**	**EETUQ1J153LJ**
18000	35 x 50	8.55	9.83	0.023	0.018	**EETUQ1J183LA**	**EETUQ1J183LJ**
80 VDC Working, 100 VDC Surge							
1500	22 x 25	2.26	2.60	0.221	0.166	**EETUQ1K152HA**	**EETUQ1K152HJ**
1800	22 x 30	2.52	2.90	0.184	0.138	**EETUQ1K182HA**	**EETUQ1K182HJ**
2200	22 x 35	2.73	3.14	0.151	0.113	**EETUQ1K222HA**	**EETUQ1K222HJ**
	25 x 25	2.73	3.14	0.151	0.113	**EETUQ1K222JA**	**EETUQ1K222JJ**
2700	22 x 40	2.78	3.20	0.123	0.092	**EETUQ1K272HA**	**EETUQ1K272HJ**
	25 x 30	2.78	3.20	0.123	0.092	**EETUQ1K272JA**	**EETUQ1K272JJ**

TS-UQ Standard Ratings (continued)

Part numbers shown with 2 pins and 4.0mm length terminal

Cap. (µF)	Size (mm) D x L	Max 85°C R.C. (A_{rms}) 120Hz	Max 85°C R.C. (A_{rms}) 10kHz~	20°C ESR (Ω, max.) 120Hz	20°C ESR (Ω, max.) 20kHz	Panasonic Part Number (By Sleeving Style) PVC with Top Plate	Panasonic Part Number (By Sleeving Style) PET without Top Plate
80 VDC Working, 105 VDC Surge (continued)							
3300	22 x 45	3.21	3.69	0.100	0.075	**EETUQ1K332HA**	**EETUQ1K332HJ**
	25 x 35	3.21	3.69	0.100	0.075	**EETUQ1K332JA**	**EETUQ1K332JJ**
	30 x 25	3.21	3.69	0.100	0.075	**EETUQ1K332KA**	**EETUQ1K332KJ**
3900	22 x 50	3.59	4.13	0.085	0.064	**EETUQ1K392HA**	**EETUQ1K392HJ**
	25 x 40	3.59	4.13	0.085	0.064	**EETUQ1K392JA**	**EETUQ1K392JJ**
	35 x 25	3.59	4.13	0.085	0.064	**EETUQ1K392LA**	**EETUQ1K392LJ**
4700	25 x 45	4.09	4.70	0.071	0.053	**EETUQ1K472JA**	**EETUQ1K472JJ**
	30 x 30	4.09	4.70	0.071	0.053	**EETUQ1K472KA**	**EETUQ1K472KJ**
5600	25 x 50	4.55	5.23	0.059	0.044	**EETUQ1K562JA**	**EETUQ1K562JJ**
	30 x 35	4.55	5.23	0.059	0.044	**EETUQ1K562KA**	**EETUQ1K562KJ**
	35 x 30	4.55	5.23	0.059	0.044	**EETUQ1K562LA**	**EETUQ1K562LJ**
6800	30 x 45	5.16	5.93	0.049	0.037	**EETUQ1K682KA**	**EETUQ1K682KJ**
	35 x 35	5.16	5.93	0.049	0.037	**EETUQ1K682LA**	**EETUQ1K682LJ**
8200	30 x 50	5.83	6.70	0.040	0.030	**EETUQ1K822KA**	**EETUQ1K822KJ**
	35 x 40	5.83	6.70	0.040	0.030	**EETUQ1K822LA**	**EETUQ1K822LJ**
10000	35 x 45	6.51	7.49	0.033	0.025	**EETUQ1K103LA**	**EETUQ1K103LJ**
12000	35 x 50	7.28	8.37	0.028	0.021	**EETUQ1K123LA**	**EETUQ1K123LJ**
100 VDC Working, 125 VDC Surge							
1000	22 x 25	1.96	2.25	0.332	0.216	**EETUQ2A102HA**	**EETUQ2A102HJ**
1200	25 x 25	2.31	2.66	0.276	0.180	**EETUQ2A122JA**	**EETUQ2A122JJ**
1500	22 x 30	2.57	2.96	0.221	0.144	**EETUQ2A152HA**	**EETUQ2A152HJ**
1800	22 x 35	2.84	3.27	0.184	0.120	**EETUQ2A182HA**	**EETUQ2A182HJ**
	25 x 30	2.84	3.27	0.184	0.120	**EETUQ2A182JA**	**EETUQ2A182JJ**
2200	22 x 45	3.14	3.61	0.151	0.098	**EETUQ2A222HA**	**EETUQ2A222HJ**
	25 x 35	3.14	3.61	0.151	0.098	**EETUQ2A222JA**	**EETUQ2A222JJ**
	30 x 25	3.14	3.61	0.151	0.098	**EETUQ2A222KA**	**EETUQ2A222KJ**
2700	22 x 50	3.71	4.27	0.123	0.080	**EETUQ2A272HA**	**EETUQ2A272HJ**
	25 x 40	3.71	4.27	0.123	0.080	**EETUQ2A272JA**	**EETUQ2A272JJ**
	30 x 30	3.71	4.27	0.123	0.080	**EETUQ2A272KA**	**EETUQ2A272KJ**
	35 x 25	3.71	4.27	0.123	0.080	**EETUQ2A272LA**	**EETUQ2A272LJ**
3300	25 x 45	4.06	4.67	0.100	0.065	**EETUQ2A332JA**	**EETUQ2A332JJ**
	30 x 35	4.06	4.67	0.100	0.065	**EETUQ2A332KA**	**EETUQ2A332KJ**
3900	25 x 50	4.54	5.22	0.085	0.055	**EETUQ2A392JA**	**EETUQ2A392JJ**
	30 x 40	4.54	5.22	0.085	0.055	**EETUQ2A392KA**	**EETUQ2A392KJ**
	35 x 30	4.54	5.22	0.085	0.055	**EETUQ2A392LA**	**EETUQ2A392LJ**
4700	30 x 45	5.13	5.90	0.071	0.046	**EETUQ2A472KA**	**EETUQ2A472KJ**
	35 x 35	5.13	5.90	0.071	0.046	**EETUQ2A472LA**	**EETUQ2A472LJ**
5600	30 x 50	5.75	6.61	0.059	0.041	**EETUQ2A562KA**	**EETUQ2A562KJ**
	35 x 40	5.75	6.61	0.059	0.038	**EETUQ2A562LA**	**EETUQ2A562LJ**
6800	35 x 45	6.60	7.59	0.049	0.034	**EETUQ2A682LA**	**EETUQ2A682LJ**
8200	35 x 50	7.29	8.38	0.040	0.030	**EETUQ2A822LA**	**EETUQ2A822LJ**
160 VDC Working, 200 VDC Surge							
560	22 x 25	2.25	3.15	0.355	0.160	**EETUQ2C561HA**	**EETUQ2C561HJ**
680	22 x 30	2.50	3.50	0.293	0.132	**EETUQ2C681HA**	**EETUQ2C681HJ**
820	22 x 35	2.75	3.85	0.243	0.109	**EETUQ2C821HA**	**EETUQ2C821HJ**
1000	22 x 40	3.00	4.20	0.199	0.090	**EETUQ2C102HA**	**EETUQ2C102HJ**
	25 x 30	3.00	4.20	0.199	0.090	**EETUQ2C102JA**	**EETUQ2C102JJ**
1200	22 x 45	3.25	4.55	0.166	0.075	**EETUQ2C122HA**	**EETUQ2C122HJ**
	25 x 35	3.25	4.55	0.166	0.075	**EETUQ2C122JA**	**EETUQ2C122JJ**
	30 x 25	3.25	4.55	0.166	0.075	**EETUQ2C122KA**	**EETUQ2C122KJ**
1500	22 x 50	3.73	5.22	0.133	0.060	**EETUQ2C152HA**	**EETUQ2C152HJ**
	25 x 40	3.73	5.22	0.133	0.060	**EETUQ2C152JA**	**EETUQ2C152JJ**
	30 x 30	3.73	5.22	0.133	0.060	**EETUQ2C152KA**	**EETUQ2C152KJ**
	35 x 25	3.73	5.22	0.133	0.060	**EETUQ2C152LA**	**EETUQ2C152LJ**
1800	25 x 45	4.20	5.88	0.111	0.050	**EETUQ2C182JA**	**EETUQ2C182JJ**
	30 x 35	4.20	5.88	0.120	0.060	**EETUQ2C182KA**	**EETUQ2C182KJ**
	35 x 30	4.20	5.88	0.111	0.050	**EETUQ2C182LA**	**EETUQ2C182LJ**
2200	30 x 40	4.78	6.69	0.090	0.041	**EETUQ2C222KA**	**EETUQ2C222KJ**
	35 x 35	4.78	6.69	0.098	0.049	**EETUQ2C222LA**	**EETUQ2C222LJ**
2700	30 x 45	5.45	7.63	0.074	0.033	**EETUQ2C272KA**	**EETUQ2C272KJ**
	35 x 40	5.45	7.63	0.080	0.040	**EETUQ2C272LA**	**EETUQ2C272LJ**
3300	35 x 45	5.75	8.05	0.070	0.035	**EETUQ2C332LA**	**EETUQ2C332LJ**
3900	35 x 50	6.00	8.40	0.055	0.028	**EETUQ2C392LA**	**EETUQ2C392LJ**

TS-UQ Standard Ratings (continued)

Part numbers shown with 2 pins and 4.0mm length terminal

Cap. (μF)	Size (mm) D x L	Max 85°C R.C. (A_{rms}) 120Hz	Max 85°C R.C. (A_{rms}) 10kHz~	20°C ESR (Ω, max.) 120Hz	20°C ESR (Ω, max.) 20kHz	Panasonic Part Number (By Sleeving Style) PVC sleeve with Top Plate	Panasonic Part Number (By Sleeving Style) PET sleeve without Top Plate
200 VDC Working, 250 VDC Surge							
390	22 x 25	1.68	2.35	0.510	0.230	**EETUQ2D391HA**	**EETUQ2D391HJ**
470	22 x 30	1.85	2.59	0.423	0.190	**EETUQ2D471HA**	**EETUQ2D471HJ**
560	22 x 30	2.43	3.40	0.355	0.160	**EETUQ2D561HA**	**EETUQ2D561HJ**
	25 x 25	2.43	3.40	0.355	0.160	**EETUQ2D561JA**	**EETUQ2D561JJ**
680	22 x 35	2.68	3.75	0.293	0.132	**EETUQ2D681HA**	**EETUQ2D681HJ**
	25 x 30	2.68	3.75	0.293	0.132	**EETUQ2D681JA**	**EETUQ2D681JJ**
820	22 x 40	2.93	4.10	0.243	0.109	**EETUQ2D821HA**	**EETUQ2D821HJ**
	25 x 30	2.93	4.10	0.243	0.109	**EETUQ2D821JA**	**EETUQ2D821JJ**
	30 x 25	2.93	4.10	0.243	0.109	**EETUQ2D821KA**	**EETUQ2D821KJ**
1000	22 x 45	3.25	4.55	0.199	0.090	**EETUQ2D102HA**	**EETUQ2D102HJ**
	25 x 35	3.25	4.55	0.199	0.090	**EETUQ2D102JA**	**EETUQ2D102JJ**
	30 x 30	3.25	4.55	0.199	0.090	**EETUQ2D102KA**	**EETUQ2D102KJ**
	35 x 25	3.25	4.55	0.232	0.116	**EETUQ2D102LA**	**EETUQ2D102LJ**
1200	22 x 50	3.50	4.90	0.166	0.075	**EETUQ2D122HA**	**EETUQ2D122HJ**
	25 x 40	3.50	4.90	0.166	0.075	**EETUQ2D122JA**	**EETUQ2D122JJ**
	30 x 30	3.50	4.90	0.166	0.075	**EETUQ2D122KA**	**EETUQ2D122KJ**
1500	25 x 50	3.87	5.42	0.133	0.060	**EETUQ2D152JA**	**EETUQ2D152JJ**
	30 x 35	3.87	5.42	0.144	0.065	**EETUQ2D152KA**	**EETUQ2D152KJ**
	35 x 30	3.87	5.42	0.144	0.065	**EETUQ2D152LA**	**EETUQ2D152LJ**
1800	30 x 45	4.32	6.05	0.120	0.060	**EETUQ2D182KA**	**EETUQ2D182KJ**
	35 x 35	4.32	6.05	0.120	0.060	**EETUQ2D182LA**	**EETUQ2D182LJ**
2200	30 x 50	4.92	6.89	0.098	0.049	**EETUQ2D222KA**	**EETUQ2D222KJ**
	35 x 40	4.92	6.89	0.105	0.053	**EETUQ2D222LA**	**EETUQ2D222LJ**
2700	35 x 50	5.45	7.63	0.086	0.043	**EETUQ2D272LA**	**EETUQ2D272LJ**
250 VDC Working, 300 VDC Surge							
270	22 x 25	1.31	1.83	0.737	0.332	**EETUQ2E271HA**	**EETUQ2E271HJ**
330	22 x 30	1.75	2.45	0.603	0.271	**EETUQ2E331HA**	**EETUQ2E331HJ**
390	22 x 30	1.91	2.67	0.510	0.230	**EETUQ2E391HA**	**EETUQ2E391HJ**
	25 x 25	1.91	2.67	0.510	0.230	**EETUQ2E391JA**	**EETUQ2E391JJ**
470	22 x 35	2.11	2.95	0.423	0.190	**EETUQ2E471HA**	**EETUQ2E471HJ**
	25 x 30	2.11	2.95	0.423	0.190	**EETUQ2E471JA**	**EETUQ2E471JJ**
560	22 x 40	2.25	3.15	0.355	0.160	**EETUQ2E561HA**	**EETUQ2E561HJ**
	25 x 30	2.25	3.15	0.355	0.160	**EETUQ2E561JA**	**EETUQ2E561JJ**
	30 x 25	2.25	3.15	0.355	0.160	**EETUQ2E561KA**	**EETUQ2E561KJ**
680	22 x 45	2.50	3.50	0.293	0.132	**EETUQ2E681HA**	**EETUQ2E681HJ**
	25 x 35	2.50	3.50	0.293	0.132	**EETUQ2E681JA**	**EETUQ2E681JJ**
	30 x 25	2.30	3.22	0.293	0.132	**EETUQ2E681KF**	**EETUQ2E681KC**
	30 x 30	2.50	3.50	0.293	0.132	**EETUQ2E681KA**	**EETUQ2E681KJ**
820	22 x 50	2.77	3.88	0.243	0.109	**EETUQ2E821HA**	**EETUQ2E821HJ**
	25 x 40	2.77	3.88	0.243	0.109	**EETUQ2E821JA**	**EETUQ2E821JJ**
	30 x 30	2.77	3.88	0.243	0.109	**EETUQ2E821KA**	**EETUQ2E821KJ**
	35 x 25	2.77	3.88	0.243	0.121	**EETUQ2E821LA**	**EETUQ2E821LJ**
1000	25 x 45	3.32	4.65	0.199	0.090	**EETUQ2E102JA**	**EETUQ2E102JJ**
	30 x 35	3.32	4.65	0.199	0.090	**EETUQ2E102KA**	**EETUQ2E102KJ**
	35 x 30	3.32	4.65	0.199	0.090	**EETUQ2E102LA**	**EETUQ2E102LJ**
1200	30 x 40	3.53	4.94	0.166	0.075	**EETUQ2E122KA**	**EETUQ2E122KJ**
	35 x 35	3.53	4.94	0.166	0.083	**EETUQ2E122LA**	**EETUQ2E122LJ**
1500	30 x 50	4.04	5.66	0.133	0.066	**EETUQ2E152KA**	**EETUQ2E152KJ**
	35 x 40	4.04	5.66	0.133	0.066	**EETUQ2E152LA**	**EETUQ2E152LJ**
1800	35 x 45	4.55	6.37	0.111	0.055	**EETUQ2E182LA**	**EETUQ2E182LJ**
2200	35 x 50	4.75	6.65	0.098	0.049	**EETUQ2E222LA**	**EETUQ2E222LJ**
350 VDC Working, 400 VDC Surge							
150	22 x 25	1.12	1.57	1.326	0.663	**EETUQ2V151HA**	**EETUQ2V151HJ**
180	22 x 30	1.22	1.71	1.105	0.553	**EETUQ2V181HA**	**EETUQ2V181HJ**
220	22 x 35	1.44	2.02	0.904	0.452	**EETUQ2V221HA**	**EETUQ2V221HJ**
270	22 x 40	1.66	2.32	0.737	0.368	**EETUQ2V271HA**	**EETUQ2V271HJ**
	25 x 30	1.66	2.32	0.737	0.368	**EETUQ2V271JA**	**EETUQ2V271JJ**
330	22 x 45	1.88	2.63	0.603	0.301	**EETUQ2V331HA**	**EETUQ2V331HJ**
	25 x 35	1.88	2.63	0.603	0.301	**EETUQ2V331JA**	**EETUQ2V331JJ**
390	22 x 50	2.06	2.88	0.510	0.255	**EETUQ2V391HA**	**EETUQ2V391HJ**
	25 x 40	2.06	2.88	0.510	0.255	**EETUQ2V391JA**	**EETUQ2V391JJ**
	30 x 30	2.06	2.88	0.510	0.255	**EETUQ2V391KA**	**EETUQ2V391KJ**
	35 x 25	2.06	2.88	0.510	0.255	**EETUQ2V391LA**	**EETUQ2V391LJ**

TS-UQ Standard Ratings (continued)

Part numbers shown with 2 pins and 4.0mm length terminal

Cap. (μF)	Size (mm) D x L	Max 85°C R.C. (A_{rms}) 120Hz	Max 85°C R.C. (A_{rms}) 10kHz~	20°C ESR (Ω, max.) 120Hz	20°C ESR (Ω, max.) 20kHz	Panasonic Part Number (By Sleeving Style) PVC with Top Plate	Panasonic Part Number (By Sleeving Style) PET without Top Plate
350 VDC Working, 400 VDC Surge (continued)							
470	25 x 45	2.40	3.36	0.423	0.212	**EETUQ2V471JA**	**EETUQ2V471JJ**
	30 x 35	2.40	3.36	0.423	0.212	**EETUQ2V471KA**	**EETUQ2V471KJ**
	35 x 30	2.40	3.36	0.423	0.233	**EETUQ2V471LA**	**EETUQ2V471LJ**
560	25 x 50	2.60	3.64	0.355	0.178	**EETUQ2V561JA**	**EETUQ2V561JJ**
	30 x 40	2.60	3.64	0.355	0.178	**EETUQ2V561KA**	**EETUQ2V561KJ**
	35 x 30	2.60	3.64	0.355	0.195	**EETUQ2V561LA**	**EETUQ2V561LJ**
680	30 x 45	2.96	4.14	0.293	0.146	**EETUQ2V681KA**	**EETUQ2V681KJ**
	35 x 35	2.96	4.14	0.293	0.146	**EETUQ2V681LA**	**EETUQ2V681LJ**
820	30 x 50	3.25	4.55	0.243	0.121	**EETUQ2V821KA**	**EETUQ2V821KJ**
	35 x 45	3.25	4.55	0.243	0.121	**EETUQ2V821LA**	**EETUQ2V821LJ**
1000	35 x 50	3.54	4.96	0.199	0.109	**EETUQ2V102LA**	**EETUQ2V102LJ**
400 VDC Working, 450 VDC Surge							
120	22 x 25	1.02	1.43	1.658	0.829	**EETUQ2G121HA**	**EETUQ2G121HJ**
150	22 x 30	1.16	1.62	1.326	0.663	**EETUQ2G151HA**	**EETUQ2G151HJ**
180	22 x 30	1.44	2.02	1.105	0.553	**EETUQ2G181HF**	**EETUQ2G181HC**
	22 x 35	1.44	2.02	1.105	0.553	**EETUQ2G181HA**	**EETUQ2G181HJ**
220	22 x 35	1.49	2.09	0.904	0.452	**EETUQ2G221HF**	**EETUQ2G221HC**
	22 x 40	1.49	2.09	0.904	0.452	**EETUQ2G221HA**	**EETUQ2G221HJ**
	25 x 30	1.49	2.09	0.904	0.452	**EETUQ2G221JA**	**EETUQ2G221JJ**
270	22 x 45	1.67	2.34	0.737	0.368	**EETUQ2G271HA**	**EETUQ2G271HJ**
	25 x 35	1.67	2.34	0.737	0.368	**EETUQ2G271JA**	**EETUQ2G271JJ**
	30 x 30	1.67	2.34	0.737	0.368	**EETUQ2G271KA**	**EETUQ2G271KJ**
	30 x 25	1.67	2.34	0.737	0.368	**EETUQ2G271KF**	**EETUQ2G271KC**
330	22 x 50	1.90	2.66	0.603	0.301	**EETUQ2G331HA**	**EETUQ2G331HJ**
	25 x 40	1.90	2.66	0.603	0.301	**EETUQ2G331JA**	**EETUQ2G331JJ**
	30 x 30	1.90	2.66	0.603	0.301	**EETUQ2G331KA**	**EETUQ2G331KJ**
	35 x 25	1.90	2.66	0.603	0.301	**EETUQ2G331LA**	**EETUQ2G331LJ**
390	25 x 45	2.13	2.98	0.510	0.255	**EETUQ2G391JA**	**EETUQ2G391JJ**
	30 x 35	2.13	2.98	0.510	0.255	**EETUQ2G391KA**	**EETUQ2G391KJ**
	35 x 30	2.13	2.98	0.510	0.255	**EETUQ2G391LA**	**EETUQ2G391LJ**
470	25 x 50	2.39	3.35	0.423	0.212	**EETUQ2G471JA**	**EETUQ2G471JJ**
	30 x 40	2.39	3.35	0.423	0.212	**EETUQ2G471KA**	**EETUQ2G471KJ**
	35 x 30	2.39	3.35	0.423	0.212	**EETUQ2G471LA**	**EETUQ2G471LJ**
560	30 x 45	2.69	3.77	0.355	0.178	**EETUQ2G561KA**	**EETUQ2G561KJ**
	35 x 35	2.69	3.77	0.355	0.178	**EETUQ2G561LA**	**EETUQ2G561LJ**
680	30 x 50	2.96	4.14	0.293	0.146	**EETUQ2G681KA**	**EETUQ2G681KJ**
	35 x 40	2.96	4.14	0.293	0.146	**EETUQ2G681LF**	**EETUQ2G681LC**
	35 x 45	2.96	4.14	0.293	0.146	**EETUQ2G681LA**	**EETUQ2G681LJ**
820	35 x 45	3.25	4.55	0.243	0.121	**EETUQ2G821LF**	**EETUQ2G821LC**
	35 x 50	3.25	4.55	0.243	0.121	**EETUQ2G821LA**	**EETUQ2G821LJ**
420 VDC Working, 470 VDC Surge							
120	22 x 25	1.08	1.51	1.658	0.829	**EETUQ2S121HA**	**EETUQ2S121HJ**
150	22 x 30	1.30	1.82	1.326	0.663	**EETUQ2S151HA**	**EETUQ2S151HJ**
	25 x 25	1.30	1.82	1.326	0.663	**EETUQ2S151JA**	**EETUQ2S151JJ**
180	22 x 35	1.48	2.07	1.105	0.553	**EETUQ2S181HA**	**EETUQ2S181HJ**
	25 x 30	1.48	2.07	1.105	0.553	**EETUQ2S181JA**	**EETUQ2S181JJ**
220	22 x 40	1.65	2.31	0.904	0.452	**EETUQ2S221HF**	**EETUQ2S221HC**
	25 x 35	1.65	2.31	0.904	0.452	**EETUQ2S221JA**	**EETUQ2S221JJ**
	30 x 25	1.65	2.31	0.904	0.452	**EETUQ2S221KA**	**EETUQ2S221KJ**
270	22 x 45	1.94	2.72	0.737	0.368	**EETUQ2S271HF**	**EETUQ2S271HC**
	25 x 40	1.94	2.72	0.737	0.368	**EETUQ2S271JA**	**EETUQ2S271JJ**
	30 x 30	1.94	2.72	0.737	0.368	**EETUQ2S271KA**	**EETUQ2S271KJ**
330	25 x 45	2.17	3.03	0.603	0.301	**EETUQ2S331JA**	**EETUQ2S331JJ**
	30 x 30	2.17	3.03	0.603	0.301	**EETUQ2S331KF**	**EETUQ2S331KC**
	35 x 25	2.17	3.03	0.603	0.301	**EETUQ2S331LA**	**EETUQ2S331LJ**
390	25 x 50	2.27	3.18	0.510	0.255	**EETUQ2S391JA**	**EETUQ2S391JJ**
	30 x 35	2.27	3.18	0.510	0.255	**EETUQ2S391KA**	**EETUQ2S391KJ**
	35 x 30	2.27	3.18	0.510	0.255	**EETUQ2S391LA**	**EETUQ2S391LJ**
470	30 x 40	2.61	3.65	0.423	0.212	**EETUQ2S471KF**	**EETUQ2S471KC**
	35 x 35	2.61	3.65	0.423	0.212	**EETUQ2S471LA**	**EETUQ2S471LJ**
560	30 x 45	2.82	3.95	0.355	0.178	**EETUQ2S561KF**	**EETUQ2S561KC**
	35 x 40	2.82	3.95	0.355	0.178	**EETUQ2S561LA**	**EETUQ2S561LJ**
680	30 x 50	3.11	4.35	0.293	0.146	**EETUQ2S681KF**	**EETUQ2S681KC**
	35 x 45	3.11	4.35	0.293	0.146	**EETUQ2S681LA**	**EETUQ2S681LJ**

TS-UQ Standard Ratings (continued)

Part numbers shown with 2 pins and 4.0mm length terminal

Cap. (μF)	Size (mm) D x L	Max 85°C R.C. (A_{rms}) 120Hz	Max 85°C R.C. (A_{rms}) 10kHz~	20°C ESR (Ω, max.) 120Hz	20°C ESR (Ω, max.) 20kHz	Panasonic Part Number (By Sleeving Style) PVC with Top Plate	Panasonic Part Number (By Sleeving Style) PET without Top Plate
420 VDC Working, 470 VDC Surge (continued)							
820	35 x 50	3.30	4.62	0.243	0.121	**EETUQ2S821LA**	**EETUQ2S821LJ**
450 VDC Working, 500 VDC Surge							
82	22 x 25	0.83	1.16	2.426	1.213	**EETUQ2W820HA**	**EETUQ2W820HJ**
100	22 x 25	0.93	1.30	1.989	0.995	**EETUQ2W101HA**	**EETUQ2W101HJ**
120	22 x 30	1.04	1.46	1.658	0.829	**EETUQ2W121HA**	**EETUQ2W121HJ**
150	22 x 30	1.19	1.67	1.326	0.663	**EETUQ2W151HF**	**EETUQ2W151HC**
	22 x 35	1.19	1.67	1.326	0.663	**EETUQ2W151HA**	**EETUQ2W151HJ**
	25 x 25	1.19	1.67	1.326	0.663	**EETUQ2W151JF**	**EETUQ2W151JC**
	25 x 30	1.19	1.67	1.326	0.663	**EETUQ2W151JA**	**EETUQ2W151JJ**
180	22 x 35	1.35	1.89	1.105	0.553	**EETUQ2W181HF**	**EETUQ2W181HC**
	22 x 40	1.35	1.89	1.105	0.553	**EETUQ2W181HA**	**EETUQ2W181HJ**
	25 x 30	1.35	1.89	1.105	0.553	**EETUQ2W181JA**	**EETUQ2W181JJ**
220	22 x 45	1.55	2.17	0.904	0.452	**EETUQ2W221HA**	**EETUQ2W221HJ**
	25 x 35	1.45	2.03	0.904	0.452	**EETUQ2W221JF**	**EETUQ2W221JC**
	25 x 40	1.55	2.17	0.904	0.452	**EETUQ2W221JA**	**EETUQ2W221JJ**
	30 x 25	1.55	2.17	0.904	0.452	**EETUQ2W221KF**	**EETUQ2W221KC**
	30 x 30	1.55	2.17	0.904	0.452	**EETUQ2W221KA**	**EETUQ2W221KJ**
	35 x 25	1.55	2.17	0.904	0.452	**EETUQ2W221LA**	**EETUQ2W221LJ**
270	22 x 50	1.78	2.49	0.737	0.368	**EETUQ2W271HA**	**EETUQ2W271HJ**
	25 x 40	1.78	2.49	0.737	0.368	**EETUQ2W271JA**	**EETUQ2W271JJ**
	30 x 30	1.78	2.49	0.737	0.368	**EETUQ2W271KA**	**EETUQ2W271KJ**
	35 x 25	1.78	2.49	0.737	0.368	**EETUQ2W271LF**	**EETUQ2W271LC**
330	25 x 45	2.01	2.81	0.603	0.301	**EETUQ2W331JF**	**EETUQ2W331JC**
	30 x 35	2.01	2.63	0.603	0.301	**EETUQ2W331KF**	**EETUQ2W331KC**
	30 x 40	2.01	2.81	0.603	0.301	**EETUQ2W331KA**	**EETUQ2W331KJ**
	35 x 30	2.01	2.81	0.603	0.301	**EETUQ2W331LA**	**EETUQ2W331LJ**
390	30 x 40	2.24	3.14	0.510	0.255	**EETUQ2W391KA**	**EETUQ2W391KJ**
	35 x 30	2.24	3.14	0.510	0.255	**EETUQ2W391LF**	**EETUQ2W391LC**
	35 x 35	2.24	3.14	0.510	0.255	**EETUQ2W391LA**	**EETUQ2W391LJ**
470	30 x 45	2.53	3.54	0.423	0.212	**EETUQ2W471KA**	**EETUQ2W471KJ**
	35 x 35	2.53	3.54	0.423	0.212	**EETUQ2W471LF**	**EETUQ2W471LC**
	35 x 40	2.53	3.54	0.423	0.212	**EETUQ2W471LA**	**EETUQ2W471LJ**
560	30 x 50	2.82	3.95	0.355	0.178	**EETUQ2W561KA**	**EETUQ2W561KJ**
	35 x 40	2.82	3.95	0.355	0.178	**EETUQ2W561LF**	**EETUQ2W561LC**
	35 x 45	2.82	3.95	0.355	0.178	**EETUQ2W561LA**	**EETUQ2W561LJ**
680	35 x 45	3.02	4.23	0.293	0.146	**EETUQ2W681LF**	**EETUQ2W681LC**

TS-UP Series *85°C, 3000 hours*

- ***Compact size for general purpose and industrial applications***
- ***2 and 3 pin versions available***
- ***20mm lengths for low profile applications***

Rated Working Voltage:	16 ~ 250 VDC	350 ~ 500 VDC
Operating Temperature:	-40 ~ +85°C	-25 ~ +85°C
Nominal Capacitance:	120 ~ 68000µF	33 ~ 820µF
Capacitance Tolerance:	± 20%	

Dissipation Factor (120 Hz, +20°C):

Working Voltage [V]:	16	25	35	50	63	80	100	160 ~ 500
Max. D.F. (%):	50	40	35	30	25	20	20	15

For capacitance values > 33000µF, add the value of: $\frac{(\text{rated cap. [µF]} - 33000)}{1000}$

Leakage Current: $3\sqrt{CV}$ (µA) max. after 5 minutes; *C = Capacitance in µF, V = WV*

Ripple Current Multipliers:

Frequency(Hz):	50	60	100~120	500	1k	10k
16~100WV:	0.93	0.95	1.0	1.05	1.08	1.15
160~450WV:	0.75	0.8	1.0	1.2	1.25	1.4

Ripple Current Ambient Temperature Factors**				
Temperature (°C):	85°C	70°C	60°C	≤45°C
Multiplier:	1.0	1.3	1.4	1.5

Endurance: 3000 hours* at +85°C with maximum specified ripple current (see page 4)
*2000 hours for 20mm length sizes

**Use of temperature ripple current multipliers may limit life to the hours specified for the maximum operating temperature.

Part Number System

E C O S | □ □ | P | Series Code | □ □ □ | Capacitance Code | □ | □

RoHS compliant PVC sleeve and top plate is standard. PET sleeve is available without top plate.

Suffix	
A	Standard Ratings
X	Extended CV Ratings
L	20mm Length Ratings

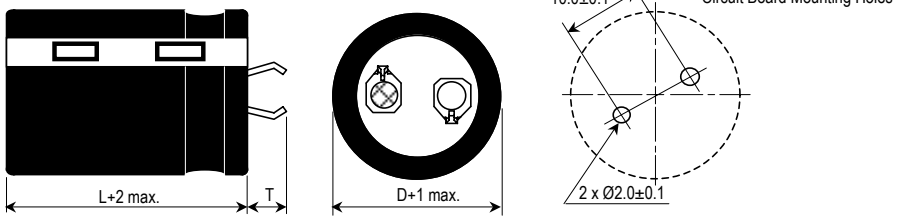
Terminal Style		
Prefix	Length	# of Pins
ECOS	6.3mm	2
ECEC	4.0mm	2
ECE3	4.0mm	3

Voltage Code															
1C	1E	1V	1H	1J	1K	2A	2C	2D	2E	2V	2T	2G	2S	2W	2H
16	25	35	50	63	80	100	160	200	250	350	385	400	420	450	500

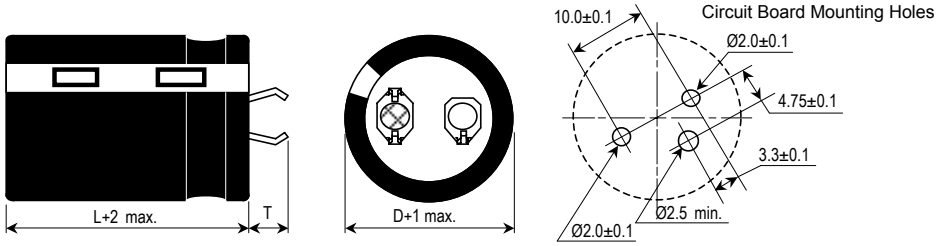
Diameter	
Diameter	Code
22	B
25	C
30	D
35	E

Dimensions in millimeters

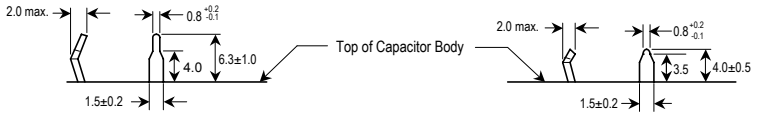
2 Pin Mounting Style



3 Pin Mounting Style



Pin Dimensions



"T" 6.3mm Length: Standard on 2 Pin Mounting Style

4mm Length: Standard on 3 Pin, Available on 2 Pin Mounting Styles

TS-UP Standard Ratings

Part numbers shown with 2 pins

Cap. (μF)	Size (mm) D x L	Max 85°C R.C. (A_{rms}) 120Hz	Max 85°C R.C. (A_{rms}) 10kHz~	20°C ESR (Ω, max.) 120Hz	20°C ESR (Ω, max.) 20kHz	Panasonic Part Number (By Terminal Length) 6.3mm Length Terminal	Panasonic Part Number (By Terminal Length) 4.0mm Length Terminal
16 VDC Working, 20 VDC Surge							
4700	22 x 20	1.60	1.84	0.159	0.135	**ECOS1CP472BL**	**ECEC1CP472BL**
	22 x 25	1.77	2.04	0.159	0.135	**ECOS1CP472BA**	**ECEC1CP472BA**
6800	22 x 25	2.57	2.96	0.110	0.093	**ECOS1CP682BA**	**ECEC1CP682BA**
	25 x 20	1.80	2.07	0.110	0.093	**ECOS1CP682CL**	**ECEC1CP682CL**
8200	22 x 25	3.10	3.57	0.091	0.077	**ECOS1CP822BA**	**ECEC1CP822BA**
10000	22 x 30	3.78	4.35	0.075	0.063	**ECOS1CP103BA**	**ECEC1CP103BA**
	25 x 25	3.78	4.35	0.075	0.063	**ECOS1CP103CA**	**ECEC1CP103CA**
	30 x 20	2.40	2.76	0.083	0.070	**ECOS1CP103DL**	**ECEC1CP103DL**
12000	22 x 30	4.52	5.20	0.062	0.053	**ECOS1CP123BA**	**ECEC1CP123BA**
	25 x 25	4.52	5.20	0.062	0.053	**ECOS1CP123CA**	**ECEC1CP123CA**
15000	22 x 35	5.26	6.05	0.053	0.045	**ECOS1CP153BA**	**ECEC1CP153BA**
	25 x 30	5.26	6.05	0.053	0.045	**ECOS1CP153CA**	**ECEC1CP153CA**
	35 x 20	3.20	3.68	0.055	0.047	**ECOS1CP153EL**	**ECEC1CP153EL**
18000	22 x 40	5.57	6.41	0.046	0.039	**ECOS1CP183BA**	**ECEC1CP183BA**
	25 x 30	5.57	6.41	0.046	0.039	**ECOS1CP183CA**	**ECEC1CP183CA**
22000	22 x 45	6.10	7.02	0.038	0.032	**ECOS1CP223BA**	**ECEC1CP223BA**
	25 x 35	6.10	7.02	0.038	0.032	**ECOS1CP223CA**	**ECEC1CP223CA**
	30 x 30	6.10	7.02	0.038	0.032	**ECOS1CP223DA**	**ECEC1CP223DA**
27000	25 x 45	6.31	7.26	0.031	0.026	**ECOS1CP273CA**	**ECEC1CP273CA**
	30 x 35	6.31	7.26	0.031	0.026	**ECOS1CP273DA**	**ECEC1CP273DA**
33000	25 x 50	6.84	7.87	0.025	0.021	**ECOS1CP333CA**	**ECEC1CP333CA**
	30 x 40	6.84	7.87	0.025	0.021	**ECOS1CP333DA**	**ECEC1CP333DA**
	35 x 30	6.84	7.87	0.025	0.021	**ECOS1CP333EA**	**ECEC1CP333EA**
39000	30 x 45	6.94	7.98	0.021	0.018	**ECOS1CP393DA**	**ECEC1CP393DA**
	35 x 35	6.94	7.98	0.021	0.018	**ECOS1CP393EA**	**ECEC1CP393EA**
47000	30 x 50	7.47	8.59	0.019	0.017	**ECOS1CP473DA**	**ECEC1CP473DA**
	35 x 40	7.47	8.59	0.021	0.019	**ECOS1CP473EA**	**ECEC1CP473EA**
56000	35 x 45	8.73	10.04	0.019	0.018	**ECOS1CP563EA**	**ECEC1CP563EA**
68000	35 x 50	9.05	10.41	0.018	0.017	**ECOS1CP683EA**	**ECEC1CP683EA**
25 VDC Working, 32 VDC Surge							
3300	22 x 20	1.60	1.84	0.176	0.141	**ECOS1EP332BL**	**ECEC1EP332BL**
	22 x 25	1.68	1.93	0.161	0.129	**ECOS1EP332BA**	**ECEC1EP332BA**
4700	22 x 25	2.39	2.75	0.113	0.090	**ECOS1EP472BA**	**ECEC1EP472BA**
	25 x 20	1.80	2.07	0.123	0.099	**ECOS1EP472CL**	**ECEC1EP472CL**
5600	22 x 25	2.86	3.29	0.095	0.076	**ECOS1EP562BA**	**ECEC1EP562BA**
6800	22 x 30	3.47	3.99	0.078	0.062	**ECOS1EP682BA**	**ECEC1EP682BA**
	25 x 25	3.47	3.99	0.078	0.062	**ECOS1EP682CA**	**ECEC1EP682CA**
	30 x 20	2.30	2.65	0.078	0.062	**ECOS1EP682DL**	**ECEC1EP682DL**
8200	22 x 30	3.57	4.11	0.065	0.052	**ECOS1EP822BA**	**ECEC1EP822BA**
	25 x 25	3.57	4.11	0.065	0.052	**ECOS1EP822CA**	**ECEC1EP822CA**
10000	22 x 35	3.78	4.35	0.058	0.046	**ECOS1EP103BA**	**ECEC1EP103BA**
	25 x 30	3.78	4.35	0.058	0.046	**ECOS1EP103CA**	**ECEC1EP103CA**
	30 x 25	3.78	4.35	0.058	0.046	**ECOS1EP103DA**	**ECEC1EP103DA**
	35 x 20	2.70	3.11	0.061	0.049	**ECOS1EP103EL**	**ECEC1EP103EL**
12000	22 x 40	4.10	4.72	0.048	0.039	**ECOS1EP123BA**	**ECEC1EP123BA**
	25 x 35	4.10	4.72	0.048	0.039	**ECOS1EP123CA**	**ECEC1EP123CA**
	30 x 30	4.10	4.72	0.048	0.039	**ECOS1EP123DA**	**ECEC1EP123DA**
15000	22 x 50	4.63	5.32	0.039	0.031	**ECOS1EP153BA**	**ECEC1EP153BA**
	25 x 40	4.63	5.32	0.039	0.031	**ECOS1EP153CA**	**ECEC1EP153CA**
	30 x 30	4.63	5.32	0.039	0.031	**ECOS1EP153DA**	**ECEC1EP153DA**
18000	25 x 45	5.47	6.29	0.035	0.028	**ECOS1EP183CA**	**ECEC1EP183CA**
	30 x 35	5.47	6.29	0.035	0.028	**ECOS1EP183DA**	**ECEC1EP183DA**
22000	25 x 50	6.10	7.02	0.029	0.023	**ECOS1EP223CA**	**ECEC1EP223CA**
	30 x 40	6.10	7.02	0.029	0.023	**ECOS1EP223DA**	**ECEC1EP223DA**
27000	30 x 45	6.21	7.14	0.023	0.019	**ECOS1EP273DA**	**ECEC1EP273DA**
	35 x 35	6.21	7.14	0.025	0.020	**ECOS1EP273EA**	**ECEC1EP273EA**
33000	30 x 50	6.84	7.87	0.020	0.017	**ECOS1EP333DA**	**ECEC1EP333DA**
	35 x 40	6.84	7.87	0.020	0.017	**ECOS1EP333EA**	**ECEC1EP333EA**
39000	35 x 45	7.36	8.46	0.019	0.017	**ECOS1EP393EA**	**ECEC1EP393EA**
47000	35 x 50	8.00	9.20	0.017	0.015	**ECOS1EP473EA**	**ECEC1EP473EA**
35 VDC Working, 44 VDC Surge							
2200	22 x 20	1.40	1.61	0.181	0.136	**ECOS1VP222BL**	**ECEC1VP222BL**
	22 x 25	1.52	1.75	0.166	0.124	**ECOS1VP222BA**	**ECEC1VP222BA**

TS-UP Standard Ratings (continued)

Part numbers shown with 2 pins

Cap. (µF)	Size (mm) D x L	Max 85°C R.C. (A_{rms}) 120Hz	Max 85°C R.C. (A_{rms}) 10kHz~	20°C ESR (Ω, max.) 120Hz	20°C ESR (Ω, max.) 20kHz	Panasonic Part Number (By Terminal Length) 6.3mm Length Terminal	Panasonic Part Number (By Terminal Length) 4.0mm Length Terminal
35 VDC Working, 44 VDC Surge (continued)							
3300	22 x 25	2.29	2.63	0.111	0.083	**ECOS1VP332BA**	**ECEC1VP332BA**
	25 x 20	1.70	1.96	0.121	0.090	**ECOS1VP332CL**	**ECEC1VP332CL**
3900	22 x 25	2.71	3.12	0.094	0.070	**ECOS1VP392BA**	**ECEC1VP392BA**
4700	22 x 30	3.26	3.75	0.078	0.058	**ECOS1VP472BA**	**ECEC1VP472BA**
	25 x 25	3.26	3.75	0.078	0.058	**ECOS1VP472CA**	**ECEC1VP472CA**
	30 x 20	2.00	2.30	0.088	0.066	**ECOS1VP472DL**	**ECEC1VP472DL**
5600	22 x 30	3.36	3.86	0.080	0.060	**ECOS1VP562BA**	**ECEC1VP562BA**
	25 x 25	3.36	3.86	0.080	0.060	**ECOS1VP562CA**	**ECEC1VP562CA**
6800	22 x 35	3.68	4.23	0.066	0.049	**ECOS1VP682BA**	**ECEC1VP682BA**
	25 x 30	3.68	4.23	0.066	0.049	**ECOS1VP682CA**	**ECEC1VP682CA**
	35 x 20	2.40	2.76	0.071	0.053	**ECOS1VP682EL**	**ECEC1VP682EL**
8200	22 x 40	4.00	4.60	0.057	0.042	**ECOS1VP822BA**	**ECEC1VP822BA**
	25 x 35	4.00	4.60	0.057	0.042	**ECOS1VP822CA**	**ECEC1VP822CA**
10000	22 x 45	4.42	5.08	0.050	0.037	**ECOS1VP103BA**	**ECEC1VP103BA**
	25 x 40	4.42	5.08	0.050	0.037	**ECOS1VP103CA**	**ECEC1VP103CA**
	30 x 30	4.42	5.08	0.050	0.037	**ECOS1VP103DA**	**ECEC1VP103DA**
	35 x 25	4.42	5.08	0.050	0.037	**ECOS1VP103EA**	**ECEC1VP103EA**
12000	25 x 45	5.05	5.81	0.044	0.033	**ECOS1VP123CA**	**ECEC1VP123CA**
	30 x 35	5.05	5.81	0.044	0.033	**ECOS1VP123DA**	**ECEC1VP123DA**
	35 x 30	5.05	5.81	0.044	0.033	**ECOS1VP123EA**	**ECEC1VP123EA**
15000	25 x 50	5.57	6.41	0.036	0.027	**ECOS1VP153CA**	**ECEC1VP153CA**
	30 x 40	5.57	6.41	0.036	0.027	**ECOS1VP153DA**	**ECEC1VP153DA**
	35 x 30	5.57	6.41	0.036	0.027	**ECOS1VP153EA**	**ECEC1VP153EA**
18000	30 x 45	5.68	6.53	0.030	0.023	**ECOS1VP183DA**	**ECEC1VP183DA**
	35 x 35	5.68	6.53	0.030	0.023	**ECOS1VP183EA**	**ECEC1VP183EA**
22000	30 x 50	6.10	7.02	0.026	0.020	**ECOS1VP223DA**	**ECEC1VP223DA**
	35 x 40	6.10	7.02	0.026	0.020	**ECOS1VP223EA**	**ECEC1VP223EA**
27000	35 x 45	6.84	7.87	0.021	0.017	**ECOS1VP273EA**	**ECEC1VP273EA**
33000	35 x 50	7.15	8.22	0.018	0.014	**ECOS1VP333EA**	**ECEC1VP333EA**
50 VDC Working, 63 VDC Surge							
1500	22 x 20	1.20	1.38	0.254	0.191	**ECOS1HP152BL**	**ECEC1HP152BL**
	22 x 25	1.24	1.43	0.221	0.166	**ECOS1HP152BA**	**ECEC1HP152BA**
2200	22 x 25	1.82	2.09	0.151	0.113	**ECOS1HP222BA**	**ECEC1HP222BA**
	25 x 20	1.40	1.61	0.173	0.130	**ECOS1HP222CL**	**ECEC1HP222CL**
2700	22 x 25	2.23	2.56	0.123	0.092	**ECOS1HP272BA**	**ECEC1HP272BA**
3300	22 x 30	2.73	3.14	0.100	0.075	**ECOS1HP332BA**	**ECEC1HP332BA**
	25 x 25	2.73	3.14	0.100	0.075	**ECOS1HP332CA**	**ECEC1HP332CA**
	30 x 20	1.70	1.96	0.116	0.087	**ECOS1HP332DL**	**ECEC1HP332DL**
3900	22 x 30	2.75	3.16	0.085	0.064	**ECOS1HP392BA**	**ECEC1HP392BA**
	25 x 25	2.75	3.16	0.085	0.064	**ECOS1HP392CA**	**ECEC1HP392CA**
4700	22 x 35	3.03	3.48	0.071	0.053	**ECOS1HP472BA**	**ECEC1HP472BA**
	25 x 30	3.03	3.48	0.071	0.053	**ECOS1HP472CA**	**ECEC1HP472CA**
	30 x 25	3.03	3.48	0.071	0.053	**ECOS1HP472DA**	**ECEC1HP472DA**
	35 x 20	2.10	2.42	0.081	0.061	**ECOS1HP472EL**	**ECEC1HP472EL**
5600	22 x 40	3.42	3.93	0.059	0.044	**ECOS1HP562BA**	**ECEC1HP562BA**
	25 x 35	3.42	3.93	0.059	0.044	**ECOS1HP562CA**	**ECEC1HP562CA**
	30 x 30	3.42	3.93	0.059	0.044	**ECOS1HP562DA**	**ECEC1HP562DA**
6800	22 x 50	3.85	4.43	0.049	0.037	**ECOS1HP682BA**	**ECEC1HP682BA**
	25 x 40	3.85	4.43	0.049	0.037	**ECOS1HP682CA**	**ECEC1HP682CA**
	30 x 30	3.85	4.43	0.049	0.037	**ECOS1HP682DA**	**ECEC1HP682DA**
8200	25 x 45	4.41	5.07	0.040	0.030	**ECOS1HP822CA**	**ECEC1HP822CA**
	30 x 35	4.41	5.07	0.040	0.030	**ECOS1HP822DA**	**ECEC1HP822DA**
10000	25 x 50	4.97	5.72	0.036	0.027	**ECOS1HP103CA**	**ECEC1HP103CA**
	30 x 40	4.97	5.72	0.036	0.027	**ECOS1HP103DA**	**ECEC1HP103DA**
	35 x 30	4.97	5.72	0.036	0.027	**ECOS1HP103EA**	**ECEC1HP103EA**
12000	30 x 45	5.58	6.42	0.032	0.024	**ECOS1HP123DA**	**ECEC1HP123DA**
	35 x 35	5.58	6.42	0.032	0.024	**ECOS1HP123EA**	**ECEC1HP123EA**
15000	30 x 50	6.44	7.41	0.028	0.021	**ECOS1HP153DA**	**ECEC1HP153DA**
	35 x 40	6.44	7.41	0.028	0.021	**ECOS1HP153EA**	**ECEC1HP153EA**
18000	35 x 45	6.94	7.98	0.023	0.018	**ECOS1HP183EA**	**ECEC1HP183EA**
22000	35 x 50	7.57	8.71	0.021	0.017	**ECOS1HP223EA**	**ECEC1HP223EA**
63 VDC Working, 79 VDC Surge							
1000	22 x 20	1.20	1.38	0.381	0.286	**ECOS1JP102BL**	**ECEC1JP102BL**

TS-UP Standard Ratings (continued)

Part numbers shown with 2 pins

Cap. (µF)	Size (mm) D x L	Max 85°C R.C. (A_{rms}) 120Hz	Max 85°C R.C. (A_{rms}) 10kHz~	20°C ESR (Ω, max.) 120Hz	20°C ESR (Ω, max.) 20kHz	Panasonic Part Number (By Terminal Length) 6.3mm Length Terminal	Panasonic Part Number (By Terminal Length) 4.0mm Length Terminal
63 VDC Working, 79 VDC Surge (continued)							
1000	22 x 25	1.20	1.38	0.332	0.249	**ECOS1JP102BA**	**ECEC1JP102BA**
1500	22 x 25	1.72	1.98	0.221	0.166	**ECOS1JP152BA**	**ECEC1JP152BA**
	25 x 20	1.30	1.50	0.254	0.191	**ECOS1JP152CL**	**ECEC1JP152CL**
1800	22 x 25	2.06	2.37	0.184	0.138	**ECOS1JP182BA**	**ECEC1JP182BA**
2200	22 x 30	2.52	2.90	0.151	0.113	**ECOS1JP222BA**	**ECEC1JP222BA**
	25 x 25	2.52	2.90	0.151	0.113	**ECOS1JP222CA**	**ECEC1JP222CA**
	30 x 20	1.50	1.73	0.173	0.130	**ECOS1JP222DL**	**ECEC1JP222DL**
2700	22 x 35	3.73	4.29	0.123	0.092	**ECOS1JP272BA**	**ECEC1JP272BA**
	25 x 30	3.73	4.29	0.123	0.092	**ECOS1JP272CA**	**ECEC1JP272CA**
3300	22 x 40	4.10	4.72	0.105	0.079	**ECOS1JP332BA**	**ECEC1JP332BA**
	25 x 30	4.10	4.72	0.105	0.079	**ECOS1JP332CA**	**ECEC1JP332CA**
	30 x 25	4.10	4.72	0.105	0.079	**ECOS1JP332DA**	**ECEC1JP332DA**
	35 x 20	1.70	1.96	0.126	0.094	**ECOS1JP332EL**	**ECEC1JP332EL**
3900	22 x 45	4.44	5.11	0.098	0.073	**ECOS1JP392BA**	**ECEC1JP392BA**
	25 x 35	4.44	5.11	0.098	0.073	**ECOS1JP392CA**	**ECEC1JP392CA**
	30 x 30	4.44	5.11	0.098	0.073	**ECOS1JP392DA**	**ECEC1JP392DA**
4700	22 x 50	4.86	5.59	0.081	0.061	**ECOS1JP472BA**	**ECEC1JP472BA**
	25 x 40	4.86	5.59	0.081	0.061	**ECOS1JP472CA**	**ECEC1JP472CA**
	30 x 30	4.86	5.59	0.081	0.061	**ECOS1JP472DA**	**ECEC1JP472DA**
	35 x 25	4.86	5.59	0.081	0.061	**ECOS1JP472EA**	**ECEC1JP472EA**
5600	25 x 45	5.36	6.16	0.068	0.051	**ECOS1JP562CA**	**ECEC1JP562CA**
	30 x 35	5.36	6.16	0.068	0.051	**ECOS1JP562DA**	**ECEC1JP562DA**
	35 x 30	5.36	6.16	0.068	0.051	**ECOS1JP562EA**	**ECEC1JP562EA**
6800	25 x 50	5.84	6.72	0.061	0.046	**ECOS1JP682CA**	**ECEC1JP682CA**
	30 x 40	5.84	6.72	0.061	0.046	**ECOS1JP682DA**	**ECEC1JP682DA**
	35 x 30	5.84	6.72	0.061	0.046	**ECOS1JP682EA**	**ECEC1JP682EA**
8200	30 x 45	6.00	6.90	0.051	0.038	**ECOS1JP822DA**	**ECEC1JP822DA**
	35 x 35	6.00	6.90	0.051	0.038	**ECOS1JP822EA**	**ECEC1JP822EA**
10000	35 x 40	6.52	7.50	0.041	0.033	**ECOS1JP103EA**	**ECEC1JP103EA**
12000	35 x 50	7.15	8.22	0.035	0.028	**ECOS1JP123EA**	**ECEC1JP123EA**
80 VDC Working, 105 VDC Surge (continued)							
680	22 x 20	1.00	1.15	0.439	0.329	**ECOS1KP681BL**	**ECEC1KP681BL**
	22 x 25	1.02	1.17	0.390	0.293	**ECOS1KP681BA**	**ECEC1KP681BA**
1000	22 x 25	1.51	1.74	0.265	0.199	**ECOS1KP102BA**	**ECEC1KP102BA**
	25 x 20	1.20	1.38	0.298	0.224	**ECOS1KP102CL**	**ECEC1KP102CL**
1200	22 x 25	1.81	2.08	0.221	0.166	**ECOS1KP122BA**	**ECEC1KP122BA**
1500	22 x 30	2.26	2.60	0.177	0.133	**ECOS1KP152BA**	**ECEC1KP152BA**
	25 x 25	2.26	2.60	0.177	0.133	**ECOS1KP152CA**	**ECEC1KP152CA**
	30 x 20	1.40	1.61	0.199	0.149	**ECOS1KP152DL**	**ECEC1KP152DL**
1800	22 x 35	2.52	2.90	0.147	0.111	**ECOS1KP182BA**	**ECEC1KP182BA**
	25 x 30	2.52	2.90	0.147	0.111	**ECOS1KP182CA**	**ECEC1KP182CA**
2200	22 x 40	2.73	3.14	0.121	0.090	**ECOS1KP222BA**	**ECEC1KP222BA**
	25 x 30	2.73	3.14	0.121	0.090	**ECOS1KP222CA**	**ECEC1KP222CA**
	30 x 25	2.73	3.14	0.121	0.090	**ECOS1KP222DA**	**ECEC1KP222DA**
	35 x 20	1.70	1.96	0.136	0.102	**ECOS1KP222EL**	**ECEC1KP222EL**
2700	22 x 45	2.78	3.20	0.098	0.074	**ECOS1KP272BA**	**ECEC1KP272BA**
	25 x 35	2.78	3.20	0.098	0.074	**ECOS1KP272CA**	**ECEC1KP272CA**
	30 x 30	2.78	3.20	0.098	0.074	**ECOS1KP272DA**	**ECEC1KP272DA**
3300	22 x 50	3.21	3.69	0.085	0.064	**ECOS1KP332BA**	**ECEC1KP332BA**
	25 x 40	3.21	3.69	0.085	0.064	**ECOS1KP332CA**	**ECEC1KP332CA**
	30 x 30	3.21	3.69	0.085	0.064	**ECOS1KP332DA**	**ECEC1KP332DA**
3900	25 x 45	3.59	4.13	0.077	0.057	**ECOS1KP392CA**	**ECEC1KP392CA**
	30 x 35	3.59	4.13	0.077	0.057	**ECOS1KP392DA**	**ECEC1KP392DA**
4700	25 x 50	4.09	4.70	0.063	0.048	**ECOS1KP472CA**	**ECEC1KP472CA**
	30 x 40	4.09	4.70	0.063	0.048	**ECOS1KP472DA**	**ECEC1KP472DA**
5600	30 x 45	4.55	5.23	0.056	0.042	**ECOS1KP562DA**	**ECEC1KP562DA**
	35 x 35	4.55	5.23	0.056	0.042	**ECOS1KP562EA**	**ECEC1KP562EA**
6800	30 x 50	5.16	5.93	0.046	0.035	**ECOS1KP682DA**	**ECEC1KP682DA**
	35 x 40	5.16	5.93	0.046	0.035	**ECOS1KP682EA**	**ECEC1KP682EA**
8200	35 x 50	5.83	6.70	0.038	0.029	**ECOS1KP822EA**	**ECEC1KP822EA**

TS-UP Standard Ratings (continued)

Part numbers shown with 2 pins

Cap. (µF)	Size (mm) D x L	Max 85°C R.C. (A_{rms}) 120Hz	Max 85°C R.C. (A_{rms}) 10kHz~	20°C ESR (Ω, max.) 120Hz	20°C ESR (Ω, max.) 20kHz	Panasonic Part Number (By Terminal Length) 6.3mm Length Terminal	Panasonic Part Number (By Terminal Length) 4.0mm Length Terminal
100 VDC Working, 125 VDC Surge							
470	22 x 20	1.00	1.15	0.459	0.298	**ECOS2AP471BL**	**ECEC2AP471BL**
	22 x 25	1.11	1.28	0.459	0.298	**ECOS2AP471BA**	**ECEC2AP471BA**
560	22 x 25	1.32	1.52	0.385	0.250	**ECOS2AP561BA**	**ECEC2AP561BA**
680	22 x 25	1.61	1.85	0.317	0.206	**ECOS2AP681BA**	**ECEC2AP681BA**
	25 x 20	1.10	1.27	0.366	0.238	**ECOS2AP681CL**	**ECEC2AP681CL**
1000	22 x 30	1.96	2.25	0.216	0.140	**ECOS2AP102BA**	**ECEC2AP102BA**
	25 x 25	1.96	2.25	0.216	0.140	**ECOS2AP102CA**	**ECEC2AP102CA**
	30 x 20	1.20	1.38	0.249	0.162	**ECOS2AP102DL**	**ECEC2AP102DL**
1200	22 x 35	2.31	2.66	0.193	0.126	**ECOS2AP122BA**	**ECEC2AP122BA**
	25 x 30	2.31	2.66	0.180	0.117	**ECOS2AP122CA**	**ECEC2AP122CA**
1500	22 x 40	2.57	2.96	0.155	0.101	**ECOS2AP152BA**	**ECEC2AP152BA**
	25 x 30	2.57	2.96	0.155	0.101	**ECOS2AP152CA**	**ECEC2AP152CA**
	30 x 25	2.57	2.96	0.155	0.101	**ECOS2AP152DA**	**ECEC2AP152DA**
	35 x 20	1.50	1.73	0.177	0.115	**ECOS2AP152EL**	**ECEC2AP152EL**
1800	22 x 45	2.84	3.27	0.129	0.084	**ECOS2AP182BA**	**ECEC2AP182BA**
	25 x 35	2.84	3.27	0.138	0.090	**ECOS2AP182CA**	**ECEC2AP182CA**
	30 x 30	2.84	3.27	0.138	0.090	**ECOS2AP182DA**	**ECEC2AP182DA**
2200	22 x 50	3.14	3.61	0.121	0.078	**ECOS2AP222BA**	**ECEC2AP222BA**
	25 x 40	3.14	3.61	0.121	0.078	**ECOS2AP222CA**	**ECEC2AP222CA**
	30 x 30	3.14	3.61	0.121	0.078	**ECOS2AP222DA**	**ECEC2AP222DA**
	35 x 25	3.14	3.61	0.121	0.078	**ECOS2AP222EA**	**ECEC2AP222EA**
2700	25 x 45	3.71	4.27	0.104	0.068	**ECOS2AP272CA**	**ECEC2AP272CA**
	30 x 35	3.71	4.27	0.104	0.068	**ECOS2AP272DA**	**ECEC2AP272DA**
	35 x 30	3.71	4.27	0.104	0.068	**ECOS2AP272EA**	**ECEC2AP272EA**
3300	25 x 50	4.06	4.67	0.090	0.059	**ECOS2AP332CA**	**ECEC2AP332CA**
	30 x 40	4.06	4.67	0.090	0.059	**ECOS2AP332DA**	**ECEC2AP332DA**
3900	30 x 45	4.54	5.22	0.077	0.050	**ECOS2AP392DA**	**ECEC2AP392DA**
	35 x 35	4.54	5.22	0.081	0.052	**ECOS2AP392EA**	**ECEC2AP392EA**
4700	30 x 50	5.13	5.90	0.071	0.049	**ECOS2AP472DA**	**ECEC2AP472DA**
	35 x 40	5.13	5.90	0.071	0.049	**ECOS2AP472EA**	**ECEC2AP472EA**
5600	35 x 45	5.75	6.61	0.059	0.041	**ECOS2AP562EA**	**ECEC2AP562EA**
6800	35 x 50	6.60	7.59	0.049	0.037	**ECOS2AP682EA**	**ECEC2AP682EA**
160 VDC Working, 200 VDC Surge							
220	22 x 20	0.75	1.05	0.980	0.490	**ECOS2CP221BL**	**ECEC2CP221BL**
	22 x 25	0.91	1.27	0.829	0.414	**ECOS2CP221BA**	**ECEC2CP221BA**
270	22 x 25	1.19	1.67	0.675	0.338	**ECOS2CP271BA**	**ECEC2CP271BA**
	25 x 20	0.87	1.22	0.798	0.399	**ECOS2CP271CL**	**ECEC2CP271CL**
330	22 x 25	1.45	2.03	0.553	0.276	**ECOS2CP331BA**	**ECEC2CP331BA**
390	22 x 25	1.62	2.27	0.468	0.234	**ECOS2CP391BX**	**ECEC2CP391BX**
	25 x 25	1.62	2.27	0.468	0.234	**ECOS2CP391CA**	**ECEC2CP391CA**
	30 x 20	1.10	1.54	0.595	0.298	**ECOS2CP391DL**	**ECEC2CP391DL**
470	22 x 30	2.11	2.95	0.423	0.212	**ECOS2CP471BA**	**ECEC2CP471BA**
	25 x 25	2.11	2.95	0.423	0.212	**ECOS2CP471CA**	**ECEC2CP471CA**
560	22 x 30	2.25	3.15	0.355	0.178	**ECOS2CP561BX**	**ECEC2CP561BX**
	22 x 35	2.25	3.15	0.355	0.178	**ECOS2CP561BA**	**ECEC2CP561BA**
	25 x 25	2.25	3.15	0.355	0.178	**ECOS2CP561CX**	**ECEC2CP561CX**
	25 x 30	2.25	3.15	0.355	0.178	**ECOS2CP561CA**	**ECEC2CP561CA**
	35 x 20	1.30	1.82	0.414	0.207	**ECOS2CP561EL**	**ECEC2CP561EL**
680	22 x 35	2.50	3.50	0.293	0.146	**ECOS2CP681BX**	**ECEC2CP681BX**
	22 x 40	2.50	3.50	0.293	0.146	**ECOS2CP681BA**	**ECEC2CP681BA**
	25 x 30	2.50	3.50	0.293	0.146	**ECOS2CP681CX**	**ECEC2CP681CX**
	30 x 25	2.50	3.50	0.293	0.146	**ECOS2CP681DA**	**ECEC2CP681DA**
820	22 x 40	2.50	3.50	0.243	0.121	**ECOS2CP821BX**	**ECEC2CP821BX**
	22 x 45	2.75	3.85	0.263	0.131	**ECOS2CP821BA**	**ECEC2CP821BA**
	25 x 35	2.75	3.85	0.263	0.131	**ECOS2CP821CA**	**ECEC2CP821CA**
	30 x 25	2.75	3.85	0.263	0.131	**ECOS2CP821DX**	**ECEC2CP821DX**
	30 x 30	2.75	3.85	0.263	0.131	**ECOS2CP821DA**	**ECEC2CP821DA**
1000	22 x 45	3.00	4.20	0.216	0.108	**ECOS2CP102BX**	**ECEC2CP102BX**
	25 x 40	3.00	4.20	0.216	0.108	**ECOS2CP102CX**	**ECEC2CP102CX**
	25 x 45	3.00	4.20	0.232	0.128	**ECOS2CP102CA**	**ECEC2CP102CA**
	30 x 30	3.00	4.20	0.232	0.128	**ECOS2CP102DX**	**ECEC2CP102DX**
	30 x 35	3.00	4.20	0.232	0.128	**ECOS2CP102DA**	**ECEC2CP102DA**
	35 x 30	3.00	4.20	0.232	0.128	**ECOS2CP102EA**	**ECEC2CP102EA**

TS-UP Standard Ratings (continued)

Part numbers shown with 2 pins

Cap. (μF)	Size (mm) D x L	Max 85°C R.C. (A_{rms}) 120Hz	Max 85°C R.C. (A_{rms}) 10kHz~	20°C ESR (Ω, max.) 120Hz	20°C ESR (Ω, max.) 20kHz	Panasonic Part Number (By Terminal Length) 6.3mm Length Terminal	Panasonic Part Number (By Terminal Length) 4.0mm Length Terminal
160 VDC Working, 200 VDC Surge (continued)							
1200	25 x 50	3.25	4.55	0.207	0.114	**ECOS2CP122CA**	**ECEC2CP122CA**
	30 x 35	3.25	4.55	0.207	0.114	**ECOS2CP122DA**	**ECEC2CP122DA**
	35 x 30	3.25	4.55	0.207	0.114	**ECOS2CP122EA**	**ECEC2CP122EA**
1500	25 x 50	3.73	5.22	0.166	0.091	**ECOS2CP152CX**	**ECEC2CP152CX**
	30 x 45	3.73	5.22	0.166	0.091	**ECOS2CP152DA**	**ECEC2CP152DA**
	35 x 30	3.73	5.22	0.166	0.091	**ECOS2CP152EX**	**ECEC2CP152EX**
	35 x 35	3.73	5.22	0.166	0.091	**ECOS2CP152EA**	**ECEC2CP152EA**
1800	30 x 50	4.20	5.88	0.138	0.083	**ECOS2CP182DA**	**ECEC2CP182DA**
	35 x 35	4.20	5.88	0.138	0.083	**ECOS2CP182EX**	**ECEC2CP182EX**
2200	30 x 50	4.78	6.69	0.105	0.053	**ECOS2CP222DX**	**ECEC2CP222DX**
	35 x 40	4.78	6.69	0.113	0.073	**ECOS2CP222EX**	**ECEC2CP222EX**
	35 x 45	4.78	6.69	0.113	0.073	**ECOS2CP222EA**	**ECEC2CP222EA**
2700	35 x 50	5.45	7.63	0.092	0.060	**ECOS2CP272EA**	**ECEC2CP272EA**
200 VDC Working, 250 VDC Surge							
150	22 x 20	0.65	0.91	1.326	0.597	**ECOS2DP151BL**	**ECEC2DP151BL**
	22 x 25	0.71	0.99	1.216	0.547	**ECOS2DP151BA**	**ECEC2DP151BA**
220	22 x 25	1.04	1.46	0.829	0.373	**ECOS2DP221BA**	**ECEC2DP221BA**
	25 x 20	0.87	1.22	0.904	0.407	**ECOS2DP221CL**	**ECEC2DP221CL**
270	22 x 25	1.41	1.97	0.614	0.276	**ECOS2DP271BA**	**ECEC2DP271BA**
330	22 x 25	1.56	2.18	0.553	0.249	**ECOS2DP331BX**	**ECEC2DP331BX**
	30 x 20	1.00	1.40	0.603	0.271	**ECOS2DP331DL**	**ECEC2DP331DL**
390	22 x 30	1.68	2.35	0.468	0.210	**ECOS2DP391BA**	**ECEC2DP391BA**
	25 x 25	1.68	2.35	0.468	0.210	**ECOS2DP391CA**	**ECEC2DP391CA**
470	22 x 35	1.85	2.59	0.388	0.175	**ECOS2DP471BA**	**ECEC2DP471BA**
	25 x 30	1.85	2.59	0.388	0.175	**ECOS2DP471CA**	**ECEC2DP471CA**
	35 x 20	1.30	1.82	0.459	0.206	**ECOS2DP471EL**	**ECEC2DP471EL**
560	22 x 40	2.43	3.40	0.326	0.147	**ECOS2DP561BA**	**ECEC2DP561BA**
	25 x 30	2.43	3.40	0.326	0.147	**ECOS2DP561CX**	**ECEC2DP561CX**
	30 x 25	2.43	3.40	0.326	0.147	**ECOS2DP561DA**	**ECEC2DP561DA**
680	22 x 45	2.68	3.75	0.268	0.121	**ECOS2DP681BA**	**ECEC2DP681BA**
	25 x 35	2.68	3.75	0.268	0.121	**ECOS2DP681CA**	**ECEC2DP681CA**
	30 x 30	2.68	3.75	0.268	0.121	**ECOS2DP681DA**	**ECEC2DP681DA**
820	25 x 45	2.93	4.10	0.222	0.100	**ECOS2DP821CA**	**ECEC2DP821CA**
	30 x 30	2.93	4.10	0.222	0.100	**ECOS2DP821DX**	**ECEC2DP821DX**
	30 x 35	2.93	4.10	0.222	0.100	**ECOS2DP821DA**	**ECEC2DP821DA**
	35 x 25	2.93	4.10	0.222	0.100	**ECOS2DP821EA**	**ECEC2DP821EA**
1000	25 x 45	3.25	4.55	0.199	0.090	**ECOS2DP102CX**	**ECEC2DP102CX**
	25 x 50	3.25	4.55	0.199	0.090	**ECOS2DP102CA**	**ECEC2DP102CA**
	30 x 35	3.25	4.55	0.199	0.090	**ECOS2DP102DX**	**ECEC2DP102DX**
	30 x 40	3.25	4.55	0.199	0.090	**ECOS2DP102DA**	**ECEC2DP102DA**
	35 x 30	3.25	4.55	0.199	0.090	**ECOS2DP102EA**	**ECEC2DP102EA**
1200	30 x 40	3.50	4.90	0.166	0.075	**ECOS2DP122DX**	**ECEC2DP122DX**
	30 x 45	3.50	4.90	0.166	0.075	**ECOS2DP122DA**	**ECEC2DP122DA**
	35 x 30	3.50	4.90	0.166	0.075	**ECOS2DP122EX**	**ECEC2DP122EX**
	35 x 35	3.50	4.90	0.166	0.075	**ECOS2DP122EA**	**ECEC2DP122EA**
1500	30 x 45	3.87	5.42	0.144	0.072	**ECOS2DP152DX**	**ECEC2DP152DX**
	30 x 50	3.87	5.42	0.144	0.072	**ECOS2DP152DA**	**ECEC2DP152DA**
	35 x 35	3.87	5.42	0.144	0.072	**ECOS2DP152EX**	**ECEC2DP152EX**
	35 x 40	3.87	5.42	0.144	0.072	**ECOS2DP152EA**	**ECEC2DP152EA**
1800	30 x 50	4.32	6.05	0.120	0.060	**ECOS2DP182DX**	**ECEC2DP182DX**
	35 x 40	4.32	6.05	0.120	0.060	**ECOS2DP182EX**	**ECEC2DP182EX**
	35 x 45	4.32	6.05	0.120	0.060	**ECOS2DP182EA**	**ECEC2DP182EA**
2200	35 x 45	4.92	6.89	0.098	0.054	**ECOS2DP222EX**	**ECEC2DP222EX**
	35 x 50	4.92	6.89	0.098	0.054	**ECOS2DP222EA**	**ECEC2DP222EA**
250 VDC Working, 300 VDC Surge							
120	22 x 20	0.45	0.63	1.658	0.663	**ECOS2EP121BL**	**ECEC2EP121BL**
	22 x 25	0.71	0.99	1.520	0.608	**ECOS2EP121BA**	**ECEC2EP121BA**
150	22 x 25	0.89	1.25	1.216	0.486	**ECOS2EP151BA**	**ECEC2EP151BA**
	25 x 20	0.65	0.91	1.326	0.531	**ECOS2EP151CL**	**ECEC2EP151CL**
180	22 x 25	1.07	1.50	0.921	0.368	**ECOS2EP181BA**	**ECEC2EP181BA**
220	22 x 25	1.17	1.64	0.754	0.301	**ECOS2EP221BX**	**ECEC2EP221BX**
	30 x 20	0.87	1.22	0.829	0.332	**ECOS2EP221DL**	**ECEC2EP221DL**
270	22 x 30	1.31	1.83	0.614	0.246	**ECOS2EP271BA**	**ECEC2EP271BA**

TS-UP Standard Ratings (continued)

Part numbers shown with 2 pins

Cap. (µF)	Size (mm) D x L	Max 85°C R.C. (A_{rms}) 120Hz	Max 85°C R.C. (A_{rms}) 10kHz~	20°C ESR (Ω, max.) 120Hz	20°C ESR (Ω, max.) 20kHz	Panasonic Part Number (By Terminal Length) 6.3mm Length Terminal	Panasonic Part Number (By Terminal Length) 4.0mm Length Terminal
250 VDC Working, 300 VDC Surge (continued)							
270	25 x 25	1.31	1.83	0.614	0.246	**ECOS2EP271CA**	**ECEC2EP271CA**
330	22 x 35	1.75	2.45	0.553	0.221	**ECOS2EP331BA**	**ECEC2EP331BA**
	25 x 30	1.75	2.45	0.502	0.201	**ECOS2EP331CA**	**ECEC2EP331CA**
	35 x 20	1.10	1.54	0.553	0.221	**ECOS2EP331EL**	**ECEC2EP331EL**
390	22 x 40	1.91	2.67	0.468	0.187	**ECOS2EP391BA**	**ECEC2EP391BA**
	25 x 30	1.91	2.67	0.468	0.187	**ECOS2EP391CX**	**ECEC2EP391CX**
	25 x 35	1.91	2.67	0.468	0.187	**ECOS2EP391CA**	**ECEC2EP391CA**
	30 x 25	1.91	2.67	0.425	0.170	**ECOS2EP391DA**	**ECEC2EP391DA**
470	22 x 45	2.11	2.95	0.388	0.155	**ECOS2EP471BA**	**ECEC2EP471BA**
	25 x 35	2.11	2.95	0.388	0.155	**ECOS2EP471CX**	**ECEC2EP471CX**
	25 x 40	2.11	2.95	0.388	0.155	**ECOS2EP471CA**	**ECEC2EP471CA**
	30 x 25	2.11	2.95	0.353	0.141	**ECOS2EP471DX**	**ECEC2EP471DX**
	30 x 30	2.11	2.95	0.388	0.155	**ECOS2EP471DA**	**ECEC2EP471DA**
560	25 x 40	2.25	3.15	0.326	0.130	**ECOS2EP561CX**	**ECEC2EP561CX**
	25 x 45	2.25	3.15	0.326	0.130	**ECOS2EP561CA**	**ECEC2EP561CA**
	30 x 30	2.25	3.15	0.326	0.130	**ECOS2EP561DX**	**ECEC2EP561DX**
	30 x 35	2.25	3.15	0.326	0.130	**ECOS2EP561DA**	**ECEC2EP561DA**
	35 x 25	2.25	3.15	0.326	0.130	**ECOS2EP561EA**	**ECEC2EP561EA**
680	25 x 45	2.50	3.50	0.268	0.107	**ECOS2EP681CX**	**ECEC2EP681CX**
	25 x 50	2.50	3.50	0.268	0.107	**ECOS2EP681CA**	**ECEC2EP681CA**
	30 x 35	2.50	3.50	0.268	0.107	**ECOS2EP681DX**	**ECEC2EP681DX**
	30 x 40	2.50	3.50	0.268	0.107	**ECOS2EP681DA**	**ECEC2EP681DA**
	35 x 30	2.50	3.50	0.268	0.107	**ECOS2EP681EA**	**ECEC2EP681EA**
820	30 x 40	2.50	3.50	0.222	0.089	**ECOS2EP821DX**	**ECEC2EP821DX**
	30 x 45	2.77	3.88	0.222	0.089	**ECOS2EP821DA**	**ECEC2EP821DA**
	35 x 30	2.77	3.88	0.222	0.089	**ECOS2EP821EX**	**ECEC2EP821EX**
	35 x 35	2.77	3.88	0.243	0.109	**ECOS2EP821EA**	**ECEC2EP821EA**
1000	30 x 45	3.32	4.65	0.182	0.073	**ECOS2EP102DX**	**ECEC2EP102DX**
	30 x 50	3.32	4.65	0.199	0.090	**ECOS2EP102DA**	**ECEC2EP102DA**
	35 x 35	3.32	4.65	0.199	0.090	**ECOS2EP102EX**	**ECEC2EP102EX**
	35 x 40	3.32	4.65	0.199	0.099	**ECOS2EP102EA**	**ECEC2EP102EA**
1200	35 x 40	3.53	4.94	0.166	0.083	**ECOS2EP122EX**	**ECEC2EP122EX**
	35 x 45	3.53	4.94	0.166	0.083	**ECOS2EP122EA**	**ECEC2EP122EA**
1500	35 x 50	4.04	5.66	0.133	0.066	**ECOS2EP152EA**	**ECEC2EP152EA**
350 VDC Working, 400 VDC Surge							
82	22 x 25	0.83	1.16	2.022	0.708	**ECOS2VP820BA**	**ECEC2VP820BA**
100	22 x 30	0.91	1.27	1.658	0.580	**ECOS2VP101BA**	**ECEC2VP101BA**
120	22 x 30	1.00	1.40	1.382	0.484	**ECOS2VP121BA**	**ECEC2VP121BA**
	25 x 25	1.00	1.40	1.382	0.484	**ECOS2VP121CA**	**ECEC2VP121CA**
150	22 x 35	1.12	1.57	1.105	0.387	**ECOS2VP151BA**	**ECEC2VP151BA**
	25 x 25	1.12	1.57	1.105	0.387	**ECOS2VP151CX**	**ECEC2VP151CX**
	25 x 30	1.12	1.57	1.105	0.387	**ECOS2VP151CA**	**ECEC2VP151CA**
	30 x 25	1.12	1.57	1.105	0.387	**ECOS2VP151DA**	**ECEC2VP151DA**
180	22 x 40	1.22	1.71	0.921	0.322	**ECOS2VP181BA**	**ECEC2VP181BA**
	25 x 30	1.22	1.71	0.921	0.322	**ECOS2VP181CX**	**ECEC2VP181CX**
	25 x 35	1.22	1.71	0.921	0.322	**ECOS2VP181CA**	**ECEC2VP181CA**
	30 x 25	1.22	1.71	0.921	0.322	**ECOS2VP181DA**	**ECEC2VP181DA**
220	22 x 45	1.44	2.02	0.754	0.264	**ECOS2VP221BA**	**ECEC2VP221BA**
	25 x 35	1.44	2.02	0.754	0.264	**ECOS2VP221CX**	**ECEC2VP221CX**
	25 x 40	1.44	2.02	0.754	0.264	**ECOS2VP221CA**	**ECEC2VP221CA**
	30 x 25	1.44	2.02	0.754	0.264	**ECOS2VP221DX**	**ECEC2VP221DX**
	30 x 30	1.44	2.02	0.754	0.264	**ECOS2VP221DA**	**ECEC2VP221DA**
	35 x 25	1.44	2.02	0.754	0.264	**ECOS2VP221EA**	**ECEC2VP221EA**
270	25 x 40	1.66	2.32	0.614	0.215	**ECOS2VP271CX**	**ECEC2VP271CX**
	30 x 30	1.66	2.32	0.614	0.215	**ECOS2VP271DX**	**ECEC2VP271DX**
	30 x 35	1.66	2.32	0.614	0.215	**ECOS2VP271DA**	**ECEC2VP271DA**
	35 x 25	1.66	2.32	0.614	0.215	**ECOS2VP271EX**	**ECEC2VP271EX**
	35 x 30	1.66	2.32	0.614	0.215	**ECOS2VP271EA**	**ECEC2VP271EA**
330	25 x 50	1.88	2.63	0.502	0.176	**ECOS2VP331CA**	**ECEC2VP331CA**
	30 x 35	1.88	2.63	0.502	0.176	**ECOS2VP331DX**	**ECEC2VP331DX**
	30 x 40	1.88	2.63	0.502	0.176	**ECOS2VP331DA**	**ECEC2VP331DA**
	35 x 30	1.88	2.63	0.502	0.176	**ECOS2VP331EA**	**ECEC2VP331EA**

TS-UP Standard Ratings (continued)

Part numbers shown with 2 pins

Cap. (µF)	Size (mm) D x L	Max 85°C R.C. (A_{rms}) 120Hz	Max 85°C R.C. (A_{rms}) 10kHz~	20°C ESR (Ω, max.) 120Hz	20°C ESR (Ω, max.) 20kHz	Panasonic Part Number (By Terminal Length) 6.3mm Length Terminal	Panasonic Part Number (By Terminal Length) 4.0mm Length Terminal
350 VDC Working, 400 VDC Surge (continued)							
390	25 x 50	2.06	2.88	0.425	0.149	**ECOS2VP391CX**	**ECEC2VP391CX**
	30 x 40	2.06	2.88	0.425	0.149	**ECOS2VP391DX**	**ECEC2VP391DX**
	30 x 45	2.06	2.88	0.468	0.164	**ECOS2VP391DA**	**ECEC2VP391DA**
	35 x 30	2.06	2.88	0.425	0.149	**ECOS2VP391EX**	**ECEC2VP391EX**
	35 x 35	2.06	2.88	0.425	0.149	**ECOS2VP391EA**	**ECEC2VP391EA**
470	30 x 50	2.40	3.36	0.388	0.136	**ECOS2VP471DA**	**ECEC2VP471DA**
	35 x 35	2.40	3.36	0.353	0.123	**ECOS2VP471EX**	**ECEC2VP471EX**
	35 x 40	2.40	3.36	0.353	0.123	**ECOS2VP471EA**	**ECEC2VP471EA**
560	30 x 50	2.60	3.64	0.326	0.114	**ECOS2VP561DX**	**ECEC2VP561DX**
	35 x 40	2.60	3.64	0.296	0.104	**ECOS2VP561EX**	**ECEC2VP561EX**
	35 x 45	2.60	3.64	0.296	0.104	**ECOS2VP561EA**	**ECEC2VP561EA**
680	35 x 45	2.96	4.14	0.293	0.117	**ECOS2VP681EX**	**ECEC2VP681EX**
	35 x 50	2.96	4.14	0.293	0.117	**ECOS2VP681EA**	**ECEC2VP681EA**
820	35 x 50	3.55	4.97	0.243	0.097	**ECOS2VP821EX**	**ECEC2VP821EX**
385 VDC Working, 435 VDC Surge							
47	22 x 20	0.25	0.35	4.233	1.481	**ECOS2TP470BL**	**ECEC2TP470BL**
68	22 x 25	0.76	1.06	2.438	0.853	**ECOS2TP680BA**	**ECEC2TP680BA**
	25 x 20	0.35	0.49	2.926	1.024	**ECOS2TP680CL**	**ECEC2TP680CL**
82	22 x 25	0.83	1.16	2.022	0.708	**ECOS2TP820BA**	**ECEC2TP820BA**
100	22 x 30	0.92	1.29	1.658	0.580	**ECOS2TP101BA**	**ECEC2TP101BA**
	25 x 25	0.92	1.29	1.658	0.580	**ECOS2TP101CA**	**ECEC2TP101CA**
	30 x 20	0.47	0.66	1.989	0.696	**ECOS2TP101DL**	**ECEC2TP101DL**
120	22 x 35	1.02	1.43	1.382	0.553	**ECOS2TP121BA**	**ECEC2TP121BA**
	25 x 25	1.02	1.43	1.382	0.553	**ECOS2TP121CX**	**ECEC2TP121CX**
	25 x 30	1.02	1.43	1.382	0.553	**ECOS2TP121CA**	**ECEC2TP121CA**
150	22 x 35	1.16	1.62	1.105	0.442	**ECOS2TP151BX**	**ECEC2TP151BX**
	22 x 40	1.16	1.62	1.105	0.442	**ECOS2TP151BA**	**ECEC2TP151BA**
	25 x 30	1.16	1.62	1.105	0.442	**ECOS2TP151CA**	**ECEC2TP151CA**
	30 x 25	1.16	1.62	1.105	0.442	**ECOS2TP151DA**	**ECEC2TP151DA**
	35 x 20	0.60	0.84	1.326	0.531	**ECOS2TP151EL**	**ECEC2TP151EL**
180	22 x 40	1.44	2.02	0.921	0.368	**ECOS2TP181BX**	**ECEC2TP181BX**
	22 x 45	1.44	2.02	0.921	0.368	**ECOS2TP181BA**	**ECEC2TP181BA**
	25 x 30	1.44	2.02	0.921	0.368	**ECOS2TP181CX**	**ECEC2TP181CX**
	25 x 35	1.44	2.02	0.921	0.368	**ECOS2TP181CA**	**ECEC2TP181CA**
	30 x 25	1.44	2.02	0.921	0.368	**ECOS2TP181DX**	**ECEC2TP181DX**
	30 x 30	1.44	2.02	0.921	0.368	**ECOS2TP181DA**	**ECEC2TP181DA**
220	22 x 45	1.49	2.09	0.829	0.373	**ECOS2TP221BX**	**ECEC2TP221BX**
	22 x 50	1.49	2.09	0.829	0.373	**ECOS2TP221BA**	**ECEC2TP221BA**
	25 x 40	1.49	2.09	0.829	0.373	**ECOS2TP221CA**	**ECEC2TP221CA**
	30 x 30	1.49	2.09	0.829	0.373	**ECOS2TP221DA**	**ECEC2TP221DA**
270	25 x 45	1.67	2.34	0.675	0.304	**ECOS2TP271CA**	**ECEC2TP271CA**
	30 x 35	1.67	2.34	0.675	0.304	**ECOS2TP271DA**	**ECEC2TP271DA**
	35 x 25	1.67	2.34	0.675	0.304	**ECOS2TP271EX**	**ECEC2TP271EX**
	35 x 30	1.67	2.34	0.675	0.304	**ECOS2TP271EA**	**ECEC2TP271EA**
330	25 x 50	1.90	2.66	0.553	0.249	**ECOS2TP331CX**	**ECEC2TP331CX**
	30 x 40	1.90	2.66	0.553	0.249	**ECOS2TP331DA**	**ECEC2TP331DA**
	35 x 30	1.90	2.66	0.553	0.249	**ECOS2TP331EX**	**ECEC2TP331EX**
	35 x 35	1.90	2.66	0.553	0.249	**ECOS2TP331EA**	**ECEC2TP331EA**
390	30 x 45	2.13	2.98	0.468	0.210	**ECOS2TP391DA**	**ECEC2TP391DA**
	35 x 35	2.13	2.98	0.468	0.210	**ECOS2TP391EX**	**ECEC2TP391EX**
	35 x 40	2.13	2.98	0.468	0.210	**ECOS2TP391EA**	**ECEC2TP391EA**
470	30 x 50	2.39	3.35	0.388	0.175	**ECOS2TP471DA**	**ECEC2TP471DA**
	35 x 40	2.39	3.35	0.388	0.175	**ECOS2TP471EX**	**ECEC2TP471EX**
	35 x 45	2.39	3.35	0.388	0.175	**ECOS2TP471EA**	**ECEC2TP471EA**
560	35 x 45	2.69	3.77	0.326	0.147	**ECOS2TP561EX**	**ECEC2TP561EX**
	35 x 50	2.69	3.77	0.326	0.147	**ECOS2TP561EA**	**ECEC2TP561EA**
680	35 x 50	3.00	4.20	0.268	0.121	**ECOS2TP681EX**	**ECEC2TP681EX**
400 VDC Working, 450 VDC Surge							
47	22 x 20	0.25	0.35	3.527	1.235	**ECOS2GP470BL**	**ECEC2GP470BL**
	22 x 25	0.47	0.66	3.527	1.235	**ECOS2GP470BA**	**ECEC2GP470BA**
68	22 x 25	0.69	0.97	2.438	0.853	**ECOS2GP680BA**	**ECEC2GP680BA**
	25 x 20	0.35	0.49	2.926	1.024	**ECOS2GP680CL**	**ECEC2GP680CL**
82	22 x 25	0.83	1.16	2.022	0.708	**ECOS2GP820BA**	**ECEC2GP820BA**

TS-UP Standard Ratings (continued)

Part numbers shown with 2 pins

Cap. (µF)	Size (mm) D x L	Max 85°C R.C. (A_{rms}) 120Hz	Max 85°C R.C. (A_{rms}) 10kHz~	20°C ESR (Ω, max.) 120Hz	20°C ESR (Ω, max.) 20kHz	Panasonic Part Number (By Terminal Length) 6.3mm Length Terminal	Panasonic Part Number (By Terminal Length) 4.0mm Length Terminal
400 VDC Working, 450 VDC Surge (continued)							
100	22 x 30	0.92	1.29	1.658	0.580	ECOS2GP101BA	ECEC2GP101BA
	25 x 25	0.92	1.29	1.658	0.580	ECOS2GP101CA	ECEC2GP101CA
	30 x 20	0.47	0.66	1.989	0.696	ECOS2GP101DL	ECEC2GP101DL
120	22 x 35	1.02	1.43	1.382	0.484	ECOS2GP121BA	ECEC2GP121BA
	25 x 25	1.02	1.43	1.382	0.484	ECOS2GP121CX	ECEC2GP121CX
150	22 x 40	1.16	1.62	1.105	0.387	ECOS2GP151BA	ECEC2GP151BA
	25 x 30	1.16	1.62	1.105	0.387	ECOS2GP151CA	ECEC2GP151CA
	30 x 25	1.16	1.62	1.105	0.387	ECOS2GP151DA	ECEC2GP151DA
	35 x 20	0.60	0.84	1.326	0.464	ECOS2GP151EL	ECEC2GP151EL
180	22 x 45	1.44	2.02	0.921	0.322	ECOS2GP181BA	ECEC2GP181BA
	25 x 30	1.44	2.02	0.921	0.322	ECOS2GP181CX	ECEC2GP181CX
	25 x 35	1.44	2.02	0.921	0.322	ECOS2GP181CA	ECEC2GP181CA
220	22 x 50	1.49	2.09	0.754	0.264	ECOS2GP221BA	ECEC2GP221BA
	25 x 40	1.49	2.09	0.754	0.264	ECOS2GP221CA	ECEC2GP221CA
	30 x 30	1.49	2.09	0.754	0.264	ECOS2GP221DA	ECEC2GP221DA
270	25 x 45	1.67	2.34	0.675	0.236	ECOS2GP271CA	ECEC2GP271CA
	30 x 35	1.67	2.34	0.675	0.236	ECOS2GP271DA	ECEC2GP271DA
	35 x 30	1.67	2.34	0.675	0.236	ECOS2GP271EA	ECEC2GP271EA
330	30 x 40	1.90	2.66	0.553	0.193	ECOS2GP331DA	ECEC2GP331DA
	35 x 30	1.90	2.66	0.553	0.193	ECOS2GP331EX	ECEC2GP331EX
	35 x 35	1.90	2.66	0.553	0.193	ECOS2GP331EA	ECEC2GP331EA
390	30 x 45	2.13	2.98	0.468	0.164	ECOS2GP391DA	ECEC2GP391DA
	35 x 35	2.13	2.98	0.468	0.164	ECOS2GP391EX	ECEC2GP391EX
	35 x 40	2.13	2.98	0.468	0.164	ECOS2GP391EA	ECEC2GP391EA
470	35 x 40	2.39	3.35	0.388	0.136	ECOS2GP471EX	ECEC2GP471EX
	35 x 45	2.39	3.35	0.388	0.136	ECOS2GP471EA	ECEC2GP471EA
560	35 x 45	2.69	3.77	0.326	0.114	ECOS2GP561EX	ECEC2GP561EX
	35 x 50	2.69	3.77	0.326	0.114	ECOS2GP561EA	ECEC2GP561EA
680	35 x 50	3.00	4.20	0.268	0.094	ECOS2GP681EX	ECEC2GP681EX
420 VDC Working, 470 VDC Surge							
82	22 x 30	0.83	1.16	2.426	0.849	ECOS2SP820BA	ECEC2SP820BA
100	22 x 30	0.92	1.29	1.989	0.696	ECOS2SP101BA	ECEC2SP101BA
	25 x 25	0.92	1.29	1.989	0.696	ECOS2SP101CA	ECEC2SP101CA
120	22 x 35	1.02	1.43	1.658	0.580	ECOS2SP121BA	ECEC2SP121BA
	25 x 30	1.02	1.43	1.658	0.580	ECOS2SP121CA	ECEC2SP121CA
150	22 x 40	1.16	1.62	1.326	0.464	ECOS2SP151BA	ECEC2SP151BA
	25 x 30	1.16	1.62	1.326	0.464	ECOS2SP151CA	ECEC2SP151CA
	30 x 25	1.16	1.62	1.326	0.464	ECOS2SP151DA	ECEC2SP151DA
180	22 x 45	1.44	2.02	1.105	0.387	ECOS2SP181BA	ECEC2SP181BA
	25 x 35	1.44	2.02	1.105	0.387	ECOS2SP181CA	ECEC2SP181CA
	30 x 30	1.44	2.02	1.105	0.387	ECOS2SP181DA	ECEC2SP181DA
220	25 x 45	1.49	2.09	0.904	0.316	ECOS2SP221CA	ECEC2SP221CA
	30 x 30	1.49	2.09	0.904	0.316	ECOS2SP221DA	ECEC2SP221DA
	35 x 25	1.49	2.09	0.904	0.316	ECOS2SP221EA	ECEC2SP221EA
270	25 x 50	1.67	2.34	0.737	0.258	ECOS2SP271CA	ECEC2SP271CA
	30 x 35	1.67	2.34	0.737	0.258	ECOS2SP271DA	ECEC2SP271DA
	35 x 30	1.67	2.34	0.737	0.258	ECOS2SP271EA	ECEC2SP271EA
330	30 x 45	1.90	2.66	0.603	0.211	ECOS2SP331DA	ECEC2SP331DA
	35 x 35	1.90	2.66	0.603	0.211	ECOS2SP331EA	ECEC2SP331EA
390	30 x 50	2.13	2.98	0.510	0.179	ECOS2SP391DA	ECEC2SP391DA
	35 x 40	2.13	2.98	0.510	0.179	ECOS2SP391EA	ECEC2SP391EA
470	35 x 45	2.39	3.35	0.423	0.148	ECOS2SP471EA	ECEC2SP471EA
560	35 x 50	2.69	3.77	0.355	0.124	ECOS2SP561EA	ECEC2SP561EA
450 VDC Working, 500 VDC Surge							
33	22 x 20	0.20	0.28	6.028	2.411	ECOS2WP330BL	ECEC2WP330BL
	22 x 25	0.41	0.57	6.028	2.411	ECOS2WP330BA	ECEC2WP330BA
47	22 x 25	0.59	0.83	4.233	1.693	ECOS2WP470BA	ECEC2WP470BA
	25 x 20	0.29	0.41	4.233	1.693	ECOS2WP470CL	ECEC2WP470CL
56	22 x 25	0.70	0.98	2.960	1.184	ECOS2WP560BA	ECEC2WP560BA
68	30 x 20	0.38	0.53	2.926	1.170	ECOS2WP680DL	ECEC2WP680DL
82	22 x 30	0.83	1.16	2.022	0.809	ECOS2WP820BA	ECEC2WP820BA
	25 x 25	0.83	1.16	2.022	0.809	ECOS2WP820CA	ECEC2WP820CA
100	22 x 35	0.93	1.30	1.658	0.663	ECOS2WP101BA	ECEC2WP101BA
	35 x 20	0.52	0.73	1.989	0.796	ECOS2WP101EL	ECEC2WP101EL

TS-UP Standard Ratings (continued)

Part numbers shown with 2 pins

Cap. (µF)	Size (mm) D x L	Max 85°C R.C. (A_{rms}) 120Hz	Max 85°C R.C. (A_{rms}) 10kHz~	20°C ESR (Ω, max.) 120Hz	20°C ESR (Ω, max.) 20kHz	Panasonic Part Number (By Terminal Length) 6.3mm Length Terminal	Panasonic Part Number (By Terminal Length) 4.0mm Length Terminal
450 VDC Working, 500 VDC Surge (continued)							
120	22 x 40	1.04	1.46	1.382	0.553	**ECOS2WP121BA**	**ECEC2WP121BA**
	25 x 30	1.04	1.46	1.382	0.553	**ECOS2WP121CA**	**ECEC2WP121CA**
	30 x 25	1.04	1.46	1.382	0.553	**ECOS2WP121DA**	**ECEC2WP121DA**
150	22 x 50	1.19	1.67	1.105	0.442	**ECOS2WP151BA**	**ECEC2WP151BA**
	25 x 40	1.19	1.67	1.105	0.442	**ECOS2WP151CA**	**ECEC2WP151CA**
	30 x 30	1.19	1.67	1.105	0.442	**ECOS2WP151DA**	**ECEC2WP151DA**
180	25 x 40	1.35	1.89	0.921	0.368	**ECOS2WP181CX**	**ECEC2WP181CX**
	25 x 45	1.35	1.89	0.921	0.368	**ECOS2WP181CA**	**ECEC2WP181CA**
	30 x 30	1.35	1.89	0.921	0.368	**ECOS2WP181DX**	**ECEC2WP181DX**
	30 x 35	1.35	1.89	0.921	0.368	**ECOS2WP181DA**	**ECEC2WP181DA**
	35 x 25	1.35	1.89	0.921	0.368	**ECOS2WP181EA**	**ECEC2WP181EA**
220	25 x 45	1.55	2.17	0.754	0.301	**ECOS2WP221CX**	**ECEC2WP221CX**
	25 x 50	1.55	2.17	0.754	0.301	**ECOS2WP221CA**	**ECEC2WP221CA**
	30 x 35	1.55	2.17	0.754	0.301	**ECOS2WP221DX**	**ECEC2WP221DX**
	30 x 40	1.55	2.17	0.754	0.301	**ECOS2WP221DA**	**ECEC2WP221DA**
	35 x 30	1.55	2.17	0.754	0.301	**ECOS2WP221EA**	**ECEC2WP221EA**
270	30 x 45	1.78	2.49	0.675	0.270	**ECOS2WP271DA**	**ECEC2WP271DA**
	35 x 30	1.78	2.49	0.614	0.246	**ECOS2WP271EX**	**ECEC2WP271EX**
270	35 x 35	1.78	2.49	0.675	0.270	**ECOS2WP271EA**	**ECEC2WP271EA**
330	30 x 50	2.01	2.81	0.553	0.249	**ECOS2WP331DA**	**ECEC2WP331DA**
	35 x 35	2.01	2.81	0.553	0.221	**ECOS2WP331EX**	**ECEC2WP331EX**
	35 x 40	2.01	2.81	0.553	0.249	**ECOS2WP331EA**	**ECEC2WP331EA**
390	35 x 45	2.24	3.14	0.510	0.255	**ECOS2WP391EA**	**ECEC2WP391EA**
470	35 x 45	2.53	3.54	0.423	0.233	**ECOS2WP471EX**	**ECEC2WP471EX**
	35 x 50	2.53	3.54	0.423	0.233	**ECOS2WP471EA**	**ECEC2WP471EA**
500 VDC Working, 550 VDC Surge							
47	22 x 25	0.63	0.88	3.527	1.411	**ECOS2HP470BA**	**ECEC2HP470BA**
56	22 x 30	0.70	0.98	2.960	1.184	**ECOS2HP560BA**	**ECEC2HP560BA**
68	22 x 35	0.78	1.09	2.438	0.975	**ECOS2HP680BA**	**ECEC2HP680BA**
	25 x 25	0.78	1.09	2.438	0.975	**ECOS2HP680CA**	**ECEC2HP680CA**
82	22 x 40	0.88	1.23	2.022	0.809	**ECOS2HP820BA**	**ECEC2HP820BA**
	25 x 30	0.88	1.23	2.022	0.809	**ECOS2HP820CA**	**ECEC2HP820CA**
100	22 x 45	0.99	1.39	1.658	0.663	**ECOS2HP101BA**	**ECEC2HP101BA**
	25 x 35	0.99	1.39	1.658	0.663	**ECOS2HP101CA**	**ECEC2HP101CA**
120	22 x 50	1.13	1.58	1.382	0.553	**ECOS2HP121BA**	**ECEC2HP121BA**
	25 x 40	1.13	1.58	1.382	0.553	**ECOS2HP121CA**	**ECEC2HP121CA**
	30 x 30	1.13	1.58	1.382	0.553	**ECOS2HP121DA**	**ECEC2HP121DA**
150	25 x 45	1.29	1.80	1.105	0.442	**ECOS2HP151CA**	**ECEC2HP151CA**
	30 x 35	1.29	1.80	1.105	0.442	**ECOS2HP151DA**	**ECEC2HP151DA**
	35 x 25	1.20	1.68	1.105	0.442	**ECOS2HP151EA**	**ECEC2HP151EA**
180	25 x 50	1.38	1.93	0.921	0.368	**ECOS2HP181CA**	**ECEC2HP181CA**
	30 x 40	1.38	1.93	0.921	0.368	**ECOS2HP181DA**	**ECEC2HP181DA**
	35 x 30	1.36	1.90	0.921	0.368	**ECOS2HP181EA**	**ECEC2HP181EA**
220	30 x 45	1.50	2.10	0.754	0.339	**ECOS2HP221DA**	**ECEC2HP221DA**
	35 x 35	1.54	2.16	0.754	0.301	**ECOS2HP221EA**	**ECEC2HP221EA**
270	35 x 40	1.76	2.46	0.614	0.276	**ECOS2HP271EA**	**ECEC2HP271EA**
330	35 x 45	1.99	2.79	0.502	0.251	**ECOS2HP331EA**	**ECEC2HP331EA**
390	35 x 50	2.22	3.11	0.425	0.234	**ECOS2HP391EA**	**ECEC2HP391EA**

T-UP Series *85°C, 3000 hours*

- ***4 or 5 terminal mounting provides stability and keyed polarity***
- ***Extended CV ratings***
- ***Can vent construction***

Rated Working Voltage:	16 ~ 250 VDC	350 ~ 500 VDC
Operating Temperature:	-40 ~ +85°C	-25 ~ +85°C
Nominal Capacitance:	1200~270000µF	270~2700µF
Capacitance Tolerance:	± 20%	

Dissipation Factor (120 Hz, +20°C):

Working Voltage [V]:	16	25	35	50	63	80	100	160 ~ 500
Max. D.F. (%):	50	40	35	30	25	20	20	15

For capacitance values > 33000µF, add the value of: $\frac{\text{(rated cap. [µF] - 33000)}}{1000}$

Leakage Current: $3\sqrt{CV}$ (µA) max. after 5 minutes; *C = Capacitance in µF, V = WV*

Ripple Current Multipliers:

Frequency(Hz):	50	60	100~120	500	1k	10k
16~100WV:	0.93	0.95	1.0	1.05	1.08	1.15
160~450WV:	0.75	0.8	1.0	1.2	1.25	1.4

Ripple Current Ambient Temperature Factors**				
Temperature (°C):	85°C	70°C	60°C	≤45°C
Multiplier:	1.0	1.3	1.4	1.5

Endurance: 3000 hours at +85°C with maximum specified ripple current (see page 4)

**Use of temperature ripple current multipliers may limit life to the hours specified for the maximum operating temperature.

Part Number System

E C E C | □ □ | P | Series Code | □ □ □ | Capacitance Code | □ | □

RoHS compliant PVC sleeve and top plate is standard.

Terminals	
Prefix	No. of Pins
ECEC	4
ECEP	5

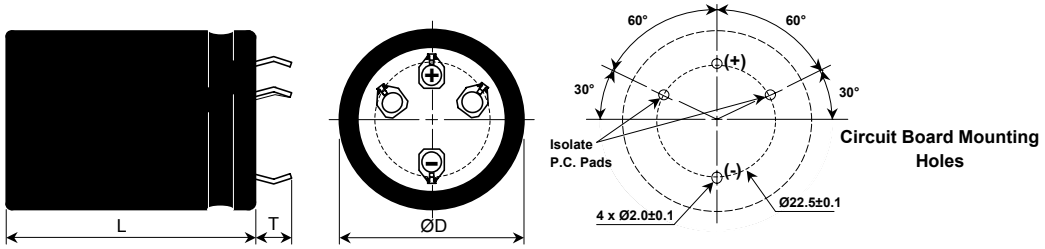
Voltage Code													
1C	1E	1V	1H	1J	1K	2A	2C	2D	2E	2V	2G	2W	2H
16	25	35	50	63	80	100	160	200	250	350	400	450	500

Diameter Code	
Dia.	Code
35	E
40	F
50	H

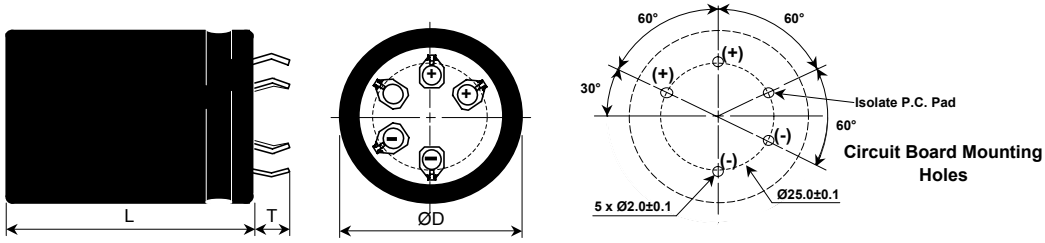
Terminal Suffix Code		
Terminal Type	Standard Ratings	Extended Ratings
6.3mm Snap-in (Standard):	A	X
4.0mm Snap-in:	4	5
4.0mm Straight with Standoff:	E	Y

Dimensions in millimeters

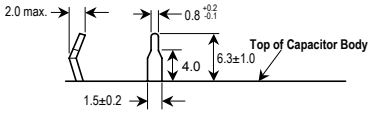
4 Pin Mounting Style



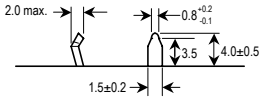
5 Pin Mounting Style



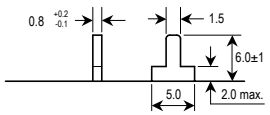
Pin Dimensions



T = 6.3mm Length Snap-in Terminal
Standard on 4 and 5 Pin Products



T = 4mm Length Snap-in Terminal
Available on 4 Pin Product only



T = 4mm Length Straight Standoff Pin Terminal
Available on 4 and 5 Pin Products

T-UP Standard Ratings

Part numbers shown with 6.3mm Length Snap-in Terminals

Cap. (μF)	Size (mm) D x L	Max 85°C R.C. (A_{rms}) 120Hz	Max 85°C R.C. (A_{rms}) 10kHz~	20°C ESR (Ω, max.) 120Hz	20°C ESR (Ω, max.) 20kHz	Panasonic Part Number 4 Pin Style	Panasonic Part Number 5 Pin Style
16 VDC Working, 20 VDC Surge							
47000	35 x 40	7.47	8.59	0.021	0.019	**ECET1CP473EA**	
56000	40 x 40	9.05	10.41	0.022	0.021	**ECET1CP563FA**	**ECEP1CP563FA**
68000	35 x 50	9.05	10.41	0.018	0.017	**ECET1CP683EA**	
82000	35 x 63	10.02	11.52	0.016	0.015	**ECET1CP823EA**	
	40 x 50	10.29	11.83	0.016	0.015	**ECET1CP823FA**	**ECEP1CP823FA**
100000	35 x 80	11.00	12.65	0.015	0.014	**ECET1CP104EA**	
	40 x 63	11.36	13.06	0.018	0.017	**ECET1CP104FA**	**ECEP1CP104FA**
120000	35 x 105	12.81	14.73	0.014	0.013	**ECET1CP124EA**	
	40 x 80	12.42	14.28	0.017	0.016	**ECET1CP124FA**	**ECEP1CP124FA**
	50 x 50	13.17	15.15	0.014	0.013		**ECEP1CP124HA**
150000	50 x 63	14.40	16.56	0.012	0.011		**ECEP1CP154HA**
180000	40 x 105	14.85	17.08	0.013	0.012	**ECET1CP184FA**	**ECEP1CP184FA**
	50 x 80	15.69	18.04	0.011	0.010		**ECEP1CP184HA**
220000	50 x 92	16.73	19.24	0.010	0.009		**ECEP1CP224HA**
270000	50 x 105	17.79	20.46	0.009	0.008		**ECEP1CP274HA**
25 VDC Working, 32 VDC Surge							
33000	35 x 40	6.84	7.87	0.019	0.015	**ECET1EP333EA**	
39000	40 x 40	8.00	9.20	0.020	0.018	**ECET1EP393FA**	**ECEP1EP393FA**
47000	35 x 50	8.00	9.20	0.014	0.012	**ECET1EP473EA**	
56000	35 x 63	8.85	10.18	0.015	0.013	**ECET1EP563EA**	
	40 x 50	8.96	10.30	0.016	0.015	**ECET1EP563FA**	**ECEP1EP563FA**
68000	35 x 80	10.43	11.99	0.013	0.011	**ECET1EP683EA**	
	40 x 63	10.25	11.79	0.017	0.015	**ECET1EP683FA**	**ECEP1EP683FA**
82000	50 x 50	12.29	14.13	0.016	0.015		**ECEP1EP823HA**
100000	35 x 105	11.97	13.77	0.010	0.008	**ECET1EP104EA**	
	40 x 80	12.08	13.89	0.012	0.011	**ECET1EP104FA**	**ECEP1EP104FA**
	50 x 63	13.45	15.47	0.014	0.013		**ECEP1EP104HA**
120000	50 x 80	15.29	17.58	0.012	0.011		**ECEP1EP124HA**
150000	40 x 105	14.07	16.18	0.011	0.010	**ECET1EP154FA**	**ECEP1EP154FA**
	50 x 92	16.01	18.41	0.011	0.010		**ECEP1EP154HA**
180000	50 x 105	16.89	19.42	0.010	0.009		**ECEP1EP184HA**
35 VDC Working, 44 VDC Surge							
22000	35 x 40	6.10	7.02	0.026	0.020	**ECET1VP223EA**	
27000	40 x 40	6.84	7.87	0.021	0.017	**ECET1VP273FA**	**ECEP1VP273FA**
33000	35 x 50	7.15	8.22	0.018	0.014	**ECET1VP333EA**	
39000	35 x 63	7.94	9.13	0.015	0.012	**ECET1VP393EA**	
	40 x 50	7.98	9.18	0.017	0.014	**ECET1VP393FA**	**ECEP1VP393FA**
47000	35 x 80	9.53	10.96	0.014	0.011	**ECET1VP473EA**	
	40 x 63	9.58	11.02	0.016	0.013	**ECET1VP473FA**	**ECEP1VP473FA**
56000	40 x 80	10.30	11.85	0.015	0.012	**ECET1VP563FA**	**ECEP1VP563FA**
	50 x 50	10.94	12.58	0.015	0.012		**ECEP1VP563HA**
68000	35 x 105	10.62	12.21	0.010	0.008	**ECET1VP683EA**	
	50 x 63	11.93	13.72	0.013	0.011		**ECEP1VP683HA**
82000	40 x 105	12.02	13.82	0.012	0.009	**ECET1VP823FA**	**ECEP1VP823FA**
	50 x 80	13.06	15.02	0.012	0.010		**ECEP1VP823HA**
100000	50 x 92	13.97	16.07	0.011	0.009		**ECEP1VP104HA**
120000	50 x 105	14.86	17.09	0.010	0.008		**ECEP1VP124HA**
50 VDC Working, 63 VDC Surge							
15000	35 x 40	6.44	7.41	0.028	0.021	**ECET1HP153EA**	
18000	40 x 40	6.94	7.98	0.023	0.017	**ECET1HP183FA**	**ECEP1HP183FA**
22000	35 x 50	7.57	8.71	0.021	0.017	**ECET1HP223EA**	
27000	35 x 63	8.31	9.56	0.018	0.015	**ECET1HP273EA**	
	40 x 50	8.12	9.34	0.018	0.015	**ECET1HP273FA**	**ECEP1HP273FA**
33000	35 x 80	9.23	10.61	0.015	0.012	**ECET1HP333EA**	
	40 x 63	9.10	10.47	0.018	0.014	**ECET1HP333FA**	**ECEP1HP333FA**
	50 x 50	10.48	12.05	0.018	0.014		**ECEP1HP333HA**
39000	40 x 80	10.12	11.64	0.015	0.012	**ECET1HP393FA**	**ECEP1HP393FA**
47000	35 x 105	10.27	11.81	0.014	0.011	**ECET1HP473EA**	
	50 x 63	11.54	13.27	0.013	0.010		**ECEP1HP473HA**
56000	40 x 105	11.47	13.19	0.012	0.009	**ECET1HP563FA**	**ECEP1HP563FA**
	50 x 80	12.46	14.33	0.012	0.009		**ECEP1HP563HA**
68000	50 x 92	13.17	15.15	0.011	0.009		**ECEP1HP683HA**

T-UP Standard Ratings (continued)

Part numbers shown with 6.3mm Length Snap-in Terminals

Cap. (µF)	Size (mm) D x L	Max 85°C R.C. (A_{rms}) 120Hz	Max 85°C R.C. (A_{rms}) 10kHz~	20°C ESR (Ω, max.) 120Hz	20°C ESR (Ω, max.) 20kHz	Panasonic Part Number 4 Pin Style	Panasonic Part Number 5 Pin Style
50 VDC Working, 63 VDC Surge (continued)							
82000	50 x 105	13.87	15.95	0.011	0.008		**ECEP1HP823HA**
63 VDC Working, 79 VDC Surge							
10000	35 x 40	6.52	7.50	0.041	0.033	**ECET1JP103EA**	
12000	35 x 50	7.15	8.22	0.035	0.028	**ECET1JP123EA**	
	40 x 40	7.15	8.22	0.035	0.028	**ECET1JP123FA**	**ECEP1JP123FA**
15000	35 x 63	7.71	8.87	0.028	0.022	**ECET1JP153EA**	
15000	40 x 50	7.53	8.66	0.033	0.027	**ECET1JP153FA**	**ECEP1JP153FA**
18000	35 x 80	9.41	10.82	0.023	0.018	**ECET1JP183EA**	
	40 x 63	9.25	10.64	0.028	0.022	**ECET1JP183FA**	**ECEP1JP183FA**
27000	35 x 105	10.38	11.94	0.015	0.012	**ECET1JP273EA**	
	40 x 80	9.97	11.47	0.018	0.015	**ECET1JP273FA**	**ECEP1JP273FA**
	50 x 50	10.86	12.49	0.018	0.015		**ECEP1JP273HA**
33000	40 x 105	11.76	13.52	0.015	0.012	**ECET1JP333FA**	**ECEP1JP333FA**
	50 x 63	11.67	13.42	0.017	0.013		**ECEP1JP333HA**
47000	50 x 80	12.78	14.70	0.013	0.010		**ECEP1JP473HA**
51000	50 x 92	13.34	15.34	0.012	0.010		**ECEP1JP513HA**
56000	50 x 105	13.93	16.02	0.012	0.009		**ECEP1JP563HA**
80 VDC Working, 105 VDC Surge							
6800	35 x 40	5.16	5.93	0.046	0.035	**ECET1KP682EA**	
8200	35 x 50	5.83	6.70	0.038	0.029	**ECET1KP822EA**	
	40 x 40	5.83	6.70	0.038	0.029	**ECET1KP822FA**	**ECEP1KP822FA**
10000	35 x 63	6.38	7.34	0.033	0.025	**ECET1KP103EA**	
	40 x 50	6.56	7.54	0.033	0.025	**ECET1KP103FA**	**ECEP1KP103FA**
12000	35 x 80	6.92	7.96	0.028	0.021	**ECET1KP123EA**	
	40 x 63	7.29	8.38	0.028	0.021	**ECET1KP123FA**	**ECEP1KP123FA**
15000	40 x 80	8.93	10.27	0.024	0.018	**ECET1KP153FA**	**ECEP1KP153FA**
18000	50 x 50	10.00	11.50	0.023	0.017		**ECEP1KP183HA**
22000	35 x 105	9.86	11.34	0.015	0.011	**ECET1KP223EA**	
	50 x 63	11.08	12.74	0.019	0.014		**ECEP1KP223HA**
27000	40 x 105	11.35	13.05	0.015	0.012	**ECET1KP273FA**	**ECEP1KP273FA**
	50 x 80	12.33	14.18	0.015	0.012		**ECEP1KP273HA**
33000	50 x 92	13.37	15.38	0.014	0.010		**ECEP1KP333HA**
39000	50 x 105	14.34	16.49	0.013	0.010		**ECEP1KP393HA**
100 VDC Working, 125 VDC Surge							
4700	35 x 40	5.13	5.90	0.071	0.049	**ECET2AP472EA**	
5600	40 x 40	5.75	6.61	0.059	0.044	**ECET2AP562FA**	**ECEP2AP562FA**
6800	35 x 50	6.60	7.59	0.049	0.037	**ECET2AP682EA**	
8200	35 x 63	7.05	8.11	0.040	0.030	**ECET2AP822EA**	
	40 x 50	7.28	8.37	0.040	0.030	**ECET2AP822FA**	**ECEP2AP822FA**
10000	35 x 80	7.74	8.90	0.033	0.025	**ECET2AP103EA**	
	40 x 63	7.97	9.17	0.033	0.025	**ECET2AP103FA**	**ECEP2AP103FA**
	50 x 50	8.82	10.14	0.033	0.025		**ECEP2AP103HA**
12000	35 x 105	8.57	9.86	0.028	0.021	**ECET2AP123EA**	
	40 x 80	8.65	9.95	0.028	0.021	**ECET2AP123FA**	**ECEP2AP123FA**
15000	40 x 105	10.12	11.64	0.022	0.017	**ECET2AP153FA**	**ECEP2AP153FA**
	50 x 63	10.07	11.58	0.022	0.017		**ECEP2AP153HA**
18000	50 x 80	11.00	12.65	0.018	0.014		**ECEP2AP183HA**
22000	50 x 92	11.76	13.52	0.015	0.011		**ECEP2AP223HA**
27000	50 x 105	12.53	14.41	0.014	0.010		**ECEP2AP273HA**
160 VDC Working, 200 VDC Surge							
2200	35 x 40	4.78	6.69	0.098	0.049	**ECET2CP222EA**	
2700	35 x 50	5.45	7.63	0.080	0.044	**ECET2CP272EA**	
	40 x 40	5.45	7.63	0.080	0.044	**ECET2CP272FA**	**ECEP2CP272FA**
3300	35 x 63	6.29	8.81	0.065	0.036	**ECET2CP332EA**	
	40 x 50	6.29	8.81	0.065	0.036	**ECET2CP332FA**	**ECEP2CP332FA**
3900	35 x 80	7.27	10.18	0.055	0.030	**ECET2CP392EA**	
	40 x 63	7.27	10.18	0.055	0.030	**ECET2CP392FA**	**ECEP2CP392FA**
5600	40 x 80	8.32	11.65	0.038	0.021	**ECET2CP562FA**	**ECEP2CP562FA**
	50 x 50	8.25	11.55	0.038	0.021	**ECEP2CP562HA**	**ECEP2CP562HA**
6800	35 x 105	9.05	12.67	0.032	0.017	**ECET2CP682EA**	
8200	50 x 63	8.93	12.50	0.026	0.014	**ECEP2CP822HA**	**ECEP2CP822HA**
10000	40 x 105	9.86	13.80	0.022	0.012	**ECET2CP103FA**	**ECEP2CP103FA**
	50 x 80	9.80	13.72	0.022	0.012		**ECEP2CP103HA**

T-UP Standard Ratings (continued)

Part numbers shown with 6.3mm Length Snap-in Terminals

Cap. (µF)	Size (mm) D x L	Max 85°C R.C. (A_{rms}) 120Hz	Max 85°C R.C. (A_{rms}) 10kHz~	20°C ESR (Ω, max.) 120Hz	20°C ESR (Ω, max.) 20kHz	Panasonic Part Number 4 Pin Style	Panasonic Part Number 5 Pin Style
160 VDC Working, 200 VDC Surge (continued)							
12000	50 x 92	12.93	18.10	0.018	0.010		**ECEP2CP123HA**
15000	50 x 105	14.10	19.74	0.014	0.008		**ECEP2CP153HA**
200 VDC Working, 250 VDC Surge							
1800	35 x 40	4.32	6.05	0.120	0.060	**ECET2DP182EA**	
2200	35 x 50	4.92	6.89	0.098	0.054	**ECET2DP222EA**	
	40 x 40	4.92	6.89	0.098	0.054	**ECET2DP222FA**	**ECEP2DP222FA**
2700	35 x 63	5.50	7.70	0.080	0.044	**ECET2DP272EA**	
	40 x 50	5.41	7.57	0.080	0.044	**ECET2DP272FA**	**ECEP2DP272FA**
3300	35 x 80	6.44	9.02	0.065	0.036	**ECET2DP332EA**	
	40 x 63	6.32	8.85	0.065	0.036	**ECET2DP332FA**	**ECEP2DP332FA**
3900	35 x 80	6.60	9.24	0.055	0.030	**ECET2DP392EA**	
	40 x 63	6.81	9.53	0.055	0.030	**ECET2DP392FX**	**ECEP2DP392FX**
	50 x 50	8.22	11.51	0.055	0.030		**ECEP2DP392HA**
4700	40 x 80	8.38	11.73	0.046	0.025	**ECET2DP472FA**	**ECEP2DP472FA**
	50 x 63	9.32	13.05	0.046	0.025		**ECEP2DP472HA**
5600	35 x 105	8.90	12.46	0.038	0.021	**ECET2DP562EA**	
	50 x 63	9.57	13.40	0.038	0.021		**ECEP2DP562HA**
6800	40 x 105	8.65	12.11	0.032	0.017	**ECET2DP682FA**	**ECEP2DP682FA**
	50 x 80	11.41	15.97	0.032	0.017		**ECEP2DP682HA**
7500	50 x 92	12.28	17.19	0.029	0.016		**ECEP2DP752HA**
8200	50 x 92	13.02	18.23	0.026	0.014		**ECEP2DP822HX**
	50 x 105	13.16	18.42	0.026	0.014		**ECEP2DP822HA**
10000	50 x 105	14.17	19.84	0.021	0.011		**ECEP2DP103HA**
250 VDC Working, 300 VDC Surge							
1200	35 x 40	3.32	4.65	0.166	0.083	**ECET2EP122EA**	
1500	35 x 50	4.04	5.66	0.133	0.066	**ECET2EP152EA**	
	40 x 40	4.04	5.66	0.133	0.066	**ECET2EP152FA**	**ECEP2EP152FA**
1800	35 x 63	4.49	6.29	0.111	0.055	**ECET2EP182EA**	
	40 x 50	4.49	6.29	0.111	0.055	**ECET2EP182FA**	**ECEP2EP182FA**
2200	35 x 63	4.70	6.58	0.090	0.045	**ECET2EP222EX**	
	35 x 80	4.94	6.92	0.090	0.045	**ECET2EP222EA**	
	40 x 63	4.94	6.92	0.090	0.045	**ECET2EP222FA**	**ECEP2EP222FA**
2700	35 x 80	5.63	7.88	0.074	0.037	**ECET2EP272EA**	
	40 x 63	5.81	8.13	0.074	0.037	**ECET2EP272FX**	**ECEP2EP272FX**
	50 x 50	6.77	9.48	0.074	0.037		**ECEP2EP272HA**
3300	40 x 80	7.00	9.80	0.060	0.030	**ECET2EP332FA**	**ECEP2EP332FA**
	50 x 50	7.22	10.11	0.060	0.060		**ECEP2EP332HX**
	50 x 63	7.79	10.91	0.060	0.030		**ECEP2EP332HA**
3900	35 x 105	7.47	10.46	0.051	0.026	**ECET2EP392EA**	
	40 x 80	7.36	10.30	0.051	0.026	**ECET2EP392FA**	**ECEP2EP392FA**
	50 x 63	8.19	11.47	0.051	0.026		**ECEP2EP392HA**
4700	40 x 105	8.88	12.43	0.042	0.021	**ECET2EP472FA**	**ECEP2EP472FA**
	50 x 80	9.65	13.51	0.042	0.021		**ECEP2EP472HA**
5600	50 x 80	10.42	14.59	0.036	0.018		**ECEP2EP562HX**
	50 x 92	10.80	15.12	0.036	0.018		**ECEP2EP562HA**
6800	50 x 105	12.16	17.02	0.029	0.015		**ECEP2EP682HA**
7500	50 x 105	12.56	17.58	0.026	0.014		**ECEP2EP752HA**
350 VDC Working, 400 VDC Surge							
470	35 x 40	2.40	3.36	0.388	0.175	**ECET2VP471EA**	
680	35 x 50	2.96	4.14	0.366	0.165	**ECET2VP681EA**	
	40 x 40	2.96	4.14	0.366	0.165	**ECET2VP681FA**	**ECEP2VP681FA**
1000	35 x 63	3.80	5.32	0.249	0.112	**ECET2VP102EA**	
	40 x 50	3.80	5.32	0.249	0.112	**ECET2VP102FA**	**ECEP2VP102FA**
1200	35 x 80	4.42	6.19	0.207	0.093	**ECET2VP122EA**	
	40 x 63	4.42	6.19	0.207	0.093	**ECET2VP122FA**	**ECEP2VP122FA**
	50 x 50	5.18	7.25	0.207	0.093		**ECEP2VP122HA**
1500	50 x 63	6.01	8.41	0.166	0.075		**ECEP2VP152HA**
1800	35 x 105	5.79	8.11	0.138	0.062	**ECET2VP182EA**	
	40 x 80	5.85	8.19	0.138	0.062	**ECET2VP182FA**	**ECEP2VP182FA**
	50 x 80	6.89	9.65	0.138	0.062		**ECEP2VP182HA**

T-UP Standard Ratings (continued)

Part numbers shown with 6.3mm Length Snap-in Terminals

Cap. (µF)	Size (mm) D x L	Max 85°C R.C. (A_{rms}) 120Hz	Max 85°C R.C. (A_{rms}) 10kHz~	20°C ESR (Ω, max.) 120Hz	20°C ESR (Ω, max.) 20kHz	Panasonic Part Number 4 Pin Style	Panasonic Part Number 5 Pin Style
350 VDC Working, 400 VDC Surge (continued)							
2200	40 x 105	6.91	9.67	0.113	0.051	**ECET2VP222FA**	**ECEP2VP222FA**
	50 x 92	7.79	10.91	0.113	0.051		**ECEP2VP222HA**
2700	50 x 105	8.80	12.32	0.092	0.041		**ECEP2VP272HA**
400 VDC Working, 450 VDC Surge							
470	35 x 45	2.39	3.35	0.388	0.136	**ECET2GP471EA**	
560	35 x 50	2.72	3.81	0.326	0.114	**ECET2GP561EA**	
	40 x 40	2.69	3.77	0.326	0.114	**ECET2GP561FA**	**ECEP2GP561FA**
680	40 x 50	3.38	4.73	0.268	0.093	**ECET2GP681FA**	**ECEP2GP681FA**
820	35 x 63	3.55	4.97	0.222	0.078	**ECET2GP821EA**	
	40 x 50	3.38	4.73	0.222	0.078	**ECET2GP821FA**	**ECEP2GP821FA**
1000	35 x 80	3.42	4.79	0.199	0.080	**ECET2GP102EA**	
	40 x 63	4.16	5.82	0.199	0.080	**ECET2GP102FA**	**ECEP2GP102FA**
	50 x 50	4.76	6.66	0.199	0.080		**ECEP2GP102HA**
1200	35 x 80	4.52	6.33	0.152	0.053	**ECET2GP122EA**	
	40 x 63	4.52	6.33	0.152	0.053	**ECET2GP122FA**	**ECEP2GP122FA**
	50 x 50	5.21	7.29	0.166	0.066		**ECEP2GP122HX**
	50 x 63	5.47	7.66	0.166	0.066		**ECEP2GP122HA**
1500	35 x 105	5.44	7.62	0.122	0.043	**ECET2GP152EA**	
	40 x 80	5.50	7.70	0.122	0.043	**ECET2GP152FA**	**ECEP2GP152FA**
	50 x 63	6.12	8.57	0.133	0.053		**ECEP2GP152HX**
	50 x 80	6.47	9.06	0.133	0.053		**ECEP2GP152HA**
1800	40 x 105	6.53	9.14	0.101	0.035	**ECET2GP182FA**	**ECEP2GP182FA**
	50 x 80	7.09	9.93	0.111	0.044		**ECEP2GP182HX**
	50 x 92	7.35	10.29	0.111	0.044		**ECEP2GP182HA**
2200	50 x 92	8.13	11.38	0.090	0.036		**ECEP2GP222HX**
	50 x 105	8.43	11.80	0.090	0.036		**ECEP2GP222HA**
2700	50 x 105	9.34	13.08	0.073	0.025		**ECEP2GP272HA**
450 VDC Working, 500 VDC Surge							
330	35 x 40	2.01	2.81	0.553	0.249	**ECET2WP331EA**	
470	35 x 50	2.53	3.54	0.423	0.233	**ECET2WP471EA**	
	40 x 40	2.53	3.54	0.423	0.233	**ECET2WP471FA**	**ECEP2WP471FA**
560	35 x 63	2.90	4.06	0.355	0.195	**ECET2WP561EA**	
680	35 x 80	3.17	4.44	0.293	0.161	**ECET2WP681EA**	
	40 x 50	3.15	4.41	0.293	0.161	**ECET2WP681FA**	**ECEP2WP681FA**
820	35 x 80	3.78	5.29	0.243	0.133	**ECET2WP821EA**	
	40 x 63	3.70	5.18	0.243	0.133	**ECET2WP821FA**	**ECEP2WP821FA**
	50 x 50	4.31	6.03	0.263	0.145		**ECEP2WP821HA**
1000	40 x 80	4.21	5.89	0.216	0.119	**ECET2WP102FA**	**ECEP2WP102FA**
	50 x 63	4.96	6.94	0.216	0.119		**ECEP2WP102HA**
1200	35 x 105	4.80	6.72	0.166	0.091	**ECET2WP122EA**	
	40 x 80	4.84	6.78	0.166	0.091	**ECET2WP122FA**	**ECEP2WP122FA**
	50 x 63	5.43	7.60	0.180	0.099		**ECEP2WP122HX**
	50 x 80	5.71	7.99	0.180	0.099		**ECEP2WP122HA**
1500	40 x 105	5.81	8.13	0.133	0.073	**ECET2WP152FA**	**ECEP2WP152FA**
	50 x 80	6.15	8.61	0.144	0.079		**ECEP2WP152HX**
	50 x 92	6.55	9.17	0.144	0.079		**ECEP2WP152HA**
1800	50 x 92	7.02	9.83	0.120	0.066		**ECEP2WP182HX**
	50 x 105	7.36	10.30	0.120	0.066		**ECEP2WP182HA**
500 VDC Working, 550 VDC Surge							
270	35 x 40	1.76	2.46	0.614	0.276	**ECET2HP271EA**	
330	40 x 40	2.16	3.02	0.502	0.276	**ECET2HP331FA**	**ECEP2HP331FA**
390	35 x 50	2.22	3.11	0.425	0.234	**ECET2HP391EA**	
470	35 x 63	2.58	3.61	0.353	0.194	**ECET2HP471EA**	
	40 x 50	2.70	3.78	0.353	0.194	**ECET2HP471FA**	**ECEP2HP471FA**
560	40 x 63	3.11	4.35	0.326	0.179	**ECET2HP561FA**	**ECEP2HP561FA**
	50 x 50	3.52	4.93	0.355	0.195		**ECEP2HP561HA**
680	35 x 80	3.21	4.49	0.244	0.134	**ECET2HP681EA**	
	50 x 50	3.88	5.43	0.293	0.161		**ECEP2HP681HX**
	50 x 63	4.07	5.70	0.293	0.161		**ECEP2HP681HA**
820	35 x 105	3.97	5.56	0.202	0.111	**ECET2HP821EA**	
	40 x 80	3.88	5.43	0.222	0.122	**ECET2HP821FA**	**ECEP2HP821FA**
	50 x 63	4.47	6.26	0.222	0.122		**ECEP2HP821HA**
1000	50 x 80	5.05	7.07	0.199	0.109		**ECEP2HP102HA**

T-UP Standard Ratings (continued)

Part numbers shown with 6.3mm Length Snap-in Terminals

Cap. (µF)	Size (mm) D x L	Max 85°C R.C. (A_{rms}) 120Hz	Max 85°C R.C. (A_{rms}) 10kHz~	20°C ESR (Ω, max.) 120Hz	20°C ESR (Ω, max.) 20kHz	Panasonic Part Number 4 Pin Style	Panasonic Part Number 5 Pin Style
500 VDC Working, 550 VDC Surge (continued)							
1200	40 x 105	5.90	8.26	0.152	0.084	**ECET2HP122FA**	**ECEP2HP122FA**
	50 x 80	5.35	7.49	0.166	0.091		**ECEP2HP122HX**
	50 x 92	5.74	8.04	0.166	0.091		**ECEP2HP122HA**
1500	50 x 105	6.65	9.31	0.144	0.079		**ECEP2HP152HA**

TS-HC Series *105°C, 2000 hours*

- ***Long life with high capacitance (30% smaller than HB series)***
- ***2 and 3 pin versions available***
- ***RoHS compliant PVC and RoHS compliant PET sleeve options***

Rated Working Voltage:	10 ~ 250 VDC	350 ~ 450 VDC
Operating Temperature:	-40 ~ +105°C	-25 ~ +105°C
Nominal Capacitance:	270 ~ 100000µF	100 ~ 1000µF
Capacitance Tolerance:	± 20%	

Dissipation Factor (120 Hz, +20°C):

Working Voltage [V]:	10	16	25	35	50	63	80	100 ~ 450
Max. D.F. (%):	55	45	35	30	25	20	17	15

For capacitance values > 33000µF, add the value of: $\frac{\text{(rated cap. [µF] - 33000)}}{1000}$

Leakage Current: $3\sqrt{CV}$ (µA) max. after 5 minutes; *C = Capacitance in µF, V = WV*

Ripple Current Multipliers:

Frequency(Hz):	50	60	100~120	500	1k	10k
16~100WV:	0.93	0.95	1.0	1.05	1.08	1.15
160~450WV:	0.75	0.8	1.0	1.2	1.25	1.4

Ripple Current Ambient Temperature Factors*					
Temperature (°C):	105°C	85°C	70°C	60°C	≤45°C
Multiplier:	1.0	1.7	2.0	2.2	2.35

Endurance: 2000 hours at +105°C with maximum specified ripple current (see page4)

*Use of temperature ripple current multipliers may limit life to the hours specified for the maximum operating temperature.

Part Number System

E	E	T	H	C	□	□	□	□	□	□	□
Common Code			Series Code				Capacitance Code				

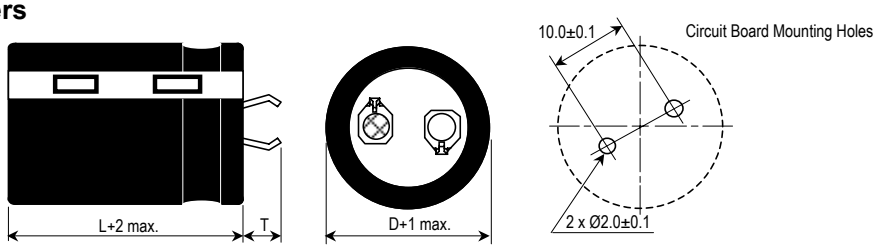
Sleeving Options: See Part Number listings

Voltage Code														
1A	1C	1E	1V	1H	1J	1K	2A	2C	2D	2E	2V	2G	2S	2W
10	16	25	35	50	63	80	100	160	200	250	350	400	420	450

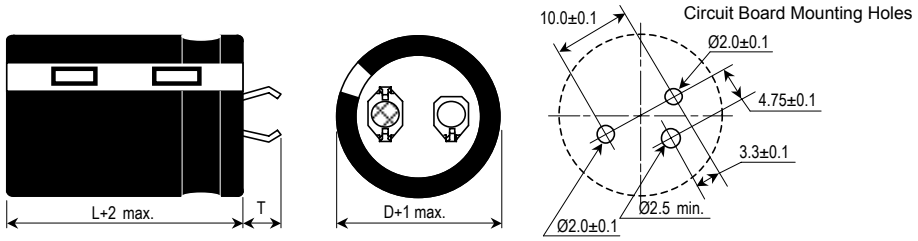
Diameter / Terminal Code			
# of pins:	2	3	2
pin length "T":	4.0±0.5mm	4.0±0.5mm	6.3±1mm
Diameter 22mm	H	P	B
25mm	J	Q	C
30mm	K	R	D
35mm	L	S	E

Dimensions in millimeters

2 Pin Mounting Style



3 Pin Mounting Style



Pin Dimensions

4mm Length: Standard on 2 and 3 Pin Mounting Styles

6.3mm Length: Available on 2 Pin Mounting Style Only

TS-HC Standard Ratings

Part numbers shown with 2 pins and 4.0mm length terminals

Cap. (µF)	Size (mm) D x L	Max 105°C R.C. (A_{rms}) 120Hz	Max 105°C R.C. (A_{rms}) 10kHz~	20°C ESR (Ω, max.) 120Hz	20°C ESR (Ω, max.) 20kHz	Panasonic Part Number (By Sleeving Style) PVC with Top Plate	Panasonic Part Number (By Sleeving Style) PET without Top Plate
10 VDC Working, 13 VDC Surge							
12000	22 x 25	2.20	2.53	0.076	0.065	**EETHC1A123HA**	**EETHC1A123HJ**
18000	22 x 30	2.40	2.76	0.051	0.043	**EETHC1A183HA**	**EETHC1A183HJ**
	25 x 25	2.40	2.76	0.051	0.043	**EETHC1A183JA**	**EETHC1A183JJ**
22000	22 x 35	2.60	2.99	0.041	0.035	**EETHC1A223HA**	**EETHC1A223HJ**
	25 x 30	2.60	2.99	0.041	0.035	**EETHC1A223JA**	**EETHC1A223JJ**
27000	22 x 40	3.10	3.57	0.034	0.029	**EETHC1A273HA**	**EETHC1A273HJ**
	25 x 35	3.10	3.57	0.034	0.029	**EETHC1A273JA**	**EETHC1A273JJ**
	30 x 25	3.10	3.57	0.034	0.029	**EETHC1A273KA**	**EETHC1A273KJ**
33000	22 x 45	3.40	3.91	0.028	0.023	**EETHC1A333HA**	**EETHC1A333HJ**
	25 x 40	3.40	3.91	0.028	0.023	**EETHC1A333JA**	**EETHC1A333JJ**
39000	25 x 45	3.70	4.26	0.026	0.022	**EETHC1A393JA**	**EETHC1A393JJ**
	30 x 30	3.70	4.26	0.026	0.023	**EETHC1A393KA**	**EETHC1A393KJ**
	35 x 25	3.70	4.26	0.026	0.022	**EETHC1A393LA**	**EETHC1A393LJ**
47000	25 x 50	4.20	4.83	0.024	0.021	**EETHC1A473JA**	**EETHC1A473JJ**
	30 x 35	4.20	4.83	0.024	0.022	**EETHC1A473KA**	**EETHC1A473KJ**
	35 x 30	4.20	4.83	0.024	0.021	**EETHC1A473LA**	**EETHC1A473LJ**
56000	30 x 40	5.00	5.75	0.023	0.021	**EETHC1A563KA**	**EETHC1A563KJ**
	35 x 35	5.00	5.75	0.023	0.020	**EETHC1A563LA**	**EETHC1A563LJ**
68000	30 x 45	5.40	6.21	0.022	0.020	**EETHC1A683KA**	**EETHC1A683KJ**
	35 x 40	5.40	6.21	0.022	0.019	**EETHC1A683LA**	**EETHC1A683LJ**
82000	35 x 45	6.10	7.02	0.021	0.019	**EETHC1A823LA**	**EETHC1A823LJ**
100000	35 x 50	6.90	7.94	0.020	0.019	**EETHC1A104LA**	**EETHC1A104LJ**
16 VDC Working, 20 VDC Surge							
10000	22 x 25	2.60	2.99	0.075	0.063	**EETHC1C103HA**	**EETHC1C103HJ**
12000	22 x 30	2.90	3.34	0.062	0.053	**EETHC1C123HA**	**EETHC1C123HJ**
	25 x 25	2.90	3.34	0.062	0.053	**EETHC1C123JA**	**EETHC1C123JJ**
15000	22 x 35	3.20	3.68	0.050	0.042	**EETHC1C153HA**	**EETHC1C153HJ**
18000	22 x 40	3.50	4.03	0.041	0.035	**EETHC1C183HA**	**EETHC1C183HJ**
	25 x 30	3.50	4.03	0.041	0.035	**EETHC1C183JA**	**EETHC1C183JJ**
22000	22 x 45	3.80	4.37	0.034	0.029	**EETHC1C223HA**	**EETHC1C223HJ**
	25 x 35	3.80	4.37	0.034	0.029	**EETHC1C223JA**	**EETHC1C223JJ**
	30 x 25	3.80	4.37	0.034	0.029	**EETHC1C223KA**	**EETHC1C223KJ**
27000	22 x 50	4.20	4.83	0.028	0.023	**EETHC1C273HA**	**EETHC1C273HJ**
	25 x 40	4.20	4.83	0.028	0.023	**EETHC1C273JA**	**EETHC1C273JJ**
	30 x 30	4.20	4.83	0.028	0.023	**EETHC1C273KA**	**EETHC1C273KJ**
	35 x 25	4.20	4.83	0.028	0.023	**EETHC1C273LA**	**EETHC1C273LJ**
33000	25 x 45	4.70	5.41	0.023	0.019	**EETHC1C333JA**	**EETHC1C333JJ**
	30 x 35	4.70	5.41	0.023	0.019	**EETHC1C333KA**	**EETHC1C333KJ**
	35 x 30	4.70	5.41	0.023	0.020	**EETHC1C333LA**	**EETHC1C333LJ**
39000	30 x 40	5.10	5.87	0.022	0.018	**EETHC1C393KA**	**EETHC1C393KJ**
	35 x 35	5.10	5.87	0.022	0.020	**EETHC1C393LA**	**EETHC1C393LJ**
47000	30 x 45	5.50	6.33	0.016	0.014	**EETHC1C473KA**	**EETHC1C473KJ**
	35 x 40	5.50	6.33	0.021	0.019	**EETHC1C473LA**	**EETHC1C473LJ**
56000	30 x 50	6.00	6.90	0.020	0.018	**EETHC1C563KA**	**EETHC1C563KJ**
	35 x 45	6.00	6.90	0.020	0.018	**EETHC1C563LA**	**EETHC1C563LJ**
25 VDC Working, 32 VDC Surge							
6800	22 x 25	2.40	2.76	0.085	0.064	**EETHC1E682HA**	**EETHC1E682HJ**
8200	22 x 30	2.70	3.11	0.071	0.053	**EETHC1E822HA**	**EETHC1E822HJ**
	25 x 25	2.70	3.11	0.071	0.053	**EETHC1E822JA**	**EETHC1E822JJ**
10000	22 x 35	3.00	3.45	0.058	0.044	**EETHC1E103HA**	**EETHC1E103HJ**
12000	22 x 40	3.20	3.68	0.048	0.036	**EETHC1E123HA**	**EETHC1E123HJ**
	25 x 30	3.20	3.68	0.048	0.036	**EETHC1E123JA**	**EETHC1E123JJ**
15000	22 x 45	3.60	4.14	0.039	0.029	**EETHC1E153HA**	**EETHC1E153HJ**
	25 x 35	3.60	4.14	0.039	0.029	**EETHC1E153JA**	**EETHC1E153JJ**
	30 x 25	3.60	4.14	0.039	0.029	**EETHC1E153KA**	**EETHC1E153KJ**
18000	22 x 50	3.90	4.49	0.032	0.024	**EETHC1E183HA**	**EETHC1E183HJ**
	25 x 40	3.90	4.49	0.032	0.024	**EETHC1E183JA**	**EETHC1E183JJ**
	30 x 30	3.90	4.49	0.032	0.024	**EETHC1E183KA**	**EETHC1E183KJ**
	35 x 25	3.90	4.49	0.032	0.024	**EETHC1E183LA**	**EETHC1E183LJ**
22000	25 x 45	4.30	4.95	0.026	0.020	**EETHC1E223JA**	**EETHC1E223JJ**
	30 x 35	4.30	4.95	0.026	0.020	**EETHC1E223KA**	**EETHC1E223KJ**
	35 x 30	4.30	4.95	0.026	0.020	**EETHC1E223LA**	**EETHC1E223LJ**
27000	30 x 40	4.80	5.52	0.021	0.016	**EETHC1E273KA**	**EETHC1E273KJ**

TS-HC Standard Ratings (continued)

Part numbers shown with 2 pins and 4.0mm length terminals

Cap. (µF)	Size (mm) D x L	Max 105°C R.C. (A_{rms}) 120Hz	Max 105°C R.C. (A_{rms}) 10kHz~	20°C ESR (Ω, max.) 120Hz	20°C ESR (Ω, max.) 20kHz	Panasonic Part Number (By Sleeving Style) PVC with Top Plate	Panasonic Part Number (By Sleeving Style) PET without Top Plate
25 VDC Working, 32 VDC Surge (continued)							
27000	35 x 35	4.80	5.52	0.021	0.016	**EETHC1E273LA**	**EETHC1E273LJ**
33000	30 x 45	5.50	6.33	0.018	0.013	**EETHC1E333KA**	**EETHC1E333KJ**
	35 x 40	5.50	6.33	0.018	0.014	**EETHC1E333LA**	**EETHC1E333LJ**
39000	30 x 50	5.80	6.67	0.017	0.013	**EETHC1E393KA**	**EETHC1E393KJ**
	35 x 45	5.80	6.67	0.017	0.014	**EETHC1E393LA**	**EETHC1E393LJ**
47000	35 x 50	6.30	7.25	0.017	0.014	**EETHC1E473LA**	**EETHC1E473LJ**
35 VDC Working, 44 VDC Surge							
4700	22 x 25	2.20	2.53	0.106	0.079	**EETHC1V472HA**	**EETHC1V472HJ**
5600	22 x 30	2.40	2.76	0.089	0.067	**EETHC1V562HA**	**EETHC1V562HJ**
	25 x 25	2.40	2.76	0.089	0.067	**EETHC1V562JA**	**EETHC1V562JJ**
6800	22 x 35	2.60	2.99	0.073	0.055	**EETHC1V682HA**	**EETHC1V682HJ**
8200	22 x 40	2.90	3.34	0.061	0.045	**EETHC1V822HA**	**EETHC1V822HJ**
	25 x 30	2.90	3.34	0.061	0.045	**EETHC1V822JA**	**EETHC1V822JJ**
10000	22 x 45	3.20	3.68	0.050	0.037	**EETHC1V103HA**	**EETHC1V103HJ**
	25 x 35	3.20	3.68	0.050	0.037	**EETHC1V103JA**	**EETHC1V103JJ**
	30 x 25	3.20	3.68	0.050	0.037	**EETHC1V103KA**	**EETHC1V103KJ**
12000	25 x 40	3.50	4.03	0.041	0.031	**EETHC1V123JA**	**EETHC1V123JJ**
	30 x 30	3.50	4.03	0.041	0.031	**EETHC1V123KA**	**EETHC1V123KJ**
	35 x 25	3.50	4.03	0.041	0.031	**EETHC1V123LA**	**EETHC1V123LJ**
15000	25 x 45	3.90	4.49	0.033	0.025	**EETHC1V153JA**	**EETHC1V153JJ**
	30 x 35	3.90	4.49	0.033	0.025	**EETHC1V153KA**	**EETHC1V153KJ**
	35 x 30	3.90	4.49	0.033	0.025	**EETHC1V153LA**	**EETHC1V153LJ**
18000	30 x 40	4.30	4.95	0.028	0.021	**EETHC1V183KA**	**EETHC1V183KJ**
	35 x 35	4.30	4.95	0.028	0.021	**EETHC1V183LA**	**EETHC1V183LJ**
22000	30 x 45	5.00	5.75	0.023	0.017	**EETHC1V223KA**	**EETHC1V223KJ**
	35 x 40	5.00	5.75	0.023	0.017	**EETHC1V223LA**	**EETHC1V223LJ**
27000	30 x 50	5.30	6.10	0.018	0.014	**EETHC1V273KA**	**EETHC1V273KJ**
	35 x 45	5.30	6.10	0.018	0.014	**EETHC1V273LA**	**EETHC1V273LJ**
33000	35 x 50	5.90	6.79	0.015	0.012	**EETHC1V333LA**	**EETHC1V333LJ**
50 VDC Working, 63 VDC Surge							
2700	22 x 25	1.80	2.07	0.154	0.115	**EETHC1H272HA**	**EETHC1H272HJ**
3300	22 x 30	2.00	2.30	0.126	0.094	**EETHC1H332HA**	**EETHC1H332HJ**
3900	22 x 35	2.20	2.53	0.106	0.080	**EETHC1H392HA**	**EETHC1H392HJ**
	25 x 25	2.20	2.53	0.106	0.080	**EETHC1H392JA**	**EETHC1H392JJ**
4700	22 x 40	2.50	2.88	0.088	0.066	**EETHC1H472HA**	**EETHC1H472HJ**
	25 x 30	2.50	2.88	0.088	0.066	**EETHC1H472JA**	**EETHC1H472JJ**
5600	22 x 45	2.80	3.22	0.074	0.056	**EETHC1H562HA**	**EETHC1H562HJ**
	25 x 35	2.80	3.22	0.074	0.056	**EETHC1H562JA**	**EETHC1H562JJ**
	30 x 25	2.80	3.22	0.074	0.056	**EETHC1H562KA**	**EETHC1H562KJ**
6800	22 x 50	3.30	3.80	0.061	0.046	**EETHC1H682HA**	**EETHC1H682HJ**
	25 x 40	3.30	3.80	0.061	0.046	**EETHC1H682JA**	**EETHC1H682JA**
	30 x 30	3.30	3.80	0.061	0.046	**EETHC1H682KA**	**EETHC1H682KJ**
	35 x 25	3.30	3.80	0.061	0.046	**EETHC1H682LA**	**EETHC1H682LJ**
8200	25 x 45	3.60	4.14	0.051	0.038	**EETHC1H822JA**	**EETHC1H822JJ**
	30 x 35	3.60	4.14	0.051	0.038	**EETHC1H822KA**	**EETHC1H822KJ**
10000	25 x 50	4.00	4.60	0.041	0.031	**EETHC1H103JA**	**EETHC1H103JJ**
	30 x 40	4.00	4.60	0.041	0.031	**EETHC1H103KA**	**EETHC1H103KJ**
	35 x 30	4.00	4.60	0.041	0.031	**EETHC1H103LA**	**EETHC1H103LJ**
12000	30 x 45	4.50	5.18	0.035	0.026	**EETHC1H123KA**	**EETHC1H123KJ**
	35 x 35	4.50	5.18	0.035	0.028	**EETHC1H123LA**	**EETHC1H123LJ**
15000	30 x 50	4.80	5.52	0.028	0.021	**EETHC1H153KA**	**EETHC1H153KJ**
	35 x 40	4.80	5.52	0.028	0.022	**EETHC1H153LA**	**EETHC1H153LJ**
18000	35 x 45	5.60	6.44	0.023	0.018	**EETHC1H183LA**	**EETHC1H183LJ**
63 VDC Working, 79 VDC Surge							
2200	22 x 25	2.00	2.30	0.151	0.113	**EETHC1J222HA**	**EETHC1J222HJ**
2700	22 x 30	2.20	2.53	0.123	0.092	**EETHC1J272HA**	**EETHC1J272HJ**
	25 x 25	2.20	2.53	0.123	0.092	**EETHC1J272JA**	**EETHC1J272JJ**
3300	22 x 35	2.50	2.88	0.100	0.075	**EETHC1J332HA**	**EETHC1J332HJ**
3900	22 x 40	2.70	3.11	0.085	0.064	**EETHC1J392HA**	**EETHC1J392HJ**
	25 x 30	2.70	3.11	0.085	0.064	**EETHC1J392JA**	**EETHC1J392JJ**
	30 x 25	2.70	3.11	0.085	0.064	**EETHC1J392KA**	**EETHC1J392KJ**
4700	22 x 45	3.00	3.45	0.071	0.053	**EETHC1J472HA**	**EETHC1J472HJ**
	25 x 35	3.00	3.45	0.071	0.053	**EETHC1J472JA**	**EETHC1J472JJ**
5600	22 x 50	3.30	3.80	0.059	0.044	**EETHC1J562HA**	**EETHC1J562HJ**

TS-HC Standard Ratings (continued)

Part numbers shown with 2 pins and 4.0mm length terminals

Cap. (µF)	Size (mm) D x L	Max 105°C R.C. (A_{rms}) 120Hz	Max 105°C R.C. (A_{rms}) 10kHz~	20°C ESR (Ω, max.) 120Hz	20°C ESR (Ω, max.) 20kHz	Panasonic Part Number (By Sleeving Style) PVC with Top Plate	Panasonic Part Number (By Sleeving Style) PET without Top Plate
63 VDC Working, 79 VDC Surge (continued)							
5600	25 x 40	3.30	3.80	0.059	0.044	**EETHC1J562JA**	**EETHC1J562JJ**
	30 x 30	3.30	3.80	0.059	0.044	**EETHC1J562KA**	**EETHC1J562KJ**
	35 x 25	3.30	3.80	0.059	0.044	**EETHC1J562LA**	**EETHC1J562LJ**
6800	25 x 45	3.60	4.14	0.049	0.037	**EETHC1J682JA**	**EETHC1J682JJ**
	30 x 35	3.60	4.14	0.049	0.037	**EETHC1J682KA**	**EETHC1J682KJ**
	35 x 30	3.60	4.14	0.049	0.037	**EETHC1J682LA**	**EETHC1J682LJ**
8200	30 x 40	3.90	4.49	0.040	0.030	**EETHC1J822KA**	**EETHC1J822KJ**
	35 x 35	3.90	4.49	0.040	0.030	**EETHC1J822LA**	**EETHC1J822LJ**
10000	30 x 45	4.40	5.06	0.033	0.025	**EETHC1J103KA**	**EETHC1J103KJ**
	35 x 40	4.40	5.06	0.033	0.025	**EETHC1J103LA**	**EETHC1J103LJ**
12000	30 x 50	4.80	5.52	0.028	0.021	**EETHC1J123KA**	**EETHC1J123KJ**
	35 x 45	4.80	5.52	0.028	0.022	**EETHC1J123LA**	**EETHC1J123LJ**
15000	35 x 50	5.40	6.21	0.022	0.018	**EETHC1J153LA**	**EETHC1J153LJ**
80 VDC Working, 100 VDC Surge							
1200	22 x 25	1.50	1.73	0.235	0.176	**EETHC1K122HA**	**EETHC1K122HJ**
1500	22 x 30	1.70	1.96	0.188	0.141	**EETHC1K152HA**	**EETHC1K152HJ**
	25 x 25	1.70	1.96	0.188	0.141	**EETHC1K152JA**	**EETHC1K152JJ**
1800	22 x 35	1.80	2.07	0.157	0.117	**EETHC1K182HA**	**EETHC1K182HJ**
2200	22 x 40	2.10	2.42	0.128	0.096	**EETHC1K222HA**	**EETHC1K222HJ**
	25 x 30	2.10	2.42	0.128	0.096	**EETHC1K222JA**	**EETHC1K222JJ**
2700	22 x 45	2.40	2.76	0.104	0.078	**EETHC1K272HA**	**EETHC1K272HJ**
	25 x 35	2.40	2.76	0.104	0.078	**EETHC1K272JA**	**EETHC1K272JJ**
	30 x 25	2.40	2.76	0.104	0.078	**EETHC1K272KA**	**EETHC1K272KJ**
3300	22 x 50	2.60	2.99	0.085	0.064	**EETHC1K332HA**	**EETHC1K332HJ**
	25 x 40	2.60	2.99	0.085	0.064	**EETHC1K332JA**	**EETHC1K332JJ**
	30 x 30	2.60	2.99	0.085	0.064	**EETHC1K332KA**	**EETHC1K332KJ**
	35 x 25	2.60	2.99	0.085	0.064	**EETHC1K332LA**	**EETHC1K332LJ**
3900	25 x 45	3.00	3.45	0.072	0.054	**EETHC1K392JA**	**EETHC1K392JJ**
	30 x 35	3.00	3.45	0.072	0.054	**EETHC1K392KA**	**EETHC1K392KJ**
4700	25 x 50	3.30	3.80	0.060	0.045	**EETHC1K472JA**	**EETHC1K472JJ**
	30 x 40	3.30	3.80	0.060	0.045	**EETHC1K472KA**	**EETHC1K472KJ**
	35 x 30	3.30	3.80	0.060	0.045	**EETHC1K472LA**	**EETHC1K472LJ**
5600	30 x 45	3.70	4.26	0.050	0.038	**EETHC1K562KA**	**EETHC1K562KJ**
	35 x 35	3.70	4.26	0.050	0.038	**EETHC1K562LA**	**EETHC1K562LJ**
6800	30 x 50	3.90	4.49	0.041	0.031	**EETHC1K682KA**	**EETHC1K682KJ**
	35 x 40	3.90	4.49	0.041	0.032	**EETHC1K682LA**	**EETHC1K682LJ**
8200	35 x 45	4.50	5.18	0.034	0.027	**EETHC1K822LA**	**EETHC1K822LJ**
100 VDC Working, 125 VDC Surge							
820	22 x 25	1.40	1.61	0.303	0.197	**EETHC2A821HA**	**EETHC2A821HJ**
1200	22 x 30	1.80	2.07	0.207	0.135	**EETHC2A122HA**	**EETHC2A122HJ**
	25 x 25	1.80	2.07	0.207	0.135	**EETHC2A122JA**	**EETHC2A122JJ**
1500	22 x 35	2.10	2.42	0.166	0.108	**EETHC2A152HA**	**EETHC2A152HJ**
	25 x 30	2.10	2.42	0.166	0.108	**EETHC2A152JA**	**EETHC2A152JJ**
1800	22 x 40	2.30	2.65	0.138	0.090	**EETHC2A182HA**	**EETHC2A182HJ**
	25 x 35	2.30	2.65	0.138	0.090	**EETHC2A182JA**	**EETHC2A182JJ**
	30 x 25	2.30	2.65	0.138	0.090	**EETHC2A182KA**	**EETHC2A182KJ**
2200	22 x 45	2.60	2.99	0.113	0.073	**EETHC2A222HA**	**EETHC2A222HJ**
	25 x 40	2.60	2.99	0.113	0.073	**EETHC2A222JA**	**EETHC2A222JJ**
	30 x 30	2.60	2.99	0.113	0.073	**EETHC2A222KA**	**EETHC2A222KJ**
	35 x 25	2.60	2.99	0.113	0.073	**EETHC2A222LA**	**EETHC2A222LJ**
2700	25 x 45	2.90	3.34	0.092	0.060	**EETHC2A272JA**	**EETHC2A272JJ**
	30 x 35	2.90	3.34	0.092	0.060	**EETHC2A272KA**	**EETHC2A272KJ**
3300	25 x 50	3.20	3.68	0.075	0.049	**EETHC2A332JA**	**EETHC2A332JJ**
	30 x 40	3.20	3.68	0.075	0.049	**EETHC2A332KA**	**EETHC2A332KJ**
	35 x 30	3.20	3.68	0.075	0.049	**EETHC2A332LA**	**EETHC2A332LJ**
3900	30 x 45	3.60	4.14	0.064	0.043	**EETHC2A392KA**	**EETHC2A392KJ**
	35 x 35	3.60	4.14	0.064	0.043	**EETHC2A392LA**	**EETHC2A392LJ**
4700	30 x 50	3.80	4.37	0.053	0.038	**EETHC2A472KA**	**EETHC2A472KJ**
	35 x 40	3.80	4.37	0.053	0.037	**EETHC2A472LA**	**EETHC2A472LJ**
5600	35 x 45	4.20	4.83	0.044	0.031	**EETHC2A562LA**	**EETHC2A562LJ**
6800	35 x 50	4.70	5.41	0.037	0.027	**EETHC2A682LA**	**EETHC2A682LJ**
160 VDC Working, 200 VDC Surge							
470	22 x 25	1.40	1.96	0.423	0.190	**EETHC2C471HA**	**EETHC2C471HJ**

TS-HC Standard Ratings (continued)

Part numbers shown with 2 pins and 4.0mm length terminals

Cap. (µF)	Size (mm) D x L	Max 105°C R.C. (A_{rms}) 120Hz	Max 105°C R.C. (A_{rms}) 10kHz~	20°C ESR (Ω, max.) 120Hz	20°C ESR (Ω, max.) 20kHz	Panasonic Part Number (By Sleeving Style) PVC sleeve with Top Plate	Panasonic Part Number (By Sleeving Style) PET sleeve without Top Plate
160 VDC Working, 200 VDC Surge (continued)							
560	22 x 30	1.50	2.10	0.355	0.160	**EETHC2C561HA**	**EETHC2C561HJ**
680	22 x 30	1.70	2.38	0.293	0.132	**EETHC2C681HA**	**EETHC2C681HJ**
	25 x 25	1.70	2.38	0.293	0.132	**EETHC2C681JA**	**EETHC2C681JJ**
820	22 x 35	2.00	2.80	0.243	0.109	**EETHC2C821HA**	**EETHC2C821HJ**
	25 x 30	2.00	2.80	0.243	0.109	**EETHC2C821JA**	**EETHC2C821JJ**
1000	22 x 40	2.20	3.08	0.199	0.090	**EETHC2C102HA**	**EETHC2C102HJ**
1000	25 x 35	2.20	3.08	0.199	0.090	**EETHC2C102JA**	**EETHC2C102JJ**
	30 x 25	2.20	3.08	0.216	0.108	**EETHC2C102KA**	**EETHC2C102KJ**
1200	22 x 45	2.30	3.22	0.166	0.075	**EETHC2C122HA**	**EETHC2C122HJ**
	25 x 40	2.30	3.22	0.166	0.075	**EETHC2C122JA**	**EETHC2C122JJ**
	30 x 30	2.30	3.22	0.166	0.075	**EETHC2C122KA**	**EETHC2C122KJ**
	35 x 25	2.30	3.22	0.180	0.090	**EETHC2C122LA**	**EETHC2C122LJ**
1500	25 x 45	2.50	3.50	0.133	0.060	**EETHC2C152JA**	**EETHC2C152JJ**
	30 x 35	2.50	3.50	0.133	0.060	**EETHC2C152KA**	**EETHC2C152KJ**
	35 x 30	2.50	3.50	0.155	0.077	**EETHC2C152LA**	**EETHC2C152LJ**
1800	25 x 50	2.70	3.78	0.111	0.050	**EETHC2C182JA**	**EETHC2C182JJ**
	30 x 40	2.70	3.78	0.111	0.050	**EETHC2C182KA**	**EETHC2C182KJ**
	35 x 30	2.70	3.78	0.120	0.060	**EETHC2C182LA**	**EETHC2C182LJ**
2200	30 x 45	2.90	4.06	0.090	0.041	**EETHC2C222KA**	**EETHC2C222KJ**
	35 x 35	2.90	4.06	0.098	0.049	**EETHC2C222LA**	**EETHC2C222LJ**
2700	30 x 50	3.10	4.34	0.080	0.040	**EETHC2C272KA**	**EETHC2C272KJ**
	35 x 40	3.10	4.34	0.086	0.043	**EETHC2C272LA**	**EETHC2C272LJ**
3300	35 x 50	3.30	4.62	0.070	0.042	**EETHC2C332LA**	**EETHC2C332LJ**
200 VDC Working, 250 VDC Surge							
390	22 x 25	1.31	1.83	0.510	0.230	**EETHC2D391HA**	**EETHC2D391HJ**
470	22 x 30	1.45	2.03	0.423	0.190	**EETHC2D471HA**	**EETHC2D471HJ**
	25 x 25	1.45	2.03	0.423	0.190	**EETHC2D471JF**	**EETHC2D471JC**
560	22 x 30	1.67	2.34	0.355	0.160	**EETHC2D561HA**	**EETHC2D561HJ**
680	22 x 40	1.75	2.45	0.293	0.132	**EETHC2D681HA**	**EETHC2D681HJ**
	25 x 30	1.75	2.45	0.293	0.132	**EETHC2D681JA**	**EETHC2D681JJ**
820	22 x 45	2.04	2.86	0.243	0.109	**EETHC2D821HA**	**EETHC2D821HJ**
	25 x 35	2.04	2.86	0.243	0.109	**EETHC2D821JA**	**EETHC2D821JJ**
	30 x 25	2.04	2.86	0.243	0.109	**EETHC2D821KA**	**EETHC2D821KJ**
1000	22 x 50	2.30	3.22	0.199	0.090	**EETHC2D102HA**	**EETHC2D102HJ**
	25 x 40	2.30	2.90	0.199	0.090	**EETHC2D102JF**	**EETHC2D102JC**
	25 x 45	2.30	3.22	0.199	0.090	**EETHC2D102JA**	**EETHC2D102JJ**
	30 x 30	2.30	3.22	0.199	0.090	**EETHC2D102KA**	**EETHC2D102KJ**
	35 x 25	2.30	3.22	0.216	0.097	**EETHC2D102LA**	**EETHC2D102LA**
1200	25 x 45	2.65	3.33	0.166	0.075	**EETHC2D122JF**	**EETHC2D122JC**
	25 x 50	2.65	3.71	0.166	0.075	**EETHC2D122JA**	**EETHC2D122JJ**
	30 x 35	2.65	3.71	0.166	0.075	**EETHC2D122KA**	**EETHC2D122KJ**
	35 x 30	2.65	3.71	0.180	0.090	**EETHC2D122LA**	**EETHC2D122LA**
1500	30 x 40	2.80	3.92	0.133	0.060	**EETHC2D152KA**	**EETHC2D152KJ**
	35 x 30	2.80	3.92	0.144	0.072	**EETHC2D152LA**	**EETHC2D152LA**
1800	30 x 45	3.08	4.31	0.111	0.050	**EETHC2D182KA**	**EETHC2D182KJ**
	35 x 40	3.08	4.31	0.129	0.064	**EETHC2D182LA**	**EETHC2D182LA**
2200	30 x 50	3.48	4.87	0.090	0.041	**EETHC2D222KA**	**EETHC2D222KJ**
	35 x 45	3.48	4.87	0.098	0.044	**EETHC2D222LA**	**EETHC2D222LA**
250 VDC Working, 300 VDC Surge							
270	22 x 25	1.10	1.54	0.614	0.276	**EETHC2E271HA**	**EETHC2E271HJ**
330	22 x 30	1.20	1.68	0.502	0.226	**EETHC2E331HA**	**EETHC2E331HJ**
	25 x 25	1.20	1.68	0.502	0.226	**EETHC2E331JA**	**EETHC2E331JJ**
390	22 x 30	1.20	1.68	0.425	0.191	**EETHC2E391HF**	**EETHC2E391HC**
	22 x 35	1.30	1.82	0.425	0.191	**EETHC2E391HA**	**EETHC2E391HJ**
	25 x 25	1.30	1.82	0.425	0.191	**EETHC2E391JA**	**EETHC2E391JJ**
470	22 x 35	1.20	1.68	0.353	0.159	**EETHC2E471HF**	**EETHC2E471HC**
	22 x 40	1.40	1.96	0.353	0.159	**EETHC2E471HA**	**EETHC2E471HJ**
	25 x 30	1.40	1.96	0.353	0.159	**EETHC2E471JA**	**EETHC2E471JJ**
	30 x 25	1.40	1.96	0.353	0.159	**EETHC2E471KA**	**EETHC2E471KJ**
560	22 x 40	1.40	1.96	0.296	0.133	**EETHC2E561HF**	**EETHC2E561HC**
	22 x 45	1.50	2.10	0.296	0.133	**EETHC2E561HA**	**EETHC2E561HJ**
	25 x 35	1.50	2.10	0.296	0.133	**EETHC2E561JA**	**EETHC2E561JJ**
	30 x 25	1.50	2.10	0.296	0.133	**EETHC2E561KA**	**EETHC2E561KJ**

TS-HC Standard Ratings (continued)

Part numbers shown with 2 pins and 4.0mm length terminals

Cap. (µF)	Size (mm) D x L	Max 105°C R.C. (A_{rms}) 120Hz	Max 105°C R.C. (A_{rms}) 10kHz~	20°C ESR (Ω, max.) 120Hz	20°C ESR (Ω, max.) 20kHz	Panasonic Part Number (By Sleeving Style) PVC with Top Plate	Panasonic Part Number (By Sleeving Style) PET without Top Plate
250 VDC Working, 300 VDC Surge (continued)							
680	22 x 45	1.50	2.10	0.244	0.110	**EETHC2E681HF**	**EETHC2E681HC**
	22 x 50	1.70	2.38	0.244	0.110	**EETHC2E681HA**	**EETHC2E681HJ**
	25 x 40	1.70	2.38	0.244	0.110	**EETHC2E681JA**	**EETHC2E681JJ**
	30 x 30	1.70	2.38	0.244	0.110	**EETHC2E681KA**	**EETHC2E681KJ**
	35 x 25	1.70	2.38	0.244	0.110	**EETHC2E681LA**	**EETHC2E681LJ**
820	25 x 45	2.00	2.80	0.202	0.091	**EETHC2E821JA**	**EETHC2E821JJ**
	30 x 35	2.00	2.80	0.202	0.091	**EETHC2E821KA**	**EETHC2E821KJ**
	35 x 30	2.00	2.80	0.202	0.091	**EETHC2E821LA**	**EETHC2E821LJ**
1000	25 x 50	2.20	3.08	0.166	0.075	**EETHC2E102JF**	**EETHC2E102JC**
	30 x 40	2.20	3.08	0.166	0.075	**EETHC2E102KA**	**EETHC2E102KJ**
	35 x 30	2.20	3.08	0.166	0.075	**EETHC2E102LA**	**EETHC2E102LJ**
1200	30 x 45	2.30	3.22	0.138	0.062	**EETHC2E122KA**	**EETHC2E122KJ**
	35 x 35	2.30	3.22	0.138	0.062	**EETHC2E122LA**	**EETHC2E122LJ**
1500	35 x 45	2.50	3.50	0.111	0.050	**EETHC2E152LA**	**EETHC2E152LJ**
1800	35 x 45	2.50	3.50	0.092	0.041	**EETHC2E182LF**	**EETHC2E182LC**
	35 x 50	2.70	3.78	0.092	0.041	**EETHC2E182LA**	**EETHC2E182LJ**
350 VDC Working, 400 VDC Surge							
120	22 x 25	0.75	1.05	1.382	0.622	**EETHC2V121HA**	**EETHC2V121HJ**
150	22 x 30	0.82	1.15	1.105	0.497	**EETHC2V151HA**	**EETHC2V151HJ**
180	22 x 30	0.90	1.26	0.921	0.414	**EETHC2V181HA**	**EETHC2V181HJ**
	25 x 25	0.90	1.26	0.921	0.414	**EETHC2V181JA**	**EETHC2V181JJ**
220	22 x 35	1.00	1.40	0.754	0.339	**EETHC2V221HA**	**EETHC2V221HJ**
	25 x 30	1.00	1.40	0.754	0.339	**EETHC2V221JA**	**EETHC2V221JJ**
270	22 x 40	1.10	1.54	0.614	0.276	**EETHC2V271HF**	**EETHC2V271HC**
	25 x 35	1.10	1.54	0.614	0.276	**EETHC2V271JA**	**EETHC2V271JJ**
	30 x 25	1.10	1.54	0.614	0.276	**EETHC2V271KA**	**EETHC2V271KJ**
330	22 x 45	1.20	1.68	0.502	0.226	**EETHC2V331HF**	**EETHC2V331HC**
	25 x 40	1.20	1.68	0.502	0.226	**EETHC2V331JA**	**EETHC2V331JJ**
	30 x 30	1.20	1.68	0.502	0.226	**EETHC2V331KA**	**EETHC2V331KJ**
390	25 x 45	1.30	1.82	0.425	0.191	**EETHC2V391JA**	**EETHC2V391JJ**
	30 x 30	1.30	1.82	0.425	0.191	**EETHC2V391KF**	**EETHC2V391KC**
	30 x 35	1.30	1.82	0.425	0.191	**EETHC2V391KA**	**EETHC2V391KJ**
470	25 x 50	1.40	1.96	0.353	0.159	**EETHC2V471JA**	**EETHC2V471JJ**
	30 x 35	1.40	1.96	0.353	0.159	**EETHC2V471KF**	**EETHC2V471KC**
	35 x 30	1.40	1.96	0.353	0.159	**EETHC2V471LA**	**EETHC2V471LJ**
560	30 x 40	1.50	2.10	0.296	0.133	**EETHC2V561KF**	**EETHC2V561KC**
	30 x 45	1.50	2.10	0.296	0.133	**EETHC2V561KA**	**EETHC2V561KJ**
	35 x 35	1.50	2.10	0.296	0.133	**EETHC2V561LA**	**EETHC2V561LJ**
680	30 x 45	1.70	2.38	0.244	0.110	**EETHC2V681KF**	**EETHC2V681KC**
	30 x 50	1.70	2.38	0.244	0.110	**EETHC2V681KA**	**EETHC2V681KJ**
	35 x 40	1.70	2.38	0.244	0.110	**EETHC2V681LA**	**EETHC2V681LJ**
820	35 x 45	1.90	2.66	0.202	0.091	**EETHC2V821LA**	**EETHC2V821LJ**
1000	35 x 50	1.90	2.66	0.202	0.091	**EETHC2V102LF**	**EETHC2V102LC**
400 VDC Working, 450 VDC Surge							
100	22 x 25	0.70	0.98	1.824	0.821	**EETHC2G101HA**	**EETHC2G101HJ**
120	22 x 30	0.75	1.05	1.520	0.684	**EETHC2G121HA**	**EETHC2G121HJ**
150	22 x 30	0.88	1.23	1.216	0.547	**EETHC2G151HA**	**EETHC2G151HJ**
	25 x 25	0.88	1.23	1.216	0.547	**EETHC2G151JF**	**EETHC2G151JC**
180	22 x 35	0.95	1.33	1.013	0.456	**EETHC2G181HA**	**EETHC2G181HJ**
	25 x 30	0.95	1.33	1.013	0.456	**EETHC2G181JA**	**EETHC2G181JJ**
220	22 x 40	1.00	1.40	0.829	0.373	**EETHC2G221HF**	**EETHC2G221HC**
	22 x 45	1.10	1.54	0.829	0.373	**EETHC2G221HA**	**EETHC2G221HJ**
	25 x 35	1.10	1.54	0.829	0.373	**EETHC2G221JA**	**EETHC2G221JJ**
	30 x 25	1.10	1.54	0.829	0.373	**EETHC2G221KA**	**EETHC2G221KJ**
270	22 x 45	1.10	1.54	0.675	0.304	**EETHC2G271HF**	**EETHC2G271HC**
	22 x 50	1.22	1.71	0.675	0.304	**EETHC2G271HA**	**EETHC2G271HJ**
	25 x 40	1.22	1.71	0.675	0.304	**EETHC2G271JA**	**EETHC2G271JJ**
	30 x 30	1.22	1.71	0.675	0.304	**EETHC2G271KA**	**EETHC2G271KJ**
	35 x 25	1.22	1.71	0.675	0.304	**EETHC2G271LA**	**EETHC2G271LJ**
330	25 x 45	1.44	2.02	0.553	0.249	**EETHC2G331JA**	**EETHC2G331JJ**
	30 x 30	1.44	2.02	0.553	0.249	**EETHC2G331KF**	**EETHC2G331KC**
	30 x 35	1.44	2.02	0.553	0.249	**EETHC2G331KA**	**EETHC2G331KJ**
	35 x 30	1.44	2.02	0.553	0.249	**EETHC2G331LA**	**EETHC2G331LJ**
390	25 x 50	1.55	2.17	0.468	0.210	**EETHC2G391JA**	**EETHC2G391JJ**
	30 x 35	1.40	1.96	0.468	0.210	**EETHC2G391KF**	**EETHC2G391KC**

TS-HC Standard Ratings (continued)

Part numbers shown with 2 pins and 4.0mm length terminals

Cap. (μF)	Size (mm) D x L	Max 85°C R.C. (A_{rms}) 120Hz	Max 85°C R.C. (A_{rms}) 10kHz~	20°C ESR (Ω, max.) 120Hz	20°C ESR (Ω, max.) 20kHz	Panasonic Part Number (By Sleeving Style) PVC with Top Plate	Panasonic Part Number (By Sleeving Style) PET without Top Plate
400 VDC Working, 450 VDC Surge (continued)							
390	30 x 40	1.55	2.17	0.468	0.210	**EETHC2G391KA**	**EETHC2G391KJ**
	35 x 30	1.55	2.17	0.468	0.210	**EETHC2G391LA**	**EETHC2G391LJ**
470	30 x 45	1.68	2.35	0.388	0.175	**EETHC2G471KA**	**EETHC2G471KJ**
	35 x 35	1.68	2.35	0.388	0.175	**EETHC2G471LA**	**EETHC2G471LJ**
560	30 x 45	1.90	2.66	0.326	0.147	**EETHC2G561KF**	**EETHC2G561KC**
	30 x 50	1.90	2.66	0.326	0.147	**EETHC2G561KA**	**EETHC2G561KJ**
	35 x 40	1.90	2.66	0.326	0.147	**EETHC2G561LA**	**EETHC2G561LJ**
680	35 x 45	2.12	2.97	0.268	0.121	**EETHC2G681LA**	**EETHC2G681LJ**
820	35 x 50	2.30	3.22	0.202	0.091	**EETHC2G821LA**	**EETHC2G821LJ**
420 VDC Working, 470 VDC Surge							
120	22 x 30	0.74	1.04	1.520	0.684	**EETHC2S121HA**	**EETHC2S121HJ**
	25 x 25	0.74	1.04	1.520	0.684	**EETHC2S121JA**	**EETHC2S121JJ**
150	22 x 35	0.84	1.18	1.216	0.547	**EETHC2S151HA**	**EETHC2S151HJ**
180	22 x 40	0.91	1.27	1.103	0.456	**EETHC2S181HA**	**EETHC2S181HJ**
	25 x 30	0.91	1.27	1.103	0.456	**EETHC2S181JA**	**EETHC2S181JJ**
220	22 x 45	1.05	1.47	0.829	0.373	**EETHC2S221HA**	**EETHC2S221HJ**
	25 x 35	1.05	1.47	0.829	0.373	**EETHC2S221JA**	**EETHC2S221JJ**
	30 x 25	1.05	1.47	0.829	0.373	**EETHC2S221KA**	**EETHC2S221KJ**
270	22 x 50	1.20	1.68	0.675	0.304	**EETHC2S271HA**	**EETHC2S271HJ**
	25 x 40	1.20	1.68	0.675	0.304	**EETHC2S271JA**	**EETHC2S271JJ**
	30 x 30	1.20	1.68	0.675	0.304	**EETHC2S271KA**	**EETHC2S271KJ**
	35 x 25	1.20	1.68	0.675	0.304	**EETHC2S271LA**	**EETHC2S271LJ**
330	25 x 50	1.42	1.99	0.553	0.249	**EETHC2S331JA**	**EETHC2S331JJ**
330	30 x 35	1.42	1.99	0.553	0.249	**EETHC2S331KA**	**EETHC2S331KJ**
	35 x 35	1.42	1.99	0.553	0.249	**EETHC2S331LA**	**EETHC2S331LJ**
390	30 x 40	1.55	2.17	0.468	0.210	**EETHC2S391KA**	**EETHC2S391KJ**
	35 x 35	1.55	2.17	0.468	0.210	**EETHC2S391LA**	**EETHC2S391LJ**
470	30 x 45	1.71	2.39	0.388	0.175	**EETHC2S471KA**	**EETHC2S471KJ**
	35 x 35	1.71	2.39	0.388	0.175	**EETHC2S471LA**	**EETHC2S471LJ**
560	30 x 50	1.90	2.66	0.326	0.147	**EETHC2S561KA**	**EETHC2S561KJ**
	35 x 45	1.90	2.66	0.326	0.147	**EETHC2S561LA**	**EETHC2S561LJ**
680	35 x 50	2.10	2.94	0.268	0.121	**EETHC2S681LA**	**EETHC2S681LJ**
450 VDC Working, 500 VDC Surge							
100	22 x 30	0.64	0.90	1.824	0.821	**EETHC2W101HA**	**EETHC2W101HJ**
	25 x 25	0.64	0.90	1.824	0.821	**EETHC2W101JA**	**EETHC2W101JJ**
120	22 x 35	0.72	1.01	1.520	0.684	**EETHC2W121HA**	**EETHC2W121HJ**
	25 x 30	0.72	1.01	1.520	0.684	**EETHC2W121JA**	**EETHC2W121JJ**
150	22 x 40	0.79	1.11	1.216	0.547	**EETHC2W151HA**	**EETHC2W151HJ**
	25 x 30	0.79	1.11	1.216	0.547	**EETHC2W151JA**	**EETHC2W151JJ**
	30 x 25	0.79	1.11	1.216	0.547	**EETHC2W151KA**	**EETHC2W151KJ**
180	22 x 45	0.87	1.22	1.013	0.456	**EETHC2W181HA**	**EETHC2W181HJ**
	25 x 35	0.79	1.11	1.013	0.456	**EETHC2W181JF**	**EETHC2W181JC**
	25 x 40	0.87	1.22	1.013	0.456	**EETHC2W181JA**	**EETHC2W181JJ**
	30 x 30	0.87	1.22	1.013	0.456	**EETHC2W181KA**	**EETHC2W181KJ**
220	22 x 50	0.90	1.26	0.829	0.373	**EETHC2W221HA**	**EETHC2W221HJ**
	25 x 45	1.00	1.40	0.829	0.373	**EETHC2W221JA**	**EETHC2W221JJ**
	30 x 30	1.00	1.40	0.829	0.373	**EETHC2W221KA**	**EETHC2W221KJ**
	35 x 25	1.00	1.40	0.829	0.373	**EETHC2W221LA**	**EETHC2W221LJ**
270	25 x 50	1.19	1.67	0.675	0.304	**EETHC2W271JA**	**EETHC2W271JJ**
	30 x 35	1.07	1.50	0.675	0.304	**EETHC2W271KF**	**EETHC2W271KC**
	30 x 40	1.19	1.67	0.675	0.304	**EETHC2W271KA**	**EETHC2W271KJ**
	35 x 30	1.19	1.67	0.675	0.304	**EETHC2W271LA**	**EETHC2W271LJ**
330	30 x 40	1.24	1.74	0.553	0.249	**EETHC2W331KF**	**EETHC2W331KC**
	30 x 45	1.38	1.93	0.553	0.249	**EETHC2W331KA**	**EETHC2W331KJ**
	35 x 35	1.38	1.93	0.553	0.249	**EETHC2W331LA**	**EETHC2W331LJ**
390	30 x 45	1.39	1.95	0.468	0.210	**EETHC2W391KF**	**EETHC2W391KC**
	30 x 50	1.55	2.17	0.468	0.210	**EETHC2W391KA**	**EETHC2W391KJ**
	35 x 40	1.55	2.17	0.468	0.210	**EETHC2W391LA**	**EETHC2W391LJ**
470	35 x 45	1.74	2.44	0.388	0.175	**EETHC2W471LA**	**EETHC2W471LJ**
560	35 x 50	1.90	2.66	0.326	0.147	**EETHC2W561LA**	**EETHC2W561LJ**

TS-HA/HB Series *105°C, 3000 hours*

- ***Long 3000 hour life at 105°C with high ripple current capability***
- ***2 and 3 pin versions available***
- ***Can vent construction***

Rated Working Voltage:	10 ~ 250 VDC	385 ~ 450 VDC
Operating Temperature:	-40 ~ +105°C	-25 ~ +105°C
Nominal Capacitance:	180~68000µF	82~560µF
Capacitance Tolerance:	± 20%	

Dissipation Factor (120 Hz, +20°C):

Working Voltage [V]:	10	16	25	35	50	63	80	100 ~ 450
Max. D.F. (%):	55	45	35	30	25	20	17	15

For capacitance values > 33000µF, add the value of: $\frac{\text{(rated cap. [µF] - 33000)}}{1000}$

Leakage Current: 3√CV (µA) max. after 5 minutes; *C = Capacitance in µF, V = WV*

Ripple Current Multipliers:

Frequency(Hz):	50	60	100~120	500	1k	10k
16~100WV:	0.93	0.95	1.0	1.05	1.08	1.15
160~450WV:	0.75	0.8	1.0	1.2	1.25	1.4

Ripple Current Ambient Temperature Factors**

Temperature (°C):	105°C	85°C	70°C	60°C	≤45°C
Multiplier:	1.0	1.7	2.0	2.2	2.35

Endurance: 3000 hours* at +105°C with maximum specified ripple current (see page 4)
*2000 hours for 20mm length sizes

**Use of temperature ripple current multipliers may limit life to the hours specified for the maximum operating temperature.

Part Number System

E C □ □ | □ □ | A / B | □ □ □ | □ | □

Series Code (A / B) | Capacitance Code | Suffix | Diameter

Suffix

A	Standard Ratings
X	Extended CV Ratings
L	20mm Length Ratings

RoHS compliant PVC sleeve and top plate is standard. PET sleeve is available without top plate.

Diameter

Diameter	Code
22	B
25	C
30	D
35	E

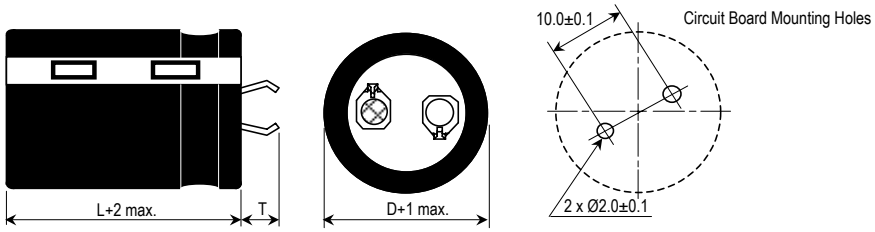
Terminal Style

Prefix	Length	# of Pins
ECOS	6.3mm	2
ECEC	4.0mm	2
ECE3	4.0mm	3

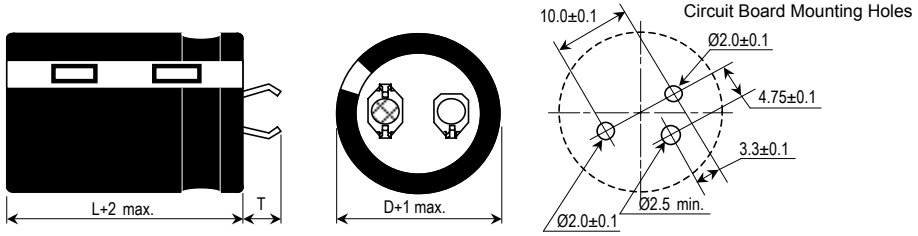
Voltage Code

1A	1C	1E	1V	1H	1J	1K	2A	2C	2D	2E	2T	2G	2W
10	16	25	35	50	63	80	100	160	200	250	385	400	450

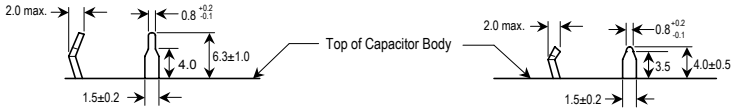
2 Pin Mounting Style



3 Pin Mounting Style



Pin Dimensions



"T" 6.3mm Length: Standard on 2 Pin Mounting Style

4mm Length: Standard on 3 Pin, Available on 2 Pin Mounting Styles

TS-HA Standard Ratings

Part numbers shown with 2 pins

Cap. (μF)	Size (mm) D x L	Max 105°C R.C. (A_{rms}) 120Hz	Max 105°C R.C. (A_{rms}) 10kHz~	20°C ESR (Ω, max.) 120Hz	20°C ESR (Ω, max.) 20kHz	Panasonic Part Number (By Terminal Length) 6.3mm Length Terminal	Panasonic Part Number (By Terminal Length) 4.0mm Length Terminal
10 VDC Working, 13 VDC Surge							
10000	22 x 25	1.80	2.07	0.075	0.063	**ECOS1AA103BA**	**ECEC1AA103BA**
12000	22 x 30	2.20	2.53	0.062	0.053	**ECOS1AA123BA**	**ECEC1AA123BA**
15000	22 x 35	2.30	2.65	0.053	0.045	**ECOS1AA153BA**	**ECEC1AA153BA**
	25 x 25	2.30	2.65	0.053	0.045	**ECOS1AA153CA**	**ECEC1AA153CA**
18000	22 x 40	2.40	2.76	0.044	0.038	**ECOS1AA183BA**	**ECEC1AA183BA**
	25 x 30	2.40	2.76	0.044	0.038	**ECOS1AA183CA**	**ECEC1AA183CA**
22000	22 x 45	2.60	2.99	0.038	0.032	**ECOS1AA223BA**	**ECEC1AA223BA**
	25 x 35	2.60	2.99	0.038	0.032	**ECOS1AA223CA**	**ECEC1AA223CA**
	30 x 25	2.60	2.99	0.038	0.032	**ECOS1AA223DA**	**ECEC1AA223DA**
27000	22 x 50	3.10	3.57	0.033	0.028	**ECOS1AA273BA**	**ECEC1AA273BA**
	25 x 40	3.10	3.57	0.033	0.028	**ECOS1AA273CA**	**ECEC1AA273CA**
	30 x 30	3.10	3.57	0.033	0.028	**ECOS1AA273DA**	**ECEC1AA273DA**
	35 x 25	3.10	3.57	0.033	0.028	**ECOS1AA273EA**	**ECEC1AA273EA**
33000	25 x 45	3.40	3.91	0.027	0.023	**ECOS1AA333CA**	**ECEC1AA333CA**
	30 x 35	3.40	3.91	0.027	0.023	**ECOS1AA333DA**	**ECEC1AA333DA**
	35 x 30	3.40	3.91	0.027	0.023	**ECOS1AA333EA**	**ECEC1AA333EA**
39000	25 x 50	3.70	4.26	0.025	0.021	**ECOS1AA393CA**	**ECEC1AA393CA**
	30 x 40	3.70	4.26	0.025	0.021	**ECOS1AA393DA**	**ECEC1AA393DA**
	35 x 30	3.70	4.26	0.025	0.021	**ECOS1AA393EA**	**ECEC1AA393EA**
47000	30 x 45	4.20	4.83	0.023	0.020	**ECOS1AA473DA**	**ECEC1AA473DA**
	35 x 35	4.20	4.83	0.023	0.020	**ECOS1AA473EA**	**ECEC1AA473EA**
56000	30 x 50	5.00	5.75	0.022	0.019	**ECOS1AA563DA**	**ECEC1AA563DA**
	35 x 40	5.00	5.75	0.022	0.021	**ECOS1AA563EA**	**ECEC1AA563EA**
68000	35 x 50	5.50	6.33	0.021	0.020	**ECOS1AA683EA**	**ECEC1AA683EA**
16 VDC Working, 20 VDC Surge							
3300	22 x 20	1.30	1.50	0.216	0.173	**ECOS1CA332BL**	**ECEC1CA332BL**
4700	25 x 20	1.60	1.84	0.152	0.121	**ECOS1CA472CL**	**ECEC1CA472CL**
6800	22 x 25	2.20	2.53	0.085	0.068	**ECOS1CA682BA**	**ECEC1CA682BA**
	30 x 20	1.80	2.07	0.105	0.084	**ECOS1CA682DL**	**ECEC1CA682DL**
8200	22 x 30	2.40	2.76	0.071	0.057	**ECOS1CA822BA**	**ECEC1CA822BA**
10000	22 x 30	2.60	2.99	0.066	0.053	**ECOS1CA103BA**	**ECEC1CA103BA**
	25 x 25	2.60	2.99	0.066	0.053	**ECOS1CA103CA**	**ECEC1CA103CA**
	35 x 20	2.40	2.76	0.071	0.057	**ECOS1CA103EL**	**ECEC1CA103EL**
12000	22 x 35	2.90	3.34	0.055	0.044	**ECOS1CA123BA**	**ECEC1CA123BA**
	25 x 30	2.90	3.34	0.055	0.044	**ECOS1CA123CA**	**ECEC1CA123CA**
	30 x 25	2.90	3.34	0.055	0.044	**ECOS1CA123DA**	**ECEC1CA123DA**
15000	22 x 40	3.20	3.68	0.046	0.037	**ECOS1CA153BA**	**ECEC1CA153BA**
	25 x 35	3.20	3.68	0.046	0.037	**ECOS1CA153CA**	**ECEC1CA153CA**
	30 x 30	3.20	3.68	0.046	0.037	**ECOS1CA153DA**	**ECEC1CA153DA**
18000	22 x 45	3.50	4.03	0.040	0.034	**ECOS1CA183BA**	**ECEC1CA183BA**
	25 x 40	3.50	4.03	0.040	0.034	**ECOS1CA183CA**	**ECEC1CA183CA**
	30 x 30	3.50	4.03	0.040	0.034	**ECOS1CA183DA**	**ECEC1CA183DA**
	35 x 25	3.50	4.03	0.040	0.034	**ECOS1CA183EA**	**ECEC1CA183EA**
22000	25 x 45	3.80	4.37	0.033	0.028	**ECOS1CA223CA**	**ECEC1CA223CA**
	30 x 35	3.80	4.37	0.033	0.028	**ECOS1CA223DA**	**ECEC1CA223DA**
	35 x 30	3.80	4.37	0.033	0.028	**ECOS1CA223EA**	**ECEC1CA223EA**
27000	25 x 50	4.20	4.83	0.028	0.025	**ECOS1CA273CA**	**ECEC1CA273CA**
	30 x 40	4.20	4.83	0.028	0.025	**ECOS1CA273DA**	**ECEC1CA273DA**
	35 x 30	4.20	4.83	0.028	0.025	**ECOS1CA273EA**	**ECEC1CA273EA**
33000	30 x 45	4.70	5.41	0.023	0.020	**ECOS1CA333DA**	**ECEC1CA333DA**
	35 x 35	4.70	5.41	0.023	0.020	**ECOS1CA333EA**	**ECEC1CA333EA**
39000	30 x 50	5.10	5.87	0.022	0.020	**ECOS1CA393DA**	**ECEC1CA393DA**
	35 x 40	5.10	5.87	0.022	0.020	**ECOS1CA393EA**	**ECEC1CA393EA**
47000	35 x 45	5.50	6.33	0.020	0.018	**ECOS1CA473EA**	**ECEC1CA473EA**
56000	35 x 50	6.00	6.90	0.019	0.017	**ECOS1CA563EA**	**ECEC1CA563EA**
25 VDC Working, 32 VDC Surge							
2200	22 x 20	1.30	1.50	0.241	0.181	**ECOS1EA222BL**	**ECEC1EA222BL**
3300	25 x 20	1.60	1.84	0.161	0.121	**ECOS1EA332CL**	**ECEC1EA332CL**
4700	22 x 25	2.00	2.30	0.106	0.079	**ECOS1EA472BA**	**ECEC1EA472BA**
	30 x 20	1.80	2.07	0.113	0.085	**ECOS1EA472DL**	**ECEC1EA472DL**
5600	22 x 30	2.20	2.53	0.089	0.067	**ECOS1EA562BA**	**ECEC1EA562BA**
6800	22 x 30	2.40	2.76	0.073	0.055	**ECOS1EA682BA**	**ECEC1EA682BA**
	25 x 25	2.40	2.76	0.073	0.055	**ECOS1EA682CA**	**ECEC1EA682CA**
	35 x 20	2.30	2.65	0.080	0.060	**ECOS1EA682EL**	**ECEC1EA682EL**

TS-HA Standard Ratings (continued)

Part numbers shown with 2 pins

Cap. (µF)	Size (mm) D x L	Max 105°C R.C. (A_{rms}) 120Hz	Max 105°C R.C. (A_{rms}) 10kHz~	20°C ESR (Ω, max.) 120Hz	20°C ESR (Ω, max.) 20kHz	Panasonic Part Number (By Terminal Length) 6.3mm Length Terminal	Panasonic Part Number (By Terminal Length) 4.0mm Length Terminal
25 VDC Working, 32 VDC Surge (continued)							
8200	22 x 35	2.70	3.11	0.061	0.045	**ECOS1EA822BA**	**ECEC1EA822BA**
	25 x 30	2.70	3.11	0.061	0.045	**ECOS1EA822CA**	**ECEC1EA822CA**
	30 x 25	2.70	3.11	0.061	0.045	**ECOS1EA822DA**	**ECEC1EA822DA**
10000	22 x 40	3.00	3.45	0.051	0.039	**ECOS1EA103BA**	**ECEC1EA103BA**
	25 x 35	3.00	3.45	0.051	0.039	**ECOS1EA103CA**	**ECEC1EA103CA**
	30 x 30	3.00	3.45	0.051	0.039	**ECOS1EA103DA**	**ECEC1EA103DA**
12000	22 x 45	3.20	3.68	0.044	0.033	**ECOS1EA123BA**	**ECEC1EA123BA**
	25 x 40	3.20	3.68	0.044	0.035	**ECOS1EA123CA**	**ECEC1EA123CA**
	30 x 30	3.20	3.68	0.044	0.035	**ECOS1EA123DA**	**ECEC1EA123DA**
	35 x 25	3.20	3.68	0.044	0.035	**ECOS1EA123EA**	**ECEC1EA123EA**
15000	25 x 45	3.60	4.14	0.036	0.031	**ECOS1EA153CA**	**ECEC1EA153CA**
	30 x 35	3.60	4.14	0.036	0.031	**ECOS1EA153DA**	**ECEC1EA153DA**
	35 x 30	3.60	4.14	0.036	0.031	**ECOS1EA153EA**	**ECEC1EA153EA**
18000	25 x 50	3.90	4.49	0.030	0.027	**ECOS1EA183CA**	**ECEC1EA183CA**
	30 x 40	3.90	4.49	0.030	0.027	**ECOS1EA183DA**	**ECEC1EA183DA**
	35 x 35	3.90	4.49	0.030	0.027	**ECOS1EA183EA**	**ECEC1EA183EA**
22000	30 x 45	4.30	4.95	0.025	0.022	**ECOS1EA223DA**	**ECEC1EA223DA**
	35 x 35	4.30	4.95	0.025	0.022	**ECOS1EA223EA**	**ECEC1EA223EA**
27000	35 x 45	4.80	5.52	0.021	0.019	**ECOS1EA273EA**	**ECEC1EA273EA**
33000	35 x 50	5.50	6.33	0.018	0.016	**ECOS1EA333EA**	**ECEC1EA333EA**
35 VDC Working, 44 VDC Surge							
1500	22 x 20	1.10	1.27	0.287	0.216	**ECOS1VA152BL**	**ECEC1VA152BL**
2200	25 x 20	1.40	1.61	0.196	0.147	**ECOS1VA222CL**	**ECEC1VA222CL**
3300	22 x 25	1.90	2.19	0.121	0.090	**ECOS1VA332BA**	**ECEC1VA332BA**
	30 x 20	1.70	1.96	0.131	0.098	**ECOS1VA332DL**	**ECEC1VA332DL**
3900	22 x 30	2.00	2.30	0.111	0.083	**ECOS1VA392BA**	**ECEC1VA392BA**
4700	22 x 35	2.20	2.53	0.088	0.066	**ECOS1VA472BA**	**ECEC1VA472BA**
	25 x 25	2.20	2.53	0.088	0.066	**ECOS1VA472CA**	**ECEC1VA472CA**
	35 x 20	2.00	2.30	0.095	0.071	**ECOS1VA472EL**	**ECEC1VA472EL**
5600	22 x 35	2.40	2.76	0.074	0.056	**ECOS1VA562BA**	**ECEC1VA562BA**
	25 x 30	2.40	2.76	0.074	0.056	**ECOS1VA562CA**	**ECEC1VA562CA**
	30 x 25	2.40	2.76	0.074	0.056	**ECOS1VA562DA**	**ECEC1VA562DA**
6800	22 x 40	2.60	2.99	0.061	0.046	**ECOS1VA682BA**	**ECEC1VA682BA**
	25 x 35	2.60	2.99	0.061	0.046	**ECOS1VA682CA**	**ECEC1VA682CA**
	30 x 30	2.60	2.99	0.061	0.046	**ECOS1VA682DA**	**ECEC1VA682DA**
8200	22 x 50	2.90	3.34	0.051	0.038	**ECOS1VA822BA**	**ECEC1VA822BA**
	25 x 40	2.90	3.34	0.051	0.038	**ECOS1VA822CA**	**ECEC1VA822CA**
	30 x 30	2.90	3.34	0.051	0.038	**ECOS1VA822DA**	**ECEC1VA822DA**
	35 x 25	2.90	3.34	0.051	0.038	**ECOS1VA822EA**	**ECEC1VA822EA**
10000	25 x 45	3.20	3.68	0.041	0.031	**ECOS1VA103CA**	**ECEC1VA103CA**
	30 x 35	3.20	3.68	0.041	0.031	**ECOS1VA103DA**	**ECEC1VA103DA**
	35 x 30	3.20	3.68	0.041	0.031	**ECOS1VA103EA**	**ECEC1VA103EA**
12000	25 x 50	3.50	4.03	0.035	0.026	**ECOS1VA123CA**	**ECEC1VA123CA**
	30 x 40	3.50	4.03	0.035	0.026	**ECOS1VA123DA**	**ECEC1VA123DA**
	35 x 30	3.50	4.03	0.035	0.026	**ECOS1VA123EA**	**ECEC1VA123EA**
15000	30 x 45	3.90	4.49	0.030	0.022	**ECOS1VA153DA**	**ECEC1VA153DA**
	35 x 35	3.90	4.49	0.030	0.022	**ECOS1VA153EA**	**ECEC1VA153EA**
18000	35 x 40	4.30	4.95	0.028	0.021	**ECOS1VA183EA**	**ECEC1VA183EA**
22000	35 x 50	5.00	5.75	0.023	0.017	**ECOS1VA223EA**	**ECEC1VA223EA**
50 VDC Working, 63 VDC Surge							
1000	22 x 20	0.90	1.04	0.265	0.199	**ECOS1HA102BL**	**ECEC1HA102BL**
1500	25 x 20	1.20	1.38	0.177	0.133	**ECOS1HA152CL**	**ECEC1HA152CL**
1800	22 x 25	1.50	1.73	0.129	0.097	**ECOS1HA182BA**	**ECEC1HA182BA**
2200	22 x 30	1.70	1.96	0.105	0.079	**ECOS1HA222BA**	**ECEC1HA222BA**
	30 x 20	1.40	1.61	0.121	0.090	**ECOS1HA222DL**	**ECEC1HA222DL**
2700	22 x 30	1.80	2.07	0.086	0.064	**ECOS1HA272BA**	**ECEC1HA272BA**
	25 x 25	1.80	2.07	0.086	0.064	**ECOS1HA272CA**	**ECEC1HA272CA**
3300	22 x 35	2.00	2.30	0.070	0.053	**ECOS1HA332BA**	**ECEC1HA332BA**
	25 x 30	2.00	2.30	0.070	0.053	**ECOS1HA332CA**	**ECEC1HA332CA**
	35 x 20	1.70	1.96	0.085	0.064	**ECOS1HA332EL**	**ECEC1HA332EL**
3900	22 x 40	2.20	2.53	0.064	0.048	**ECOS1HA392BA**	**ECEC1HA392BA**
	25 x 35	2.20	2.53	0.064	0.048	**ECOS1HA392CA**	**ECEC1HA392CA**
	30 x 25	2.20	2.53	0.064	0.048	**ECOS1HA392DA**	**ECEC1HA392DA**
4700	22 x 45	2.50	2.88	0.053	0.040	**ECOS1HA472BA**	**ECEC1HA472BA**
	25 x 40	2.50	2.88	0.053	0.040	**ECOS1HA472CA**	**ECEC1HA472CA**

TS-HA Standard Ratings (continued)

Part numbers shown with 2 pins

Cap. (µF)	Size (mm) D x L	Max 105°C R.C. (A_{rms}) 120Hz	Max 105°C R.C. (A_{rms}) 10kHz~	20°C ESR (Ω, max.) 120Hz	20°C ESR (Ω, max.) 20kHz	Panasonic Part Number (By Terminal Length) 6.3mm Length Terminal	Panasonic Part Number (By Terminal Length) 4.0mm Length Terminal
50 VDC Working, 63 VDC Surge (continued)							
4700	30 x 30	2.50	2.88	0.053	0.040	**ECOS1HA472DA**	**ECEC1HA472DA**
	35 x 25	2.50	2.88	0.053	0.040	**ECOS1HA472EA**	**ECEC1HA472EA**
5600	22 x 50	2.80	3.22	0.050	0.038	**ECOS1HA562BA**	**ECEC1HA562BA**
	25 x 40	2.80	3.22	0.050	0.038	**ECOS1HA562CA**	**ECEC1HA562CA**
	30 x 35	2.80	3.22	0.050	0.038	**ECOS1HA562DA**	**ECEC1HA562DA**
	35 x 30	2.80	3.22	0.050	0.038	**ECOS1HA562EA**	**ECEC1HA562EA**
	25 x 50	3.30	3.80	0.046	0.035	**ECOS1HA682CA**	**ECEC1HA682CA**
	30 x 40	3.30	3.80	0.046	0.035	**ECOS1HA682DA**	**ECEC1HA682DA**
6800	35 x 30	3.30	3.80	0.046	0.035	**ECOS1HA682EA**	**ECEC1HA682EA**
8200	30 x 45	3.60	4.14	0.038	0.029	**ECOS1HA822DA**	**ECEC1HA822DA**
	35 x 35	3.60	4.14	0.038	0.029	**ECOS1HA822EA**	**ECEC1HA822EA**
10000	30 x 50	4.00	4.60	0.033	0.025	**ECOS1HA103DA**	**ECEC1HA103DA**
	35 x 40	4.00	4.60	0.033	0.025	**ECOS1HA103EA**	**ECEC1HA103EA**
12000	35 x 45	4.50	5.18	0.028	0.022	**ECOS1HA123EA**	**ECEC1HA123EA**
15000	35 x 50	4.80	5.52	0.022	0.018	**ECOS1HA153EA**	**ECEC1HA153EA**
63 VDC Working, 79 VDC Surge							
680	22 x 20	0.90	1.04	0.463	0.347	**ECOS1JA681BL**	**ECEC1JA681BL**
1000	25 x 20	1.20	1.38	0.315	0.236	**ECOS1JA102CL**	**ECEC1JA102CL**
1200	22 x 25	1.40	1.61	0.235	0.176	**ECOS1JA122BA**	**ECEC1JA122BA**
1500	22 x 30	1.50	1.73	0.188	0.141	**ECOS1JA152BA**	**ECEC1JA152BA**
	30 x 20	1.30	1.50	0.210	0.157	**ECOS1JA152DL**	**ECEC1JA152DL**
1800	22 x 30	1.70	1.96	0.157	0.117	**ECOS1JA182BA**	**ECEC1JA182BA**
	25 x 25	1.70	1.96	0.157	0.117	**ECOS1JA182CA**	**ECEC1JA182CA**
2200	22 x 35	2.00	2.30	0.128	0.096	**ECOS1JA222BA**	**ECEC1JA222BA**
	25 x 30	2.00	2.30	0.128	0.096	**ECOS1JA222CA**	**ECEC1JA222CA**
	35 x 20	1.50	1.73	0.143	0.107	**ECOS1JA222EL**	**ECEC1JA222EL**
2700	22 x 40	2.20	2.53	0.104	0.078	**ECOS1JA272BA**	**ECEC1JA272BA**
	25 x 35	2.20	2.53	0.104	0.078	**ECOS1JA272CA**	**ECEC1JA272CA**
	30 x 25	2.20	2.53	0.104	0.078	**ECOS1JA272DA**	**ECEC1JA272DA**
3300	22 x 50	2.50	2.88	0.090	0.068	**ECOS1JA332BA**	**ECEC1JA332BA**
	25 x 40	2.50	2.88	0.090	0.068	**ECOS1JA332CA**	**ECEC1JA332CA**
	30 x 30	2.50	2.88	0.090	0.068	**ECOS1JA332DA**	**ECEC1JA332DA**
	35 x 25	2.50	2.88	0.090	0.068	**ECOS1JA332EA**	**ECEC1JA332EA**
3900	25 x 45	2.70	3.11	0.077	0.057	**ECOS1JA392CA**	**ECEC1JA392CA**
	30 x 35	2.70	3.11	0.077	0.057	**ECOS1JA392DA**	**ECEC1JA392DA**
	35 x 30	2.70	3.11	0.077	0.057	**ECOS1JA392EA**	**ECEC1JA392EA**
4700	25 x 50	3.00	3.45	0.063	0.048	**ECOS1JA472CA**	**ECEC1JA472CA**
	30 x 40	3.00	3.45	0.063	0.048	**ECOS1JA472DA**	**ECEC1JA472DA**
	35 x 30	3.00	3.45	0.063	0.048	**ECOS1JA472EA**	**ECEC1JA472EA**
5600	30 x 45	3.30	3.80	0.053	0.040	**ECOS1JA562DA**	**ECEC1JA562DA**
	35 x 35	3.30	3.80	0.053	0.040	**ECOS1JA562EA**	**ECEC1JA562EA**
6800	30 x 50	3.60	4.14	0.049	0.037	**ECOS1JA682DA**	**ECEC1JA682DA**
	35 x 40	3.60	4.14	0.049	0.037	**ECOS1JA682EA**	**ECEC1JA682EA**
8200	35 x 45	3.90	4.49	0.040	0.030	**ECOS1JA822EA**	**ECEC1JA822EA**
10000	35 x 50	4.40	5.06	0.033	0.028	**ECOS1JA103EA**	**ECEC1JA103EA**
80 VDC Working, 100 VDC Surge							
470	22 x 20	0.80	0.92	0.459	0.298	**ECOS1KA471BL**	**ECEC1KA471BL**
560	25 x 20	1.00	1.15	0.317	0.206	**ECOS1KA681CL**	**ECEC1KA681CL**
820	22 x 25	1.20	1.38	0.222	0.145	**ECOS1KA821BA**	**ECEC1KA821BA**
1000	22 x 30	1.30	1.50	0.182	0.119	**ECOS1KA102BA**	**ECEC1KA102BA**
	25 x 25	1.30	1.50	0.182	0.119	**ECOS1KA102CA**	**ECEC1KA102CA**
	30 x 20	1.20	1.38	0.216	0.140	**ECOS1KA102DL**	**ECEC1KA102DL**
1200	22 x 30	1.50	1.73	0.166	0.116	**ECOS1KA122BA**	**ECEC1KA122BA**
	25 x 25	1.50	1.73	0.166	0.116	**ECOS1KA122CA**	**ECEC1KA122CA**
1500	22 x 35	1.70	1.96	0.133	0.093	**ECOS1KA152BA**	**ECEC1KA152BA**
	25 x 30	1.70	1.96	0.133	0.093	**ECOS1KA152CA**	**ECEC1KA152CA**
	35 x 20	1.40	1.61	0.155	0.108	**ECOS1KA152EL**	**ECEC1KA152EL**
1800	22 x 40	1.80	2.07	0.111	0.077	**ECOS1KA182BA**	**ECEC1KA182BA**
	25 x 35	1.80	2.07	0.111	0.077	**ECOS1KA182CA**	**ECEC1KA182CA**
	30 x 25	1.80	2.07	0.111	0.077	**ECOS1KA182DA**	**ECEC1KA182DA**
2200	22 x 45	2.10	2.42	0.090	0.063	**ECOS1KA222BA**	**ECEC1KA222BA**
	25 x 35	2.10	2.42	0.090	0.063	**ECOS1KA222CA**	**ECEC1KA222CA**
	30 x 30	2.10	2.42	0.090	0.063	**ECOS1KA222DA**	**ECEC1KA222DA**
	35 x 25	2.10	2.42	0.090	0.063	**ECOS1KA222EA**	**ECEC1KA222EA**

TS-HA/HB Standard Ratings (continued)

Part numbers shown with 2 pins

Cap. (µF)	Size (mm) D x L	Max 105°C R.C. (A_{rms}) 120Hz	Max 105°C R.C. (A_{rms}) 10kHz~	20°C ESR (Ω, max.) 120Hz	20°C ESR (Ω, max.) 20kHz	Panasonic Part Number (By Terminal Length) 6.3mm Length Terminal	Panasonic Part Number (By Terminal Length) 4.0mm Length Terminal
80 VDC Working, 100 VDC Surge (continued)							
2700	25 x 45	2.40	2.76	0.074	0.055	**ECOS1KA272CA**	**ECEC1KA272CA**
	30 x 35	2.40	2.76	0.074	0.055	**ECOS1KA272DA**	**ECEC1KA272DA**
	35 x 30	2.40	2.76	0.074	0.055	**ECOS1KA272EA**	**ECEC1KA272EA**
3300	25 x 50	2.60	2.99	0.065	0.049	**ECOS1KA332CA**	**ECEC1KA332CA**
	30 x 40	2.60	2.99	0.065	0.049	**ECOS1KA332DA**	**ECEC1KA332DA**
	35 x 30	2.60	2.99	0.065	0.049	**ECOS1KA332EA**	**ECEC1KA332EA**
3900	30 x 45	3.00	3.45	0.060	0.045	**ECOS1KA392DA**	**ECEC1KA392DA**
	35 x 35	3.00	3.45	0.060	0.045	**ECOS1KA392EA**	**ECEC1KA392EA**
4700	30 x 50	3.30	3.80	0.049	0.037	**ECOS1KA472DA**	**ECEC1KA472DA**
	35 x 40	3.30	3.80	0.049	0.037	**ECOS1KA472EA**	**ECEC1KA472EA**
5600	35 x 45	3.70	4.26	0.050	0.038	**ECOS1KA562EA**	**ECEC1KA562EA**
6800	35 x 50	3.90	4.49	0.041	0.031	**ECOS1KA682EA**	**ECEC1KA682EA**
100 VDC Working, 125 VDC Surge							
330	22 x 20	0.80	1.20	0.653	0.392	**ECOS2AA331BL**	**ECEC2AA331BL**
470	25 x 20	1.00	1.50	0.459	0.275	**ECOS2AA471CL**	**ECEC2AA471CL**
560	22 x 25	1.10	1.65	0.296	0.178	**ECOS2AA561BA**	**ECEC2AA561BA**
680	30 x 20	1.10	1.65	0.317	0.190	**ECOS2AA681DL**	**ECEC2AA681DL**
820	22 x 30	1.40	2.10	0.202	0.121	**ECOS2AA821BA**	**ECEC2AA821BA**
	25 x 25	1.40	2.10	0.202	0.121	**ECOS2AA821CA**	**ECEC2AA821CA**
1000	22 x 35	1.70	2.55	0.182	0.109	**ECOS2AA102BA**	**ECEC2AA102BA**
	25 x 30	1.70	2.55	0.182	0.109	**ECOS2AA102CA**	**ECEC2AA102CA**
	35 x 20	1.20	1.80	0.216	0.129	**ECOS2AA102EL**	**ECEC2AA102EL**
1200	22 x 40	1.80	2.70	0.152	0.091	**ECOS2AA122BA**	**ECEC2AA122BA**
	25 x 35	1.80	2.70	0.152	0.091	**ECOS2AA122CA**	**ECEC2AA122CA**
	30 x 25	1.80	2.70	0.152	0.091	**ECOS2AA122DA**	**ECEC2AA122DA**
1500	22 x 45	2.10	3.15	0.122	0.073	**ECOS2AA152BA**	**ECEC2AA152BA**
	25 x 40	2.10	3.15	0.122	0.079	**ECOS2AA152CA**	**ECEC2AA152CA**
	30 x 30	2.10	3.15	0.122	0.079	**ECOS2AA152DA**	**ECEC2AA152DA**
	35 x 25	2.10	3.15	0.122	0.079	**ECOS2AA152EA**	**ECEC2AA152EA**
1800	25 x 45	2.30	3.45	0.111	0.072	**ECOS2AA182CA**	**ECEC2AA182CA**
	30 x 35	2.30	3.45	0.111	0.072	**ECOS2AA182DA**	**ECEC2AA182DA**
	35 x 30	2.30	3.45	0.111	0.072	**ECOS2AA182EA**	**ECEC2AA182EA**
2200	25 x 50	2.60	3.90	0.090	0.059	**ECOS2AA222CA**	**ECEC2AA222CA**
	30 x 40	2.60	3.90	0.090	0.059	**ECOS2AA222DA**	**ECEC2AA222DA**
	35 x 30	2.60	3.90	0.090	0.059	**ECOS2AA222EA**	**ECEC2AA222EA**
2700	30 x 45	2.90	4.35	0.080	0.052	**ECOS2AA272DA**	**ECEC2AA272DA**
	35 x 35	2.90	4.35	0.080	0.052	**ECOS2AA272EA**	**ECEC2AA272EA**
3300	30 x 50	3.20	4.80	0.075	0.053	**ECOS2AA332DA**	**ECEC2AA332DA**
	35 x 40	3.20	4.80	0.075	0.053	**ECOS2AA332EA**	**ECEC2AA332EA**
3900	35 x 45	3.60	5.40	0.064	0.045	**ECOS2AA392EA**	**ECEC2AA392EA**
4700	35 x 50	3.80	5.70	0.053	0.040	**ECOS2AA472EA**	**ECEC2AA472EA**
160 VDC Working, 200 VDC Surge							
470	22 x 30	1.40	1.96	0.423	0.190	**ECOS2CB471BA**	**ECEC2CB471BA**
560	22 x 35	1.50	2.10	0.355	0.160	**ECOS2CB561BA**	**ECEC2CB561BA**
680	22 x 40	1.70	2.38	0.293	0.132	**ECOS2CB681BA**	**ECEC2CB681BA**
	25 x 30	1.70	2.38	0.293	0.132	**ECOS2CB681CA**	**ECEC2CB681CA**
820	22 x 45	2.00	2.80	0.243	0.109	**ECOS2CB821BA**	**ECEC2CB821BA**
	25 x 35	2.00	2.80	0.243	0.109	**ECOS2CB821CA**	**ECEC2CB821CA**
1000	22 x 50	2.20	3.08	0.199	0.090	**ECOS2CB102BA**	**ECEC2CB102BA**
	25 x 40	2.20	3.08	0.199	0.090	**ECOS2CB102CA**	**ECEC2CB102CA**
	30 x 30	2.20	3.08	0.199	0.090	**ECOS2CB102DA**	**ECEC2CB102DA**
	35 x 25	2.20	3.08	0.199	0.090	**ECOS2CB102EA**	**ECEC2CB102EA**
1200	25 x 45	2.30	3.22	0.180	0.090	**ECOS2CB122CA**	**ECEC2CB122CA**
	30 x 35	2.30	3.22	0.180	0.090	**ECOS2CB122DA**	**ECEC2CB122DA**
	35 x 30	2.30	3.22	0.180	0.090	**ECOS2CB122EA**	**ECEC2CB122EA**
1500	30 x 40	2.50	3.50	0.144	0.072	**ECOS2CB152DA**	**ECEC2CB152DA**
	35 x 30	2.50	3.50	0.144	0.072	**ECOS2CB152EA**	**ECEC2CB152EA**
1800	30 x 45	2.70	3.78	0.129	0.064	**ECOS2CB182DA**	**ECEC2CB182DA**
	35 x 35	2.70	3.78	0.129	0.064	**ECOS2CB182EA**	**ECEC2CB182EA**
2200	35 x 45	2.90	4.06	0.105	0.063	**ECOS2CB222EA**	**ECEC2CB222EA**
2700	35 x 50	3.10	4.34	0.086	0.052	**ECOS2CB272EA**	**ECEC2CB272EA**
200 VDC Working, 250 VDC Surge							
390	22 x 30	1.30	1.82	0.510	0.230	**ECOS2DB391BA**	**ECEC2DB391BA**
	25 x 25	1.30	1.82	0.510	0.230	**ECOS2DB391CA**	**ECEC2DB391CA**
470	22 x 35	1.40	1.96	0.423	0.190	**ECOS2DB471BA**	**ECEC2DB471BA**

TS-HB Standard Ratings (continued)

Part numbers shown with 2 pins

Cap. (µF)	Size (mm) D x L	Max 105°C R.C. (A_{rms}) 120Hz	Max 105°C R.C. (A_{rms}) 10kHz~	20°C ESR (Ω, max.) 120Hz	20°C ESR (Ω, max.) 20kHz	Panasonic Part Number (By Terminal Length) 6.3mm Length Terminal	Panasonic Part Number (By Terminal Length) 4.0mm Length Terminal
200 VDC Working, 250 VDC Surge (continued)							
470	25 x 30	1.40	1.96	0.423	0.190	**ECOS2DB471CA**	**ECEC2DB471CA**
560	22 x 40	1.50	2.10	0.355	0.160	**ECOS2DB561BA**	**ECEC2DB561BA**
	25 x 30	1.50	2.10	0.355	0.160	**ECOS2DB561CA**	**ECEC2DB561CA**
	30 x 25	1.50	2.10	0.355	0.160	**ECOS2DB561DA**	**ECEC2DB561DA**
680	22 x 45	1.70	2.38	0.293	0.132	**ECOS2DB681BA**	**ECEC2DB681BA**
	25 x 35	1.70	2.38	0.293	0.132	**ECOS2DB681CA**	**ECEC2DB681CA**
820	25 x 45	2.00	2.80	0.263	0.118	**ECOS2DB821CA**	**ECEC2DB821CA**
	30 x 30	2.00	2.80	0.263	0.118	**ECOS2DB821DA**	**ECEC2DB821DA**
	35 x 25	2.00	2.80	0.263	0.118	**ECOS2DB821EA**	**ECEC2DB821EA**
1000	25 x 50	2.20	3.08	0.216	0.108	**ECOS2DB102CA**	**ECEC2DB102CA**
	30 x 35	2.20	3.08	0.216	0.108	**ECOS2DB102DA**	**ECEC2DB102DA**
	35 x 30	2.20	3.08	0.216	0.108	**ECOS2DB102EA**	**ECEC2DB102EA**
1200	30 x 40	2.30	3.22	0.193	0.097	**ECOS2DB122DA**	**ECEC2DB122DA**
	35 x 35	2.30	3.22	0.193	0.097	**ECOS2DB122EA**	**ECEC2DB122EA**
1500	30 x 50	2.50	3.50	0.155	0.077	**ECOS2DB152DA**	**ECEC2DB152DA**
	35 x 40	2.50	3.50	0.155	0.077	**ECOS2DB152EA**	**ECEC2DB152EA**
1800	35 x 45	2.70	3.78	0.129	0.077	**ECOS2DB182EA**	**ECEC2DB182EA**
2200	35 x 50	2.90	4.06	0.105	0.063	**ECOS2DB222EA**	**ECEC2DB222EA**
250 VDC Working, 300 VDC Surge							
180	22 x 25	0.90	1.26	0.921	0.461	**ECOS2EB181BA**	**ECEC2EB181BA**
220	22 x 30	1.00	1.40	0.754	0.377	**ECOS2EB221BA**	**ECEC2EB221BA**
270	22 x 35	1.10	1.54	0.614	0.307	**ECOS2EB271BA**	**ECEC2EB271BA**
330	22 x 40	1.20	1.68	0.502	0.251	**ECOS2EB331BA**	**ECEC2EB331BA**
	25 x 30	1.20	1.68	0.502	0.251	**ECOS2EB331CA**	**ECEC2EB331CA**
390	22 x 45	1.30	1.82	0.425	0.213	**ECOS2EB391BA**	**ECEC2EB391BA**
	30 x 25	1.30	1.82	0.425	0.213	**ECOS2EB391DA**	**ECEC2EB391DA**
470	22 x 50	1.40	1.96	0.353	0.176	**ECOS2EB471BA**	**ECEC2EB471BA**
	25 x 40	1.40	1.96	0.353	0.176	**ECOS2EB471CA**	**ECEC2EB471CA**
	30 x 30	1.40	1.96	0.353	0.176	**ECOS2EB471DA**	**ECEC2EB471DA**
560	25 x 45	1.50	2.10	0.296	0.148	**ECOS2EB561CA**	**ECEC2EB561CA**
	35 x 25	1.50	2.10	0.296	0.148	**ECOS2EB561EA**	**ECEC2EB561EA**
680	25 x 50	1.70	2.38	0.244	0.134	**ECOS2EB681CA**	**ECEC2EB681CA**
	30 x 40	1.70	2.38	0.244	0.134	**ECOS2EB681DA**	**ECEC2EB681DA**
	35 x 30	1.70	2.38	0.244	0.134	**ECOS2EB681EA**	**ECEC2EB681EA**
820	30 x 45	2.00	2.80	0.202	0.111	**ECOS2EB821DA**	**ECEC2EB821DA**
	35 x 35	2.00	2.80	0.202	0.111	**ECOS2EB821EA**	**ECEC2EB821EA**
1000	30 x 50	2.20	3.08	0.199	0.109	**ECOS2EB102DA**	**ECEC2EB102DA**
	35 x 40	2.20	3.08	0.199	0.109	**ECOS2EB102EA**	**ECEC2EB102EA**
1200	35 x 45	2.30	3.22	0.166	0.099	**ECOS2EB122EA**	**ECEC2EB122EA**
1500	35 x 50	2.50	3.50	0.144	0.093	**ECOS2EB152EA**	**ECEC2EB152EA**
385 VDC Working, 425 VDC Surge							
82	22 x 30	0.64	0.90	2.022	0.809	**ECOS2TB820BA**	**ECEC2TB820BA**
100	22 x 30	0.69	0.97	1.658	0.663	**ECOS2TB101BA**	**ECEC2TB101BA**
	25 x 25	0.69	0.97	1.658	0.663	**ECOS2TB101CA**	**ECEC2TB101CA**
120	22 x 35	0.75	1.05	1.382	0.553	**ECOS2TB121BA**	**ECEC2TB121BA**
	25 x 30	0.75	1.05	1.382	0.553	**ECOS2TB121CA**	**ECEC2TB121CA**
150	22 x 40	0.82	1.15	1.105	0.442	**ECOS2TB151BA**	**ECEC2TB151BA**
	25 x 30	0.82	1.15	1.105	0.442	**ECOS2TB151CA**	**ECEC2TB151CA**
	30 x 25	0.82	1.15	1.105	0.442	**ECOS2TB151DA**	**ECEC2TB151DA**
180	22 x 45	0.95	1.33	0.921	0.368	**ECOS2TB181BA**	**ECEC2TB181BA**
	25 x 35	0.95	1.33	0.921	0.368	**ECOS2TB181CA**	**ECEC2TB181CA**
	30 x 30	0.95	1.33	0.921	0.368	**ECOS2TB181DA**	**ECEC2TB181DA**
220	25 x 45	1.10	1.54	0.754	0.301	**ECOS2TB221CA**	**ECEC2TB221CA**
	30 x 30	1.10	1.54	0.829	0.332	**ECOS2TB221DA**	**ECEC2TB221DA**
	35 x 25	1.10	1.54	0.829	0.332	**ECOS2TB221EA**	**ECEC2TB221EA**
270	25 x 50	1.20	1.68	0.675	0.270	**ECOS2TB271CA**	**ECEC2TB271CA**
	35 x 30	1.20	1.68	0.675	0.270	**ECOS2TB271EA**	**ECEC2TB271EA**
330	30 x 45	1.35	1.89	0.553	0.221	**ECOS2TB331DA**	**ECEC2TB331DA**
	35 x 35	1.35	1.89	0.553	0.221	**ECOS2TB331EA**	**ECEC2TB331EA**
390	30 x 50	1.55	2.17	0.510	0.204	**ECOS2TB391DA**	**ECEC2TB391DA**
470	35 x 45	1.75	2.45	0.423	0.212	**ECOS2TB471EA**	**ECEC2TB471EA**
560	35 x 50	1.80	2.52	0.355	0.178	**ECOS2TB561EA**	**ECEC2TB561EA**
400 VDC Working, 450 VDC Surge							
82	22 x 30	0.64	0.90	2.022	0.708	**ECOS2GB820BA**	**ECEC2GB820BA**
100	22 x 30	0.69	0.97	1.658	0.580	**ECOS2GB101BA**	**ECEC2GB101BA**

TS-HB Standard Ratings (continued)

Part numbers shown with 2 pins

Cap. (µF)	Size (mm) D x L	Max 85°C R.C. (A_{rms}) 120Hz	Max 85°C R.C. (A_{rms}) 10kHz~	20°C ESR (Ω, max.) 120Hz	20°C ESR (Ω, max.) 20kHz	Panasonic Part Number (By Terminal Length) 6.3mm Length Terminal	Panasonic Part Number (By Terminal Length) 4.0mm Length Terminal
400 VDC Working, 450 VDC Surge (continued)							
100	25 x 25	0.69	0.97	1.658	0.580	**ECOS2GB101CA**	**ECEC2GB101CA**
120	22 x 35	0.75	1.05	1.382	0.484	**ECOS2GB121BA**	**ECEC2GB121BA**
	25 x 30	0.75	1.05	1.382	0.484	**ECOS2GB121CA**	**ECEC2GB121CA**
150	22 x 40	0.82	1.15	1.105	0.387	**ECOS2GB151BA**	**ECEC2GB151BA**
	25 x 30	0.82	1.15	1.105	0.387	**ECOS2GB151CA**	**ECEC2GB151CA**
	30 x 25	0.82	1.15	1.105	0.387	**ECOS2GB151DA**	**ECEC2GB151DA**
180	22 x 45	0.95	1.33	0.921	0.322	**ECOS2GB181BA**	**ECEC2GB181BA**
	25 x 35	0.95	1.33	0.921	0.322	**ECOS2GB181CA**	**ECEC2GB181CA**
	30 x 30	0.95	1.33	0.921	0.322	**ECOS2GB181DA**	**ECEC2GB181DA**
220	25 x 45	1.10	1.54	0.754	0.264	**ECOS2GB221CA**	**ECEC2GB221CA**
	30 x 30	1.10	1.54	0.754	0.264	**ECOS2GB221DA**	**ECEC2GB221DA**
	35 x 25	1.10	1.54	0.754	0.264	**ECOS2GB221EA**	**ECEC2GB221EA**
270	25 x 50	1.20	1.68	0.614	0.215	**ECOS2GB271CA**	**ECEC2GB271CA**
	30 x 35	1.20	1.68	0.614	0.215	**ECOS2GB271DA**	**ECEC2GB271DA**
	35 x 30	1.20	1.68	0.614	0.215	**ECOS2GB271EA**	**ECEC2GB271EA**
330	30 x 45	1.35	1.89	0.502	0.201	**ECOS2GB331DA**	**ECEC2GB331DA**
	35 x 35	1.35	1.89	0.502	0.201	**ECOS2GB331EA**	**ECEC2GB331EA**
390	30 x 50	1.55	2.17	0.425	0.170	**ECOS2GB391DA**	**ECEC2GB391DA**
	35 x 40	1.55	2.17	0.425	0.170	**ECOS2GB391EA**	**ECEC2GB391EA**
470	35 x 45	1.75	2.45	0.353	0.141	**ECOS2GB471EA**	**ECEC2GB471EA**
560	35 x 50	1.80	2.52	0.296	0.118	**ECOS2GB561EA**	**ECEC2GB561EA**
420 VDC Working, 470 VDC Surge							
100	22 x 30	0.64	0.90	1.824	0.821	**ECOS2SB101BA**	**ECEC2SB101BA**
	25 x 25	0.64	0.90	1.824	0.821	**ECOS2SB101CA**	**ECEC2SB101CA**
120	22 x 35	0.72	1.01	1.520	0.684	**ECOS2SB121BA**	**ECEC2SB121BA**
	25 x 30	0.72	1.01	1.520	0.684	**ECOS2SB121CA**	**ECEC2SB121CA**
150	22 x 40	0.79	1.11	1.216	0.547	**ECOS2SB151BA**	**ECEC2SB151BA**
	25 x 30	0.79	1.11	1.216	0.547	**ECOS2SB151CA**	**ECEC2SB151CA**
	30 x 25	0.79	1.11	1.216	0.547	**ECOS2SB151DA**	**ECEC2SB151DA**
180	22 x 45	0.87	1.22	1.013	0.456	**ECOS2SB181BA**	**ECEC2SB181BA**
	25 x 40	0.87	1.22	1.013	0.456	**ECOS2SB181CA**	**ECEC2SB181CA**
	30 x 30	0.87	1.22	1.013	0.456	**ECOS2SB181DA**	**ECEC2SB181DA**
220	25 x 45	1.00	1.40	0.829	0.373	**ECOS2SB221CA**	**ECEC2SB221CA**
	30 x 30	1.00	1.40	0.829	0.373	**ECOS2SB221DA**	**ECEC2SB221DA**
	35 x 25	1.00	1.40	0.829	0.373	**ECOS2SB221EA**	**ECEC2SB221EA**
270	25 x 50	1.19	1.67	0.675	0.304	**ECOS2SB271CA**	**ECEC2SB271CA**
	30 x 40	1.19	1.67	0.675	0.304	**ECOS2SB271DA**	**ECEC2SB271DA**
	35 x 30	1.19	1.67	0.675	0.304	**ECOS2SB271EA**	**ECEC2SB271EA**
330	30 x 45	1.38	1.93	0.553	0.249	**ECOS2SB331DA**	**ECEC2SB331DA**
	35 x 35	1.38	1.93	0.553	0.249	**ECOS2SB331EA**	**ECEC2SB331EA**
390	30 x 50	1.55	2.17	0.468	0.210	**ECOS2SB391DA**	**ECEC2SB391DA**
	35 x 40	1.55	2.17	0.468	0.210	**ECOS2SB391EA**	**ECEC2SB391EA**
470	35 x 45	1.74	2.44	0.388	0.175	**ECOS2SB471EA**	**ECEC2SB471EA**
560	35 x 50	1.90	2.66	0.326	0.147	**ECOS2SB561EA**	**ECEC2SB561EA**
450 VDC Working, 500 VDC Surge							
82	22 x 30	0.56	0.78	2.022	0.708	**ECOS2WB820BA**	**ECEC2WB820BA**
	25 x 25	0.56	0.78	2.022	0.708	**ECOS2WB820CA**	**ECEC2WB820CA**
100	22 x 35	0.64	0.90	1.658	0.580	**ECOS2WB101BA**	**ECEC2WB101BA**
	25 x 30	0.64	0.90	1.658	0.580	**ECOS2WB101CA**	**ECEC2WB101CA**
120	22 x 40	0.72	1.01	1.382	0.484	**ECOS2WB121BA**	**ECEC2WB121BA**
	25 x 35	0.72	1.01	1.382	0.484	**ECOS2WB121CA**	**ECEC2WB121CA**
	30 x 25	0.72	1.01	1.382	0.484	**ECOS2WB121DA**	**ECEC2WB121DA**
150	22 x 50	0.79	1.11	1.105	0.387	**ECOS2WB151BA**	**ECEC2WB151BA**
	25 x 40	0.79	1.11	1.105	0.387	**ECOS2WB151CA**	**ECEC2WB151CA**
	30 x 30	0.79	1.11	1.105	0.387	**ECOS2WB151DA**	**ECEC2WB151DA**
	35 x 25	0.79	1.11	1.105	0.387	**ECOS2WB151EA**	**ECEC2WB151EA**
180	25 x 45	0.87	1.22	0.921	0.322	**ECOS2WB181CA**	**ECEC2WB181CA**
	30 x 35	0.87	1.22	0.921	0.322	**ECOS2WB181DA**	**ECEC2WB181DA**
220	25 x 50	1.00	1.40	0.754	0.264	**ECOS2WB221CA**	**ECEC2WB221CA**
	30 x 40	1.00	1.40	0.754	0.264	**ECOS2WB221DA**	**ECEC2WB221DA**
	35 x 30	1.00	1.40	0.754	0.264	**ECOS2WB221EA**	**ECEC2WB221EA**
270	30 x 45	1.19	1.67	0.614	0.215	**ECOS2WB271DA**	**ECEC2WB271DA**
	35 x 35	1.19	1.67	0.614	0.215	**ECOS2WB271EA**	**ECEC2WB271EA**
330	30 x 50	1.38	1.93	0.502	0.176	**ECOS2WB331DA**	**ECEC2WB331DA**
	35 x 40	1.38	1.93	0.502	0.176	**ECOS2WB331EA**	**ECEC2WB331EA**
390	35 x 45	1.55	2.17	0.425	0.149	**ECOS2WB391EA**	**ECEC2WB391EA**
470	35 x 50	1.74	2.44	0.353	0.123	**ECOS2WB471EA**	**ECEC2WB471EA**

T-HA Series *105°C, 3000 hours*

- ***Long Life - endurance rating of 3000 hours at 105°C***
- ***4 or 5 terminal mounting provides stability and keyed polarity***
- ***Extended higher CV ratings***

Rated Working Voltage:	16 ~ 250 VDC	350 ~ 450 VDC
Operating Temperature:	-40 ~ +105°C	-25 ~ +105°C
Nominal Capacitance:	820~250000µF	330~2200µF
Capacitance Tolerance:	± 20%	

Dissipation Factor (120 Hz, +20°C):

Working Voltage [V]:	16	25	35	50	63	80	100	160 ~ 450
Max. D.F. (%):	50	40	35	30	25	20	20	15

For capacitance values > 33000µF, add the value of: $\frac{\text{(rated cap. [µF] - 33000)}}{1000}$

Leakage Current: $3\sqrt{CV}$ (µA) max. after 5 minutes; *C = Capacitance in µF, V = WV*

Ripple Current Multipliers:

Frequency(Hz):	50	60	100~120	500	1k	10k
16~100WV:	0.93	0.95	1.0	1.05	1.08	1.15
160~450WV:	0.75	0.8	1.0	1.2	1.25	1.4

Ripple Current Ambient Temperature Factors**

Temperature (°C):	105°C	85°C	70°C	60°C	≤45°C
Multiplier:	1.0	1.7	2.0	2.2	2.35

Endurance: 3000 hours at +105°C with maximum specified ripple current (see page 4)

**Use of temperature ripple current multipliers may limit life to the hours specified for the maximum operating temperature.

Part Number System

E C E T | □ □ | A | □ □ □ | □ | □

Series Code: A

Capacitance Code: □ □ □

RoHS compliant PVC sleeve and top plate is standard.

Terminals	
Prefix	No. of Pins
ECET	4
ECEP	5

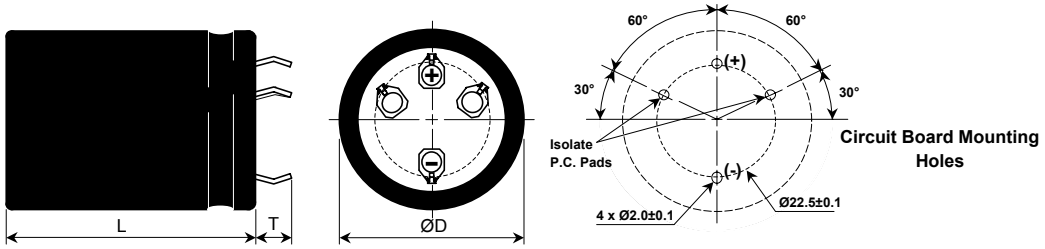
Voltage Code											
1C	1E	1V	1H	1J	1K	2A	2D	2E	2V	2G	2W
16	25	35	50	63	80	100	200	250	350	400	450

Diameter Code	
Dia.	Code
35	E
40	F
50	H

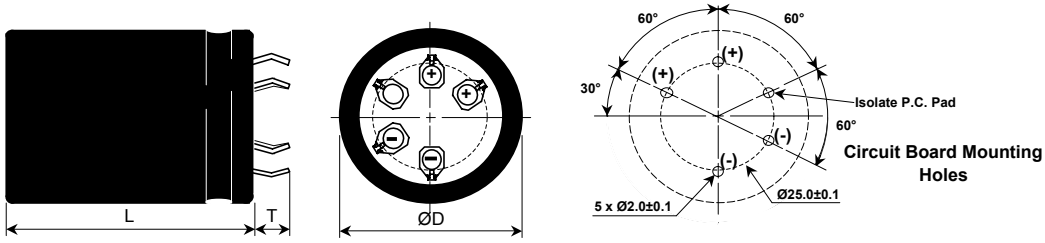
Terminal Suffix Code		
Terminal Length & Type	Standard Ratings	Extended Ratings
6.3mm Snap-in (Standard):	A	X
4.0mm Snap-in (4 pin only):	4	5
4.0mm Straight with Standoff:	E	Y

Dimensions in millimeters

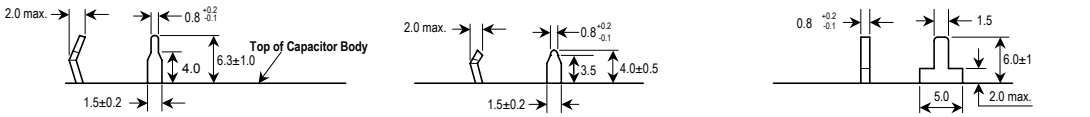
4 Pin Mounting Style



5 Pin Mounting Style



Pin Dimensions



T-HA Standard Ratings

Part numbers shown with 6.3mm Length Snap-in Terminals

Cap. (µF)	Size (mm) D x L	Max 105°C R.C. (A_{rms}) 120Hz	Max 105°C R.C. (A_{rms}) 10kHz~	20°C ESR (Ω, max.) 120Hz	20°C ESR (Ω, max.) 20kHz	Panasonic Part Number 4 Pin Style	Panasonic Part Number 5 Pin Style
16 VDC Working, 20 VDC Surge							
39000	35 x 40	5.10	5.87	0.022	0.020	**ECET1CA393EA**	
47000	40 x 40	5.50	6.33	0.020	0.018	**ECET1CA473FA**	**ECEP1CA473FA**
56000	35 x 50	6.00	6.90	0.019	0.017	**ECET1CA563EA**	
68000	35 x 63	6.62	7.61	0.017	0.015	**ECET1CA683EA**	
	40 x 50	7.29	8.38	0.015	0.014	**ECET1CA683FA**	**ECEP1CA683FA**
82000	40 x 63	7.66	8.81	0.017	0.015	**ECET1CA823FA**	**ECEP1CA823FA**
100000	35 x 80	8.03	9.23	0.015	0.013	**ECET1CA104EA**	
120000	35 x 105	8.71	10.02	0.014	0.012	**ECET1CA124EA**	
	40 x 80	8.79	10.11	0.014	0.012	**ECET1CA124FA**	**ECEP1CA124FA**
	50 x 50	9.02	10.37	0.015	0.014		**ECEP1CA124HA**
150000	40 x 105	9.88	11.36	0.013	0.012	**ECET1CA154FA**	**ECEP1CA154FA**
	50 x 63	10.15	11.67	0.014	0.013		**ECEP1CA154HA**
180000	50 x 80	11.02	12.67	0.013	0.012		**ECEP1CA184HA**
220000	50 x 92	11.71	13.47	0.012	0.011		**ECEP1CA224HA**
250000	50 x 105	12.31	14.16	0.011	0.010		**ECEP1CA254HA**
25 VDC Working, 32 VDC Surge							
27000	35 x 40	4.80	5.52	0.018	0.017	**ECET1EA273EA**	
33000	35 x 50	5.50	6.33	0.018	0.016	**ECET1EA333EA**	
	40 x 40	5.50	6.33	0.018	0.016	**ECET1EA333FA**	**ECEP1EA333FA**
47000	35 x 63	6.56	7.54	0.017	0.015	**ECET1EA473EA**	
	40 x 50	6.47	7.44	0.015	0.014	**ECET1EA473FA**	**ECEP1EA473FA**
56000	35 x 80	7.25	8.34	0.015	0.013	**ECET1EA563EA**	
	40 x 63	7.17	8.25	0.014	0.013	**ECET1EA563FA**	**ECEP1EA563FA**
82000	35 x 105	8.58	9.87	0.013	0.012	**ECET1EA823EA**	
	40 x 80	8.68	9.98	0.013	0.012	**ECET1EA823FA**	**ECEP1EA823FA**
	50 x 50	9.20	10.58	0.016	0.015		**ECEP1EA823HA**
100000	40 x 105	9.76	11.22	0.012	0.010	**ECET1EA104FA**	**ECEP1EA104FA**
	50 x 63	10.02	11.52	0.015	0.013		**ECEP1EA104HA**
120000	50 x 80	10.93	12.57	0.013	0.012		**ECEP1EA124HA**
150000	50 x 92	11.70	13.46	0.012	0.011		**ECEP1EA154HA**
180000	50 x 105	12.42	14.28	0.010	0.009		**ECEP1EA184HA**
35 VDC Working, 44 VDC Surge							
18000	35 x 40	4.30	4.95	0.028	0.021	**ECET1VA183EA**	
22000	35 x 50	5.00	5.75	0.023	0.017	**ECET1VA223EA**	
	40 x 40	5.00	5.75	0.023	0.017	**ECET1VA223FA**	**ECEP1VA223FA**
27000	35 x 63	5.53	6.36	0.025	0.018	**ECET1VA273EA**	
	40 x 50	5.44	6.26	0.020	0.015	**ECET1VA273FA**	**ECEP1VA273FA**
33000	40 x 63	6.61	7.60	0.019	0.014	**ECET1VA333FA**	**ECEP1VA333FA**
39000	35 x 80	6.52	7.50	0.019	0.014	**ECET1VA393EA**	
47000	35 x 105	8.07	9.28	0.017	0.013	**ECET1VA473EA**	
	40 x 80	7.79	8.96	0.018	0.013	**ECET1VA473FA**	**ECEP1VA473FA**
	50 x 50	8.25	9.49	0.021	0.016		**ECEP1VA473HA**
56000	50 x 63	9.07	10.43	0.019	0.014		**ECEP1VA563HA**
68000	40 x 105	9.27	10.66	0.016	0.012	**ECET1VA683FA**	**ECEP1VA683FA**
	50 x 80	10.07	11.58	0.017	0.013		**ECEP1VA683HA**
82000	50 x 92	10.89	12.52	0.015	0.011		**ECEP1VA823HA**
100000	50 x 105	11.75	13.51	0.013	0.010		**ECEP1VA104HA**
50 VDC Working, 63 VDC Surge							
10000	35 x 40	4.00	4.60	0.033	0.025	**ECET1HA103EA**	
15000	35 x 50	4.80	5.52	0.022	0.018	**ECET1HA153EA**	
	40 x 40	4.80	5.52	0.022	0.018	**ECET1HA153FA**	**ECEP1HA153FA**
18000	35 x 63	5.27	6.06	0.020	0.016	**ECET1HA183EA**	
22000	40 x 50	5.15	5.92	0.016	0.013	**ECET1HA223FA**	**ECEP1HA223FA**
27000	35 x 80	6.16	7.08	0.015	0.012	**ECET1HA273EA**	
	40 x 63	6.05	6.96	0.015	0.012	**ECET1HA273FA**	**ECEP1HA273FA**
33000	35 x 105	7.23	8.31	0.013	0.010	**ECET1HA333EA**	
	50 x 50	7.75	8.91	0.018	0.014		**ECEP1HA333HA**
39000	40 x 80	7.55	8.68	0.014	0.011	**ECET1HA393FA**	**ECEP1HA393FA**
	50 x 63	8.40	9.66	0.016	0.013		**ECEP1HA393HA**
47000	40 x 105	8.18	9.41	0.012	0.010	**ECET1HA473FA**	**ECEP1HA473FA**
	50 x 80	9.19	10.57	0.014	0.011		**ECEP1HA473HA**
56000	50 x 92	9.79	11.26	0.012	0.009		**ECEP1HA563HA**

T-HA Standard Ratings (continued)

Part numbers shown with 6.3mm Length Snap-in Terminals

Cap. (µF)	Size (mm) D x L	Max 105°C R.C. (A_{rms}) 120Hz	Max 105°C R.C. (A_{rms}) 10kHz~	20°C ESR (Ω, max.) 120Hz	20°C ESR (Ω, max.) 20kHz	Panasonic Part Number 4 Pin Style	Panasonic Part Number 5 Pin Style
50 VDC Working, 63 VDC Surge (continued)							
68000	50 x 105	10.42	11.98	0.011	0.009		ECEP1HA683HA
63 VDC Working, 79 VDC Surge							
6800	35 x 40	3.60	4.14	0.049	0.037	ECET1JA682EA	
12000	35 x 50	4.40	5.06	0.028	0.023	ECET1JA123EA	
	40 x 40	4.52	5.20	0.030	0.026	ECET1JA123FA	ECEP1JA123FA
15000	35 x 63	4.92	5.66	0.024	0.021	ECET1JA153EA	
	40 x 50	4.80	5.52	0.027	0.023	ECET1JA153FA	ECEP1JA153FA
18000	35 x 80	5.79	6.66	0.022	0.019	ECET1JA183EA	
	40 x 63	5.39	6.20	0.023	0.020	ECET1JA183FA	ECEP1JA183FA
22000	50 x 50	6.76	7.77	0.019	0.016		ECEP1JA223HA
27000	35 x 105	6.53	7.51	0.017	0.014	ECET1JA273EA	
	40 x 80	6.59	7.58	0.017	0.014	ECET1JA273FA	ECEP1JA273FA
	50 x 63	7.34	8.44	0.017	0.014		ECEP1JA273HA
33000	50 x 80	8.00	9.20	0.015	0.013		ECEP1JA333HA
39000	40 x 105	7.53	8.66	0.014	0.012	ECET1JA393FA	ECEP1JA393FA
	50 x 92	8.48	9.75	0.014	0.012		ECEP1JA393HA
47000	50 x 105	8.99	10.34	0.012	0.010		ECEP1JA473HA
80 VDC Working, 105 VDC Surge							
4700	35 x 40	3.30	3.80	0.049	0.037	ECET1KA472EA	
6800	35 x 50	3.90	4.49	0.041	0.031	ECET1KA682EA	
	40 x 40	3.90	4.49	0.041	0.031	ECET1KA682FA	ECEP1KA682FA
8200	35 x 63	4.39	5.05	0.036	0.027	ECET1KA822EA	
	40 x 50	4.29	4.93	0.036	0.027	ECET1KA822FA	ECEP1KA822FA
10000	35 x 80	4.88	5.61	0.031	0.024	ECET1KA103EA	
	40 x 63	4.73	5.44	0.033	0.025	ECET1KA103FA	ECEP1KA103FA
12000	50 x 50	6.03	6.93	0.035	0.026		ECEP1KA123HA
15000	35 x 105	6.13	7.05	0.024	0.018	ECET1KA153EA	
	40 x 80	5.97	6.87	0.025	0.019	ECET1KA153FA	ECEP1KA153FA
	50 x 63	6.65	7.65	0.028	0.021		ECEP1KA153HA
18000	50 x 80	7.29	8.38	0.026	0.019		ECEP1KA183HA
22000	40 x 105	6.95	7.99	0.019	0.014	ECET1KA223FA	ECEP1KA223FA
	50 x 92	7.83	9.00	0.022	0.016		ECEP1KA223HA
27000	50 x 105	8.38	9.64	0.018	0.014		ECEP1KA273HA
100 VDC Working, 125 VDC Surge							
3300	35 x 40	3.20	3.68	0.075	0.053	ECET2AA332EA	
4700	35 x 50	3.80	4.37	0.053	0.040	ECET2AA472EA	
	40 x 40	3.80	4.37	0.053	0.040	ECET2AA472FA	ECEP2AA472FA
5600	35 x 63	4.06	4.67	0.044	0.033	ECET2AA562EA	
6800	40 x 50	4.57	5.26	0.037	0.027	ECET2AA682FA	ECEP2AA682FA
8200	35 x 80	5.15	5.92	0.030	0.023	ECET2AA822EA	
	40 x 63	5.02	5.77	0.030	0.023	ECET2AA822FA	ECEP2AA822FA
	50 x 50	6.14	7.06	0.030	0.023		ECEP2AA822HA
10000	35 x 105	6.38	7.34	0.025	0.019	ECET2AA103EA	
12000	40 x 80	6.44	7.41	0.021	0.016	ECET2AA123FA	ECEP2AA123FA
	50 x 63	7.17	8.25	0.022	0.017		ECEP2AA123HA
15000	40 x 105	7.37	8.48	0.017	0.012	ECET2AA153FA	ECEP2AA153FA
	50 x 80	8.01	9.21	0.019	0.014		ECEP2AA153HA
18000	50 x 92	8.64	9.94	0.017	0.012		ECEP2AA183HA
22000	50 x 105	9.32	10.72	0.015	0.011		ECEP2AA223HA
200 VDC Working, 250 VDC Surge							
1200	35 x 40	2.50	3.50	0.133	0.066	ECET2DA122EA	
1800	40 x 40	2.70	3.78	0.129	0.077	ECET2DA182FA	ECEP2DA182FA
2200	35 x 50	2.90	4.06	0.098	0.059	ECET2DA222EA	
2700	35 x 63	3.65	5.11	0.080	0.048	ECET2DA272EA	
	40 x 50	3.55	4.97	0.086	0.052	ECET2DA272FA	ECEP2DA272FA
3300	35 x 80	4.52	6.33	0.065	0.039	ECET2DA332EA	
	40 x 63	4.40	6.16	0.070	0.042	ECET2DA332FA	ECEP2DA332FA
	50 x 50	5.20	7.28	0.075	0.045		ECEP2DA332HA
3900	50 x 50	5.65	7.91	0.064	0.038		ECEP2DA392HX
	50 x 63	5.90	8.26	0.064	0.038		ECEP2DA392HA
4700	35 x 105	5.70	7.98	0.046	0.028	ECET2DA472EA	
	40 x 80	5.76	8.06	0.049	0.030	ECET2DA472FA	ECEP2DA472FA
	50 x 63	6.48	9.07	0.053	0.032		ECEP2DA472HX

T-HA Standard Ratings (continued)

Part numbers shown with 6.3mm Length Snap-in Terminals

Cap. (µF)	Size (mm) D x L	Max 105°C R.C. (A_{rms}) 120Hz	Max 105°C R.C. (A_{rms}) 10kHz~	20°C ESR (Ω, max.) 120Hz	20°C ESR (Ω, max.) 20kHz	Panasonic Part Number 4 Pin Style	Panasonic Part Number 5 Pin Style
200 VDC Working, 250 VDC Surge (continued)							
4700	50 x 80	6.82	9.55	0.053	0.032		ECEP2DA472HA
5600	40 x 105	6.76	9.46	0.041	0.025	ECET2DA562FA	ECEP2DA562FA
	50 x 92	7.68	10.75	0.044	0.027		ECEP2DA562HA
6800	50 x 92	8.46	11.84	0.034	0.020		ECEP2DA682HX
	50 x 105	8.71	12.19	0.034	0.020		ECEP2DA682HA
8200	50 x 105	9.56	13.38	0.028	0.016		ECEP2DA822HA
250 VDC Working, 300 VDC Surge							
820	35 x 40	2.20	3.08	0.243	0.133	ECET2EA821EA	
1200	35 x 50	2.30	3.22	0.180	0.117	ECET2EA122EA	
	40 x 40	2.66	3.72	0.180	0.117	ECET2EA122FA	ECEP2EA122FA
1500	35 x 63	2.57	3.60	0.144	0.093	ECET2EA152EA	
1800	40 x 50	3.15	4.41	0.120	0.078	ECET2EA182FA	ECEP2EA182FA
2200	35 x 80	3.75	5.25	0.098	0.064	ECET2EA222EA	
	40 x 63	3.68	5.15	0.098	0.064	ECET2EA222FA	ECEP2EA222FA
	50 x 50	4.35	6.09	0.098	0.064		ECEP2EA222HA
2700	35 x 105	4.80	6.72	0.080	0.052	ECET2EA272EA	
	50 x 50	4.80	6.72	0.080	0.052		ECEP2EA272HX
	50 x 63	4.98	6.97	0.080	0.052		ECEP2EA272HA
3300	35 x 105	4.86	6.80	0.065	0.042	ECET2EA332EA	
	40 x 80	4.86	6.80	0.065	0.042	ECET2EA332FA	ECEP2EA332FA
	50 x 63	5.48	7.67	0.065	0.042		ECEP2EA332HA
3900	40 x 105	5.61	7.85	0.055	0.036	ECET2EA392FA	ECEP2EA392FA
	50 x 80	6.10	8.54	0.055	0.036		ECEP2EA392HA
4300	50 x 92	6.67	9.34	0.050	0.033		ECEP2EA432HA
4700	50 x 92	6.93	9.70	0.046	0.030		ECEP2EA472HX
	50 x 105	7.03	9.84	0.046	0.030		ECEP2EA472HA
5600	50 x 105	7.67	10.74	0.039	0.025		ECEP2EA562HA
350 VDC Working, 400 VDC Surge							
470	35 x 40	2.00	2.80	0.459	0.183	ECET2VA471EA	
680	35 x 50	2.15	3.01	0.317	0.127	ECET2VA681EA	
	40 x 40	2.30	3.22	0.317	0.127	ECET2VA681FA	ECEP2VA681FA
820	35 x 63	2.65	3.71	0.263	0.105	ECET2VA821EA	
	40 x 50	2.65	3.71	0.263	0.105	ECET2VA821FA	ECEP2VA821FA
1000	50 x 50	3.56	4.98	0.216	0.086		ECEP2VA102HA
1200	35 x 80	3.22	4.51	0.180	0.072	ECET2VA122EA	
	40 x 63	3.22	4.51	0.180	0.072	ECET2VA122FA	ECEP2VA122FA
1500	35 x 105	4.78	6.69	0.144	0.057	ECET2VA152EA	
	40 x 80	3.75	5.25	0.144	0.057	ECET2VA152FA	ECEP2VA152FA
	50 x 63	4.16	5.82	0.144	0.057		ECEP2VA152HA
1800	40 x 105	5.23	7.32	0.120	0.048	ECET2VA182FA	ECEP2VA182FA
	50 x 80	5.69	7.97	0.120	0.048		ECEP2VA182HA
2000	50 x 92	6.34	8.88	0.108	0.043		ECEP2VA202HA
2200	50 x 105	7.03	9.84	0.098	0.039		ECEP2VA222HA
400 VDC Working, 450 VDC Surge							
390	35 x 45	1.55	2.17	0.425	0.170	ECET2GA391EA	
470	40 x 40	1.75	2.45	0.353	0.141	ECET2GA471FA	ECEP2GA471FA
560	35 x 50	1.80	2.52	0.296	0.118	ECET2GA561EA	
680	40 x 50	2.17	3.04	0.244	0.098	ECET2GA681FA	ECEP2GA681FA
820	35 x 63	2.44	3.42	0.202	0.081	ECET2GA821EA	
	40 x 50	2.58	3.61	0.202	0.081	ECET2GA821FA	ECEP2GA821FA
	50 x 50	3.15	4.41	0.202	0.081		ECEP2GA821HA
1000	35 x 80	3.00	4.20	0.166	0.066	ECET2GA102EA	
	40 x 63	3.00	4.20	0.166	0.066	ECET2GA102FA	ECEP2GA102FA
	50 x 50	3.45	4.83	0.166	0.066		ECEP2GA102HA
1200	35 x 105	3.75	5.25	0.138	0.055	ECET2GA122EA	
	40 x 80	3.79	5.31	0.138	0.055	ECET2GA122FA	ECEP2GA122FA
	50 x 63	4.22	5.91	0.152	0.061		ECEP2GA122HA
1500	40 x 105	4.81	6.73	0.111	0.044	ECET2GA152FA	ECEP2GA152FA
	50 x 80	5.22	7.31	0.122	0.049		ECEP2GA152HA
1600	50 x 92	5.69	7.97	0.114	0.046		ECEP2GA162HA

T-HA Standard Ratings (continued)

Part numbers shown with 6.3mm Length Snap-in Terminals

Cap. (µF)	Size (mm) D x L	Max 105°C R.C. (A_{rms}) 120Hz	Max 105°C R.C. (A_{rms}) 10kHz~	20°C ESR (Ω, max.) 120Hz	20°C ESR (Ω, max.) 20kHz	Panasonic Part Number 4 Pin Style	Panasonic Part Number 5 Pin Style
400 VDC Working, 450 VDC Surge (continued)							
1800	40 x 105	5.06	7.08	0.101	0.041	**ECET2GA182FA**	**ECEP2GA182FA**
	50 x 80	5.50	7.70	0.101	0.041		**ECEP2GA182HX**
	50 x 105	6.48	9.07	0.101	0.041		**ECEP2GA182HA**
2200	50 x 92	6.55	9.17	0.082	0.033		**ECEP2GA222HA**
450 VDC Working, 500 VDC Surge							
330	35 x 40	1.37	1.92	0.502	0.176	**ECET2WA331EA**	
470	35 x 50	1.74	2.44	0.353	0.123	**ECET2WA471EA**	
	40 x 40	1.68	2.35	0.353	0.123	**ECET2WA471FA**	**ECEP2WA471FA**
560	35 x 63	2.15	3.01	0.296	0.104	**ECET2WA561EA**	
	40 x 50	2.10	2.94	0.296	0.104	**ECET2WA561FA**	**ECEP2WA561FA**
680	40 x 63	2.50	3.50	0.244	0.085	**ECET2WA681FA**	**ECEP2WA681FA**
	50 x 50	2.90	4.06	0.244	0.085		**ECEP2WA681HA**
820	35 x 80	2.70	3.78	0.202	0.071	**ECET2WA821EA**	
	50 x 50	3.42	4.79	0.222	0.079		**ECEP2WA821HX**
	50 x 63	3.42	4.79	0.222	0.078		**ECEP2WA821HA**
1000	35 x 105	3.47	4.86	0.166	0.058	**ECET2WA102EA**	
	40 x 80	3.50	4.90	0.166	0.058	**ECET2WA102FA**	**ECEP2WA102FA**
	50 x 63	3.74	5.24	0.172	0.065		**ECEP2WA102HA**
1200	40 x 105	4.33	6.06	0.138	0.048	**ECET2WA122FA**	**ECEP2WA122FA**
	50 x 80	4.70	6.58	0.152	0.053		**ECEP2WA122HA**
1300	50 x 92	5.18	7.25	0.140	0.049		**ECEP2WA132HA**
1500	50 x 105	6.03	8.44	0.122	0.043		**ECEP2WA152HA**
1800	50 x 105	6.23	8.72	0.101	0.036		**ECEP2WA182HA**

TS-EE Series *105°C, 3000 hours*

- ***Highest ripple current capability for demanding inverter applications***
- ***Suitable for high ambient temperatures and continuous operation***
- ***RoHS compliant PVC and RoHS compliant PET sleeve options***

Rated Working Voltage:	200 ~ 250 VDC	400 ~ 450 VDC
Operating Temperature:	-40 ~ +105°C	-25 ~ +105°C
Nominal Capacitance:	220~1800 µF	75 ~ 560µF
Capacitance Tolerance:	± 20%	

Dissipation Factor (120 Hz, +20°C):

WV (V):	200~400	450
D.F.(%):	15 max.	20 max.

Leakage Current: 3√CV (µA) max. after 5 minutes; *C = Capacitance in µF, V = WV*

Ripple Current Multipliers:

Frequency(Hz):	50	60	100~120	500	1k	10k
200~250WV:	0.75	0.80	1.0	1.20	1.25	1.30
400~450WV:	0.75	0.80	1.0	1.20	1.25	1.40

Ripple Current Ambient Temperature Factors*			
Temperature (°C):	105°C	85°C	≤70°C
Multiplier:	1.0	1.42	1.6

Endurance: 3000 hours at +105°C with maximum specified ripple current (see page4)

*Use of temperature ripple current multipliers may limit life to the hours specified for the maximum operating temperature.

Part Number System

E	E	T	E	E	□	□	□	□	□	□
Common Code			Series Code				Capacitance Code			

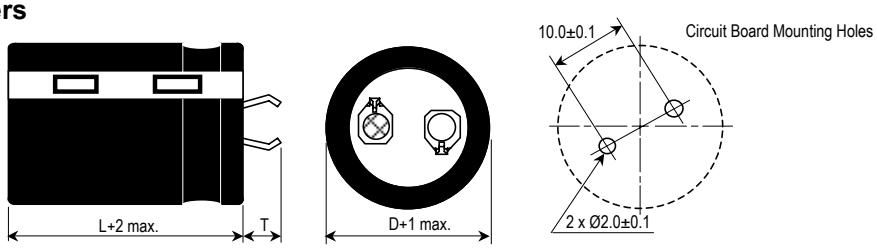
Sleeving Options: See Part Number listings

Voltage Code			
2D	2E	2G	2W
200	250	400	450

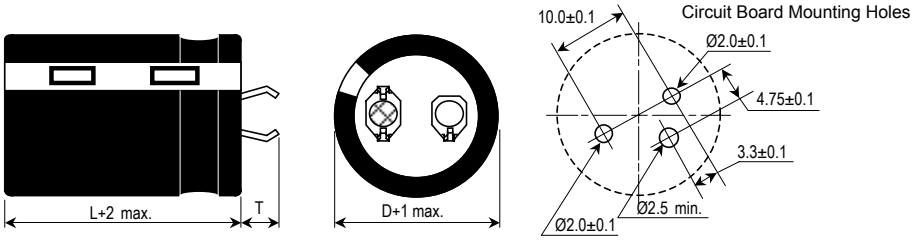
Diameter / Terminal Code		
# of pins:	2	3
pin length "T":	4.0±0.5mm	4.0±0.5mm
Diameter 22mm	H	P
25mm	J	Q
30mm	K	R
35mm	L	S

Dimensions in millimeters

2 Pin Mounting Style



3 Pin Mounting Style



Pin Dimensions

4mm Length: Standard on 2 and 3 Pin Mounting Styles

6.3mm Length: Available on 2 Pin Mounting Style Only

TS-EE Standard Ratings

Part numbers shown with 2 pins and 4.0mm length terminals

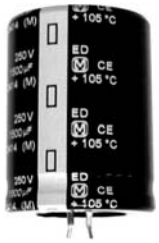
Cap. (μF)	Size (mm) D x L	Max 105°C R.C. (A_{rms}) 120Hz	Max 105°C R.C. (A_{rms}) 10kHz~	20°C ESR (Ω, max.) 120Hz	20°C ESR (Ω, max.) 20kHz	Panasonic Part Number (By Sleeving Style) PVC with Top Plate	Panasonic Part Number (By Sleeving Style) PET without Top Plate
200 VDC Working, 250 VDC Surge							
300	22 x 25	1.70	2.21	0.829	0.592	**EETEE2D301HA**	**EETEE2D301HJ**
390	22 x 30	2.17	2.82	0.637	0.455	**EETEE2D391HA**	**EETEE2D391HJ**
590	22 x 40	2.30	2.99	0.421	0.300	**EETEE2D591HA**	**EETEE2D591HJ**
	25 x 30	2.30	2.99	0.421	0.300	**EETEE2D591JA**	**EETEE2D591JJ**
700	22 x 45	2.65	3.45	0.355	0.254	**EETEE2D701HA**	**EETEE2D701HJ**
	25 x 35	2.65	3.45	0.355	0.254	**EETEE2D701JA**	**EETEE2D701JJ**
590	30 x 25	3.08	4.00	0.421	0.300	**EETEE2D591KA**	**EETEE2D591KJ**
800	22 x 50	3.08	4.00	0.311	0.222	**EETEE2D801HA**	**EETEE2D801HJ**
	25 x 40	3.08	4.00	0.311	0.222	**EETEE2D801JA**	**EETEE2D801JJ**
	30 x 30	3.48	4.52	0.311	0.222	**EETEE2D801KA**	**EETEE2D801KJ**
	35 x 25	3.48	4.52	0.311	0.222	**EETEE2D801LA**	**EETEE2D801LJ**
1000	25 x 50	3.48	4.52	0.249	0.178	**EETEE2D102JA**	**EETEE2D102JJ**
	30 x 35	3.98	5.17	0.249	0.178	**EETEE2D102KA**	**EETEE2D102KJ**
	35 x 30	4.20	5.46	0.249	0.178	**EETEE2D102LA**	**EETEE2D102LJ**
1200	30 x 40	4.20	5.46	0.209	0.149	**EETEE2D122KA**	**EETEE2D122KJ**
1300	30 x 45	4.62	6.01	0.191	0.136	**EETEE2D132KA**	**EETEE2D132KJ**
1500	35 x 40	4.62	6.01	0.166	0.118	**EETEE2D152LA**	**EETEE2D152LJ**
	30 x 50	5.22	6.79	0.166	0.118	**EETEE2D152KA**	**EETEE2D152KJ**
1800	35 x 45	5.22	6.79	0.138	0.099	**EETEE2D182LA**	**EETEE2D182LJ**
250 VDC Working, 300 VDC Surge							
220	22 × 25	1.43	1.86	1.130	0.807	**EETEE2E221HA**	**EETEE2E221HJ**
300	22 × 30	1.56	2.03	0.829	0.592	**EETEE2E301HA**	**EETEE2E301HJ**
	25 × 25	1.70	2.21	0.829	0.592	**EETEE2E301JA**	**EETEE2E301JJ**
370	22 × 35	1.70	2.21	0.672	0.480	**EETEE2E371HA**	**EETEE2E371HJ**
420	22 × 40	1.82	2.37	0.592	0.423	**EETEE2E421HA**	**EETEE2E421HJ**
	25 × 30	1.82	2.37	0.592	0.423	**EETEE2E421JA**	**EETEE2E421JJ**
520	22 × 45	2.00	2.60	0.478	0.342	**EETEE2E521HA**	**EETEE2E521HJ**
	25 × 35	2.00	2.60	0.478	0.342	**EETEE2E521JA**	**EETEE2E521JJ**
420	30 × 25	2.20	2.86	0.592	0.423	**EETEE2E421KA**	**EETEE2E421KJ**
590	22 × 50	2.30	2.99	0.421	0.301	**EETEE2E591HA**	**EETEE2E591HJ**
	25 × 40	2.30	2.99	0.421	0.301	**EETEE2E591JA**	**EETEE2E591JJ**
	30 × 30	2.50	3.25	0.421	0.301	**EETEE2E591KA**	**EETEE2E591KJ**
	35 × 25	2.50	3.25	0.421	0.301	**EETEE2E591LA**	**EETEE2E591LJ**
730	25 × 45	2.70	3.51	0.341	0.243	**EETEE2E731JA**	**EETEE2E731JJ**
	30 × 35	3.00	3.90	0.341	0.243	**EETEE2E731KA**	**EETEE2E731KJ**
	35 × 30	3.00	3.90	0.341	0.243	**EETEE2E731LA**	**EETEE2E731LJ**
860	30 × 40	3.30	4.29	0.289	0.207	**EETEE2E861KA**	**EETEE2E861KJ**
1000	30 × 45	3.45	4.49	0.249	0.178	**EETEE2E102KA**	**EETEE2E102KJ**
1300	35 × 45	3.75	4.88	0.191	0.137	**EETEE2E132LA**	**EETEE2E132LJ**
1500	35 × 50	4.05	5.27	0.166	0.118	**EETEE2E152LA**	**EETEE2E152LJ**
400 VDC Working, 450 VDC Surge							
100	22 × 25	0.95	1.33	2.487	1.776	**EETEE2G101HA**	**EETEE2G101HJ**
120	22 × 30	1.22	1.71	2.072	1.480	**EETEE2G121HA**	**EETEE2G121HJ**
150	22 × 35	1.33	1.86	1.658	1.184	**EETEE2G151HA**	**EETEE2G151HJ**
180	25 × 30	1.33	1.86	1.382	0.987	**EETEE2G181JA**	**EETEE2G181JJ**
220	22 × 45	1.55	2.17	1.130	0.807	**EETEE2G221HA**	**EETEE2G221HJ**
	25 × 35	1.55	2.17	1.130	0.807	**EETEE2G221JA**	**EETEE2G221JJ**
180	30 × 25	1.68	2.35	1.382	0.987	**EETEE2G181KA**	**EETEE2G181KJ**
270	22 × 50	1.68	2.35	0.921	0.658	**EETEE2G271HA**	**EETEE2G271HJ**
	25 × 40	1.68	2.35	0.921	0.658	**EETEE2G271JA**	**EETEE2G271JJ**
220	30 × 30	1.79	2.51	1.130	0.807	**EETEE2G221KA**	**EETEE2G221KJ**
250	35 × 25	1.79	2.51	0.995	0.711	**EETEE2G251LA**	**EETEE2G251LJ**
320	25 × 45	1.90	2.66	0.777	0.555	**EETEE2G321JA**	**EETEE2G321JJ**
270	30 × 35	2.12	2.97	0.921	0.658	**EETEE2G271KA**	**EETEE2G271KJ**
370	25 × 50	2.12	2.97	0.672	0.480	**EETEE2G371JA**	**EETEE2G371JJ**
330	30 × 40	2.33	3.26	0.754	0.538	**EETEE2G331KA**	**EETEE2G331KJ**
	35 × 30	2.33	3.26	0.754	0.538	**EETEE2G331LA**	**EETEE2G331LJ**
390	30 × 45	2.52	3.53	0.638	0.455	**EETEE2G391KA**	**EETEE2G391KJ**
	35 × 35	2.52	3.53	0.638	0.455	**EETEE2G391LA**	**EETEE2G391LJ**
470	30 × 50	2.85	3.99	0.529	0.378	**EETEE2G471KA**	**EETEE2G471KJ**
	35 × 40	2.85	3.99	0.529	0.378	**EETEE2G471LA**	**EETEE2G471LJ**
560	35 × 45	3.18	4.45	0.444	0.317	**EETEE2G561LA**	**EETEE2G561LJ**

TS-EE Standard Ratings (continued)

Part numbers shown with 2 pins and 4.0mm length terminals

Cap. (μF)	Size (mm) D x L	Max 105°C R.C. (A_{rms}) 120Hz	Max 105°C R.C. (A_{rms}) 10kHz~	20°C ESR (Ω, max.) 120Hz	20°C ESR (Ω, max.) 20kHz	Panasonic Part Number (By Sleeving Style) PVC with Top Plate	Panasonic Part Number (By Sleeving Style) PET without Top Plate
450 VDC Working, 500 VDC Surge							
75	22 × 25	0.83	1.16	4.421	3.158	**EETEE2W750HA**	**EETEE2W750HJ**
100	22 × 30	0.95	1.33	3.316	2.368	**EETEE2W101HA**	**EETEE2W101HJ**
	25 × 25	0.95	1.33	3.316	2.368	**EETEE2W101JA**	**EETEE2W101JJ**
120	22 × 35	1.15	1.61	2.763	1.974	**EETEE2W121HA**	**EETEE2W121HJ**
150	22 × 40	1.22	1.71	2.210	1.579	**EETEE2W151HA**	**EETEE2W151HJ**
120	25 × 30	1.22	1.71	2.763	1.974	**EETEE2W121JA**	**EETEE2W121JJ**
	30 × 25	1.22	1.71	2.763	1.974	**EETEE2W121KA**	**EETEE2W121KJ**
180	22 × 45	1.35	1.89	1.842	1.316	**EETEE2W181HA**	**EETEE2W181HJ**
	25 × 40	1.35	1.89	1.842	1.316	**EETEE2W181JA**	**EETEE2W181JJ**
220	25 × 45	1.55	2.17	1.507	1.077	**EETEE2W221JA**	**EETEE2W221JJ**
180	30 × 30	1.60	2.24	1.842	1.316	**EETEE2W181KA**	**EETEE2W181KJ**
	35 × 25	1.60	2.24	1.842	1.316	**EETEE2W181LA**	**EETEE2W181LJ**
270	25 × 50	1.74	2.44	1.228	0.877	**EETEE2W271JA**	**EETEE2W271JJ**
	30 × 40	1.90	2.66	1.228	0.877	**EETEE2W271KA**	**EETEE2W271KJ**
250	35 × 30	1.90	2.66	1.228	0.877	**EETEE2W251LA**	**EETEE2W251LJ**
330	30 × 45	2.20	3.08	1.005	0.718	**EETEE2W331KA**	**EETEE2W331KJ**
300	35 × 35	2.20	3.08	1.105	0.789	**EETEE2W301LA**	**EETEE2W301LJ**
390	30 × 50	2.40	3.36	0.850	0.607	**EETEE2W391KA**	**EETEE2W391KJ**
330	35 × 40	2.40	3.36	1.005	0.718	**EETEE2W331LA**	**EETEE2W331LJ**
390	35 × 45	2.61	3.65	0.850	0.607	**EETEE2W391LA**	**EETEE2W391LJ**
470	35 × 50	2.85	3.99	0.705	0.504	**EETEE2W471LA**	**EETEE2W471LJ**

TS-ED Series *105°C, 3000 hours*



- ***High ripple current capability for demanding inverter applications***
- ***2 and 3 pin versions available***
- ***RoHS compliant PVC and RoHS compliant PET sleeve options***

Rated Working Voltage:	200 ~ 250 VDC	400 ~ 450 VDC
Operating Temperature:	-40 ~ +105°C	-25 ~ +105°C
Nominal Capacitance:	220~2200 µF	56 ~ 560µF
Capacitance Tolerance:	± 20%	
Dissipation Factor: (120 Hz, +20°C)	15% max.	
Leakage Current:	3√CV (µA) max. after 5 minutes; *C = Capacitance in µF, V = WV*	

Ripple Current Multipliers:

Frequency(Hz):	50	60	100~120	500	1k	10k
16~100WV:	0.93	0.95	1.0	1.05	1.08	1.15
160~450WV:	0.75	0.8	1.0	1.2	1.25	1.4

Ripple Current Ambient Temperature Factors*

Temperature (°C):	105°C	85°C	70°C	60°C	≤45°C
Multiplier:	1.0	1.7	2.0	2.2	2.35

Endurance:	3000 hours at +105°C with maximum specified ripple current (see page4)

*Use of temperature ripple current multipliers may limit life to the hours specified for the maximum operating temperature.

Part Number System

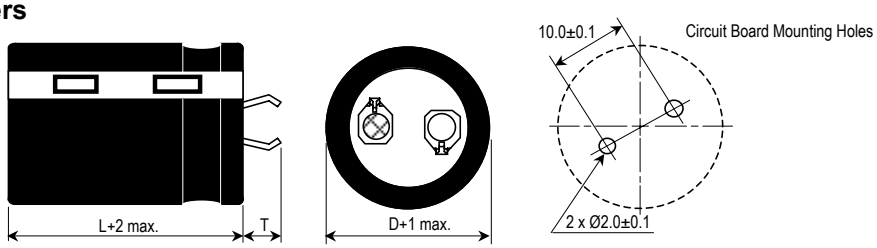
E E T — Common Code; E D — Series Code; □□ — Voltage Code; □□□ — Capacitance Code; □ — Diameter; □ — Sleeving Options: See Part Number listings

Voltage Code				
2D	2E	2G	2S	2W
200	250	400	420	450

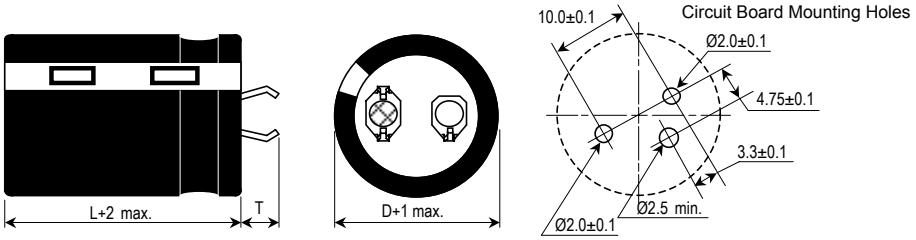
Diameter	Diameter / Terminal Code		
# of pins:	2	3	2
pin length "T":	4.0±0.5mm	4.0±0.5mm	6.3±1mm
22mm	H	P	B
25mm	J	Q	C
30mm	K	R	D
35mm	L	S	E

Dimensions in millimeters

2 Pin Mounting Style



3 Pin Mounting Style



Pin Dimensions

4mm Length: Standard on 2 and 3 Pin Mounting Styles

6.3mm Length: Available on 2 Pin Mounting Style Only

TS-ED Standard Ratings

Part numbers shown with 2 pins and 4.0mm length terminals

Cap. (µF)	Size (mm) D x L	Max 105°C R.C. (A_{rms}) 120Hz	Max 105°C R.C. (A_{rms}) 10kHz~	20°C ESR (Ω, max.) 120Hz	20°C ESR (Ω, max.) 20kHz	Panasonic Part Number (By Sleeving Style) PVC with Top Plate	Panasonic Part Number (By Sleeving Style) PET without Top Plate
200 VDC Working, 250 VDC Surge							
270	22 x 25	1.42	2.03	0.553	0.249	**EETED2D271HA**	**EETED2D271HJ**
330	22 x 30	1.56	2.23	0.452	0.203	**EETED2D331HA**	**EETED2D331HJ**
390	22 x 30	1.71	2.44	0.383	0.172	**EETED2D391HA**	**EETED2D391HJ**
	25 x 25	1.71	2.44	0.383	0.172	**EETED2D391JA**	**EETED2D391JJ**
470	22 x 35	1.85	2.64	0.317	0.143	**EETED2D471HA**	**EETED2D471HJ**
	25 x 30	1.85	2.64	0.317	0.143	**EETED2D471JA**	**EETED2D471JJ**
560	22 x 40	2.14	3.05	0.266	0.120	**EETED2D561HA**	**EETED2D561HJ**
	25 x 30	2.14	3.05	0.266	0.120	**EETED2D561JA**	**EETED2D561JJ**
	30 x 25	2.14	3.05	0.266	0.120	**EETED2D561KA**	**EETED2D561KJ**
680	22 x 45	2.42	3.45	0.219	0.099	**EETED2D681HA**	**EETED2D681HJ**
	25 x 35	2.42	3.45	0.219	0.099	**EETED2D681JA**	**EETED2D681JJ**
	30 x 30	2.42	3.45	0.219	0.099	**EETED2D681KA**	**EETED2D681KJ**
820	22 x 50	2.63	3.76	0.182	0.082	**EETED2D821HA**	**EETED2D821HJ**
	25 x 40	2.63	3.76	0.182	0.082	**EETED2D821JA**	**EETED2D821JJ**
	30 x 30	2.63	3.76	0.182	0.082	**EETED2D821KA**	**EETED2D821KJ**
	35 x 25	2.63	3.76	0.182	0.091	**EETED2D821LA**	**EETED2D821LJ**
1000	25 x 45	2.84	4.06	0.149	0.067	**EETED2D102JA**	**EETED2D102JJ**
	30 x 35	2.84	4.06	0.149	0.067	**EETED2D102KA**	**EETED2D102KJ**
	35 x 30	2.84	4.06	0.149	0.067	**EETED2D102LA**	**EETED2D102LJ**
1200	30 x 40	3.13	4.47	0.124	0.062	**EETED2D122KA**	**EETED2D122KJ**
	35 x 35	3.13	4.47	0.124	0.062	**EETED2D122LA**	**EETED2D122LJ**
1500	30 x 50	3.56	5.08	0.099	0.050	**EETED2D152KA**	**EETED2D152KJ**
	35 x 40	3.56	5.08	0.099	0.050	**EETED2D152LA**	**EETED2D152LJ**
1800	35 x 45	3.84	5.48	0.083	0.041	**EETED2D182LA**	**EETED2D182LJ**
2200	35 x 50	4.12	5.89	0.068	0.033	**EETED2D222LA**	**EETED2D222LJ**
250 VDC Working, 300 VDC Surge							
220	22 x 30	1.28	1.83	0.678	0.305	**EETED2E221HA**	**EETED2E221HJ**
270	22 x 30	1.42	2.03	0.553	0.249	**EETED2E271HA**	**EETED2E271HJ**
	25 x 25	1.42	2.03	0.553	0.249	**EETED2E271JA**	**EETED2E271JJ**
330	22 x 35	1.64	2.34	0.452	0.203	**EETED2E331HA**	**EETED2E331HJ**
	25 x 30	1.56	2.23	0.452	0.203	**EETED2E331JA**	**EETED2E331JJ**
390	22 x 40	1.72	2.45	0.383	0.172	**EETED2E391HA**	**EETED2E391HJ**
	25 x 30	1.71	2.44	0.383	0.172	**EETED2E391JA**	**EETED2E391JJ**
	30 x 25	1.71	2.44	0.383	0.172	**EETED2E391KA**	**EETED2E391KJ**
470	22 x 45	1.85	2.64	0.317	0.143	**EETED2E471HA**	**EETED2E471HJ**
	25 x 35	1.85	2.64	0.317	0.143	**EETED2E471JA**	**EETED2E471JJ**
	30 x 30	1.85	2.64	0.317	0.143	**EETED2E471KA**	**EETED2E471KJ**
560	25 x 40	2.14	3.05	0.266	0.120	**EETED2E561JA**	**EETED2E561JJ**
	30 x 30	2.14	3.05	0.266	0.120	**EETED2E561KA**	**EETED2E561KJ**
	35 x 25	2.14	3.05	0.266	0.133	**EETED2E561LA**	**EETED2E561LJ**
680	25 x 45	2.42	3.45	0.219	0.099	**EETED2E681JA**	**EETED2E681JJ**
	30 x 35	2.42	3.45	0.219	0.099	**EETED2E681KA**	**EETED2E681KJ**
	35 x 30	2.42	3.45	0.219	0.110	**EETED2E681LA**	**EETED2E681LJ**
820	30 x 40	2.63	3.76	0.182	0.082	**EETED2E821KA**	**EETED2E821KJ**
	35 x 35	2.63	3.76	0.182	0.091	**EETED2E821LA**	**EETED2E821LJ**
1000	30 x 50	2.84	4.06	0.149	0.067	**EETED2E102KA**	**EETED2E102KJ**
	35 x 40	2.84	4.06	0.149	0.067	**EETED2E102LA**	**EETED2E102LJ**
1200	35 x 45	3.13	4.47	0.124	0.062	**EETED2E122LA**	**EETED2E122LJ**
1500	35 x 50	3.56	5.08	0.099	0.050	**EETED2E152LA**	**EETED2E152LJ**
400 VDC Working, 450 VDC Surge							
82	22 x 25	0.80	1.14	1.617	0.728	**EETED2G820HA**	**EETED2G820HJ**
100	22 x 30	0.91	1.30	1.326	0.597	**EETED2G101HA**	**EETED2G101HJ**
	25 x 25	0.91	1.30	1.326	0.597	**EETED2G101JA**	**EETED2G101JJ**
120	22 x 35	1.02	1.46	1.105	0.497	**EETED2G121HA**	**EETED2G121HJ**
	25 x 30	1.02	1.46	1.105	0.497	**EETED2G121JA**	**EETED2G121JJ**
150	22 x 40	1.07	1.53	0.884	0.398	**EETED2G151HA**	**EETED2G151HJ**
	25 x 30	1.07	1.53	0.884	0.398	**EETED2G151JA**	**EETED2G151JJ**
	30 x 25	1.07	1.53	0.884	0.398	**EETED2G151KA**	**EETED2G151KJ**
180	22 x 45	1.12	1.60	0.737	0.332	**EETED2G181HA**	**EETED2G181HJ**
	25 x 35	1.12	1.60	0.737	0.332	**EETED2G181JA**	**EETED2G181JJ**
	30 x 30	1.12	1.60	0.737	0.332	**EETED2G181KA**	**EETED2G181KJ**
220	22 x 50	1.42	2.03	0.603	0.271	**EETED2G221HA**	**EETED2G221HJ**
	25 x 40	1.42	2.03	0.603	0.271	**EETED2G221JA**	**EETED2G221JJ**
	30 x 30	1.42	2.03	0.603	0.271	**EETED2G221KA**	**EETED2G221KJ**

TS-ED Standard Ratings (continued)

Part numbers shown with 2 pins and 4.0mm length terminals

Cap. (µF)	Size (mm) D x L	Max 105°C R.C. (A_{rms}) 120Hz	Max 105°C R.C. (A_{rms}) 10kHz~	20°C ESR (Ω, max.) 120Hz	20°C ESR (Ω, max.) 20kHz	Panasonic Part Number (By Sleeving Style) PVC with Top Plate	Panasonic Part Number (By Sleeving Style) PET without Top Plate
400 VDC Working, 450 VDC Surge (continued)							
220	35 x 25	1.42	2.03	0.603	0.271	**EETED2G221LA**	**EETED2G221LJ**
270	25 x 45	1.56	2.23	0.491	0.221	**EETED2G271JA**	**EETED2G271JJ**
	30 x 35	1.56	2.23	0.491	0.221	**EETED2G271KA**	**EETED2G271KJ**
	35 x 30	1.56	2.23	0.491	0.221	**EETED2G271LA**	**EETED2G271LJ**
330	30 x 40	1.71	2.44	0.402	0.181	**EETED2G331KA**	**EETED2G331KJ**
	35 x 30	1.71	2.44	0.402	0.181	**EETED2G331LA**	**EETED2G331LJ**
390	30 x 45	1.85	2.64	0.340	0.153	**EETED2G391KA**	**EETED2G391KJ**
	35 x 35	1.85	2.64	0.340	0.153	**EETED2G391LA**	**EETED2G391LJ**
470	35 x 40	2.01	2.87	0.282	0.127	**EETED2G471LA**	**EETED2G471LJ**
560	35 x 45	2.35	3.36	0.237	0.107	**EETED2G561LA**	**EETED2G561LJ**
420 VDC Working, 470 VDC Surge							
68	22 x 25	0.67	0.95	1.950	0.878	**EETED2S680HA**	**EETED2S680HJ**
82	22 x 30	0.76	1.08	1.617	0.728	**EETED2S820HA**	**EETED2S820HJ**
	25 x 25	0.76	1.08	1.617	0.728	**EETED2S820JA**	**EETED2S820JJ**
100	22 x 30	0.80	1.14	1.326	0.597	**EETED2S101HA**	**EETED2S101HJ**
	25 x 25	0.80	1.14	1.326	0.597	**EETED2S101JA**	**EETED2S101JJ**
120	22 x 35	0.91	1.30	1.105	0.497	**EETED2S121HA**	**EETED2S121HJ**
	25 x 30	0.91	1.30	1.105	0.497	**EETED2S121JA**	**EETED2S121JJ**
150	22 x 40	1.02	1.46	0.884	0.398	**EETED2S151HA**	**EETED2S151HJ**
	25 x 35	1.02	1.46	0.884	0.398	**EETED2S151JA**	**EETED2S151JJ**
	30 x 25	1.02	1.46	0.884	0.398	**EETED2S151KA**	**EETED2S151KJ**
180	22 x 45	1.07	1.53	0.737	0.332	**EETED2S181HA**	**EETED2S181HJ**
	25 x 40	1.07	1.53	0.737	0.332	**EETED2S181JA**	**EETED2S181JJ**
	30 x 30	1.07	1.53	0.737	0.332	**EETED2S181KA**	**EETED2S181KJ**
	35 x 25	1.07	1.53	0.737	0.332	**EETED2S181LA**	**EETED2S181LJ**
220	25 x 45	1.12	1.60	0.603	0.271	**EETED2S221JA**	**EETED2S221JJ**
	30 x 35	1.12	1.60	0.603	0.271	**EETED2S221KA**	**EETED2S221KJ**
	35 x 30	1.12	1.60	0.603	0.271	**EETED2S221LA**	**EETED2S221LJ**
270	25 x 50	1.42	2.03	0.491	0.221	**EETED2S271JA**	**EETED2S271JJ**
	30 x 40	1.42	2.03	0.491	0.221	**EETED2S271KA**	**EETED2S271KJ**
	35 x 30	1.42	2.03	0.491	0.221	**EETED2S271LA**	**EETED2S271LJ**
330	30 x 45	1.72	2.45	0.402	0.181	**EETED2S331KA**	**EETED2S331KJ**
	35 x 35	1.72	2.45	0.402	0.181	**EETED2S331LA**	**EETED2S331LJ**
390	30 x 50	1.85	2.64	0.340	0.153	**EETED2S391KA**	**EETED2S391KJ**
	35 x 40	1.85	2.64	0.340	0.153	**EETED2S391LA**	**EETED2S391LJ**
470	35 x 45	1.97	2.82	0.282	0.127	**EETED2S471LA**	**EETED2S471LJ**
450 VDC Working, 500 VDC Surge							
56	22 x 25	0.67	0.95	2.368	1.066	**EETED2W560HA**	**EETED2W560HJ**
68	22 x 30	0.76	1.08	1.950	0.878	**EETED2W680HA**	**EETED2W680HJ**
	25 x 25	0.76	1.08	1.950	0.878	**EETED2W680JA**	**EETED2W680JJ**
82	22 x 30	0.80	1.14	1.617	0.728	**EETED2W820HA**	**EETED2W820HJ**
	25 x 25	0.80	1.14	1.617	0.728	**EETED2W820JA**	**EETED2W820JJ**
100	22 x 35	0.91	1.30	1.326	0.597	**EETED2W101HA**	**EETED2W101HJ**
	25 x 30	0.91	1.30	1.326	0.597	**EETED2W101JA**	**EETED2W101JJ**
120	22 x 40	1.02	1.46	1.105	0.497	**EETED2W121HA**	**EETED2W121HJ**
	25 x 35	1.02	1.46	1.105	0.497	**EETED2W121JA**	**EETED2W121JJ**
	30 x 25	1.02	1.46	1.105	0.497	**EETED2W121KA**	**EETED2W121KJ**
150	22 x 45	1.07	1.53	0.884	0.398	**EETED2W151HA**	**EETED2W151HJ**
	25 x 40	1.07	1.53	0.884	0.398	**EETED2W151JA**	**EETED2W151JJ**
	30 x 30	1.07	1.53	0.884	0.398	**EETED2W151KA**	**EETED2W151KJ**
	35 x 25	1.07	1.53	0.884	0.398	**EETED2W151LA**	**EETED2W151LJ**
180	22 x 50	1.12	1.60	0.737	0.332	**EETED2W181HA**	**EETED2W181HJ**
	25 x 40	1.12	1.60	0.737	0.332	**EETED2W181JA**	**EETED2W181JJ**
	30 x 30	1.12	1.60	0.737	0.332	**EETED2W181KA**	**EETED2W181KJ**
	35 x 25	1.12	1.60	0.737	0.332	**EETED2W181LA**	**EETED2W181LJ**
220	25 x 45	1.42	2.03	0.603	0.271	**EETED2W221JA**	**EETED2W221JJ**
	30 x 35	1.42	2.03	0.603	0.271	**EETED2W221KA**	**EETED2W221KJ**
	35 x 30	1.42	2.03	0.603	0.271	**EETED2W221LA**	**EETED2W221LJ**
270	30 x 40	1.72	2.45	0.491	0.221	**EETED2W271KA**	**EETED2W271KJ**
	35 x 35	1.72	2.45	0.491	0.221	**EETED2W271LA**	**EETED2W271LJ**
330	30 x 50	1.85	2.64	0.402	0.181	**EETED2W331KA**	**EETED2W331KJ**
	35 x 40	1.85	2.64	0.402	0.181	**EETED2W331LA**	**EETED2W331LJ**
390	35 x 40	1.97	2.82	0.340	0.153	**EETED2W391LA**	**EETED2W391LJ**
470	35 x 50	2.47	3.53	0.282	0.127	**EETED2W471LA**	**EETED2W471LJ**

TS-XB Series *105°C, 7000 hours*

- ***Designed for long life industrial applications***
- ***2 and 3 pin versions available***
- ***RoHS compliant PVC and RoHS compliant PET sleeve options***

Rated Working Voltage:	160 ~ 250 VDC	315 ~ 450 VDC
Operating Temperature:	-40 ~ +105°C	-25 ~ +105°C
Nominal Capacitance:	180~2200 µF	39 ~ 680µF
Capacitance Tolerance:	± 20%	
Dissipation Factor: (120 Hz, +20°C)	15% max.	
Leakage Current:	3√CV (µA) max. after 5 minutes; *C = Capacitance in µF, V = WV*	

Ripple Current Multipliers:

Frequency(Hz):	50	60	100~120	500	1k	10k
16~100WV:	0.93	0.95	1.0	1.05	1.08	1.15
160~450WV:	0.75	0.8	1.0	1.2	1.25	1.4

Ripple Current Ambient Temperature Factors*

Temperature (°C):	105°C	85°C	70°C	60°C	≤45°C
Multiplier:	1.0	1.7	2.0	2.2	2.35

Endurance:	7000 hours at +105°C with maximum specified ripple current (see page4)

*Use of temperature ripple current multipliers may limit life to the hours specified for the maximum operating temperature.

Part Number System

E	E	T	X	B	□	□	□	□	□	□	□
Common Code			Series Code		Capacitance Code						

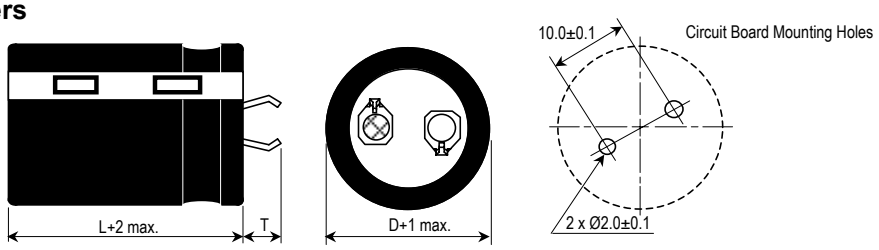
Sleeving Options: See Part Number listings

Voltage Code							
2C	2P	2D	2E	2F	2V	2G	2W
160	180	200	250	315	350	400	450

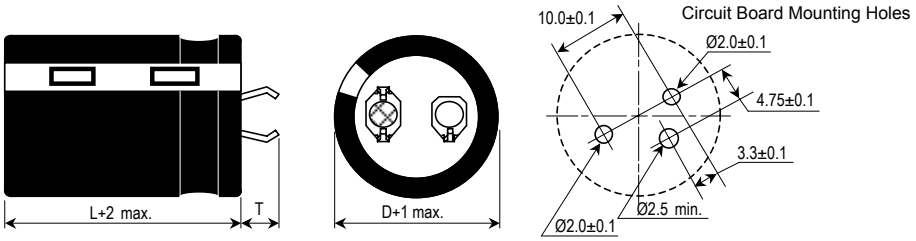
Diameter / Terminal Code			
# of pins:	2	3	2
pin length "T":	4.0±0.5mm	4.0±0.5mm	6.3±1mm
Diameter 22mm	H	P	B
25mm	J	Q	C
30mm	K	R	D
35mm	L	S	E

Dimensions in millimeters

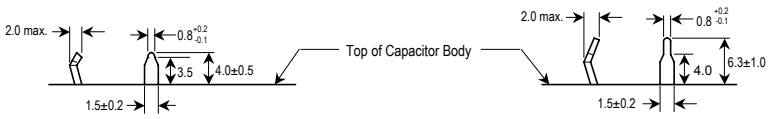
2 Pin Mounting Style



3 Pin Mounting Style



Pin Dimensions



4mm Length: Standard on 2 and 3 Pin Mounting Styles

6.3mm Length: Available on 2 Pin Mounting Style Only

TS-XB Standard Ratings

Part numbers shown with 2 pins and 4.0mm length terminals

Cap. (µF)	Size (mm) D x L	Max 105°C R.C. (A_{rms}) 120Hz	Max 105°C R.C. (A_{rms}) 10kHz~	20°C ESR (Ω, max.) 120Hz	20°C ESR (Ω, max.) 20kHz	Panasonic Part Number (By Sleeving Style) PVC with Top Plate	Panasonic Part Number (By Sleeving Style) PET without Top Plate
160 VDC Working, 200 VDC Surge							
270	22 x 25	1.10	1.54	0.655	0.295	**EETXB2C271HA**	**EETXB2C271HJ**
330	22 x 30	1.20	1.68	0.536	0.241	**EETXB2C331HA**	**EETXB2C331HJ**
390	22 x 30	1.30	1.82	0.453	0.204	**EETXB2C391HA**	**EETXB2C391HJ**
	25 x 25	1.30	1.82	0.453	0.204	**EETXB2C391JA**	**EETXB2C391JJ**
470	22 x 35	1.40	1.96	0.376	0.169	**EETXB2C471HA**	**EETXB2C471HJ**
	25 x 30	1.40	1.96	0.376	0.169	**EETXB2C471JA**	**EETXB2C471JJ**
560	22 x 40	1.50	2.10	0.316	0.142	**EETXB2C561HA**	**EETXB2C561HJ**
	25 x 30	1.50	2.10	0.316	0.142	**EETXB2C561JA**	**EETXB2C561JJ**
	30 x 25	1.50	2.10	0.316	0.142	**EETXB2C561KA**	**EETXB2C561KJ**
680	22 x 45	1.70	2.38	0.260	0.117	**EETXB2C681HA**	**EETXB2C681HJ**
	25 x 35	1.70	2.38	0.260	0.117	**EETXB2C681JA**	**EETXB2C681JJ**
	30 x 30	1.70	2.38	0.260	0.117	**EETXB2C681KA**	**EETXB2C681KJ**
820	25 x 40	2.00	2.80	0.216	0.097	**EETXB2C821JA**	**EETXB2C821JJ**
	30 x 30	2.00	2.80	0.216	0.097	**EETXB2C821KA**	**EETXB2C821KJ**
1000	25 x 45	2.20	3.08	0.177	0.080	**EETXB2C102JA**	**EETXB2C102JJ**
	30 x 35	2.20	3.08	0.177	0.080	**EETXB2C102KA**	**EETXB2C102KJ**
1200	25 x 50	2.30	3.22	0.160	0.080	**EETXB2C122JA**	**EETXB2C122JJ**
	30 x 40	2.30	3.22	0.160	0.080	**EETXB2C122KA**	**EETXB2C122KJ**
	35 x 35	2.30	3.22	0.160	0.080	**EETXB2C122LA**	**EETXB2C122LJ**
1500	30 x 45	2.50	3.50	0.128	0.064	**EETXB2C152KA**	**EETXB2C152KJ**
	35 x 35	2.50	3.50	0.128	0.064	**EETXB2C152LA**	**EETXB2C152LJ**
1800	30 x 50	2.70	3.78	0.115	0.057	**EETXB2C182KA**	**EETXB2C182KJ**
	35 x 40	2.70	3.78	0.115	0.057	**EETXB2C182LA**	**EETXB2C182LJ**
2200	35 x 50	2.90	4.06	0.094	0.056	**EETXB2C222LA**	**EETXB2C222LJ**
180 VDC Working, 225 VDC Surge							
220	22 x 25	1.00	1.40	0.804	0.36	**EETXB2P221HA**	**EETXB2P221HJ**
270	22 x 25	1.10	1.54	0.655	0.29	**EETXB2P271HA**	**EETXB2P271HJ**
330	22 x 30	1.20	1.68	0.536	0.24	**EETXB2P331HA**	**EETXB2P331HJ**
	25 x 25	1.20	1.68	0.536	0.24	**EETXB2P331JA**	**EETXB2P331JJ**
390	22 x 30	1.30	1.82	0.453	0.20	**EETXB2P391HA**	**EETXB2P391HJ**
	25 x 25	1.30	1.82	0.453	0.20	**EETXB2P391JA**	**EETXB2P391JJ**
470	22 x 35	1.40	1.96	0.376	0.17	**EETXB2P471HA**	**EETXB2P471HJ**
	25 x 30	1.40	1.96	0.376	0.17	**EETXB2P471JA**	**EETXB2P471JJ**
	30 x 25	1.40	1.96	0.376	0.17	**EETXB2P471KA**	**EETXB2P471KJ**
560	22 x 40	1.50	2.10	0.316	0.14	**EETXB2P561HA**	**EETXB2P561HJ**
	25 x 35	1.50	2.10	0.316	0.14	**EETXB2P561JA**	**EETXB2P561JJ**
	30 x 25	1.50	2.10	0.316	0.14	**EETXB2P561KA**	**EETXB2P561KJ**
680	22 x 50	1.70	2.38	0.260	0.12	**EETXB2P681HA**	**EETXB2P681HJ**
	25 x 40	1.70	2.38	0.260	0.12	**EETXB2P681JA**	**EETXB2P681JJ**
	30 x 30	1.70	2.38	0.260	0.12	**EETXB2P681KA**	**EETXB2P681KJ**
820	25 x 45	2.00	2.80	0.216	0.10	**EETXB2P821JA**	**EETXB2P821JJ**
	30 x 35	2.00	2.80	0.234	0.11	**EETXB2P821KA**	**EETXB2P821KJ**
	35 x 30	2.00	2.80	0.234	0.11	**EETXB2P821LA**	**EETXB2P821LJ**
1000	30 x 40	2.20	3.08	0.192	0.10	**EETXB2P102KA**	**EETXB2P102KJ**
	35 x 30	2.20	3.08	0.192	0.10	**EETXB2P102LA**	**EETXB2P102LJ**
1200	30 x 45	2.30	3.22	0.160	0.08	**EETXB2P122KA**	**EETXB2P122KJ**
	35 x 35	2.30	3.22	0.172	0.09	**EETXB2P122LA**	**EETXB2P122LJ**
1500	30 x 50	2.50	3.50	0.138	0.07	**EETXB2P152KA**	**EETXB2P152KJ**
	35 x 40	2.50	3.50	0.138	0.07	**EETXB2P152LA**	**EETXB2P152LJ**
1800	35 x 45	2.70	3.78	0.115	0.07	**EETXB2P182LA**	**EETXB2P182LJ**
2200	35 x 50	2.90	4.06	0.094	0.06	**EETXB2P222LA**	**EETXB2P222LJ**
200 VDC Working, 250 VDC Surge							
220	22 x 25	1.00	1.40	0.804	0.36	**EETXB2D221HA**	**EETXB2D221HJ**
270	22 x 30	1.10	1.54	0.655	0.29	**EETXB2D271HA**	**EETXB2D271HJ**
	25 x 25	1.10	1.54	0.655	0.29	**EETXB2D271JA**	**EETXB2D271JJ**
330	22 x 30	1.20	1.68	0.536	0.24	**EETXB2D331HA**	**EETXB2D331HJ**
	25 x 25	1.20	1.68	0.536	0.24	**EETXB2D331JA**	**EETXB2D331JJ**
390	22 x 35	1.30	1.82	0.453	0.20	**EETXB2D391HA**	**EETXB2D391HJ**
	25 x 30	1.30	1.82	0.453	0.20	**EETXB2D391JA**	**EETXB2D391JJ**
	30 x 25	1.30	1.82	0.453	0.20	**EETXB2D391KA**	**EETXB2D391KJ**
470	22 x 40	1.40	1.96	0.376	0.17	**EETXB2D471HA**	**EETXB2D471HJ**
	25 x 35	1.40	1.96	0.376	0.17	**EETXB2D471JA**	**EETXB2D471JJ**
	30 x 30	1.40	1.96	0.376	0.17	**EETXB2D471KA**	**EETXB2D471KJ**
560	22 x 45	1.50	2.10	0.316	0.14	**EETXB2D561HA**	**EETXB2D561HJ**

TS-XB Standard Ratings (continued)

Part numbers shown with 2 pins and 4.0mm length terminals

Cap. (µF)	Size (mm) D x L	Max 105°C R.C. (A_{rms}) 120Hz	Max 105°C R.C. (A_{rms}) 10kHz~	20°C ESR (Ω, max.) 120Hz	20°C ESR (Ω, max.) 20kHz	Panasonic Part Number (By Sleeving Style) PVC with Top Plate	Panasonic Part Number (By Sleeving Style) PET without Top Plate
200 VDC Working, 250 VDC Surge (continued)							
560	25 x 35	1.50	2.10	0.316	0.14	**EETXB2D561JA**	**EETXB2D561JJ**
	30 x 30	1.50	2.10	0.316	0.14	**EETXB2D561KA**	**EETXB2D561KJ**
680	25 x 40	1.70	2.38	0.260	0.12	**EETXB2D681JA**	**EETXB2D681JJ**
	30 x 35	1.70	2.38	0.260	0.12	**EETXB2D681KA**	**EETXB2D681KJ**
820	25 x 50	2.00	2.80	0.216	0.10	**EETXB2D821JA**	**EETXB2D821JJ**
	30 x 40	2.00	2.80	0.216	0.10	**EETXB2D821KA**	**EETXB2D821KJ**
	35 x 30	2.00	2.80	0.216	0.10	**EETXB2D821LA**	**EETXB2D821LJ**
1000	30 x 45	2.20	3.08	0.177	0.09	**EETXB2D102KA**	**EETXB2D102KJ**
	35 x 35	2.20	3.08	0.177	0.09	**EETXB2D102LA**	**EETXB2D102LJ**
1200	30 x 50	2.30	3.22	0.160	0.08	**EETXB2D122KA**	**EETXB2D122KJ**
	35 x 40	2.30	3.22	0.160	0.08	**EETXB2D122LA**	**EETXB2D122LJ**
1500	35 x 50	2.50	3.50	0.128	0.06	**EETXB2D152LA**	**EETXB2D152LJ**
250 VDC Working, 300 VDC Surge							
180	22 x 30	0.90	1.26	0.819	0.41	**EETXB2E181HA**	**EETXB2E181HJ**
	25 x 25	0.90	1.26	0.819	0.41	**EETXB2E181JA**	**EETXB2E181JJ**
220	22 x 30	1.00	1.40	0.670	0.33	**EETXB2E221HA**	**EETXB2E221HJ**
	25 x 25	1.00	1.40	0.670	0.33	**EETXB2E221JA**	**EETXB2E221JJ**
270	22 x 35	1.10	1.54	0.546	0.27	**EETXB2E271HA**	**EETXB2E271HJ**
	25 x 30	1.10	1.54	0.546	0.27	**EETXB2E271JA**	**EETXB2E271JJ**
	30 x 25	1.10	1.54	0.546	0.27	**EETXB2E271KA**	**EETXB2E271KJ**
330	22 x 40	1.20	1.68	0.447	0.22	**EETXB2E331HA**	**EETXB2E331HJ**
	25 x 35	1.20	1.68	0.447	0.22	**EETXB2E331JA**	**EETXB2E331JJ**
	30 x 25	1.20	1.68	0.447	0.22	**EETXB2E331KA**	**EETXB2E331KJ**
390	22 x 45	1.30	1.82	0.378	0.19	**EETXB2E391HA**	**EETXB2E391HJ**
	25 x 35	1.30	1.82	0.378	0.19	**EETXB2E391JA**	**EETXB2E391JJ**
	30 x 30	1.30	1.82	0.378	0.19	**EETXB2E391KA**	**EETXB2E391KJ**
470	25 x 45	1.40	1.96	0.314	0.16	**EETXB2E471JA**	**EETXB2E471JJ**
	30 x 35	1.40	1.96	0.314	0.16	**EETXB2E471KA**	**EETXB2E471KJ**
	35 x 30	1.40	1.96	0.314	0.16	**EETXB2E471LA**	**EETXB2E471LJ**
560	25 x 50	1.50	2.10	0.263	0.13	**EETXB2E561JA**	**EETXB2E561JJ**
	30 x 35	1.50	2.10	0.263	0.13	**EETXB2E561KA**	**EETXB2E561KJ**
	35 x 30	1.50	2.10	0.263	0.13	**EETXB2E561LA**	**EETXB2E561LJ**
680	30 x 45	1.70	2.38	0.217	0.12	**EETXB2E681KA**	**EETXB2E681KJ**
	35 x 35	1.70	2.38	0.217	0.12	**EETXB2E681LA**	**EETXB2E681LJ**
820	30 x 50	2.00	2.80	0.180	0.10	**EETXB2E821KA**	**EETXB2E821KJ**
	35 x 40	2.00	2.80	0.180	0.10	**EETXB2E821LA**	**EETXB2E821LJ**
1000	35 x 45	2.20	3.08	0.177	0.10	**EETXB2E102LA**	**EETXB2E102LJ**
1200	35 x 50	2.30	3.22	0.147	0.09	**EETXB2E122LA**	**EETXB2E122LJ**
315 VDC Working, 365 VDC Surge							
82	22 x 25	0.64	0.90	1.797	0.90	**EETXB2F820HA**	**EETXB2F820HJ**
100	22 x 30	0.69	0.97	1.474	0.74	**EETXB2F101HA**	**EETXB2F101HJ**
120	22 x 30	0.75	1.05	1.228	0.61	**EETXB2F121HA**	**EETXB2F121HJ**
	25 x 25	0.75	1.05	1.228	0.61	**EETXB2F121JA**	**EETXB2F121JJ**
150	22 x 35	0.82	1.15	0.982	0.49	**EETXB2F151HA**	**EETXB2F151HJ**
	25 x 30	0.82	1.15	0.982	0.49	**EETXB2F151JA**	**EETXB2F151JJ**
	30 x 25	0.82	1.15	0.982	0.49	**EETXB2F151KA**	**EETXB2F151KJ**
180	22 x 40	0.90	1.26	0.819	0.41	**EETXB2F181HA**	**EETXB2F181HJ**
	25 x 35	0.90	1.26	0.819	0.41	**EETXB2F181JA**	**EETXB2F181JJ**
	30 x 25	0.90	1.26	0.819	0.41	**EETXB2F181KA**	**EETXB2F181KJ**
220	22 x 45	1.00	1.40	0.737	0.37	**EETXB2F221HA**	**EETXB2F221HJ**
	25 x 40	1.00	1.40	0.737	0.37	**EETXB2F221JA**	**EETXB2F221JJ**
	30 x 30	1.00	1.40	0.737	0.37	**EETXB2F221KA**	**EETXB2F221KJ**
270	25 x 45	1.10	1.54	0.600	0.30	**EETXB2F271JA**	**EETXB2F271JJ**
	30 x 35	1.10	1.54	0.600	0.30	**EETXB2F271KA**	**EETXB2F271KJ**
	35 x 30	1.10	1.54	0.600	0.30	**EETXB2F271LA**	**EETXB2F271LJ**
330	25 x 50	1.20	1.68	0.491	0.25	**EETXB2F331JA**	**EETXB2F331JJ**
	30 x 40	1.20	1.68	0.491	0.25	**EETXB2F331KA**	**EETXB2F331KJ**
	35 x 30	1.20	1.68	0.491	0.25	**EETXB2F331LA**	**EETXB2F331LJ**
390	30 x 45	1.30	1.82	0.453	0.23	**EETXB2F391KA**	**EETXB2F391KJ**
	35 x 35	1.30	1.82	0.453	0.23	**EETXB2F391LA**	**EETXB2F391LJ**
470	30 x 50	1.40	1.96	0.376	0.19	**EETXB2F471KA**	**EETXB2F471KJ**
	35 x 40	1.40	1.96	0.376	0.19	**EETXB2F471LA**	**EETXB2F471LJ**
560	35 x 45	1.50	2.10	0.316	0.16	**EETXB2F561LA**	**EETXB2F561LJ**
680	35 x 50	1.70	2.38	0.260	0.14	**EETXB2F681LA**	**EETXB2F681LJ**

TS-XB Standard Ratings (continued)

Part numbers shown with 2 pins and 4.0mm length terminals

Cap. (µF)	Size (mm) D x L	Max 105°C R.C. (A_{rms}) 120Hz	Max 105°C R.C. (A_{rms}) 10kHz~	20°C ESR (Ω, max.) 120Hz	20°C ESR (Ω, max.) 20kHz	Panasonic Part Number (By Sleeving Style) PVC with Top Plate	Panasonic Part Number (By Sleeving Style) PET without Top Plate
350 VDC Working, 400 VDC Surge							
82	22 x 25	0.64	0.90	1.797	0.90	**EETXB2V820HA**	**EETXB2V820HJ**
100	22 x 30	0.69	0.97	1.474	0.74	**EETXB2V101HA**	**EETXB2V101HJ**
	25 x 25	0.69	0.97	1.474	0.74	**EETXB2V101JA**	**EETXB2V101JJ**
120	22 x 35	0.75	1.05	1.228	0.61	**EETXB2V121HA**	**EETXB2V121HJ**
	25 x 30	0.75	1.05	1.228	0.61	**EETXB2V121JA**	**EETXB2V121JJ**
150	22 x 40	0.82	1.15	0.982	0.49	**EETXB2V151HA**	**EETXB2V151HJ**
	25 x 30	0.82	1.15	0.982	0.49	**EETXB2V151JA**	**EETXB2V151JJ**
	30 x 25	0.82	1.15	0.982	0.49	**EETXB2V151KA**	**EETXB2V151KJ**
180	22 x 45	0.90	1.26	0.819	0.41	**EETXB2V181HA**	**EETXB2V181HJ**
	25 x 35	0.90	1.26	0.819	0.41	**EETXB2V181JA**	**EETXB2V181JJ**
	30 x 30	0.90	1.26	0.819	0.41	**EETXB2V181KA**	**EETXB2V181KJ**
220	22 x 50	1.00	1.40	0.737	0.37	**EETXB2V221HA**	**EETXB2V221HJ**
	25 x 40	1.00	1.40	0.737	0.37	**EETXB2V221JA**	**EETXB2V221JJ**
	30 x 30	1.00	1.40	0.737	0.37	**EETXB2V221KA**	**EETXB2V221KJ**
270	25 x 50	1.10	1.54	0.600	0.30	**EETXB2V271JA**	**EETXB2V271JJ**
	30 x 35	1.10	1.54	0.600	0.30	**EETXB2V271KA**	**EETXB2V271KJ**
	35 x 30	1.10	1.54	0.600	0.30	**EETXB2V271LA**	**EETXB2V271LJ**
330	30 x 45	1.20	1.68	0.491	0.25	**EETXB2V331KA**	**EETXB2V331KJ**
	35 x 35	1.20	1.68	0.491	0.25	**EETXB2V331LA**	**EETXB2V331LJ**
390	30 x 50	1.30	1.82	0.453	0.23	**EETXB2V391KA**	**EETXB2V391KJ**
	35 x 40	1.30	1.82	0.453	0.23	**EETXB2V391LA**	**EETXB2V391LJ**
470	35 x 40	1.40	1.96	0.376	0.19	**EETXB2V471LA**	**EETXB2V471LJ**
560	35 x 50	1.50	2.10	0.316	0.16	**EETXB2V561LA**	**EETXB2V561LJ**
400 VDC Working, 450 VDC Surge							
56	22 x 25	0.51	0.71	2.631	0.92	**EETXB2G560HA**	**EETXB2G560HJ**
68	22 x 30	0.56	0.78	2.167	0.76	**EETXB2G680HA**	**EETXB2G680HJ**
	25 x 25	0.56	0.78	2.167	0.76	**EETXB2G680JA**	**EETXB2G680JJ**
82	22 x 35	0.64	0.90	1.797	0.63	**EETXB2G820HA**	**EETXB2G820HJ**
	25 x 25	0.64	0.90	1.797	0.63	**EETXB2G820JA**	**EETXB2G820JJ**
100	22 x 35	0.69	0.97	1.474	0.52	**EETXB2G101HA**	**EETXB2G101HJ**
	25 x 30	0.69	0.97	1.474	0.52	**EETXB2G101JA**	**EETXB2G101JJ**
120	22 x 40	0.75	1.05	1.228	0.43	**EETXB2G121HA**	**EETXB2G121HJ**
	25 x 35	0.75	1.05	1.228	0.43	**EETXB2G121JA**	**EETXB2G121JJ**
	30 x 25	0.75	1.05	1.228	0.43	**EETXB2G121KA**	**EETXB2G121KJ**
150	22 x 50	0.82	1.15	0.982	0.34	**EETXB2G151HA**	**EETXB2G151HJ**
	25 x 40	0.82	1.15	0.982	0.34	**EETXB2G151JA**	**EETXB2G151JJ**
	30 x 30	0.82	1.15	0.982	0.34	**EETXB2G151KA**	**EETXB2G151KJ**
180	25 x 45	0.90	1.26	0.819	0.29	**EETXB2G181JA**	**EETXB2G181JJ**
	30 x 35	0.90	1.26	0.819	0.29	**EETXB2G181KA**	**EETXB2G181KJ**
	35 x 25	0.90	1.26	0.819	0.29	**EETXB2G181LA**	**EETXB2G181LJ**
220	25 x 50	1.00	1.40	0.670	0.23	**EETXB2G221JA**	**EETXB2G221JJ**
	30 x 40	1.00	1.40	0.670	0.23	**EETXB2G221KA**	**EETXB2G221KJ**
	35 x 30	1.00	1.40	0.670	0.23	**EETXB2G221LA**	**EETXB2G221LJ**
270	30 x 45	1.10	1.54	0.546	0.19	**EETXB2G271KA**	**EETXB2G271KJ**
	35 x 35	1.10	1.54	0.546	0.19	**EETXB2G271LA**	**EETXB2G271LJ**
330	30 x 50	1.20	1.68	0.447	0.18	**EETXB2G331KA**	**EETXB2G331KJ**
	35 x 40	1.20	1.68	0.447	0.18	**EETXB2G331LA**	**EETXB2G331LJ**
390	35 x 45	1.30	1.82	0.378	0.15	**EETXB2G391LA**	**EETXB2G391LJ**
470	35 x 50	1.40	1.96	0.314	0.13	**EETXB2G471LA**	**EETXB2G471LJ**
450 VDC Working, 500 VDC Surge							
39	22 x 25	0.37	0.52	3.779	1.32	**EETXB2W390HA**	**EETXB2W390HJ**
47	22 x 30	0.40	0.56	3.135	1.10	**EETXB2W470HA**	**EETXB2W470HJ**
56	22 x 35	0.47	0.66	2.631	0.92	**EETXB2W560HA**	**EETXB2W560HJ**
	25 x 25	0.47	0.66	2.631	0.92	**EETXB2W560JA**	**EETXB2W560JJ**
68	22 x 40	0.53	0.74	2.167	0.76	**EETXB2W680HA**	**EETXB2W680HJ**
	25 x 30	0.53	0.74	2.167	0.76	**EETXB2W680JA**	**EETXB2W680JJ**
82	22 x 45	0.56	0.78	1.797	0.63	**EETXB2W820HA**	**EETXB2W820HJ**
	25 x 35	0.56	0.78	1.797	0.63	**EETXB2W820JA**	**EETXB2W820JJ**
	30 x 25	0.56	0.78	1.797	0.63	**EETXB2W820KA**	**EETXB2W820KJ**
100	22 x 50	0.64	0.90	1.474	0.52	**EETXB2W101HA**	**EETXB2W101HJ**
	25 x 40	0.64	0.90	1.474	0.52	**EETXB2W101JA**	**EETXB2W101JJ**
	30 x 30	0.64	0.90	1.474	0.52	**EETXB2W101KA**	**EETXB2W101KJ**
120	25 x 45	0.72	1.01	1.228	0.43	**EETXB2W121JA**	**EETXB2W121JJ**
	30 x 30	0.72	1.01	1.228	0.43	**EETXB2W121KA**	**EETXB2W121KJ**

TS-XB Standard Ratings (continued)

Part numbers shown with 2 pins and 4.0mm length terminals

Cap. (µF)	Size (mm) D x L	Max 105°C R.C. (A_{rms}) 120Hz	Max 105°C R.C. (A_{rms}) 10kHz~	20°C ESR (Ω, max.) 120Hz	20°C ESR (Ω, max.) 20kHz	Panasonic Part Number (By Sleeving Style) PVC with Top Plate	Panasonic Part Number (By Sleeving Style) PET without Top Plate
450 VDC Working, 500 VDC Surge (continued)							
150	25 x 50	0.79	1.11	0.982	0.34	**EETXB2W151JA**	**EETXB2W151JJ**
	30 x 40	0.79	1.11	0.982	0.34	**EETXB2W151KA**	**EETXB2W151KJ**
	35 x 30	0.79	1.11	0.982	0.34	**EETXB2W151LA**	**EETXB2W151LJ**
180	30 x 45	0.87	1.22	0.819	0.29	**EETXB2W181KA**	**EETXB2W181KJ**
	35 x 35	0.87	1.22	0.819	0.29	**EETXB2W181LA**	**EETXB2W181LJ**
220	30 x 50	1.00	1.40	0.670	0.23	**EETXB2W221KA**	**EETXB2W221KJ**
	35 x 40	1.00	1.40	0.670	0.23	**EETXB2W221LA**	**EETXB2W221LJ**
270	35 x 45	1.19	1.67	0.546	0.19	**EETXB2W271LA**	**EETXB2W271LJ**
330	35 x 50	1.38	1.93	0.447	0.16	**EETXB2W331LA**	**EETXB2W331LJ**

Panasonic Industrial Company

Electronic Components

Aluminum Electrolytic Capacitors

Panasonic Industrial Company
Components Division
3 Panasonic Way (7H-2)
Secaucus, NJ 07094

http://www.panasonic.com/industrial/components/

1-800-344-2112

Panasonic ideas for life