



# Product Selection Guide 2012

One world. One KEMET.

The Capacitance Company  
**KEMET**  
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# One world. One source. One KEMET.

No bouncing from supplier to supplier to find what you need. No multiple web sites and phone calls to get answers.

When you partner with KEMET, our entire global organization seamlessly provides you with the coordinated action and service you need. We're your single, integrated source for capacitance solutions worldwide, offering 95% of possible dielectric solutions, to cover practically any application. With new, innovative products year after year after year. Global availability. Full design collaboration, with fast custom design and prototyping to give your new products a competitive edge. Plus consistent quality, reliability and on-time delivery.

All from one company that's easy to work with and totally dedicated to your success. For anything to do with capacitance, call *The Capacitance Company* – KEMET.

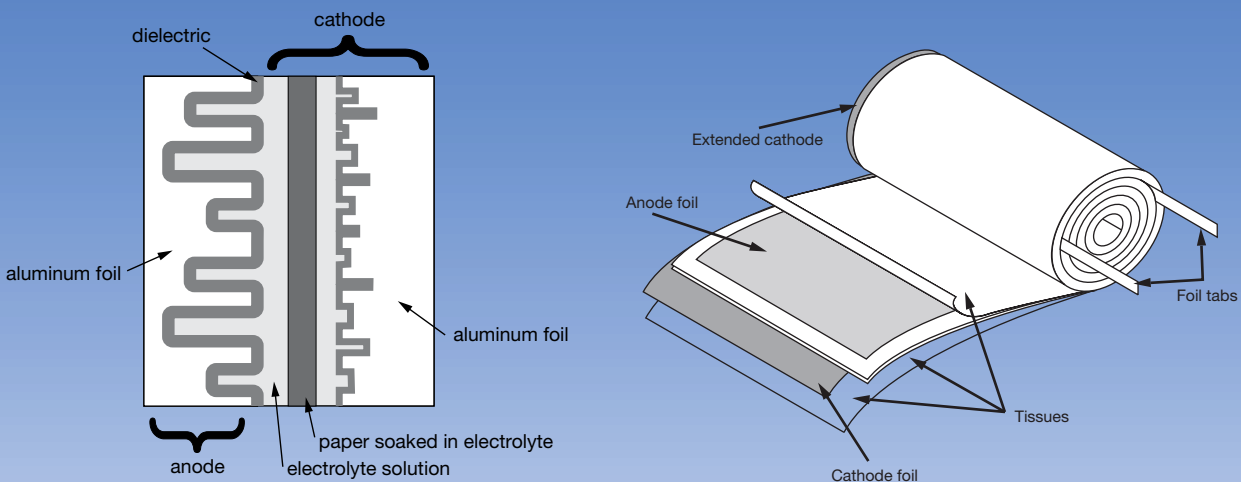
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# Aluminum Electrolytic Capacitors

Aluminum electrolytics offer some of the smallest sizes for a given capacitance and voltage. Commonly used for filtering and bulk energy storage, electrolytics are available in rated voltages exceeding 500 VDC. KEMET Electrolytic capacitors are utilized in a wide variety of demanding power electronics applications such as automotive, power generators and converters, welders, wind turbines, uninterruptible power supplies, and medical imaging.


Electrolytic capacitors consist of aluminum foil which is first etched to increase its surface area. Separate, carefully designed etching techniques are used for the anode and cathode foils. A layer of aluminum oxide, an excellent dielectric, is formed on the surface of the etched anode foil before the foils are wound together between special separator papers. At the same time, tabs are welded to the foils to form the connections. The wound assembly is impregnated with a liquid electrolyte. This electrolyte is a precision-made compound which fully impregnates the etched foil, providing a low ESR conductive path to the cathode foil with stable electrical and chemical properties. KEMET crafts its own electrolytes to match the etched foil characteristics and desired final properties. The assembly is packaged in such a way as to provide excellent vibration resistance and low thermal resistance.

KEMET offers a broad line of axial, snap-in, screw terminal and miniature electrolytic capacitors; however, it is often beneficial to optimize the capacitor to a specific requirement, particularly in automotive and power applications. KEMET's systems and production methods are designed with optimization in mind. By utilizing a "library" of foils, electrolytes, separator papers, and mechanical parts in carefully selected combinations, KEMET can swiftly design and build optimized electrolytic capacitors to match a given specification.




**Aluminum electrolytic capacitor typical construction**

## Axial Electrolytic Capacitors



Series	Rated Temperature	Capacitance Range	Voltage Range (VDC)	Applications	Benefits
PEG226 PEH226	150°C	250 $\mu$ F - 4700 $\mu$ F	25 - 63	Automotive	<ul style="list-style-type: none"> <li>Extremely high ripple current</li> <li>Up to 28A ripple (RMS, continuous load)</li> <li>High vibration resistance</li> </ul>
PEG225 PEH225	Up to 150°C	470 $\mu$ F - 6300 $\mu$ F	25 - 63	Automotive	<ul style="list-style-type: none"> <li>Extremely high ripple current</li> <li>Up to 28A ripple (RMS, continuous load)</li> <li>High vibration resistance</li> <li>High CV</li> </ul>
PEG220 PEH220	150°C	250 $\mu$ F - 4700 $\mu$ F	25 - 63	Automotive	<ul style="list-style-type: none"> <li>Very high ripple current</li> <li>Up to 21A ripple (RMS, continuous load)</li> <li>High vibration resistance</li> </ul>
PEG124	105°C 125°C	1 $\mu$ F - 470 $\mu$ F 10 $\mu$ F - 4700 $\mu$ F	100 - 450 10 - 63	Electronic Ballast Industrial Automotive Telecom	<ul style="list-style-type: none"> <li>Long life &gt; 30 years at 50°C</li> <li>Low ESR</li> <li>Low ESL</li> </ul>
PEG126 PEH126	150°C	250 $\mu$ F - 4000 $\mu$ F	25 - 63	Automotive	<ul style="list-style-type: none"> <li>Low ESR</li> <li>High ripple current</li> <li>Intermittent specification</li> <li>Resistance to vibrations</li> <li>150°C, 2000h (<math>\emptyset</math>20), 1500h (<math>\emptyset</math>16)</li> </ul>
PEG127	150°C	33 $\mu$ F - 1300 $\mu$ F	25 - 63	Automotive	<ul style="list-style-type: none"> <li>High temperature rating</li> <li>High ripple current</li> <li>Up to 6.6A ripple (RMS, continuous load)</li> <li>High vibration resistance</li> <li>150°C, 1600h</li> </ul>

## Screw Terminal Electrolytic Capacitors



Series	Temperature Range	Capacitance Range	Voltage Range (VDC)	Life Expectancy @ Rated Voltage, Rated Temperature	Benefits
ALS30/31	-40 to +85°C	100 $\mu$ F - 680000 $\mu$ F	25 - 500	40000 hours	<ul style="list-style-type: none"> <li>Case sizes &amp; terminals for the European market</li> <li>20000 hours life at 85°C (<math>U_R, I_R</math> applied)</li> <li>High ripple current</li> <li>Excellent surge voltage capability</li> </ul>
ALS32/33	-40 to +85°C	220 $\mu$ F - 18000 $\mu$ F	350 - 500	40000 hours	<ul style="list-style-type: none"> <li>Case sizes &amp; terminals for the Asian market</li> <li>20000 hours life at 85°C (<math>U_R, I_R</math> applied)</li> <li>High ripple current</li> <li>Excellent surge voltage capability</li> </ul>
ALS34/35	-40 to +85°C	150 $\mu$ F - 470000 $\mu$ F	25 - 500	40000 hours	<ul style="list-style-type: none"> <li>Case sizes &amp; terminals for the American market</li> <li>20000 hours life at 85°C (<math>U_R, I_R</math> applied)</li> <li>High ripple current</li> <li>Excellent surge voltage capability</li> </ul>
PEH200	-40 to +85°C	100 $\mu$ F - 330000 $\mu$ F	25 - 500	60000 hours	<ul style="list-style-type: none"> <li>High CV value</li> <li>Long life</li> <li>Low ESR &amp; ESL</li> <li>Compact size</li> </ul>
PEH169	-40 to +85°C	68 $\mu$ F - 470000 $\mu$ F	10 - 450	78000 hours	<ul style="list-style-type: none"> <li>High CV value</li> <li>Long life</li> <li>Low ESR &amp; ESL</li> <li>Compact size</li> </ul>
ALS40/41	-40 to +105°C	150 $\mu$ F - 680000 $\mu$ F	25 - 450	15000 hours	<ul style="list-style-type: none"> <li>Compact size</li> <li>9000 hours life at 105°C (<math>U_R, I_R</math> applied)</li> <li>High ripple current</li> <li>Excellent surge voltage capability</li> </ul>
PEH169	-40 to +105°C	100 $\mu$ F - 330000 $\mu$ F	10 - 350	25000 hours	<ul style="list-style-type: none"> <li>High CV value</li> <li>Long life</li> <li>Low ESR &amp; ESL</li> <li>Compact size</li> </ul>
PEH205	-55 to +125°C	1500 $\mu$ F - 390000 $\mu$ F	16 - 100	Up to 8000 hours (@ $U_R, I_R, +125^\circ\text{C}$ )	<ul style="list-style-type: none"> <li>High temperature +125°C</li> <li>Long life</li> <li>Low ESR &amp; ESL</li> <li>Compact size</li> </ul>

## Snap-In Electrolytic Capacitors



Series	Temperature Range	Capacitance Range	Voltage Range (VDC)	Life Expectancy @ Rated Voltage, Rated Temperature	Benefits
ALC10	-40 to +85°C	56 $\mu$ F - 82000 $\mu$ F	40 - 500	29000 hours	<ul style="list-style-type: none"> <li>• Compact size</li> <li>• 18000 hours life at 85°C (<math>U_R</math>, <math>I_R</math> applied)</li> <li>• High ripple current</li> <li>• Excellent surge voltage capability</li> </ul>
ALC12	-40 to +85°C	150 $\mu$ F - 8200 $\mu$ F	200 - 450	9000 hours	<ul style="list-style-type: none"> <li>• Compact size</li> <li>• 2000 hours life at 85°C (<math>U_R</math>, <math>I_R</math> applied)</li> <li>• Excellent surge voltage capability</li> </ul>
PEH506	-40 to +85°C	68 $\mu$ F - 27000 $\mu$ F	35 - 450	6000 hours	<ul style="list-style-type: none"> <li>• Long life grade</li> <li>• PCB mounting</li> <li>• Low ESR &amp; ESL</li> <li>• High ripple current</li> </ul>
ALC40	-40 to +105°C	47 $\mu$ F - 120000 $\mu$ F	25 - 450	14000 hours	<ul style="list-style-type: none"> <li>• Compact size</li> <li>• 9000 hours life at 105°C (<math>U_R</math>, <math>I_R</math> applied)</li> <li>• High ripple current</li> <li>• Excellent surge voltage capability</li> </ul>
ALC42	-40 to +105°C	120 $\mu$ F - 6800 $\mu$ F	200 - 450	11000 hours	<ul style="list-style-type: none"> <li>• Compact size</li> <li>• 2000 hours life at 105°C (<math>U_R</math>, <math>I_R</math> applied)</li> <li>• Excellent surge voltage capability</li> </ul>
PEH532	-40 to +105°C	68 $\mu$ F - 27000 $\mu$ F	35 - 500	2000 hours	<ul style="list-style-type: none"> <li>• Long life grade</li> <li>• PCB mounting</li> <li>• Low ESR &amp; ESL</li> <li>• High ripple current</li> </ul>
PEH534	-40 to +105°C	150 $\mu$ F - 22000 $\mu$ F	35 - 500	4000 hours	<ul style="list-style-type: none"> <li>• Long life grade</li> <li>• PCB mounting</li> <li>• Low ESR &amp; ESL</li> <li>• High ripple current</li> </ul>
PEH536	-40 to +105°C	47 $\mu$ F - 18000 $\mu$ F	35 - 500	6000 hours	<ul style="list-style-type: none"> <li>• Long life grade</li> <li>• PCB mounting</li> <li>• Low ESR &amp; ESL</li> <li>• High ripple current</li> </ul>
PEH526/626	-40 to +125°C	820 $\mu$ F - 6800 $\mu$ F	25 - 80	4000 hours	<ul style="list-style-type: none"> <li>• 125°C temperature rating</li> <li>• High vibration specification</li> <li>• Low ESR</li> <li>• High ripple current capability</li> </ul>

## Other Electrolytic Capacitors



Series	Temperature Range	Capacitance Range	Voltage Range	Life Expectancy @ Rated Voltage, Rated Temperature	Benefits
ALN20S	-40 to +85°C	10000 $\mu$ F	50 - 100VDC	29000 hours	<ul style="list-style-type: none"> <li>• 4 pin solder tag</li> <li>• Long life</li> <li>• Slit foil technology</li> </ul>
ALC10S	-40 to +85°C	10000 $\mu$ F	50 - 100VDC	29000 hours	<ul style="list-style-type: none"> <li>• 2 pin solder tag</li> <li>• Long life</li> <li>• Slit foil technology</li> </ul>
ALP/T 20	-40 to +85°C	22 $\mu$ F - 150000 $\mu$ F	40 - 450VDC	26000 hours	<ul style="list-style-type: none"> <li>• Solder tag &amp; DIN standard solder pin</li> <li>• Long life</li> </ul>
ALP/T 22	-40 to +85°C	22 $\mu$ F - 150000 $\mu$ F	40 - 450VDC	26000 hours	<ul style="list-style-type: none"> <li>• Solder tag &amp; DIN standard solder pin</li> <li>• Long life</li> </ul>
MS/MD	-20 to +60°C MS type -20 to +70°C MD types	25 $\mu$ F - 750 $\mu$ F	120 - 260VAC		<ul style="list-style-type: none"> <li>• AC motor start capacitors</li> <li>• 6.3mm double amp tags (quick connect type)</li> <li>• VDE approved to EN60252-2</li> </ul>



## Other Electrolytic Capacitors (cont.)

Series	Temperature Range	Capacitance Range	Voltage Range	Life Expectancy @ Rated Voltage, Rated Temperature	Benefits
ELG	-40 to 105°C	47 $\mu$ F - 82000 $\mu$ F	6.3 - 450VDC	2000 hours	<ul style="list-style-type: none"> <li>• 2 pin snap-in terminals</li> <li>• High reliability</li> <li>• Low ESR</li> <li>• Different case size available for capacitance value</li> </ul>
ELH	-40 to 85°C	47 $\mu$ F - 120000 $\mu$ F	6.3 - 450VDC	2000 hours	<ul style="list-style-type: none"> <li>• 2 pin snap-in terminals</li> <li>• High reliability</li> <li>• Low ESR</li> <li>• Different case size available for capacitance value</li> </ul>
EDK	-40 to 85°C	.01 $\mu$ F - 1000 $\mu$ F	4 - 450VDC	2000 hours	<ul style="list-style-type: none"> <li>• Surface mount</li> <li>• Low profile vertical chip</li> </ul>
EEV	-40 to 105°C	4.7 $\mu$ F - 1500 $\mu$ F	6.3 - 35VDC	2000 hours	<ul style="list-style-type: none"> <li>• Surface mount</li> <li>• Low profile vertical chip</li> <li>• Ultra low impedance</li> </ul>
EXV	-40 to 105°C	1 $\mu$ F - 1000 $\mu$ F	6.3 - 50VDC	3000 - 5000 hours	<ul style="list-style-type: none"> <li>• Surface mount</li> <li>• Low profile vertical chip</li> <li>• Ultra low impedance</li> </ul>
ESC	-40 to 105°C	4.7 $\mu$ F - 15000 $\mu$ F	6.3 - 100VDC	1000 - 3000 hours	<ul style="list-style-type: none"> <li>• Radial through-hole</li> <li>• Low ESR</li> <li>• High frequency</li> </ul>
ESH	-40 to 105°C	.47 $\mu$ F - 15000 $\mu$ F	6.3 - 450VDC	2000 hours	<ul style="list-style-type: none"> <li>• Radial through-hole</li> <li>• High CV product</li> </ul>
ESG	-40 to 105°C	4.7 $\mu$ F - 330 $\mu$ F	160 - 450VDC	5000 hours	<ul style="list-style-type: none"> <li>• Radial through-hole</li> <li>• High ripple current</li> <li>• Long life</li> </ul>
ESK	-40 to 85°C	.1 $\mu$ F - 22000 $\mu$ F	6.3 - 500VDC	2000 hours	<ul style="list-style-type: none"> <li>• Radial through-hole</li> <li>• General purpose</li> </ul>
ESY	-40 to 105°C	5.6 $\mu$ F - 6800 $\mu$ F	6.3 - 100VDC	1000 - 5000 hours	<ul style="list-style-type: none"> <li>• Radial through-hole</li> <li>• Low impedance</li> <li>• High ripple current</li> </ul>
ESW	-40 to 105°C	6.8 $\mu$ F - 15000 $\mu$ F	6.3 - 100VDC	3000 - 5000 hours	<ul style="list-style-type: none"> <li>• Radial through-hole</li> <li>• Low impedance</li> <li>• High ripple current</li> </ul>
EST	-40 to 105°C	6.8 $\mu$ F - 15000 $\mu$ F	6.3 - 63VDC	4000 - 10000 hours	<ul style="list-style-type: none"> <li>• Radial through-hole</li> <li>• Low impedance</li> <li>• Long life</li> </ul>



# Looking for a hassle-free source for 95% of possible dielectric solutions?

KEMET is the place for one-stop dielectric shopping. We offer our customers the broadest selection of capacitor technologies in the industry, including tantalum, ceramic, aluminum, electrolytic, film and paper.

But the range of products is only the beginning. You simply won't find an electronic components manufacturer more determined to find new technological solutions to customer problems, or more committed to product quality and on-time delivery – in every case, lowering your total cost of ownership as much as we possibly can. It's how we've helped customers succeed for more than 90 years. And it's how we're helping them succeed today.

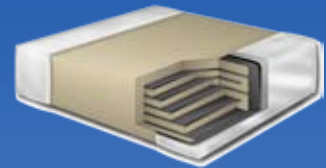


# Multilayer Ceramic Capacitors (MLCCs)

KEMET Multilayer Ceramic Capacitors (MLCCs) offer tremendous performance, reliability and cost advantages for circuit designers. Our comprehensive line of surface mount and through-hole devices are utilized in a variety of computer, telecommunications, automotive, military, medical and consumer electronics. Primary applications include decoupling, filtering, bypassing and smoothing.

Ceramics are non-polar devices which offer unsurpassed volumetric efficiency, delivering the highest capacitance in the smallest package sizes in the market. Available in a wide range of sizes, KEMET MLCCs offer very low equivalent series resistance (ESR), exhibit excellent high frequency characteristics and are extremely reliable. KEMET is driving ceramic technology advancement, resulting in smaller case sizes, better performance and lower cost. These factors have accelerated the progression of readily available ceramics into markets and applications previously occupied by tantalum, aluminum and film capacitors, lowering the risk of material shortages.

MLCCs are monolithic devices that consist of laminated layers of specially formulated, ceramic dielectric materials interspersed with a metal electrode system. The layered formation is then fired at high temperature to produce a sintered and volumetrically efficient capacitance device. A conductive termination barrier system is integrated on the exposed ends of the chip to complete the connection. KEMET offers one of the broadest product portfolios of ceramic capacitors in the industry, providing customers the right combination of dielectric, termination system, form factor and screening.



## • Dielectrics

Ceramic MLCCs are offered in temperature and voltage stable COG (NP0), temperature stable X8R, X7R and X5R as well as general purpose X8L, Z5U and Y5V dielectrics. KEMET provides dielectrics in both base metal electrodes (BME) and precious metal electrodes (PME) technologies. Military designated dielectrics such as BP, BX and BR, and a wide range of high temperature (to 260°C) and high voltage dielectric solutions for extreme environments are available.

## • Terminations

KEMET offers a variety of termination systems including RoHS-compliant tin, tin-lead, gold and custom options. KEMET's Flex Mitigation products reduce risk of flex-related board failure and provide a benign failure mode.

## • Form Factors

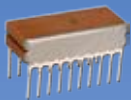
Surface mount, through-hole, J-leads, L-leads, S-leads, stacked and modules are some of the form factors that KEMET produces. Customers can tailor a part for their requirements.

## • Screening

KEMET offers parts that meet varying testing and screening levels. This includes general purpose commercial grades, automotive grade (AEC-Q200), medical grades and parts qualified to many military specifications.

## • Environmental Compliance

KEMET's standard ceramic products meet RoHS criteria and are compatible with modern solder processes including multiple reflow passes.



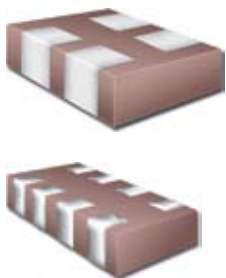
## Surface Mount Multilayer Ceramic Chip Capacitors (SMD MLCCs)

COG, X7R, X5R, Z5U & Y5V Dielectrics • 4VDC–250VDC  
 (Commercial & Automotive Grades)



Size Code EIA/Metric	Dielectric/ Capacitance Range	Voltage Range (VDC)	Benefits
0201/0603	COG – 10pF - 100pF X5R – 0.01 $\mu$ F - 0.1 $\mu$ F	6.3 - 25 4 - 16	General (All Dielectrics) <ul style="list-style-type: none"> <li>Pb-Free and RoHS-compliant (excluding SnPb end metallization option)</li> <li>Non-polar device, minimizing installation concerns</li> <li>100% pure matte tin-plated end metallization allowing for excellent solderability</li> <li>Note commercial &amp; automotive capacitance ranges may differ. Refer to specific catalog for more details.</li> </ul> COG Dielectric <ul style="list-style-type: none"> <li>-55°C to +125°C operating temperature range</li> <li>Commercial and Automotive (AEC-Q200) Grades available</li> <li>No piezoelectric noise</li> <li>Extremely low ESR and ESL</li> <li>High thermal stability</li> <li>High ripple current capability</li> <li>Preferred capacitance solution at line frequencies and into the MHz range</li> <li>No capacitance change with respect to applied rated DC voltage</li> <li>Negligible capacitance change with respect to temperature from -55°C to +125°C</li> <li>No capacitance decay with time</li> <li>SnPb plated end metallization option available upon request (5% min)</li> <li>COTS (Commercial-Off-The-Shelf) screening available</li> </ul> X7R Dielectric <ul style="list-style-type: none"> <li>-55°C to +125°C operating temperature range</li> <li>Commercial and Automotive (AEC-Q200) Grades available</li> <li>Temperature stable dielectric</li> <li>SnPb end metallization option available upon request (5% min)</li> <li>Telecom "Tip and Ring," 250VDC available</li> <li>COTS (Commercial-Off-The-Shelf) screening available</li> </ul> X5R Dielectric <ul style="list-style-type: none"> <li>-55°C to +85°C operating temperature range</li> <li>Commercial and Automotive (AEC-Q200) Grades available</li> <li>Temperature stable Dielectric</li> </ul> Z5U Dielectric <ul style="list-style-type: none"> <li>+10°C to +85°C operating temperature range</li> </ul> Y5V Dielectric <ul style="list-style-type: none"> <li>-30°C to +85°C operating temperature range</li> </ul>
0402/1005	COG – 0.1pF - 22pF X7R – 100pF - 0.1 $\mu$ F X5R – 0.012 $\mu$ F - 4.7 $\mu$ F Y5V – 0.022 $\mu$ F - 1.0 $\mu$ F	50 - 100 6.3 - 50 4 - 16 6.3 - 16	
0603/1608	COG – 0.3pF - 47pF X7R – 100pF - 2.2 $\mu$ F X5R – 0.27 $\mu$ F - 10 $\mu$ F Y5V – 0.022 $\mu$ F - 1.0 $\mu$ F	50 - 250 6.3 - 200 4 - 25 6.3 - 25	
0805/2012	COG – 0.3pF - 100pF X7R – 100pF - 2.2 $\mu$ F X5R – 0.47 $\mu$ F - 47 $\mu$ F Z5U – 6800pF - 0.1 $\mu$ F Y5V – 0.022 $\mu$ F - 10 $\mu$ F	50 - 250 6.3 - 250 4 - 25 50 - 100 6.3 - 50	
1206/3216	COG – 1.0pF - 0.1 $\mu$ F X7R – 1000pF - 10 $\mu$ F X5R – 0.27 $\mu$ F - 100 $\mu$ F Z5U – 0.01pF - 0.22 $\mu$ F Y5V – 0.22 $\mu$ F - 22 $\mu$ F	10 - 200 6.3 - 250 6.3 - 50 50 - 100 6.3 - 50	
1210/3225	COG – 1.0pF - 0.22 $\mu$ F X7R – 2200pF - 47 $\mu$ F X5R – 0.33 $\mu$ F - 100 $\mu$ F Z5U – 0.47 $\mu$ F - 1.0 $\mu$ F Y5V – 0.22 $\mu$ F - 22 $\mu$ F	10 - 200 6.3 - 250 6.3 - 35 50 - 100 6.3 - 50	
1808/4520	COG – 330pF - 4700pF X7R – 4700pF - 0.18 $\mu$ F	50 - 200	
1812/4532	COG – 470pF - 0.22 $\mu$ F X7R – 6800pF - 10 $\mu$ F Z5U – 0.082 $\mu$ F - 1.0 $\mu$ F	50 - 200 25 - 250 50 - 100	
1825/4564	COG – 3,900pF - 0.027 $\mu$ F X7R – 0.022 $\mu$ F - 2.2 $\mu$ F Z5U – 0.18 $\mu$ F - 2.2 $\mu$ F	50 - 200 25 - 250 50 - 100	
2220/5650	COG – 6800pF - 0.47 $\mu$ F X7R – 0.082 $\mu$ F - 22 $\mu$ F	50 - 100 25 - 250	
2225/5664	COG – 4,700pF - 0.033 $\mu$ F X7R – 0.1 $\mu$ F - 2.2 $\mu$ F Z5U – 0.33 $\mu$ F - 2.2 $\mu$ F	50 - 200 50 - 250 50 - 100	

## Capacitor Array • X7R & COG Dielectric • 10VDC–200VDC (Commercial & Automotive Grades)



Size Code EIA/Metric	Dielectric/ Capacitance Range	Voltage Range (VDC)	Benefits
0508 Array (2 Capacitor)	COG – 100pF - 2200pF X7R – 330pF - 0.22 $\mu$ F	10 - 100 10 - 100	<ul style="list-style-type: none"> <li>-55°C to +125°C operating temperature range</li> <li>Commercial and Automotive (AEC-Q200) Grades available</li> <li>Saves both circuit board and inventory space</li> <li>Reduces placement costs and increases throughput</li> <li>Pb-Free and RoHS-compliant (excluding SnPb end metallization option)</li> <li>EIA 0508 (2-capacitor) and 0612 (4-capacitor) case sizes</li> <li>Non-polar device, minimizing installation concerns</li> <li>Flexible termination option is standard on 0508 case size arrays</li> <li>100% pure matte tin-plated end metallization allowing for excellent solderability</li> <li>SnPb end metallization option available upon request (5% min)</li> </ul>
0612 Array (4 Capacitor)	COG – 10pF - 470pF X7R – 330pF - 0.1 $\mu$ F	10 - 200 10 - 200	

## Flex Mitigation Solutions • Surface Mount Multilayer Ceramic Chip Capacitors (SMD MLCCs)

### Open Mode Design • X7R Dielectric • 16VDC–200VDC

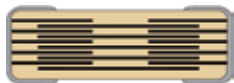
#### (Commercial & Automotive Grade) Available with Flexible Termination System (FO-CAP)



Size Code EIA/Metric	Capacitance Range	Voltage Range (VDC)	Benefits
0805/2012	1000pF - 0.68μF	16 - 200	<ul style="list-style-type: none"> <li>• -55°C to +125°C operating temperature range</li> <li>• Available with Flexible Termination System (FO-CAP)</li> <li>• Commercial and Automotive (AEC-Q200) Grades available</li> <li>• Open Mode/fail open design</li> <li>• Mid to high capacitance flex mitigation</li> <li>• Pb-Free and RoHS-compliant (excluding SnPb end metallization option)</li> <li>• Non-polar device, minimizing installation concerns</li> <li>• 100% pure matte tin-plated end metallization allowing for excellent solderability</li> <li>• SnPb end metallization option available upon request (5% min)</li> </ul>
1206/3216	0.018μF - 4.7μF	16 - 200	
1210/3225	0.068μF - 6.8μF	16 - 200	
1812/4532	0.047μF - 4.7μF	25 - 200	

### Floating Electrode Design (FE-CAP) • X7R Dielectric • 6.3VDC–250VDC

#### (Commercial & Automotive Grade)



Size Code EIA/Metric	Capacitance Range	Voltage Range (VDC)	Benefits
0402/1005	150pF - 1000pF	6.3 - 50	<ul style="list-style-type: none"> <li>• -55°C to +125°C operating temperature range</li> <li>• Commercial and Automotive (AEC-Q200) Grades available</li> <li>• Floating Electrode/fail open design</li> <li>• Low to mid capacitance flex mitigation</li> <li>• Pb-Free and RoHS-compliant (excluding SnPb end metallization option)</li> <li>• Non-polar device, minimizing installation concerns</li> <li>• 100% pure matte tin-plated end metallization allowing for excellent solderability</li> <li>• SnPb end metallization option available upon request (5% min)</li> </ul>
0603/1608	180pF - 0.022μF	6.3 - 200	
0805/2012	180pF - 0.10μF	6.3 - 250	
1206/3216	1000pF - 0.12μF	6.3 - 250	
1210/3225	2200pF - 0.22μF	6.3 - 250	
1812/4532	6800pF - 0.22μF	6.3 - 250	

### Flexible Termination System (FT-CAP) • X7R, X8L Dielectrics • 6.3VDC–3000VDC

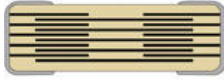
#### (Commercial & Automotive Grades)



Size Code EIA/Metric	Capacitance Range	Voltage Range (VDC)	Benefits
0603/1608	X8L - 0.047μF - 0.22μF X7R - 180pF - 0.47μF	10 - 50 6.3 - 200	<p>General (All Dielectrics)</p> <ul style="list-style-type: none"> <li>• Superior flex performance (up to 5mm)</li> <li>• High capacitance flex mitigation</li> <li>• Commercial and Automotive (AEC-Q200) Grades available</li> <li>• Pb-Free and RoHS compliant (excluding SnPb end metallization option)</li> <li>• Non-polar device, minimizing installation concerns</li> <li>• 100% pure matte tin-plated end metallization allowing for excellent solderability</li> <li>• SnPb end metallization option available upon request (5% min)</li> </ul> <p>X8L Dielectric</p> <ul style="list-style-type: none"> <li>• -55°C to +150°C operating temperature range</li> </ul> <p>X7R Dielectric</p> <ul style="list-style-type: none"> <li>• -55°C to +125°C operating temperature range</li> </ul>
0805/2012	X8L - 0.15μF - 1.0μF X7R - 180pF - 2.2μF X7R - 62pF - 0.012μF	10 - 50 6.3 - 250 500 - 1000	
1206/3216	X8L - 0.47μF - 4.7μF X7R - 1000pF - 10.0μF X7R - 75pF - 0.068μF	10 - 50 6.3 - 250 500 - 2000	
1210/3225	X8L - 0.39μF - 10.0μF X7R - 2200pF - 22.0μF X7R - 130pF - 0.15μF	10 - 50 6.3 - 250 500 - 2000	
1808/4520	X7R - 4700pF - 0.18μF X7R - 75pF - 0.15μF	50 - 200 500 - 3000	
1812/4532	X7R - 6800pF - 10.0uF X7R - 150pF - 0.33uF	25 - 250 500 - 3000	
1825/4564	X7R - 0.022μF - 2.2μF X7R - 330pF - 0.22μF	50 - 250 500 - 3000	
2220/5650	X7R - 0.047μF - 22.0μF X7R - 330pF - 0.22μF	25 - 250 50 - 3000	
2225/5664	X7R - 0.047μF - 2.2μF X7R - 470pF - 0.27μF	50 - 250 500 - 3000	

## Flex Mitigation Solution • Surface Mount Multilayer Ceramic Chip Capacitors (SMD MLCCs)

### Floating Electrode Design with Flexible Termination System (FF-CAP) • X7R Dielectric • 6.3VDC–250VDC (Commercial & Automotive Grade)



Size Code EIA/Metric	Capacitance Range	Voltage Range (VDC)	Benefits
0603/1608	180pF - 0.022 $\mu$ F	6.3 - 200	<ul style="list-style-type: none"> <li>-55°C to +125°C operating temperature range</li> <li>Commercial and Automotive (AEC-Q200) Grades available</li> <li>Superior flex performance (up to 5mm)</li> <li>Floating Electrode/fail open design</li> <li>Low to mid capacitance flex mitigation</li> <li>Pb-Free and RoHS-compliant (excluding SnPb end metallization option)</li> <li>Non-polar device, minimizing installation concerns</li> <li>100% pure matte tin-plated end metallization allowing for excellent solderability</li> <li>SnPb end metallization option available upon request (5% min)</li> </ul>
0805/2012	180pF - 0.10 $\mu$ F	6.3 - 250	
1206/3216	1000pF - 0.12 $\mu$ F	6.3 - 250	
1210/3225	2200pF - 0.22 $\mu$ F	6.3 - 250	
1812/4532	6800pF - 0.22 $\mu$ F	6.3 - 50	

### KPS Series • Leadframe Mounted • Stacked • X7R Dielectric • 10VDC–250VDC (Commercial & Automotive Grade)



Size Code EIA/Metric	Capacitance Range	Voltage Range (VDC)	Benefits
1210/3225	0.10 $\mu$ F - 47.0 $\mu$ F	10 - 250	<ul style="list-style-type: none"> <li>-55°C to +125°C operating temperature range</li> <li>Commercial and Automotive (AEC-Q200) Grades available</li> <li>Reliable and robust termination system</li> <li>Higher capacitance in the same footprint</li> <li>Potential board space savings</li> <li>Advanced protection against thermal and mechanical stress</li> <li>Provides up to 10mm of board flex capability</li> <li>Reduces audible, microphonic noise</li> <li>Extremely low ESR and ESL</li> <li>Pb-Free and RoHS-compliant</li> <li>Capable of Pb-Free reflow profiles</li> <li>Non-polar device, minimizing installation concerns</li> <li>Tantalum and electrolytic alternative</li> </ul>
1812/4532	0.10 $\mu$ F - 22.0 $\mu$ F	16 - 250	
2220/5650	0.10 $\mu$ F - 47.0 $\mu$ F	16 - 250	

## Through-Hole Multilayer Ceramic Capacitors (THD MLCCs)

### Axial (Aximax) • Conformally Coated • COG (NP0), X7R and Z5U Dielectrics • 25VDC–250VDC (Commercial & Automotive Grade)



Series Code	Dimensions L x H x T (inches max)	Dielectric/ Capacitance Range	Voltage Range (VDC)	Benefits
C410	0.170 x 0.100	COG – 1.0pF - 4700pF X7R – 10pF - 1.0 $\mu$ F Z5U – 1000pF - 0.22 $\mu$ F	50 - 200 25 - 250 50 - 200	<p>General (All Dielectrics)</p> <ul style="list-style-type: none"> <li>Pb-Free and RoHS-compliant (excluding SnPb lead material option)</li> <li>Non-polar device, minimizing installation concerns</li> <li>100% pure matte tin-plated lead material allowing for excellent solderability</li> <li>SnPb plated lead material option available upon request (60/40)</li> <li>0.51mm lead diameter</li> <li>Through-hole technology offers excellent flex performance</li> </ul> <p>COG (NP0) Dielectric</p> <ul style="list-style-type: none"> <li>-55°C to +125°C operating temperature range</li> <li>Commercial and Automotive (AEC-Q200) Grades available</li> <li>No piezoelectric noise</li> <li>Low ESR and ESL</li> <li>High thermal stability</li> <li>High ripple current capability</li> <li>Preferred capacitance solution at line frequencies and into the MHz range</li> <li>No capacitance change with respect to applied rated DC voltage</li> <li>Negligible capacitance change with respect to temperature from -55°C to +125°C</li> <li>No capacitance decay with time</li> </ul> <p>X7R Dielectric</p> <ul style="list-style-type: none"> <li>-55°C to +125°C operating temperature range</li> <li>Commercial and Automotive (AEC-Q200) Grades available</li> <li>Temperature stable dielectric</li> </ul> <p>Z5U Dielectric</p> <ul style="list-style-type: none"> <li>+10°C to +85°C operating temperature range</li> </ul>
C412	0.170 x 0.120	COG – 120pF - 4700pF X7R – 0.015 $\mu$ F - 0.1 $\mu$ F Z5U – 0.12 $\mu$ F - 0.33 $\mu$ F	50 - 200 25 - 250 50 - 200	
C420	0.260 x 0.100	COG – 390pF - 0.01 $\mu$ F X7R – 6800pF - 1.0 $\mu$ F Z5U – 0.027 $\mu$ F - 0.47 $\mu$ F	50 - 200 25 - 250 50 - 200	
C430	0.290 x 0.150	COG – 1,800pF - 0.01 $\mu$ F X7R – 0.022 $\mu$ F - 4.7 $\mu$ F Z5U – 0.022 $\mu$ F - 1.0 $\mu$ F	50 - 200 25 - 250 50 - 200	
C440	0.400 x 0.150	COG – 5600pF - 0.015 $\mu$ F X7R – 0.022 $\mu$ F - 4.7 $\mu$ F Z5U – 0.18 $\mu$ F - 2.2 $\mu$ F	50 - 200 25 - 250 50 - 200	

## Through-Hole Multilayer Ceramic Capacitors (THD MLCCs)

Radial (Goldmax) • Conformally Coated • COG (NP0), X7R & Z5U Dielectrics • 25VDC–250VDC  
 (Commercial & Automotive Grade)



Series Code	Dimensions L x H x T (inches max)	Lead Spacing (inches)	Dielectric/ Capacitance Range	Voltage Range (VDC)	Benefits
C315	0.150 x 0.210 x 0.100	0.10	COG – 1.0pF - 4700pF X7R – 100pF - 1.0μF Z5U – 1000pF - 0.1μF	50 - 200 25 - 250 50 - 200	General (All Dielectrics) <ul style="list-style-type: none"> <li>Pb-Free and RoHS-compliant (excluding SnPb lead material option)</li> <li>Non-polar device, minimizing installation concerns</li> <li>100% pure matte tin-plated lead material allowing for excellent solderability</li> <li>SnPb plated lead material option available upon request (60/40)</li> <li>Several lead configuration options available (See catalog for details)</li> <li>See High Voltage table for &gt;250VDC availability</li> <li>0.51mm lead diameter (C31X-C34X)</li> <li>0.64mm lead diameter (C35X)</li> <li>Through-hole technology offers excellent flex performance</li> </ul> COG (NP0) Dielectric <ul style="list-style-type: none"> <li>-55°C to +125°C operating temperature range</li> <li>Commercial and Automotive (AEC-Q200) Grades available</li> <li>No piezoelectric noise</li> <li>Low ESR and ESL</li> <li>High thermal stability</li> <li>High ripple current capability</li> </ul> X7R Dielectric <ul style="list-style-type: none"> <li>-55°C to +125°C operating temperature range</li> <li>Commercial and Automotive (AEC-Q200) Grades available</li> <li>Temperature stable dielectric</li> </ul> Z5U Dielectric <ul style="list-style-type: none"> <li>+10°C to +85°C operating</li> </ul>
C316	0.150 x 0.230 x 0.100	0.10			
C317	0.150 x 0.230 x 0.100	0.20			
C318	0.150 x 0.235 x 0.100	0.20			
C320	0.200 x 0.260 x 0.125	0.10	COG – 1.0pF - 0.015μF X7R – 100pF - 10μF Z5U – 1000pF - 1.0μF	50 - 200 25 - 250 50 - 200	
C321	0.200 x 0.260 x 0.125	0.25			
C322	0.200 x 0.260 x 0.125	0.20			
C323	0.200 x 0.320 x 0.125	0.20			
C324	0.200 x 0.260 x 0.125	0.10			
C325	0.200 x 0.320 x 0.125	0.20			
C326	0.200 x 0.350 x 0.125	0.10			
C327	0.200 x 0.350 x 0.125	0.20			
C328	0.200 x 0.325 x 0.125	0.20	COG – 47pF - 0.033μF X7R – 4700pF - 2.2μF Z5U – 0.010μF - 2.2μF	50 - 200 25 - 250 50 - 200	
C330	0.300 x 0.360 x 0.150	0.20			
C331	0.300 x 0.360 x 0.150	0.25			
C333	0.300 x 0.390 x 0.150	0.20			
C335	0.300 x 0.420 x 0.150	0.20	COG – 0.01μF - 0.068μF X7R – 0.068μF - 4.7μF Z5U – 0.10μF - 4.7μF	50 - 200 25 - 250 50 - 200	
C336	0.300 x 0.450 x 0.150	0.20			
C340	0.400 x 0.460 x 0.150	0.20	COG – 0.022μF - 0.12μF X7R – 0.18μF - 10μF Z5U – 0.18μF - 6.8μF	50 - 200 25 - 250 50 - 200	
C346	0.400 x 0.590 x 0.150	0.20			
C350	0.500 x 0.560 x 0.200	0.40	COG – 0.022μF - 0.12μF X7R – 0.18μF - 10μF Z5U – 0.18μF - 6.8μF	50 - 200 25 - 250 50 - 200	
C356	0.500 x 0.670 x 0.200	0.40			

## Axial • Molded • COG (NP0) & X7R Dielectrics • 50VDC–200VDC (Commercial Grade)



Series Code	Dimensions L x D (inches max)	Dielectric/ Capacitance Range	Voltage Range (VDC)	Benefits
C114	0.160 x 0.090	COG – 1.0pF - 680pF X7R – 10pF - 0.01μF	100 - 200 50 - 100	<ul style="list-style-type: none"> <li>-55°C to +125°C operating temperature range</li> <li>Pb-Free and RoHS-compliant (excluding SnPb lead material option)</li> <li>Non-polar device, minimizing installation concerns</li> <li>100% pure matte tin-plated lead material allowing for excellent solderability</li> <li>SnPb plated lead material option available upon request (60/40)</li> <li>0.51mm lead diameter (C114 &amp; C124)</li> <li>0.64mm lead diameter (C192, C202 &amp; C222)</li> <li>Through-hole technology offers excellent flex performance</li> </ul>
C124	0.250 x 0.090	COG – 390pF - 1000pF X7R – 5600pF - 0.047μF	100 - 200 50 - 100	
C192	0.390 x 0.140	COG – 680pF - 8200pF X7R – 0.012μF - 0.27μF	100 - 200 50 - 100	
C202	0.500 x 0.250	COG – 5600pF - 0.033μF X7R – 0.056μF - 1.0μF	100 - 200 50 - 100	
C222	0.690 x 0.350	COG – 0.027μF - 0.1μF X7R – 0.47μF - 3.3μF	100 - 200 50 - 100	



## Through-Hole Multilayer Ceramic Capacitors (THD MLCCs)

Radial • Molded • COG (NP0) & X7R Dielectrics • 50VDC–200VDC  
 (Commercial Grade)



Series Code	Dimensions L x H x T (inches)	Lead Spacing (inches)	Dielectric/ Capacitance Range	Voltage Range (VDC)	Benefits
C052/56	0.190 x 0.190 x 0.090	0.20	COG – 1.0pF - 4700pF X7R – 10pF - 0.1μF	50 - 200	<ul style="list-style-type: none"> <li>-55°C to +125°C operating temperature range</li> <li>Pb-Free and RoHS-compliant (excluding SnPb lead material option)</li> <li>Non-polar device, minimizing installation concerns</li> <li>100% pure matte tin-plated lead material allowing for excellent solderability</li> <li>SnPb plated lead material option available upon request (60/40)</li> <li>0.51mm lead diameter (C31X-C34X)</li> <li>0.64mm lead diameter (C35X)</li> <li>Through-hole technology offers excellent flex performance</li> </ul>
C062/66	0.290 x 0.290 x 0.090	0.20	COG – 3300pF - 0.022μF X7R – 1200pF - 1.0μF	50 - 200	
C512	0.480 x 0.480 x 0.140	0.40	COG – 0.012μF - 0.1μF X7R – 1.0μF - 2.2μF	50 - 200	
C522	0.480 x 0.480 x 0.240	0.40	COG – 0.082μF - 0.18μF X7R – 1.0μF - 3.3μF	50 - 200	

C<sup>3</sup> Technology • Axial & Radial • COG (NP0) & X7R Dielectrics • 50VDC–200VDC  
 (Robust • MIL Screened)



Series Code	Form Factor	Dielectric	Capacitance Range	Voltage Range (VDC)	Benefits
SCR	Radial	COG (NP0)	10pF - 0.068μF	50 - 200	<ul style="list-style-type: none"> <li>-55°C to +125°C operating temperature range</li> <li>C<sup>3</sup> designs provide robust protection for extreme environments</li> <li>Internal lead wire attachment</li> <li>Non-coated</li> <li>Axial and radial form factor</li> <li>Available with screening to MIL-PRF-20, Group A (COG)</li> <li>Available with screening to MIL-PRF-39014, Group A (X7R)</li> <li>Lead spacing options of .020 &amp; .025 (inches)</li> <li>Lead diameter options of 0.20 &amp; 0.40 (inches)</li> <li>Solder coated copper clad steel lead material (standard)</li> <li>Gold plated copper clad steel lead material option</li> <li>Through-hole technology offers excellent flex performance</li> </ul>
SRR	Radial	X7R	680pF - 4.7μF		
SCA	Axial	COG (NP0)	10pF - 0.1μF		
SRA	Axial	X7R	1000pF - 5.6μF		

## High Voltage Surface Mount Multilayer Ceramic Chip Capacitors (SMD MLCCs)

High Voltage • COG (NPO) & X7R Dielectrics • 500VDC–3KVDC  
 (Commercial & Automotive Grade)



Size Code EIA/Metric	Dielectric/ Capacitance Range	Voltage Range (VDC)	Benefits
0805/2012	COG – 1.0pF - 220pF X7R – 10pF - 0.012 $\mu$ F	500 - 1000	<ul style="list-style-type: none"> <li>• -55°C to +125°C operating temperature range</li> <li>• Available in Commercial and Automotive Grade (AEC-Q200)</li> <li>• Flexible termination (FT-CAP) option available upon request</li> <li>• Pb-Free and RoHS-compliant (excluding SnPb end metallization option)</li> <li>• DC voltage ratings of 500V, 630V, 1KV, 1.5KV, 2KV, 2.5KV, 3KV</li> <li>• Available capacitance tolerances of <math>\pm</math>5%, <math>\pm</math>10% and <math>\pm</math>20%</li> <li>• Low ESR and ESL</li> <li>• Non-polar device, minimizing installation concerns</li> <li>• 100% pure matte tin-plated end metallization allowing for excellent solderability</li> <li>• SnPb plated end metallization option available upon request (5% min)</li> </ul>
1206/3216	COG – 10pF - 1000pF X7R – 10pF - 0.068 $\mu$ F	500 - 2000	
1210/3225	COG – 10pF - 3300pF X7R – 10pF - 0.15 $\mu$ F	500 - 2000	
1808/4520	COG – 1.0pF - 2700pF X7R – 100pF - 0.15 $\mu$ F	500 - 3000	
1812/4532	COG – 10pF - 3900pF X7R – 10pF - 0.33 $\mu$ F	500 - 3000	
1825/4564	COG – 10pF - 8200pF X7R – 100pF - 0.22 $\mu$ F	500 - 3000	
2220/5650	COG – 10pF - 8200pF X7R – 100pF - 0.22 $\mu$ F	500 - 3000	
2225/5664	COG – 10pF - 0.01pF X7R – 100pF - 0.27 $\mu$ F	500 - 3000	

## High Voltage Surface Mount Multilayer Ceramic Chip Capacitors (SMD MLCCs)

Large Chip • High Voltage • COG (NPO) & X7R Dielectrics • 500VDC–5KVDC  
 (Robust • MIL Screened)



Case Size (EIA)	Dimensions (mm)	Dielectric/ Capacitance Range	Voltage Range (VDC)	Benefits
1515	3.81 x 3.81	COG – 12pF - 4700pF X7R – 270pF - 0.1 $\mu$ F	500 - 3000 500 - 2000	<ul style="list-style-type: none"> <li>• -55°C to +125°C operating temperature range</li> <li>• DC voltage ratings of 500V, 1KV, 2KV, 3KV, 4KV and 5KV</li> <li>• Available capacitance tolerances of <math>\pm</math>5%, <math>\pm</math>10%, <math>\pm</math>20%, 0/+100% and -20%/+80%</li> <li>• Low ESR and ESL</li> <li>• Non-polar device, minimizing installation concerns</li> <li>• Available with screening to MIL-PRF-49467, Group A &amp; B</li> <li>• Several end metallization options available (See catalog for details)</li> <li>• Infrared or vapor phase soldering process recommended</li> </ul>
1812	4.57 x 3.05	COG – 12pF - 2700pF X7R – 270pF - 0.056 $\mu$ F	500 - 3000 500 - 2000	
1825	4.57 x 6.35	COG – 22pF - 8200pF X7R – 560pF - 0.15 $\mu$ F	500 - 3000	
2020	5.08 x 5.08	COG – 22pF - 8200pF X7R – 560pF - 0.18 $\mu$ F	500 - 3000	
2225	5.59 x 6.35	COG – 27pF - 0.012 $\mu$ F X7R – 680pF - 0.22 $\mu$ F	500 - 3000	
2520	6.35 x 5.08	COG – 27pF - 0.01 $\mu$ F X7R – 680pF - 0.22 $\mu$ F	500 - 4000 500 - 3000	
3333	8.38 x 8.38	COG – 27pF - 0.015 $\mu$ F X7R – 1200pF - 0.82 $\mu$ F	500 - 4000 500 - 3000	
3530	8.89 x 7.62	COG – 27pF - 0.022 $\mu$ F X7R – 270pF - 0.56 $\mu$ F	500 - 4000	
4040	10.2 x 10.2	COG – 18pF - 0.039 $\mu$ F X7R – 470pF - 0.82 $\mu$ F	500 - 4000	
4540	11.43 x 10.2	COG – 18pF - 0.056 $\mu$ F X7R – 470pF - 1.2 $\mu$ F	500 - 5000	
5440	13.7 x 10.2	COG – 27pF - 0.082 $\mu$ F X7R – 680pF - 1.5 $\mu$ F	500 - 4000	
5550	14.0 x 12.7	COG – 27pF - 0.068 $\mu$ F X7R – 680pF - 1.8 $\mu$ F	500 - 5000	
6560	16.5 x 15.2	COG – 47pF - 0.1 $\mu$ F X7R – 1200pF - 2.2 $\mu$ F	500 - 5000	

## Surface Mount Multilayer Ceramic Chip Capacitors (SMD MLCCs)

**ArcShield • High Voltage Arc-Over Prevention • X7R Dielectric • 500VDC-1000VDC  
 (Commercial & Automotive Grade)**



Case Size (EIA/Metric)	Dielectric/Capacitance Range	Voltage Range (VDC)	Benefits
0805/2012	X7R – 2200pF - 0.012 $\mu$ F	500 - 1000	<ul style="list-style-type: none"> <li>Designed to eliminate the risk of arc-over</li> <li>Patent pending shield electrode technology built inside the chip for enhanced reliability</li> <li>-55°C to +125°C operating temperature range</li> <li>Available in Commercial and Automotive Grade (AEC-Q200)</li> <li>Flexible termination (FT-CAP) available upon request</li> <li>Pb-Free and RoHS-compliant (excluding SnPb end metallization option)</li> <li>DC voltage ratings of 500V, 630V, 1KV</li> <li>Available capacitance tolerances of <math>\pm 5\%</math>, <math>\pm 10\%</math> and <math>\pm 20\%</math></li> <li>Low ESR and ESL</li> <li>Non-polar device, minimizing installation concerns</li> <li>100% pure matte tin-plated end metallization allowing for excellent solderability</li> <li>SnPb plated end metallization option available upon request (5% min)</li> </ul>
1206/3216	X7R – 0.012 $\mu$ F - 0.068 $\mu$ F	500 - 1000	
1210/3225	X7R – 0.022 $\mu$ F - 0.15 $\mu$ F	500 - 1000	
1808/4520	X7R – 0.018 $\mu$ F - 0.15 $\mu$ F	500 - 1000	
1812/4532	X7R – 0.027 $\mu$ F - 0.33 $\mu$ F	500 - 1000	

## Surface Mount Multilayer Ceramic Chip Capacitors (SMD MLCCs)

**KPS HV (SM Series) • Leadframe Mounted • High Voltage • COG (NP0) & X7R Dielectrics • 500VDC–5KVDC  
 (Robust • MIL Screened)**



Case Size (EIA)	Dimensions (mm)	Dielectric/Capacitance Range	Voltage Range (VDC)	Benefits
SM20	3.81 x 3.81	COG – 12pF - 4700pF X7R – 270pF - 0.082 $\mu$ F	500 - 3000 500 - 2000	<ul style="list-style-type: none"> <li>-55°C to +125°C operating temperature range</li> <li>DC voltage ratings of 500V, 1KV, 2KV, 3KV, 4KV and 5KV</li> <li>Available capacitance tolerances of <math>\pm 5\%</math>, <math>\pm 10\%</math>, <math>\pm 20\%</math>, 0/+100% and -20%/+80%</li> <li>“J” &amp; “L” lead configurations available</li> <li>Reduced microphonics</li> <li>Reliable and robust termination system</li> <li>Advanced protection against thermal and mechanical stress</li> <li>Improved flex performance</li> <li>Reduces audible, microphonic noise</li> <li>Non-polar device, minimizing installation concerns</li> <li>Available with screening to MIL-PRF-49467, Group A &amp; B</li> <li>Several end metallization options available (See catalog for details)</li> </ul>
SM21	5.08 x 5.08	COG – 22pF - 8200pF X7R – 560pF - 0.18 $\mu$ F	500 - 3000 500 - 3000	
SM22	6.35 x 5.08	COG – 27pF - 0.01 $\mu$ F X7R – 680pF - 0.22 $\mu$ F	500 - 3000	
SM23	8.89 x 7.62	COG – 27pF - 0.022 $\mu$ F X7R – 270pF - 0.56 $\mu$ F	500 - 4000	
SM24	11.43 x 10.2	COG – 18pF - 0.056 $\mu$ F X7R – 470pF - 1.2 $\mu$ F	500 - 5000	
SM25	14.0 x 12.7	COG – 27pF - 0.082 $\mu$ F X7R – 470pF - 1.8 $\mu$ F	500 - 5000	
SM26	16.5 x 15.2	COG – 47pF - 0.1 $\mu$ F X7R – 1200pF - 2.7 $\mu$ F	500 - 5000	
SM30	7.62 X 3.81	COG – 10pF - 0.015 $\mu$ F X7R – 150pF - 0.22 $\mu$ F	500 - 4000	
SM31	10.2 X 5.08	COG – 10pF - 0.027 $\mu$ F X7R – 270pF - 0.39 $\mu$ F	500 - 5000	
SM33	17.08 X 7.62	COG – 12pF - 0.12 $\mu$ F X7R – 220pF - 1.5 $\mu$ F	500 - 7000	
SM34	22.9 X 10.2	COG – 22pF - 0.15 $\mu$ F X7R – 470pF - 1.5 $\mu$ F	500 - 10000	
SM35	27.9 X 12.7	COG – 33pF - 0.22 $\mu$ F X7R – 820pF - 3.9 $\mu$ F	500 - 10000	
SM36	33.0 X 15.2	COG – 56pF - 0.33 $\mu$ F X7R – 1200pF - 5.6 $\mu$ F	500 - 10000	

## High Voltage Through-Hole Multilayer Ceramic Capacitors (THD MLCCs)

High Voltage Goldmax Series • Radial • Conformally Coated • COG (NP0) & X7R Dielectrics • 500VDC–3KVDC (Commercial & Automotive Grade)



Series Code	Dimensions L x H x T (inches)	Lead Spacing (inches)	Dielectric/ Capacitance Range	Voltage Range (VDC)	Benefits
C315	0.150 x 0.210 x 0.100	0.10	COG – 1.0pF - 180pF X7R – 10pF - 3300pF	500 - 1000	General (All Dielectrics) <ul style="list-style-type: none"> <li>Pb-Free and RoHS-compliant (excluding SnPb lead material option)</li> <li>DC voltage ratings of 500V, 1KV, 1.5KV, 2KV, 2.5KV, 3KV</li> <li>Available capacitance tolerances of <math>\pm 0.25\text{pF}</math>, <math>\pm 0.5\text{pF}</math>, <math>\pm 1\text{pF}</math>, <math>\pm 2\text{pF}</math>, <math>\pm 5\%</math>, <math>\pm 10\%</math> and <math>\pm 20\%</math></li> <li>Non-polar device, minimizing installation concerns</li> <li>100% pure matte tin-plated lead material allowing for excellent solderability</li> <li>SnPb plated lead material option available upon request (60/40)</li> <li>Several lead configuration options available (See catalog for details)</li> <li>0.51mm lead diameter (C31X-C34X)</li> <li>0.64mm lead diameter (C35X)</li> </ul> COG (NP0) Dielectric <ul style="list-style-type: none"> <li>-55°C to +125°C operating temperature range</li> <li>Commercial and Automotive (AEC-Q200) Grades available</li> <li>No piezoelectric noise</li> <li>Low ESR and ESL</li> <li>High thermal stability</li> <li>High ripple current capability</li> </ul> X7R Dielectric <ul style="list-style-type: none"> <li>-55°C to +125°C operating temperature range</li> <li>Commercial and Automotive (AEC-Q200) Grades available</li> <li>Temperature stable dielectric</li> </ul> Z5U Dielectric <ul style="list-style-type: none"> <li>+10°C to +85°C operating temperature range</li> </ul>
C316	0.150 x 0.230 x 0.100	0.10			
C317	0.150 x 0.230 x 0.100	0.20			
C318	0.150 x 0.235 x 0.100	0.20			
C320	0.200 x 0.260 x 0.125	0.10	COG – 1.0pF - 3300pF X7R – 10pF - 0.047 $\mu\text{F}$	500 - 2000	
C321	0.200 x 0.260 x 0.125	0.25			
C322	0.200 x 0.260 x 0.125	0.20			
C323	0.200 x 0.320 x 0.125	0.20			
C324	0.200 x 0.260 x 0.125	0.10			
C325	0.200 x 0.320 x 0.125	0.20			
C326	0.200 x 0.350 x 0.125	0.10			
C327	0.200 x 0.350 x 0.125	0.20			
C328	0.200 x 0.325 x 0.125	0.20	COG – 10pF - 6800pF X7R – 10pF - 0.22 $\mu\text{F}$	500 - 3000	
C330	0.300 x 0.360 x 0.150	0.20			
C331	0.300 x 0.360 x 0.150	0.25			
C333	0.300 x 0.390 x 0.150	0.20	COG – 1.0pF - 0.015 $\mu\text{F}$ X7R – 1200pF - 0.68 $\mu\text{F}$	500 - 3000	
C335	0.300 x 0.420 x 0.150	0.20			
C336	0.300 x 0.450 x 0.150	0.20	COG – 100pF - 0.39 $\mu\text{F}$ X7R – 6800pF - 0.82 $\mu\text{F}$	500 - 3000	
C340	0.400 x 0.460 x 0.150	0.20			
C346	0.400 x 0.590 x 0.150	0.20			
C350	0.500 x 0.560 x 0.200	0.40			
C356	0.500 x 0.670 x 0.200	0.40			

## High Voltage Through-Hole Multilayer Ceramic Chip Capacitors (THD MLCCs)

High Voltage Goldmax Series • Radial • Conformally Coated • X7R Dielectric • 25VDC–500VDC (Commercial Grade)



Series Code	Dimensions L x H x T (inches)	Lead Spacing (inches)	Dielectric/ Capacitance Range	Voltage Range (VDC)	Benefits
C617	0.250 x 0.220 x 0.200	0.170	COG – 1.0pF - 0.015μF X7R – 1200pF - 0.68μF	500 - 3000 500 - 2000	<p>General (All Dielectrics)</p> <ul style="list-style-type: none"> <li>• Meets MIL-PRF-49467 lead spacing requirements</li> <li>• Pb-Free and RoHS-compliant (excluding SnPb lead material option)</li> <li>• DC voltage ratings of 500V, 1KV, 1.5KV, 2KV, 2.5KV and 3KV</li> <li>• Available capacitance tolerances of ±0.25pF, ±0.5pF, ±1pF, ±2pF, ±5%, ±10% and ±20%</li> <li>• Non-polar device, minimizing installation concerns</li> <li>• 100% pure matte tin-plated lead material allowing for excellent solderability</li> <li>• SnPb plated lead material option available upon request (60/40)</li> <li>• Several lead configuration options available (See catalog for details)</li> <li>• 0.64mm lead diameter</li> <li>• Group A inspection per MIL-PRF-49467 available upon request</li> </ul> <p>COG (NPO) Dielectric</p> <ul style="list-style-type: none"> <li>• -55°C to +125°C operating temperature range</li> <li>• Commercial and Automotive (AEC-Q200) Grades available</li> <li>• No piezoelectric noise</li> <li>• Low ESR and ESL</li> <li>• High thermal stability</li> <li>• High ripple current capability</li> <li>• Preferred capacitance solution at line frequencies and into the MHz range</li> <li>• No capacitance change with respect to applied rated DC voltage</li> <li>• Negligible capacitance change with respect to temperature from -55°C to +125°C</li> <li>• No capacitance decay with time</li> </ul> <p>X7R Dielectric</p> <ul style="list-style-type: none"> <li>• -55°C to +125°C operating temperature range</li> <li>• Commercial and Automotive (AEC-Q200) Grades available</li> <li>• Temperature stable dielectric</li> </ul>
C622/C623	0.320 x 0.280 x 0.250	0.220	COG – 1.0pF - 0.015μF X7R – 1200pF - 0.68μF	500 - 3000	
C627/C628	0.370 x 0.300 x 0.250	0.275	COG – 1.0pF - 0.015μF X7R – 1200pF - 0.68μF		
C630/C631	0.450 x 0.220 x 0.200	0.300	COG – 1.0pF - 0.015μF X7R – 1200pF - 0.68μF		
C637/C638	0.470 x 0.400 x 0.270	0.375	COG – 1.0pF - 0.015μF X7R – 1200pF - 0.68μF		
C640/C641	0.550 x 0.280 x 0.250	0.400	COG – 1.0pF - 0.015μF X7R – 1200pF - 0.68μF		
C642/C643	0.500 x 0.560 x 0.200	0.400	COG – 1.0pF - 0.015μF X7R – 1200pF - 0.68μF		
C647/C648	0.570 x 0.500 x 0.270	0.475	COG – 1.0pF - 0.015μF X7R – 1200pF - 0.68μF		
C657/C658	0.670x 0.600 x 0.270	0.575	COG – 1.0pF - 0.015μF X7R – 1200pF - 0.68μF		
C667/C668	0.770 x 0.720 x 0.270	0.675	COG – 1.0pF - 0.015μF X7R – 1200pF - 0.68μF		

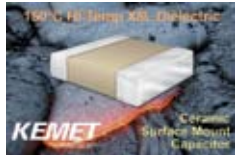
## High Voltage • Radial • COG (NPO) & X7R Dielectric • 500VDC–10KVDC (Robust • MIL Screened)



Style/Case Size	Max Temp.	Dielectric/ Capacitance Range	Voltage Range (VDC)	Benefits
HV10 - HV16	+200°C	COG – 15pF - 0.015μF X7R – 820pF - 1.0μF	500 - 4000	<ul style="list-style-type: none"> <li>• Ceramic high voltage</li> <li>• High temperature (+200°C)</li> <li>• Ideal for industrial, down hole, harsh environments</li> <li>• Radial</li> </ul>
VCR/VRR	+200°C	COG – 10pF - 0.047μF X7R – 680pF - 1.2μF	500 - 5000	<ul style="list-style-type: none"> <li>• High voltage</li> <li>• Ceramic cased high temperature (+200°C)</li> <li>• Radial</li> </ul>
HV20 - HV36	+125°C	COG – 10pF - 0.33μF X7R – 680pF - 5.6μF	500 - 10000	<ul style="list-style-type: none"> <li>• High voltage (125°C X7R, COG)</li> <li>• Ceramic conformal coated</li> <li>• Radial</li> </ul>
HV60 - HV66	+125°C	COG – 15pF - 0.047μF X7R – 820pF - 0.47μF	600 - 5000	<ul style="list-style-type: none"> <li>• High voltage</li> <li>• Ceramic conformal coated (+125°C)</li> <li>• MIL-PRF-49467 equivalent</li> <li>• Radial</li> </ul>
HS20 - HS36	+125°C	COG – 15pF - 0.18μF X7R – 820pF - 5.6μF	500 - 10000	<ul style="list-style-type: none"> <li>• High voltage</li> <li>• Ceramic conformal coated (+125°C)</li> <li>• Space Quality</li> <li>• Radial</li> </ul>

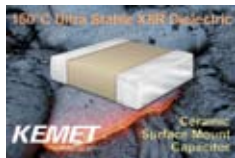
## High Temperature Surface Mount Multilayer Ceramic Chip Capacitors (SMD MLCCs)

High Temperature (150°C) • X8L Dielectric • 10VDC–50VDC  
 (Commercial & Automotive Grade)



Size Code EIA/Metric	Max Temp.	Capacitance Range	Voltage Range (VDC)	Benefits
0402/1005	150°C	0.012 $\mu$ F - 0.047 $\mu$ F	10 - 25V	<ul style="list-style-type: none"> <li>-55°C to +150°C operating temperature range</li> <li>Available with Flexible Termination System (FT-CAP) for 0603 - 1210 case sizes</li> <li>Pb-Free and RoHS-compliant (excluding SnPb end metallization option)</li> <li>Available capacitance tolerances of <math>\pm</math>5%, <math>\pm</math>10% and <math>\pm</math>20%</li> <li>Commercial and Automotive Grades available</li> <li>Non-polar device, minimizing installation concerns</li> <li>100% pure matte tin-plated end metallization allowing for excellent solderability</li> <li>SnPb plated end metallization available upon request (5% min)</li> </ul>
0603/1608		0.047 $\mu$ F - 0.22 $\mu$ F	10 - 50V	
0805/2012		0.15 $\mu$ F - 1.0 $\mu$ F	10 - 50V	
1206/3216		0.47 $\mu$ F - 4.7 $\mu$ F	10 - 50V	
1210/3225		0.39 $\mu$ F - 10 $\mu$ F	10 - 50V	

High Temperature (150°C) • Ultra-Stable X8R Dielectric • 25VDC–100VDC  
 (Commercial & Automotive Grade)



Size Code EIA/Metric	Max Temp.	Capacitance Range	Voltage Range (VDC)	Benefits
0402/1005	150°C	100pF - 1500pF	25 - 100V	<ul style="list-style-type: none"> <li>-55°C to +150°C operating temperature range</li> <li>Pb-Free and RoHS-compliant (excluding SnPb end metallization option)</li> <li>Available capacitance tolerances of <math>\pm</math>1%, <math>\pm</math>2%, <math>\pm</math>5%, <math>\pm</math>10% and <math>\pm</math>20%</li> <li>Extremely low ESR and ESL</li> <li>High thermal stability</li> <li>High ripple current capability</li> <li>No capacitance change applied rated DC voltage</li> <li>Non-polar device, minimizing installation concerns</li> <li>100% pure matte tin-plated end metallization that allowing for excellent solderability.</li> <li>SnPb plated end metallization available upon request (5% min)</li> </ul>
0603/1608		430pF - 0.01 $\mu$ F	25 - 100V	
0805/2012		2200pF - 0.033 $\mu$ F	25 - 100V	
1206/3216		6800pF - 0.1 $\mu$ F	25 - 100V	
1210/3225		0.012 $\mu$ F - 0.18 $\mu$ F	25 - 100V	
1812/4532		0.015 $\mu$ F - 0.22 $\mu$ F	50 - 100V	

## High Temperature Surface Mount Multilayer Ceramic Chip Capacitors (SMD MLCCs)

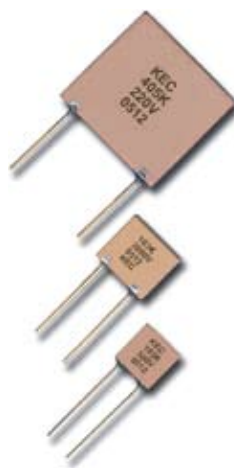
High Temperature (200°C) • COG Dielectric • 10VDC–200VDC  
 (Industrial Grade)



Size Code EIA/Metric	Max Temp.	Capacitance Range	Voltage Range (VDC)	Benefits
0402/1005	200°C	0.5pF - 1500pF	10 - 100	<ul style="list-style-type: none"> <li>-55°C to +200°C operating temperature range</li> <li>RoHS-compliant (excluding SnPb end metallization option)</li> <li>Available capacitance tolerances of ±0.25pF, ±0.5pF, ±1%, ±2%, ±5%, ±10% and ±20%</li> <li>No piezoelectric noise</li> <li>Extremely low ESR and ESL</li> <li>High thermal stability</li> <li>High ripple current capability</li> <li>Preferred capacitance solution at line frequencies and into the MHz range</li> <li>No capacitance change with respect to applied rated DC voltage</li> <li>Negligible capacitance change with respect to temperature from -55°C to +200°C</li> <li>No capacitance decay with time</li> <li>Non-polar device, minimizing installation concerns</li> <li>100% pure matte tin-plated end metallization allowing for excellent solderability</li> <li>SnPb plated end metallization available upon request (5% min)</li> </ul>
0603/1608		0.5pF - 0.01μF	10 - 200	
0805/2012		0.5pF - 0.047μF	10 - 200	
1206/3216		1.0pF - 0.1μF	10 - 200	
1210/3225		1.0pF - 0.22μF	10 - 200	
1812/4532		0.015μF - 0.22μF	50 - 100	
2220/5650		0.47μF	50	

## High Temperature Through-Hole Multilayer Ceramic Capacitors (THD MLCCs)

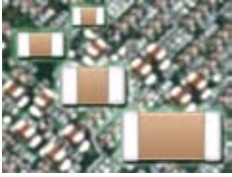
High Temperature (200°C - 260°C) • Axial & Radial • COG (NP0) & X7R Dielectrics • 50VDC–5KVDC  
 (Robust / MIL Screened)



Style/Case Size	Max Temp.	Dielectric/ Capacitance Range	Voltage Range (VDC)	Benefits
HT05 - HT16 HP05 - HP16	200°C	COG – 22pF - 0.1μF X7R – 1000pF - 4.7μF	100, 200	<ul style="list-style-type: none"> <li>-55°C to +200°C operating temperature range</li> <li>Ideal for industrial, down hole and harsh environments</li> <li>Axial and radial form factors</li> <li>Conformal coated option available (HP Series only)</li> </ul>
HV10 - HV16		COG – 15pF - 0.015μF X7R – 820pF - 1.0μF	500 - 4000	<ul style="list-style-type: none"> <li>-55°C to +200°C operating temperature range</li> <li>High temperature (+200°C)</li> <li>Ideal for industrial, down hole and harsh environments</li> <li>Radial form factor</li> </ul>
ACR/ARR/ ACA/ARA		COG – 10pF - 0.15μF X7R – 1000pF - 4.7μF	50 - 100	<ul style="list-style-type: none"> <li>-55°C to +200°C operating temperature range</li> <li>Ideal for down hole, jet engine controls and geophysical pressure probes</li> <li>Axial and radial form factors</li> </ul>
VCR/VRR		COG – 10pF - 0.047μF X7R – 680pF - 1.2μF	500 - 5000	<ul style="list-style-type: none"> <li>-55°C to +200°C operating temperature range</li> <li>Ideal for high voltage power supplies, high voltage meter</li> <li>Multiplier and RF circuits</li> <li>Radial form factor</li> </ul>
TCR/TRR/ TCA/TRA	260°C	COG – 10pF - 0.15μF X7R – 1000pF - 3.9μF	50 - 100	<ul style="list-style-type: none"> <li>-55°C to +260°C operating temperature range</li> <li>Ideal for down hole, jet engine controls and geophysical pressure probes</li> <li>Axial and radial form factors</li> </ul>

## Military Grade Surface Mount Multilayer Ceramic Chip Capacitors (SMD MLCCs)

**MIL-PRF-55681 • Established Reliability • BP (NP0) & BX (X7R) Dielectrics • 50VDC–100VDC  
 (Military Grade)**



Size Code EIA	Style	Dielectric	Capacitance Range	Voltage Range (VDC)	Benefits
0805	CDR01 CDR31	BP, BX	10pF - 0.018 $\mu$ F	50 - 100	<ul style="list-style-type: none"> <li>• -55°C to +125°C operating temperature range</li> <li>• Established reliability</li> <li>• Non-polar device, minimizing installation concerns</li> <li>• 100% pure matte tin-plated end metallization option available</li> <li>• SnPb plated (70/30) end metallization option available</li> <li>• SnPb coated (60/40) end metallization option available</li> </ul>
1206	CDR32	BP, BX	1.0pF - 0.039 $\mu$ F	50 - 100	
1210	CDR33	BP, BX	1000pF - 0.1 $\mu$ F	50 - 100	
1805	CDR02	BP, BX	220pF - 0.022 $\mu$ F	50 - 100	
1808	CDR03	BP, BX	330pF - 0.068 $\mu$ F	50 - 100	
1812	CDR04 CDR34	BP, BX	1200pF - 0.18 $\mu$ F	50 - 100	
1825	CDR05 CDR35	BP, BX	3900pF - 0.470 $\mu$ F	50 - 100	
2225	CDR06	BP, BX	6800pF - 0.47 $\mu$ F	50 - 100	

## Military Grade Surface Mount Multilayer Ceramic Chip Capacitors (SMD MLCCs)

**GR900 • High Reliability • BP (NP0) & BX (X7R) Dielectrics • 16VDC–200VDC  
 (Military Grade)**



Size Code EIA	Style	Dielectric	Capacitance Range	Voltage Range (VDC)	Benefits
0504	C0504	BP, BX	10pF - 6800pF	50 - 200	<ul style="list-style-type: none"> <li>• -55°C to +125°C operating temperature range</li> <li>• High reliability</li> <li>• Group A &amp; B (optional) testing</li> <li>• In process inspection (per MIL-PRF-123)</li> <li>• Non-polar device, minimizing installation concerns</li> <li>• 100% pure matte tin plated end metallization option available</li> <li>• SnPb plated (70/30) end metallization option available</li> <li>• SnPb coated (60/40) end metallization option available</li> <li>• Gold plated end metallization option available</li> </ul>
0805	C0805	BP, BX	10pF - 0.1 $\mu$ F	25 - 200	
1005	C1005	BP, BX	1.0pF - 0.022 $\mu$ F	50 - 200	
1206	C1206	BP, BX	1.0pF - 0.15 $\mu$ F	16 - 200	
1210	C1210	BP, BX	10pF - 0.47 $\mu$ F	16 - 200	
1805	C1805	BP, BX	220pF - 0.047 $\mu$ F	50 - 200	
1808	C1808	BP, BX	330pF - 0.1 $\mu$ F	50 - 200	
1812	C1812	BP, BX	330pF - 0.18 $\mu$ F	50 - 200	
1825	C1825	BP, BX	2700pF - 0.47 $\mu$ F	50 - 200	
2225	C2225	BP, BX	2700pF - 1.0 $\mu$ F	50 - 200	



## Military Grade Surface Mount Multilayer Ceramic Chip Capacitors (SMD MLCCs) (cont.)

**MIL-PRF-123 • High Reliability • BR (X7R) & BX (X7R) Dielectrics • 6.3VDC–200VDC  
 (Military Grade & Space Quality)**



Size Code EIA	Style	Dielectric	Capacitance Range	Voltage Range (VDC)	Benefits
0805	CKS51	BP, BX	1.0pF - 0.018 $\mu$ F	50 - 100	<ul style="list-style-type: none"> <li>-55°C to +125°C operating temperature range</li> <li>High reliability</li> <li>Non-polar device, minimizing installation concerns</li> <li>Tin coated (Sn60) end metallization option available</li> <li>SnPb plated (70/30) end metallization option available</li> <li>Gold plated end metallization option available</li> </ul>
1206	CKS55	BP, BX	1.0pF - 0.039 $\mu$ F	50 - 100	
1210	CKS52	BP, BX	300pF - 0.1 $\mu$ F	50 - 100	
1808	CKS53	BP, BX	300pF - 0.1 $\mu$ F	50 - 100	
1812	CKS56	BP, BX	1200pF - 0.18 $\mu$ F	50 - 100	
1825	CKS57	BP, BX	3900pF - 0.47 $\mu$ F	50 - 100	
2225	CKS54	BP	1100pF - 1.0 $\mu$ F	50	

**DSCC Approved • High Reliability • BP (COG/NP0), BR (X7R) & BX (X7R) Dielectrics • 6.3VDC–200VDC  
 (Military Grade)**



Size Code EIA	Style	Dielectric	Capacitance Range	Voltage Range (VDC)	Benefits
0402	DSCC 03029	BR, BX	100pF - 2200pF	6.3 - 200	<ul style="list-style-type: none"> <li>Defense Supply Center, Columbus approved</li> <li>Federal Stock Control Number, Cage Code 31433</li> <li>Meets US Department of Defense (USDoD) specifications per MIL-PRF-55681</li> <li>Meets USDoD standards per MIL-STD-202 &amp; MIL-STD-1285</li> <li>High reliability</li> <li>Non-polar device, minimizing installation concerns</li> </ul>
0603	DSCC 03028	BR, BX	100pF - 0.1 $\mu$ F	6.3 - 200	
0805	DSCC 05006	BP, BR, BX	1.0pF - 0.018 $\mu$ F	10 - 200	
1206	DSCC 05007	BP, BR, BX	1.0pF - 0.047 $\mu$ F	10 - 200	
2220	DSCC 91019	BR	0.56 $\mu$ F - 1.0 $\mu$ F	25 - 50	

## Military Grade Surface Mount Multilayer Ceramic Chip Capacitors (SMD MLCCs)

**Commercial-Off-The-Shelf (COTS) for Higher Reliability Applications • X7R and COG Dielectrics • 6.3VDC–250VDC  
 (COTS • MIL Screened)**



Size Code EIA/Metric	Dimensions L x W (mm)	Dielectric/ Capacitance Range	Voltage Range (VDC)	Benefits
0402/1005	1.0 x 0.5	COG – 0.5pF - 2200pF X7R – 150pF - 0.1 $\mu$ F	10 - 100 6.3 - 50	<ul style="list-style-type: none"> <li>-55°C to +125°C operating temperature range</li> <li>Voltage conditioning and post-electrical testing per MIL-PRF-55681, Paragraph 4.8.3.1</li> <li>Destructive Physical Analysis (DPA) per EIA-469</li> <li>Humidity, steady state, low voltage (85/85) per MIL-STD 202, Method 103, Condition A</li> <li>Certificate of compliance</li> <li>RoHS-compliant (excluding SnPb end metallization option)</li> <li>Non-polar device, minimizing installation concerns</li> <li>100% pure matte tin plated end metallization allowing for excellent solderability</li> <li>SnPb plated end metallization option available upon request (5% min)</li> </ul>
0603/1608	1.6 x 0.8	COG – 0.5pF - 0.015 $\mu$ F X7R – 180pF - 0.47 $\mu$ F	10 - 200 6.3 - 200	
0805/2012	2.0 x 1.25	COG – 0.5pF - 0.047 $\mu$ F X7R – 180pF - 2.2 $\mu$ F	10 - 200 6.3 - 250	
1206/3216	3.2 x 1.6	COG – 10pF - 0.1 $\mu$ F X7R – 1000pF - 10 $\mu$ F	10 - 200 6.3 - 250	
1210/3225	3.2 x 2.5	COG – 10pF - 0.022 $\mu$ F X7R – 2200pF - 22 $\mu$ F	10 - 200 6.3 - 250	
1808/4520	4.5 x 3.2	X7R – 4700pF - 0.18 $\mu$ F	50 - 200	
1812/4532	4.5 x 3.2	COG – 470pF - 0.22 $\mu$ F X7R – 6800pF - 10 $\mu$ F	50 - 200 25 - 250	
1825/4564	4.5 x 6.4	COG – 3900pF - 0.027 $\mu$ F X7R – 0.022 $\mu$ F - 2.2 $\mu$ F	50 - 200 25 - 250	
2220/5650	5.6 x 5.0	COG – 6800pF - 0.47 $\mu$ F X7R – 0.82 $\mu$ F - 22 $\mu$ F	50 - 200 25 - 250	
2225/5664	5.6 x 6.3	COG – 4700pF - 0.033 $\mu$ F X7R – 0.047 $\mu$ F - 2.2 $\mu$ F	50 - 200 50 - 250	

## Military Grade Surface Mount Multilayer Ceramic Chip Capacitors (SMD MLCCs) (cont.)

Large Chip • High Voltage • COG (NPO) & X7R Dielectrics • 500VDC–5KVDC  
 (Robust • MIL Screened)



Case Size (EIA)	Dimensions (mm)	Dielectric/ Capacitance Range	Voltage Range (VDC)	Benefits
1515	3.81 x 3.81	COG – 12pF - 4700pF X7R – 270pF - 0.1μF	500 - 3000 500 - 2000	<ul style="list-style-type: none"> <li>• -55°C to +125°C operating temperature range</li> <li>• DC voltage ratings of 500V, 1KV, 2KV, 3KV, 4KV and 5KV</li> <li>• Available capacitance tolerances of ±5%, ±10%, ±20%, 0/+100% and -20%/+80%</li> <li>• Low ESR and ESL</li> <li>• Non-polar device, minimizing installation concerns</li> <li>• Available with screening to MIL-PRF-49467, Group A &amp; B</li> <li>• Several end metallization options available (See catalog for details)</li> <li>• Infrared or vapor phase soldering process recommended</li> </ul>
1812	4.57 x 3.05	COG – 12pF - 2700pF X7R – 270pF - 0.056μF	500 - 3000 500 - 2000	
1825	4.57 x 6.35	COG – 22pF - 8200pF X7R – 560pF - 0.15μF	500 - 3000	
2020	5.08 x 5.08	COG – 22pF - 8200pF X7R – 560pF - 0.18μF	500 - 3000	
2225	5.59 x 6.35	COG – 27pF - 0.012μF X7R – 680pF - 0.22μF	500 - 3000	
2520	6.35 x 5.08	COG – 27pF - 0.01μF X7R – 680pF - 0.22μF	500 - 4000 500 - 3000	
3333	8.38 x 8.38	COG – 27pF - 0.015μF X7R – 1200pF - 0.82μF	500 - 4000 500 - 3000	
3530	8.89 x 7.62	COG – 27pF - 0.022μF X7R – 270pF - 0.56μF	500 - 4000	
4040	10.2 x 10.2	COG – 18pF - 0.039μF X7R – 470pF - 0.82μF	500 - 4000	
4540	11.43 x 10.2	COG – 18pF - 0.056μF X7R – 470pF - 1.2μF	500 - 5000	
5440	13.7 x 10.2	COG – 27pF - 0.082μF X7R – 680pF - 1.5μF	500 - 4000	
5550	14.0 x 12.7	COG – 27pF - 0.068μF X7R – 680pF - 1.8μF	500 - 5000	
6560	16.5 x 15.2	COG – 47pF - 0.1μF X7R – 1200pF - 2.2μF	500 - 5000	

## Military Grade Surface Mount Multilayer Ceramic Chip Capacitors (SMD MLCCs)

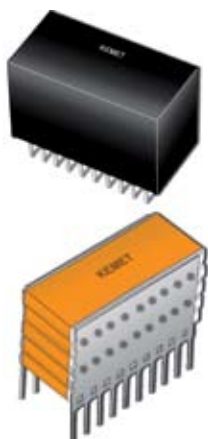
KPS HV • Leadframe Mounted • High Voltage • COG (NP0) & X7R Dielectrics • 500VDC–5KVDC  
 (Robust • MIL Screened)



Series Code	Dimensions (mm)	Dielectric/ Capacitance Range	Voltage Range (VDC)	Benefits
SM20	3.81 x 3.81	COG – 12pF - 4700pF X7R – 270pF - 0.082μF	500 - 3000 500 - 2000	<ul style="list-style-type: none"> <li>• -55°C to +125°C operating temperature range</li> <li>• DC voltage ratings of 500V, 1KV, 2KV, 3KV, 4KV and 5KV</li> <li>• Available capacitance tolerances of ±5%, ±10%, ±20%, +100, -0% and +80%, -20%</li> <li>• “J” &amp; “L” lead configurations available</li> <li>• Reduced microphonics</li> <li>• Reliable and robust termination system</li> <li>• Advanced protection against thermal and mechanical stress</li> <li>• Improved flex performance</li> <li>• Reduces audible, microphonic noise</li> <li>• Non-polar device, minimizing installation concerns</li> <li>• Available with screening to MIL-PRF-49467, Group A &amp; B</li> <li>• Several end metallization options available (See catalog for details)</li> </ul>
SM21	5.08 x 5.08	COG – 22pF - 8200pF X7R – 560pF - 0.18μF	500 - 3000 500 - 2000	
SM22	6.35 x 5.08	COG – 27pF - 0.01μF X7R – 680pF - 0.22μF	500 - 3000	
SM23	8.89 x 7.62	COG – 27pF - 0.022μF X7R – 270pF - 0.56μF	500 - 4000	
SM24	11.43 x 10.2	COG – 18pF - 0.056μF X7R – 470pF - 1.2μF	500 - 5000	
SM25	14.0 x 12.7	COG – 27pF - 0.082μF X7R – 470pF - 1.8μF	500 - 5000	
SM26	16.5 x 15.2	COG – 47pF - 0.1μF X7R – 1200pF - 2.7μF	500 - 5000	
SM30	7.62 x 3.81	COG – 10pF - 0.015μF X7R – 150pF - 0.22μF	500 - 4000	
SM31	10.2 x 5.08	COG – 10pF - 0.027μF X7R – 270pF - 0.39μF	500 - 5000	
SM33	17.08 x 7.62	COG – 12pF - 0.12μF X7R – 220pF - 1.5μF	500 - 7000	
SM34	22.9 x 10.2	COG – 22pF - 0.15μF X7R – 470pF - 1.5μF	500 - 10000	
SM35	27.9 x 12.7	COG – 33pF - 0.22μF X7R – 820pF - 3.9μF	500 - 10000	
SM36	33.0 x 15.2	COG – 56pF - 0.33μF X7R – 1200pF - 5.6μF	500 - 10000	

## Military Grade Through-Hole Multilayer Ceramic Capacitors (THD MLCCs)

KPS MIL • MIL-PRF-49470 • High Reliability • BX(X7R), BR(X7R) & BQ(X7R) Dielectrics • 50VDC–500VDC  
 (Military & Space Grade)



Case Code	Military Equivalent Styles	Lead Type	Dielectric	Capacitance Range	Voltage Range (VDC)	Benefits
3	M49470	Straight Formed “J” Formed “L”	BX, BR, BQ	2.2μF - 47μF	50 - 500	<ul style="list-style-type: none"> <li>• 49470 B-Level reliability</li> <li>• 49470 T-Level Reliability available (Space Grade)</li> <li>• Commercial Grade available</li> <li>• -55°C to +125°C operating temperature range</li> <li>• Reliable and robust termination system</li> <li>• Higher capacitance in the same footprint</li> <li>• Potential board space savings</li> <li>• Advanced protection against thermal and mechanical stress</li> <li>• Reduces audible, microphonic noise</li> <li>• Extremely low ESR and ESL</li> <li>• Encapsulated or unencapsulated</li> <li>• Non-polar device, minimizing installation concerns</li> <li>• SnPb coated (60/40) lead material</li> <li>• DSCC 87106 equivalent available upon request</li> </ul>
4				0.82μF - 15μF		
5				0.15μF - 5.6μF		

## Military Grade Through-Hole Multilayer Ceramic Capacitors (THD MLCCs)

**Axial • MIL-PRF-20 • Established Reliability • CG (COG/NPO) Dielectric • 50VDC–200VDC (Military Grade)**



Series Code	Military Equivalent Styles	Dimensions L x D (inches)	Dielectric	Capacitance Range	Voltage Range (VDC)	Benefits
C114G	CC75, CCR75	0.16 x 0.09	CG	1.0pF - 680pF	50 - 200	<ul style="list-style-type: none"> <li>-55°C to +125°C operating temperature range</li> <li>Ultra-stable COG (NPO) Dielectric</li> <li>Established reliability</li> <li>Non-polar device, minimizing installation concerns</li> <li>SnPb coated (60/40) lead material</li> <li>Failure rating screening available 0.001 to 1.0%</li> </ul>
C124G	CC76, CCR76	0.25 x 0.09		82pF - 1000pF	50 - 200	
C192G	CC77, CCR77	0.39 x 0.14		150pF - 5600pF	50 - 200	
C202G	CC78, CCR78	0.50 x 0.25		820pF - 0.027μF	50 - 200	
C222G	CC79, CCR79	0.69 x 0.35		3900pF - 0.082μF	50 - 200	

## Military Grade Through-Hole Multilayer Ceramic Capacitors (THD MLCCs)

**Radial • MIL-PRF-20 • Established Reliability • CG (COG/NPO) Dielectric • 50VDC–200VDC (Military Grade)**



KEMET Series	Military Equivalent Styles	Dimensions H x L x W (inches)	Dielectric	Capacitance Range	Voltage Range (VDC)	Benefits
C052G/ C056G	CC05, CCR05	0.19 x 0.19 x 0.09	CG	1.0pF - 3300pF	50 - 200	<ul style="list-style-type: none"> <li>-55°C to +125°C operating temperature range</li> <li>Ultra-stable COG (NPO) Dielectric</li> <li>Established reliability</li> <li>Non-polar device, minimizing installation concerns</li> <li>SnPb coated (60/40) lead material</li> <li>Failure rating screening available 0.001 to 1.0%</li> <li>Lead spacings 0.20 - 0.40"</li> </ul>
C062G/ C066G	CC06, CCR06	0.29 x 0.29 x 0.09		360pF - 0.018μF	50 - 200	
C512G	CC07, CCR07	0.48 x 0.48 x 0.14		2200pF - 0.10μF	50 - 200	
C522G	CC08, CCR08	0.48 x 0.48 x 0.24		3900pF - 0.068μF	50 - 200	

**Radial • GR900 • High Reliability • CG (COG/NPO), BP (COG/NPO) & BX (X7R) Dielectrics • 50VDC–200VDC (Military Grade)**



KEMET Series	Dimensions H x L x W (inches)	Dielectric	Capacitance Range	Voltage Range (VDC)	Benefits
C052B	0.19 x 0.19 x 0.09	CG, BP BX	1.0pF - 6800pF 470pF - 0.15μF	50 - 200	<ul style="list-style-type: none"> <li>-55°C to +125°C operating temperature range</li> <li>High reliability</li> <li>Solder coated copper, lead material standard</li> <li>Group A &amp; B (optional) testing</li> <li>In process inspection (per MIL-PRF-123)</li> <li>Non-polar device, minimizing installation concerns</li> <li>Lead spacings 0.20 - 0.40"</li> </ul>
C062B	0.29 x 0.29 x 0.09	CG, BP BX	270pF - 0.024μF 3300pF - 1.0μF	50 - 200	
C512B	0.48 x 0.48 x 0.14	CG, BP BX	2000pF - 0.15μF 0.039μF - 3.3μF	50 - 200	

## Military Grade Through-Hole Multilayer Ceramic Capacitors (THD MLCCs)

Radial • MIL-PRF-123 • High Reliability • BP (C0G/NP0) & BX (X7R) Dielectrics • 50VDC–200VDC (Military Grade)



KEMET Series	Military Equivalent Styles	Dimensions H x L x W (inches)	Dielectric	Capacitance Range	Voltage Range (VDC)	Benefits
C052Z	CKS05	0.19 x 0.19 x 0.09	BP BX	4.7pF - 3300pF 270pF - 0.01 $\mu$ F	50 - 200	<ul style="list-style-type: none"> <li>-55°C to +125°C operating temperature range</li> <li>High reliability</li> <li>Solder coated copper, lead material standard</li> <li>Non-polar device, minimizing installation concerns</li> <li>Lead spacings 0.20 - 0.40"</li> </ul>
C062Z	CKS06	0.29 x 0.29 x 0.09	BP BX	270pF - 0.018 $\mu$ F 5600pF - 1.0 $\mu$ F	50 - 200	
C512Z	CKS07	0.48 x 0.48 x 0.14	BP BX	2200pF - 0.1 $\mu$ F 0.056 $\mu$ F - 1.0 $\mu$ F	50 - 200	

Axial • MIL-C-11015 & MIL-PRF-39014 • High Reliability • BX (X7R) & BR (X7R) Dielectrics • 50VDC–100VDC (Military Grade)



KEMET Series	Military Equivalent Styles	Dimensions H x L x W (inches)	Dielectric	Capacitance Range	Voltage Range (VDC)	Benefits
C114K C114T	CK12 (11015) CKR11 (39014)	0.16 x 0.09	BX	10pF - 0.01 $\mu$ F	50 - 100	<ul style="list-style-type: none"> <li>-55°C to +125°C operating temperature range</li> <li>High reliability</li> <li>Non-polar device, minimizing installation concerns</li> <li>SnPb coated (60/40) lead material</li> <li>Failure rating screening available 0.001 to 1.0%</li> </ul>
C124K C124T	CK13 (11015) CKR12 (39014)	0.25 x 0.09	BX	5600pF - 0.047 $\mu$ F	50 - 100	
C192K C192T	CK14 (11015) CKR14 (39014)	0.39 x 0.14	BX	0.012 $\mu$ F - 0.27 $\mu$ F	50 - 100	
C202K C202T	CK15 (11015) CKR15 (39014)	0.50 x 0.25	BX, BR	0.056 $\mu$ F - 1.0 $\mu$ F	50 - 100	
C222K C222T	CK16 (11015) CKR16 (39014)	0.69 x 0.35	BR	0.47 $\mu$ F - 3.3 $\mu$ F	50 - 100	

Radial • MIL-C-11015 & MIL-PRF-39014 • High Reliability • BX (X7R) Dielectric • 50VDC–200VDC (Military Grade)



Series Code	Military Equivalent Styles	Dimensions H x L x W (inches)	Dielectric	Capacitance Range	Voltage Range (VDC)	Benefits
C052K / C056K C052T / C056T	CK05 (11015) CKR05 (39014)	0.19 x 0.19 x 0.09	BX	10pF - 0.1 $\mu$ F	50 - 200	<ul style="list-style-type: none"> <li>-55°C to +125°C operating temperature range</li> <li>High reliability</li> <li>Non-polar device, minimizing installation concerns</li> <li>SnPb coated (60/40) lead material</li> <li>Failure rating screening available 0.001 to 1.0%</li> <li>Lead spacings 0.20 - 0.40"</li> </ul>
C062K / C066K C062T / C066T	CK06 (11015) CKR06 (39014)	0.29 x 0.29 x 0.09	BX	1200pF - 1.0 $\mu$ F	50 - 200	

## Surface Mount Multilayer Ceramic Chip Capacitors (SMD MLCCs) for High Power Applications

**CBR Series • COG Dielectric • Ultra High Q • Low ESR • 6.3VDC–250VDC  
 (RF & Microwave)**



Size Code (EIA/Metric)	Dimensions L x W (mm)	Dielectric/ Capacitance Range	Voltage Range (VDC)	Benefits
0201/0603	0.6 x 0.03	COG - 0.1pF - 33pF	6.3 - 25	<ul style="list-style-type: none"> <li>• -55°C to +125°C operating temperature range</li> <li>• Ultra high Q</li> <li>• Base metal electrode (BME) dielectric system</li> <li>• Pb-Free and RoHS-compliant</li> <li>• Available capacitance tolerances of ±0.05pF, ±0.1pF, ±0.25pF, ±0.5pF, ±1%, ±2%, ±5% and ±10%</li> <li>• No piezoelectric noise</li> <li>• Low ESR</li> <li>• High thermal stability</li> <li>• No capacitance change with respect to applied rated DC voltage</li> <li>• Negligible capacitance change with respect to temperature</li> <li>• No capacitance decay with time</li> <li>• Non-polar device, minimizing installation concerns</li> <li>• 100% pure matte tin-plated termination finish allowing for excellent solderability</li> </ul>
0402/1005	1.0 x 0.5	COG - 0.1pF - 22pF	50 - 100	
0603/1608	1.6 x 0.8	COG - 0.3pF - 47pF	50 - 250	
0805/2012	2.0 x 1.25	COG - 0.3pF - 100pF	50 - 250	

## Surface Mount Inductors




Application	Construction	Series	Sizes	Inductance nH	Current Rating mA	Benefits
Filtering on Signal Line	Wire Wound	L-SWS	0806	1.0 - 100	80 - 610	• High Q, high inductance values narrow tolerance achieved with bottom surface electrodes
	Multilayer	L-SMS	0402 - 1206	0.047 - 33	1 - 300	• High Q, low inductance values, small case sizes
Noise Reduction on Power Supply Line	Wire Wound	L-PWS	0805 - 1207	1.0 - 1000	15 - 1075	• Available with super low DC resistance and high current ratings
		L-PWI	0805 - 1007	1.0 - 680	45 - 775	• High current
		L-PWF	0603	1.0 - 47	35 - 230	• High efficiency design with bottom surface electrodes
	Multilayer	L-PMS	0603, 0805	0.10 - 10	50 - 500	• Multi-layer block structure yields higher reliability
Power Inductor for Switching Regulator	Wire Wound	L-DWL	0805	1.0 - 47	100 - 620	• Low profile, high current
		L-DWF	0603	1.0 - 47	50 - 290	• High efficiency design with bottom surface electrodes
		L-DWS	0805 - 1007	1.0 - 1000	25 - 1200	• Low DC resistance
		L-DWI	0805 - 1210	1.0 - 100	65 - 1440	• High current
		L-DWD	3010 - 10050	0.9 - 220	220 - 9000	• High current, low profile, original magnetically shielded, shock-proof structure
	Multilayer	L-DMI	1008, 1206	1.0 - 4.7	700 - 1300	• Low profile, low DC resistance
Radio Frequency Inductor	Multilayer	L-RMS	0201 - 0805	1.0 - 470	40 - 300	• Designed for application above 100MHz, low inductance values, excellent Q and SRF properties

## Ferrite Beads



Application	Construction	Series	Sizes	Impedance $\Omega$	Current Rating mA	Benefits
EMI Suppression (Ferrite Beads)	Wire Wound	Z-PWS	0603 - 1806	8 - 100	2000 - 6000	• High current, several material combinations available to target specific frequency ranges
		Z-PWZ	0603 - 1812	30 - 2000	400 - 4000	• High current and impedance
	Multilayer	Z-SMS	0201 - 0805	10 - 2500	100 - 1500	• Wide range of material types and broad impedance range targeted for signal lines
		Z-PMS	0402 - 0805	33 - 390	1000 - 4000	• For power lines, low DC resistance

A person in a dark suit is shown from the chest up, holding a large, cylindrical capacitor. The person's face is partially visible, wearing glasses. The background is a clear blue sky. The text is overlaid on the left side of the image.

# *Why The Capacitance Company is also the “Easy-To-Buy-From” company.*

When you choose KEMET, you'll enjoy a level of responsiveness you just won't get from any other component manufacturer. You simply won't find an electronic components manufacturer more passionate about customer service. Our innovative service offerings and superior localized support are known throughout the industry, powered by our global, customer-focused sales organization and worldwide logistics capabilities. We're 100% committed to serving any customer, anywhere, and meeting customer needs when they need to be met.

Whether you need rush samples, technical assistance, in-person consultations or accelerated custom design, design collaboration and prototype services, we have a solution. If it's anything to do with capacitance, we can help – and help fast.





# EMI Filters

As electronics become pervasive in virtually all aspects of our lives, the generation of electromagnetic noise between equipment can be problematic. In order to maintain complete system functionality, it is increasingly important to limit these types of interference. KEMET's complete line of EMI filtering products address EMI issues across a multitude of applications.

Many geographical regions regulate equipment testing for EMI noise immunity and generation. These tests are often mandatory before the final product can be released into the marketplace. The permitted noise levels are, in such cases, clearly defined in international standards. If the product cannot meet the requirements, it is often necessary to add an EMI filter to the design.

EMI filters consist of combinations of capacitive and inductive elements that will reduce the disturbance levels in the frequency band specified by the design. As *The Capacitance Company*, KEMET has an exceptional advantage of selecting capacitors of superior quality and functionality to best serve its EMI filter products.

KEMET offers a broad portfolio of EMI filters to accommodate a variety of applications:



## **Power and Small Signal Feed-Through Filters**

- A wide range of current ratings from 0.1A to 800A in various configurations of capacitors and inductors
- Excellent stability properties and attenuation up to the GHz region
- Applications include screen rooms, power supplies, telecom systems, medical and military equipment

## **General Purpose Filters**

- A variety of PCB mount and spade lug terminated filters for standard line voltage up to 16A
- Various configurations for moderate to high performance attenuation
- Applications include consumer goods, domestic appliances and business equipment, low power switch mode power supplies and digital equipment

## **Chassis Mount Filters**

- Single and three phase filters with and without neutral connection, with various types of screw or flexible lead terminals and different geometries
- Current ratings from 1A to 1600A
- Voltage ratings from 250VAC to 600VAC and 1000VDC
- Single or multistage for alternative attenuation levels
- Applications include industrial frequency inverters, motor drives, switch mode power supplies and medical systems

## **Special Purpose Filters**

- Power line filters for screen rooms
- DC filters for solar panel arrays
- Three phase filters for inverters for solar panel systems

For applications requiring customized solutions, KEMET's filter research and development team offers complete collaborative design services to meet your specific geometric and electrical specifications.

## EMI Filters for Light Fittings



Series	Current Rating (A)	Benefits
FLH...DK	1.4 - 7	<ul style="list-style-type: none"> <li>Complies to EN/IEC 60939</li> <li>Enables compliance to EN 55015 for light fittings for CE marking</li> <li>No increase in ground current</li> </ul>

## Chassis Mount Single Phase Filters

### Chassis Mount Single Phase General Purpose Filters



Series	Current Rating (A)	L(mH)	Capacitance x (μF)	Capacitance y (nF)	Benefits
FAI	1 - 30	2x0.5 - 2x10	0.015 - 0.1	2x2.2 - 2x3.2	<ul style="list-style-type: none"> <li>Single or multistage chassis mount filters</li> <li>Metal enclosures, various terminations</li> <li>Medical versions available</li> <li>High symmetric and asymmetric attenuation</li> </ul>
FAK	3 - 20	2x0.5 - 2x25	0.15 - 0.47	2x1 - 2x5.6	
FAM	1 - 40	2x0.2 - 2x20	0.1 - 1	2x1 - 2x22	
FAR	0.5 - 8.5	2x2 - 2x40	0.15 - 0.47	2x2.2 - 2x3.3	
FAS	1 - 10	2x0.05 - 2x22	0.22 - 1.0	2x4.7 - 2x22	

### Chassis Mount Single Phase General Purpose Filters • Multistage



Series	Current Rating (A)	L(mH)	Capacitance x (μF)	Capacitance y (nF)	Benefits
FBK	10 - 30	2x0.6 - 2x0.8	2x0.33 - 2x0.47	2x4.7 - 2x10	<ul style="list-style-type: none"> <li>Multistage chassis mount filters</li> <li>Metal enclosures, various terminations</li> <li>Medical versions available</li> <li>General, high and very high performance</li> </ul>
FBR	1 - 16	2x2.8 - 2x22	2x0.33 - 2x1	2x4.7	
FBS	1 - 16	2x0.043 - 2x22	2x0.33 - 2x1	2x4.7	

### Chassis Mount Single Phase High Performance Filters • Low Profile

Series	Current Rating (A)	L(mH)	Capacitance x (μF)	Capacitance y (nF)	Benefits
FLLE2...FP	10 - 25	4x3 + 2x0.036	1 + 0.47 + 1	4x22	<ul style="list-style-type: none"> <li>Very low profile</li> <li>High attenuation</li> <li>Multistage design</li> <li>Residential or light industrial environments</li> <li>Motor drive</li> </ul>

### Chassis Mount Single Phase High Performance Filters



Series	Current Rating (A)	L(mH)	Capacitance x (μF)	Capacitance y (nF)	Benefits
FLLE2...AN	8 - 63	2x1 - 2x10	2.2 - 4.4 & 0.68 - 1	2x10 - 2x33 & 2x47 - 2x94	<ul style="list-style-type: none"> <li>General applications</li> <li>High attenuation</li> <li>Industrial environments</li> <li>Motor drive</li> </ul>
FLLE2...AI,...AS	6 - 20	2x1 - 2x2.4	2x0.68 - 4x2.2	2x4.7 - 2x33	<ul style="list-style-type: none"> <li>Very high symmetric and asymmetric attenuation</li> <li>Single or two stage designs</li> <li>Frequency converters</li> </ul>

### Single Phase Power Line Filters

Series	Current Rating (A)	Benefits	Applications
FLLE2...SR	1 - 100	<ul style="list-style-type: none"> <li>High attenuation</li> <li>Multistage design</li> </ul>	<ul style="list-style-type: none"> <li>Shielded rooms and secure areas</li> <li>Direct mounting via pipe outlet</li> </ul>

### Chassis Mount DC EMI Filters for Photovoltaic Inverters



Series	Current Rating (A)	Benefits
FLLE2...PV	25 - 1600	<ul style="list-style-type: none"> <li>Solar panel inverters</li> </ul>

## Chassis Mount Three Phase Filters

### Chassis Mount Three Phase and Neutral Filters • General Purpose

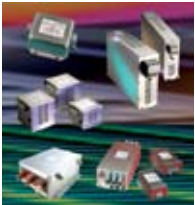
Series	Current Rating (A)	L(mH)	Capacitance x (μF)	Capacitance y (nF)	Benefits
FTR	13 - 100	3x0.1 - 4x0.1	3x0.01 - 3x1	4x4.7 - 4x22	<ul style="list-style-type: none"> <li>• High symmetric and asymmetric attenuation</li> <li>• Single or two stage designs</li> <li>• Compact design</li> <li>• Screw or flexible lead termination</li> </ul>

### Chassis Mount Three Phase and Neutral Filters • High Performance



Series	Current Rating (A)	L(mH)	Capacitance x (μF)	Capacitance y (nF)	Benefits
FLLD3...AB	25 - 63	4x0.5 - 4x2	3x2.2	2x15 - 3x4.7	<ul style="list-style-type: none"> <li>• High symmetric and asymmetric attenuation</li> <li>• Screw or terminal block connectors</li> </ul>
FLLD3...AD	16 - 25	4x1.1 - 4x1.8	3x1	15	<ul style="list-style-type: none"> <li>• High symmetric and asymmetric attenuation</li> <li>• Screw or spade lug terminations</li> <li>• Low profile</li> </ul>
FLLD3...AW	3 - 20	4x0.2 - 4x1.5	3x0.1	4.7 - 22	<ul style="list-style-type: none"> <li>• Good high frequency attenuation</li> <li>• Screw or spade lug terminations</li> <li>• Low profile and compact</li> </ul>
FLLD3...BM,...ZS	4 - 25	4x0.04 - 3x4	4x0.04 - 3x13.2	1x22 - 4x33	<ul style="list-style-type: none"> <li>• High symmetric and asymmetric attenuation</li> <li>• Good broadband attenuation</li> <li>• Compact, low profile</li> </ul>

### Chassis Mount Three Phase Filters • High Performance • High Voltage



Series	Current Rating (A)	L(mH)	Capacitance x (μF)	Capacitance y (nF)	Benefits
FLLD3...AN,...HN	8 - 450	3x0.075 - 3x7.6	3x2.2 - 3x10 & 3x1 - 3x10	3x10 - 3x280 & 2x1	<ul style="list-style-type: none"> <li>• 440VAC - 520VAC</li> <li>• High attenuation</li> <li>• 600VAC version</li> </ul>
FLLD3...HNR2	8 - 450				
FLLD3...SN,...SH	8 - 300	0.27 - 0.5/phase	9x1 - 9x22	6x110 - 6x340	<ul style="list-style-type: none"> <li>• 480VAC - 520VAC</li> <li>• Slim design</li> </ul>
FLLD3...FP	8 - 17	6x4.5 + 3x0.036	3x1.5 - 9x1	2x0.47	<ul style="list-style-type: none"> <li>• Low profile</li> </ul>
FLLD3...SC	8 - 130	0.27 - 0.5	9x1 - 9x2.2	6x110	<ul style="list-style-type: none"> <li>• 520VAC</li> <li>• Slim design</li> </ul>
FLLD3...BN	7 - 180	3x0.3 - 3x2	3x5.6 + 3x3.3	1x3.3	<ul style="list-style-type: none"> <li>• 520VAC</li> <li>• Slim design</li> <li>• Industrial environments</li> <li>• Motor run</li> </ul>

### Chassis Mount Three Phase Filters • High Current • High Voltage



Series	Current Rating (A)	Benefits
FLLD3...PV	150 - 2200	<ul style="list-style-type: none"> <li>• 690VAC</li> <li>• Compact high current filter</li> <li>• Alternative energy inverters (wind, solar, etc.)</li> </ul>

### Chassis Mount Three Phase and Neutral Filters • High Performance, High Voltage

Series	Current Rating (A)	L(mH)	Capacitance x (μF)	Capacitance y (nF)	Benefits
FLLD4...DN	8 - 64	4x1 - 4x1.78	6x2.2 - 6x4.7	2x0.1	<ul style="list-style-type: none"> <li>• 520VAC</li> <li>• Low earth leakage</li> <li>• Compact light weight</li> <li>• Screw terminals</li> <li>• Industrial environments</li> </ul>

## Feed-Through Filters

### Power Feed-Through Filters



Series	Current Rating (A)	Benefits	Applications
FLLDH, FLLDU	16 - 300	<ul style="list-style-type: none"> <li>• Single line, high performance</li> <li>• PI configuration</li> <li>• Excellent attenuation up to GHz range</li> <li>• Rugged sealed construction</li> </ul>	<ul style="list-style-type: none"> <li>• Screen rooms</li> <li>• Power supplies</li> <li>• Telecom systems</li> <li>• Medical equipment</li> </ul>
FLLCC	25 - 800	<ul style="list-style-type: none"> <li>• Single line, high performance</li> <li>• C configuration</li> </ul>	

### Small Signal Feed-Through Filters



Series	Current Rating (A)	Capacitance	Benefits
AFCL 060	10	1.5nF - 47nF	<ul style="list-style-type: none"> <li>• CL configuration</li> <li>• Film dielectric</li> <li>• Self-healing characteristics</li> <li>• Excellent temperature stability</li> </ul>
AFCL 100	1 - 10	100nF - 820nF	<ul style="list-style-type: none"> <li>• CL configuration</li> <li>• Film dielectric</li> <li>• Self-healing characteristics</li> <li>• Excellent temperature stability</li> </ul>
AFPI 100	0.5 - 10	2x500nF	<ul style="list-style-type: none"> <li>• PI configuration</li> <li>• Film dielectric</li> <li>• Self-healing characteristics</li> <li>• Excellent temperature stability</li> </ul>
AFPI 160	16	2x2.5nF - 2x2000nF	
AFPI 190	6 - 30	2x18nF - 2x2000nF	
AFCC 100	5 - 20	15nF - 1400nF	<ul style="list-style-type: none"> <li>• C configuration</li> <li>• Film dielectric</li> <li>• Self-healing characteristics</li> <li>• Excellent temperature stability</li> </ul>
AFCC 160	16 - 25	2.5nF - 10000nF	
AFCC 190	10 - 63	18nF - 220nF	
AKCL 100	0.06 - 15	1.2μF	<ul style="list-style-type: none"> <li>• CL configuration</li> <li>• Ceramic dielectric</li> <li>• Hermetic sealing</li> <li>• Other configurations on request</li> </ul>

## Cylindrical Case General Purpose Filters



Series	Current Rating (A)	Capacitance x (μF)	Capacitance y (nF)	Benefits
FNC	10 - 16	0.15 - 0.68	2x4.7 - 2x27	<ul style="list-style-type: none"> <li>• Suited for consumer goods, appliances, vending machines, etc.</li> <li>• Compact design, spade lug terminations</li> <li>• Push-fit or stud-mount mounting</li> </ul>

## General Purpose PCB Mount Filters



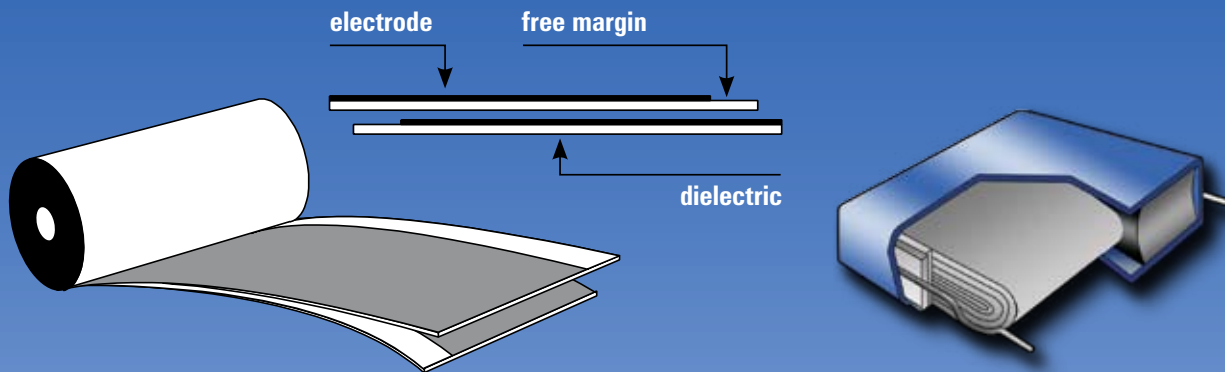
Series	Current Rating (A)	L(mH)	Capacitance x (μF)	Capacitance y (nF)	Benefits
FAA, FAH	0.5 - 10	2x1 - 2x40	0.1 - 0.68, 2x0.1	2x2.2 - 2x4.7	<ul style="list-style-type: none"> <li>• Compact PCB design</li> <li>• PCB or spade lug terminations</li> <li>• Medical versions available</li> </ul>
FLH	0.5 - 6	2x1 - 2x24	0.033	2x2.5	<ul style="list-style-type: none"> <li>• Compact PCB design</li> <li>• High performance</li> <li>• Medical versions available</li> </ul>
FAMAV	3.3 - 16	2x1, 2x13	0.47	2x1 - 2x6.8	<ul style="list-style-type: none"> <li>• High performance filter</li> <li>• High RF attenuation</li> <li>• Single or two stage designs</li> <li>• Medical versions available</li> </ul>

# Film Capacitors

With over 50 years of experience manufacturing plastic film capacitors, KEMET also designs and builds custom equipment for film capacitor production, continuously innovating and improving the production capability, quality, and efficiency. Because films are exceptionally thin – less than  $1\mu\text{m}$  in some cases – extreme precision and process control is required to manufacture quality capacitors for demanding applications.

In the most common type of film capacitor, the electrodes are vacuum deposited, or metallized onto a roll of precision plastic film. The metallization is not deposited near one edge. Two films, one with the unmetallized edge on the left and one on the right, are laid on top of each other and wound into a roll. In many cases, the roll is flattened. Next, several metal layers are sprayed on the ends. These become the electrodes onto which wires are welded before encapsulation.







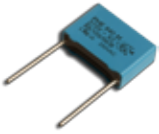



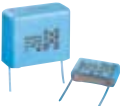

Another variation has the two films in a stack of layers much like a multilayer ceramic capacitor. These can either have leads attached and be encapsulated for through-hole capacitors, or left unencapsulated for surface mount capacitors. KEMET offers several variations on this basic construction using all the commonly available plastic films to meet a broad range of application requirements. KEMET commonly customizes film capacitors for specific applications when a standard part is not available.




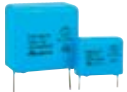







Dielectric Material	Abbreviation	Min. film thickness ( $\mu\text{m}$ )	Dielectric constant at 1 kHz, +23°C	Operating Temperature (°C) Normal/Extended	Temperature coefficient (ppm/°C)	Dissipation factor at 1 kHz, +23°C	Insulation time constant(s) at +23°C	Dielectric absorption %
Polyester	PET	0.9	3.3	-55 to +100 (+125)	+400 ( $\pm 200$ )	0.5%	25,000	0.5
Polyethylene Naphthalate	PEN	1.4	3.0	-55 to +125 (+150)	+200 ( $\pm 150$ )	0.4%	25,000	1.2
Polyphenylene Sulfide	PPS	1.2	3.0	-55 to +125 (+175)	0 (-50) -55 to +100 550 ( $\pm 50$ ) +100 to +150 0 (+50) +150 to +200	0.06%	50,000	0.05
Polypropylene	PP	2.4	2.2	-55 to +105 (+125)	-200 (-100, +50) almost liner	0.03%	100,000	0.01
Paper Impregnated	P	8.0	5.5	-40 to +115	+1200 ( $\pm 200$ )	0.8%	15,000	N/A

Properties of common dielectrics used in film capacitors

## AC Line EMI Capacitors • Class X

Series	Class	Capacitance Range	Rated Voltage (VAC)	Benefits
 F861 Polypropylene Metallized Film	X2	0.001 $\mu$ F - 45 $\mu$ F	310	<ul style="list-style-type: none"> <li>• Test voltage (factory test) 1900VDC</li> <li>• Climactic category 40/110/56</li> <li>• Max. dV/dt 500 V/<math>\mu</math>S</li> <li>• Lead spacing 7.5, 10, 22.5, 27.5, 37.5, 52.5mm</li> <li>• Approvals: ENEC, UL, cUL</li> </ul>
 F871 Polypropylene Metallized Film	X1	0.001 $\mu$ F - 12 $\mu$ F	330	<ul style="list-style-type: none"> <li>• Test voltage (factory test) 2500VDC</li> <li>• Climactic category 40/110/56</li> <li>• Max. dV/dt 500 V/<math>\mu</math>S</li> <li>• Lead spacing 10, 15, 22.5, 27.5, 37.5mm</li> <li>• Approvals: ENEC, UL, cUL</li> </ul>
 F872 Polypropylene Metallized Film	X1	0.001 $\mu$ F - 5.6 $\mu$ F	480	<ul style="list-style-type: none"> <li>• Test voltage (factory test) 3000VDC</li> <li>• Climactic category 40/110/56</li> <li>• Max. dV/dt 750 V/<math>\mu</math>S</li> <li>• Lead spacing 10, 15, 22.5, 27.5, 37.5mm</li> <li>• Approvals: ENEC, UL, cUL</li> </ul>
 F873 Polypropylene Metallized Film	X1	0.01 $\mu$ F - 1.8 $\mu$ F	760	<ul style="list-style-type: none"> <li>• Test voltage (factory test) 4250VDC</li> <li>• Climactic category 40/110/56</li> <li>• Max. dV/dt 300 V/<math>\mu</math>S</li> <li>• Lead spacing 22.5, 27.5, 37.5mm</li> <li>• Approvals: ENEC, UL, cUL</li> </ul>
 R46 Polypropylene Metallized Film	X2	0.01 $\mu$ F - 10.0 $\mu$ F	275 (310 UL) 300 (310 UL)	<ul style="list-style-type: none"> <li>• Test voltage (factory test) 2200VDC &amp; 1500VAC</li> <li>• Climactic category 40/110/56</li> <li>• Max. dV/dt 100 to 500 V/<math>\mu</math>S</li> <li>• Lead spacing 10, 15, 22.5, 27.5, 37.5mm</li> <li>• Approvals ENEC, UL, cUL, CQC</li> </ul>
 R46-125°C Polypropylene Metallized Film	X2	0.01 $\mu$ F - 1.0 $\mu$ F	275 (310 UL)	<ul style="list-style-type: none"> <li>• Test voltage (factory test) 2200VDC</li> <li>• Climactic category 40/125/56</li> <li>• Max. dV/dt 500 V/<math>\mu</math>S</li> <li>• Lead spacing 10, 15, 22.5mm</li> <li>• Approvals: ENEC</li> </ul>
 PHE840M Polypropylene Metallized Film	X2	0.01 $\mu$ F - 10.0 $\mu$ F	275 (280 UL)	<ul style="list-style-type: none"> <li>• Test voltage (factory test) 2200VDC</li> <li>• Climactic category 55/105/56/B</li> <li>• Max. dV/dt 100 V/<math>\mu</math>S</li> <li>• Lead spacing 7.5, 10, 15, 22.5, 27.5, 37.5mm</li> <li>• Approvals ENEC, UL, cUL</li> </ul>
 PHE840E Polypropylene Metallized Film	X2	0.01 $\mu$ F - 10.0 $\mu$ F	300	<ul style="list-style-type: none"> <li>• Test voltage (factory test) 2200VDC</li> <li>• Climactic category 55/105/56/B</li> <li>• Max. dV/dt 100 V/<math>\mu</math>S</li> <li>• Lead spacing 10, 15, 22.5, 27.5, 37.5mm</li> <li>• Approvals ENEC, UL, cUL</li> </ul>
 PME271M Impregnated Metallized Paper	X2	0.001 $\mu$ F - 0.6 $\mu$ F	275	<ul style="list-style-type: none"> <li>• Test voltage (factory test) 2150VDC</li> <li>• Climatic category 40/110/56/B</li> <li>• Max. dV/dt 400 to 1200 V/<math>\mu</math>S</li> <li>• Lead spacing 10.2, 15.2, 20.3, 22.5, 25.4mm</li> <li>• Approvals: ENEC, UL, CSA</li> </ul>
 PME271E Impregnated Metallized Paper	X1	0.01 $\mu$ F - 0.22 $\mu$ F	300	<ul style="list-style-type: none"> <li>• Test voltage (factory test) 2150VDC</li> <li>• Climatic category 40/110/56/B</li> <li>• Max. dV/dt 400 to 1200 V/<math>\mu</math>S</li> <li>• Lead spacing 15.2, 20.3, 22.5, 25.4mm</li> <li>• Approvals: ENEC, UL</li> </ul>
 PHE820M Polyester Metallized Film	X2	0.01 $\mu$ F - 2.2 $\mu$ F	275	<ul style="list-style-type: none"> <li>• Test voltage (factory test) 2150VDC</li> <li>• Climatic category 40/100/56/B</li> <li>• Max. dV/dt 100 V/<math>\mu</math>S</li> <li>• Lead spacing 15, 22.5, 27.5, 37.5mm</li> <li>• Approvals: ENEC, UL, CSA</li> </ul>
 PHE820E Polyester Metallized Film	X2	0.01 $\mu$ F - 2.2 $\mu$ F	300	<ul style="list-style-type: none"> <li>• Test voltage (factory test) 2150VDC</li> <li>• Climatic category 40/100/56/B</li> <li>• Max. dV/dt 100 V/<math>\mu</math>S</li> <li>• Lead spacing 15, 22.5, 27.5, 37.5mm</li> <li>• Approvals: ENEC, UL, CSA</li> </ul>

## AC Line EMI Capacitors • Class X

Series	Class	Capacitance Range	Rated Voltage (VAC)	Benefits
 R46+R Polypropylene Metallized Film	X2	0.22 $\mu$ F - 10 $\mu$ F 0.22 $\mu$ F - 10 $\mu$ F	275 300	<ul style="list-style-type: none"> <li>• Interference suppression and across-the-line applications</li> <li>• Climatic category 40/110/56</li> <li>• Max. dV/dt 100 to 200 V/<math>\mu</math>s</li> <li>• Lead spacing 22.5, 27.5, 37.5mm</li> <li>• Discharge resistor 470k<math>\Omega</math> to 10M<math>\Omega</math></li> <li>• Approvals: ENEC, UL, CSA</li> </ul>
 PHE841 Polypropylene Metallized Film	X1	0.01 $\mu$ F - 2.2 $\mu$ F	330	<ul style="list-style-type: none"> <li>• Test voltage (factory test) 3000VDC</li> <li>• Climatic category 40/100/56/B</li> <li>• Max. dV/dt 100 V/<math>\mu</math>s</li> <li>• Lead spacing 10, 15, 22.5, 27.5, 37.5mm</li> <li>• Approvals ENEC, UL, CSA</li> </ul>
 R49+R Polypropylene Metallized Film	X1	0.33 $\mu$ F, 6.8 $\mu$ F	330	<ul style="list-style-type: none"> <li>• Interference suppression and across-the-line applications</li> <li>• Climatic category 40/110/56</li> <li>• Max. dV/dt 100 to 200 V/<math>\mu</math>s</li> <li>• Lead spacing 27.5mm, 37.5mm</li> <li>• Discharge resistor 470k<math>\Omega</math> to 10M<math>\Omega</math></li> <li>• Approvals: ENEC, UL, CSA</li> </ul>
 PHE844 Polypropylene Metallized Film	X1	0.1 $\mu$ F - 2.2 $\mu$ F	440 (480 UL)	<ul style="list-style-type: none"> <li>• Test voltage (factory test) 3000 VDC</li> <li>• Climatic category 40/105/56/B</li> <li>• Max. dV/dt 100 V/<math>\mu</math>s</li> <li>• Lead spacing 22.5, 27.5, 37.5mm</li> <li>• Approvals ENEC, UL, cUL</li> </ul>
 PME278 Impregnated Metallized Paper	X1	0.001 $\mu$ F - 0.15 $\mu$ F	440VAC	<ul style="list-style-type: none"> <li>• Test voltage (factory test) 2700VDC</li> <li>• Climatic category 40/110/56/B</li> <li>• Max. dV/dt 600 to 2000 V/<math>\mu</math>s</li> <li>• Lead spacing 10.2, 15.2, 20.3, 22.5, 25.4mm</li> <li>• Approvals: ENEC</li> </ul>
 R47 Polypropylene Metallized Film	X2 X1 X2	0.0047 $\mu$ F - 2.2 $\mu$ F	440 440 520	<ul style="list-style-type: none"> <li>• Test voltage (factory test) 2700VDC &amp; 1700VAC</li> <li>• Climatic category 40/110/56 (40/85/56 for 520 VAC)</li> <li>• Max. dV/dt 150 to 750 V/<math>\mu</math>s</li> <li>• Lead spacing 10, 15, 22.5, 27.5, 37.5mm</li> <li>• Approvals ENEC, UL, cUL</li> </ul>
 R49 Polypropylene Metallized Film	X1	0.01 $\mu$ F - 2.2 $\mu$ F 0.047 $\mu$ F - 6.8 $\mu$ F	310 330	<ul style="list-style-type: none"> <li>• Test voltage (factory test) 2200VDC &amp; 1500VAC</li> <li>• Climatic category 40/110/56</li> <li>• Max. dV/dt 100 to 600 V/<math>\mu</math>s</li> <li>• Lead spacing 10, 15, 22.5, 27.5, 37.5mm</li> <li>• Approvals ENEC, UL, cUL</li> </ul>
 PME264 Impregnated Metallized Paper	X2	0.001 $\mu$ F - 0.1 $\mu$ F	660VAC	<ul style="list-style-type: none"> <li>• Test voltage (factory test) 3000VDC</li> <li>• Climatic category 40/085/56/B</li> <li>• Max. dV/dt 600 to 2000 V/<math>\mu</math>s</li> <li>• Lead spacing 15.2, 20.3, 25.4mm</li> <li>• Approvals: ENEC, UL</li> </ul>
 PHE845 Polypropylene Metallized Film	X1	0.01 $\mu$ F - 1.0 $\mu$ F	760 (600 UL)	<ul style="list-style-type: none"> <li>• Test voltage (factory test) 4250VDC</li> <li>• Climatic category 40/105/56/B</li> <li>• Max. dV/dt 100 V/<math>\mu</math>s</li> <li>• Lead spacing 22.5, 27.5, 37.5mm</li> <li>• Approvals ENEC, UL, cUL</li> </ul>



## AC Line EMI Capacitors • Class Y



Series	Class	Capacitance Range	Rated Voltage	Benefits
F881 Polypropylene Metallized Film	Y2	0.001 $\mu$ F - 1.0 $\mu$ F	300VAC	<ul style="list-style-type: none"> <li>• Test voltage (factory test) 4000VDC and 2500VAC</li> <li>• Climactic category 40/110/56</li> <li>• Max. dV/dt 800 V/<math>\mu</math>S</li> <li>• Lead spacing 10, 15, 22.5, 27.5, 37.5mm</li> <li>• Approvals: ENEC, UL, cUL</li> </ul>
PHE850 Polypropylene Metallized Film	Y2	0.01 $\mu$ F - 1.0 $\mu$ F	300 (480 UL)	<ul style="list-style-type: none"> <li>• Test voltage (factory test) 5000VDC &amp; 2500VAC</li> <li>• Climactic category 55/110/56/B</li> <li>• Max. dV/dt 100 V/<math>\mu</math>s</li> <li>• Lead spacing 10, 15, 22.5, 27.5, 37.5mm</li> <li>• Approvals ENEC, UL, cUL</li> </ul>
R41 Polypropylene Metallized Film	Y2	0.001 $\mu$ F - 1.0 $\mu$ F	300	<ul style="list-style-type: none"> <li>• Test voltage (factory test) 5000VDC &amp; 2500VAC</li> <li>• Climactic category 40/110/56</li> <li>• Max. dV/dt 300 to 800 V/<math>\mu</math>s</li> <li>• Lead spacing 10, 15, 22.5, 27.5, 37.5mm</li> <li>• Approvals ENEC, UL, cUL, CQC</li> </ul>
SMP253 Impregnated Metallized Paper	Y2	0.001 $\mu$ F - 0.0047 $\mu$ F	250VAC	<ul style="list-style-type: none"> <li>• SMD, size 5045</li> <li>• Test voltage (factory test) 3000VDC</li> <li>• Climatic category 40/100/56/B</li> <li>• Max. dV/dt 2000 V/<math>\mu</math>s</li> <li>• Approvals: ENEC, UL, CSA</li> </ul>
PME271Y Impregnated Metallized Paper	Y2	0.001 $\mu$ F - 0.1 $\mu$ F	250VAC	<ul style="list-style-type: none"> <li>• Test voltage (factory test) 3000VDC</li> <li>• Climatic category 40/100/56/B</li> <li>• Max. dV/dt 400 to 2000 V/<math>\mu</math>s</li> <li>• Lead spacing 10.2, 15.2, 20.3, 25.4mm</li> <li>• Approvals: ENEC, UL, CSA</li> </ul>
PME271Y (A-E) Impregnated Metallized Paper	Y2	0.001 $\mu$ F - 0.15 $\mu$ F	300VAC	<ul style="list-style-type: none"> <li>• Test voltage (factory test) 3000VDC</li> <li>• Climatic category 40/115/56/B</li> <li>• Max. dV/dt 400 to 2000 V/<math>\mu</math>s</li> <li>• Lead spacing 10.2, 15.2, 20.3, 25.4mm</li> <li>• Approvals: ENEC, UL, CSA</li> </ul>
PME295 Impregnated Metallized Paper	Y1	0.47nF - 4.7nF	440VAC (ENEC) 480VAC (UL)	<ul style="list-style-type: none"> <li>• Test voltage (factory test) 4000VAC</li> <li>• Climatic category 40/115/56/B</li> <li>• Max. dV/dt 2000 V/<math>\mu</math>s</li> <li>• Lead spacing 15.0mm</li> <li>• Approvals: ENEC, UL, CSA</li> </ul>

## DC Film Capacitors for AC Series Power Supply



Series	Dielectric/ Electrodes/Class	Capacitance Range	Rated Voltage	Benefits
PME271M	Impregnated metallized paper Class X2	0.001 $\mu$ F - 0.6 $\mu$ F	275VAC	<ul style="list-style-type: none"> <li>• Best long-term stability</li> <li>• Climatic category 40/110/56/B</li> <li>• Max. dV/dt 400 to 1200 V/<math>\mu</math>s</li> <li>• Lead spacing 10.2, 15.2, 20.3, 22.5, 25.4mm</li> <li>• Approvals: ENEC, EN/IEC 60384-14, UL 1283, UL 1414, CSA No. 1</li> </ul>
PME271E	Impregnated metallized paper Class X1	0.01 $\mu$ F - 0.22 $\mu$ F	300VAC	<ul style="list-style-type: none"> <li>• Best long-term stability</li> <li>• Climatic category 40/110/56/B</li> <li>• Max. dV/dt 400 to 1200 V/<math>\mu</math>s</li> <li>• Lead spacing 15.2, 20.3, 22.5, 25.4mm</li> <li>• Approvals: ENEC, EN/IEC 60384-14, UL 1283</li> </ul>
PHE820M	Polyester metallized film Class X2	0.01 $\mu$ F - 2.2 $\mu$ F	275VAC	<ul style="list-style-type: none"> <li>• 2-section series construction</li> <li>• Climatic category 40/100/56/B</li> <li>• Max. dV/dt 100 V/<math>\mu</math>s</li> <li>• Lead spacing 15, 22.5, 27.5, 37.5mm</li> <li>• Approvals: ENEC, EN/IEC 60384-14, UL 1283, UL 1414, CSA No. 8, CSA No. 1</li> </ul>
PHE820E	Polyester metallized film Class X2	0.01 $\mu$ F - 2.2 $\mu$ F	300VAC	<ul style="list-style-type: none"> <li>• 2-section series construction</li> <li>• Climatic category 40/100/56/B</li> <li>• Max. dV/dt 100 V/<math>\mu</math>s</li> <li>• Lead spacing 15, 22.5, 27.5, 37.5mm</li> <li>• Approvals: ENEC, EN/IEC 60384-14, UL 1283, UL 1414, CSA No. 8, CSA No. 1</li> </ul>
R752	Polypropylene metallized film	0.033 $\mu$ F - 6.8 $\mu$ F	230VAC 400VDC	<ul style="list-style-type: none"> <li>• 1-section with humidity protection</li> <li>• Climatic category 55/105/56</li> <li>• Max. dV/dt 70 to 1000V/<math>\mu</math>s</li> <li>• Lead spacing 10, 15, 22.5, 27.5, 37.5mm</li> </ul>
R75L	Polypropylene metallized film	0.010 $\mu$ F - 10 $\mu$ F	250VAC 560VDC	<ul style="list-style-type: none"> <li>• 1-section with humidity protection</li> <li>• Climatic category 55/105/56</li> <li>• Max. dV/dt 90 to 1500V/<math>\mu</math>s</li> <li>• Lead spacing 10, 15, 22.5, 27.5, 37.5mm</li> </ul>
R603	Polyester metallized film	0.15 $\mu$ F - 6.8 $\mu$ F	300VAC 560VDC	<ul style="list-style-type: none"> <li>• 2-section series construction</li> <li>• Climatic category 55/105/56</li> <li>• Max. dV/dt 100 to 200V/<math>\mu</math>s</li> <li>• Lead spacing 22.5, 27.5, 37.5mm</li> </ul>
R47	Polypropylene metallized film Class X2	4700pF - 2.2 $\mu$ F	520VAC 1000VDC	<ul style="list-style-type: none"> <li>• 2-section series construction</li> <li>• Climatic category 40/085/56</li> <li>• Max. dV/dt 150 to 750 V/<math>\mu</math>s</li> <li>• Lead spacing 10, 15, 22.5, 27.5, 37.5mm</li> <li>• Approvals: ENEC IEC 60384-14, cULus (UL 1283, UL 1414)</li> </ul>

## RC Combination Arc Suppressors



Series	Dielectric/ Electrodes	Capacitance Range	Rated Voltage	Benefits
PMR205	Impregnated metallized paper	0.1 $\mu$ F - 1.0 $\mu$ F R: 22 $\Omega$ - 680 $\Omega$	125VAC 250VDC	<ul style="list-style-type: none"> <li>• Test voltage (factory test) 375VDC</li> <li>• Climatic category 40/085/56/B</li> <li>• Lead spacing 15.2, 20.3, 25.4mm</li> </ul>
PMR209	Impregnated metallized paper	0.047 $\mu$ F - 0.47 $\mu$ F R: 22 $\Omega$ - 470 $\Omega$	250VAC 630VDC Class X2	<ul style="list-style-type: none"> <li>• Test voltage (factory test) 1800VDC</li> <li>• Climatic category 40/085/56/B</li> <li>• Lead spacing 15.2, 20.3, 25.4mm</li> <li>• Approvals: ENEC, EN/IEC 60384-14, UL 1283</li> </ul>
PMR210	Impregnated metallized paper	0.022 $\mu$ F - 0.1 $\mu$ F R: 100 $\Omega$	250VAC Class X1	<ul style="list-style-type: none"> <li>• Test voltage (factory test) 3000VDC, 2000VAC</li> <li>• Climatic category 40/085/56/B</li> <li>• Lead spacing 15.2, 20.3, 25.4mm</li> <li>• Approvals: ENEC, EN/IEC 60384-14, UL 1414</li> </ul>
PMZ2035	Impregnated metallized paper	0.1 $\mu$ F R: 150 $\Omega$	440VAC Class X1	<ul style="list-style-type: none"> <li>• Test voltage (factory test) 1800VDC</li> <li>• Climatic category 40/085/56/B</li> <li>• Lead spacing 25.4mm</li> <li>• Approvals: ENEC, EN/IEC 60384-14</li> </ul>
1.43/F43	Polypropylene metallized film	0.25 $\mu$ F - 1.0 $\mu$ F 0.25 $\mu$ F - 1.0 $\mu$ F 0.022 $\mu$ F - 0.5 $\mu$ F 0.010 $\mu$ F - 1.0 $\mu$ F	250VDC, 160VAC 400VDC, 200VAC 630VDC, 220VAC 275VAC, 560VDC Class X2	<ul style="list-style-type: none"> <li>• RC spark suppression</li> <li>• Climatic category 55/105/56</li> <li>• Climatic category 40/100/56 (275VAC)</li> <li>• Lead spacing 15, 22.5, 27.5mm</li> <li>• Resistor value: 10<math>\Omega</math> to 1k<math>\Omega</math></li> <li>• Approvals: ENEC IEC 60384-14, UL 1414 (only for 275VAC)</li> </ul>

## Low Voltage Noise Suppression Capacitors with Integrated Varistor or Suppression Diodes



Series	Dielectric/Electrodes	Capacitance Range	Rated Voltage (VDC)	Benefits
F5A	Polyester metallized film capacitor with integrated ceramic varistor	0.1 $\mu$ F - 2.2 $\mu$ F 0.1 $\mu$ F - 1.5 $\mu$ F	5 - 63 ( $\rho=5$ mm) 5 - 63 ( $\rho=10$ mm)	<ul style="list-style-type: none"> <li>DC motors suppression mainly in automotive applications</li> <li>Climatic category 55/125/56</li> <li>Varistor voltage range 8VDC to 82VDC</li> <li>Lead spacing 5, 10mm</li> </ul>
F5B	Polyester metallized film capacitor with integrated bidirectional suppressor diode	0.1 $\mu$ F - 1.2 $\mu$ F 1.5 $\mu$ F - 2.2 $\mu$ F 0.1 $\mu$ F - 1.5 $\mu$ F	5 - 63 ( $\rho=5$ mm) 5 - 50 ( $\rho=5$ mm) 5 - 63 ( $\rho=10$ mm)	<ul style="list-style-type: none"> <li>DC motors suppression mainly in automotive applications for very high performance peak reduction</li> <li>Climatic category 55/125/56</li> <li>Diode breakdown voltage range 10VDC to 78VDC</li> <li>Lead spacing 5, 10mm</li> </ul>
F5D	Polyester metallized film capacitor with integrated ceramic capacitor	0.1 $\mu$ F - 2.2 $\mu$ F	63, 100 VDC	<ul style="list-style-type: none"> <li>DC motors suppression mainly in automotive applications</li> <li>Superior frequency response</li> <li>Climatic category 55/125/56</li> <li>Lead spacing 5, 10mm</li> </ul>

## General Purpose Film Capacitors • Radial and Axial






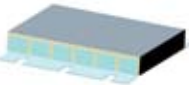
Series	Dielectric/Electrodes	Capacitance Range	Rated Voltage	Benefits
F611 & F612	Polyester metallized film, radial	0.001 $\mu$ F - 330 $\mu$ F	50 - 1000VDC	<ul style="list-style-type: none"> <li>Climatic category 55/105/56</li> <li>Max. dV/dt 400 V/<math>\mu</math>S</li> <li>Lead spacing 5, 7.5, 10, 15, 22.5, 27.5, 37.5mm</li> </ul>
F622	Polyester metallized film, radial	0.001 $\mu$ F - 2.2 $\mu$ F	50 - 630VDC	<ul style="list-style-type: none"> <li>Climatic category 55/125/56</li> <li>Max. dV/dt 800 V/<math>\mu</math>S</li> <li>Lead spacing 5mm</li> </ul>
MMK	Polyester metallized film, radial	0.001 $\mu$ F - 82 $\mu$ F	50 - 1000VDC	<ul style="list-style-type: none"> <li>Climatic category 55/100/56</li> <li>Max. dV/dt 1.0 to 100 V/<math>\mu</math>s</li> <li>Lead spacing 5, 7.5, 10, 15, 22.5, 27.5, 37.5mm</li> </ul>
R82 (5mm) R66 (7.5mm) R60 (10-37.5mm)	Polyester metallized film, radial	0.001 $\mu$ F - 220 $\mu$ F	50 - 1000VDC	<ul style="list-style-type: none"> <li>Climatic category 55/105/56</li> <li>Max. dV/dt 1.0 to 400 V/<math>\mu</math>s</li> <li>Lead spacing 5, 7.5, 10, 15, 22.5, 27.5, 37.5mm</li> </ul>
RSB	Polyester metallized film, radial high temp.	0.001 $\mu$ F - 2.2 $\mu$ F	50 - 630VDC	<ul style="list-style-type: none"> <li>Climatic category 55/125/56</li> <li>Max. dV/dt 200 to 800 V/<math>\mu</math>s</li> <li>Lead spacing 5mm</li> </ul>
PME261	Impregnated metallized paper, radial	0.0082 $\mu$ F - 1.0 $\mu$ F 0.001 $\mu$ F - 0.15 $\mu$ F 0.001 $\mu$ F - 0.1 $\mu$ F	220VAC, 400VDC 300VAC, 630VDC 500VAC, 1000VDC	<ul style="list-style-type: none"> <li>Test voltage (factory test) 800VDC/1250VDC 2000VDC</li> <li>Climatic category 40/070/56</li> <li>Max. dV/dt 220 to 2000 V/<math>\mu</math>s</li> <li>Lead spacing 10.2, 15.2, 20.3, 25.4mm</li> </ul>
A50	Polyester metallized film, axial	0.47 $\mu$ F - 10.0 $\mu$ F 0.33 $\mu$ F - 10.0 $\mu$ F 0.10 $\mu$ F - 10.0 $\mu$ F 0.047 $\mu$ F - 10.0 $\mu$ F 0.010 $\mu$ F - 3.3 $\mu$ F 1000pF - 1.0 $\mu$ F 1000pF - 0.47 $\mu$ F	50VDC, 30VAC 63VDC, 40VAC 100VDC, 63VAC 250VDC, 160VAC 400VDC, 200VAC 630VDC, 220VAC 1000VDC, 250VAC	<ul style="list-style-type: none"> <li>DC multipurpose applications</li> <li>Climatic category 55/105/56</li> <li>Max dV/dt 1.0 to 50 V/<math>\mu</math>s</li> <li>Length L = 11 to 33mm</li> </ul>

## Stable High Temperature Capacitors • PPS Film







Series	Electrodes	Capacitance Range	Rated Voltage	Benefits
SMR	Metallized	0.001 $\mu$ F - 22 $\mu$ F 0.001 $\mu$ F - 22 $\mu$ F 0.001 $\mu$ F - 12 $\mu$ F 0.001 $\mu$ F - 3.9 $\mu$ F 0.001 $\mu$ F - 1.8 $\mu$ F	50VDC, 30VAC 63VDC, 40VAC 100VDC, 63VAC 250VDC, 160VAC 400VDC, 200VAC	<ul style="list-style-type: none"> <li>Climatic category 55/150/56</li> <li>Max. dV/dt 2 to 40 V/<math>\mu</math>s</li> <li>Lead spacing 5, 7.5, 10, 15, 22.5, 27.5mm</li> </ul>




## Metallized Polyester • High Current for High Frequency SMPS and DC/DC Converters

Series	Type	Capacitance Range	Rated Voltage	Benefits
 MDK	Through-hole, multiple leads	0.033 $\mu$ F - 15 $\mu$ F 0.033 $\mu$ F - 10 $\mu$ F 0.033 $\mu$ F - 1.5 $\mu$ F 0.033 $\mu$ F - 0.47 $\mu$ F 0.033 $\mu$ F - 0.18 $\mu$ F	50VDC, 30VAC 100VDC, 63VAC 250VDC, 160VAC 400VDC, 200VAC 630VDC, 220VAC	<ul style="list-style-type: none"> <li>For high frequency output filtering</li> <li>Metallized Polyester (PET)</li> <li>Climatic category 55/125/56</li> <li>Lead spacing 10, 15mm</li> </ul>
 MDC	SMD, multiple leads	0.033 $\mu$ F - 15 $\mu$ F 0.033 $\mu$ F - 10 $\mu$ F 0.033 $\mu$ F - 1.5 $\mu$ F 0.033 $\mu$ F - 0.47 $\mu$ F 0.033 $\mu$ F - 0.18 $\mu$ F	50VDC, 30VAC 100VDC, 63VAC 250VDC, 160VAC 400VDC, 200VAC 630VDC, 220VAC	<ul style="list-style-type: none"> <li>For high frequency output filtering</li> <li>Metallized Polyester (PET)</li> <li>Climatic category 55/125/56</li> <li>Lead spacing 10, 15mm</li> </ul>
 MDS	SMD, low profile, multiple leads	0.033 $\mu$ F - 6.8 $\mu$ F 0.033 $\mu$ F - 5.6 $\mu$ F 0.033 $\mu$ F - 0.68 $\mu$ F 0.033 $\mu$ F - 0.33 $\mu$ F 0.033 $\mu$ F - 0.10 $\mu$ F	50VDC, 30VAC 100VDC, 63VAC 250VDC, 160VAC 400VDC, 200VAC 630VDC, 220VAC	<ul style="list-style-type: none"> <li>For high frequency output filtering</li> <li>Metallized Polyester (PET)</li> <li>Climatic category 55/125/56</li> <li>Lead spacing 10, 15mm</li> </ul>
 JSN	SMD, multiple leads, through-hole also available	10 $\mu$ F - 68 $\mu$ F 10 $\mu$ F - 33 $\mu$ F 10 $\mu$ F - 15 $\mu$ F	100VDC, 63VAC 160VDC, 90VAC 250VDC, 160VAC	<ul style="list-style-type: none"> <li>DC/DC and AC/DC converters applications</li> <li>Climatic category (IEC 60068-1) 55/125/56</li> <li>Max. dV/dt 27 to 40V/<math>\mu</math>s</li> <li>Size from 60.80 to 60.160 (naked components)</li> </ul>

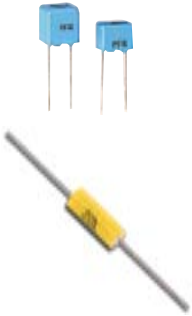
## Polypropylene Film Capacitors • Radial & Axial

Series	Construction	Capacitance Range	Rated Voltage	Benefits
 F461-F464	Single metallized film, radial	0.001 $\mu$ F - 56 $\mu$ F	160 - 2500VDC 90 - 900VAC	<ul style="list-style-type: none"> <li>DC or AC applications</li> <li>Climactic category 55/105/56</li> <li>Max. dV/dt 9500 V/<math>\mu</math>S</li> <li>Lead spacing 5, 7.5, 10, 15, 22.5, 27.5, 37.5mm</li> </ul>
 PHE426	Single metallized film, radial	0.001 $\mu$ F - 0.22 $\mu$ F 0.001 $\mu$ F - 27 $\mu$ F 0.033 $\mu$ F - 18 $\mu$ F 0.001 $\mu$ F - 10 $\mu$ F 0.1 $\mu$ F - 3.9 $\mu$ F 0.001 $\mu$ F - 5.6 $\mu$ F 0.0027 $\mu$ F - 3.3 $\mu$ F 0.0047 $\mu$ F - 0.047 $\mu$ F 0.001 $\mu$ F - 0.027 $\mu$ F	100VDC, 63VAC 250VDC, 160VAC 300VDC, 160VAC 400VDC, 220VAC 450VDC, 220VAC 630VDC, 250VAC 1000VDC, 250VAC 1600VDC, 650VAC 2000VDC, 700VAC	<ul style="list-style-type: none"> <li>DC or AC applications</li> <li>Climactic category 55/105/56</li> <li>Max. dV/dt 30 to 1500 V/<math>\mu</math>s</li> <li>Lead spacing 5, 7.5, 10, 15, 22.5, 27.5, 37.5mm</li> </ul>
 R79	Single metallized film, radial	0.039 $\mu$ F - 0.22 $\mu$ F 0.012 $\mu$ F - 0.15 $\mu$ F 0.0039 $\mu$ F - 0.047 $\mu$ F 0.001 $\mu$ F - 0.018 $\mu$ F	160VDC, 70VAC 250VDC, 160VAC 400VDC, 200VAC 630VDC, 220VAC	<ul style="list-style-type: none"> <li>DC or AC applications</li> <li>Climactic category 55/105/56</li> <li>Max. dV/dt 100 to 600 V/<math>\mu</math>s</li> <li>Lead spacing 5mm</li> </ul>
 R75	Single metallized film, radial	0.1 $\mu$ F - 3.3 $\mu$ F 0.068 $\mu$ F - 33 $\mu$ F 0.068 $\mu$ F - 0.22 $\mu$ F 0.027 $\mu$ F - 33 $\mu$ F 0.027 $\mu$ F - 0.068 $\mu$ F 0.01 $\mu$ F - 15 $\mu$ F 0.01 $\mu$ F - 0.027 $\mu$ F 0.001 $\mu$ F - 8.2 $\mu$ F 0.012 $\mu$ F - 3.9 $\mu$ F 220pF - 0.0082 $\mu$ F 0.0082 $\mu$ F - 2.2 $\mu$ F 0.0039 $\mu$ F - 1.5 $\mu$ F 0.001 $\mu$ F - 1.0 $\mu$ F	160VDC, 70VAC 160VDC, 90VAC 250VDC, 140VAC 250VDC, 160VAC 400VDC, 200VAC 400VDC, 220VAC 630VDC, 220VAC 630VDC, 250VAC 1000VDC, 250VAC 1000VDC, 400VAC 1250VDC, 600VAC 1600VDC, 650VAC 2000VDC, 700VAC	<ul style="list-style-type: none"> <li>Climactic category 55/105/56</li> <li>Max. dV/dt 35 to 9500 V/<math>\mu</math>s</li> <li>Lead spacing 7.5, 10, 15, 22.5, 27.5, 37.5mm</li> </ul>

## Polypropylene Film Capacitors • Radial & Axial (cont.)

Series	Construction	Capacitance Range	Rated Voltage	Benefits
 R74	Single metallized film, radial	0.010 $\mu$ F - 0.15 $\mu$ F 2200pF - 3.3 $\mu$ F 1000pF - 2.2 $\mu$ F 470pF - 0.018 $\mu$ F 470pF - 1.0 $\mu$ F 1000pF - 0.47 $\mu$ F	250VAC, 630VDC 400VAC, 1300VDC 500VAC, 1600VDC 600VAC, 2000VDC (Mini) 700VAC, 2000VDC 900VAC, 2200VDC	<ul style="list-style-type: none"> <li>Optimized for AC applications</li> <li>Climatic category 55/105/56</li> <li>Max. dV/dt 180 to 10000V/<math>\mu</math>s</li> <li>Lead spacing 10, 15, 22.5, 27.5, 37.5mm</li> </ul>
R74 @ 125°C	Single metallized film, radial	1000pF - 0.10 $\mu$ F 680pF - 0.068 $\mu$ F	500VAC, 1600VDC 700VAC, 2000VDC	<ul style="list-style-type: none"> <li>Optimized for AC applications</li> <li>Climatic category 55/125/56</li> <li>Max. dV/dt 1200 to 9500V/<math>\mu</math>s</li> <li>Lead spacing 10, 15, 22.5mm</li> </ul>
 R71	Single metallized film, radial	0.010 $\mu$ F - 22 $\mu$ F 0.010 $\mu$ F - 22 $\mu$ F 0.010 $\mu$ F - 15 $\mu$ F 0.22 $\mu$ F - 10 $\mu$ F	420VDC, 220VAC 520VDC, 250VAC 630VDC, 275VAC 1000VDC, 275VAC	<ul style="list-style-type: none"> <li>PFC (Power Factor Correction) applications</li> <li>Climatic category 40/110/56</li> <li>Max. dV/dt 60 to 400V/<math>\mu</math>s</li> <li>Lead spacing 10, 15, 22.5, 27.5, 37.5mm</li> <li>DC or AC applications</li> </ul>
 PHE429	Single metallized film, radial	0.1 $\mu$ F - 0.47 $\mu$ F 0.047 $\mu$ F - 0.15 $\mu$ F	420VDC, 220VAC 630VDC, 275VAC	<ul style="list-style-type: none"> <li>DC or AC applications</li> <li>Climatic category 55/110/56</li> <li>Max. dV/dt 150 to 250 V/<math>\mu</math>s</li> <li>Lead spacing 15mm</li> </ul>
 A70	Single metallized film, axial	0.022 $\mu$ F - 4.7 $\mu$ F 0.010 $\mu$ F - 3.3 $\mu$ F 6800pF - 1.5 $\mu$ F 1000pF - 0.68 $\mu$ F	160VDC, 90VAC 250VDC, 200VAC 400VDC, 220VAC 630VDC, 250VAC	<ul style="list-style-type: none"> <li>DC or AC applications</li> <li>Climatic category 55/105/56</li> <li>Max. dV/dt 1 to 30 V/<math>\mu</math>s</li> <li>Length L = 11 to 33mm</li> </ul>
 R76	Double metallized film, radial	6800pF - 15.0 $\mu$ F 2700pF - 8.2 $\mu$ F 680pF - 0.012 $\mu$ F 3900pF - 5.6 $\mu$ F 220pF - 3300pF 470pF - 2.2 $\mu$ F 3300pF - 1.2 $\mu$ F 100pF - 0.68 $\mu$ F	250VDC, 180VAC 400VDC, 250VAC 630VDC, 250VAC 630VDC, 400VAC 1000VDC, 400VAC 1000VDC, 600VAC 1600VDC, 650VAC 2000VDC, 700VAC	<ul style="list-style-type: none"> <li>Optimized for DC and pulse applications</li> <li>Climatic category 55/105/56</li> <li>Max. dV/dt 100 to 9500V/<math>\mu</math>s</li> <li>Lead spacing 7.5, 10, 15, 22.5, 27.5, 37.5mm</li> </ul>
 R77	Double metallized film, radial	0.027 $\mu$ F - 0.10 $\mu$ F 0.010 $\mu$ F - 0.10 $\mu$ F 5600pF - 0.10 $\mu$ F 1000pF - 0.10 $\mu$ F 1000pF - 0.027 $\mu$ F 1000pF - 0.018 $\mu$ F	250VAC, 630VDC 300VAC, 800VDC 400VAC, 1000VDC 500VAC, 1300VDC 700VAC, 1600VDC 900VAC, 2000VDC	<ul style="list-style-type: none"> <li>Optimized for AC applications</li> <li>Climatic category 55/105/56</li> <li>Max. dV/dt 900V/<math>\mu</math>s to 9500V/<math>\mu</math>s</li> <li>Lead spacing 15, 22.5, 27.5mm</li> </ul>
 PHE450	Double metallized film, radial	330pF - 10 $\mu$ F 330pF - 5.6 $\mu$ F 330pF - 3.3 $\mu$ F 330pF - 2.2 $\mu$ F 2.7nF - 1.0 $\mu$ F 1.0nF - 0.68 $\mu$ F 1nF - 0.33 $\mu$ F 1nF - 0.033 $\mu$ F	250VDC, 180VAC 400VDC, 250VAC 630VDC, 300/400VAC 1000VDC, 375/600VAC 1600VDC, 650VAC 2000VDC, 700VAC 2500VDC, 900VAC 3000VDC, 1000VAC	<ul style="list-style-type: none"> <li>DC or AC applications</li> <li>Climatic category 55/105/56/B</li> <li>Max. dV/dt 200 to 2500 V/<math>\mu</math>s</li> <li>Lead spacing 7.5, 10, 15, 22.5, 27.5, 37.5mm</li> </ul>
 R73	Polypropylene film/foil, radial	0.047 $\mu$ F - 0.15 $\mu$ F 0.033 $\mu$ F - 0.10 $\mu$ F 0.015 $\mu$ F - 0.047 $\mu$ F 0.010 $\mu$ F - 0.047 $\mu$ F 0.010 $\mu$ F - 2.2 $\mu$ F 3300pF - 1.5 $\mu$ F 2200pF - 0.82 $\mu$ F 1000pF - 0.56 $\mu$ F 100pF - 0.22 $\mu$ F	100VDC, 63VAC 160VDC, 90VAC 250VDC, 125VAC 400VDC, 160VAC 630VDC, 300VAC 1000VDC, 400VAC 1250VDC, 450VAC 1600VDC, 450VAC 2000VDC, 500VAC	<ul style="list-style-type: none"> <li>High current applications</li> <li>Climatic category 55/105/56</li> <li>Max. dV/dt 2400 to 54000V/<math>\mu</math>s</li> <li>Lead spacing 15, 22.5, 27.5, 37.5mm</li> </ul>
 PHE448	Film/foil, radial	1.5nF - 22nF 0.1nF - 3.3nF	1600VDC, 650VAC 2000VDC, 700VAC	<ul style="list-style-type: none"> <li>High current applications</li> <li>Climatic category 55/105/56</li> <li>Max. dV/dt 15000 to 25000 V/<math>\mu</math>s</li> <li>Lead spacing 15mm</li> </ul>

## Polypropylene Film Capacitors • Radial & Axial (cont.)



Series	Construction	Capacitance Range	Rated Voltage	Benefits
PFR	Film/foil, radial	100pF - 22000pF 100pF - 10000pF 100pF - 6800pF 100pF - 6800pF 100pF - 4700pF 100pF - 680pF	63VDC, 40VAC 100VDC, 63VAC 250VDC, 160VAC 400VDC, 220VAC 630VDC, 250VAC 1000VDC, 250VAC	<ul style="list-style-type: none"> <li>• Timing, integration</li> <li>• Climatic category 55/100/56</li> <li>• Max. dV/dt 1000 V/μs</li> <li>• Lead spacing 5mm</li> </ul>
A72	Film/foil, axial	4700pF - 0.010μF 2200pF - 0.015μF 47pF - 0.010μF 0.015μF - 0.33μF 3300pF - 0.10μF 2200pF - 0.068μF 1000pF - 0.047μF	100VDC, 63VAC 250VDC, 125VAC 400VDC, 160VAC 630VDC, 300VAC 1000VDC, 400VAC 1500VDC, 450VAC 2000VDC, 500VAC	<ul style="list-style-type: none"> <li>• High current applications</li> <li>• Climatic category 55/105/56</li> <li>• Max. dV/dt 1800 to 27000V/μs</li> <li>• Length L = 11 to 33mm</li> </ul>

## SMD Film Capacitors

### Metallized Polyester Dielectric



Series	Type	Capacitance Range	Rated Voltage	Benefits	
MMC		2220 - 6560 2824 - 6560 2220 - 6560 2220 - 6560 2824 - 6560	1nF - 15000nF 1nF - 4700nF 1nF - 3300nF 1nF - 1000nF 1nF - 470nF	50VDC, 30VAC 63VDC, 40VAC 100VDC, 63VAC 250VDC, 160VAC 400VDC, 200VAC	<ul style="list-style-type: none"> <li>• Encapsulated winding construction</li> <li>• Climatic category 55/100/56</li> <li>• Max. dV/dt 5 to 50 V/μs</li> </ul>
MDC	SMD, multiple leads	0.033μF - 15μF 0.033μF - 10μF 0.033μF - 1.5μF 0.033μF - 0.47μF 0.033μF - 0.18μF	50VDC, 30VAC 100VDC, 63VAC 250VDC, 160VAC 400VDC, 200VAC 630VDC, 220VAC	<ul style="list-style-type: none"> <li>• For high frequency output filtering</li> <li>• Metallized Polyester (PET)</li> <li>• Climatic category 55/125/56</li> <li>• Lead spacing 10, 15mm</li> </ul>	
MDS	SMD, low profile, multiple leads	0.033μF - 6.8μF 0.033μF - 5.6μF 0.033μF - 0.68μF 0.033μF - 0.33μF 0.033μF - 0.10μF	50VDC, 30VAC 100VDC, 63VAC 250VDC, 160VAC 400VDC, 200VAC 630VDC, 220VAC	<ul style="list-style-type: none"> <li>• For high frequency output filtering</li> <li>• Metallized Polyester (PET)</li> <li>• Climatic category 55/125/56</li> <li>• Lead spacing 10, 15mm</li> </ul>	
JSN	SMD, multiple leads, through-hole also available	10μF - 68μF 10μF - 33μF 10μF - 15μF	100VDC, 63VAC 160VDC, 90VAC 250VDC, 160VAC	<ul style="list-style-type: none"> <li>• DC/DC and AC/DC converters applications</li> <li>• Climatic category 55/125/56</li> <li>• Max. dV/dt 27 to 40V/μs</li> <li>• Size from 60.80 to 60.160 (naked components)</li> </ul>	

## SMD Film Capacitors

### Metallized PEN Dielectric



Series	Type	Capacitance Range	Rated Voltage	Benefits
GMC	2220 - 6560	1nF - 5600nF	50VDC, 30VAC	<ul style="list-style-type: none"> <li>Encapsulated winding construction</li> <li>Metallized Polyethylene Naphthalate (PEN)</li> <li>Climatic category 55/125/56</li> <li>Max. dV/dt 5 to 50 V/μs</li> </ul>
	2824 - 6560	1nF - 4700nF	63VDC, 40VAC	
	2220 - 6560	1nF - 2200nF	100VDC, 63VAC	
	2220 - 6560	1nF - 680nF	250VDC, 160VAC	
	2824 - 5045	1nF - 330nF	400VDC, 200VAC	
	4036 - 6560	22nF - 150nF	630VDC, 300VAC	
GPC	2824 - 6560	0.47nF - 1000nF	63VDC, 40VAC	<ul style="list-style-type: none"> <li>Encapsulated winding construction</li> <li>Double sided metallized film as electrode</li> <li>Climatic category 55/125/56</li> <li>Max. dV/dt 100 to 2200 V/μs</li> </ul>
		0.47nF - 1000nF	100VDC, 63VAC	
		0.47nF - 680nF	160VDC, 100VAC	
		0.47nF - 470nF	250VDC, 160VAC	
		0.47nF - 220nF	400VDC, 200VAC	
		0.47nF - 150nF	630VDC, 300VAC	
LDE*	1206 - 6054	1000pF - 4.7μF	50VDC, 40VAC	<ul style="list-style-type: none"> <li>Unencapsulated winding construction</li> <li>Climatic category 55/125/56</li> <li>Max. dV/dt 100 to 300 V/μs</li> </ul>
	1206 - 6054	1000pF - 4.7μF	63VDC, 40VAC	
	1206 - 6054	1000pF - 4.7μF	100VDC, 63VAC	
	1206 - 6054	1000pF - 1.5μF	250VDC, 120VAC	
	2220 - 6054	0.015μF - 0.47μF	400VDC, 160VAC**	
	2220 - 6054	1000pF - 0.27μF	630VDC, 200VAC	
GMW	2220	1nF - 470nF	63VDC, 40VAC	<ul style="list-style-type: none"> <li>Unencapsulated winding construction</li> <li>Climatic category 55/125/21</li> <li>Max. dV/dt 20 to 50 V/μs</li> </ul>
		1nF - 220nF	100VDC, 63VAC	
		1nF - 68nF	250VDC, 160VAC	
		1nF - 15nF	400VDC, 200VAC	
		1nF - 6.8nF	630VDC, 220VAC	

\* For Rated Voltage ≥ 250VDC available special version ITU & Telcordia compliant.

\*\* 400VDC/230VAC for 30 minutes (occasionally).

### Metallized PPS Dielectric



Series	Type	Capacitance Range	Rated Voltage	Benefits
SMC	2220 - 6560	1nF - 3300nF	50VDC, 30VAC	<ul style="list-style-type: none"> <li>Encapsulated winding construction</li> <li>Climatic category 55/125/56</li> <li>Max. dV/dt 2 to 40 V/μs</li> </ul>
		1nF - 1500nF	100VDC, 63VAC	
		1nF - 470nF	250VDC, 160VAC	
		1nF - 220nF	400VDC, 200VAC	
SPC	2824 - 6560	0.47nF - 680nF	100VDC, 63VAC	<ul style="list-style-type: none"> <li>Encapsulated winding construction</li> <li>Double sided metallized film as electrode</li> <li>Climatic category 55/125/56</li> <li>Max. dV/dt 150 to 2000 V/μs</li> </ul>
		0.47nF - 330nF	250VDC, 160VAC	
		0.47nF - 150nF	400VDC, 250VAC	
		0.47nF - 100nF	630VDC, 350VAC	
LDB	1206 - 1210	0.012μF - 0.1μF	16VDC	<ul style="list-style-type: none"> <li>Unencapsulated chip construction</li> <li>Special tolerances 2% to 5%</li> <li>Climatic category 55/125/56</li> </ul>
	1206 - 1812	3300pF - 0.1μF	50VDC	
SMW	2220 - 2824	1nF - 560nF	50VDC, 30VAC	<ul style="list-style-type: none"> <li>Unencapsulated winding construction</li> <li>Climatic category 55/125/56</li> <li>Max. dV/dt 8 to 20 V/μs</li> </ul>
		1nF - 180nF	100VDC, 63VAC	
		1nF - 68nF	250VDC, 160VAC	
		1nF - 22nF	400VDC, 200VAC	

### Metallized Impregnated Paper Dielectric • Class Y



Series	Type	Capacitance Range	Rated Voltage	Benefits
SMP253	5045	1nF - 4.7nF	250VAC	<ul style="list-style-type: none"> <li>Encapsulated winding construction</li> <li>EMI Capacitor, Class Y2</li> <li>Climatic category 40/100/56/B</li> <li>Max. dV/dt 2000 V/μs</li> </ul>

## Power Electronics and AC Film Capacitors • Metallized Polypropylene

Series	Type	Capacitance Range	Rated Voltage	Benefits
C4C	Axial	0.1 $\mu$ F - 2.5 $\mu$ F 0.047 $\mu$ F - 1.5 $\mu$ F 0.022 $\mu$ F - 0.68 $\mu$ F 6800pF - 0.22 $\mu$ F	850VDC, 450VAC 1200VDC, 500VAC 2000VDC, 630VAC 3000VDC, 750VAC	<ul style="list-style-type: none"> <li>• Snubber applications</li> <li>• Climatic category 40/85/56</li> <li>• Max. dV/dt 200 to 2100V/<math>\mu</math>s</li> <li>• Length L = 33 to 58mm</li> </ul>
C4G	Axial	1 $\mu$ F - 40 $\mu$ F 0.47 $\mu$ F - 20 $\mu$ F 0.47 $\mu$ F - 10 $\mu$ F 0.47 $\mu$ F - 6.8 $\mu$ F 0.15 $\mu$ F - 4.0 $\mu$ F	250VDC, 160VAC 400VDC, 250VAC 600VDC, 330VAC 700VDC, 400VAC 850VDC, 450VAC	<ul style="list-style-type: none"> <li>• Switching applications</li> <li>• Climatic category 40/85/56</li> <li>• Max. dV/dt 15 to 210V/<math>\mu</math>s</li> <li>• Length L = 20.5 to 58mm</li> </ul>
C4H	Axial flat	0.1 $\mu$ F - 1.0 $\mu$ F 0.047 $\mu$ F - 0.68 $\mu$ F 0.022 $\mu$ F - 0.33 $\mu$ F 6800pF - 0.1 $\mu$ F	850VDC, 450VAC 1200VDC, 500VAC 2000VDC, 630VAC 3000VDC, 750VAC	<ul style="list-style-type: none"> <li>• Snubber applications</li> <li>• Climatic category 40/85/56</li> <li>• Max. dV/dt 190 to 2100V/<math>\mu</math>s</li> <li>• Length L = 33 to 58mm</li> </ul>
C4M	Axial flat	1 $\mu$ F - 20 $\mu$ F 0.47 $\mu$ F - 6.8 $\mu$ F 0.47 $\mu$ F - 4.7 $\mu$ F 0.47 $\mu$ F - 3.0 $\mu$ F	250VDC, 160VAC 400VDC, 250VAC 600VDC, 330VAC 700VDC, 400VAC	<ul style="list-style-type: none"> <li>• Switching applications</li> <li>• Climatic category 40/85/56</li> <li>• Max. dV/dt 15 to 80V/<math>\mu</math>s</li> <li>• Length L = 20.5 to 58mm</li> </ul>
C4AS	Box	0.15 $\mu$ F - 5.0 $\mu$ F 0.15 $\mu$ F - 4.7 $\mu$ F 0.1 $\mu$ F - 3.5 $\mu$ F 0.033 $\mu$ F - 1.5 $\mu$ F 0.022 $\mu$ F - 0.82 $\mu$ F	850VDC, 500VAC 1000VDC, 600VAC 1200VDC, 630VAC 2000VDC, 700VAC 3000VDC, 750VAC	<ul style="list-style-type: none"> <li>• Snubber applications</li> <li>• Climatic category 40/85/56</li> <li>• Max. dV/dt 469 to 3360V/<math>\mu</math>s</li> <li>• Lead spacing 27.5, 37.5, 52.5mm</li> <li>• Terminals: Tinned copper 2 or 4 wires</li> </ul>
C4AT	Box	1.0 $\mu$ F - 60 $\mu$ F 1.0 $\mu$ F - 40 $\mu$ F 1.0 $\mu$ F - 33 $\mu$ F 0.68 $\mu$ F - 20 $\mu$ F 0.47 $\mu$ F - 15 $\mu$ F 0.22 $\mu$ F - 10 $\mu$ F	250VDC, 160VAC 400VDC, 250VAC 450VDC, 275VAC 600VDC, 350VAC 700VDC, 400VAC 850VDC, 450VAC	<ul style="list-style-type: none"> <li>• Switching applications</li> <li>• Climatic category 40/85/56</li> <li>• Max. dV/dt 15 to 148V/<math>\mu</math>s</li> <li>• Lead spacing 27.5, 37.5, 52.5mm</li> <li>• Terminals: Tinned copper 2 or 4 wires</li> </ul>
C4AE	Box	30 $\mu$ F - 100 $\mu$ F 15 $\mu$ F - 55 $\mu$ F 12 $\mu$ F - 40 $\mu$ F 8.0 $\mu$ F - 25 $\mu$ F	450VDC 700VDC 900VDC 1100VDC	<ul style="list-style-type: none"> <li>• DC link applications</li> <li>• Climatic category 40/85/56</li> <li>• Max. dV/dt 10 to 21V/<math>\mu</math>s</li> <li>• Lead spacing 37.5, 52.5mm</li> <li>• Terminals: Tinned copper 2 or 4 wires</li> </ul>
C4BS	IGBT box	0.47 $\mu$ F - 5.0 $\mu$ F 0.47 $\mu$ F - 4.0 $\mu$ F 0.33 $\mu$ F - 3.3 $\mu$ F 0.10 $\mu$ F - 1.5 $\mu$ F 0.047 $\mu$ F - 0.82 $\mu$ F	850VDC, 550VAC 1000VDC, 600VAC 1200VDC, 630VAC 2000VDC, 700VAC 3000VDC, 750VAC	<ul style="list-style-type: none"> <li>• Snubber-IGBT applications</li> <li>• Climatic category 40/85/56</li> <li>• Max. dV/dt 469 to 3361V/<math>\mu</math>s</li> <li>• Box length L = 32 to 57.5mm</li> <li>• Terminals: Tinned brass lugs</li> </ul>
C4BT	IGBT box	4.7 $\mu$ F - 60 $\mu$ F 3.3 $\mu$ F - 40 $\mu$ F 2.5 $\mu$ F - 20 $\mu$ F 1.5 $\mu$ F - 15 $\mu$ F 1.0 $\mu$ F - 10 $\mu$ F	250VDC, 160VAC 400VDC, 250VAC 600VDC, 330VAC 700VDC, 400VAC 850VDC, 450VAC	<ul style="list-style-type: none"> <li>• Switching-IGBT applications</li> <li>• Climatic category 40/85/56</li> <li>• Max. dV/dt 27 to 148V/<math>\mu</math>s</li> <li>• Box length L = 32 to 57.5mm</li> <li>• Terminals: Tinned brass lugs</li> </ul>
C4DC	Flat cylindrical plastic case (low inductance)	1.5 $\mu$ F - 6.0 $\mu$ F 1.0 $\mu$ F - 4.0 $\mu$ F 0.5 $\mu$ F - 4.0 $\mu$ F	850VDC, 500VAC 1000VDC, 600VAC 1400VDC, 700VAC	<ul style="list-style-type: none"> <li>• Snubber-GTO applications</li> <li>• Climatic category 40/85/56</li> <li>• Max. dV/dt 380 to 1000V/<math>\mu</math>s</li> <li>• Diameter D = 60 to 90mm</li> <li>• Height H = 51 to 64mm</li> <li>• Hole M8 threaded (M6 on request)</li> </ul>
C4DR	Flat cylindrical plastic case (low inductance)	25 $\mu$ F - 220 $\mu$ F 12 $\mu$ F - 100 $\mu$ F 7.5 $\mu$ F - 70 $\mu$ F 4.0 $\mu$ F - 60 $\mu$ F 2.5 $\mu$ F - 25 $\mu$ F 1.0 $\mu$ F - 15 $\mu$ F	400VDC, 160VAC 600VDC, 220VAC 700VDC, 250VAC 850VDC, 330VAC 1200VDC, 440VAC 1500VDC, 500VAC	<ul style="list-style-type: none"> <li>• Clamper-GTO applications</li> <li>• Climatic category 40/85/56</li> <li>• Max. dV/dt 12 to 400V/<math>\mu</math>s</li> <li>• Diameter D = 60 to 90mm</li> <li>• Height H = 51 to 99mm</li> <li>• Hole M8 threaded (M6 on request)</li> </ul>
C4DE	Flat cylindrical plastic case (low inductance)	175 $\mu$ F - 380 $\mu$ F 100 $\mu$ F - 220 $\mu$ F 68 $\mu$ F - 140 $\mu$ F 47 $\mu$ F - 100 $\mu$ F	400VDC 600VDC 800VDC 1000VDC	<ul style="list-style-type: none"> <li>• DC link applications</li> <li>• Climatic category 40/85/21</li> <li>• Max. dV/dt 15 to 37V/<math>\mu</math>s</li> <li>• Diameter D = 84mm</li> <li>• Height H = 40, 51, 64mm</li> <li>• Terminals: M6 or M8 threaded bolt (also available with threaded female connections)</li> </ul>



## Power Electronics and AC Film Capacitors • Metallized Polypropylene

Series	Type	Capacitance Range	Rated Voltage	Benefits
 C4E	Rectangular box, metal or plastic	According to customer request	According to customer request	<ul style="list-style-type: none"> <li>• Custom and standard “brick” DC link capacitors for energy conversion, AC motor drives and hybrid/electric vehicles</li> </ul>
 C44A	Aluminum case	15 $\mu$ F - 330 $\mu$ F 10 $\mu$ F - 100 $\mu$ F 5 $\mu$ F - 100 $\mu$ F 3 $\mu$ F - 60 $\mu$ F 1.0 $\mu$ F - 22 $\mu$ F 1.0 $\mu$ F - 15 $\mu$ F	400VDC, 250VAC 600VDC, 330VAC 700VDC, 400VAC 850VDC, 450VAC 1200VDC, 500VAC 1500VDC, 630VAC	<ul style="list-style-type: none"> <li>• General purpose applications</li> <li>• Climatic category 40/85/21</li> <li>• Max. dV/dt 10 to 400V/<math>\mu</math>s</li> <li>• Diameter D = 45 to 85mm, Height H = 80 to 200mm</li> <li>• Terminals: Tinned brass spade lugs or screws</li> </ul>
 C44B	Aluminum case	0.10 $\mu$ F - 1.5 $\mu$ F 0.047 $\mu$ F - 0.68 $\mu$ F 0.10 $\mu$ F - 4.0 $\mu$ F	1200VDC, 500VAC 2000VDC, 630VAC 2400VDC, 1000VAC	<ul style="list-style-type: none"> <li>• Snubber applications</li> <li>• Climatic category 40/85/21</li> <li>• Max. dV/dt 500 to 750V/<math>\mu</math>s</li> <li>• Diameter D = 25 to 65mm, Height H = 60 to 200mm</li> <li>• Terminals: Tinned brass spade lugs or screws</li> </ul>
 C44E	Aluminum case	150 $\mu$ F - 400 $\mu$ F 100 $\mu$ F - 200 $\mu$ F 100 $\mu$ F - 120 $\mu$ F 50 $\mu$ F - 60 $\mu$ F	400VDC, 250VAC 600VDC, 380VAC 750VDC, 440VAC 1200VDC, 550VAC	<ul style="list-style-type: none"> <li>• AC filter applications</li> <li>• Climatic category 25/70/21</li> <li>• Max. dV/dt 10 to 30V/<math>\mu</math>s</li> <li>• Diameter D = 76 to 85mm, Height H = 137 to 270mm</li> <li>• Terminals: Tinned brass spade lugs or screws</li> </ul>
 C44H	Aluminum case	15 $\mu$ F - 120 $\mu$ F 15 $\mu$ F - 56 $\mu$ F 30 $\mu$ F - 55 $\mu$ F	400VDC, 250VAC 600VDC, 330VAC 700VDC, 400VAC	<ul style="list-style-type: none"> <li>• UPS filtering applications</li> <li>• Climatic category 40/85/21</li> <li>• Max. dV/dt 15 to 30V/<math>\mu</math>s</li> <li>• Diameter D = 45 to 75mm, Height H = 61 to 150mm</li> <li>• Terminals: Tinned double spade lug 6.3mm</li> </ul>
 C44P-C20A	Aluminum case	200 $\mu$ F - 600 $\mu$ F 100 $\mu$ F - 600 $\mu$ F 100 $\mu$ F - 300 $\mu$ F 22 $\mu$ F - 150 $\mu$ F 15 $\mu$ F - 150 $\mu$ F 10 $\mu$ F - 100 $\mu$ F	400VDC, 250VAC 500VDC, 330VAC 750VDC, 440VAC 750VDC, 550VAC 900VDC, 640VAC 1100VDC, 780VAC	<ul style="list-style-type: none"> <li>• AC filter applications</li> <li>• Climatic category 25/70/56</li> <li>• Max. dV/dt 15 to 30V/<math>\mu</math>s</li> <li>• Diameter D = 65 to 116mm, Height H = 115 to 280mm</li> <li>• Terminations: Plastic insulator with screw terminals M10</li> <li>• Safety device</li> </ul>
 C44U	Aluminum case	120 $\mu$ F - 550 $\mu$ F 75 $\mu$ F - 600 $\mu$ F 50 $\mu$ F - 500 $\mu$ F 50 $\mu$ F - 550 $\mu$ F	700VDC 900VDC 1100VDC 1300VDC	<ul style="list-style-type: none"> <li>• DC link applications</li> <li>• Climatic category 40/85/21</li> <li>• Max. dV/dt 6 to 31V/<math>\mu</math>s</li> <li>• Diameter D = 76, 85mm, Height H = 55 to 140mm</li> <li>• Terminals: Tinned brass screws</li> </ul>
 C93	Aluminum case	50 $\mu$ F - 100 $\mu$ F 10 $\mu$ F - 100 $\mu$ F	400VDC, 320VAC 600VDC, 415VAC	<ul style="list-style-type: none"> <li>• PFC and filter applications</li> <li>• Max. dV/dt 30V/<math>\mu</math>s</li> <li>• Diameter D = 40 to 75mm, Height H = 78 to 150mm</li> <li>• Terminals: Tinned brass spade lugs or screws</li> <li>• Safety device - IMQ, UL approvals</li> </ul>
 C9T	Aluminum case	3x30.8 $\mu$ F - 3x184.8 $\mu$ F 3x26.2 $\mu$ F - 3x157 $\mu$ F 3x19.2 $\mu$ F - 3x115 $\mu$ F 3x27.9 $\mu$ F - 3x66.8 $\mu$ F	415VAC 450VAC 525VAC 690VAC	<ul style="list-style-type: none"> <li>• PFC &amp; AC filter applications - Three phase execution</li> <li>• Max. dV/dt 30V/<math>\mu</math>s</li> <li>• Diameter D = 60 to 116mm, Height H = 150 to 280mm</li> <li>• Terminals: Tinned brass spade lugs or screws</li> <li>• Safety device - UL approval</li> </ul>

## Capacitors for AC Lighting Applications • Metallized Polypropylene



Series	Type	Capacitance Range	Rated Voltage	Benefits
C3B	Cylindrical plastic case	2 $\mu$ F - 50 $\mu$ F	250VAC	<ul style="list-style-type: none"> <li>Lighting applications</li> <li>Temperature Range -25/+85°C</li> <li>Diameter D = 25mm to 50mm, Height H = 48mm to 133mm</li> <li>Terminals: Unipolar wires, push in connector</li> <li>Mechanical connection: With/without bolt, quick fitting</li> <li>Type of capacitor (ENEC03): Type A</li> </ul>
C95	Cylindrical Aluminum case	2.0 $\mu$ F - 60 $\mu$ F 2.5 $\mu$ F - 6.8 $\mu$ F	250VAC 450VAC	<ul style="list-style-type: none"> <li>Lighting applications</li> <li>Temperature Range -25/+85°C and -25/+100°C</li> <li>Diameter D = 25mm to 50mm, Height H = 55mm to 120mm</li> <li>Terminals: Spade lug 2.8mm, push in connector</li> <li>Mechanical connection: With/without bolt, quick fitting</li> <li>Type of capacitor (ENEC03): Type B</li> </ul>

## Capacitors for AC Motor Run Applications • Metallized Polypropylene



Series	Type	Capacitance Range	Rated Voltage	Benefits
C27	Cylindrical plastic case	1 $\mu$ F - 70 $\mu$ F 1 $\mu$ F - 100 $\mu$ F 1 $\mu$ F - 120 $\mu$ F	420VAC cl.A 470VAC cl.B 420VAC cl.B 470VAC cl.C 275VAC cl.B 425VAC cl.D	<ul style="list-style-type: none"> <li>Climatic category -25/85/21 or -25/100/21</li> <li>Class of Safety Protection: P0</li> <li>Diameter (D) D = 25 to 60mm</li> <li>Height (H) H = 55 to 120mm</li> <li>Terminals: Spade lug, unipolar wires, bipolar cable</li> <li>Mechanical connection: With/without bolt, quick fitting</li> </ul>
C28	Cylindrical plastic case	2 $\mu$ F - 11 $\mu$ F	420VAC cl.A 470VAC cl.B	<ul style="list-style-type: none"> <li>Climatic category -25/85/21</li> <li>Class of Safety Protection: P2</li> <li>Diameter (D) D = 25 to 35mm</li> <li>Height (H) H = 55 to 74mm</li> <li>Terminals: Spade lug, unipolar wires, bipolar cable</li> <li>Mechanical connection: With/without bolt, quick fitting</li> </ul>
C87	Cylindrical aluminum case	1 $\mu$ F - 80 $\mu$ F 1 $\mu$ F - 120 $\mu$ F 1 $\mu$ F - 130 $\mu$ F	420VAC cl.A 470VAC cl.B 420VAC cl.B 470VAC cl.C 280VAC cl.B	<ul style="list-style-type: none"> <li>Climatic category -25/85/21 or -25/100/21</li> <li>Class of Safety Protection: P2</li> <li>Diameter (D) D = 25 to 60mm</li> <li>Height (H) H = 48 to 133mm</li> <li>Terminals: Spade lug, bipolar cable</li> <li>Mechanical connection: With/without bolt</li> </ul>
C24	Box plastic case	0.2 $\mu$ F - 9.0 $\mu$ F 0.47 $\mu$ F - 20.0 $\mu$ F 0.4 $\mu$ F - 15.0 $\mu$ F 0.1 $\mu$ F - 3.0 $\mu$ F 0.68 $\mu$ F - 30.0 $\mu$ F 0.33 $\mu$ F - 10.0 $\mu$ F	460VAC C24.6 275VAC C24.K 350VAC C24.B 650VAC C24.7 230VAC C24.2 400VAC C24.4 (valid 2009)	<ul style="list-style-type: none"> <li>Climatic category -40/85(100)/21</li> <li>Class of Safety Protection: P0</li> <li>Lead Spacing 22.5, 27.5, 37.5mm</li> <li>Max. dV/dt 30 to 50V/<math>\mu</math>s</li> </ul>

# Which capacitor is right for you?

As *The Capacitance Company*, we make over 95% of possible dielectric solutions – the broadest selection of capacitor technologies in the industry. By offering a wide variety of dielectrics, dimensions, voltages, temperature characteristics and terminations, KEMET capacitors satisfy an expansive range of customer requirements and applications.

In fact, if the capacitor you need hasn't been invented, it's only because you haven't asked. We can quickly develop custom products and carry out early-stage manufacturing through our accelerated collaboration services. Available through our global innovation and manufacturing centers around the world, accelerated collaboration brings together the necessary people, equipment and facilities together to get the job done, on time and in budget.

Of course, when you're under pressure to design smaller and smaller products with greater and greater functionality, there's no time for the traditional back-and-forth with your suppliers. With KEMET, you get direct contact to the engineers and other professionals who can help you successfully solve your design problems, and in record time. We deal personally with customers to ascertain the new part types needed for their next-generation products. In many cases, we can go from start to samples in only four months.

We've helped some of the world's most prominent electronics companies slash time to market and gain significant windows of competitive advantage. We can do the same for you, too.

# Tantalum Capacitors

Tantalum capacitors are the leading choice when high capacitance is needed in the smallest possible size. KEMET has been the foremost manufacturer of tantalum capacitors for over 50 years, and is constantly introducing new innovations to meet changing demands. Offered in a variety of standard sizes, KEMET tantalum capacitors are fully RoHS-compliant and compatible with modern solder processes including multiple Pb-Free reflow passes.

KEMET tantalum capacitors offer many advantages including low ESR, surge current robustness and multiple operating temperature ranges. KEMET also offers a complete line of military and Commercial-Off-The-Shelf (COTS) products as well as enhanced testing for space applications. While many applications use surface mount technology, a complete line of through-hole tantalum capacitors are available for down-hole, military and other demanding environments.

KEMET's traditional MnO<sub>2</sub> tantalum capacitors consist of a sintered anode of tantalum metal. This anode is porous, thus providing increased surface area. An oxide layer is then formed, and this oxide layer becomes the capacitor dielectric. The oxidized anode is impregnated with manganese dioxide to form the cathode.

Tantalum polymer capacitors are a newer variation which replaces the manganese dioxide cathode with a solid conductive polymer cathode. KEMET polymer tantalum capacitors are recommended when very low ESR, increased temperature stability, or benign failure mode is critical.

Tantalum Surface Mount Products							
Standard Tantalum	Low ESR		High Temperature	High Reliability Commercial-Off-The-Shelf COTS	MIL-PRF (CWR Series)	Fused	Automotive Grade
T491 Commercial	MnO <sub>2</sub>	Polymer	T498 150°C Rated	T493 Military/Aerospace COTS/Low ESR Option CWR11 Case Sizes	T409 CWR09 Style MIL-PRF-55365/4	T496 Series	T491 Commercial
T489 Low Leakage Commercial	T494 Commercial (≥80 mΩ)	T520 105°C Rated Polymer (≥6 mΩ)	T499 175°C Rated	T497 High Grade COTS CWR09/19/29 Case Sizes	T419 CWR19 Style MIL-PRF-55365/11		T494 Commercial (≥80 mΩ)
	T495 Surge Robust (≥30 mΩ)	T521 High Voltage Polymer (≥25 mΩ)		T540 Polymer COTS	T429 CWR29 Style MIL-PRF-55365/8		T489 Low Leakage
	T510 High Capacitance (≥10 mΩ)	T522 Low Leakage Polymer		T541 Polymer COTS Multiple Anode	T492 CWR11 Style MIL-PRF-55365/8		T495 Surge Robust (≥30 mΩ)
	Tantalum Stack MnO <sub>2</sub> (TSM)	T525 125°C Rated Polymer (≥25 mΩ)					T498 150°C Rated
		T528 Low ESR Facedown Terminal Polymer (≥5 mΩ)					T499 175°C Rated
		T530 High Capacitance 125°C Rated Polymer (≥4 mΩ)					T510 Multiple Anode Low ESR MnO <sub>2</sub>
		Tantalum Stack Polymer (TSP)					T525 125°C Rated Polymer (≥25 mΩ)

Tantalum Through-Hole Products			
Hermetically Sealed	Radial Dipped	Molded Axial	Molded Radial
Polar T110/T140 Series CSR13 Case Sizes	T35X Series Standard Radial Dipped	T32X Series CX01/05 Style MIL-PRF-49137/1 & 5	T330/T340 Series Standard Molded Radial
Polar T2XX Series CSR/CSS Style MIL-PRF-39003	T363/T369 Series CX02/12 Style MIL-PRF-49137/2		T370 Series CX06 Case Sizes
Miniature T222 Series CSR09 Style MIL-PRF-39003/2	T368 Series High Capacitance		T37X Series CX06 Style MIL-PRF-49137/6
CR500 High Reliability Series	T396/T398 Series "Fail Safe" Insertion		

## DSCC Drawings

- T495 - DSCC Drawing 95158E
- T496 - DSCC Drawing 04053A
- T525 - DSCC Drawing 04051
- T530 - DSCC Drawing 04052

## Tantalum Surface Mount Capacitors • Standard

### T491 MnO<sub>2</sub> Series (Industrial Grade)



Series	Case Size KEMET/EIA	Dimensions L x W x H (mm)	Capacitance Range	Benefits
T491	A/3216-18	3.2 x 1.6 x 1.6	0.10 $\mu$ F - 220 $\mu$ F	<ul style="list-style-type: none"> <li>• Industrial/Commercial Grade</li> <li>• 2.5 - 50 Volts</li> <li>• <math>\pm</math>20%, <math>\pm</math>10% capacitance tolerance</li> <li>• Tape and reel packaging</li> <li>• RoHS-compliant</li> </ul>
	B/3528-21	3.5 x 2.8 x 1.9	0.15 $\mu$ F - 150 $\mu$ F	
	C/6032-28	6.0 x 3.2 x 2.5	0.47 $\mu$ F - 330 $\mu$ F	
	D/7343-31	7.3 x 4.3 x 2.8	1.5 $\mu$ F - 680 $\mu$ F	
	X/7343-43	7.3 x 4.3 x 4.0	6.8 $\mu$ F - 1000 $\mu$ F	
	E/7260-38	7.3 x 6.0 x 3.6	47 $\mu$ F - 1000 $\mu$ F	

### T491 MnO<sub>2</sub> Series, Low Profile (Industrial Grade)



Series	Case Size KEMET/EIA	Dimensions L x W x H (mm)	Capacitance Range	Benefits
T491 Low Profile	R/2012-12	2.0 x 1.3 x 1.2	1.0 $\mu$ F - 10 $\mu$ F	<ul style="list-style-type: none"> <li>• Low profile</li> <li>• 2.5 - 50 Volts</li> <li>• <math>\pm</math>20%, <math>\pm</math>10% capacitance tolerance</li> <li>• Tape and reel packaging</li> <li>• RoHS-compliant</li> </ul>
	S/3216-12	3.2 x 1.6 x 1.2	1.0 $\mu$ F - 22 $\mu$ F	
	T/3528-12	3.5 x 2.8 x 1.2	3.3 $\mu$ F - 100 $\mu$ F	
	U/6032-15	6.0 x 3.2 x 1.5	6.8 $\mu$ F - 100 $\mu$ F	
	V/7343-20	7.3 x 4.3 x 2.0	1.0 $\mu$ F - 330 $\mu$ F	

### T489 Low Leakage MnO<sub>2</sub> Series



Series	Case Size KEMET/EIA	Dimensions L x W x H (mm)	Capacitance Range	Benefits
T489 Low Leakage	A	3.2 x 1.6 x 1.6	0.1 $\mu$ F - 15 $\mu$ F	<ul style="list-style-type: none"> <li>• DC leakage at 0.0075CV</li> <li>• Improved reliability: 0.50%/1000hrs, 85°C, rated voltage</li> <li>• Low ESR options available</li> <li>• Operating temperature range of -55°C to +125°C</li> <li>• Tape and reel packaging</li> <li>• Automotive Grade available</li> </ul>
	B	3.5 x 2.8 x 1.9	0.68 $\mu$ F - 150 $\mu$ F	
	C	6.0 x 3.2 x 2.5	1.0 $\mu$ F - 150 $\mu$ F	
	D	7.3 x 4.3 x 2.8	2.2 $\mu$ F - 220 $\mu$ F	
	X	7.3 x 4.3 x 4.0	100 $\mu$ F - 470 $\mu$ F	

## Tantalum Surface Mount Capacitors • Low ESR MnO<sub>2</sub>

### T494 Low ESR MnO<sub>2</sub> Series (Industrial Grade)



Series	Case Size KEMET/EIA	Dimensions L x W x H (mm)	Capacitance Range	Benefits
T494	A/3216-18	3.2 x 1.6 x 1.6	0.10 $\mu$ F - 100 $\mu$ F	<ul style="list-style-type: none"> <li>• Low ESR, Industrial Grade</li> <li>• 2.5 - 50 Volts</li> <li>• <math>\pm</math>20%, <math>\pm</math>10% capacitance tolerance</li> <li>• Tape and reel packaging</li> <li>• RoHS-compliant</li> <li>• Automotive Grade available</li> </ul>
	B/3528-21	3.5 x 2.8 x 1.9	0.15 $\mu$ F - 220 $\mu$ F	
	C/6032-28	6.0 x 3.2 x 2.5	0.47 $\mu$ F - 330 $\mu$ F	
	D/7343-31	7.3 x 4.3 x 2.8	1.5 $\mu$ F - 680 $\mu$ F	
	X/7343-43	7.3 x 4.3 x 4.0	6.8 $\mu$ F - 1000 $\mu$ F	
	E/7260-38	7.3 x 6.0 x 3.6	470 $\mu$ F - 1000 $\mu$ F	

## Tantalum Surface Mount Capacitors • Low ESR MnO<sub>2</sub> (cont.)

### T494 Low ESR MnO<sub>2</sub> Series, Low Profile (Industrial Grade)



Series	Case Size KEMET/EIA	Dimensions L x W x H (mm)	Capacitance Range	Benefits
T494 Low Profile	R/2012-12	2.0 x 1.3 x 1.2	1.0μF - 10μF	<ul style="list-style-type: none"> <li>• Low profile, low ESR</li> <li>• 4 - 50 Volts</li> <li>• ±20%, ±10% capacitance tolerance</li> <li>• Tape and reel packaging</li> <li>• RoHS-compliant</li> </ul>
	S/3216-12	3.2 x 1.6 x 1.2	1.0μF - 22μF	
	T/3528-12	3.5 x 2.8 x 1.2	3.3μF - 100μF	
	U/6032-15	6.0 x 3.2 x 1.5	6.8μF - 100μF	
	V/7343-20	7.3 x 4.3 x 2.0	1.0μF - 330μF	

### T495 Low ESR MnO<sub>2</sub> Series (Surge Robust)



Series	Case Size KEMET/EIA	Dimensions L x W x H (mm)	Capacitance Range	Benefits
T495	A/3216-18	3.6 x 1.6 x 1.6	0.47μF - 22μF	<ul style="list-style-type: none"> <li>• Low ESR, surge robust series</li> <li>• 2.5 - 50 Volts</li> <li>• ±20%, ±10% capacitance tolerance</li> <li>• Tape and reel packaging</li> <li>• RoHS compliant</li> <li>• Available DSCC Drawing 95158</li> <li>• Automotive Grade available</li> </ul>
	B/3528-21	3.5 x 2.8 x 1.9	0.47μF - 150μF	
	C/6032-28	6.0 x 3.2 x 2.5	1.0μF - 330μF	
	D/7343-31	7.3 x 4.3 x 2.8	2.2μF - 470μF	
	X/7343-43	7.3 x 4.3 x 4.0	4.7μF - 1000μF	
	E/7260-38	7.3 x 6.0 x 3.6	100μF - 1000μF	

### T495 Low ESR MnO<sub>2</sub> Series, Low Profile (Surge Robust)



Series	Case Size KEMET/EIA	Dimensions L x W x H (mm)	Capacitance Range	Benefits
T495 Low Profile	T/3528-12 V/7343-20	3.5 x 2.8 x 1.2 7.3 x 4.3 x 2.0	10μF - 100μF 68μF - 220μF	<ul style="list-style-type: none"> <li>• Low profile, low ESR, surge robust</li> <li>• 2.5 -16 Volts</li> <li>• ±20%, ±10% capacitance tolerance</li> <li>• Tape and reel packaging</li> <li>• RoHS-compliant</li> </ul>

### T510 Low ESR MnO<sub>2</sub> Series (Multiple Anode)



Series	Case Size KEMET/EIA	Dimensions L x W x H (mm)	Capacitance Range	Benefits
T510	X/7343-43 E/7260-38	7.3 x 4.3 x 4.0 7.3 x 6.0 x 3.6	22μF - 1000μF 47μF - 1000μF	<ul style="list-style-type: none"> <li>• Low ESR (&lt;10-120mΩ)</li> <li>• 4 - 25 Volts</li> <li>• ±20%, ±10% capacitance tolerance</li> <li>• Tape and reel packaging</li> <li>• RoHS-compliant</li> <li>• Automotive &amp; Space Grade available</li> </ul>

## Tantalum Surface Mount Capacitors • Low ESR MnO<sub>2</sub> (cont.)

### Tantalum Stack MnO<sub>2</sub> (TSM) Series



Series	Case Size KEMET/EIA	Dimensions L x W x H (mm)	Capacitance Range	Benefits
TSM	2C	6.5 x 3.3 x 5.3	20 $\mu$ F - 440 $\mu$ F	<ul style="list-style-type: none"> <li>• High capacitance</li> <li>• Surface mountable</li> <li>• Capacitance can be custom specified</li> <li>• Voltage ratings of 6 to 50 VDC</li> <li>• High volumetric efficiency</li> <li>• Ultra low ESR</li> <li>• Surge capability</li> <li>• Weibull failure options B and C</li> <li>• Operating temperature range of -55<math>^{\circ}</math>C to +125<math>^{\circ}</math>C</li> </ul>
	3C	6.5 x 3.3 x 7.8	30 $\mu$ F - 660 $\mu$ F	
	4C	6.5 x 6.6 x 5.3	40 $\mu$ F - 880 $\mu$ F	
	6C	6.5 x 6.6 x 7.8	60 $\mu$ F - 1320 $\mu$ F	
	2D	8.0 x 4.4 x 6.2	9.4 $\mu$ F - 660 $\mu$ F	
	3D	8.0 x 4.4 x 9.2	14 $\mu$ F - 990 $\mu$ F	
	4D	8.0 x 8.9 x 6.2	19 $\mu$ F - 1320 $\mu$ F	
	6D	8.0 x 8.9 x 9.2	28 $\mu$ F - 1980 $\mu$ F	
	2X	8.0 x 4.4 x 8.9	20 $\mu$ F - 660 $\mu$ F	
	3X	8.0 x 4.4 x 13.3	30 $\mu$ F - 990 $\mu$ F	
	4X	8.0 x 8.9 x 8.9	40 $\mu$ F - 1320 $\mu$ F	
6X	8.0 x 8.9 x 13.3	60 $\mu$ F - 1980 $\mu$ F		

## Tantalum Surface Mount Capacitors • Low ESR Polymer

### Polymer Tantalum Series



Series	Case Size KEMET/EIA	Dimensions L x W x H (mm)	Capacitance Range	Benefits
T520	A/3216-18	3.2 x 1.6 x 1.6	10 $\mu$ F - 100 $\mu$ F	<ul style="list-style-type: none"> <li>• KEMET organic with polymer cathode</li> <li>• 2 - 25 Volts</li> <li>• <math>\pm</math>20% capacitance tolerance</li> <li>• RoHS-compliant</li> <li>• Low ESR (6 to 80m<math>\Omega</math>)</li> <li>• High ripple handling</li> <li>• 100% surge current test</li> <li>• 100% accelerated steady state aging</li> </ul>
	B/3528-21	3.5 x 2.8 x 1.9	33 $\mu$ F - 330 $\mu$ F	
	C/6032-28	6.0 x 3.2 x 2.5	68 $\mu$ F - 330 $\mu$ F	
	D/7343-31	7.3 x 4.3 x 2.8	15 $\mu$ F - 1000 $\mu$ F	
	L/6032-19	6.0 x 3.2 x 1.9	100 $\mu$ F - 330 $\mu$ F	
	Y/7343-40	7.3 x 4.3 x 4.0 max	330 $\mu$ F - 1000 $\mu$ F	
	X/7343-43	7.3 x 4.3 x 4.0	330 $\mu$ F - 1000 $\mu$ F	
	M/3528-15	3.5 x 2.8 x 1.5	150 $\mu$ F - 330 $\mu$ F	
	T/3528-12	3.5 x 2.8 x 1.2 max	15 $\mu$ F - 100 $\mu$ F	
	U/6032-15	6.0 x 3.2 x 1.5 max	33 $\mu$ F - 220 $\mu$ F	
	W/7343-15	7.3 x 4.3 x 1.5 max	33 $\mu$ F - 470 $\mu$ F	
	V/7343-20	7.3 x 4.3 x 1.9 max	15 $\mu$ F - 470 $\mu$ F	

### High Voltage Polymer Tantalum Series



Series	Case Size KEMET/EIA	Dimensions L x W x H (mm)	Capacitance Range	Benefits
T521	D/7343-31	7.3 x 4.3 x 2.8	33 $\mu$ F - 100 $\mu$ F	<ul style="list-style-type: none"> <li>• KEMET organic with polymer cathode</li> <li>• Highest voltage polymer tantalum</li> <li>• 16 - 35 Volts</li> <li>• Low ESR</li> <li>• RoHS-compliant</li> <li>• Suitable for 28V power rail</li> <li>• 100% surge current test</li> <li>• 100% accelerated steady state aging</li> </ul>
	V/7343-20	7.3 x 4.3 x 1.9 max	15 $\mu$ F - 100 $\mu$ F	
	X/7343-43	7.3 x 4.3 x 4.0	33 $\mu$ F - 330 $\mu$ F	

## Tantalum Surface Mount Capacitors • Low ESR Polymer (cont.)

### Reduced Leakage Polymer Series



Series	Case Size KEMET/EIA	Dimensions L x W x H (mm)	Capacitance Range	Benefits
T522	V/7343-20 Y/7343-40	7.3 x 4.3 x 2.0 7.3 x 4.3 x 4.0	150 $\mu$ F - 330 $\mu$ F 470 $\mu$ F	<ul style="list-style-type: none"> <li>• KEMET organic with polymer cathode</li> <li>• Low ESR</li> <li>• RoHS-compliant</li> <li>• 100% surge current test</li> <li>• 100% accelerated steady state aging</li> <li>• Reduced leakage</li> </ul>

### 125°C Rated Polymer Tantalum Series



Series	Case Size KEMET/EIA	Dimensions L x W x H (mm)	Capacitance Range	Benefits
T525	T/3528-12 B/3528-21 D/7343-31 Y/7343-40	3.5 x 2.8 x 1.2 3.5 x 2.8 x 1.9 7.3 x 4.3 x 2.8 7.3 x 4.3 x 4.0	33 $\mu$ F - 100 $\mu$ F 33 $\mu$ F - 150 $\mu$ F 47 $\mu$ F - 680 $\mu$ F 330 $\mu$ F - 470 $\mu$ F	<ul style="list-style-type: none"> <li>• KEMET organic with polymer cathode</li> <li>• 2.5 - 16 Volts</li> <li>• <math>\pm</math>20% capacitance tolerance</li> <li>• 125°C maximum operating temperature</li> <li>• RoHS-compliant</li> <li>• Available DSCC Drawing 04051</li> <li>• Automotive Grade available</li> </ul>

### Low ESL/Facedown Terminal Polymer Tantalum Series



Series	Case Size KEMET/EIA	Dimensions L x W x H (mm)	Capacitance Range	Benefits
T528	I/3216-10 M/3528-15 Z/7343-17 W/7343-15 K/3528-10	3.2 x 1.6 x 1.0 3.5 x 2.8 x 1.5 7.3 x 4.3 x 1.7 max 7.3 x 4.3 x 1.15 max 3.5 x 2.8 x 1.0 max	33 $\mu$ F - 100 $\mu$ F 100 $\mu$ F - 220 $\mu$ F 150 $\mu$ F - 330 $\mu$ F 150 $\mu$ F - 330 $\mu$ F 150 $\mu$ F - 220 $\mu$ F	<ul style="list-style-type: none"> <li>• Face down termination organic</li> <li>• Low profile</li> <li>• Low ESL &lt; 0.7nH @ 20MHz</li> <li>• 2.5 - 10 Volts</li> <li>• <math>\pm</math>20% capacitance tolerance</li> <li>• RoHS-compliant</li> <li>• Lower ESR (<math>\leq</math> 5 m<math>\Omega</math>)</li> </ul>

### High Capacitance/125°C Rated Polymer Tantalum Series



Series	Case Size KEMET/EIA	Dimensions L x W x H (mm)	Capacitance Range	Benefits
T530	D/7343-31 Y/7343-40 X/7343-43	7.3 x 4.3 x 2.8 7.3 x 4.3 x 1.9 7.3 x 4.3 x 4.0	150 $\mu$ F - 680 $\mu$ F 220 $\mu$ F - 1000 $\mu$ F 150 $\mu$ F - 1500 $\mu$ F	<ul style="list-style-type: none"> <li>• KEMET organic with polymer cathode</li> <li>• 2.5 - 10 Volts</li> <li>• Ultra-low ESR (<math>\leq</math> 4m<math>\Omega</math> available)</li> <li>• <math>\pm</math>20% capacitance tolerance</li> <li>• RoHS-compliant</li> <li>• Available DSCC Drawing 04052</li> </ul>



## Tantalum Surface Mount Capacitors • Low ESR Polymer (cont.)

### Tantalum Stack Polymer (TSP) Series



Series	Case Size KEMET/EIA	Dimensions L x W x H (mm)	Capacitance Range	Benefits
TSP	6B	4.1 x 6.1 x 6.3	198 $\mu$ F - 900 $\mu$ F	<ul style="list-style-type: none"> <li>• Polymer cathode technology</li> <li>• High capacitance</li> <li>• Surface mountable</li> <li>• Capacitance can be custom specified</li> <li>• Voltage ratings of 6 to 50 VDC</li> <li>• High volumetric efficiency</li> <li>• Ultra low ESR</li> <li>• Surge capability</li> <li>• Operating temperature range of -55<math>^{\circ}</math>C to +125<math>^{\circ}</math>C</li> </ul>
	2D	8.0 x 4.4 x 6.2	94 $\mu$ F - 660 $\mu$ F	
	3D	8.0 x 4.4 x 9.2	141 $\mu$ F - 2040 $\mu$ F	
	4D	8.0 x 8.9 x 6.2	188 $\mu$ F - 2720 $\mu$ F	
	6D	8.0 x 8.9 x 9.2	282 $\mu$ F - 4080 $\mu$ F	

### KEMET Organic Capacitor (AO-CAP) A700 Polymer Aluminum



Series	Case Size	Dimensions D x H (inches)	Capacitance Range	Benefits
A700	V/7343-20	7.3 x 4.3 x 1.9	8.2 $\mu$ F - 150 $\mu$ F	<ul style="list-style-type: none"> <li>• Organic polymer for counter-electrode material</li> <li>• Pb-Free</li> <li>• Extremely low ESR (7m<math>\Omega</math>–28m<math>\Omega</math>)</li> <li>• 2 - 10 Volts</li> <li>• <math>\pm</math>20% capacitance tolerance</li> <li>• Tape and reel packaging</li> </ul>
	D/7343-31	7.3 x 4.3 x 2.8	56.0 $\mu$ F - 220 $\mu$ F	
	X/7343-43	7.3 x 4.3 x 4.0	100.0 $\mu$ F - 470 $\mu$ F	

## Tantalum Surface Mount Capacitors • High Temperature

### 150 $^{\circ}$ C Rated MnO<sub>2</sub>



Series	Case Size KEMET/EIA	Dimensions L x W x H (mm)	Capacitance Range	Benefits
T498	A/3216-18	3.2 x 1.6 x 1.6	0.33 $\mu$ F - 4.7 $\mu$ F	<ul style="list-style-type: none"> <li>• 150<math>^{\circ}</math>C maximum high temperature</li> <li>• 6 - 50 Volts</li> <li>• <math>\pm</math>20%, <math>\pm</math>10% capacitance tolerance</li> <li>• Tape and reel packaging</li> <li>• RoHS-compliant</li> <li>• Automotive Grade available</li> </ul>
	B/3528-21	3.5 x 2.8 x 1.9	2.2 $\mu$ F - 33 $\mu$ F	
	C/6032-28	6.0 x 3.2 x 2.5	1.5 $\mu$ F - 47 $\mu$ F	
	D/7343-31	7.3 x 4.3 x 2.8	10 $\mu$ F - 100 $\mu$ F	
	X/7343-43	7.3 x 4.3 x 4.0	22 $\mu$ F - 220 $\mu$ F	

### 175 $^{\circ}$ C Rated MnO<sub>2</sub>



Series	Case Size KEMET/EIA	Dimensions L x W x H (mm)	Capacitance Range	Benefits
T499	A/3216-18	3.2 x 1.6 x 1.6	0.15 $\mu$ F - 4.7 $\mu$ F	<ul style="list-style-type: none"> <li>• 175<math>^{\circ}</math>C maximum high temperature</li> <li>• 6 - 50 Volts</li> <li>• <math>\pm</math>20%, <math>\pm</math>10% capacitance tolerance</li> <li>• Tape and reel packaging</li> <li>• RoHS-compliant</li> <li>• Automotive Grade available</li> </ul>
	B/3528-21	3.5 x 2.8 x 1.9	0.47 $\mu$ F - 33 $\mu$ F	
	C/6032-28	6.0 x 3.2 x 2.5	1.5 $\mu$ F - 68 $\mu$ F	
	D/7343-31	7.3 x 4.3 x 2.8	3.3 $\mu$ F - 150 $\mu$ F	
	X/7343-43	7.3 x 4.3 x 4.0	33 $\mu$ F - 220 $\mu$ F	

## Tantalum Surface Mount Capacitors • High Reliability Commercial Off-The-Shelf (COTS)

### Military/Aerospace COTS MnO<sub>2</sub> Series



Series	Case Size KEMET/EIA	Dimensions L x W x H (mm)	Capacitance Range	Benefits
T493	A/3216-18	3.2 x 1.6 x 1.6	0.10µF - 100µF	<ul style="list-style-type: none"> <li>Commercial-Off-The-Shelf (COTS)</li> <li>4 - 50 Volts</li> <li>±20%, ±10% capacitance tolerance</li> <li>CECC qualified</li> <li>Tape and reel packaging</li> <li>Low ESR, surge tested, Weibull graded, termination options</li> </ul>
	B/3528-21	3.5 x 2.8 x 1.9	0.15µF - 100µF	
	C/6032-28	6.0 x 3.2 x 2.5	0.47µF - 220µF	
	D/7343-31	7.3 x 4.3 x 2.8	1.5µF - 330µF	
	X/7343-43	7.3 x 4.3 x 4.0	4.7µF - 4700µF	
	E/7260-38	7.3 x 6.0 x 3.6	47µF - 68µF	

### High Grade COTS MnO<sub>2</sub> Series



Series	Case Size KEMET/EIA	Dimensions L x W x H (mm)	Capacitance Range	Benefits
T497	A	2.54 x 1.27 x 1.27	0.33µF - 4.7µF	<ul style="list-style-type: none"> <li>High grade Commercial-Off-The-Shelf (COTS)</li> <li>4 - 50 Volts</li> <li>±20%, ±10% capacitance tolerance</li> <li>100% accelerated steady state aging</li> <li>100% thermal shock</li> <li>Surge current testing available</li> <li>Tape and reel packaging</li> <li>RoHS-compliant</li> <li>Termination options available</li> </ul>
	B	3.81 x 1.27 x 1.27	0.68µF - 15µF	
	C	5.08 x 1.27 x 1.27	0.47µF - 0.68µF	
	D	3.81 x 2.54 x 1.27	1.5µF - 33µF	
	E	5.08 x 2.54 x 1.27	2.2µF - 68µF	
	F	5.59 x 3.43 x 1.78	4.7µF - 68µF	
	G	6.73 x 2.79 x 2.79	6.8µF - 150µF	
	H	7.24 x 3.81 x 2.79	15µF - 150µF	
	X	6.93 x 5.41 x 2.74	15µF - 33µF	

### Polymer COTS Series



Series	Case Size KEMET/EIA	Dimensions L x W x H (mm)	Capacitance Range	Benefits
T540	B	3.5 x 2.8 x 1.9	22µF - 150µF	<ul style="list-style-type: none"> <li>Polymer cathode technology</li> <li>125°C maximum operating temperature</li> <li>High frequency capacitance retention</li> <li>Benign failure mode</li> <li>Tape and reel packaging</li> <li>Low ESR, surge tested</li> </ul>
	D	7.3 x 4.3 x 2.8	47µF - 680µF	

### Polymer COTS Multiple Anode Series



Series	Case Size KEMET/EIA	Dimensions L x W x H (mm)	Capacitance Range	Benefits
T541	D	7.3 x 4.3 x 2.8	150µF - 680µF	<ul style="list-style-type: none"> <li>Polymer cathode technology</li> <li>125°C maximum operating temperature</li> <li>High frequency capacitance retention</li> <li>Benign failure mode</li> <li>ESR: 10mΩ to 40mΩ</li> <li>Tape and reel packaging</li> <li>Low ESR, surge tested</li> </ul>
	X	7.3 x 4.3 x 4.0	150µF - 1000µF	
	Y	7.3 x 4.3 x 4.0 max	220µF - 680µF	

## Tantalum Surface Mount Capacitors • MIL-PRF (CWR Style) Established Reliability

### MIL-PRF (CWR Style)



Series	Case Size KEMET/EIA	Dimensions L x W x H (mm)	Capacitance Range	Benefits
T409 T419 T429	A	2.54 x 1.27 x 1.27	0.1 $\mu$ F - 6.8 $\mu$ F	<ul style="list-style-type: none"> <li>MIL-PRF-55365/4 &amp; 11 (CWR09/19/29)</li> <li>4 - 50 Volts</li> <li><math>\pm</math>20%, <math>\pm</math>10%, <math>\pm</math>5% capacitance tolerance</li> <li>100% surge current test available</li> <li>Tape and reel packaging</li> <li>Termination options available</li> </ul>
	B	3.81 x 1.27 x 1.27	0.22 $\mu$ F - 22 $\mu$ F	
	C	5.08 x 1.27 x 1.27	0.47 $\mu$ F - 10 $\mu$ F	
	D	3.81 x 2.54 x 1.27	0.68 $\mu$ F - 33 $\mu$ F	
	E	5.08 x 2.54 x 1.27	1.0 $\mu$ F - 68 $\mu$ F	
	F	5.59 x 3.43 x 1.78	1.5 $\mu$ F - 100 $\mu$ F	
	G	6.73 x 2.79 x 2.79	3.3 $\mu$ F - 150 $\mu$ F	
	H	7.24 x 3.81 x 2.79	4.7 $\mu$ F - 330 $\mu$ F	
	X	6.93 x 5.41 x 2.74	15 $\mu$ F - 150 $\mu$ F	

### CWR11 Style MIL-PRF-55365/8



Series	Case Size KEMET/EIA	Dimensions L x W x H (mm)	Capacitance Range	Benefits
T492	A/3216-18	3.2 x 1.6 x 1.6	0.10 $\mu$ F - 4.7 $\mu$ F	<ul style="list-style-type: none"> <li>MIL-PRF-55365/8 (CWR11)</li> <li>4 - 50 Volts</li> <li><math>\pm</math>20%, <math>\pm</math>10%, <math>\pm</math>5% capacitance tolerance</li> <li>Tape and reel packaging</li> <li>100% surge current test available</li> <li>Termination options available</li> </ul>
	B/3528-21	3.5 x 2.8 x 1.9	1.5 $\mu$ F - 15 $\mu$ F	
	C/6032-28	6.0 x 3.2 x 2.5	0.47 $\mu$ F - 33 $\mu$ F	
	D/7343-31	7.3 x 4.3 x 2.8	1.5 $\mu$ F - 100 $\mu$ F	

## Tantalum Surface Mount Capacitors • Fused

### Fused MnO<sub>2</sub> Series



Series	Case Size KEMET/EIA	Dimensions L x W x H (mm)	Capacitance Range	Benefits
T496	B/3528-21	3.5 x 2.8 x 1.9	0.15 $\mu$ F - 22 $\mu$ F	<ul style="list-style-type: none"> <li>Fail-safe fused series</li> <li>2.5 - 50 Volts</li> <li><math>\pm</math>20%, <math>\pm</math>10% capacitance tolerance</li> <li>Tape and reel packaging</li> <li>RoHS-compliant</li> <li>Available DSCC Drawing 04053</li> </ul>
	C/6032-28	6.0 x 3.2 x 2.5	0.47 $\mu$ F - 150 $\mu$ F	
	D/7343-31	7.3 x 4.3 x 2.8	2.2 $\mu$ F - 330 $\mu$ F	
	X/7343-43	7.3 x 4.3 x 4.0	10 $\mu$ F - 470 $\mu$ F	

## Aluminum Polymer Surface Mount Capacitors

### KEMET Organic Capacitor (AO-CAP) A700



Series	Case Size	Dimensions D x H (inches)	Capacitance Range	Benefits
A700	V/7343-20	7.3 x 4.3 x 1.9	8.2 $\mu$ F - 150 $\mu$ F	<ul style="list-style-type: none"> <li>Organic polymer for counter-electrode material</li> <li>Pb-Free</li> <li>Extremely low ESR (7m<math>\Omega</math>-28m<math>\Omega</math>)</li> <li>2 - 10 Volts</li> <li><math>\pm</math>20% capacitance tolerance</li> <li>Tape and reel packaging</li> </ul>
	D/7343-31	7.3 x 4.3 x 2.8	56.0 $\mu$ F - 220 $\mu$ F	
	X/7343-43	7.3 x 4.3 x 4.0	100.0 $\mu$ F - 470 $\mu$ F	

## Tantalum Through-Hole Capacitors • Hermetic Seal

### Polar T110/T140 Series, CSR13 Case Sizes



Case Size	Dimensions D x L (inches)		Capacitance Range	Benefits
	Uninsulated	Insulated		
A	0.125 x 0.250	0.135 x 0.286	0.0047 $\mu$ F - 12 $\mu$ F	<ul style="list-style-type: none"> <li>• 6 - 125 Volts</li> <li>• <math>\pm</math>20%, <math>\pm</math>10%, <math>\pm</math>5% capacitance tolerance</li> <li>• Tape and reel packaging available</li> <li>• Available RoHS-compliant</li> <li>• CECC-qualified</li> </ul>
B	0.175 x 0.438	0.185 x 0.474	0.39 $\mu$ F - 100 $\mu$ F	
C	0.279 x 0.650	0.289 x 0.686	2.7 $\mu$ F - 470 $\mu$ F	
D	0.341 x 0.750	0.351 x 0.786	8.2 $\mu$ F - 1200 $\mu$ F	

### Polar T2XX Series CSR/CSS Style MIL-PRF-39003



Case Size	Dimensions D x L (inches)		Capacitance Range	Benefits
	Uninsulated	Insulated		
A	0.125 x 0.250	0.135 x 0.286	0.0047 $\mu$ F - 12 $\mu$ F	<ul style="list-style-type: none"> <li>• 6 - 100 Volts</li> <li>• <math>\pm</math>20%, <math>\pm</math>10%, <math>\pm</math>5% capacitance tolerance</li> <li>• Tape and reel packaging available</li> <li>• MIL-PRF-39003/01/03/04/06/09/10</li> <li>• 100% surge current test available</li> <li>• See <a href="http://www.kemet.com">www.kemet.com</a> for QPL information</li> </ul>
B	0.175 x 0.438	0.185 x 0.474	0.39 $\mu$ F - 100 $\mu$ F	
C	0.279 x 0.650	0.289 x 0.686	2.7 $\mu$ F - 470 $\mu$ F	
D	0.341 x 0.750	0.351 x 0.786	8.2 $\mu$ F - 1200 $\mu$ F	

## Tantalum Through-Hole Capacitors • Hermetic Seal (cont.)

### Miniature T222 CSR09 Style MIL-PRF-39003/2



Case Size	Dimensions D x L (inches)		Capacitance Range	Benefits
	Uninsulated	Insulated		
A	0.085 x 0.245	0.090 x 0.250	0.047 $\mu$ F - 2.7 $\mu$ F	<ul style="list-style-type: none"> <li>• 6 - 75 Volts</li> <li>• <math>\pm</math>20%, <math>\pm</math>10%, <math>\pm</math>5% capacitance tolerance</li> <li>• MIL-PRF-39003/02 approved</li> <li>• 100% surge current test available</li> <li>• See <a href="http://www.kemet.com">www.kemet.com</a> for QPL information</li> </ul>
B	0.127 x 0.375	0.138 x 0.390	0.22 $\mu$ F - 18 $\mu$ F	

### GR500 High Reliability Series

For specific GR500 High Reliability information, please refer to [www.kemet.com](http://www.kemet.com). See T2XX information above for case size dimensions.

## Tantalum Through-Hole Capacitors • Radial Dipped

### T35X Series Standard UltraDip II



Series	Dimensions D x H (inches)	Capacitance Range	Benefits
A	0.175 x 0.280 - 0.400	0.10 $\mu$ F - 10 $\mu$ F	<ul style="list-style-type: none"> <li>• 3 - 50 Volts</li> <li>• <math>\pm</math>20%, <math>\pm</math>10%, <math>\pm</math>5% capacitance tolerance</li> <li>• Tape and reel packaging available</li> <li>• Six lead configurations available</li> <li>• 0.10, 0.20, 0.25, &amp; 0.125 lead spacing available</li> <li>• Available RoHS-compliant</li> </ul> <p><b>Note:</b> "H" dimension is the range for all T35X Series. For specific "H" dimensions, refer to <a href="http://www.kemet.com">www.kemet.com</a></p>
B	0.175 x 0.300 - 0.410	0.39 $\mu$ F - 15 $\mu$ F	
C	0.196 x 0.330 - 0.440	1.8 $\mu$ F - 22 $\mu$ F	
D	0.196 x 0.340 - 0.450	1.2 $\mu$ F - 33 $\mu$ F	
E	0.216 x 0.350 - 0.460	1.5 $\mu$ F - 47 $\mu$ F	
F	0.236 x 0.390 - 0.500	2.7 $\mu$ F - 68 $\mu$ F	
G	0.250 x 0.400 - 0.510	3.9 $\mu$ F - 100 $\mu$ F	
H	0.300 x 0.400 - 0.520	5.6 $\mu$ F - 150 $\mu$ F	
J	0.330 x 0.500 - 0.580	6.8 $\mu$ F - 220 $\mu$ F	
K	0.350 x 0.530 - 0.630	10.0 $\mu$ F - 330 $\mu$ F	
L	0.350 x 0.630 - 0.730	15.0 $\mu$ F - 470 $\mu$ F	
M	0.400 x 0.670 - 0.760	22.0 $\mu$ F - 680 $\mu$ F	

### T363/T369 Series CX02/09 Style MIL-PRF-49137/2



Series	Dimensions D x H (inches)	Capacitance Range	Benefits
A	0.175 x 0.350	0.10 $\mu$ F - 6.8 $\mu$ F	<ul style="list-style-type: none"> <li>• 6 - 50 Volts</li> <li>• <math>\pm</math>20%, <math>\pm</math>10%, <math>\pm</math>5% capacitance tolerance</li> <li>• Tape and reel packaging available</li> <li>• MIL-PRF-49137 (CX02/CX12) approved (CX12 available A &amp; B case)</li> <li>• See <a href="http://www.kemet.com">www.kemet.com</a> for QPL information</li> </ul>
B	0.250 x 0.450	1.5 $\mu$ F - 68 $\mu$ F	
C	0.350 x 0.610	6.8 $\mu$ F - 150 $\mu$ F	
D	0.400 x 0.740	22.0 $\mu$ F - 330 $\mu$ F	

## Tantalum Through-Hole Capacitors • Radial Dipped

### T368 Series High Capacitance UltraDip II



Series	Dimensions D x H (inches)	Capacitance Range	Benefits
C	0.250 x 0.400 x 0.420	5.6 - 150 $\mu$ F	<ul style="list-style-type: none"> <li>• 6 - 50 Volts</li> <li>• <math>\pm</math>20%, <math>\pm</math>10%, <math>\pm</math>5% capacitance tolerance</li> <li>• Tape and reel packaging available</li> </ul>
D	0.250 x 0.460 x 0.520	18.0 - 330 $\mu$ F	

## Tantalum Through-Hole Capacitors • Radial Dipped

### T396/T398 Series Three-Leaded UltraDip III



Series	Dimensions W x T x H (inches)	Capacitance Range	Benefits
A	0.280 x 0.190 x 0.310/0.355	0.10 $\mu$ F - 10 $\mu$ F	<ul style="list-style-type: none"> <li>• 3 - 50 Volts</li> <li>• <math>\pm</math>20%, <math>\pm</math>10% capacitance tolerance</li> <li>• Tape and reel packaging available</li> <li>• Three lead design, fail-safe insertion</li> <li>• Available RoHS-compliant</li> </ul> <p><b>Note:</b> "H" dimension is for both T396/T398</p>
B	0.280 x 0.190 x 0.320/0.365	0.47 $\mu$ F - 15 $\mu$ F	
C	0.280 x 0.200 x 0.360/0.390	2.2 $\mu$ F - 22 $\mu$ F	
D	0.280 x 0.200 x 0.370/0.390	3.3 $\mu$ F - 33 $\mu$ F	
E	0.280 x 0.230 x 0.380/0.415	1.5 $\mu$ F - 47 $\mu$ F	
F	0.280 x 0.240 x 0.410/0.430	3.3 $\mu$ F - 68 $\mu$ F	
G	0.280 x 0.250 x 0.420/0.440	4.7 $\mu$ F - 100 $\mu$ F	
H	0.280 x 0.270 x 0.420/0.440	22.0 $\mu$ F - 150 $\mu$ F	
J	0.300 x 0.300 x 0.460/0.480	6.8 $\mu$ F - 220 $\mu$ F	
K	0.340 x 0.340 x 0.500/0.500	10.0 $\mu$ F - 330 $\mu$ F	
L	0.340 x 0.340 x 0.560/0.580	15.0 $\mu$ F - 470 $\mu$ F	
M	0.360 x 0.360 x 0.620/0.620	22.0 $\mu$ F - 680 $\mu$ F	

## Tantalum Through-Hole Capacitors • Molded Axial & Radial

### T32X Series CX01/05 Style MIL-PRF-49137/1 & 5



Series	Dimensions D x L x W (inches)	Capacitance Range	Benefits
A	0.095 x 0.260 x 0.020	0.10 $\mu$ F - 10 $\mu$ F	<ul style="list-style-type: none"> <li>• 2 - 50 Volts</li> <li>• <math>\pm</math>20%, <math>\pm</math>10%, <math>\pm</math>5% capacitance tolerance</li> <li>• Tape and reel packaging available</li> <li>• MIL-PRF-49137/1 &amp; 5 (CX01 &amp; CX05) approved</li> <li>• Miniature - polar type</li> <li>• See <a href="http://www.kemet.com">www.kemet.com</a> for QPL information</li> <li>• Available RoHS-compliant</li> </ul>
B	0.110 x 0.290 x 0.020	0.33 $\mu$ F - 33 $\mu$ F	
C	0.180 x 0.345 x 0.020	1.2 $\mu$ F - 68 $\mu$ F	
D	0.180 x 0.420 x 0.020	2.7 $\mu$ F - 68 $\mu$ F	
E	0.280 x 0.530 x 0.025	5.6 $\mu$ F - 220 $\mu$ F	
F	0.300 x 0.710 x 0.025	12.0 $\mu$ F - 330 $\mu$ F	

## Disclaimer

All product specifications, statements, information and data (collectively, the "Information") are subject to change without notice.

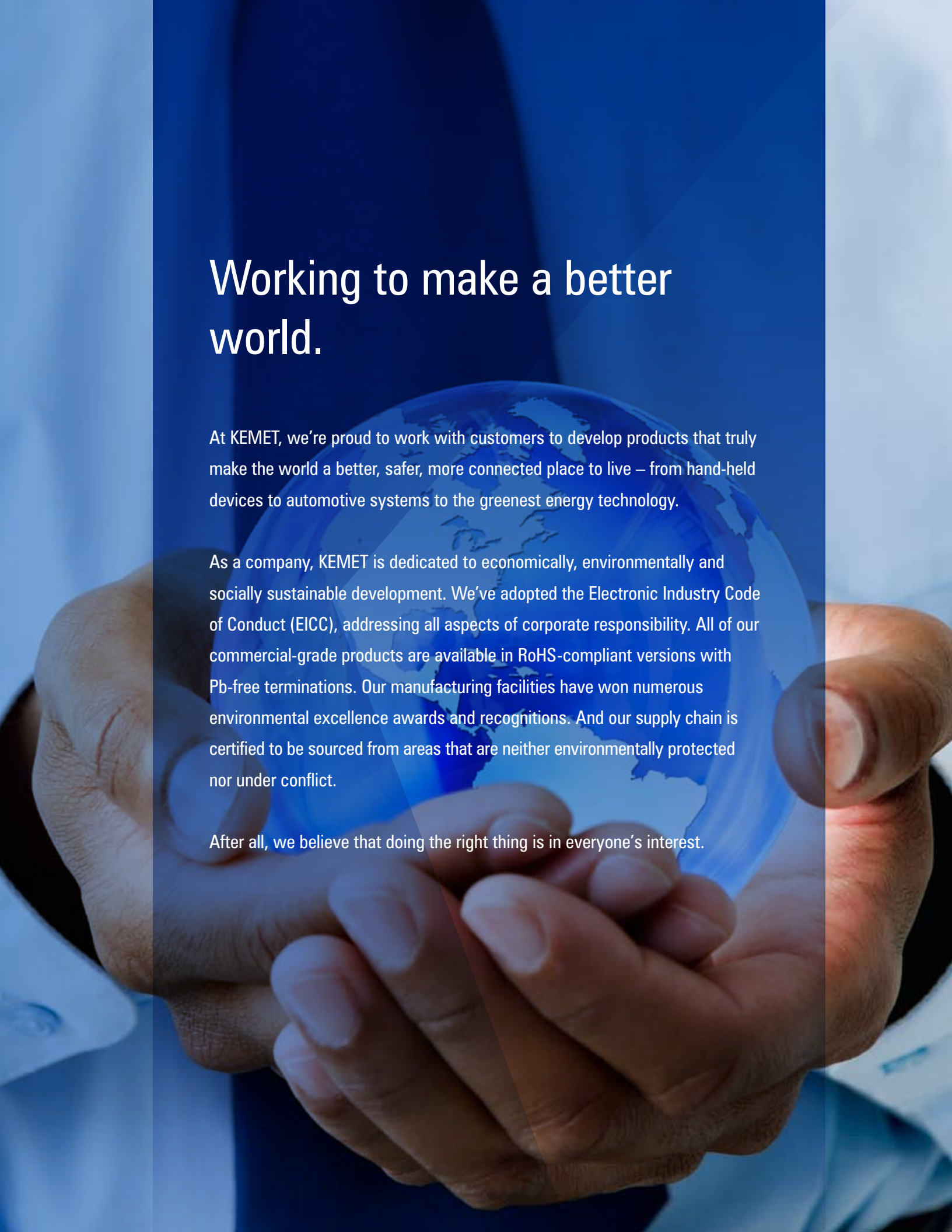
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Images may be enlarged to show detail.

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