

MASTER CATALOG

# Switches



QUALITY IN A

# Global Marketplace

Cherry has been the leader in switch innovation since its inception in 1953. To better serve our customers in today's global marketplace, we now maintain offices and manufacturing facilities in eleven locations worldwide — each with its own engineering and sales staff.

## Cherry's principal production capabilities include:

- Complex, multi-station die design and build capabilities, utilizing the latest in-die sensing and slug detection techniques
- In-die welding and contact inserting capabilities, which eliminate costly secondary operations.
- Precision metal stamping, using presses ranging from 40 to 100 tons and press speeds from 200 to 1000 strokes per minute
- Low cost laser marking on piece parts and finished assemblies
- Robotic switch assembly and testing to ensure the highest quality standards

We are committed to meeting or exceeding the highest standards for quality assurance — not only in our products, but also in our processes. Our primary objective is to achieve zero defects in every aspect of our activities. As part of our pre-emptive strategy, the prevention of defects always takes precedent over their detection.

The quality assurance processes at Cherry's manufacturing facilities in the United States, Europe and Asia have been certified under ISO 9001 and ISO 14001 Environmental.

## Cherry Locations Worldwide

**The Cherry Corporation**  
Pleasant Prairie, Wisconsin, USA

**Cherry Mikroschalter GmbH**  
Auerbach, Germany

**Cherry Electrical Products Division**  
Pleasant Prairie, Wisconsin, USA

**Cherasia Limited**  
Hong Kong

**Cherry Electrical Products Ltd.**  
Harpden, England

**Cherry SRO**  
Klasterec, Czech Republic

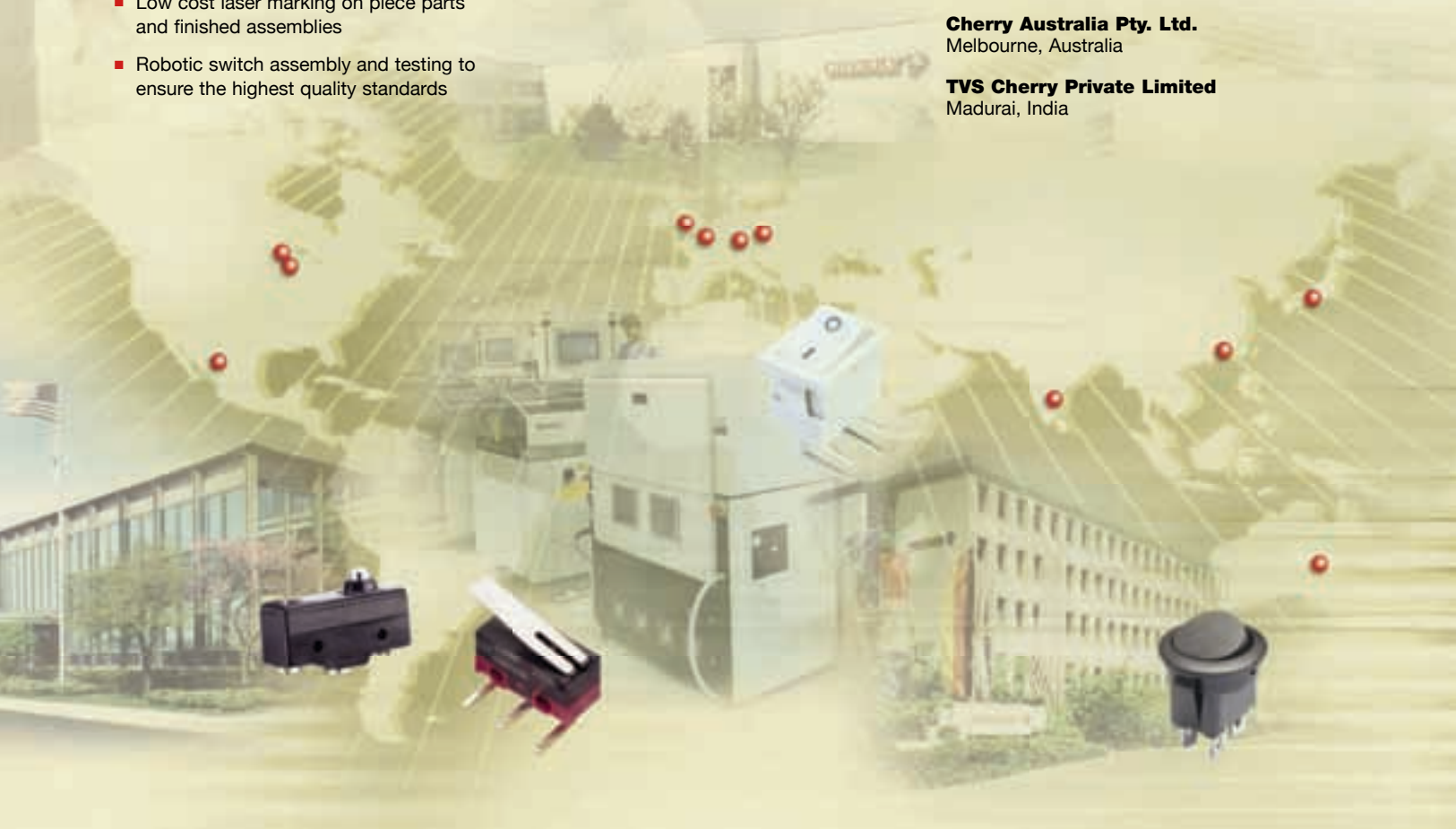
**Cherry de Mexico, S.A. de C.V.**  
Juarez, Mexico

**Cherry Zhuhai**  
Zhuhai, China

**Cherry SARL**  
Paris, France

**Cherry Australia Pty. Ltd.**  
Melbourne, Australia

**TVS Cherry Private Limited**  
Madurai, India



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SNAP-ACTION SWITCH

# Selection Guide

Series Name	Switch Type (Size)	Max. Current Rating	Mounting				Degree of Protection	Mounting Centerline Spacing Inches (mm)	Max. Temperature (°C)	Poles / Throws					Terminals					Actuator Types					
			VDE Approved	Snap-In	Mounting Holes	Threaded Ferrule				PC Mount	SPST	SPDT	DPDT	NO	NC	Line Interrupt	Screw	PC	Solder Terminals	Quick Connect	DIN	Lead Wires	Button Only	Wire Form	Flat Lever
DR	Subminiature	2A DC* 12V				●	IP40	N/A	105	●						●	●				●	●			
DB	Subminiature	10.1A 125/250VAC	●	●	●		IP40	0.374 (9.50)	120	●	●		●	●		●	●	●	●		●	●	●	●	●
DG	Subminiature	3A 125VAC		●	●			0.256 (6.50)	85	●						●					●	●		●	
DH	Subminiature	500mA @30VDC		●	●			0.157 (3.99)	70	●						●					●			●	
E6x	Subminiature	13A 125VAC		●	●			0.375 (9.53)	130	●	●		●	●		●	●	●			●	●	●	●	●
DK	Subminiature	2A DC* 12V				●	IP65 (IP67 on request)	N/A	105	●			●	●		●	●		●	●	●	●	●	●	●
DCJK	Subminiature	10A 250VAC		●			IP67	0.375 (9.53)	120	●						●	●		●	●	●	●	●	●	●
DJ	Subminiature	2A DC* 12V				●	IP67	N/A	85	●						●	●			●					
E7x	Subminiature	10.1A 125/250VAC		●				0.625 (15.88)	85	●	●		●	●				●		●	●	●	●	●	●
DC	Subminiature	10.1A 125/250VAC	●	●	●		IP67	0.375 (9.53)	120	●	●		●	●		●	●	●		●	●	●	●	●	●
D3	Miniature	16(4)A 250V	●	●	●			0.875 (22.2)	85	●	●		●	●		●	●	●	●		●	●	●	●	●
D4	Miniature	21(8)A 250VAC	●	●	●			0.875 (22.2)	150	●	●		●	●		●	●	●	●		●	●	●	●	●
E5x	Miniature	6A 250VAC		●				0.937 (23.8)	85	●	●		●	●			●				●				
E Miniature	Miniature	25A 125/250VAC		●				0.875 (22.2)	150	●	●		●	●		●	●			●	●	●	●	●	●
K	Miniature	25A 250VAC	●	●	●			0.875 (22.2)	200	●	●		●	●		●	●			●	●	●	●	●	●
E General Purpose	General Purpose	30.1A 125/250VAC		●	●			1.00 (25.4)	150	●	●	●	●	●			●			●	●	●	●	●	●
E Panel Mount	Panel Mount	16A 125/250VAC	●	●				N/A	85	●	●	●	●	●			●			●					
F80	Line Interrupt	16A 125/250VAC	●	●				N/A	85						●		●			●					

\*DR, DK and DJ Series: 2A@12VDC

PANEL MOUNT ROCKER SWITCH

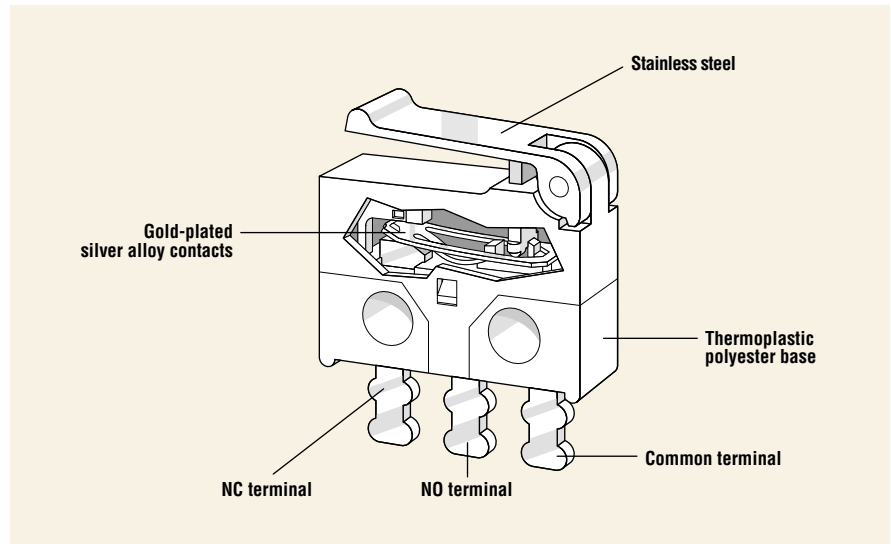
# Selection Guide

Series Name	Panel Cut-Out Approx Inches (mm)	Circuitry										Ratings		Lighted Available	Degree of Protection Available	Terminals								Approvals			Actuator Types			
		SPST	SPDT	DPST	DPDT	On-Off	On-On	(On)-Off	On-(On)	On-Off-On	(On)-Off-(On)	On-Off-(On)	Amp Rating@125VAC			Amp Rating@250VAC	Quick Connect 0.187" (4.8mm)	PC thru Hole Left Angle	PC thru Hole Straight	Solder Tab	Solder 2.09" x 1.06" (52.09mm x 26.92mm)	PC thru Hole Right Angle	Quick Connect 0.248" (6.3mm)	Wire Leads	UL	VDE	CSA	Flat	2 Color	Curved
CR	1.13 (28.8) x variable	●	●			●	●				●	20A	16A	●	IP42				●			●	●	●	●	●	●	●	●	●
LR	0.760 x 0.508 (19.3 x 12.9)	●		●	●	●						10A	8A	●		●			●			●	●	●	●					●
SR	0.760 x 0.508 (19.3 x 12.9)	●	●			●	●	●		●		10A	6A		●	●	●		●	●		●	●	●	●					●
TR	1.20 x 0.433 (30.4 x 11.0)	●	●			●	●	●	●	●	●	16A	16A	●							●	●	●	●	●	●	●	●		●
WR	1.19 x 0.867 (30.2 x 22.0)	●	●	●	●	●	●	●	●	●	●	16A	16A	●						●	●	●	●	●	●	●	●			●
RR	Round 0.787 (20.0) dia.	●		●	●	●						10A	8A	●	●		●		●			●	●	●	●					●
GR	1.13 x 0.535	●	●			●	●					15A	10A	●						●	●	●	●	●	●					●
PR	0.539 x 0.362 (13.7 x 9.2)	●				●						6A	3A									●	●	●	●		●			
FR	0.760 x 0.862 (19.35 x 21.90)	●		●		●	●					12A	12A		●		●					●	●	●	●					●
SR Round	0.787 x 0.827 (20.0 x 21.0)	●	●			●	●					20A	12A		●							●	●	●	●					●

# SUBMINIATURE DH Series

## Features

- Ultraminiature dimensions, just 0.323" x 0.106" x 0.244" (8.2mm x 2.7mm x 6.2mm)
- Specially designed for low switching currents and voltages
- Available with or without auxiliary actuator
- Can be fitted to circuit boards in upright position or horizontally with formed terminals



## Electrical Ratings

Switch Series	Electrical Rating
DH2	5 to 500mA@30VDC

## Specifications

Electrical	
Temperature Rating:	-25°C to +70°C
Flammability Rating:	UL94V-0

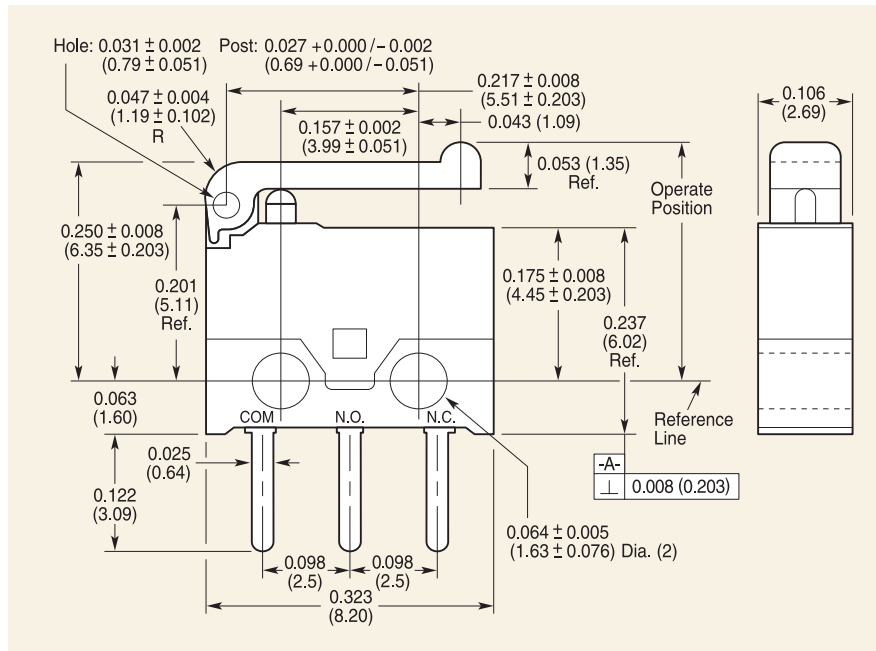
Materials	
Base:	PPS
Button:	PBT
Cover:	PBT
Auxiliary Actuator:	Plastic
Terminals:	Silver-Plated Brass
Contacts:	Gold-Plated Brass

PBT = Polybutyleneterephthalate • PPS = Polyphenylene Sulphide

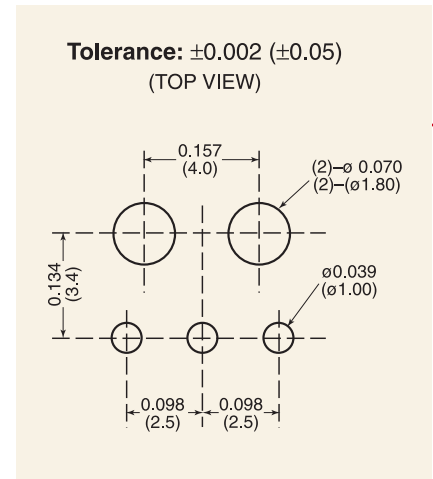




### Dimensions inches (mm)



### PCB Layout inches (mm)



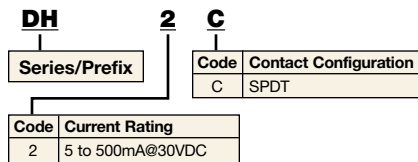
### Actuator Specifications

Actuator Type	Switch Type	Maximum Operating Force (gms.)	Maximum Pre-Travel inches (mm)	Operating Point inches (mm)	Minimum Over-Travel inches (mm)	Max. Movement Differential inches (mm)
AA		90	0.008 (0.2)	0.220±0.006 (5.6±0.15)	0.004 (0.1)	0.003 (0.07)
PA		50	0.051 (1.3)	0.264±0.020 (6.7±0.5)	0.012 (0.3)	0.024 (0.6)

### Mounting

Recommended mounting screw: M1.6. Recommended torque: 9.81 cN•M (1.0 kgf•cm). Recommended use of a flat washer and a spring washer for locking.

### Ordering Information



**B1**

Code	Terminal Type inches (mm)	Terminal Configuration
B1	0.051 x 0.122 x 0.020 (1.3 x 3.1 x 0.5) Solder, Straight	
B2	0.025 x 0.122 x 0.020 (0.6 x 3.1 x 0.5) PCB, LH Side	
B3	0.025 x 0.122 x 0.020 (0.6 x 3.1 x 0.5) PCB, LH Side	
C4	0.025 x 0.122 x 0.020 (0.6 x 3.1 x 0.5) PCB, Straight	
C5	0.025 x 0.122 x 0.020 (0.6 x 3.1 x 0.5) PCB, RH Side	
C6	0.025 x 0.122 x 0.020 (0.6 x 3.1 x 0.5) PCB, LH Side	

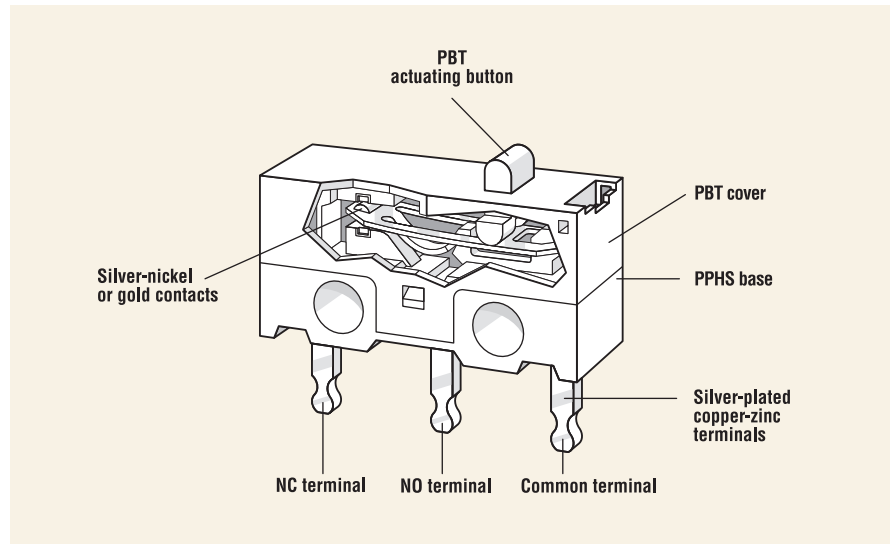
**AA**

Code	Actuator Type
AA	Button
PA	Simulated Roller

# SUBMINIATURE DG Series

## Features

- Small dimensions, just 0.504" x 0.228" x 0.256" (12.8mm x 5.8mm x 6.5mm)
- Depending on model, contact rating is suitable for low switched currents and voltages for light-current applications with loads of up to 3 amps 125VAC
- Available with or without auxiliary actuator
- Can be fitted to circuit boards in upright position or horizontally with terminals on left or right
- Mechanical life: min. 1 x 10<sup>6</sup> operations (depending on model)



## Electrical Ratings

Switch Series	EN61058 Rating	UL1054 Rating	Electrical Life at Rated Load
			According to UL (Min. Operations)
DG1	N/A	3A, 125VAC; 2A, 30VDC	6,000
DG2	N/A	0.05A, 30VDC	6,000
DG4	N/A	1A, 125VAC; 1A, 30VDC	6,000

## Specifications

### Electrical

Temperature Rating:	-25°C to +85°C
Flammability Rating:	UL9V-O

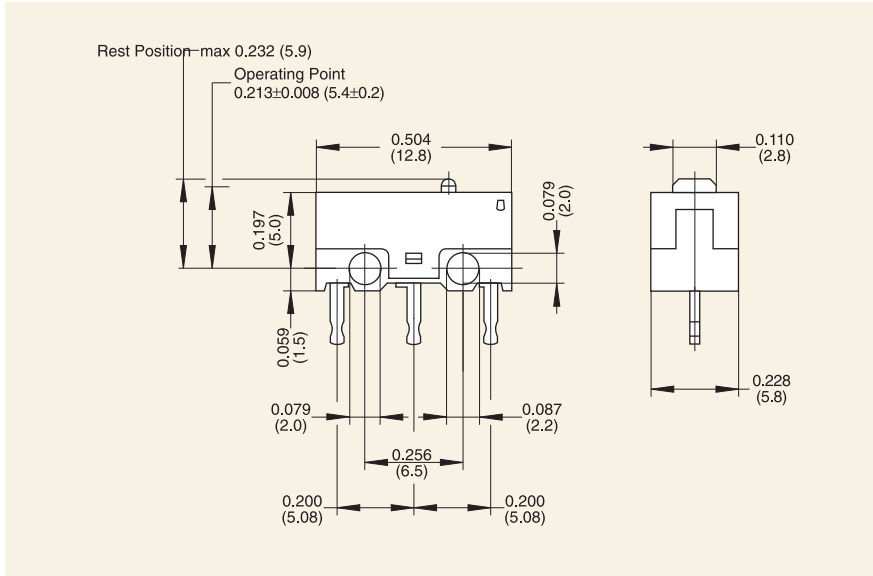
### Materials

Base:	PPHS
Cover:	PBT
Actuator:	PBT
Auxiliary Actuator:	Stainless Steel
Terminals:	Silver-Plated Brass
Contacts:	Silver Alloy (DG1, DG4) Gold Flash, Gold (DG2)

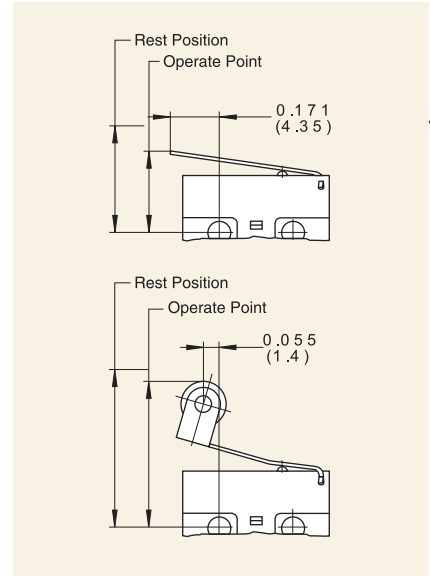
PBT = Polybutyleneterephthalate • PPHS = Polyphenylene sulphide



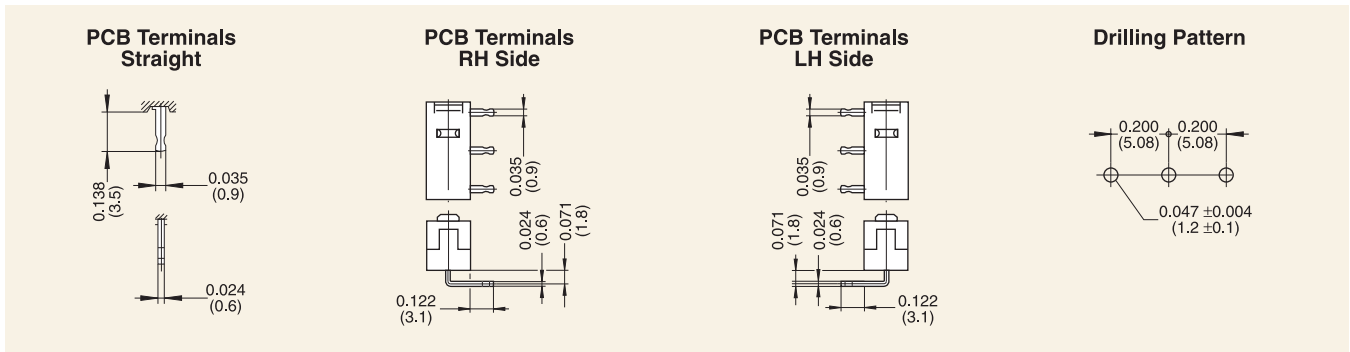
### Dimensions inches (mm)



### Auxiliary Actuators inches (mm)



### Terminal Options inches (mm)



### Actuator Specifications

Actuator Type	Switch Type	Maximum Operating Force (gms.)		Maximum Pre-Travel inches (mm)	Operating Point inches (mm)	Minimum Over-Travel inches (mm)	Max. Movement Differential inches (mm)	Max. Rest Position inches (mm)
		DG1, DG2 (B)	DG2, DG4 (C)					
AA		140	75	0.020 (0.51)	0.213±0.008 (5.41±0.20)	0.008 (0.20)	0.007 (0.18)	0.224±0.008 (5.7±0.20)
LA		45	30	0.071 (1.80)	0.268+0.031/-0.016 (6.81+0.79/-0.41)	0.022 (0.55)	0.020 (0.51)	0.314+0.055/-0.067 (8.0+1.40/-0.70)
RA		60	35	0.059 (1.50)	0.488±0.020 (12.40±0.51)	0.022 (0.55)	0.020 (0.51)	0.528±0.020 (13.40±0.50)

### Ordering Information

**DG** Series/Prefix

**1 3** Code Contact Configuration  
 3 SPDT

**B** Code Button Color/Operating Force  
 B Grey / 140 grams\*\*  
 C Black / 75 grams\*\*

**1 AA** Code Actuator Type  
 AA Button (without Auxiliary Actuator)  
 LA Straight Auxiliary Actuator, 0.169" (4.3mm) Long\*  
 LB Straight Auxiliary Actuator, 0.500" (12.7mm) Long\*  
 LC Straight Auxiliary Actuator, 1.012" (25.7mm) Long\*  
 RA Roller Auxiliary Actuator, 0.075" (1.9mm) Long\*

**Code Current Rating (UL & CSA)**

1	3A, 125VAC; 2A, 30VDC
2	0.05A, 30VDC
4	1A, 125VAC; 1A, 30VDC

**Code Terminal Type**

1	PCB, Straight
2	PCB, RH Side
3	PCB, LH Side

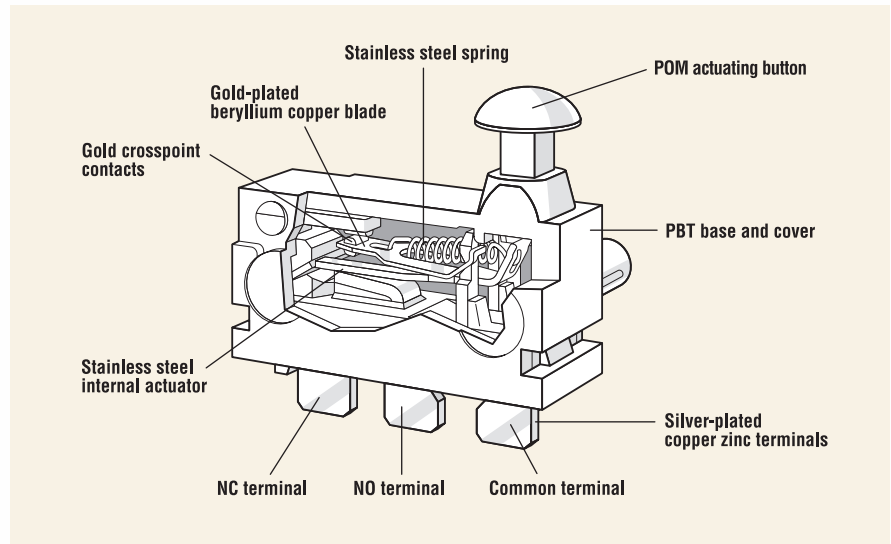
\*Actuator lengths are dimensioned from center line of switch mounting hole.

Specifications subject to change without notice.

# SUBMINIATURE DR Series

## Features

- Switch with mushroom or pan-head actuator for a wide variety of control applications
- Protection against dust complying with IP40
- Models available for operating temperatures up to 105°C
- Rated for 5mA@12VDC or 2A@12VDC
- Auxiliary actuator on request
- High contact stability thanks to gold alloy crosspoint contacts
- Mechanical life: min. 1 x 10<sup>6</sup> operations
- Various options available for connecting



## Specifications

### Electrical

Temperature Rating:	-40°C to +85°C
Flammability Rating:	N/A

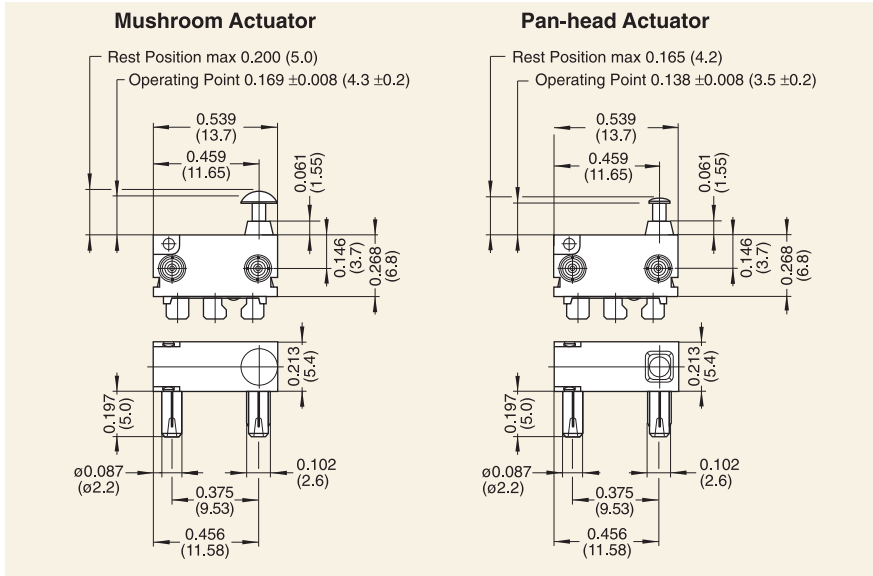
### Materials

Housing:	PBT
Actuator:	POM (+85°C)
Auxiliary Actuator:	Stainless Steel
Internal Actuator:	Stainless Steel
Spring:	Stainless Steel
Terminals:	Silver-Plated Copper-Zinc
Contacts:	Gold Crosspoint
Moving Blade:	Gold-Plated Beryllium Copper

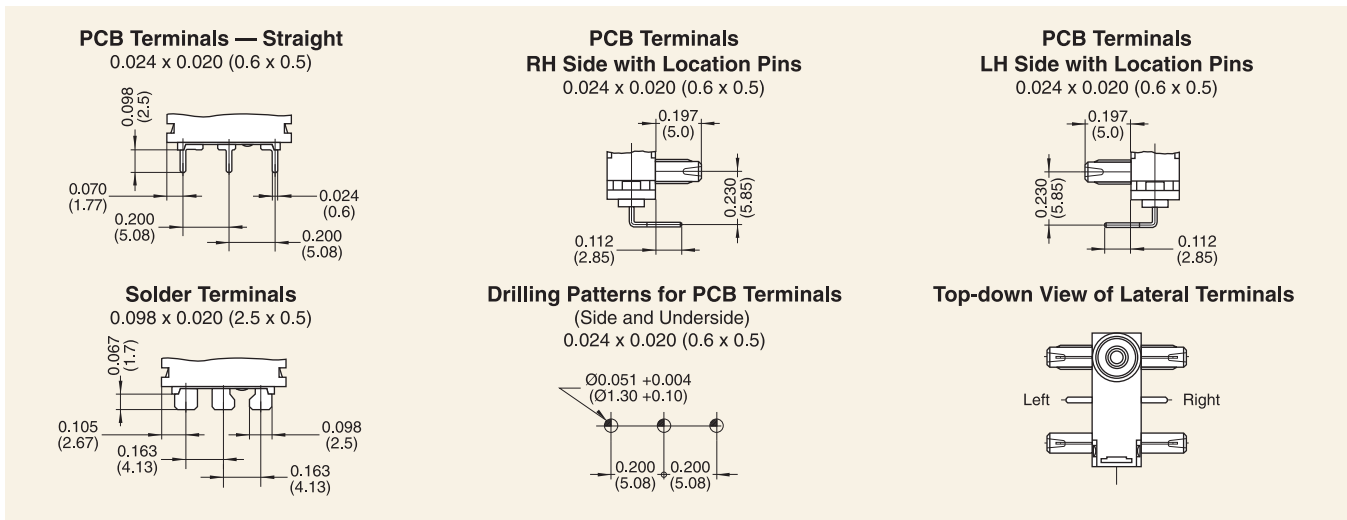
PBT = Polybutyleneterephthalate • POM = Polyacetal



### Dimensions inches (mm)



### Terminal Options inches (mm)



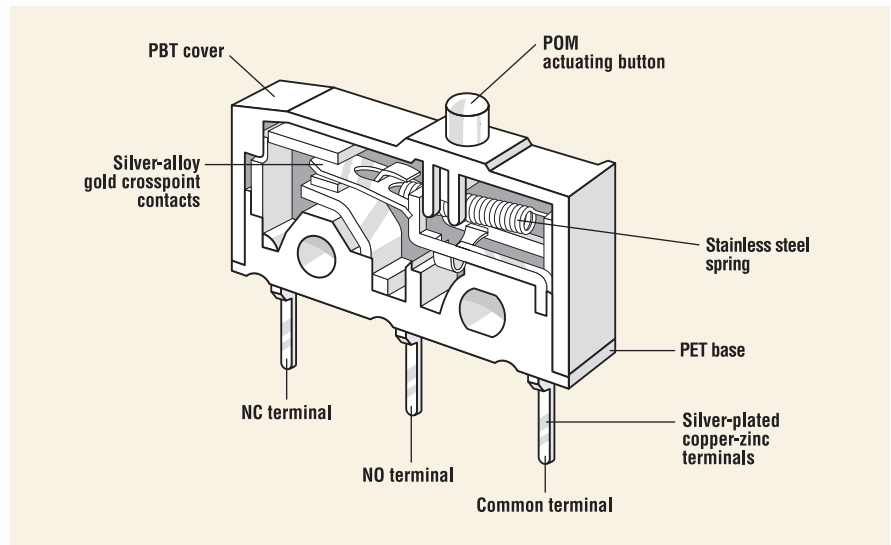
### Ordering Information

<b>DR</b>	<b>1</b>	<b>P</b>	<b>BR AO</b>
Series/Prefix	Code	Actuator Shape	Code
	P	Mushroom	AO
	R	Pan-head	without Auxiliary Actuator
Code	Current Rating	Code	Terminal Type inches (mm)
1	0.005A@12VDC or 2A@12VDC	AN	0.098 x 0.020 (2.5 x 0.5) Solder w/o Pins
		AL	0.098 x 0.020 (2.5 x 0.5) Solder with LH Pins
		AR	0.098 x 0.020 (2.5 x 0.5) Solder with RH Pins
		BN	0.024 x 0.020 (0.6 x 0.5) PCB, Straight w/o Pins
		BL	0.024 x 0.020 (0.6 x 0.5) PCB, Straight with LH Pins
		BR	0.024 x 0.020 (0.6 x 0.5) PCB, Straight with RH Pins
		CR	0.024 x 0.020 (0.6 x 0.5) PCB, RH Side with RH Pins
		DL	0.024 x 0.020 (0.6 x 0.5) PCB, LH Side with LH Pins

# SUBMINIATURE DB Series

## Features

- High-precision switch with high repeat accuracy
- Models available for operating temperatures up to 120°C
- Rated for currents up to 10 amp at 250VAC
- Range of auxiliary actuators available (can also be retrofitted); two mounting positions
- Variety of contact materials available to suit your application
- Mechanical life: up to  $15 \times 10^6$  operations
- Wide variety of terminal types available
- Numerous approvals



## Electrical Ratings

Switch Series	EN61058 Rating	UL1054 Rating	Electrical Life at Rated Load	
			According to EN (Min. Operations)	According to UL (Min. Operations)
DB1	6A, 250V~	5A, 125/250VAC	10,000	6,000
DB2	10(1.5)A, 250V~	10.1A, 125/250VAC; 1/4HP, 125VAC	10,000	6,000
DB3	0.1A, 250V~	0.1A, 125/250VAC	50,000	6,000
DB5*	1A, 250V~	1A, 125/250VAC	50,000	6,000
DB6*	6A, 250V~	5A, 125/250VAC	50,000	6,000
DB7*	10(1.5A), 400V~	10.1A, 125/250VAC; 1/4HP, 125VAC	50,000	6,000

\*85°C

## Specifications

### Electrical

Temperature Rating:	-40°C to +85°C / +120°C
Flammability Rating:	UL94V-O (PBT, PET) UL94HB (POM)

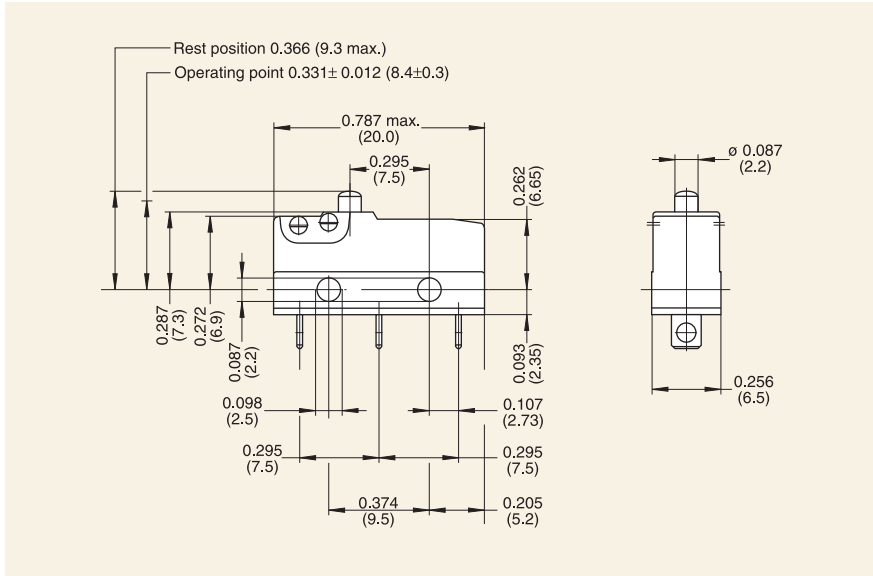
### Materials

Base:	PET
Cover:	PBT
Actuator:	PBT, POM
Auxiliary Actuator:	Stainless Steel or Plastic
Terminals:	Silver-Plated Copper-Zinc
Contacts:	Silver Alloy Gold Crosspoint

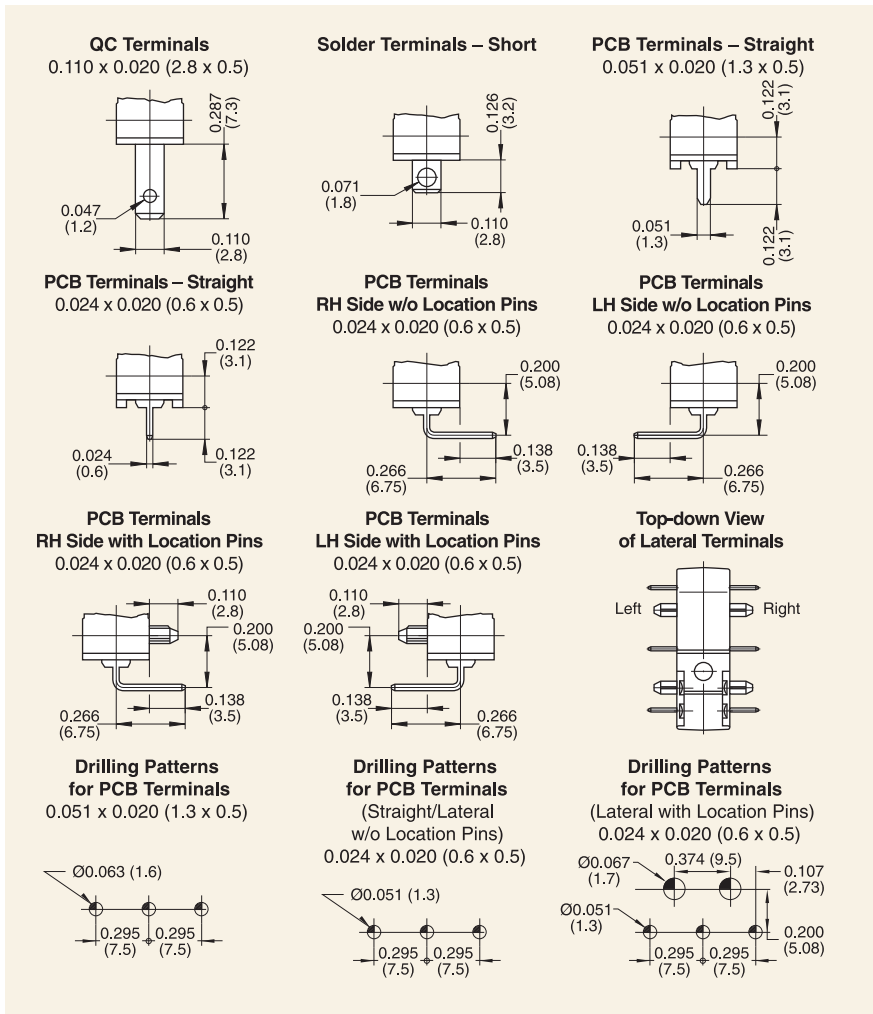
PBT = Polybutyleneterephthalate • PET = Polyethyleneterephthalate • POM = Polyacetal



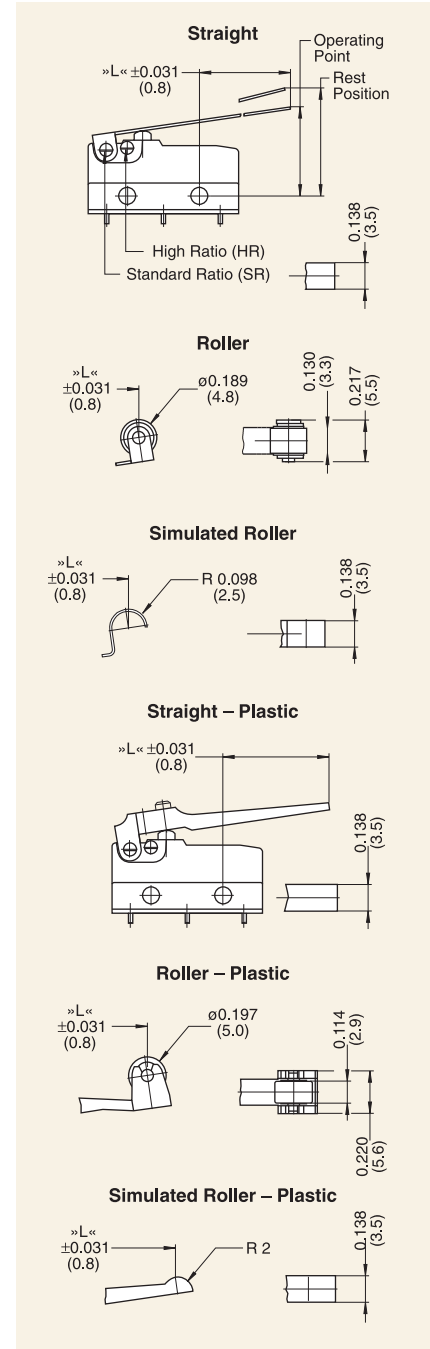
### Dimensions inches (mm)



### Terminal Options inches (mm)



### Auxiliary Actuator inches (mm)



### Contact Ratings at Direct Voltage

Switching Voltage	Switched Current Resistive Load		Inductive Load L/R=3ms	
	DB1	DB2	DB1	DB2
12V	6A	10A	6A	10A
24V	3A	5A	2A	4A
60V	1A	1A	0.5A	0.5A
110V	0.5A	0.5A	0.2A	0.2A
220V	0.25A	0.25A	0.1A	0.1A

## Actuator Specifications — Standard Ratio

Actuator Code	Switch Type	Maximum Operating Force (gms.)	Maximum Pre-Travel inches (mm)	Operating Point inches (mm)	Minimum Over-Travel inches (mm)	Max. Movement Differential inches (mm)	Max. Rest Position inches (mm)	Actuation Length inches (mm)
AA	DB5	70	0.039 (1.0)	0.331±0.012 (8.4±0.3)	0.024 (0.6)	0.004 (0.10)	0.366 (9.3)	—
	DB1/3	150	0.039 (1.0)	0.331±0.012 (8.4±0.3)	0.024 (0.6)	0.004 (0.10)	0.366 (9.3)	—
	DB6	150	0.039 (1.0)	0.331±0.012 (8.4±0.3)	0.024 (0.6)	0.006 (0.15)	0.366 (9.3)	—
	DB2	250	0.039 (1.0)	0.331±0.012 (8.4±0.3)	0.024 (0.6)	0.004 (0.10)	0.366 (9.3)	—
	DB7	280	0.039 (1.0)	0.331±0.012 (8.4±0.3)	0.024 (0.6)	0.006 (0.15)	0.366 (9.3)	—
BA	DB5	70	0.039 (1.0)	0.331±0.012 (8.4±0.3)	0.024 (0.6)	0.004 (0.10)	0.366 (9.3)	—
	DB1/3	150	0.039 (1.0)	0.331±0.012 (8.4±0.3)	0.024 (0.6)	0.004 (0.10)	0.366 (9.3)	—
	DB6	250	0.039 (1.0)	0.331±0.012 (8.4±0.3)	0.024 (0.6)	0.006 (0.15)	0.366 (9.3)	—
	DB2	250	0.039 (1.0)	0.331±0.012 (8.4±0.3)	0.024 (0.6)	0.004 (0.10)	0.366 (9.3)	—
	DB7	280	0.039 (1.0)	0.331±0.012 (8.4±0.3)	0.024 (0.6)	0.006 (0.15)	0.366 (9.3)	—
<i>Auxiliary actuator, rear-mounted (RM)</i>								
LB	DB5	30	0.157 (4.0)	0.421±0.051 (10.7±1.3)	0.079 (2.0)	0.020 (0.5)	0.551 (14.0)	—
	DB1/3	60	0.157 (4.0)	0.421±0.051 (10.7±1.3)	0.079 (2.0)	0.020 (0.5)	0.551 (14.0)	—
	DB6	60	0.157 (4.0)	0.421±0.051 (10.7±1.3)	0.079 (2.0)	0.030 (0.75)	0.551 (14.0)	0.189 (4.8)
	DB2	100	0.177 (4.5)	0.421±0.063 (10.7±1.6)	0.059 (1.5)	0.028 (0.70)	0.551 (14.0)	—
	DB7	115	0.177 (4.5)	0.421±0.063 (10.7±1.6)	0.059 (1.5)	0.030 (0.75)	0.551 (14.0)	—
LC	DB5	25	0.177 (4.5)	0.437±0.059 (11.1±1.5)	0.079 (2.0)	0.024 (0.6)	0.591 (15.0)	—
	DB1/3	50	0.177 (4.5)	0.437±0.059 (11.1±1.5)	0.079 (2.0)	0.024 (0.6)	0.591 (15.0)	—
	DB6	50	0.177 (4.5)	0.437±0.059 (11.1±1.5)	0.079 (2.0)	0.047 (1.2)	0.591 (15.0)	0.276 (7.0)
	DB2	85	0.197 (5.0)	0.437±0.071 (11.1±1.8)	0.059 (1.5)	0.039 (1.0)	0.591 (15.0)	—
	DB7	100	0.197 (5.0)	0.437±0.071 (11.1±1.8)	0.059 (1.5)	0.047 (1.2)	0.591 (15.0)	—
LD	DB5	9	0.591 (15.0)	0.512±0.138 (13.0±3.5)	0.157 (4.0)	0.177 (4.5)	1.063 (27.0)	—
	DB1/3	18	0.591 (15.0)	0.512±0.138 (13.0±3.5)	0.157 (4.0)	0.177 (4.5)	1.063 (27.0)	1.654 (42.0)
	DB6	18	0.591 (15.0)	0.512±0.138 (13.0±3.5)	0.157 (4.0)	0.268 (6.8)	1.063 (27.0)	—
	DB2/7	—	—	—	—	—	—	on request
	DB5	30	0.157 (4.0)	0.630±0.051 (16.0±1.3)	0.079 (2.0)	0.020 (0.5)	0.748 (19.0)	—
SB	DB1/3	65	0.157 (4.0)	0.630±0.051 (16.0±1.3)	0.079 (2.0)	0.020 (0.5)	0.748 (19.0)	—
	DB6	65	0.157 (4.0)	0.630±0.051 (16.0±1.3)	0.079 (2.0)	0.043 (1.1)	0.748 (19.0)	0.098 (2.5)
	DB2	110	0.177 (4.5)	0.630±0.063 (16.0±1.6)	0.059 (1.5)	0.028 (0.7)	0.748 (19.0)	—
	DB7	125	0.177 (4.5)	0.630±0.063 (16.0±1.6)	0.059 (1.5)	0.043 (1.1)	0.748 (19.0)	—
	DB5	25	0.177 (4.5)	0.646±0.059 (16.4±1.5)	0.079 (2.0)	0.024 (0.6)	0.787 (20.0)	—
SC	DB1/3	55	0.177 (4.5)	0.646±0.059 (16.4±1.5)	0.079 (2.0)	0.024 (0.6)	0.787 (20.0)	—
	DB6	55	0.177 (4.5)	0.646±0.059 (16.4±1.5)	0.079 (2.0)	0.047 (1.2)	0.787 (20.0)	0.185 (4.7)
	DB2	95	0.197 (5.0)	0.646±0.071 (16.4±1.8)	0.059 (1.5)	0.039 (1.0)	0.787 (20.0)	—
	DB7	110	0.197 (5.0)	0.646±0.071 (16.4±1.8)	0.059 (1.5)	0.047 (1.2)	0.787 (20.0)	—
	DB5	9	0.591 (15.0)	0.720±0.138 (18.3±3.5)	0.157 (4.0)	0.177 (4.5)	1.260 (32.0)	—
SD	DB1/3	20	0.591 (15.0)	0.720±0.138 (18.3±3.5)	0.157 (4.0)	0.177 (4.5)	1.260 (32.0)	1.563 (39.7)
	DB6	20	0.591 (15.0)	0.720±0.138 (18.3±3.5)	0.157 (4.0)	0.268 (6.8)	1.260 (32.0)	—
	DB2/7	—	—	—	—	—	—	on request
	DB5	30	0.157 (4.0)	0.622±0.051 (15.8±1.3)	0.079 (2.0)	0.020 (0.5)	0.748 (19.0)	—
	DB1/3	65	0.157 (4.0)	0.622±0.051 (15.8±1.3)	0.079 (2.0)	0.020 (0.5)	0.748 (19.0)	—
RB	DB6	65	0.157 (4.0)	0.622±0.051 (15.8±1.3)	0.079 (2.0)	0.030 (0.75)	0.748 (19.0)	0.098 (2.5)
	DB2	110	0.177 (4.5)	0.622±0.063 (15.8±1.6)	0.059 (1.5)	0.028 (0.7)	0.748 (19.0)	—
	DB7	125	0.177 (4.5)	0.622±0.063 (15.8±1.6)	0.059 (1.5)	0.030 (0.75)	0.748 (19.0)	—
	DB5	25	0.177 (4.5)	0.638±0.059 (16.2±1.5)	0.079 (2.0)	0.024 (0.6)	0.787 (20.0)	—
	DB1/3	55	0.177 (4.5)	0.638±0.059 (16.2±1.5)	0.079 (2.0)	0.024 (0.6)	0.787 (20.0)	—
RC	DB6	55	0.177 (4.5)	0.638±0.059 (16.2±1.5)	0.079 (2.0)	0.047 (1.2)	0.787 (20.0)	0.185 (4.7)
	DB2	95	0.197 (5.0)	0.638±0.071 (16.2±1.8)	0.059 (1.5)	0.039 (1.0)	0.787 (20.0)	—
	DB7	110	0.197 (5.0)	0.638±0.071 (16.2±1.8)	0.059 (1.5)	0.047 (1.2)	0.787 (20.0)	—
	DB5	9	0.591 (15.0)	0.713±0.138 (18.1±3.5)	0.157 (4.0)	0.177 (4.5)	1.260 (32.0)	—
	DB1/3	20	0.591 (15.0)	0.713±0.138 (18.1±3.5)	0.157 (4.0)	0.177 (4.5)	1.260 (32.0)	1.563 (39.7)
RD	DB6	20	0.591 (15.0)	0.713±0.138 (18.1±3.5)	0.157 (4.0)	0.268 (6.8)	1.260 (32.0)	—
	DB2/7	—	—	—	—	—	—	on request
	DB5	24	0.177 (4.5)	0.437±0.059 (11.1±1.5)	0.079 (2.0)	0.024 (0.6)	0.591 (15.0)	—
	DB1/3	50	0.177 (4.5)	0.437±0.059 (11.1±1.5)	0.079 (2.0)	0.024 (0.6)	0.591 (15.0)	—
	DB6	50	0.177 (4.5)	0.437±0.059 (11.1±1.5)	0.079 (2.0)	0.035 (0.9)	0.591 (15.0)	0.276 (7.0)
WB*	DB2	85	0.177 (4.5)	0.437±0.059 (11.1±1.5)	0.079 (2.0)	0.024 (0.6)	0.591 (15.0)	—
	DB7	100	0.177 (4.5)	0.437±0.059 (11.1±1.5)	0.079 (2.0)	0.035 (0.9)	0.591 (15.0)	—
	DB5	18	0.236 (6.0)	0.480±0.071 (12.2±1.8)	0.118 (3.0)	0.031 (0.8)	0.669 (17.0)	—
	DB1/3	38	0.236 (6.0)	0.480±0.071 (12.2±1.8)	0.118 (3.0)	0.031 (0.8)	0.669 (17.0)	—
	DB6	38	0.236 (6.0)	0.480±0.071 (12.2±1.8)	0.118 (3.0)	0.047 (1.2)	0.669 (17.0)	0.551 (14.0)
WC*	DB2	63	0.236 (6.0)	0.480±0.071 (12.2±1.8)	0.118 (3.0)	0.031 (0.8)	0.669 (17.0)	—
	DB7	75	0.236 (6.0)	0.480±0.071 (12.2±1.8)	0.118 (3.0)	0.047 (1.2)	0.669 (17.0)	—
	DB5	25	0.177 (4.5)	0.469±0.055 (11.9±1.4)	0.079 (2.0)	0.024 (0.6)	0.591 (15.0)	—
	DB1/3	55	0.177 (4.5)	0.469±0.055 (11.9±1.4)	0.079 (2.0)	0.024 (0.6)	0.591 (15.0)	—
	DB6	55	0.177 (4.5)	0.469±0.055 (11.9±1.4)	0.079 (2.0)	0.035 (0.9)	0.591 (15.0)	0.220 (5.6)
VB*	DB2	90	0.177 (4.5)	0.469±0.055 (11.9±1.4)	0.079 (2.0)	0.024 (0.6)	0.591 (15.0)	—
	DB7	105	0.177 (4.5)	0.469±0.055 (11.9±1.4)	0.079 (2.0)	0.035 (0.9)	0.591 (15.0)	—
	DB5	25	0.177 (4.5)	0.630±0.055 (16.0±1.4)	0.059 (1.5)	0.024 (0.6)	0.748 (19.0)	—
	DB1/3	55	0.177 (4.5)	0.630±0.055 (16.0±1.4)	0.059 (1.5)	0.024 (0.6)	0.748 (19.0)	—
	DB6	55	0.177 (4.5)	0.630±0.055 (16.0±1.4)	0.059 (1.5)	0.035 (0.9)	0.748 (19.0)	0.205 (5.2)
ZB*	DB2	90	0.177 (4.5)	0.630±0.055 (16.0±1.4)	0.059 (1.5)	0.024 (0.6)	0.748 (19.0)	—
	DB7	105	0.177 (4.5)	0.630±0.055 (16.0±1.4)	0.059 (1.5)	0.035 (0.9)	0.748 (19.0)	—

\*For 85°C only



## Actuator Specifications – High Ratio

Actuator Code	Switch Type	Maximum Operating Force (gms.)	Maximum Pre-Travel inches (mm)	Operating Point inches (mm)	Minimum Over-Travel inches (mm)	Max. Movement Differential inches (mm)	Max. Rest Position inches (mm)	Actuation Length inches (mm)
<i>Auxiliary actuator, front-mounted (FM)</i>								
	DB5	12	0.354 (9.0)	0.472±0.098 (12.0±2.5)	0.138 (3.5)	0.047 (1.2)	0.709 (18.0)	—
	DB1/3	25	0.354 (9.0)	0.472±0.098 (12.0±2.5)	0.138 (3.5)	0.047 (1.2)	0.709 (18.0)	—
	DB6	25	0.354 (9.0)	0.472±0.098 (12.0±2.5)	0.138 (3.5)	0.071 (1.8)	0.709 (18.0)	0.276 (7.0)
	DB2	40	0.354 (9.0)	0.472±0.118 (12.0±3.0)	0.138 (3.5)	0.059 (1.5)	0.709 (18.0)	—
	DB7	45	0.354 (9.0)	0.472±0.118 (12.0±3.0)	0.138 (3.5)	0.071 (1.8)	0.709 (18.0)	—
	DB5	10	0.394 (10.0)	0.492±0.118 (12.5±3.0)	0.157 (4.0)	0.055 (1.4)	0.787 (20.0)	—
	DB1/3	22	0.394 (10.0)	0.492±0.118 (12.5±3.0)	0.157 (4.0)	0.055 (1.4)	0.787 (20.0)	—
	DB6	22	0.394 (10.0)	0.492±0.118 (12.5±3.0)	0.157 (4.0)	0.083 (2.1)	0.787 (20.0)	0.370 (9.4)
	DB2	35	0.394 (10.0)	0.492±0.138 (12.5±3.5)	0.157 (4.0)	0.071 (1.8)	0.787 (20.0)	—
	DB7	40	0.394 (10.0)	0.492±0.138 (12.5±3.5)	0.157 (4.0)	0.083 (2.1)	0.787 (20.0)	—
	DB5	4	1.063 (27.0)	0.709±0.315 (18.0±8.0)	0.394 (10.0)	0.236 (6.0)	1.575 (40.0)	—
	DB1/3	9	1.063 (27.0)	0.709±0.315 (18.0±8.0)	0.394 (10.0)	0.236 (6.0)	1.575 (40.0)	1.713 (43.5)
	DB6	9	1.063 (27.0)	0.709±0.315 (18.0±8.0)	0.394 (10.0)	0.354 (9.0)	1.575 (40.0)	—
	DB2/7	—	—	—	—	—	—	on request
	DB5	14	0.354 (9.0)	0.677±0.098 (17.2±2.5)	0.138 (3.5)	0.047 (1.2)	0.866 (22.0)	—
	DB1/3	30	0.354 (9.0)	0.677±0.098 (17.2±2.5)	0.138 (3.5)	0.047 (1.2)	0.866 (22.0)	—
	DB6	30	0.354 (9.0)	0.677±0.098 (17.2±2.5)	0.138 (3.5)	0.071 (1.8)	0.866 (22.0)	0.185 (4.7)
	DB2	50	0.354 (9.0)	0.677±0.118 (17.2±3.0)	0.138 (3.5)	0.059 (1.5)	0.866 (22.0)	—
	DB7	56	0.354 (9.0)	0.677±0.118 (17.2±3.0)	0.138 (3.5)	0.071 (1.8)	0.866 (22.0)	—
	DB5	12	0.394 (10.0)	0.697±0.118 (17.7±3.0)	0.157 (4.0)	0.055 (1.4)	0.945 (24.0)	—
	DB1/3	25	0.394 (10.0)	0.697±0.118 (17.7±3.0)	0.157 (4.0)	0.055 (1.4)	0.945 (24.0)	—
	DB6	25	0.394 (10.0)	0.697±0.118 (17.7±3.0)	0.157 (4.0)	0.083 (2.1)	0.945 (24.0)	0.280 (7.1)
	DB2	40	0.394 (10.0)	0.697±0.138 (17.7±3.5)	0.157 (4.0)	0.071 (1.8)	0.945 (24.0)	—
	DB7	45	0.394 (10.0)	0.697±0.138 (17.7±3.5)	0.157 (4.0)	0.083 (2.1)	0.945 (24.0)	—
	DB5	4	1.063 (27.0)	0.913±0.315 (23.2±8.0)	0.394 (10.0)	0.236 (6.0)	1.732 (44.0)	—
	DB1/3	9	1.063 (27.0)	0.913±0.315 (23.2±8.0)	0.394 (10.0)	0.236 (6.0)	1.732 (44.0)	1.622 (41.2)
	DB6	9	1.063 (27.0)	0.913±0.315 (23.2±8.0)	0.394 (10.0)	0.354 (9.0)	1.732 (44.0)	—
	DB2/7	—	—	—	—	—	—	on request
	DB5	14	0.354 (9.0)	0.669±0.098 (17.0±2.5)	0.138 (3.5)	0.047 (1.2)	0.866 (22.0)	—
	DB1/3	30	0.354 (9.0)	0.669±0.098 (17.0±2.5)	0.138 (3.5)	0.047 (1.2)	0.866 (22.0)	—
	DB6	30	0.354 (9.0)	0.669±0.098 (17.0±2.5)	0.138 (3.5)	0.071 (1.8)	0.866 (22.0)	0.185 (4.7)
	DB2	50	0.354 (9.0)	0.669±0.118 (17.0±3.0)	0.138 (3.5)	0.059 (1.5)	0.866 (22.0)	—
	DB7	56	0.354 (9.0)	0.669±0.118 (17.0±3.0)	0.138 (3.5)	0.071 (1.8)	0.866 (22.0)	—
	DB5	12	0.394 (10.0)	0.689±0.118 (17.5±3.0)	0.157 (4.0)	0.055 (1.4)	0.945 (24.0)	—
	DB1/3	25	0.394 (10.0)	0.689±0.118 (17.5±3.0)	0.157 (4.0)	0.055 (1.4)	0.945 (24.0)	—
	DB6	25	0.394 (10.0)	0.689±0.118 (17.5±3.0)	0.157 (4.0)	0.083 (2.1)	0.945 (24.0)	0.280 (7.1)
	DB2	40	0.394 (10.0)	0.689±0.138 (17.5±3.5)	0.157 (4.0)	0.071 (1.8)	0.945 (24.0)	—
	DB7	45	0.394 (10.0)	0.689±0.138 (17.5±3.5)	0.157 (4.0)	0.083 (2.1)	0.945 (24.0)	—
	DB5	4	1.063 (27.0)	0.906±0.315 (23.0±8.0)	0.394 (10.0)	0.236 (6.0)	1.732 (44.0)	—
	DB1/3	9	1.063 (27.0)	0.906±0.315 (23.0±8.0)	0.394 (10.0)	0.236 (6.0)	1.732 (44.0)	1.622 (41.2)
	DB6	9	1.063 (27.0)	0.906±0.315 (23.0±8.0)	0.394 (10.0)	0.354 (9.0)	1.732 (44.0)	—
	DB2/7	—	—	—	—	—	—	on request
	DB5	10	0.394 (10.0)	0.508±0.102 (12.9±2.6)	0.118 (3.0)	0.055 (1.4)	0.787 (20.0)	—
	DB1/3	21	0.394 (10.0)	0.508±0.102 (12.9±2.6)	0.118 (3.0)	0.055 (1.4)	0.787 (20.0)	—
	DB6	21	0.394 (10.0)	0.508±0.102 (12.9±2.6)	0.118 (3.0)	0.083 (2.1)	0.787 (20.0)	0.370 (9.4)
	DB2	36	0.394 (10.0)	0.508±0.102 (12.9±2.6)	0.118 (3.0)	0.055 (1.4)	0.787 (20.0)	—
	DB7	42	0.394 (10.0)	0.508±0.102 (12.9±2.6)	0.118 (3.0)	0.083 (2.1)	0.787 (20.0)	—
	DB5	7	0.512 (13.0)	0.571±0.142 (14.5±3.6)	0.157 (4.0)	0.071 (1.8)	0.945 (24.0)	—
	DB1/3	16	0.512 (13.0)	0.571±0.142 (14.5±3.6)	0.157 (4.0)	0.071 (1.8)	0.945 (24.0)	—
	DB6	16	0.512 (13.0)	0.571±0.142 (14.5±3.6)	0.157 (4.0)	0.083 (2.1)	0.945 (24.0)	0.638 (16.2)
	DB2	26	0.512 (13.0)	0.571±0.142 (14.5±3.6)	0.157 (4.0)	0.071 (1.8)	0.945 (24.0)	—
	DB7	30	0.512 (13.0)	0.571±0.142 (14.5±3.6)	0.157 (4.0)	0.094 (2.4)	0.945 (24.0)	—
	DB5	11	0.354 (9.0)	0.531±0.098 (13.5±2.5)	0.098 (2.5)	0.055 (1.4)	0.787 (20.0)	—
	DB1/3	23	0.354 (9.0)	0.531±0.098 (13.5±2.5)	0.098 (2.5)	0.055 (1.4)	0.787 (20.0)	—
	DB6	23	0.354 (9.0)	0.531±0.098 (13.5±2.5)	0.098 (2.5)	0.083 (2.1)	0.787 (20.0)	0.311 (7.9)
	DB2	29	0.354 (9.0)	0.531±0.098 (13.5±2.5)	0.098 (2.5)	0.055 (1.4)	0.787 (20.0)	—
	DB7	45	0.354 (9.0)	0.531±0.098 (13.5±2.5)	0.098 (2.5)	0.083 (2.1)	0.787 (20.0)	—
	DB5	11	0.354 (9.0)	0.693±0.098 (17.6±2.5)	0.079 (2.0)	0.055 (1.4)	0.906 (23.0)	—
	DB1/3	23	0.354 (9.0)	0.693±0.098 (17.6±2.5)	0.079 (2.0)	0.055 (1.4)	0.906 (23.0)	—
	DB6	23	0.354 (9.0)	0.693±0.098 (17.6±2.5)	0.079 (2.0)	0.083 (2.1)	0.906 (23.0)	0.287 (7.3)
	DB2	39	0.354 (9.0)	0.693±0.098 (17.6±2.5)	0.079 (2.0)	0.055 (1.4)	0.906 (23.0)	—
	DB7	45	0.354 (9.0)	0.693±0.098 (17.6±2.5)	0.079 (2.0)	0.083 (2.1)	0.906 (23.0)	—

\*For 85°C only

## Ordering Information

DB			B		B1		AA	
Series/Prefix			Code	Contact Configuration	Code	Terminal Type inches (mm)	Code	Actuator Type*
			+120°C Operating Temp					
Code	UL Rating 1054	EN 61058 Rating	A	SPST NO	B1	0.110 x 0.020 (2.8 x 0.5) QC, Straight	AA	Spherical-head w/o Auxiliary Actuator
1	5A, 125/250VAC	6A, 250V~	B	SPST NC	A1	Solder, Short	BA	Radius w/o Auxiliary Actuator
2	10.1A, 125/250VAC 1/4HP, 125VAC	10(1.5)A, 250V~	+85°C Operating Temp*		C1	0.051 x 0.020 (1.3 x 0.5) PCB, Straight		
3	0.1A, 125/250VAC	0.1A, 250V	E	SPST NO	D1	0.024 x 0.020 (0.6 x 0.5) PCB, Straight		
5*	1A, 125/250VAC	1A, 250V	F	SPST NC	D2	0.024 x 0.020 (0.6 x 0.5) PCB, RH Side with Location Pins		
6*	5A, 125/250VAC	6A, 250V	G	SPDT	D3	0.024 x 0.020 (0.6 x 0.5) PCB, LH Side with Location Pins		
7*	10.1A, 125/250VAC 1/4 HP, 125VAC	10 (1.5)A, 250V~			D4	0.024 x 0.020 (0.6 x 0.5) PCB, RH Side		
					D5	0.024 x 0.020 (0.6 x 0.5) PCB, LH Side		

\*85°C only

Specifications subject to change without notice.

\*For further actuators see Actuation Specifications table.

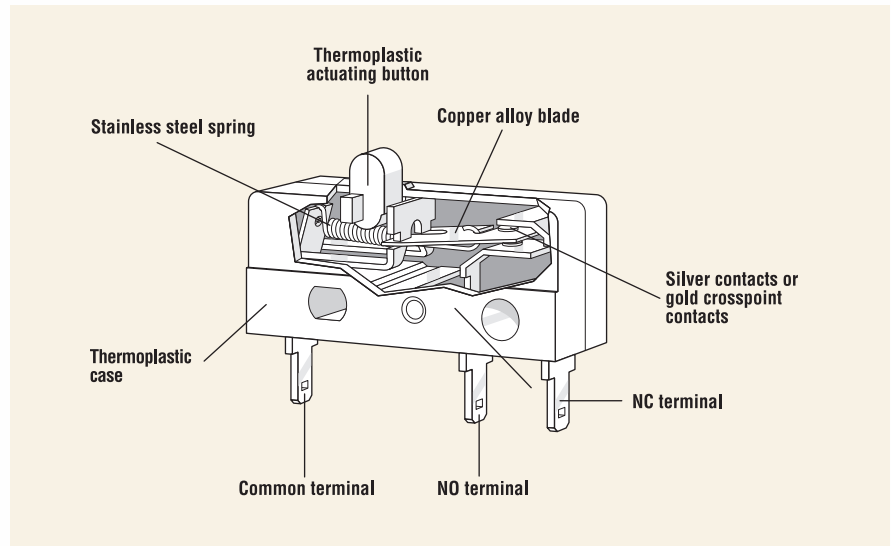


# SUBMINIATURE E Series

## Features

- 4 current ratings
- Choice of actuator
- 5 terminal types
- 3 contact arrangements
- Long life coil spring mechanism
- DC ratings available upon request
- High-temperature version available

Subminiature modules take less space than individual subminiature switches fastened side-by-side. For applications requiring 2, 3, 4 or 5-circuit control in a compact space, the special molded case design helps speed assembly since there is only one part to handle and install rather than 2, 3, 4 or 5 individual switches.



## Electrical Ratings

Switch Series	EN61058 Rating	UL1054 Rating	Electrical Life at Rated Load	
			According to VDE (Min. Operations)	According to UL (Min. Operations)
E61	N/A	5A, 125/250VAC 5A, 30VDC (optional)	N/A	6,000
E62	N/A	10.1A, 125/250VAC; 1/4HP, 125VAC	N/A	6,000
E63	N/A	0.1A, 125VAC 0.25A, 30VDC (optional)	N/A	6,000*
E64	N/A	13A, 125VAC; 10.1A, 250VAC	N/A	6,000

\*Indicates 100K life available.

## Specifications

### Electrical

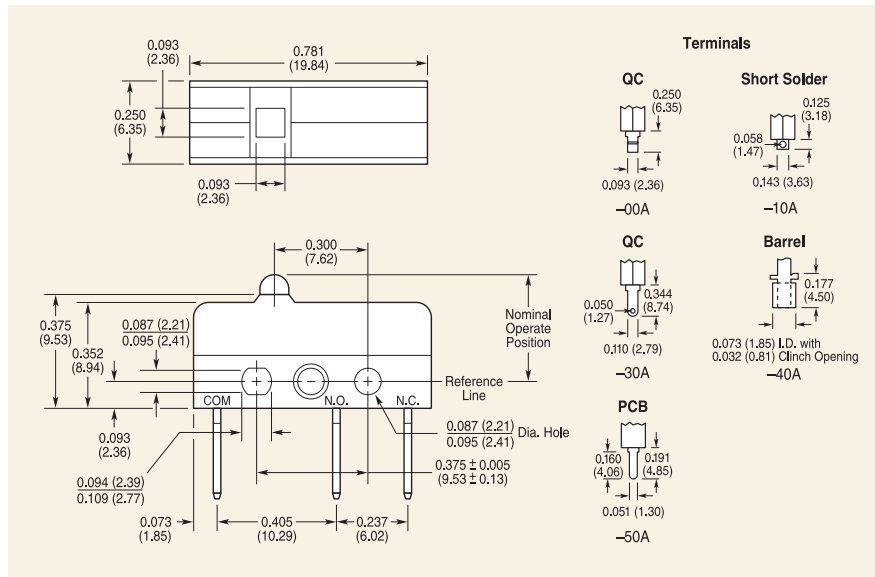
Temperature Rating:	-40° to +85°C, +130° optional using thermoset material
Flammability Rating:	UL94HB

### Materials

Case:	Thermoplastic
Actuating Button:	Thermoplastic Acetal
Terminals:	Silver-Plated Commercial Bronze
Moving Blade:	Beryllium Copper
Spring:	Stainless Steel
Auxiliary Actuator:	Cold Rolled Steel (Nickel-Plated)
Contacts:	Fine Silver (except E63 — Gold Crosspoint)



## Dimensions inches (mm)



## Actuator Specifications

Actuator Type	Switch Type	Maximum Operating Force (gms.)				Maximum Pre-Travel inches (mm)	Operating Point* inches (mm)	Minimum Over-Travel inches (mm)	Max. Movement Differential inches (mm)	Actuation Length** inches (mm)
		E61	E62	E63	E64					
-00A		90	212	90	335	0.030 (0.76)	0.330±0.015 (8.38±0.38)	0.040 (1.06)	0.004 (0.10)	—
-00R		30	65	30	110	0.130 (3.30)	0.574±0.054 (14.58±1.37)	0.030 (0.76)	0.020 (0.51)	0.196 (4.98)
-50R		10	22	10	40	0.379 (9.63)	0.570±0.156 (14.48±3.96)	0.050 (1.27)	0.050 (1.27)	0.322 (8.18)
-00H		27	56	27	100	0.144 (3.66)	0.350±0.030 (8.89±0.76)	0.040 (1.02)	0.020 (0.51)	0.271 (6.88)
-50H		9	20	9	35	0.416 (10.57)	0.350±0.175 (8.89±4.45)	0.050 (1.27)	0.050 (1.27)	0.396 (10.06)
-00K		30	65	30	110	0.131 (3.33)	0.570±0.030 (14.48±0.76)	0.030 (0.76)	0.020 (0.51)	0.203 (5.16)
-50K		10	33	10	40	0.379 (9.63)	0.570±0.158 (14.48±4.01)	0.040 (1.02)	0.050 (1.27)	0.326 (8.28)

\*Measured above reference line. Refer to dimensional drawing above. \*\*Actuator tolerance of ±0.031 inches (0.79mm).

## Circuitry

Contact arrangement available in choice of single pole double throw or single pole single throw, either normally open or normally closed. In general, normally open may be specified by changing suffix number from 00 to 01 and normally closed by changing suffix number to 02.

Example: E61-01A is normally open, and E61-02A is normally closed.

## Mounting

Recommended mounting screw: #2-56 round head. Recommended torque on screw: 2 inch lbs. max.

## Ordering Information

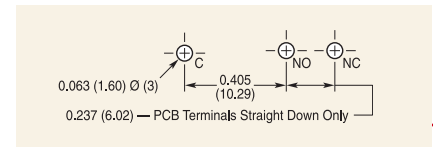
Select the current rating you need. Combine the corresponding Series/Prefix number with the appropriate suffix number for the switch type, circuitry and terminals you require. See additional note under terminals.

Example: To order the E61-50R with 0.110" (2.79mm) QC terminals, order an E61-80R.

Note: 0.093" (2.36mm) Quick Connect terminals are standard. To order solder terminals add 10 to suffix. To order 0.110" (2.79mm) QC terminals add 30 to suffix. For PCB terminals consult factory.

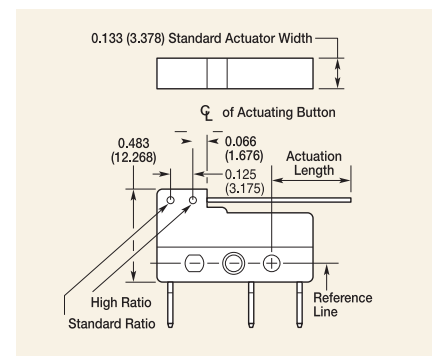
Example: The basic E61-00A becomes E61-30A for 0.110" (2.79mm) QC terminals. For PCB terminals consult factory for part numbers.

## PCB Footprint



## Actuators

Many special forms and lengths of actuators are available. Standard type integral hinged lever and roller actuators are available in choice of 2 pivot positions. Actuation lengths are dimensioned from centerline of switch mounting hole as shown.



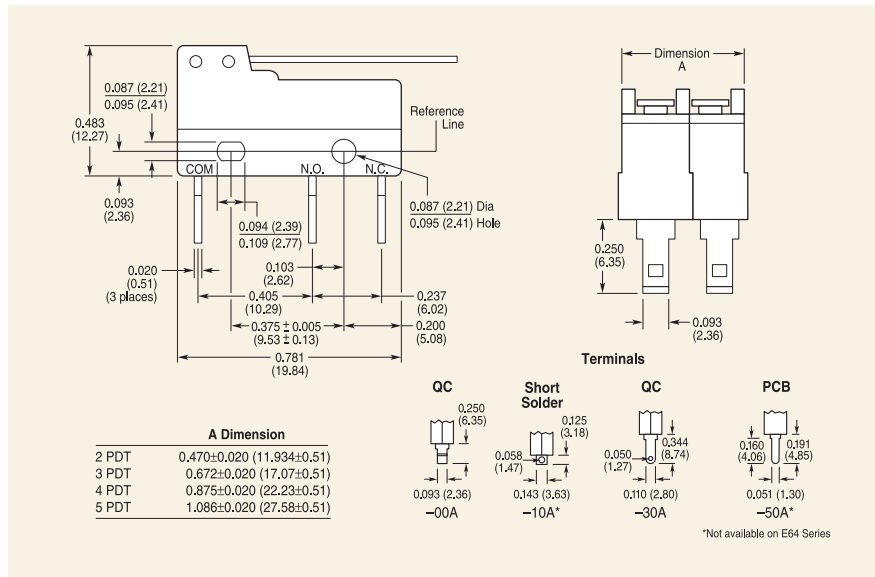
## Terminals

Subminiature series is available with quick connect. 0.093" (2.36mm) wide (mates with AMP Part No. 60432-1) and 0.110" (2.794mm) wide (mates with AMP Part No. 42068-1). Also available in short solder terminal 0.143" (3.63mm) wide x 0.125" (3.18mm) long, and PCB terminal 0.051" (1.30mm) wide x 0.191" (4.85mm) long.

Terminal	SPDT	SPST NO	SPST NC
0.093" QC	E61-00A	E61-01A	E61-02A
Short Solder†	E61-10A	E61-11A	E61-12A
0.110" QC	E61-30A	E61-31A	E61-32A
Barrel†	E61-40A	E61-41A	E61-42A
PCB†	E61-50A	E61-51A	E61-52A

†Not available on E64 Series.

## Dimensions — Modules inches (mm)



## Terminals — Modules

Subminiature modules are available with quick connect. 0.093" (2.362mm) wide (mates with AMP Part No. 60432-1) and 0.110" (2.794mm) wide (mates with AMP Part No. 42068-1). Also available in short solder terminal 0.143" (3.632mm) wide x 0.125" (3.175mm) long, and PCB terminal 0.051" (1.295mm) wide x 0.191" (4.851mm) long.

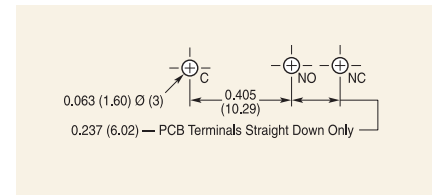
## Ordering Information — Modules

Select the current rating you need. Combine the corresponding Series/Prefix number with the appropriate suffix number for the switch type and terminals you require. Module construction not available for E64.

\*For additional actuator styles consult factory.

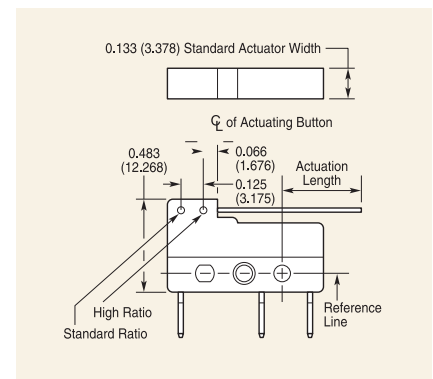
Switch Type	Terminal	Part Number Suffix			
		2PDT	3PDT	4PDT	5PDT
Standard Ratio	0.093" (2.362mm) QC	-02HM	-03HM	-04HM	-05HM
	Solder	-12HM	-13HM	-14HM	-15HM
	0.110" (2.794mm) QC	-32HM	-33HM	-34HM	-35HM
	PCB	Consult Factory			
High Ratio	0.093" (2.362mm) QC	-52HM	-53HM	-54HM	-55HM
	Solder	-62HM	-63HM	-64HM	-65HM
	0.110" (2.794mm) QC	-82HM	-83HM	-84HM	-85HM
	PCB	Consult Factory			

## PCB Footprint — Modules



## Actuators — Modules

Many special forms and lengths of actuators are available. Standard type integral hinged lever and roller actuators are available in choice of 2 pivot positions. Actuation lengths are dimensioned from centerline of switch mounting hole as shown.

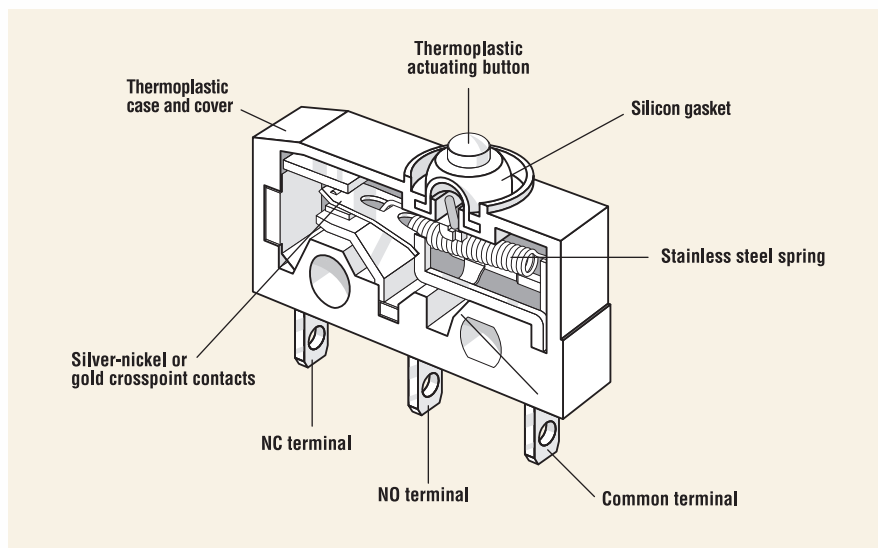


# SUBMINIATURE – SEALED

# DC Series

## Features

- Enclosed switch complying with IP 6K7
- Silicon-free version available
- Models available for operating temperatures up to 120°C
- Rated for currents up to 10 amp at 250VAC
- Range of auxiliary actuators available (can also be retrofitted)
- Various contact materials available, depending on application
- Mechanical life: min. 1 x 10<sup>6</sup> operations
- Wide variety of connection options



## Electrical Ratings

Switch Series	EN61058 Rating	UL1054 Rating	Electrical Life at Rated Load	
			According to EN (Min. Operations)	According to UL (Min. Operations)
DC1	6A, 250V~	5A, 125/250VAC; 1A, 48VDC	10,000	6,000
DC2	10(1.5)A, 250V~	10.1A, 125/250VAC; 1/4HP, 125VAC	10,000	6,000
DC3	0.1A, 250V~	0.1A, 125/250VAC	50,000	6,000
DC4	3A, 250V~	3A, 125/250VAC	50,000	6,000

## Specifications

### Electrical

Temperature Rating: -40° to +85°C / +120°C (without wire leads)  
-40° to +85C / +105°C (with wire leads)

Flammability Rating: UL94V-O (PET, PBT)  
UL94HB (POM)

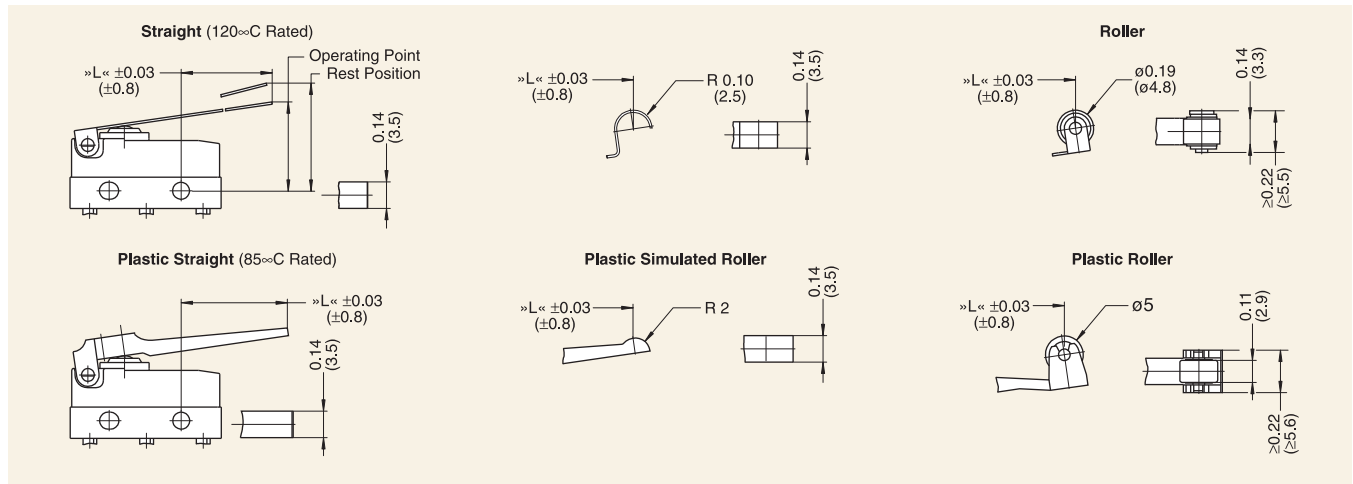
### Materials

Case: PET / PBT  
 Actuator: POM (T85), PBT (T120)  
 Auxiliary Actuator: Stainless Steel or Plastic  
 Terminals: Silver-Plated Copper-Zinc  
 Contacts: Silver Alloy (DC3 – Gold Crosspoint)

PBT = Polybutyleneterephthalate • PET = Polyethyleneterephthalate • POM = Polyacetal



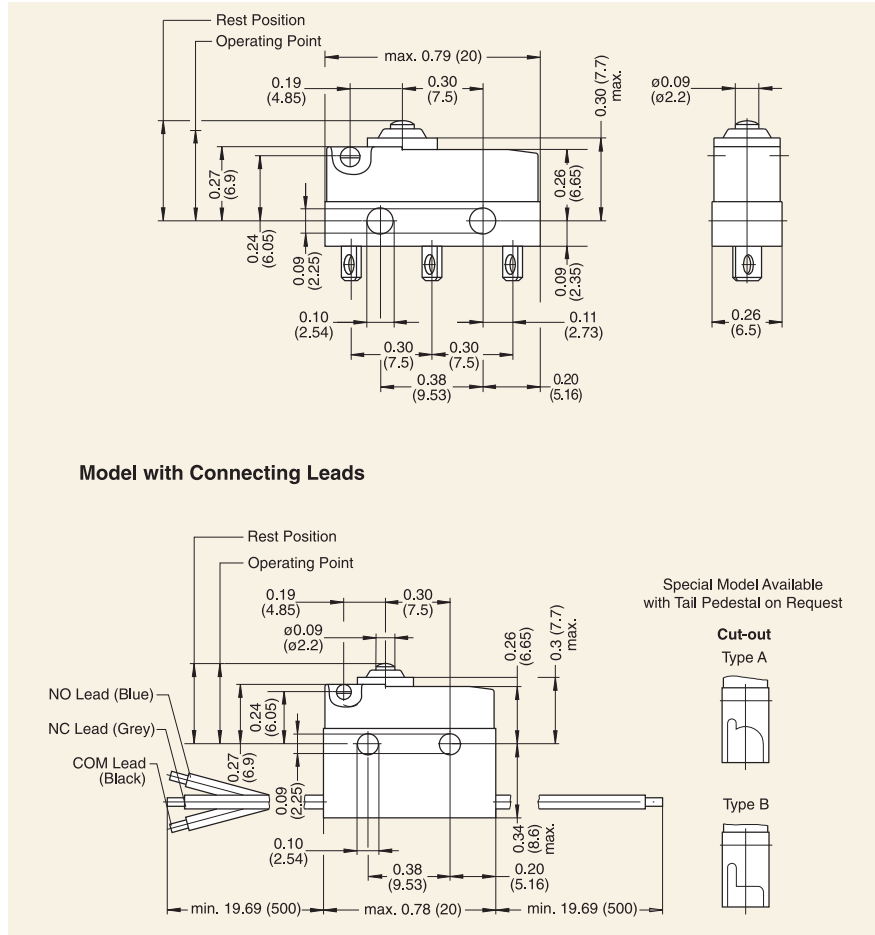
## Auxiliary Actuators inches (mm)



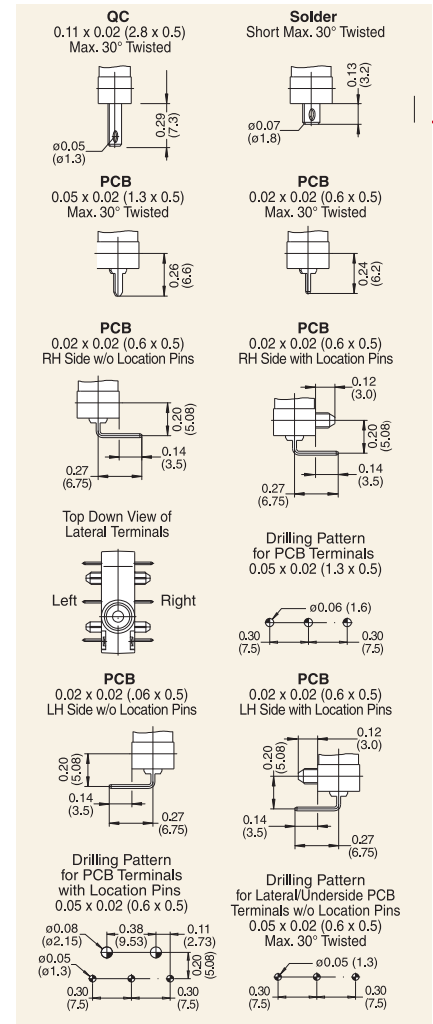
## Actuator Specifications

Actuator Code	Switch Type	Maximum Operating Force (cN)		Maximum Pre-Travel inches (mm)		Operating Point inches (mm)		Minimum Over-Travel inches (mm)	Max. Movement Differential inches (mm)		Max. Rest Position inches (mm)	Actuation Length inches (mm)
		DC1, DC3, DC4	DC2	DC1, DC3, DC4	DC2	DC1, DC3, DC4	DC2		DC1, DC3, DC4	DC2		
AA		200	340	0.04 (1.0)	0.04 (1.0)	0.33±0.01 (8.4±0.3)	0.33±0.01 (8.4±0.3)	0.02 (0.6)	0.004 (0.10)	0.004 (0.10)	0.37 (9.3)	—
LB		80	150	0.18 (4.5)	0.20 (5.0)	0.42±0.05 (10.7±1.3)	0.42±0.06 (10.7±1.6)	0.06 (1.5)	0.02 (0.5)	0.03 (0.7)	0.55 (14.0)	0.189 (4.8)
LC		70	120	0.20 (5.0)	0.22 (5.5)	0.44±0.06 (11.1±1.5)	0.44±0.07 (11.1±1.8)	0.06 (1.5)	0.02 (0.6)	0.04 (1.0)	0.59 (15.0)	0.276 (7.0)
LD		<i>forces and travel available upon request</i>										1.654 (42.0)
SB		90	160	0.18 (4.5)	0.20 (5.0)	0.63±0.05 (16.0±1.3)	0.63±0.06 (16.0±1.6)	0.06 (1.5)	0.02 (0.5)	0.03 (0.7)	0.75 (19.0)	0.098 (2.5)
SC		80	130	0.20 (5.0)	0.22 (5.5)	0.65±0.06 (16.4±1.5)	0.65±0.07 (16.4±1.8)	0.06 (1.5)	0.02 (0.6)	0.04 (1.0)	0.79 (20.0)	0.185 (4.7)
SD		<i>forces and travel available upon request</i>										1.563 (39.7)
RB		90	160	0.18 (4.5)	0.20 (5.0)	0.62±0.05 (15.8±1.3)	0.62±0.06 (15.8±1.6)	0.06 (1.5)	0.02 (0.5)	0.03 (0.7)	0.75 (19.0)	0.098 (2.5)
RC		80	130	0.20 (5.0)	0.22 (5.5)	0.64±0.06 (16.2±1.5)	0.64±0.07 (16.2±1.8)	0.06 (1.5)	0.02 (0.6)	0.04 (1.0)	0.79 (20.0)	0.185 (4.7)
RD		<i>forces and travel available upon request</i>										1.563 (39.7)
WB		68	115	0.18 (4.5)	0.18 (4.5)	0.44±0.06 (11.1±1.5)	0.44±0.06 (11.1±1.5)	0.08 (2.0)	0.02 (0.6)	0.02 (0.6)	0.59 (15.0)	0.276 (7.0)
WC		50	85	0.24 (6.0)	0.24 (6.0)	0.48±0.07 (12.2±1.8)	0.48±0.07 (12.2±1.8)	0.12 (3.0)	0.03 (0.8)	0.03 (0.8)	0.67 (17.0)	0.551 (14.0)
VB		73	125	0.18 (4.5)	0.18 (4.5)	0.47±0.06 (11.9±1.4)	0.47±0.06 (11.9±1.4)	0.08 (2.0)	0.02 (0.6)	0.02 (0.6)	0.59 (15.0)	0.220 (5.6)
ZB		73	125	0.18 (4.5)	0.18 (4.5)	0.63±0.06 (16.0±1.4)	0.63±0.06 (16.0±1.4)	0.06 (1.5)	0.02 (0.6)	0.02 (0.6)	0.75 (19.0)	0.205 (5.2)

### Dimensions inches (mm)



### Terminal Options inches (mm)



### Ordering Information

Code	UL Rating	EN 61058 Rating
1	5A, 125/250VAC 1A 48VDC	6A, 250V~
2	10.1A, 125/250VAC 1/4HP, 125VAC	10(1.5)A, 250V~
3	0.1A, 125/250VAC 0.1A 30VDC**	0.1A, 250V~
4 <sup>4</sup>	3A, 250VAC 1A 48VDC	3A, 250V~

Contact Configuration	
+105°/120° C Operating Temp	+85° C Operating Temp*
A SPST NO	E SPST NO
B SPST NC	F SPST NC
C SPDT	G SPDT

Code	Terminal Type inches (mm)	Notes
A	Short Solder	1
B	0.02" (0.5") Leads (No UL)	5, 9
C	0.03" (0.75") Leads (No UL)	5
H	0.05 x 0.02 (1.3 x 0.5) PCB	1
K	0.02 x 0.02 (0.6 x 0.5) PCB	1, 7
L	0.11 x 0.02 (2.8 x 0.5) QC	1
N	Without Leads (Type B)	6
P	Without Leads (Type A)	6
Q	Without Leads (No Cut-Out)	8
S	Welding	1
T	Leads, 20 AWG	3, 11
U	Leads, 22AWG	9, 11

Non-European Versions		
D	Leads 18 AWG (UL Only)	5, 8, 10
E	Leads 16 AWG (UL Only)	5
M	Leads 20 AWG (UL Only)	3, 5

Code	Actuator Type	Code	Actuation Length inches (mm)			
			A	B	C	D
AA	Button only					
L	Lever		0.189 (4.8)	0.276 (7.0)	1.654 (42.0)	
R	Roller		0.098 (2.5)	0.185 (4.7)	1.563 (39.7)	
S	Simulated Roller		0.098 (2.5)	0.185 (4.7)	1.563 (39.7)	
V <sup>2</sup>	Plastic Sim. Roller		0.220 (5.6)			
W <sup>2</sup>	Plastic Straight		0.276 (7.0)	0.551 (14.0)		
Z <sup>2</sup>	Plastic with Roller		0.205 (5.2)			

Code	Terminal Configuration
1	30° Twisted
3	Leads on Actuator Side
4	Leads on Opposite Side from Actuator
5	Leads Attached to Underside
6	PCB Terminals Right-hand Side
7	PCB Terminals Left-hand Side
8	PCB Terminals Right-hand Side with Location Pins
9	PCB Terminals Left-hand Side with Location Pins

\* 85°C versions use plastic levers  
 \*\* 30VDC UL rating applies only to 120C version

#### Notes:

Wire leads 500mm min. (approximately 20" long)

- Only available with terminal configuration 1.
- +85°C rated only.
- Only available with DC1, DC3 and DC4.
- Rating code 4 only as lead-version — leads 0.5mm<sup>2</sup>.
- Wire versions only rated to +105°C.
- Only available with terminal configuration 3 or 4.
- Only available with terminal configuration 1, 6, 7, 8 or 9.
- Only available with terminal configuration 5.
- Only available with DC3 and DC4.
- Not available with DC2.
- Not available in North America.

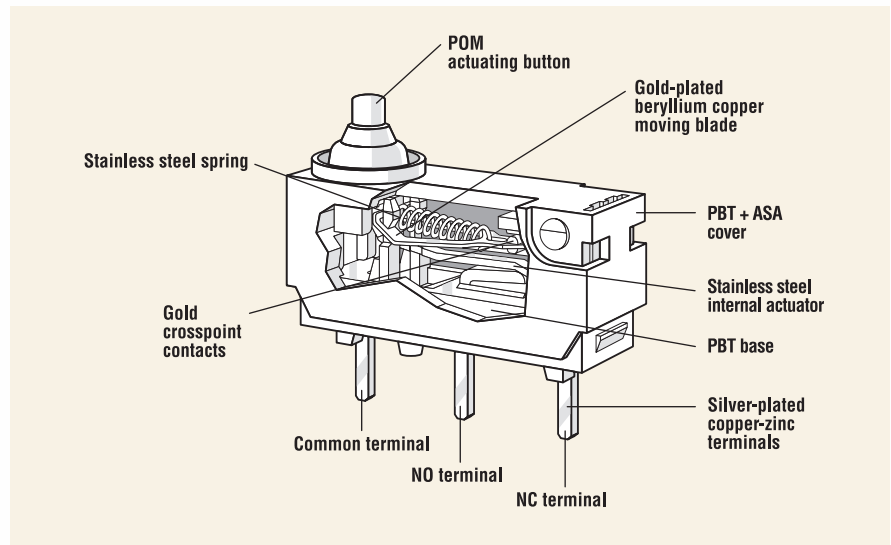


## SUBMINIATURE — SEALED

# DK Series

### Features

- Enclosed switch complying with IP 6K5. IP 6K7 available on request
- Very small dimensions, 0.579" x 0.213" x 0.268" (14.7mm x 5.4mm x 6.8mm)
- Models available for operating temperatures up to 105°C
- Rated for 5mA@12VDC or 2A@12VDC
- Can be actuated vertically or by auxiliary actuator
- Gold crosspoint contacts for high contact stability
- Mechanical life: min. 500,000 operations
- Wide variety of connection options, also available with leads



### Specifications

#### Electrical

Temperature Rating:	-40°C to +85°C
Flammability Rating:	N/A

#### Materials

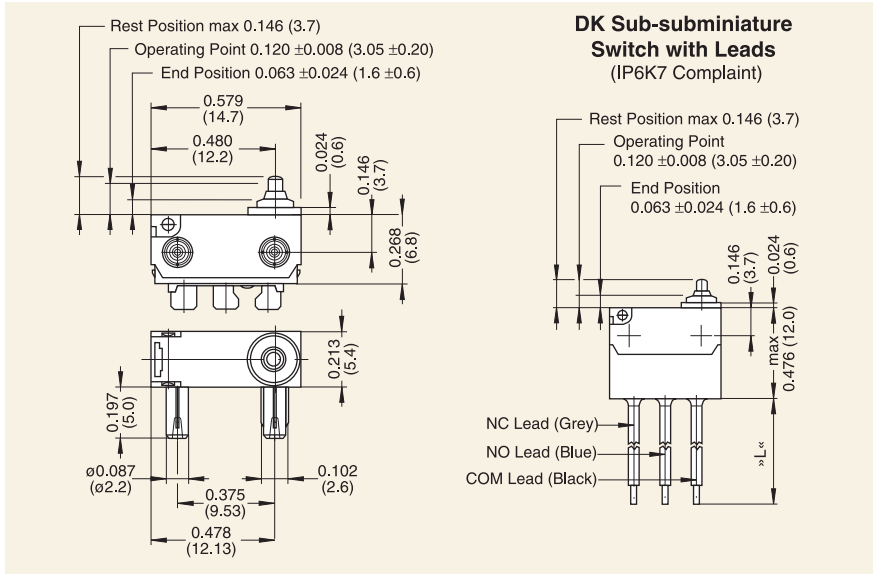
Base:	PBT
Cover:	PBT + ASA
Actuator:	POM (+85°C)
Auxiliary Actuator:	Stainless Steel
Internal Actuator:	Stainless Steel
Spring:	Stainless Steel
Moving Blade:	Gold-Plated Beryllium Copper
Terminals:	Silver-Plated Copper-Zinc
Contacts:	Gold Crosspoint
Gasket:	Silicon

ASA = Acrylonitrile-styrene-acrylicester • PBT = Polybutyleneterephthalate • POM = Polyacetal

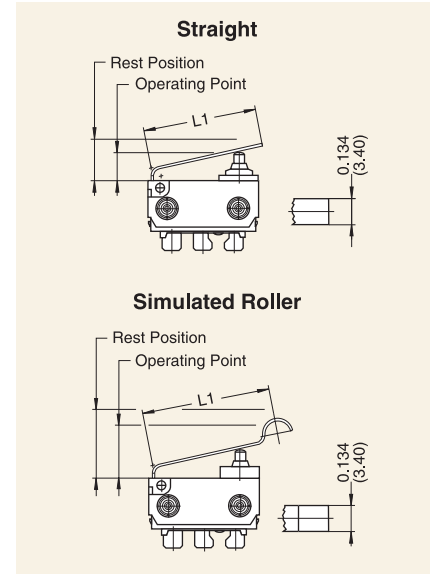




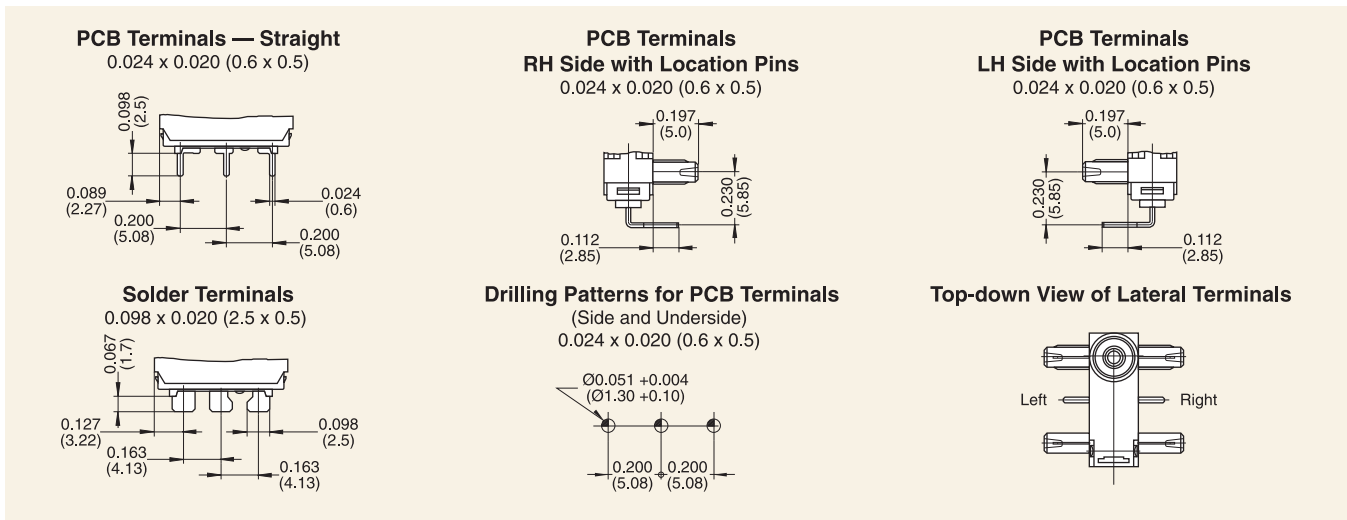
### Dimensions inches (mm)



### Auxiliary Actuators inches (mm)



### Terminal Options inches (mm)



### Ordering Information

<b>DK</b>	<b>1</b>	<b>G</b>	<b>TR</b>
<b>Series/Prefix</b>			
<b>Code</b>	<b>Current Rating</b>		
1	0.005A@12VDC or 2A@12VDC		
<b>Code</b>	<b>Contact Configuration</b>		
G	SPDT		
<b>Version with Leads</b>			
E	SPST NO		
F	SPST NC		
<b>Code</b>	<b>Terminal Type</b>	<b>inches (mm)</b>	
RN	0.098 x 0.020 (2.5 x 0.5)	Solder, Straight w/o Pins	
RR	0.098 x 0.020 (2.5 x 0.5)	Solder, Straight with RH Pins	
RL	0.098 x 0.020 (2.5 x 0.5)	Solder, Straight with LH Pins	
SN	0.024 x 0.020 (0.6 x 0.5)	PCB, Straight w/o Pins	
SR	0.024 x 0.020 (0.6 x 0.5)	PCB, Straight with RH Pins	
SL	0.024 x 0.020 (0.6 x 0.5)	PCB, Straight with LH Pins	
TR	0.024 x 0.020 (0.6 x 0.5)	PCB, RH Side with RH Pins	
UL	0.024 x 0.020 (0.6 x 0.5)	PCB, LH Side with LH Pins	
W3	9.843 (250)	Leads 0.014 <sup>2</sup> (0.35 <sup>2</sup> ) to Underside w/o Pins	
W9	9.843 (250)	Leads 0.014 <sup>2</sup> (0.35 <sup>2</sup> ) to Underside with RH Pins	
W6	9.843 (250)	Leads 0.014 <sup>2</sup> (0.35 <sup>2</sup> ) to Underside with LH Pins	
Z3	19.685 (500)	Leads 0.014 <sup>2</sup> (0.35 <sup>2</sup> ) to Underside w/o Pins	
Z9	19.685 (500)	Leads 0.014 <sup>2</sup> (0.35 <sup>2</sup> ) to Underside with RH Pins	
Z6	19.685 (500)	Leads 0.014 <sup>2</sup> (0.35 <sup>2</sup> ) to Underside with LH Pins	

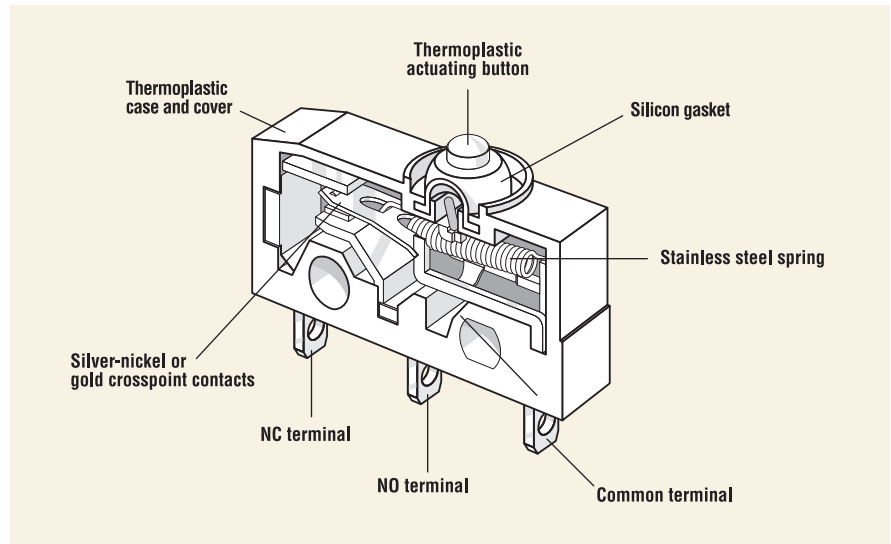
<b>A0</b>	<b>Code</b>	<b>Actuator Type</b>
A0		Without Auxiliary Actuator
D1		Straight Spring-Loaded Auxiliary Actuator
E1		Simulated Roller, Spring-Loaded

SUBMINIATURE — SEALED

# DCJK Series

## Features

- Enclosed switch complying with IP 6K7
- Silicon-free version available
- Models available for operating temperatures up to 120°C
- Rated for currents up to 10 amp at 250VAC
- Range of auxiliary actuators available (can also be retrofitted); two mounting positions
- Wide variety of terminal types; 3 pedestal heights
- High contact stability thanks to selection of application-specific contact materials
- Mechanical life: min.  $2 \times 10^6$  operations



## Specifications

### Electrical

Temperature Rating: -40° to +85°C / +120°C (without wire leads)  
-40° to +85C / +105°C (with wire leads)

Flammability Rating: UL94V-0 (PET)  
UL94V-2 (PA)  
UL94HB (POM)

### Materials

Base: PET

Cover: PET/PA

Actuator: POM (85°C) / PA (120°C)

Auxiliary Actuator: Stainless Steel or Plastic

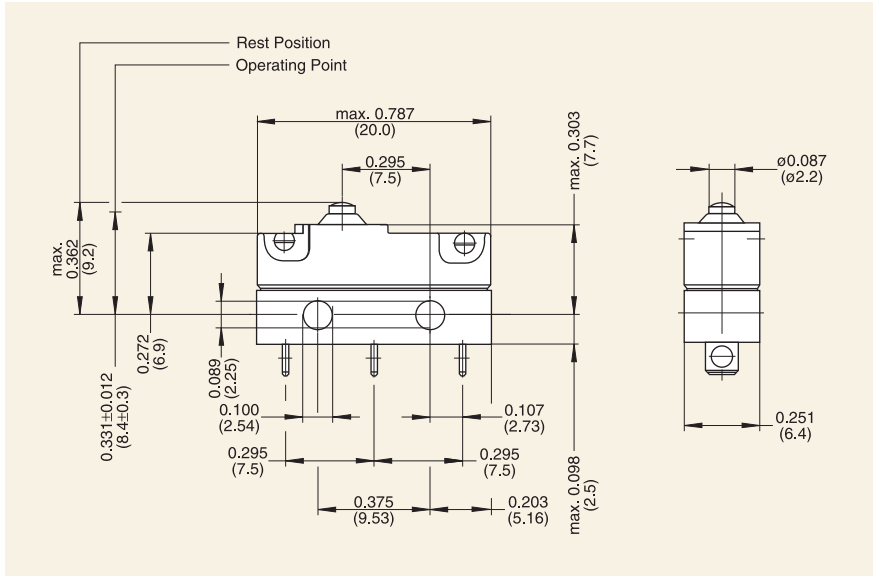
Terminals: Silver-Plated Copper-Zinc

Contacts: Silver Alloy; Silver;  
Gold-Plated Silver Crosspoint;  
Gold Crosspoint

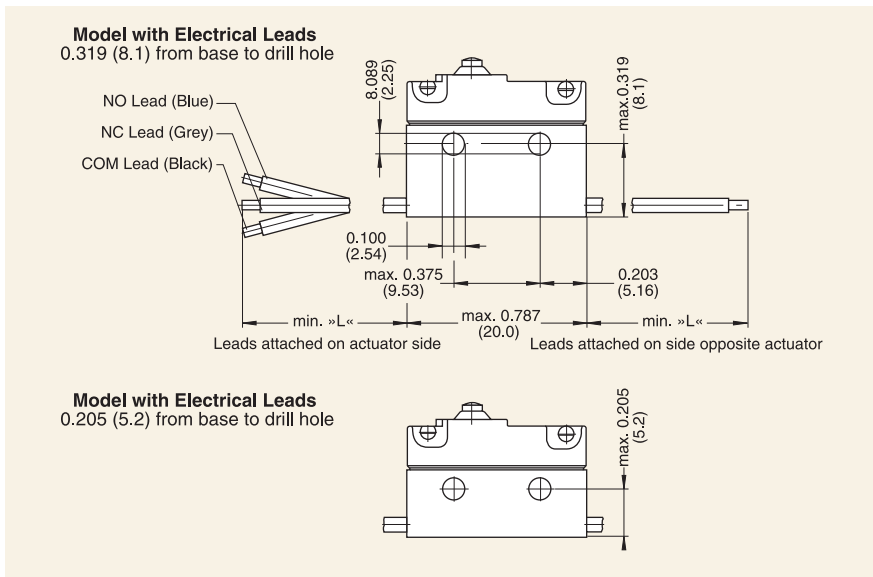
PA = Polyamide • PET = Polyethyleneterephthalate • POM = Polyacetal



### Dimensions inches (mm)



### Dimensions inches (mm)



### Example

Because of the huge variety of options available, there is no fully descriptive order code. Please give us details of your requirements so that we can find the right solution to suit your needs and tell you the precise order code to use.

### Ordering Information

DCJK	1	2	XX
Series/Prefix	Code	Code	Serial Number
	<b>Contact Material</b>	<b>Pedestal Height</b>	
	1 Silver Alloy	1 Short Pedestal 0.098 (2.5)	
	2 Silver	2 Medium Pedestal 0.205 (5.2)	
	3 Gold Crosspoint	3 Tall Pedestal 0.319 (8.1)	
	5 Gold-Plated Silver Crosspoint		

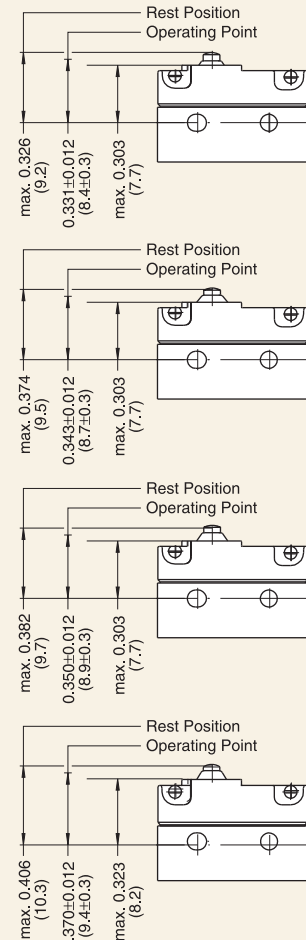
### Auxiliary Actuators

Switches in the DCJK family have two mountings for attaching auxiliary actuators. This, combined with the range of actuators available in the DC switch family and various operating points, means that a wide variety of operating forces and travel combinations is feasible.

To find the perfect fit for your requirements, please contact us.

### Switching Point Options inches (mm)

For customizing to individual requirements, switches in the DCJK family are available with four different switching points.

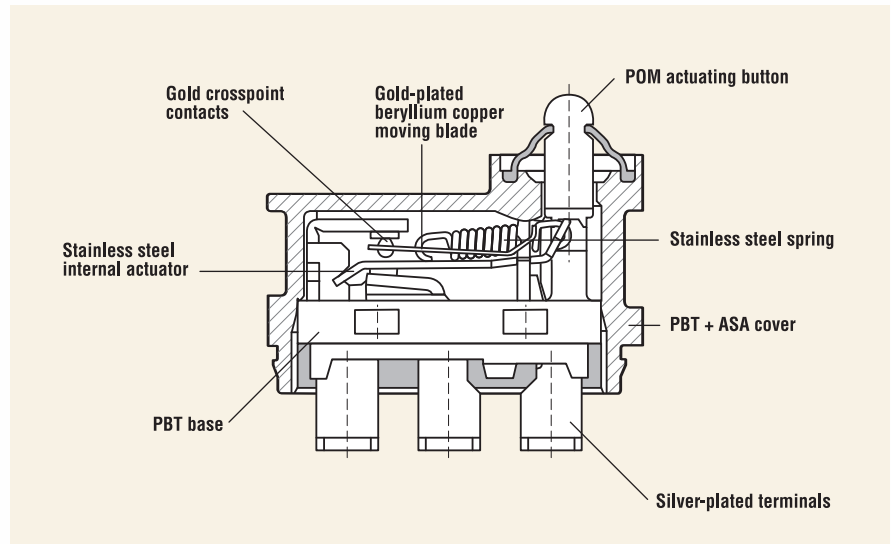


SUBMINIATURE — SEALED

# DJ Series

## Features

- Enclosed switch complying with IP 6K7
- Suitable for actuation at angles of up to 40°, depending on material used in sliding actuator, etc.
- Multiple location pins and locating slots make installation easy
- Very small dimensions
- Models available for operating temperatures up to 85°C
- Rated for 5mA@12VDC or 2A@12VDC
- High contact stability due to gold crosspoint contacts
- Mechanical life: min. 500,000 operations
- Wide variety of connection options



## Specifications

### Electrical

Temperature Rating:	-40° to +85°C
Flammability Rating:	N/A

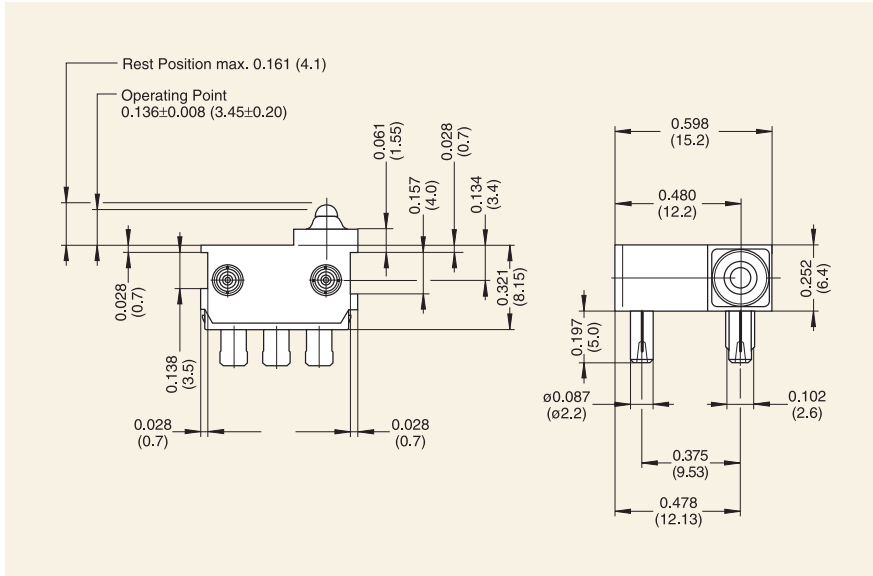
### Materials

Base:	PBT
Cover:	PBT + ASA
Actuator:	POM
Internal Actuator:	Stainless Steel
Spring:	Stainless Steel
Gasket:	Silicon
Moving Blade:	Gold-Plated Beryllium Copper
Terminals:	Silver-Plated Copper-Zinc
Contacts:	Gold Crosspoint

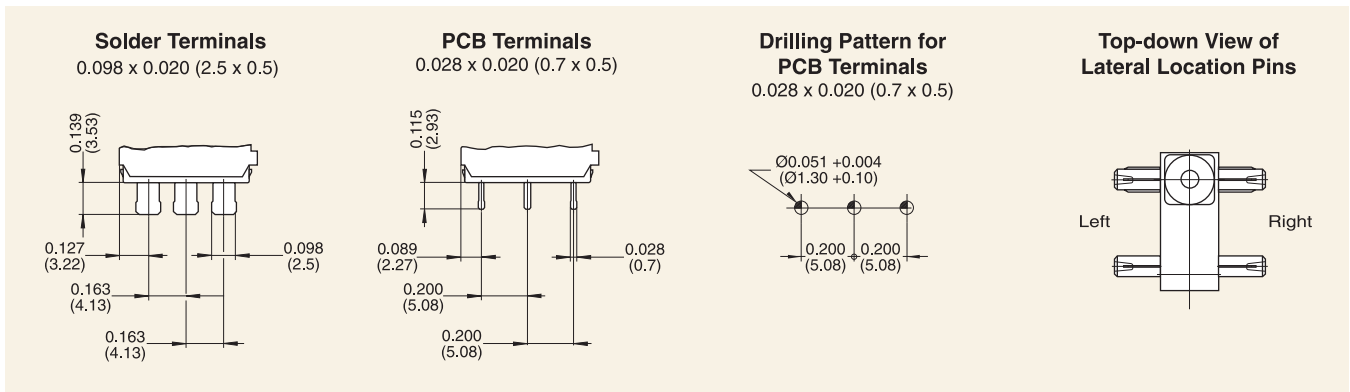
ASA = Acrylonitrile-styrene-acrylicester • PBT = Polybutyleneterephthalate • POM = Polyacetal



## Dimensions inches (mm)



## Terminal Options inches (mm)



## Ordering Information

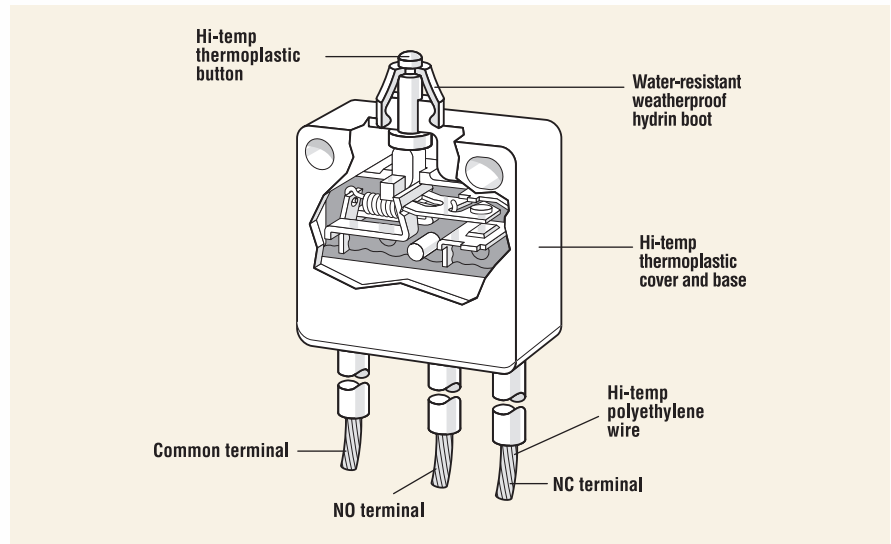
<b>DJ</b>	<b>1</b>	<b>G</b>	<b>BR AO</b>
Series/Prefix	Code	Contact Configuration	Code
	1	G	AO
		SPDT	Without Auxiliary Actuator
	Code	Current Rating	
	1	0.005A@12VDC or 2A@12VDC	
	Code	Terminal Type inches (mm)	
	AN	0.098 x 0.020 (2.5 x 0.5) Solder, Straight w/o Pins	
	AL	0.098 x 0.020 (2.5 x 0.5) Solder, Straight with LH Pins	
	AR	0.098 x 0.020 (2.5 x 0.5) Solder, Straight with RH Pins	
	BN	0.028 x 0.020 (0.7 x 0.5) PCB, Straight w/o Pins	
	BL	0.028 x 0.020 (0.7 x 0.5) PCB, Straight with LH Pins	
	BR	0.028 x 0.020 (0.7 x 0.5) PCB, Straight with RH Pins	

SUBMINIATURE — SPLASHPROOF

# E72/E73 Series

## Features

- Moisture resistant
- 3 contact arrangements
- Long life coil spring mechanism
- Choice of button or hinged actuator
- 10", 16 gauge leads attached
- Custom wire and harness designs available upon request



## Electrical Ratings

Switch Series	EN61058 Rating	UL1054 Rating	Electrical Life at Rated Load	
			According to VDE (Min. Operations)	According to UL (Min. Operations)
E72	N/A	10.1A, 1/4HP, 125/250VAC	N/A	6,000
E73	N/A	0.1A, 125VAC	N/A	6,000

## Specifications

### Electrical

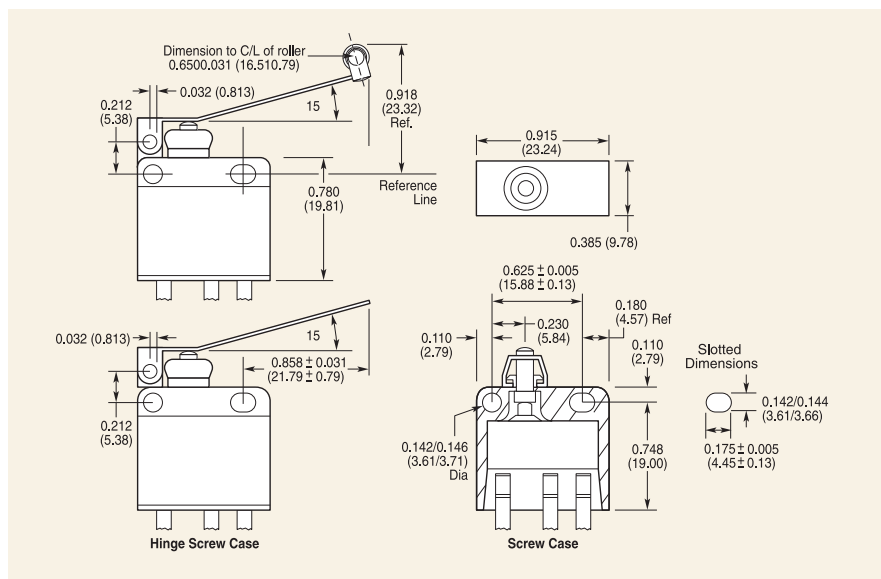
Temperature Rating:	-40° to +85°C
Flammability Rating:	UL94V-O

### Materials

Case:	Hi-Temp Thermoplastic Nylon
Boot:	Hydrin
Button:	Hi-Temp Thermoplastic Nylon
Actuator:	Stainless Steel
Potting:	Macromelt Polyamide
Contacts:	Silver Alloy (E72), Gold Crosspoint (E73)



## Dimensions inches (mm)



## Characteristics inches (mm)

	-40AT	-40HT	-40KT
Max. Rest Position	0.390 (9.91)	0.972 (24.69)	1.041 (26.44)
Max. Pre-travel	0.040 (1.02)	0.275 (6.99)	0.240 (6.10)
Operating Point	0.310 – 0.350 (7.87 – 8.99)	0.440 – 0.750 (11.18 – 19.05)	0.762 ± 0.125 (19.36 ± 3.18)
Min. Over-travel	0.035 (0.89)	0.100 (2.54)	0.125 (3.18)
Max. Movement Differential	0.004 (0.10)	0.024 (0.61)	0.025 (0.635)
Max. Operating Force	300 gms.	67 gms.	75 gms.

## Mounting

Recommended screw size: #6-32 round head. Recommended torque on screw: 6 inch lbs. max.

## Ordering Information

Actuator	Silver Contacts	Gold Contacts
Button	E72-40AT	E73-40AT
Lever	E72-40HT	E73-40HT
Roller	E72-40KT	E73-40KT



## MINIATURE

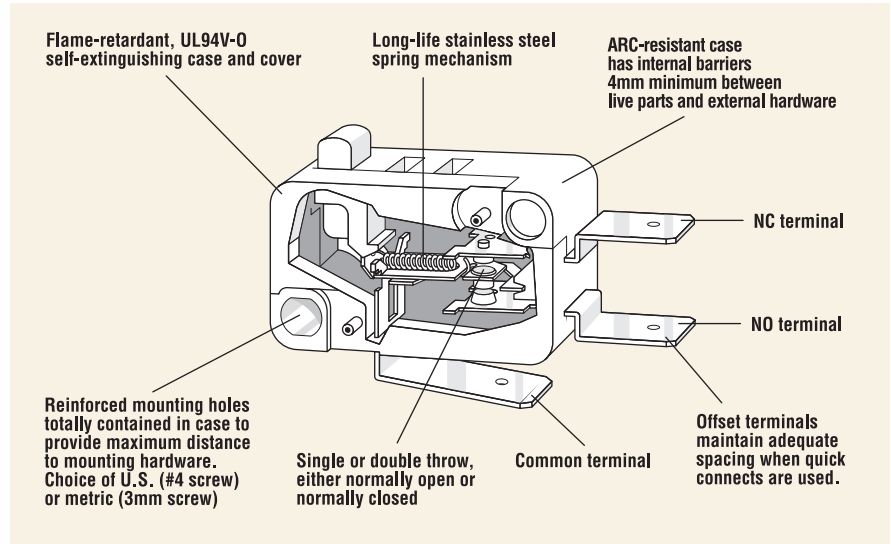
# D4 Series

### Features

- 8 current ratings
- Choice of actuators
- Various terminal types
- 3 contact arrangements
- Choice of standard or light operating force
- Long-life coil spring mechanism
- Agency approved extended life versions
- ENEC/VDE approval standard on European versions
- Stackable case and cover available upon request

### European Approved Versions

Standard D4 series switches with metric mounting holes automatically carry ENEC approval. D4 series switches with U.S. mounting holes have optional VDE approval. Contact factory for part number. Switches with straight terminals may require insulated connectors for international approval.



### Electrical Ratings

Switch Series	EN61058 Rating	UL1054 Rating	Electrical Life at Rated Load	
			According to EN (Min. Operations)	According to UL (Min. Operations)
D40	N/A	1.0A, 125VAC	NA	6,000*
D41	0.1(0.05)A, 250V~	0.1A, 125/250VAC	50,000	6,000*
D42	3(1)A, 250V~	3A, 125/250VAC; 1/10HP, 250VAC	50,000	6,000*
D43	6(2)A, 250V~	5A, 1/4HP, 125/250VAC	50,000	6,000*
D44	10(3)A, 250V~	10A, 1/2HP, 125/250VAC	50,000	6,000*
D45	16(4)A, 250V~ 10(3)A, 400V~ (Std. force only)	15A, 1/2HP, 125/250VAC	50,000	6,000*
D48	21(8)A, 250V~	21A, 1HP, 125VAC; 2HP, 250VAC	10,000	6,000
D49	N/A	10A, 1/2HP, 125/250VAC; 6A, 30VDC	NA	6,000*

Operating life for 125°C and 150°C available upon request.

\*Indicates 100K life available. Consult factory.

### Specifications

#### Electrical

Temperature Rating:	-40° to +85°C, 125°C or 150°C
Flammability Rating:	UL94V-0

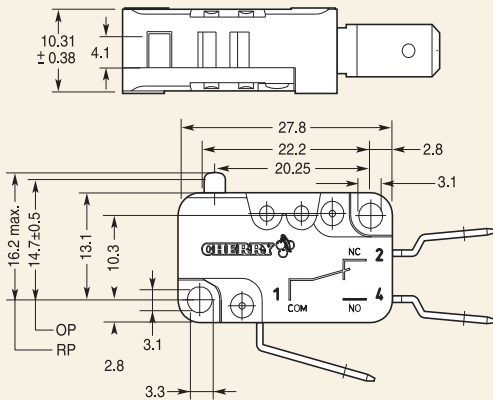
#### Materials

Case:	Thermoplastic Polyester (PBT), European Versions (PET)
Actuating Button:	Thermoplastic Acetal (POM), 85°C Thermoplastic Polyester (PET), 125°C or 150°C
Auxiliary Actuator:	Aluminum, Stainless Steel or Cold-Rolled Steel (Nickel-Plated)
Common Terminal:	Silver-Plated Brass
NO/NC Terminals:	Brass (D40, D41, D42, D43, D44, D49) Brass (D45, European versions) Copper (D45, US Versions) Silver-Plated Copper (D48, US versions) Copper (D48, European versions)
Moving Blade:	Brass (D40, D41, D42, D43) Beryllium Copper (D44, D45, D48)
Contacts:	Gold Crosspoint (D40, D41) Silver Alloy (D42, D43, D44, D45, D48, D49)

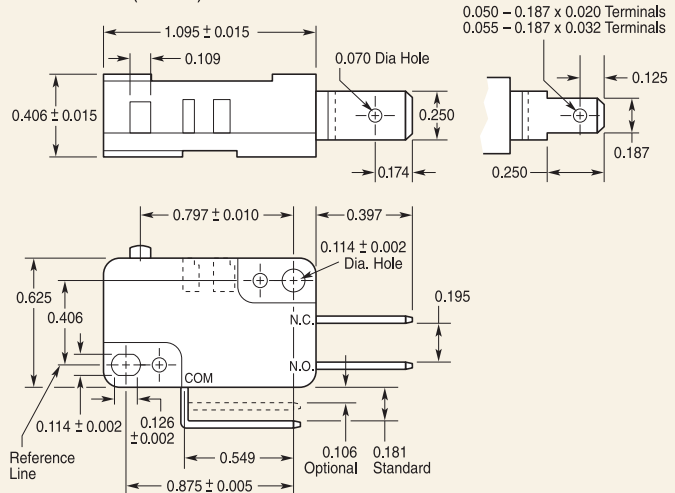


## Dimensions

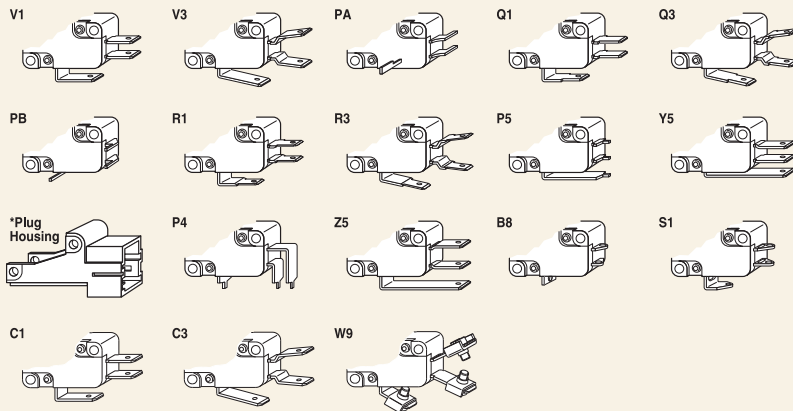
### European Version (mm)



### U.S. Version (inches)

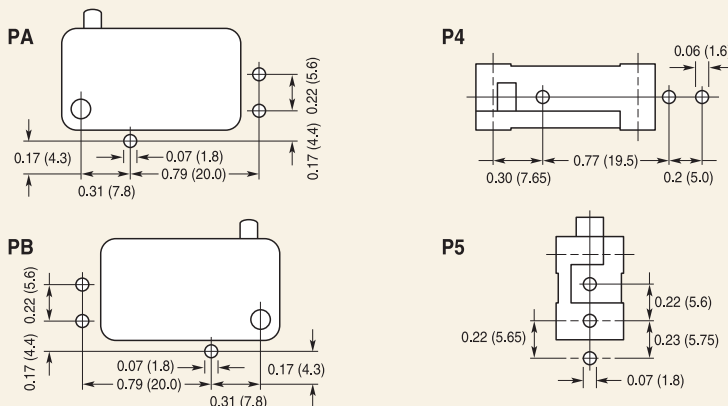


## Terminals



\*Connector Part #623-0518 (mates with Y5 only).

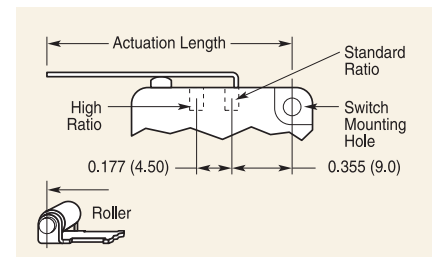
## Drilling Patterns for PCB Terminals



Specifications subject to change without notice.

## Actuators

Many special forms and lengths of actuators are available. Standard type integral hinged lever and roller actuators are available in choice of 2 mounting positions. Actuation lengths are dimensioned from centerline of switch mounting hole as shown.



## EN (VDE) Identifiers

Switches with a "standard" operating force are identified by a 'Y' next to the standard model description, e.g. D43Y.

Switches with a "light" operating force are identified by an 'X' next to the standard model description, e.g. D43X.

## Mounting — US Version

Recommended mounting screw size: #4-40 Round head. Recommended torque on screw: 3 inch lbs. max.

## Mounting — European Version

Recommended mounting screw size: M3. Recommended torque on screw: 70N cm max.

## Actuator Specifications – US Versions

Actuator Type	Switch Type	Maximum Operating Force (Gms.)							Maximum Pre-Travel inches (mm)		Operating Point inches (mm)		Minimum Over Travel inches (mm)		Max. Movement Differential inches (mm)		Actuation Length inches (mm)
		D40, D41, D42 Std / Light	D43 Std / Light	D44 Std / Light	D45 Std / Light	D48 Std / Light	D49 Std / Light	D40-D45, D49	D48	D40-D45, D49	D48	D40-D45, D49	D48	D40-D45, D49	D48		
AA		75 / 15	170 / 45	285 / 75	400 / 100	— / 120	285 / 75	0.047 (1.19)	0.070 (1.78)	0.558/0.598 (14.17/15.19)	0.537/0.577 (13.64/14.66)	0.050 (1.27)	0.035 (0.89)	0.010 (0.25)	0.010 (0.25)	—	
LA		75 / 15	170 / 45	285 / 75	400 / 100	— / 183	285 / 75	0.062 (1.57)	0.063 (1.60)	0.580/0.620 (14.73/15.75)	0.578/0.618 (14.70/15.70)	0.050 (1.27)	0.031 (0.80)	0.016 (0.41)	0.011 (0.30)	0.865 (21.97)	
LD*†		35 / 8	86 / 23	144 / 37	200 / 51	— / 77	144 / 37	0.125 (3.18)	0.150 (3.80)	0.555/0.645 (14.10/16.38)	0.563/0.657 (14.0/16.4)	0.085 (2.16)	0.071 (1.80)	0.030 (0.76)	0.031 (0.80)	1.40 (35.56)	
MD*††		20 / 5	51 / 14	86 / 23	120 / 30	— / 46	86 / 30	0.222 (5.59)	0.252 (6.40)	0.525/0.675 (13.34/17.15)	0.535/0.661 (13.6/16.8)	0.130 (3.30)	0.126 (3.20)	0.050 (1.27)	0.051 (1.30)	1.580 (40.13)	
JL*†††		17 / 3.5	38 / 10	63 / 17	90 / 22	— / 36	63 / 17	0.300 (7.62)	0.347 (8.80)	0.500/0.700 (12.70/17.78)	0.472/0.724 (12.0/18.4)	0.187 (4.75)	0.169 (4.30)	0.065 (1.65)	0.067 (1.70)	2.757 (70.03)	
RA		75 / 15	170 / 45	285 / 75	400 / 100	— / —	285 / 75	0.047 (1.19)	—	0.776/0.836 (19.71/21.33)	—	0.040 (1.02)	—	0.010 (0.25)	—	0.810 (20.57)	
RD		35 / 8	86 / 22	144 / 37	200 / 50	— / —	144 / 37	0.125 (3.18)	—	0.761/0.851 (19.33/21.62)	—	0.085 (2.16)	—	0.030 (0.76)	—	1.240 (34.04)	
TD		25 / 5	51 / 14	86 / 22	120 / 30	— / —	86 / 22	0.200 (5.08)	—	0.731/0.881 (18.57/22.38)	—	0.120 (3.05)	—	0.040 (1.02)	—	1.512 (38.51)	
GD		35 / 8	86 / 33	144 / 47	200 / 50	— / —	144 / 37	0.125 (3.18)	—	1.000/1.090 (25.40/27.69)	—	0.085 (2.16)	—	0.030 (0.76)	—	1.340 (34.04)	

\*Auxiliary levers on light force D40, D41 and D42 will be made out of Aluminum.

†YD suffix for D40, D41 and D42. ††XD suffix for D40, D41 and D42. †††YL suffix for D40, D41 and D42.

## Ordering Information – US Versions

D4		3	
Series/Prefix			
Code	EN61058	UL1054	
0	N/A	1.0A, 125VAC	
1	0.1(0.5)A, 250V	0.1A, 125/250VAC	
2	3(1)A, 250V	3A, 125/250VAC 1/10HP, 250VAC	
3	6(2)A, 250V	5A, 1/4HP, 125/250VAC	
4	10(3)A, 250V	10A, 1/2HP, 125/250VAC	
5	N/A	15A, 1/2HP, 125/250VAC	
8	N/A	21A, 1HP, 125VAC 2HP, 250VAC	
9	N/A	10A, 1/2HP, 125/250VAC 6A, 30VDC	

VDE optional for D42–D44 with U.S. mounting holes.  
All D41 switches have VDE approval.

3		V3	
Mounting Holes			
NO	NC	DT	Oper. Force
A	B	C	Std.
J	K	L	Light
4	5	6	Light

Temp. Index: 85°C, 150°C\*

\*D45 and D48 with VDE only available with metric holes. See European ordering information.

Code	Terminal Type	inches (mm)
Q1	0.187 x 0.032 (4.8 x 0.8) QC	Straight*
Q3	0.187 x 0.032 (4.8 x 0.8) QC	Dog Leg*
R1	0.187 x 0.020 (4.8 x 0.5) QC	Straight*
V1	0.250 x 0.032 (6.3 x 0.8) QC	Straight
V3	0.250 x 0.032 (6.3 x 0.8) QC	Dog Leg

\*Not available for D48.

L		D	
Code	Actuator Type	Code	Actuation Length inches (mm)
		A	D L
AA	Button	—	—
L	Lever SR	0.865 (21.97)	1.400 (35.56) 2.757 (70.02)
M	Lever HR	1.042 (26.47)	1.580 (40.13) 2.934 (74.52)
Y	Alum. Lever SR	—	1.400 (35.56) 2.757 (70.03)
X	Alum. Lever HR	—	1.580 (40.13) 2.932 (74.47)
J	SS Lever SR	—	— 2.757 (70.03)
K	SS Lever HR	—	— 2.932 (74.47)
R	Roller SR	0.810 (20.57)	1.340 (34.04) —
T	Roller HR	0.987 (25.07)	1.516 (38.51) —
G	1-Way Roller SR	0.810 (20.57)	1.340 (34.04) —
N	1-Way Roller HR	0.987 (25.07)	1.516 (38.51) —

SR = Standard Ratio, Back Hole • HR = High Ratio, Front Hole  
Additional actuators available upon request.

## Actuator Specifications — European Versions

Actuator Type	Switch Type	Maximum Operating Force (Gms.)				Maximum Pre-Travel inches (mm)		Operating Point inches (mm)	Minimum Over Travel inches (mm)		Max. Movement Differential inches (mm)		Max. Rest Position inches (mm)		Actuation Length inches (mm)
		D41-D43 Std / Light	D44 Std / Light	D45 Std / Light	D48	D41-D45	D48	D41-D45, D48	D41-D45	D48	D41-D45	D48	D41-D45	D48	D41-D45, D48
AA		170 / 45	285 / 75	400 / 100	150	0.047 (1.2)	0.063 (1.6)	0.559/0.599 (14.2/15.2)	0.051 (1.3)	0.047 (1.2)	0.012 (0.3)	0.012 (0.3)	0.638 (16.2)	0.638 (16.2)	—
MA/KA		110 / 28	180 / 50	256 / 65	100	0.087 (2.2)	0.118 (3.0)	0.567/0.630 (14.4/16.0)	0.063 (1.6)	0.055 (1.4)	0.024 (0.6)	0.024 (0.6)	0.740 (18.8)	0.740 (18.8)	1.01 (25.7)
LA/JA*		190 / 50	320 / 85	440 / 115	180	0.047 (1.2)	0.063 (1.6)	0.579/0.618 (14.7/15.7)	0.035 (0.9)	0.031 (0.8)	0.012 (0.3)	0.012 (0.3)	0.661 (16.8)	0.661 (16.8)	0.835 (21.2)
JD/LD*		86 / 22	144 / 40	200 / 50	75	0.126 (3.2)	0.150 (3.8)	0.551/0.646 (14.0/16.4)	0.091 (2.3)	0.071 (1.8)	0.031 (0.8)	0.031 (0.8)	0.780 (19.8)	0.780 (19.8)	1.40 (35.6)
KD/MD*		50 / 14	86 / 25	120 / 30	45	0.200 (5.1)	0.252 (6.4)	0.535/0.661 (13.6/16.8)	0.142 (3.6)	0.126 (3.2)	0.051 (1.3)	0.051 (1.3)	0.874 (22.2)	0.874 (22.2)	1.58 (40.1)
LL/JL*		40 / 10	60 / 17	90 / 22	35	0.299 (7.6)	0.346 (8.8)	0.47/0.72 (12.0/18.4)	0.185 (4.7)	0.169 (4.3)	0.067 (1.7)	0.067 (1.7)	0.992 (25.2)	0.992 (25.2)	2.75 (69.9)
ML/KL*		25 / 6	40 / 10	56 / 13	20	0.500 (12.7)	0.575 (14.6)	0.433/0.764 (11.0/19.4)	0.031 (0.8)	0.283 (7.2)	0.098 (2.5)	0.098 (2.5)	1.210 (30.8)	1.210 (30.8)	2.93 (74.4)
RA		190 / 45	330 / 75	440 / 100	180	0.047 (1.2)	0.067 (1.7)	0.776/0.839 (19.7/21.3)	0.039 (1.0)	0.031 (0.8)	0.016 (0.4)	0.012 (0.3)	0.858 (21.8)	0.866 (22.0)	0.811 (20.6)
RD		86 / 22	144 / 40	200 / 50	75	0.126 (3.2)	0.150 (3.8)	0.764/0.850 (19.4/21.6)	0.087 (2.2)	0.071 (1.8)	0.031 (0.8)	0.031 (0.8)	0.976 (24.8)	0.976 (24.8)	1.34 (34.1)
TD		55 / 14	86 / 22	120 / 30	50	0.200 (5.1)	0.244 (6.2)	0.744/0.870 (18.9/22.1)	0.142 (3.6)	0.118 (3.0)	0.051 (1.3)	0.047 (1.2)	1.080 (27.4)	1.078 (27.4)	1.52 (38.6)
TA		110 / 30	200 / 55	260 / 70	110	0.087 (2.2)	0.118 (3.0)	0.764/0.850 (19.4/21.6)	0.063 (1.6)	0.051 (1.3)	0.024 (0.6)	0.02 (0.5)	0.937 (23.8)	0.945 (24.0)	0.988 (25.1)
UA		120 / 32	215 / 55	280 / 70	110	0.087 (2.2)	0.118 (3.0)	0.768/0.846 (19.5/21.5)	0.063 (1.6)	0.051 (1.3)	0.020 (0.5)	0.020 (0.5)	0.937 (23.8)	0.945 (24.0)	0.988 (25.1)
SA		190 / 50	330 / 85	440 / 115	200	0.051 (1.3)	0.067 (1.7)	0.780/0.835 (19.8/21.2)	0.039 (1.0)	0.031 (0.8)	0.012 (0.3)	0.012 (0.3)	0.858 (21.8)	0.866 (22.0)	0.811 (20.6)

\*On light force D41 and D42, auxiliary actuators MD, ML, LD and LL are made out of Aluminum.

## Ordering Information — European Versions

**D4** **3**

Series/Prefix

Code	EN61058	UL1054
1	0.1(0.5)A, 250V	0.1A, 125/250VAC
2	3(1)A, 250V	3A, 125/250VAC 1/10HP, 250VAC
3	6(2)A, 250V	5A, 1/4HP, 125/250VAC
4	10(3)A, 250V	10A, 1/2HP, 125/250VAC
5	16(4)A, 250V 10(3)A, 400V~ (Std. force only)	15A, 1/2HP, 125/250VAC
8	21(8)A, 250V	21A, 1HP, 125VAC 2HP, 250VAC
9	N/A	10A, 1/2HP, 125/250VAC 6A, 30VDC

EN standard on all D4 European designs.

**3** **V3**

Mounting Holes	NO			NC			DT			Oper. Force	Temp. Index
	1	2	3	1	2	3	1	2	3		
European Metric Mounting Holes (EN Standard)	G	H	M	Std.			Light			85°C	
	N	P	R	Light			Light				
	S	T	U	Light			Light			150°C	

**L** **D**

Code	Actuator Type	Code			Actuation Length inches (mm)		
		A	D	L	A	D	L
AA	Button	—	—	—	—	—	—
J	SS Lever SR	0.835 (21.2)	1.4 (35.6)	2.75 (69.9)	—	—	—
K	SSLever HR	1.01 (25.7)	—	2.93 (74.4)	—	—	—
L	Lever SR	0.835 (21.2)	1.4 (35.6)	2.75 (69.9)	—	—	—
M	Lever HR	1.01 (25.7)	—	2.93 (74.4)	—	—	—
R	Roller SR	0.811 (20.6)	1.34 (34.1)	—	—	—	—
S	Sim. Roller SR	0.811 (20.6)	—	—	—	—	—
T	Roller HR	0.988 (25.1)	1.52 (38.6)	—	—	—	—
U	Sim. Roller HR	0.988 (25.1)	—	—	—	—	—

SR = Standard Ratio, Back Hole • HR = High Ratio, Front Hole  
Additional actuators available upon request.

**Code** **Terminal Type** inches (mm)

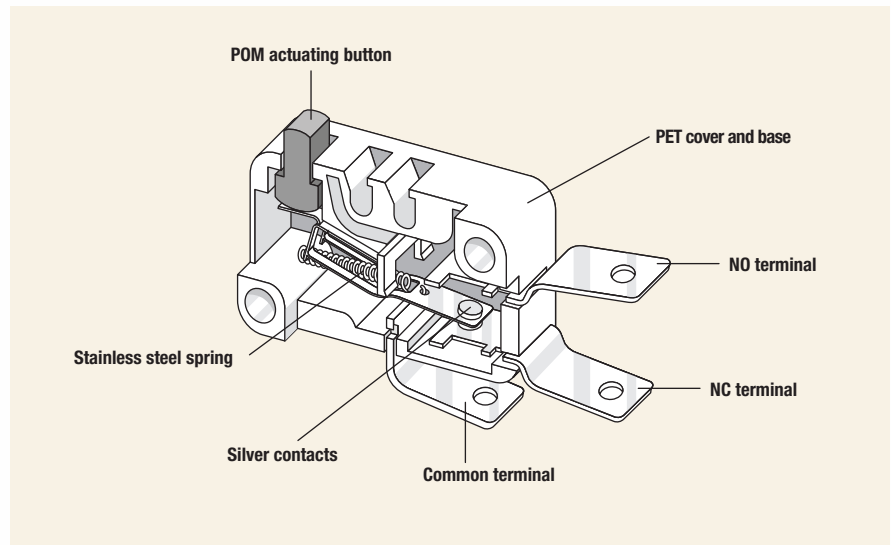
A1	Welding
B8	Short Solder*
C1	0.110 x 0.032 (2.8 x 0.8) QC, Bifurcated Straight**
C3	0.110 x 0.032 (2.8 x 0.8) QC, Bifurcated Dog Leg**
P4	0.047 x 0.020 (1.2 x 0.5) PCB, Underside*
P5	0.047 x 0.020 (1.2 x 0.5) PCB, Rear*
PA	0.047 x 0.032 (1.2 x 0.8) PCB, Housing Side*
PB	0.047 x 0.032 (1.2 x 0.8) PCB, Cover Side*
Q1	0.187 x 0.032 (4.8 x 0.8) QC Straight*
Q3	0.187 x 0.032 (4.8 x 0.8) QC Dog Leg*
R1	0.187 x 0.020 (4.8 x 0.5) QC, Straight**
R3	0.187 x 0.020 (4.8 x 0.5) QC, Dog Leg**
S1	Solder with Temp. Stop
V1	0.250 x 0.032 (6.3 x 0.8) QC, Straight
V3	0.250 x 0.032 (6.3 x 0.8) QC, Dog Leg
W9	Screw*
Y5	0.250 x 0.032 (6.3 x 0.8) QC, 5mm Grid
Z5	0.250 x 0.032 (6.3 x 0.8) QC, 7mm Grid

\* Not available for D48 European versions.  
\*\* Not available for D45 or D48 versions.

# MINIATURE D3 Series

## Features

- Self-cleaning effect of wiping contact mechanism provides excellent reliability
- Suitable for low actuation speeds
- Highly flexible, due to two mounting positions and a variety of auxiliary actuators
- Wide variety of terminal types
- >3mm (0.12") contact gap available



## Electrical Ratings

Switch Series	EN61058 Rating	UL1054 Rating	Electrical Life at Rated Load	
			According to EN (Min. Operations)	According to UL (Min. Operations)
D38 – Std.	16(4)A, 250V~ 10(3)A, 400V~	16A, 125/250VAC, 1HP	50,000	6,000

## Specifications

### Electrical

Temperature Rating:	-40° to +85°C
Flammability Rating:	UL94V-O

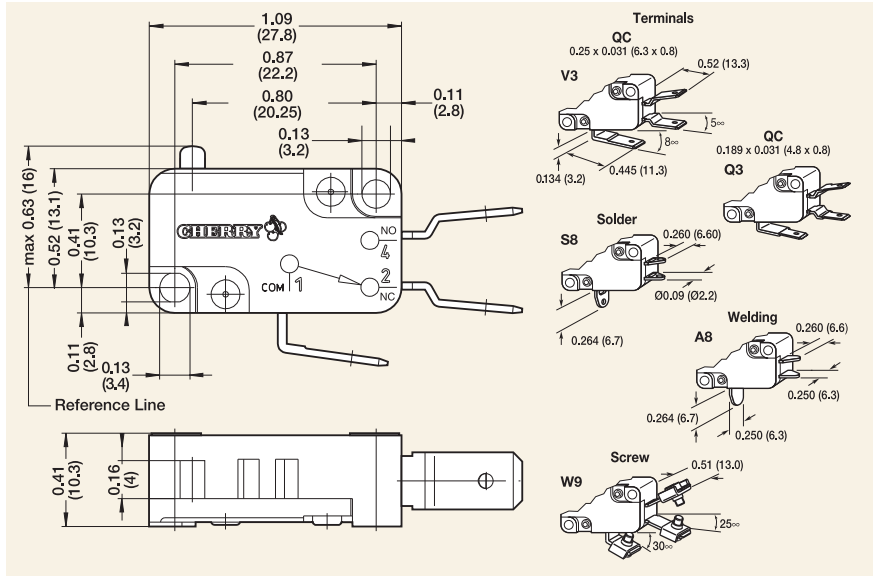
### Materials

Case:	PET
Actuator:	POM
Auxiliary Actuator:	Stainless Steel; Nickel-Plated Steel
Terminals:	Copper-Zinc
Contacts:	Silver Cadmium Oxide

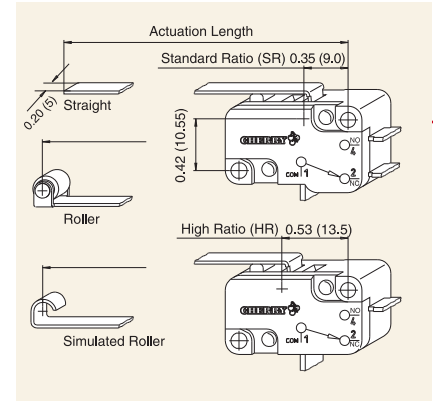
PET = Polyethyleneterephthalate • POM = Polyacetal



## Dimensions inches (mm)



## Auxiliary Actuators

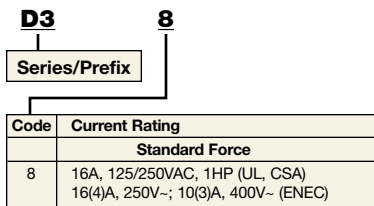


## Actuator Specifications

Actuator Type	Switch Type	Maximum Operating Force (cN)		Maximum Pre-Travel inches (mm)	Operating Point* inches (mm)	Minimum Over-Travel inches (mm)	Max. Movement Differential inches (mm)	Max. Rest Position inches (mm)	Actuation Length** inches (mm)
		D38 Std.	Standard Force						
AA		400	400	0.059 (1.5)	0.559/0.598 (14.2/15.2)	0.047 (1.2)	0.012 (0.3)	0.63 (16.0)	—
MA/KA		265	265	0.106 (2.7)	0.567/0.630 (14.4/16.0)	0.067 (1.7)	0.024 (0.6)	0.71 (18.0)	1.012 (25.7)
MD/KD		120	120	0.232 (5.9)	0.528/0.669 (13.4/17.0)	0.146 (3.7)	0.051 (1.3)	0.85 (21.6)	1.579 (40.1)
ML/KL		50	50	0.528 (13.4)	0.433/0.764 (11.0/19.4)	0.335 (8.5)	0.118 (3.0)	1.19 (30.1)	2.929 (74.4)
LA/JA		425	425	0.063 (1.6)	0.579/0.618 (14.7/15.7)	0.039 (1.0)	0.016 (0.4)	0.66 (16.8)	0.835 (21.2)
LD/JD		200	200	0.138 (3.5)	0.551/0.646 (14.0/16.4)	0.083 (2.1)	0.031 (0.8)	0.75 (19.1)	1.402 (35.6)
LL/JL		80	80	0.311 (7.9)	0.488/0.709 (12.4/18.0)	0.193 (4.9)	0.071 (1.8)	0.97 (24.6)	2.752 (69.9)

\*Measured above reference line. Refer to dimensional drawing above. \*\*Actuator tolerance ±0.031 inches (0.8mm).

## Ordering Information



**3** Code

**—** Contact Configuration

**Q3** Standard Operating Force

**L** Light Operating Force

Code	Contact Configuration
1	SPST NO
2	SPST NC
3	SPDT
Light Operating Force	
7	SPST NO
8	SPST NC
9	SPDT

**Code** Terminal Type inches (mm)

V3	0.25 x 0.031 (6.3 x 0.8) QC
Q3	0.189 x 0.031 (4.8 x 0.8) QC
S8	Solder with Temp. Stop
W9	Screw
A8	Welding

Note: PCB terminals available upon request.

**D** Actuation Length inches (mm)

Code	Actuator Type	Actuation Length inches (mm)		
		A	D	L
AA	Button	—	—	—
J	Straight, Stainless, SR	0.835 (21.2)	1.402 (35.6)	2.752 (69.9)
K	Straight, Stainless, HR	1.012 (25.7)	1.579 (40.1)	2.929 (74.4)
L	Straight, SR	0.835 (21.2)	1.402 (35.6)	2.752 (69.9)
M	Straight, HR	1.012 (25.7)	1.579 (40.1)	2.929 (74.4)
R	Roller, SR	0.811 (20.6)	1.343 (34.1)	—
S	Simulated Roller, SR	0.811 (20.6)	—	—
T	Roller, HR	0.988 (25.1)	1.520 (38.6)	—
U	Simulated Roller, HR	0.988 (25.1)	—	—



# Contact Gap >3mm (0.12 inch)

## Electrical Ratings

Switch Series	EN61058 Rating	UL1054 Rating	Electrical Life at Rated Load	
			According to EN (Min. Operations)	According to UL (Min. Operations)
<b>D36</b>	4(3)A, 250V~	4A, 250VAC, 1/3HP 125/250VAC	50,000	10,000
<b>D37</b>	10(4)A, 250V~	10A, 1/2HP, 125/250VAC	50,000	6,000
<b>D3B</b>	8(8)A, 250V~	10A, 1/2HP, 125/250VAC	50,000	10,000

## Actuator Specifications

Actuator Code	Switch Type	Maximum Operating Force (cN)	Maximum Pre-Travel inches (mm)	Operating Point* inches (mm)	Minimum Over-Travel inches (mm)	Max. Movement Differential inches (mm)	Max. Rest Position inches (mm)	Actuation Length inches (mm)	
AA		500	0.075 (1.9)	0.567±0.020 (14.4±0.5)	0.028 (0.7)	0.047 (1.2)	0.63 (16.0)	—	
MA/KA		320	0.134 (3.4)	0.579±0.031 (14.7±0.8)	0.035 (0.9)	0.079 (2.0)	0.71 (18.0)	1.012 (25.7)	
TA		<i>forces and travel available upon request</i>							—
UA		<i>forces and travel available upon request</i>							—
MD/KD		150	0.295 (7.5)	0.563±0.075 (14.3±1.9)	0.075 (1.9)	0.177 (4.5)	0.86 (21.8)	1.579 (40.1)	
TD		<i>forces and travel available upon request</i>							—
KL		65	0.669 (17.0)	0.512±0.165 (13.0±4.2)	0.165 (4.2)	0.409 (10.4)	1.21 (30.8)	2.929 (74.4)	
LA/JA		550	0.075 (1.9)	0.587±0.020 (14.9±0.5)	0.024 (0.6)	0.047 (1.2)	0.66 (16.8)	0.835 (21.2)	
RA		<i>forces and travel available upon request</i>							—
SA		<i>forces and travel available upon request</i>							—
LD/JD		240	0.177 (4.5)	0.575±0.047 (14.6±1.2)	0.047 (1.2)	0.102 (2.6)	0.76 (19.2)	1.402 (35.6)	
RD		<i>forces and travel available upon request</i>							—
JL		100	0.425 (10.8)	0.520±0.110 (13.2±2.8)	0.126 (3.2)	0.256 (6.5)	0.098 (25.0)	2.752 (69.9)	

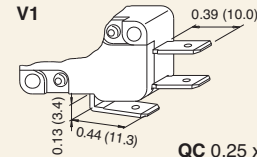
## Ordering Information

Code	UL Rating	EN 61058 Rating	Code	Terminal Type	inches (mm)
6	4A, 1/3HP, 125/250VAC	4(3)A, 250V~	V1	0.25 x 0.03 (6.3 x 0.8) QC, Straight	
7	10A, 1/2HP, 125/250VAC	10(4)A, 250V~	V3	0.25 x 0.03 (6.3 x 0.8) QC, Dog Leg	
B	10A, 1/2HP, 125/250VAC	8(8)A, 250V~	Q1	0.19 x 0.03 (4.8 x 0.8) QC, Straight	
			Q3	0.19 x 0.03 (4.8 x 0.8) QC, Dog Leg	
			C1	0.11 x 0.03 (2.8 x 0.8) QC, Bifurcated Straight*	
			C3	0.11 x 0.03 (2.8 x 0.8) QC, Bifurcated Dog Leg*	
			S8	Solder with Temp. Stop	
			W9	Screw (D3B only)	
			A8	Welding	

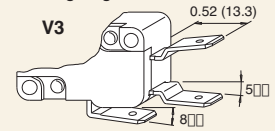
Note: PCB terminals available upon request.  
\*D36 only.

## Terminal Options

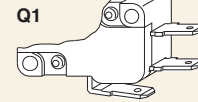
**QC 0.25 x 0.03 (6.3 x 0.8)**



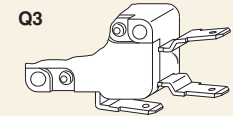
**QC 0.25 x 0.03 (6.3 x 0.8) Dog Leg**



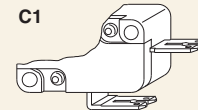
**QC 0.19 x 0.03 (4.8 x 0.8) Straight**



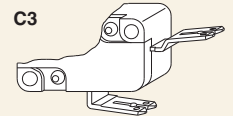
**QC 0.19 x 0.03 (4.8 x 0.8) Dog Leg**



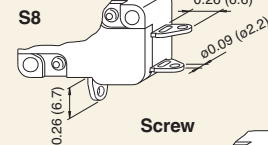
**QC 0.11 x 0.03 (2.8 x 0.8) Bifurcated, Straight**



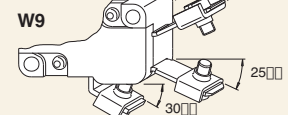
**QC 0.11 x 0.03 (2.8 x 0.8) Bifurcated, Dog Leg**



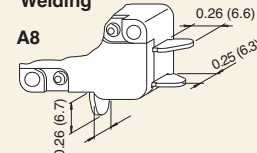
**Solder**



**Screw**



**Welding**

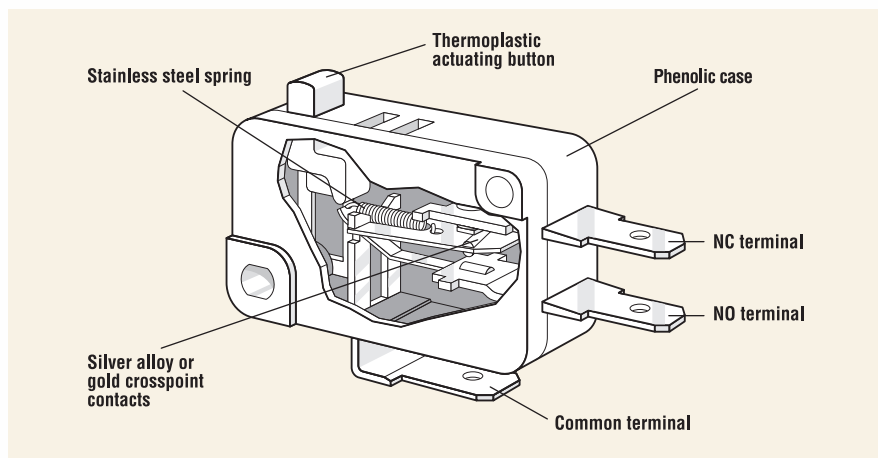




# MINIATURE E Series

## Features

- 8 current ratings AC
- 3 current ratings DC
- Choice of actuator styles
- Choice of terminals
- 3 contact arrangements
- Long-life coil spring mechanism
- Agency approved extended life versions
- High-temperature versions available



## Electrical Ratings

Switch Series	EN61058 Rating	UL1054 Rating	Electrical Life at Rated Load	
			According to VDE (Min. Operations)	According to UL (Min. Operations)
E21	N/A	0.1A, 125VAC (0.25A, 30VDC optional)	N/A	6,000**
E22	N/A	3A, 125/250VAC 1/10HP, 250VAC (0.1A, 125VDC optional)	N/A	6,000
E23	N/A	5A, 1/4HP, 125/250VAC	N/A	6,000
E31	N/A	1A, 125VAC	N/A	6,000
E33	N/A	10A, 1/2HP, 125/250VAC (6A, 30VDC optional)	N/A	6,000**
E34	N/A	15A, 1/2HP, 125/250VAC	N/A	6,000*
E35	N/A	20.1A, 1/2HP, 125/250VAC	N/A	6,000
E36	N/A	25A, 125/250VAC; 1HP, 125VAC 2HP, 250VAC	N/A	6,000

\*Indicates 100K life available for AC version only.

\*\*Indicates 100K life available for AC and DC versions.

## Specifications

### Electrical

Temperature Rating:	-40° to +85°C (130°C and 150°C optional, except E36)
Flammability Rating:	UL94HB

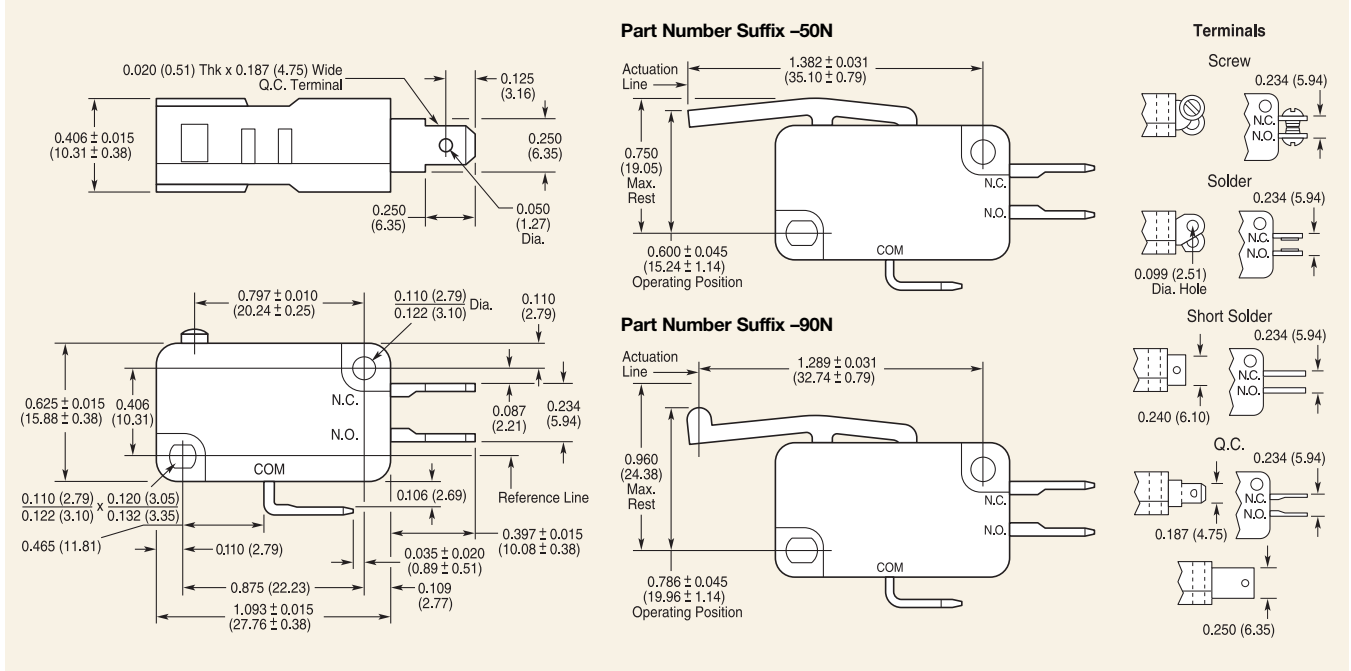
### Materials

Case:	General Purpose Phenolic
Actuating Button:	Thermoplastic Acetal
Common Terminals:	Silver-Plated Brass (E21, E22, E23, E31, E33, E34, E35) Silver-Plated Copper (E36)
NO & NC Terminals:	Brass (E21, E22, E23, E31, E33, E34, E35) Copper (E36)
Moving Blade:	Brass (E21, E22, E23) Silver-Plated Beryllium Copper (E31, E33, E34, E35, E36)
Spring:	Stainless Steel
Auxiliary Actuator:	Cold-Rolled Steel (Nickel-Plated) (except E21 and E22 – Aluminum)
Roller:	Sintered Stainless Steel
Contacts:	Silver Alloy (except E21 and E31 – Gold Crosspoint)



US (E34 and E35 only)

## Dimensions — Standard Force inches (mm)



## Actuator Specifications — Standard Force

Actuator Type	Switch Type	Max. Operating Force (gms.)				Maximum Pre-Travel inches (mm)	Operating Point* inches (mm)	Minimum Over-Travel inches (mm)	Max. Movement Differential inches (mm)	Actuation Length** inches (mm)
		E21, E22	E23, E31	E33	E34					
-00A		75	170	285	400	0.047 (1.19)	0.578±0.020 (14.68±0.51)	0.050 (1.27)	0.010 (0.25)	—
-00H		75	170	285	400	0.062 (1.57)	0.600±0.020 (15.24±0.51)	0.050 (1.27)	0.016 (0.41)	0.865 (21.97)
-50H		35	86	144	200	0.125 (3.18)	0.600±0.045 (15.24±1.14)	0.085 (2.16)	0.030 (0.76)	1.400 (35.56)
-50HL		20	51	86	120	0.220 (5.59)	0.600±0.075 (15.24±1.91)	0.130 (3.30)	0.040 (1.02)	1.580 (40.13)
-00K		75	170	285	400	0.047 (1.19)	0.806±0.030 (20.47±0.76)	0.040 (1.02)	0.010 (0.25)	0.810 (20.57)
-50K		35	86	144	200	0.125 (3.18)	0.806±0.045 (20.47±1.14)	0.085 (2.16)	0.030 (0.76)	1.340 (34.04)
-50KL		25	51	86	120	0.200 (5.08)	0.806±0.075 (20.47±1.91)	0.120 (3.05)	0.040 (1.02)	1.516 (38.51)
-50P		35	86	144	200	0.125 (3.18)	1.045±0.045 (26.54±1.14)	0.085 (2.16)	0.030 (0.76)	1.340 (34.04)
-50N†		35	86	144	200	0.175 (4.45)	0.600±0.045 (15.24±1.14)	0.065 (1.65)	0.030 (0.76)	1.382 (35.10)
-90N†		35	86	144	200	0.125 (3.18)	0.793±0.058 (20.14±1.47)	0.085 (2.16)	0.030 (0.76)	1.289 (32.74)

\*Measured above reference line. Refer to dimensional drawing above. \*\*Actuator tolerance ± 0.031 inches (0.79mm).  
 †Only available with 85°C temperature rating.  
 Note: E35 and E36 not available in standard force. See Miniature E Series Light Force for ordering information. Suffix numbers shown represent switch with 0.187" (4.75mm) terminals.

## Mounting — Standard Force

Recommended mounting screw size: #4-40 round head. Recommended torque on screw: 3 inch lbs. max.

## Ordering Information

Select the current rating you need. Combine the corresponding Series/Prefix number with the appropriate suffix number for the switch type, circuitry and terminals you require.

## Circuitry — Standard Force

Contact arrangement available in choice of single pole double throw or single pole single throw, either normally open or normally closed. In general normally open may be specified by changing suffix number from 00 to 01 and normally closed by changing suffix number to 02.

## Terminals — Standard Force

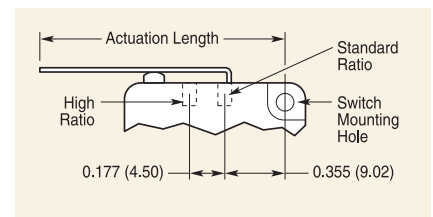
Choice of screw, solder or two quick connect terminals.

Note: 0.187" Quick Connect terminals are standard. Normally, to order screw terminals add 10 to suffix number. To order solder terminals add 20 to suffix number and to order 0.250" Q.C. terminals add 40 to suffix number.

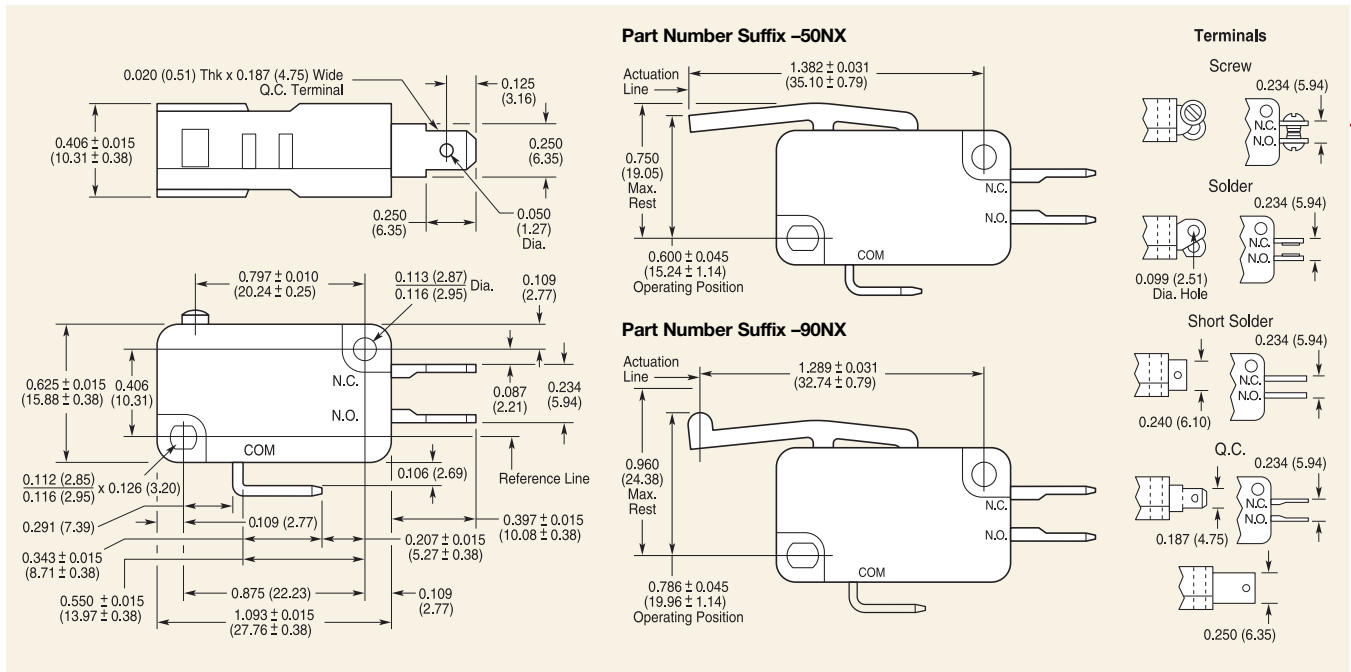
Terminal	SPDT	SPST NO	SPST NC
QC 0.187"	-00A	-01A	-02A
Screw	-10A	-11A	-12A
Solder	-20A	-21A	-22A
Short Solder	-30A	-31A	-32A
QC 0.250"	-40A	-41A	-42A

## Actuators — Standard Force

Many special forms and lengths of actuators are available. Standard type integral hinged lever and roller actuators are available in choice of 2 mounting positions. Actuation lengths are dimensioned from centerline of switch mounting hole as shown.



## Dimensions — Light Force inches (mm)



## Actuator Specifications — Light Force

Actuator Type	Switch Type	Max. Operating Force (gms.)						Maximum Pre-Travel inches (mm)	Operating Point* inches (mm)	Minimum Over-Travel inches (mm)	Maximum Movement Differential inches (mm)	Actuation Length** inches (mm)
		E21, E22	E23, E31	E33	E34	E35	E36					
-00AX		15	45	75	100	—	—	0.047 (1.19)	0.578±0.020 (14.68±0.51)	0.050 (1.27)	0.010 (0.25)	—
-00HX		15	45	75	100	—	—	0.062 (1.57)	0.600±0.020 (15.24±0.51)	0.050 (1.27)	0.016 (0.41)	0.865 (21.97)
-50HX		8	22	37	50	—	—	0.125 (3.18)	0.600±0.045 (15.24±1.14)	0.085 (2.16)	0.030 (0.76)	1.400 (35.56)
-75HX		5	14	22	30	—	—	0.220 (5.59)	0.600±0.075 (15.24±1.91)	0.130 (3.30)	0.040 (1.02)	1.580 (40.13)
-50KX		8	22	37	50	—	—	0.125 (3.18)	0.806±0.045 (20.47±1.14)	0.085 (2.16)	0.030 (0.76)	1.340 (34.04)
-75KX		5	14	22	30	—	—	0.200 (5.08)	0.806±0.075 (20.47±1.91)	0.120 (3.05)	0.040 (1.02)	1.516 (38.51)
-55HX		4	10	17	22	—	—	0.300 (7.62)	0.600±0.100 (15.24±2.54)	0.187 (4.75)	0.065 (1.65)	2.757 (70.03)
-85HX		2	6	10	13	—	—	0.500 (12.70)	0.600±0.175 (15.24±4.45)	0.312 (7.92)	0.100 (2.54)	2.932 (74.47)
-50NX†		8	22	37	50	65	112	0.175 (4.45)	0.600±0.045 (15.24±1.14)	0.065 (1.65)	0.030 (0.76)	1.382 (35.10)
-90NX†		8	22	37	50	65	112	0.125 (3.18)	0.793±0.058 (20.14±1.47)	0.085 (2.16)	0.030 (0.76)	1.289 (32.74)
-40AX	—	—	—	—	—	120	220	0.070 (1.78)	0.557±0.020 (14.15±0.51)	0.035 (0.89)	0.010 (0.25)	—

\*Measured above reference line. Refer to dimensional drawing above. \*\*Actuator tolerance ±0.031 inches (0.79mm).  
 †Only available with 85°C temperature rating.  
 Note: Suffix numbers shown represent switch with 0.187" (4.75mm) terminals.

## Mounting — Light Force

Recommended mounting screw size: #4-40 round head. Recommended torque on screw: 3 inch lbs. max.

## Ordering Information

Select the current rating you need. Combine the corresponding Series/Prefix number with the appropriate suffix number for the switch type, circuitry and terminals you require.

## Circuitry — Light Force

Contact arrangement available in choice of single pole double throw or single pole single throw, either normally open or normally closed. In general normally open may be specified by changing suffix number from 00 to 01 and normally closed by changing suffix number to 02.

## Terminals — Light Force

Choice of screw, solder or two quick connect terminals.

Note: 0.187" Quick Connect terminals are standard. Normally, to order screw terminals add 10 to suffix number. To order solder terminals add 20 to suffix number and to order 0.250" Q.C. terminals add 40 to suffix number.

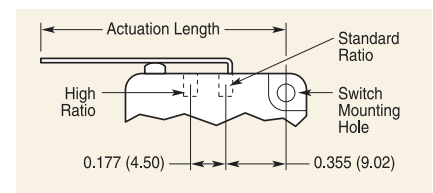
Exception: When ordering -55HX, -75HX, -75KX or -85HX switches with screw, solder or 0.250" terminals, consult factory.

Terminal	SPDT	SPST NO	SPST NC
QC 0.187"	-00AX	-01AX	-02AX
Screw	-10AX	-11AX	-12AX
Solder	-20AX	-21AX	-22AX
Short Solder	-30AX	-31AX	-32AX
QC 0.250"	-40AX	-41AX	-42AX

\*E35 and E36 only available with 0.250" (6.35) terminals.

## Actuators — Light Force

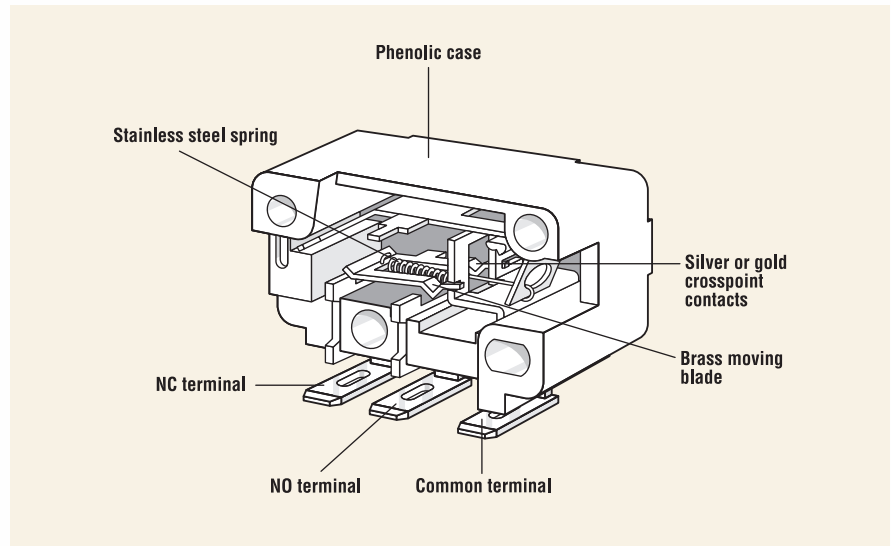
Many special forms and lengths of actuators are available. Standard type integral hinged lever and roller actuators are available in choice of 2 mounting positions. Actuation lengths are dimensioned from centerline of switch mounting hole as shown.



# MINIATURE LOW TORQUE E Series

## Features

- Long life coil spring mechanism
- Low torque rotary actuation
- Clockwise or counter clockwise actuation
- 6 terminal types
- Double rivet sturdy case construction
- 3 contact arrangements



## Electrical Ratings

Switch Series	EN61058 Rating	UL1054 Rating	Electrical Life at Rated Load	
			According to VDE (Min. Operations)	According to UL (Min. Operations)
E51	N/A	6A, 250VAC	N/A	6,000
E53	N/A	0.1A, 125VAC	N/A	6,000

## Specifications

### Electrical

Temperature Rating: -40° to +85°C

Flammability Rating: UL94HB

### Materials

Case: General Purpose Phenolic

Terminal: Silver-Plated Brass

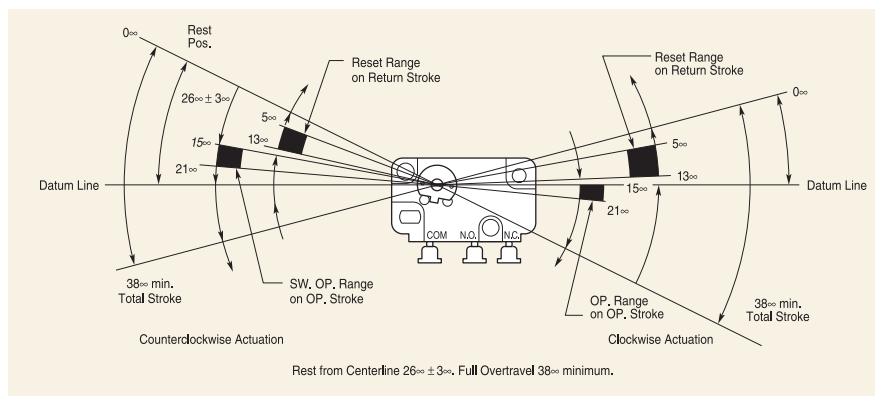
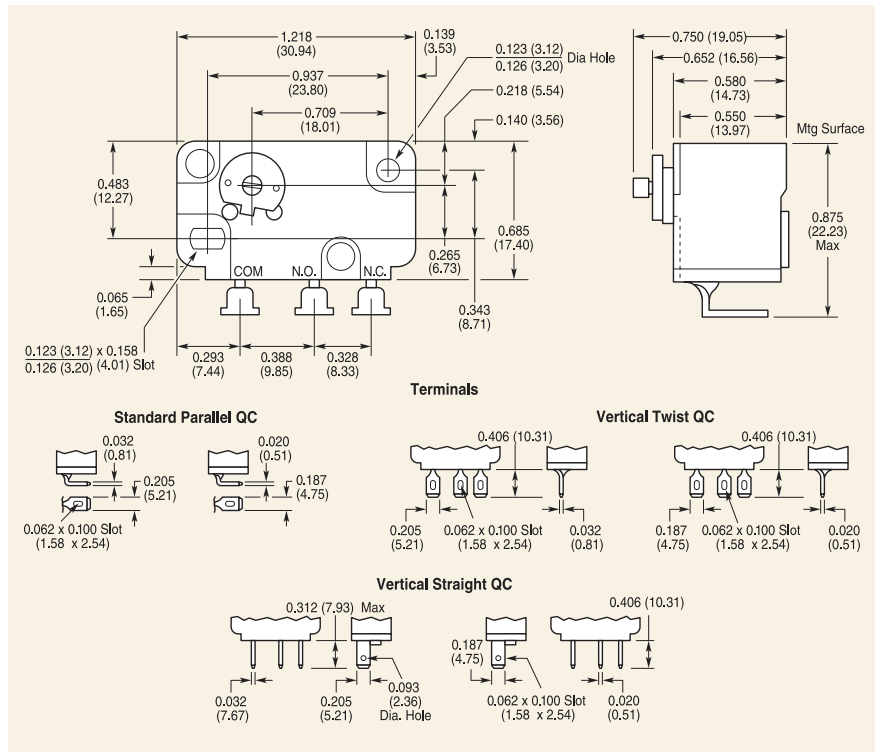
Moving Blade: Brass

Contacts: Silver Alloy (E51), Gold Crosspoint (E53)

Spring: Stainless Steel



## Dimensions inches (mm)



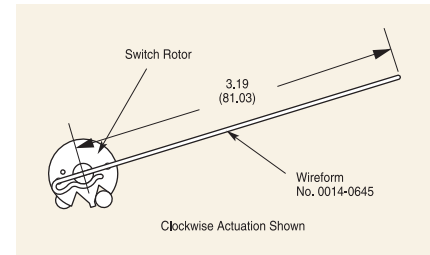
## Actuator Specifications

Switch Type	Actuator Type	Direction of Actuator	Terminals inches (mm)
	-00B	Clockwise	Standard Parallel 0.205 (5.21)
	-00R	Clockwise	Standard Parallel 0.187 (4.75)
	-50B	Clockwise	Vertical Twist 0.205 (5.21)
	-50R	Clockwise	Vertical Twist 0.187 (4.75)
	-60B	Clockwise	Vertical Straight 0.205 (5.21)
	-60R	Clockwise	Vertical Straight 0.187 (4.75)
	-00E	Counter Clockwise	Standard Parallel 0.205 (5.21)
	-00T	Counter Clockwise	Standard Parallel 0.187 (4.75)
	-50E	Counter Clockwise	Vertical Twist 0.205 (5.21)
	-50T	Counter Clockwise	Vertical Twist 0.187 (4.75)
	-60E	Counter Clockwise	Vertical Straight 0.205 (5.21)
	-60T	Counter Clockwise	Vertical Straight 0.187 (4.75)

Specifications subject to change without notice.

## Actuators

Wireform actuators are supplied unassembled for each switch. Wireforms may be readily assembled to switch rotor as shown.



## Circuitry

This series is available in single pole double throw and single pole single throw either normally open or normally closed. In general, normally open may be specified by adding 01 to suffix numbers, and normally closed by adding 02.

For example, E51-00B is double throw, E51-01B is normally open and E51-02B is normally closed.

## Mounting

Recommended mounting screw size: #4-40 Round head. Recommended torque on screw: 4 inch lbs. max.

## Operating Characteristics

Standard Force	4.0" gms. (max.)
Overtravel	15° min. (10.5 gram - cm)
Movement Differential	3° min.

Note: Special models and tooling capability available for custom wire form actuators.

Note: Additional operating forces available upon request. Consult factory.

## Ordering Information

Select the current rating you need. Combine the corresponding Series/Prefix number with the appropriate suffix number for the switch type, circuitry and terminals you require.



# MINIATURE K Series

## Features

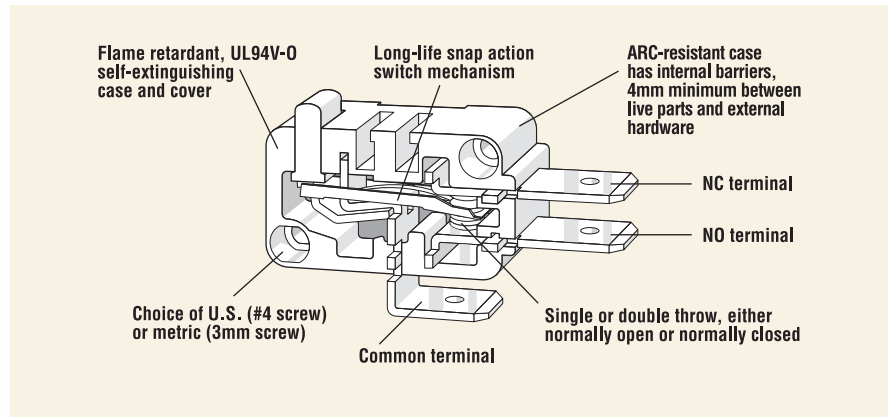
- Choice of current ratings up to 25 amps
- Choice of actuators
- Choice of terminals
- 3 contact arrangements
- Choice of operating force
- Long mechanical life
- Wiping contact action
- Snap over actuators
- Agency approved extended life versions

## International Approved Versions

K Series switches, except 25A (KWS), are internationally approved. Switches with straight terminals may require insulated connectors for international approval.

## Electrical Ratings

Switch Series	EN61058 Rating	UL1054 Rating	Electrical Life at Rated Load	
			According to VDE (Min. Operations)	According to UL (Min. Operations)
<b>KWA/KWB</b>	50mA, 28VDC	50mA, 28VDC	50,000	100,000
<b>KWC/KWD</b>	1(0.5)A, 250VAC	1.0A, 125/250VAC	50,000	100,000
<b>KWE/KWF</b>	3(1)A, 250VAC	3A, 1/10HP, 125/250VAC	50,000	100,000
<b>KWG/KWH</b>	6(2)A, 250VAC	5A, 1/4HP, 125/250VAC	50,000	100,000
<b>KWJ/KWK</b>	10(3)A, 250VAC	10A, 1/2HP, 125/250VAC	50,000	100,000
<b>KWL</b>	N/A	15.1A, 1/2HP, 125/250 VAC 5A, 125VAC Lamp Load (85°C only) 0.5A, 125VDC (85°C only) 0.25A, 250VDC (85°C only)	N/A	100,000
<b>KWM</b>	16(4)A, 250VAC	15.1A, 1/2HP, 125/250VAC 0.5A, 125VDC (85°C and 150°C only) 0.25A, 250VDC (85°C and 150°C only) 15.1A, 1/2HP, 125/250VAC (200°C only)	50,000	100,000
<b>KWS</b>	N/A	25A, 125/250VAC (85°C only) 1HP, 125VAC (85°C only) 2HP, 250VAC (85°C only)	N/A	100,000



## Specifications

### Electrical

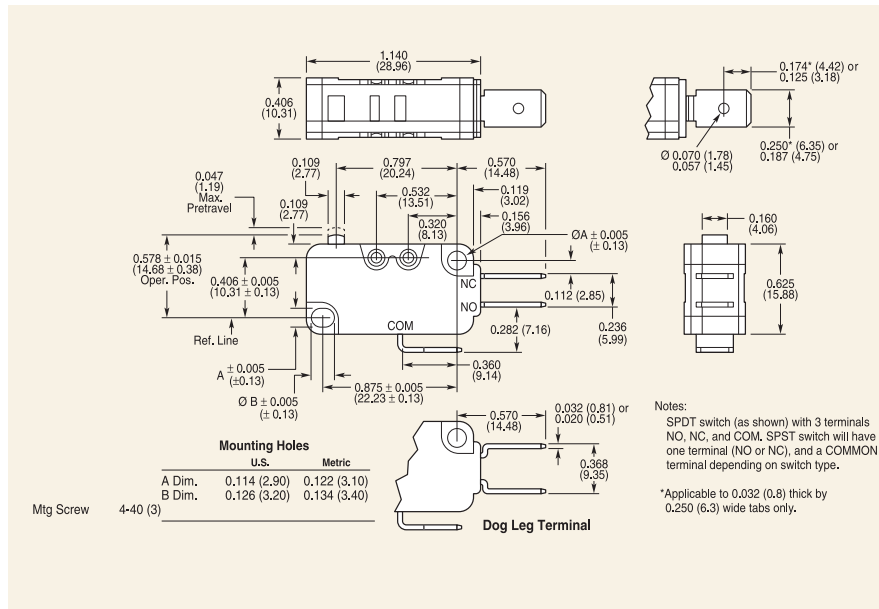
Temperature Rating:	-40° to +85°C, 150°C or 200°C
Flammability Rating:	UL94V-0

### Materials

Case/Cover:	Thermoplastic Polyester (85°C or 150°C) Liquid Crystal Polymer (200°C)
Button:	Thermoplastic Acetal (85°C) Thermoplastic Polyester (150°C) Liquid Crystal Polymer (200°C)
Auxiliary Actuator:	Cold-Rolled Steel (Nickel-Plated)
Terminals:	Brass Copper (25 amp only)
Moving Blade:	Beryllium Copper
Contacts:	Silver Alloy (except KWA and KWB — Gold-Plated)



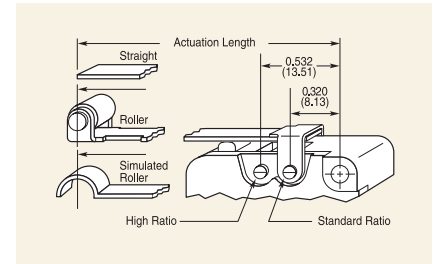
## Dimensions inches (mm)



## Actuators

Standard type snap over hinged lever and roller actuators are available in choice of two pivot positions. Lengths are dimensioned from centerline of switch upper mounting hole as shown here.

## Auxiliary Actuator



## Mounting

Recommended mounting screw size: #4-40 Round head. Recommended torque on screw: 3 inch lbs. max.

## Actuator Specifications

Actuator Type	Switch Type	Maximum Operating Force (gms.)					Maximum Pre-Travel inches (mm)	Operating Point* inches (mm)	Minimum Over-Travel inches (mm)	Max. Movement Differential inches (mm)	Actuation Length** inches (mm)
		KWA, KWC, KWE	KWG	KWD, KWJ, KWB, KWF	KWH, KWK, KWM	KWS					
A		25	50	75	150	225	0.056 (1.42)	0.602/0.563 (15.29/14.30)	0.050 (1.27)	0.010 (0.25)	—
B		25	50	75	150	225	0.075 (1.90)	0.631/0.585 (16.03/14.85)	0.051 (1.29)	0.012 (0.31)	0.865 (21.97)
C		14	27	40	80	120	0.146 (3.71)	0.659/0.569 (16.74/14.45)	0.085 (2.16)	0.030 (0.76)	1.400 (35.56)
D		6	12	18	36	54	0.330 (8.38)	0.725/0.527 (18.41/13.38)	0.182 (4.62)	0.051 (1.30)	2.722 (69.14)
E		15	30	44	88	132	0.133 (3.38)	0.653/0.572 (16.59/14.52)	0.074 (1.88)	0.021 (0.54)	1.077 (27.36)
F		8	15	23	45	67	0.267 (6.78)	0.702/0.541 (17.83/13.74)	0.146 (3.71)	0.041 (1.05)	1.612 (40.94)
G		4	7	10	20	30	0.593 (15.06)	0.820/0.467 (20.83/11.86)	0.407 (10.33)	0.091 (2.32)	2.934 (74.52)
J		16	31	46	92	138	0.128 (3.25)	0.776/0.698 (19.71/17.72)	0.088 (2.23)	0.020 (0.51)	1.254 (31.85)
M		9	18	26	52	77	0.232 (5.88)	0.813/0.675 (20.65/17.14)	0.115 (2.92)	0.036 (0.92)	1.466 (37.24)
Q		15	29	43	85	127	0.140 (3.56)	0.872/0.786 (22.15/19.96)	0.096 (2.43)	0.022 (0.56)	1.340 (34.04)
T		8	16	24	47	71	0.253 (6.43)	0.912/0.761 (23.16/19.32)	0.173 (4.39)	0.039 (1.00)	1.552 (39.42)

\*Measured above reference line. Refer to dimensional drawing above. \*\*Actuator tolerance  $\pm 0.031$  inches (0.79mm).

## Ordering Information

KW		A		D		Q		A C A		
Series/Prefix		Code		Code		Code		Code		
Light	Standard	Current	Rating	Notes	Code	Terminal Type	inches (mm)	Code	Configuration	
Code	Force	Code	Force	Rating	Notes	Code	Terminal Type	inches (mm)	Code	Configuration
A	25	B	75	50mA	1	P4	0.062 x 0.032 (1.57 x 0.81) PCB*	A	Normally Open	
C	25	D	75	1A	1	Q	0.187 x 0.020 (4.75 x 0.51) Straight	B	Normally Closed	
E	25	F	75	3A	1	R	0.187 x 0.020 (4.75 x 0.51) Dog Leg	C	Double Throw	
G	50	H	150	5A	1	S	0.187 x 0.032 (4.75 x 0.81) Straight	A	Normally Open	
J	75	K	150	10A	1	T	0.187 x 0.032 (4.75 x 0.81) Dog Leg	B	Normally Closed	
		L	150	15A	3	V	0.250 x 0.032 (6.35 x 0.81) Straight	C	Double Throw	
		M	150	15A	2	W	0.250 x 0.032 (6.35 x 0.81) Dog Leg			
		S	225	25A	3, 5					

Code	Temperature Rating
A	85°C UL/CUL
B	150°C UL/CUL
C	200°C UL/CUL
D	85°C UL/CUL/VDE*
E	150°C UL/CUL/VDE

\*Only available with 15A.

Notes:

- cULus rated for 100,000 cycles at 85°C, 150°C, 200°C. VDE rated for 150°C only.
- cULus rated for 100,000 cycles at 85°C, 150°C, 200°C. VDE rated for 85°C only.
- cULus rated for 100,000 cycles at 85°C only.
- Available in 10A and lower, cULus rated for 100,000 cycles at 85°C and 150°C.
- Available with 0.250 x 0.032" terminals only.

Code	Terminal Type	inches (mm)
P4	0.062 x 0.032 (1.57 x 0.81) PCB*	
Q	0.187 x 0.020 (4.75 x 0.51) Straight	
R	0.187 x 0.020 (4.75 x 0.51) Dog Leg	
S	0.187 x 0.032 (4.75 x 0.81) Straight	
T	0.187 x 0.032 (4.75 x 0.81) Dog Leg	
V	0.250 x 0.032 (6.35 x 0.81) Straight	
W	0.250 x 0.032 (6.35 x 0.81) Dog Leg	

\*PCB terminals are lateral to case only.

Code	Mounting Holes	Code	Configuration
A	U.S.	A	Normally Open
B	Metric	B	Normally Closed
		C	Double Throw

Snap Over Actuators		
Code	Type	Actuation Length inches (mm)
A	Button	
B	Straight SR	0.865 (21.97)
C	Straight SR	1.400 (35.56)
D	Straight SR	2.722 (69.14)
E	Straight HR	1.077 (27.36)
F	Straight HR	1.612 (40.95)
G	Straight HR	2.934 (74.52)
J	SIM Roller SR	1.254 (31.85)
M	SIM Roller HR	1.466 (37.24)
Y†	Roller SR	0.810 (20.57)
Q	Roller SR	1.340 (34.04)
W†	Roller HR	1.022 (25.96)
T	Roller HR	1.552 (39.42)

†Available as internal mounting only.

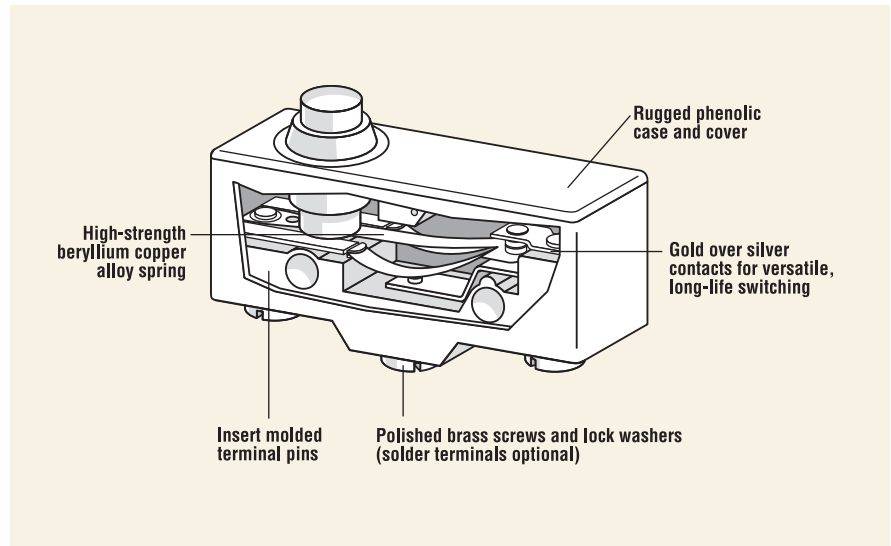


## HEAVY-DUTY SNAP ACTION

# GP Series

### Features

- Ultra-small travel differential
- Mechanical life tested to 1 million cycles
- Current switching to 20 amps
- Wide variety of actuators
- Screw or solder terminals standard
- Low operating forces available



### Electrical Ratings

Switch Series	UL1054 Rating
GP*B	20A, 1HP, 125VAC; 20A, 2HP, 250VAC; .5A, 125VDC; .25A, 250VDC
GP*C	15A, 1/8HP, 125VAC; 15A, 1/4HP, 250VAC; .5A, 125VDC; .25A, 250VDC

### Specifications

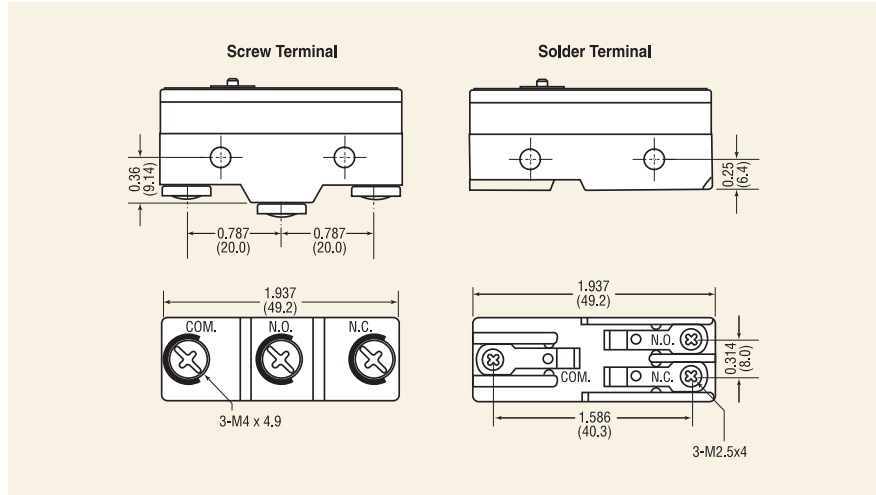
Dielectric Strength:	1000VAC 50/60Hz for 1 minute
Insulation Resistance:	100M ohms min at 500VDC
Initial Contact Resistance:	15m ohms max
Temperature Range:	-20° to +85°C

### Materials

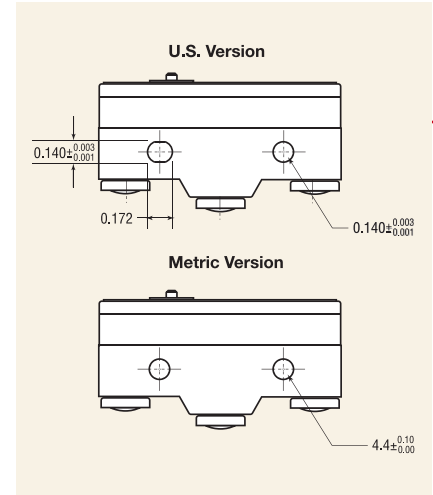
Case:	Phenolic
Cover:	Phenolic
Spring:	Beryllium Copper Alloy
Contacts:	Silver Alloy
Terminals:	Brass Screw Terminals; Copper Alloy Solder Terminals
Lever Actuator:	Stainless Steel



## Terminal Types inches (mm)



## Mounting Holes



## Standard Part Numbers and Descriptions

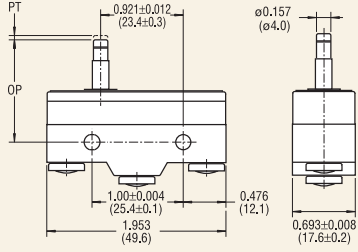
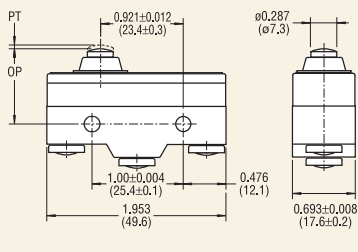
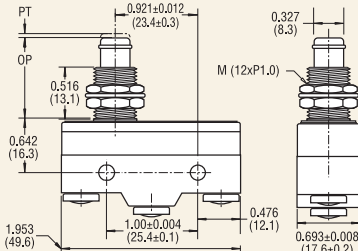
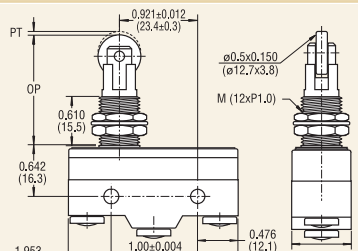
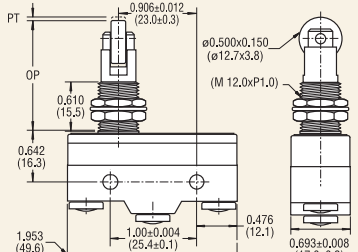
Dimensions inches (mm)	Part Number	Maximum Operating Force (oz.)	Minimum Release Force (oz.)	Maximum Pre-Travel inches (mm)	Operating Point Min./Max. inches (mm)	Minimum Over-Travel inches (mm)	Max. Movement Differential inches (mm)	Mounting Hole†	Terminal Type*
	GPTCNA11	12.3	4.0	0.016 (0.41)	0.610/0.642 (15.49/16.31)	0.005 (0.13)	0.002 (0.05)	U.S.	Screw
	GPTBNA11	22.2	7.1	0.051 (1.30)	0.625/0.657 (15.90/16.70)	0.009 (0.25)	0.008 (0.20)	U.S.	Screw
	GPTCLR11	10.5	1.7	0.157 (4.00)	0.654/0.717 (16.60/18.20)	0.062 (1.60)	0.051 (1.30)	U.S.	Screw
	GPTBLR11	9.0	0.98	0.157 (4.00)	0.654/0.717 (16.60/18.20)	0.062 (1.60)	0.067 (1.70)	U.S.	Screw
	GPTCRR11	10.6	1.8	0.157 (4.00)	1.094/1.157 (27.80/29.40)	0.062 (1.60)	0.051 (1.30)	U.S.	Screw
	GPTBRR11	9.0	0.98	0.157 (4.00)	1.094/1.157 (27.80/29.40)	0.062 (1.60)	0.067 (1.70)	U.S.	Screw

NOTE: GP Series switches are available with screw or solder terminals in U.S. or metric sizes.

\*For solder terminals, replace the "T" in the third position of the part number with an "S" (e.g., GPTCND11 becomes GPSC-ND11).

†For metric mounting, replace the "1" in the seventh position with a "0" (e.g., GPTCND11 becomes GPTCND01).

## Standard Part Numbers and Descriptions

Dimensions inches (mm)	Part Number	Maximum Operating Force (oz.)	Minimum Release Force (oz.)	Maximum Pre-Travel inches (mm)	Operating Point Min./Max. inches (mm)	Minimum Over-Travel inches (mm)	Max. Movement Differential inches (mm)	Mounting Hole <sup>†</sup>	Terminal Type <sup>‡</sup>
	GPTCND11	12.3	4.0	0.016 (0.41)	1.09/1.13 (27.70/28.70)	0.063 (1.60)	0.002 (0.05)	U.S.	Screw
	GPTBND11	22.9	7.1	0.028 (0.70)	1.091/1.130 (27.70/28.70)	0.062 (1.60)	0.008 (0.20)	U.S.	Screw
	GPTCNC11	12.3	4.0	0.106 (0.40)	0.826/0.866 (21.00/22.00)	0.062 (1.60)	0.002 (0.05)	U.S.	Screw
	GPTBNC11	22.9	7.1	0.028 (0.70)	0.826/0.866 (21.00/22.00)	0.062 (1.60)	0.008 (0.20)	U.S.	Screw
	GPTCNH11	12.3	4.0	0.016 (0.41)	0.826/0.890 (20.98/22.60)	0.217 (5.51)	0.002 (0.05)	U.S.	Screw
	GPTBNH11	22.9	7.1	0.028 (0.70)	0.826/0.890 (21.00/22.60)	0.217 (5.50)	0.008 (0.20)	U.S.	Screw
	GPTCRH11	12.3	4.0	0.016 (0.40)	1.268/1.362 (32.20/34.60)	0.140 (3.58)	0.002 (0.05)	U.S.	Screw
	GPTBRH11	22.9	7.1	0.028 (0.70)	1.268/1.362 (32.20/34.60)	0.140 (3.56)	0.008 (0.20)	U.S.	Screw
	GPTCRH12	12.3	4.0	0.160 (0.40)	1.268/1.362 (32.20/34.60)	0.140 (3.56)	0.002 (0.05)	U.S.	Screw
	GPTBRH12	22.9	7.1	0.028 (0.70)	1.268/1.362 (32.20/34.60)	0.140 (3.56)	0.008 (0.20)	U.S.	Screw

NOTE: GP Series switches are available with screw or solder terminals in U.S. or metric sizes.

<sup>†</sup>For solder terminals, replace the "T" in the third position of the part number with an "S" (e.g., GPTCND11 becomes GPSC-ND11).

<sup>‡</sup>For metric mounting, replace the "1" in the seventh position with a "0" (e.g., GPTCND11 becomes GPTCND01).

### Standard Part Numbers and Descriptions

Dimensions inches (mm)	Part Number	Maximum Operating Force (oz.)	Minimum Release Force (oz.)	Maximum Pre-Travel inches (mm)	Operating Point Min./Max. inches (mm)	Minimum Over-Travel inches (mm)	Max. Movement Differential inches (mm)	Mounting Hole <sup>†</sup>	Terminal Type <sup>‡</sup>
	GPTCLS11	2.4	0.50	0.394 (10.00)	0.716/0.780 (18.20/19.80)	0.220 (5.61)	0.050 (1.27)	U.S.	Screw
	GPTBLS11	2.8	0.50	0.394 (10.00)	0.716/0.780 (18.20/19.80)	0.220 (5.61)	0.007 (0.20)	U.S.	Screw
	GPTCLS12	3.1	0.70	0.315 (8.00)	0.716/0.780 (18.20/19.80)	0.125 (3.20)	0.040 (1.02)	U.S.	Screw
	GPTBLS12	4.2	1.4	0.315 (8.00)	0.716/0.780 (18.20/19.80)	0.125 (3.20)	0.040 (1.02)	U.S.	Screw
	GPTCRS11	3.5	0.80	0.280 (7.10)	1.157/1.220 (29.40/31.00)	0.158 (4.00)	0.040 (1.02)	U.S.	Screw
	GPTBRS11	4.2	0.80	0.280 (7.10)	1.157/1.220 (29.40/31.00)	0.158 (4.00)	0.040 (1.02)	U.S.	Screw
	GPTCRM11	5.6	1.4	0.106 (2.70)	1.173/1.205 (29.80/30.60)	0.094 (2.40)	0.020 (0.50)	U.S.	Screw
	GPTBRM11	6.4	1.5	0.106 (2.70)	1.173/1.205 (29.80/30.60)	0.094 (2.40)	0.020 (0.50)	U.S.	Screw
	GPTCRG11	5.6	1.4	0.106 (2.70)	1.594/1.658 (40.50/42.10)	0.094 (2.40)	0.020 (0.50)	U.S.	Screw
	GPTBRG11	6.3	1.4	0.106 (2.70)	1.594/1.658 (40.50/42.10)	0.094 (2.40)	0.020 (0.50)	U.S.	Screw

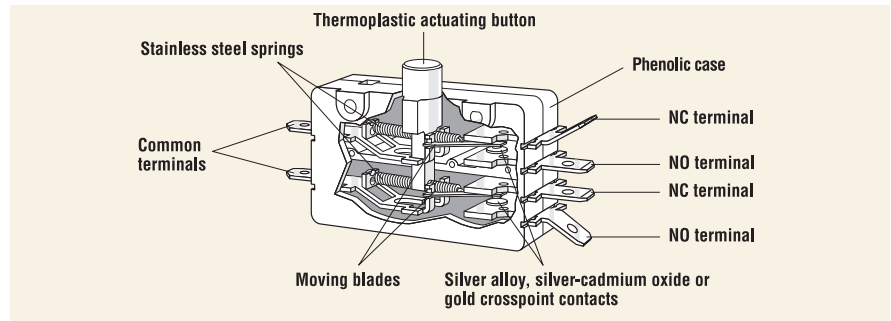
NOTE: GP Series switches are available with screw or solder terminals in U.S. or metric sizes.  
<sup>‡</sup>For solder terminals, replace the "T" in the third position of the part number with an "S" (e.g., GPTCND11 becomes GPSC-ND11).  
<sup>†</sup>For metric mounting, replace the "1" in the seventh position with a "0" (e.g., GPTCND11 becomes GPTCND01).

## GENERAL PURPOSE — SINGLE & DOUBLE POLE

# E Series

### Features

- 5 current ratings
- Choice of actuator styles
- 3 terminal types (optional screw terminals available — consult factory)
- 3 contact arrangements
- Long-life coil spring mechanism
- High-temperature 150°C and 200°C available on select models (consult factory)



### Electrical Ratings

Switch Series	EN61058 Rating	UL1054 Rating	Electrical Life at Rated Load	
			According to VDE (Min. Operations)	According to UL (Min. Operations)
<b>E13/E19</b>	N/A	15A, 125/250VAC; 3/4HP, 125VAC 1-1/2HP, 250VAC; 2A, 48 VDC (E13 Only)**	N/A	6,000*
<b>E19A</b> (mixed ratings)	N/A	15A, 125/250VAC; 3/4HP, 125VAC; 1-1/2HP, 250VAC 0.1A, 125VAC	N/A	6,000
<b>E14/E25</b>	N/A	25A, 125/250VAC; 1HP, 125VAC 2HP, 250VAC; 2A, 48VDC (E14 Only)**	N/A	6,000
<b>E20</b>	N/A	20A, 125/250VAC; 1HP, 125VAC 2HP, 250VAC	N/A	6,000
<b>E28/E29</b>	N/A	30.1A, 125/250/277VAC (UL Approved Only — Resistive Load Only)	N/A	6,000
<b>E30</b>	N/A	30.1A, 125/250VAC; 1HP, 125VAC 2HP, 250VAC (UL Only)	N/A	6,000
<b>G13/G20</b>	N/A	0.1A, 125VAC 0.1A, 30VDC (G13 Only)	N/A	6,000*

\*Indicates 100K life available.  
\*\*100K Hi-temp not available

### Specifications

#### Electrical

Temperature Rating: 105°C Std. (150°C and 200°C optional — E13, E14, E19, E20, G13)  
85°C Std. (E28 and E29), 85°C Std. (150°C optional) E25

Flammability Rating: UL94HB

#### Materials

Case: General Purpose Phenolic

Actuating Button: Thermoplastic Nylon

Common Terminals: Brass (E13, E19, E19A, G13, G20), Silver-Plated Brass (E14, E20),  
Silver-Plated Copper (E28, E29, E30)

NO and NC Terminals: Brass (E13, E19, E19A, G13, G20)  
Copper (E14, E20, E28, E29, E30)

Moving Blade: Brass (E13, E19, E19A, G13, G20)  
Silver-Plated Beryllium Copper (E14, E20, E28, E29, E30)

Spring: Stainless Steel

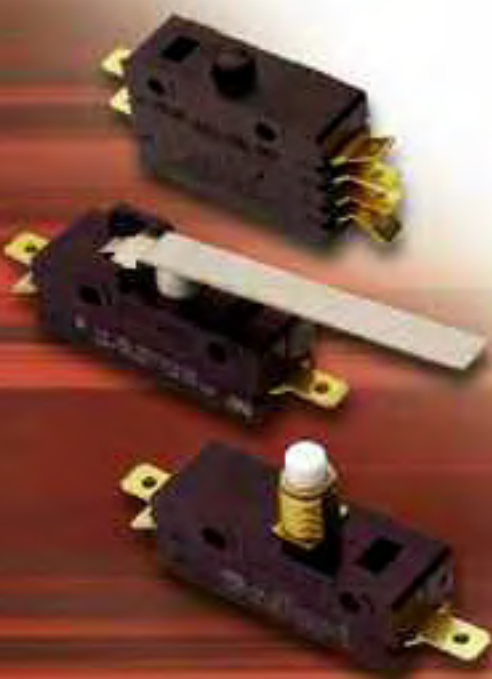
Auxiliary Actuators: Cold-Rolled Steel (Nickel-Plated)

Roller: Sintered Stainless Steel

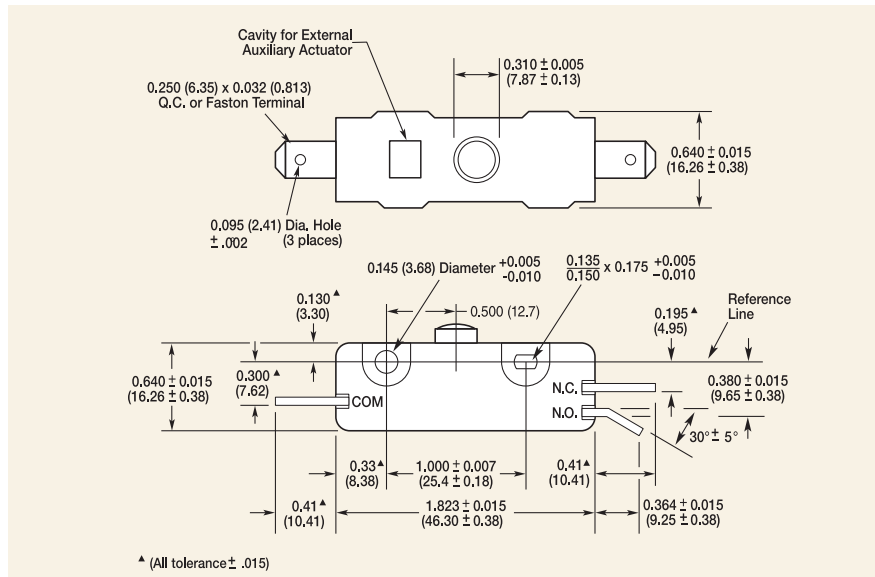
Contacts: Gold Crosspoint (G13, G20, E19A)  
Silver-Cadmium Oxide (E13, E14, E19, E19A, E20, E28, E29, E30)  
Silver Alloy (E19A, E29, E30)



US (T200: E13, G13, E14, E19 and E20)



## Dimensions — Single Pole inches (mm)



## Actuator Specifications — Single Pole

Series/ Prefix	Actuator Type	Switch Type	Maximum Operating Force (g)	Maximum Pre-Travel inches (mm)	Operating Point* inches (mm)	Minimum Over-Travel inches (mm)	Max. Movement Differential inches (mm)	Actuation Length** inches (mm)
E13/G13	-00E		425	0.050 (1.27)	0.285±0.020 <sup>♦</sup> (7.24±0.51)	0.100 (2.54)	0.015 (0.38)	—
E14/E29/E30	-00A		850	0.100 (2.54)	0.248±0.026 <sup>♦</sup> (6.30±0.66)	0.050 (1.27)	0.015 (0.38)	—
E13/G13	-00J		425	0.050 (1.27)	0.670±0.030 (17.02±0.76)	0.108 (2.74)	0.015 (0.38)	—
E14/E29/E30			850	0.100 (2.54)	0.633±0.030 (16.08±0.76)	0.050 (1.27)	0.015 (0.38)	—
E13/G13	-00M		425	0.050 (1.27)	0.812±0.030 (20.63±0.76)	0.218 (5.54)	0.015 (0.38)	—
E14/E29/E30			850	0.100 (2.54)	0.775±0.030 (19.69±0.76)	0.168 (4.27)	0.015 (0.38)	—
E13/G13	-00H		100	0.250 (6.35)	0.312±0.062 (7.93±1.57)	0.187 (4.75)	0.093 (2.36)	1.500 (38.10)
E14/E29/E30 <sup>†</sup>			285	0.312 (7.93)	0.468±0.062 (11.89±1.57)	0.105**** (2.67)	0.050 (1.27)	0.821 (20.85)
E13/G13	-50H		65	0.343 (8.71)	0.281±0.062 (7.14±1.57)	0.187 (4.75)	0.140 (3.56)	1.750 (44.45)
E14/E29/E30 <sup>†</sup>			170	0.525 (13.34)	0.437±0.062 (11.10±1.57)	0.218 (5.54)	0.080 (2.03)	1.071 (27.20)
E13/G13	-00K		100	0.250 (6.35)	0.718±0.062 (18.24±1.57)	0.187 (4.75)	0.093 (2.36)	1.391 (35.33)
E14/E29/E30 <sup>†</sup>			285	0.348 (8.84)	0.860±0.062 (21.84±1.57)	0.130 (3.30)	0.045 (1.14)	0.688 (17.47)
E13/G13	-50K		63	0.403 (10.24)	0.687±0.062 (17.45±1.57)	0.187 (4.75)	0.093 (2.36)	1.625 (41.28)
E14/E29/E30 <sup>†</sup>			211	0.483 (12.27)	0.828±0.062 (21.03±1.57)	0.218 (5.54)	0.073 (1.85)	0.902 (22.91)

\* Measured above reference line. Refer to dimensional drawing above. \*\* Actuator tolerance ±0.031 inches (0.79mm).  
<sup>†</sup>E14, E29 and E30 actuators are shorter and formed up 11° at the button.  
 \*\*\* E30 minimum over-travel is 0.150 (3.81). <sup>♦</sup> G13 and E30 have operating point tolerances of ± 0.30.

## Ordering Information

Select the current rating you need.  
 Combine the corresponding Series/Prefix number with the appropriate suffix number for the switch you need.

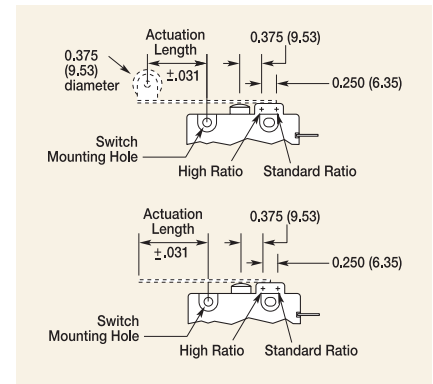
Specifications subject to change without notice.

## Mounting — Single Pole

Recommended mounting screw: #6-32 round head. Recommended torque on screw: 6 inch lbs. max. Recommended maximum torque for ferrule: 20 inch pounds

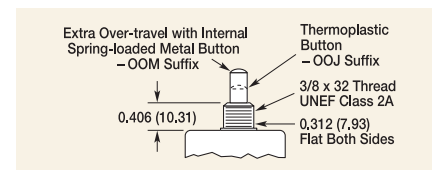
## Actuators — Single Pole

Standard type integral hinged lever and roller actuators are available in choice of two mounting positions. Actuation lengths are dimensioned from centerline of switch mounting hole as shown.



## “J” & “M” Type Optional Hardware — Single Pole

Brass Hex Nut	0012-0023
Brass Knurled Nut	0012-0025
Brass Hex Nut (Nickel-Plated)	0012-0028
Brass Knurled Nut (Nickel-Plated)	0012-0026
Star Washer (Lockwasher)	0012-0073



## Circuitry — Single Pole

Contact arrangement available in choice of single pole double throw or single pole single throw, either normally open or normally closed. In general, normally open may be specified by changing suffix number from 00 to 01 and normally closed by changing suffix number to 02.

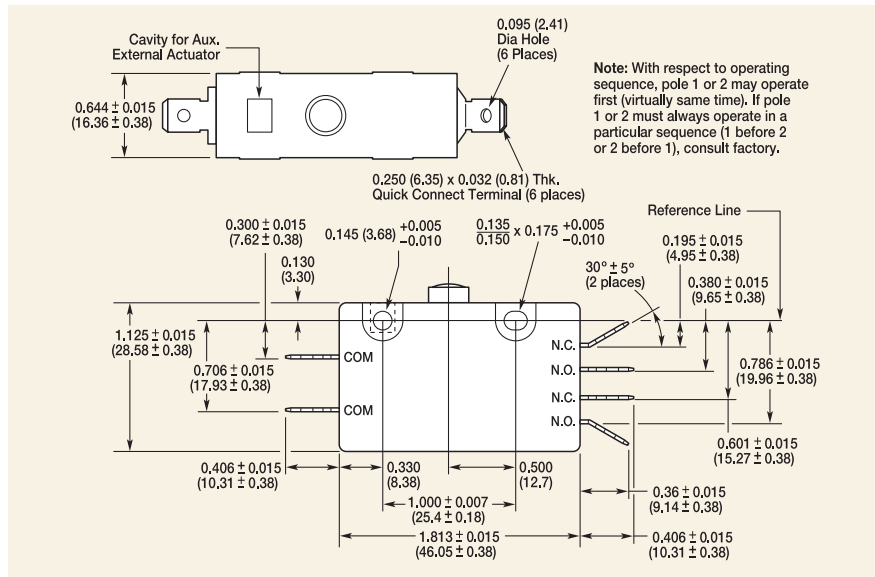
Example: E13-00E is double throw, E13-01E is normally open, and E13-02E is normally closed.

## Terminals — Single Pole

Standard 0.250" x 0.032" (6.35mm x 0.81mm) [Optional 0.187" x 0.032" (4.75mm x 0.81mm)] QC terminals can be furnished with angle formed up or down. Forms include straight 30°, 45°, 85° up or down. Other forms can be provided.



## Dimensions — Double Pole inches (mm)



## Actuator Specifications — Double Pole

Series/ Prefix	Actuator Type	Switch Type	Maximum Operating Force (g)	Maximum Pretravel inches (mm)	Operating Point* inches (mm)	Minimum Overtravel inches (mm)	Each Pole	
							Max. Movement Differential inches (mm)	Actuation Length inches (mm)
E19/G20	-00A		850	0.050 (1.27)	0.285±0.030 (7.24±0.76)	0.080 (2.03)	0.015 (0.38)	—
E20/E28			1280	0.100 (2.54)	0.248±0.030 (6.30±0.76)	0.050 (1.27)	0.015 (0.38)	—
E19/G20	-00J		850	0.050 (1.27)	0.670±0.030 (17.02±0.76)	0.080 (2.03)	0.015 (0.38)	—
E20/E28†			1280	0.100 (2.54)	0.630±0.030 (16.00±0.76)	0.050 (1.27)	0.015 (0.38)	—
E19/G20	-00M		850	0.050 (1.27)	0.812±0.030 (20.62±0.76)	0.218 (5.54)	0.015 (0.38)	—
E20/E28†			1280	0.100 (2.54)	0.774±0.030 (19.66±0.76)	0.188 (4.78)	0.015 (0.38)	—
E19/G20	-00H		205	0.275 (6.99)	0.312±0.062 (7.92±1.57)	0.187 (4.75)	0.093 (2.36)	1.500 (38.10)
E20/E28†			425	0.330 (8.38)	0.468±0.062 (11.89±1.57)	0.156 (3.96)	0.050 (1.27)	0.821 (20.85)
E19/G20	-50H		130	0.400 (10.16)	0.281±0.062 (7.14±1.57)	0.187 (4.75)	0.140 (3.56)	1.750 (44.45)
E20/E28†			285	0.600 (15.24)	0.437±0.062 (11.10±1.57)	0.156 (3.96)	0.080 (2.03)	1.071 (27.20)
E19/G20	-00K		212	0.250 (6.35)	0.718±0.062 (18.24±1.57)	0.187 (4.75)	0.093 (2.36)	1.391 (35.33)
E20/E28†			425	0.348 (8.84)	0.860±0.062 (21.84±1.57)	0.156 (3.96)	0.045 (1.14)	0.688 (17.48)
E19/G20	-50K		150	0.312 (7.92)	0.687±0.062 (17.45±1.57)	0.187 (4.75)	0.140 (3.56)	1.625 (41.28)
E20/E28†			312	0.525 (13.34)	0.828±0.062 (21.03±1.57)	0.146 (3.71)	0.075 (1.91)	0.902 (22.91)

\* Measured above reference line. Refer to dimensional drawing above. †E20 and E28 actuators are shorter and formed up 15° at the button. Contact factory for E25 specifications. \*\*Actuator tolerance ±0.031 inches (0.79mm).

## Ordering Information

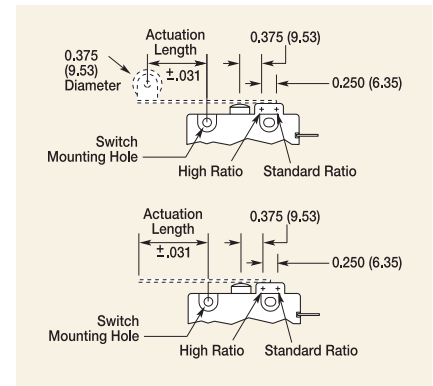
Select the current rating you need. Combine the corresponding Series/Prefix number with the appropriate suffix number for the switch you need. Note: Consult factory for part number when ordering E19A switches.

## Mounting — Double Pole

Recommended mounting screw: #6-32 round head. Recommended torque on screw: 6 inch lbs. max. Recommended maximum torque for ferrule: 20 inch pounds.

## Actuators — Double Pole

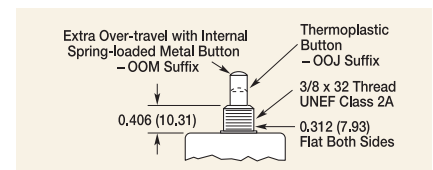
Standard type integral hinged lever and roller actuators are available in choice of two mounting positions. Actuation lengths are dimensioned from centerline of switch mounting hole as shown.



## “J” & “M” Type

### Optional Hardware — Double Pole

Brass Hex Nut	0012-0023
Brass Knurled Nut	0012-0025
Brass Hex Nut (Nickel-Plated)	0012-0028
Brass Knurled Nut (Nickel-Plated)	0012-0026
Star Washer (Lock Washer)	0012-0073



## Circuitry — Double Pole

Contact arrangement available in choice of single pole double throw or single pole single throw, either normally open or normally closed. In general, normally open may be specified by changing suffix number from 00 to 01 and normally closed by changing suffix number to 02.

Example: E19-00A is double throw, E19-01A is normally open, and E19-02A is normally closed.

## Terminals — Double Pole

Standard 0.250" x 0.032" (6.35mm x 0.81mm) [Optional 0.187" x 0.032" (4.75mm x 0.81mm)] QC terminals can be furnished with angle formed up or down on common as well as open or closed terminal. Forms include straight 30°, 45°, 85° up or down. Other forms can be provided.

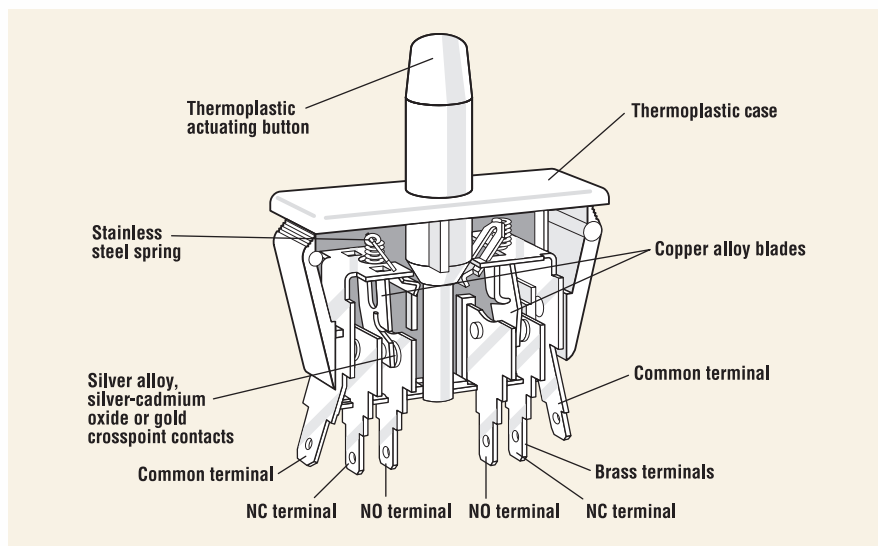


## PANEL MOUNT PUSHBUTTON — SINGLE & DOUBLE POLE

# E Series

### Features

- Choice of Momentary, Push-Pull (reset) and Cheat Interlock switches
- Snap-in panel mounting
- Long-life coil spring, snap-action mechanism
- Agency approved extended-life versions available
- VDE approval available on select models (F Series)
- Various terminal forms available (consult factory)



### Electrical Ratings

Switch Series	EN61058 Rating	UL1054 Rating	Electrical Life at Rated Load	
			According to VDE (Min. Operations)	According to UL (Min. Operations)
E65	N/A	16A, 125/250VAC; 1/3HP, 125/250VAC	N/A	6,000
E/F68	0.1(0.05)A, 125VAC	0.1A, 125VAC	50,000	6,000*
E/F69	10(4)A, 250VAC	10A, 125/250VAC; 1/3HP, 125/250VAC	50,000	6,000*
E/F77	0.1(0.05)A, 125VAC 10(4)A, 250VAC	0.1A, 125VAC; 10A, 1/3HP, 125/250VAC	50,000	6,000*
E/F78	0.1(0.05)A, 125VAC	0.1A, 125VAC	50,000	6,000*
E/F79	10(4)A, 250VAC	10A, 125/250VAC; 1/3HP, 125/250VAC	50,000	6,000*
E75	N/A	16A, 125/250VAC; 1/3HP, 125/250VAC 0.1A VAC, 0.1A VDC (optional)	N/A	6,000*

*mixed ratings available upon request*

\*Indicates 100K life available.

### Specifications

#### Electrical

Temperature Rating: -40° to +85°C

Flammability Rating: UL94V-O

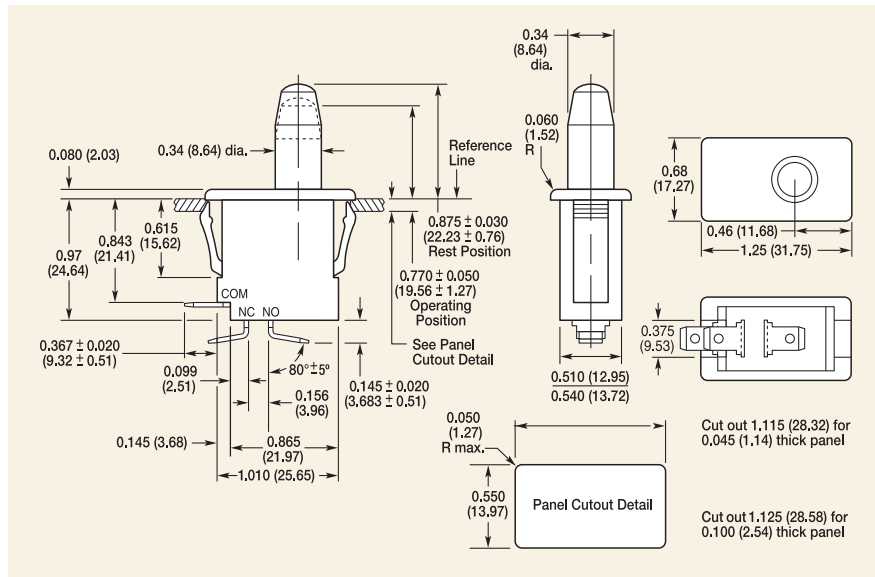
#### Materials

Case:	Thermoplastic Polyester (Single Pole Valox and Vandar Double Pole)
Actuating Button:	Thermoplastic Acetal (Valox used on International versions)
Terminals*:	Brass
Moving Blade:	Beryllium Copper
Spring:	Stainless Steel
Contacts:	Silver-Cadmium Oxide (E65, E/F69, E75, E/F77, E/F79) Gold Crosspoint (E/F68, E/F77)

\*Common terminals are plated — the remaining two terminals are not plated.



## Dimensions — Single Pole inches (mm)



## Actuator Specifications — Single Pole

Actuator Type	Switch Type	Rest Position inches (mm)	Maximum Pre-Travel inches (mm)	Operating Point* inches (mm)	Minimum Over-Travel inches (mm)	Max. Movement Differential inches (mm)	Maximum Operating Force** (g)	Maximum Full Overtravel Position inches (mm)
<i>Basic Momentary Action</i>								
-00A		0.845-0.905 (21.46-22.99)	0.125 (3.18)	0.720-0.820 (18.29-20.83)	0.375 (9.53)	0.045 (1.14)	425	0.400 (10.16)
<i>Push-Pull (Reset)</i>								
-20A		0.920-0.980 (22.37-24.89)	0.150 (3.81)	0.800-0.900 (20.32-22.86)	0.300 (7.62)	0.045 (1.14)	285	0.500 (12.70)
<i>Momentary</i>								
-30A <sup>†</sup>		0.730-0.790 (18.54-20.07)	0.125 (3.18)	0.610-0.710 (15.49-18.03)	0.100 (2.54)	0.045 (1.14)	425	0.520 (13.21)
<i>"Cheat Interlock" (Pull out to lock)</i>								
		0.730-0.790 (18.54-20.07)	0.125 (3.18)	0.800-0.900 (20.32-22.86)	0.050 (1.27)	0.060 (1.52)	585	0.980 (24.89)
<i>Short Button Momentary</i>								
-40A		0.420-0.480 (10.67-12.19)	0.125 (3.18)	0.300-0.400 (7.62-10.16)	0.175 (4.45)	0.045 (1.14)	425	0.125 (3.18)
<i>For Auxiliary Push Button</i>								
-50A		0.420-0.480 (10.67-12.19)	0.125 (3.18)	0.300-0.400 (7.62-10.16)	0.175 (4.45)	0.045 (1.14)	425	0.125 (3.18)

\*Measured above reference line. Refer to dimensional drawing above.

\*\*Operating Forces listed above are for E68/E69 switches only. E65 Operating Force: 708 grams max. for momentary switches.

<sup>†</sup>Dual function switch: Push in to operate in normal momentary mode and pull out for maintained action.

## Ordering Information

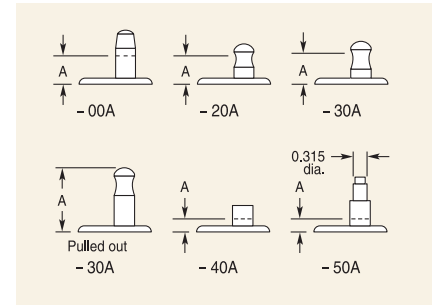
Select the current rating you need. Combine the corresponding Series/Prefix number with the appropriate suffix number for the switch type, circuitry and terminals you require. Example: SPDT: E68-30A, SPST NO: E68-31A, SPST NC: E68-32A.

## Auxiliary Buttons — Single Pole

-50A has button with special shaft to accept auxiliary push buttons for manual actuation.

## Button Detail — Single Pole

"A" dimension (full overtravel position)



## Circuitry — Single Pole

Double throw or single throw versions available.

Single Pole Series:

E65, E68/F68, E69/F69

## Terminals — Single Pole

This switch series has 0.187" x 0.020" (4.75mm x 0.51mm) as standard for up to 10 amps and 0.250" x 0.032" (6.35mm x 0.81mm) for 16 amps.

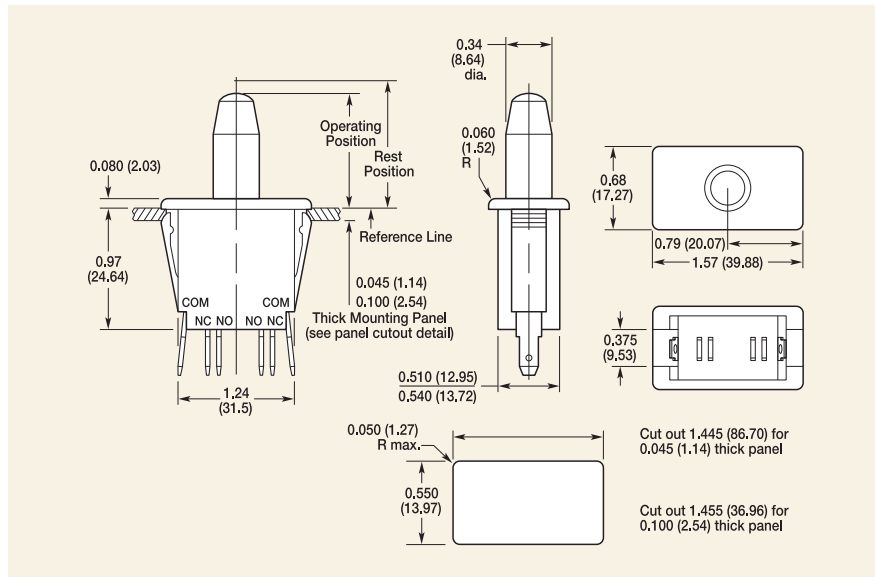
Consult factory for non-standard terminal options.

## International Versions — Single Pole

For VDE applications, standard terminals are 0.187" x 0.032" (4.75mm x 0.81mm).

Switch prefix must be "F" for VDE approved switches. Example: F68-30A was E68-30A.

## Dimensions — Double Pole inches (mm)



## Actuator Specifications — Double Pole

Actuator Type	Switch Type	Rest Position inches (mm)	Maximum Pre-Travel inches (mm)	Operating Point* inches (mm)	Minimum Overtravel inches (mm)	Max. Movement Differential inches (mm)	Maximum Operating Force** (g)	Max. Full Over-Travel Position inches (mm)
<i>Basic Momentary Action</i>								
-00A		0.845–0.905 (21.46–22.99)	0.125 (3.18)	0.720–0.820 (18.29–20.83)	0.375 (9.53)	0.075 (1.91)	680	0.400 (10.16)
<i>Push-Pull (Reset)</i>								
-20A		0.920–0.980 (23.37–24.89)	0.155 (3.81)	0.800–0.900 (20.32–22.86)	0.300 (7.62)	0.075 (1.91)	510	0.500 (12.70)
<i>Momentary</i>								
-30A <sup>†</sup>		0.730–0.790 (18.54–20.07)	0.125 (3.18)	0.610–0.710 (15.49–18.03)	0.100 (2.54)	0.075 (1.91)	757	0.520 (13.21)
<i>“Cheat Interlock” (Pull out to lock)</i>								
		0.730–0.790 (18.54–20.07)	0.155 (3.94)	0.800–0.900 (20.32–22.86)	0.030 (0.76)	0.090 (2.29)	800	0.980 (24.89)
<i>Short Button Momentary</i>								
-40A		0.420–0.480 (10.67–12.19)	0.125 (3.18)	0.300–0.400 (7.62–10.16)	0.175 (4.45)	0.075 (1.91)	680	0.125 (3.18)
<i>For Auxiliary Push Button</i>								
-50A		0.420–0.480 (10.67–12.19)	0.125 (3.18)	0.300–0.400 (7.62–10.16)	0.175 (4.45)	0.075 (1.91)	680	0.125 (3.18)

\*Measured above reference line. Refer to dimensional drawing above.

\*\*Operating Forces listed above are for E78/E79 switches only. E75 Operating Force: 921 grams max. for momentary switches.

<sup>†</sup>Dual function switch: Push in to operate in normal momentary mode and pull out for maintained action.

## Ordering Information

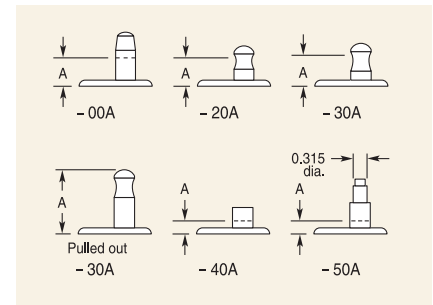
Select the current rating you need. Combine the corresponding Series/Prefix number with the appropriate suffix number for the switch type, circuitry and terminals you require. Example: DPDT: E78–30A, DPST NO: E78–31A, DPST NC: E78–32A.

## Auxiliary Buttons — Double Pole

–50A has button with special shaft to accept auxiliary push buttons for manual actuation.

## Button Detail — Double Pole

“A” dimension (full overtravel position)



## Circuitry — Double Pole

Double throw or single throw versions available.

Double Pole Series:

E77/F77, E78/F78, E79/F79, E75

## Terminals — Double Pole

This switch series has 0.187" x 0.020" (4.75mm x 0.51mm) as standard for up to 10 amps and 0.250" x 0.032" (6.35mm x 0.81mm) for 16 amps.

Consult factory for non-standard terminal options.

## International Versions — Double Pole

For VDE applications, standard terminals are 0.187" x 0.032" (4.75mm x 0.81mm).

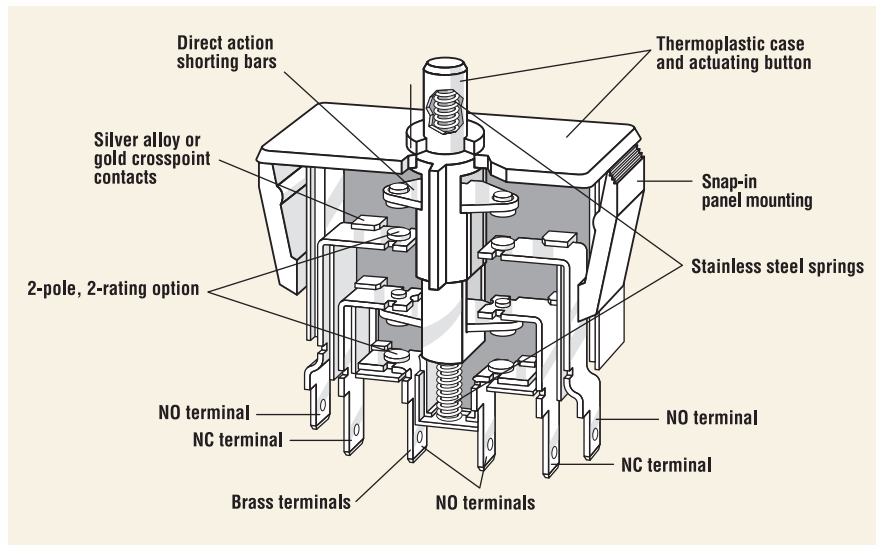
Switch prefix must be “F” for VDE approved switches. Example: F78–30A was E68–30A.

## LINE INTERRUPT

# F80 Series

### Features

- Snap-in panel mounting
- High overtravel
- Choice of button barrier or standard housing
- 3 terminal types
- Double make/double break shorting bars
- Agency approved extended-life versions available
- International approval available
- 3mm (0.12") minimum contact gaps
- Over 200 versions available



### Electrical Ratings

Switch Series	EN61058 Rating	UL1054 Rating	Electrical Life at Rated Load	
			According to VDE (Min. Operations)	According to UL (Min. Operations)
F81	10(3)A, 400VAC	10A, 125/250VAC, 3/4HP, 125VAC 1-1/2HP, 250VAC; 6A, 30VDC	50,000	6,000*
F82	16(6)A, 250VAC	16A, 125/250VAC, 3/4HP, 125VAC 1-1/2HP, 250VAC; 6A, 30VDC	50,000	6,000*
F83	0.1(0.5)A, 250VAC	0.1A, 125/250VAC	50,000	6,000*
F84	Mixed Ratings Consult Factory	Combines two different ratings in a single switch. Consult factory for special part number.	50,000	6,000*

\*Indicates 100K life available.

### Specifications

#### Electrical

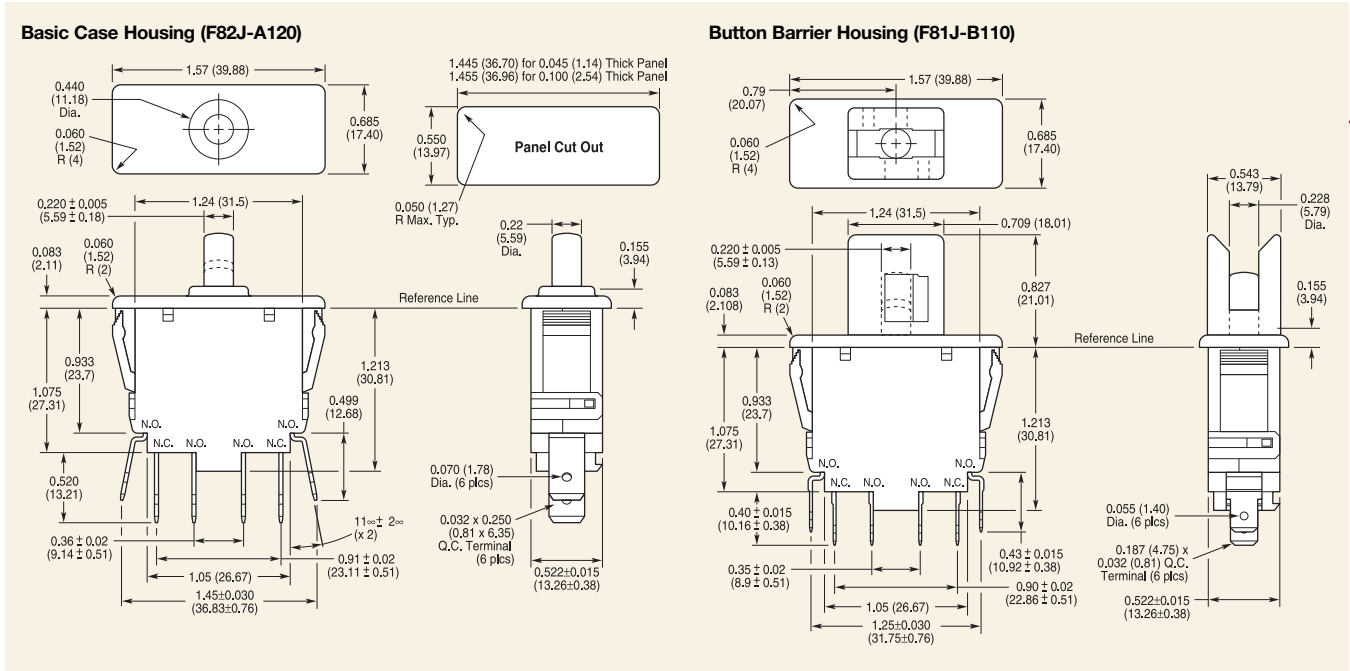
Temperature Rating:	-25° to +85°C
Flammability Rating:	UL94V-O

#### Materials

Case:	Thermoplastic Polyester
Actuating Button:	Thermoplastic Polyester
Terminals:	Brass
Moving Blade:	Brass
Springs:	Stainless Steel
Guide Pin:	Thermoplastic Nylon
Contacts:	Silver Alloy (F81, F82) Gold Crosspoint (F83) Silver Alloy/Gold Crosspoint (F84)



## Dimensions inches (mm)

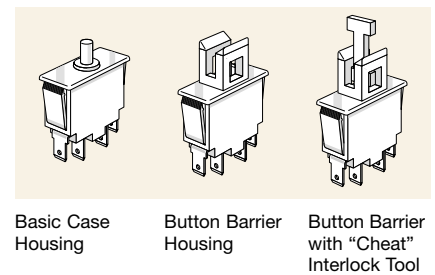


## Actuator Specifications

Switch Type	Maximum Operating Force (g)	Maximum Pre-Travel inches (mm)	Operating Point inches (mm)	Minimum Overtravel inches (mm)	Full Over-Travel Position inches (mm)	Max. Rest Position* inches (mm)
F81J-A120	866	0.236 (5.99)	0.354±0.039 (8.99±0.99)	0.079 (2.01)	0.314 (7.98)	0.551 (14.00)
F82J-A120	866	0.236 (5.99)	0.354±0.039 (8.99±0.99)	0.079 (2.01)	0.314 (7.98)	0.551 (14.00)
F81A-A120	866	0.236 (5.99)	0.354±0.039 (8.99±0.99)	0.079 (2.01)	0.314 (7.98)	0.551 (14.00)
F82A-A120	866	0.236 (5.99)	0.354±0.039 (8.99±0.99)	0.079 (2.01)	0.314 (7.98)	0.551 (14.00)
F81X-A120	866	0.236 (5.99)	0.354±0.039 (8.99±0.99)	0.079 (2.01)	0.314 (7.98)	0.551 (14.00)
F82X-A120	866	0.236 (5.99)	0.354±0.039 (8.99±0.99)	0.079 (2.01)	0.314 (7.98)	0.551 (14.00)
F82Y-A120**	250	0.030 (0.76)	0.465±0.039 (8.99±0.99)	0.250 (6.35)	0.314 (7.98)	0.490 (12.45)

\*Measured above reference line. \*\*Operating Force and Pretravel are measured when N.C. Pole Breaks.

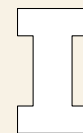
## Case Styles



Basic Case Housing

Button Barrier Housing

Button Barrier with "Cheat" Interlock Tool



### "Cheat" Interlock

Part Number:

White: 0014-4945

Red: 0014-5451

## Ordering Information



Code	Current Rating	
	UL/CSA	VDE
1	10A, 125/250VAC; 3/4HP, 125VAC; 1.5HP, 250VAC; 6A @ 30VDC	10(3)A 400VAC
2	16A, 125/250VAC; 3/4HP, 125VAC; 1.5HP, 250VAC; 6A @ 30VDC	16(6)A 250VAC
3	0.1A, 125/250VAC	0.1(0.5)A 250VAC
4*	Mixed Ratings	

\*Special order — contact factory.

**J**

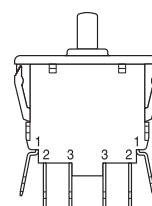
Code	Pole	Contact Configuration
A	1 & 3 2	SPST NO DM Vacant
J	1 2 3	SPST NO DM SPDT NC DB SPDT NO DM
X	1 & 2 3	Vacant SPST NO DM
Y	1 & 3 2	Vacant SPST NC DB
Z	1 2 3	Vacant SPDT NC BD SPDT NO DM
V	1 2 & 3	SPST NO DM Vacant

DB = Dead Break • DM = Dead Make

**A**

Code	Case
A	Basic
B	Actuator Barrier

### Pole Identification



**1**

Code	Type
1	Standard
W	Special

**10\*\***

Code	Terminal Type	inches (mm)
10	0.187 x 0.020 (4.75 x 0.51) QC	
20	0.250 x 0.032 (6.35 x 0.81) QC	
40	0.187 x 0.032 (4.75 x 0.81) QC	

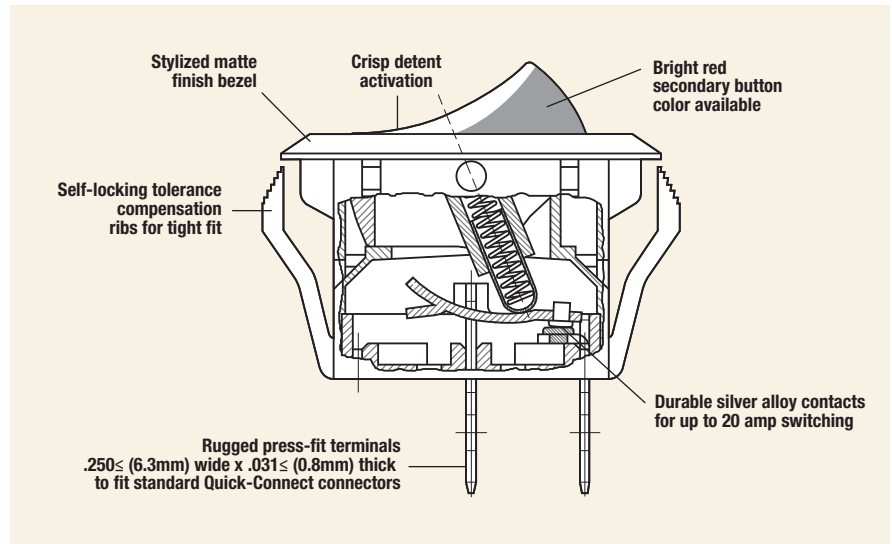
\*\*To order 100,000 cycle UL approved switch, last digit of part number must be 'L'. For example: F81J-A12L

# POWER ROCKER SWITCH

## CR Series

### Features

- Rugged design with current switching up to 20 amps
- 2-color molded button available for maximum visibility
- Lighted and non-lighted versions
- Splash-proof option available
- Available in a wide variety of colors
- Fits to 3 panel cut-out widths
- Mechanical life: min. 100,000 operations



### Electrical Ratings

Switch Series	EN61058 Rating	UL1054 Rating	Electrical Life at Rated Load	
			According to VDE (Min. Operations)	According to UL (Min. Operations)
CR	16(4)A, 250V~, T125	20A, 125VAC; 16A, 250VAC; 3/4HP, 250VAC	10,000	6,000

### Specifications

#### Electrical

Dielectric Strength:	1000VAC for 1 minute
Insulation Resistance:	10 <sup>9</sup> ohms min at 500VDC
Initial Contact Resistance:	0.020 ohms max
Temperature Range:	-20°C to +85°C

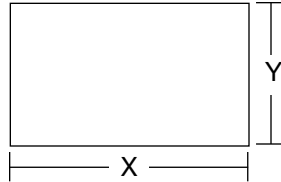
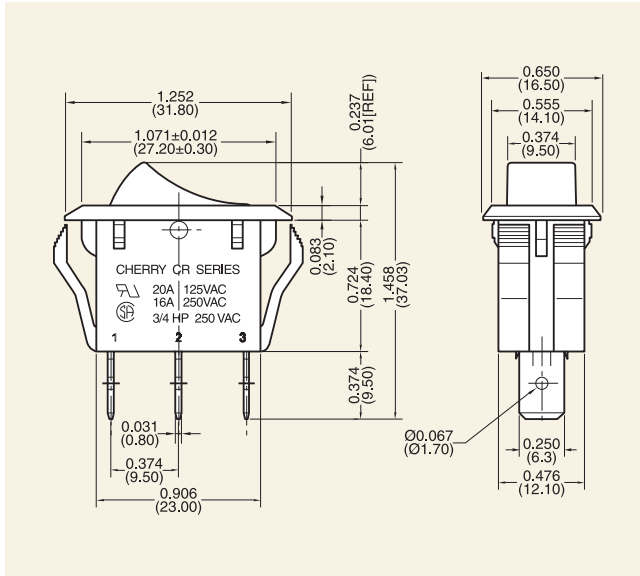
#### Materials

Actuator (non-lighted):	Nylon 66 94V-2
Actuator (lighted):	Polycarbonate
Housing:	Nylon 66 94V-2
Case:	Nylon 66 94V-2
Spring:	Steel Wire
Contacts:	Silver Alloy
Movable Arm:	Silver-Plated Copper Alloy
Terminals:	Tin-Plated Copper Alloy





### Dimensions inches (mm)



Z = Panel Thickness

### Recommended Panel Cut-Out Dimensions

inches (mm)

Dim. Z	SUFFIX E		SUFFIX F		SUFFIX G or W	
	Dim. X	Dim. Y	Dim. X	Dim. Y	Dim. X	Dim. Y
0.030 to 0.049 (0.75 to 1.25)	1.120 (28.49)	0.476 (12.10)	1.120 (28.49)	0.528 (13.41)	1.120 (28.49)	0.543 (13.80)
0.049 to 0.079 (1.25 to 2.00)	1.130 (28.70)	0.476 (12.10)	1.130 (28.70)	0.528 (13.41)	1.130 (28.70)	0.543 (13.80)
0.079 to 0.118 (2.00 to 3.00)	1.150 (29.21)	0.476 (12.10)	1.150 (29.21)	0.528 (13.41)	1.150 (29.21)	0.543 (13.80)

### Examples of Common Part Numbers and Descriptions inches (mm)

Part Number	Circuitry	Switch Function	Terminal Type	Actuator/ Housing Color	Legend Marking
CRE22F2FBBNE		On - Off	0.250 (6.3) Quick-Connect	Black/Black	
CRE22F4BBBNE		On - Off	0.250 (6.3) Quick-Connect	Red-Black/Black	
CRE24F2HBBNE		On - Off - On	0.250 (6.3) Quick-Connect	Black/Black	
CRE22F2BBRLE		On - Off/Lighted	0.250 (6.3) Quick-Connect	Red/Black	
CRE22F4BBBNW		On - Off	0.250 (6.3) Quick-Connect	Red-Black/Black Splash-Proof	

### Ordering Information

<b>CR</b> Series	<b>E</b> Code E 20A, 125VAC; 16A, 250VAC (UL & CSA) 3/4HP, 250VAC (UL) 16(4)A, 250VAC~, T125 (VDE)	<b>2</b> Code 2 Single-Pole	<b>2</b> Code 2 On - Off 3 On - On 4 On - Off - On	<b>F 2</b> Code 2 Curve - One Color 4 Curve - Two Color Red Mold 6 Curve - Two Color Green Mold	<b>F B</b> Code E Charcoal Grey Y Grey B Black R Red W White C Brown	<b>B N</b> Code N Non-Lighted L Lighted (Bulb 125VAC) E Lighted (Bulb 250VAC) R Lighted 5VDC Incandescent G Lighted 6VDC Incandescent H Lighted 12VDC Incandescent	<b>E</b> Code Y Grey B Black G Green R Red A Amber W White S Semi-transparent Nylon Red C Brown E Charcoal Grey	<b>E</b> Code E 0.476 (12.10) Non-Washable F 0.528 (13.41) Non-Washable G 0.543 (13.79) Non-Washable W 0.543 (13.79) Washable Conforms to IP42
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Note: Washable version not available lighted.

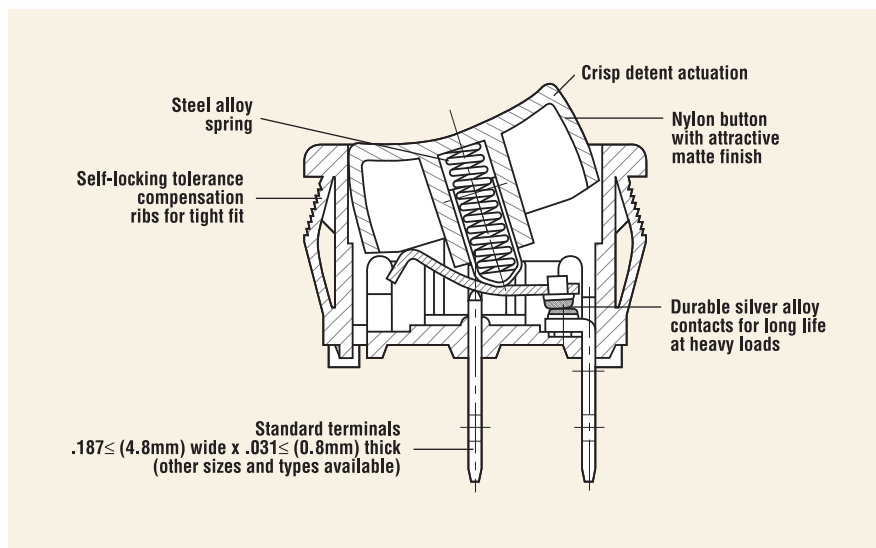


# MINIATURE ROCKER SWITCH

## SR Series

### Features

- 10 or 20 amp switching in a miniature package
- Single-throw and double-throw options
- Choice of actuator and housing color
- Variety of terminals available
- Industry-standard mounting dimensions
- Mechanical life: min. 100,000 operations



### Electrical Ratings

Switch Series	EN61058 Rating	UL1054 Rating	Electrical Life at Rated Load	
			According to VDE (Min. Operations)	According to UL (Min. Operations)
SR	10(4)A, 250V~, $\infty$ T85	20A, 125VAC; 10A, 125VAC; 6A, 250VAC	10,000	6,000

### Specifications

#### Electrical

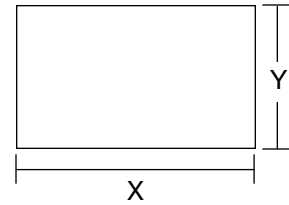
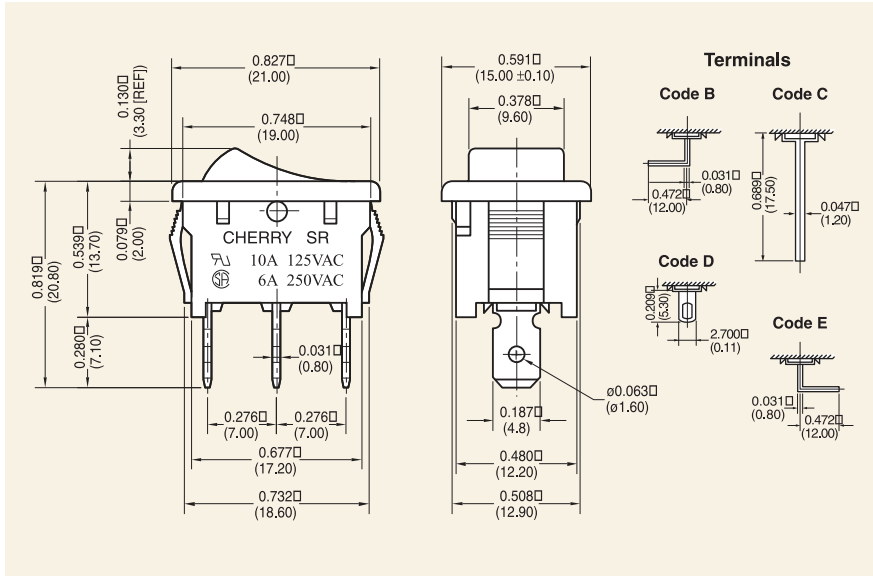
Dielectric Strength:	1000VAC for 1 minute
Insulation Resistance:	$10^8$ ohms min at 500VDC
Initial Contact Resistance:	0.020 ohms max
Temperature Range:	-20°C to +65°C

#### Materials

Actuator:	Nylon 66 94V-2
Case:	Nylon 66 94V-2
Spring:	Steel Wire
Contacts:	Silver or Copper Alloy
Movable Arm:	Silver-Plated Copper Alloy
Terminals:	Tin-Plated Copper Alloy



### Dimensions inches (mm)



Z = Panel Thickness

### Recommended Panel Cut-Out Dimensions

inches (mm)

Dim. Z	Dim. X	Dim. Y
0.030 to 0.049 (0.75 to 1.25)	0.752 (19.10)	0.508 (12.90)
0.049 to 0.079 (1.25 to 2.00)	0.760 (19.30)	0.508 (12.90)
0.079 to 0.118 (2.00 to 3.00)	0.775 (19.76)	0.508 (12.90)

### Examples of Common Part Numbers and Descriptions inches (mm)

Part Number	Circuitry	Switch Function	Terminal Type	Actuator/Housing Color	Legend Marking
SRB22A2FBBNN		On - Off	0.187 (4.8) Quick-Connect	Black/Black	
SRB22A2BBBNN		On - Off	0.187 (4.8) Quick-Connect	Black/Black	
SRB22A2DBBNN		On - Off	0.187 (4.8) Quick-Connect	Black/Black	
SRB23A2BBBNN		On - On	0.187 (4.8) Quick-Connect	Black/Black	
SRB24A2HBBNN		On - Off - On	0.187 (4.8) Quick-Connect	Black/Black	

Boot #0015-0644

### Ordering Information

<b>SR</b> Series	<b>B</b> Code 2 Circuitry Single-Pole	<b>2</b> Code 2 Switch Function On - Off	<b>4</b> Code 3 Switch Function On - On	<b>4*</b> Code 4* Switch Function On - Off - On	<b>5*</b> Code 5* Switch Function (On) - Off	<b>A</b> Code 2 Actuator Type Curve	<b>H</b> Code B Actuator Marking Blank	<b>B</b> Code C Actuator Marking LO HI	<b>D</b> Code D Actuator Marking OFF ON	<b>E*</b> Code E* Actuator Marking O I	<b>F</b> Code F Actuator Marking O -	<b>G</b> Code G Actuator Marking O •	<b>H*</b> Code H* Actuator Marking I O II	<b>H</b> Code B Housing Color Black	<b>W</b> Code W Housing Color White	<b>Y</b> Code Y Housing Color Grey	<b>C*</b> Code C* Housing Color Brown	<b>E*</b> Code E* Housing Color Charcoal Grey	<b>B</b> Code N Lighted Non-Lighted	<b>N</b> Code N Splashproof No Rocker Boot	<b>S</b> Code S Splashproof Waterproof Boot
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Code	Contact Rating
B	10A, 125VAC 6A, 250VAC (UL, CSA) 10(4)A, 250V~, μT85 (VDE)
J	20A, 125VAC (UL, cUL)

Code	Terminal Type inches (mm)
A	0.187 (4.8) QC
B	PC Thru-Hole Left Angle
C	PC Thru-Hole Straight
D	0.185 x 0.106 (4.7 x 2.7) Solder Tag
E	PC Thru-Hole Right Angle

Code	Actuator Color
B	Black
R	Red
W	White
Y	Grey
C	Brown
E*	Charcoal Grey
G	Green
D	Orange
U	Blue
M	Yellow

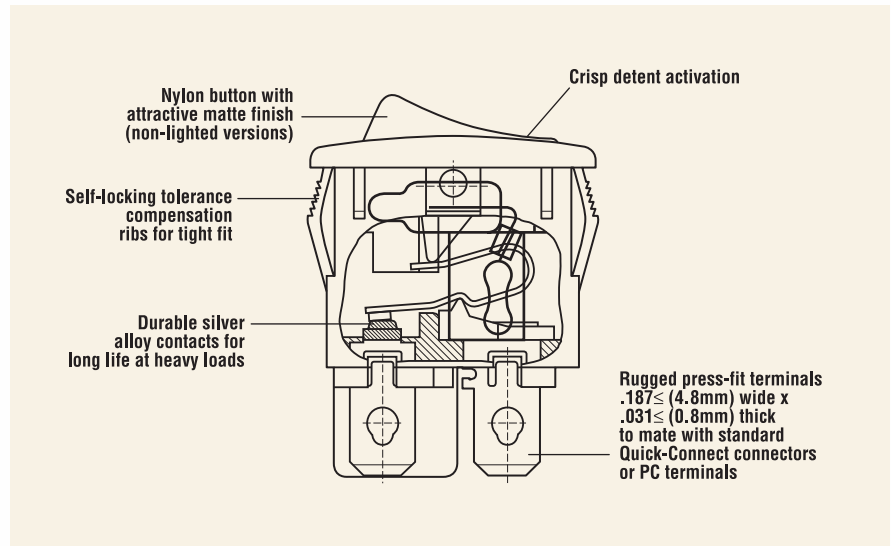
No Agency Approvals for these options

# MINIATURE ROCKER SWITCH

## LR Series

### Features

- Single-pole and double-pole configurations
- Lighted and non-lighted options
- Available in a wide variety of colors
- High current switching in a compact package
- Variety of terminal styles available
- Self-locking tabs to fit industry-standard panel cut-outs
- Mechanical life: min. 100,000 operations



### Electrical Ratings

Switch Series	EN61058 Rating	UL1054 Rating	Electrical Life at Rated Load	
			According to VDE (Min. Operations)	According to UL (Min. Operations)
LR	10(4)A, 250V~, T125/55	10A, 125VAC; 8A, 250VAC; 1/4HP, 125/250VAC	10,000	6,000

### Specifications

#### Electrical

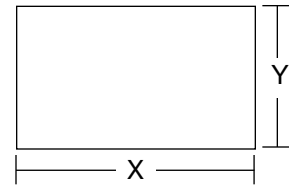
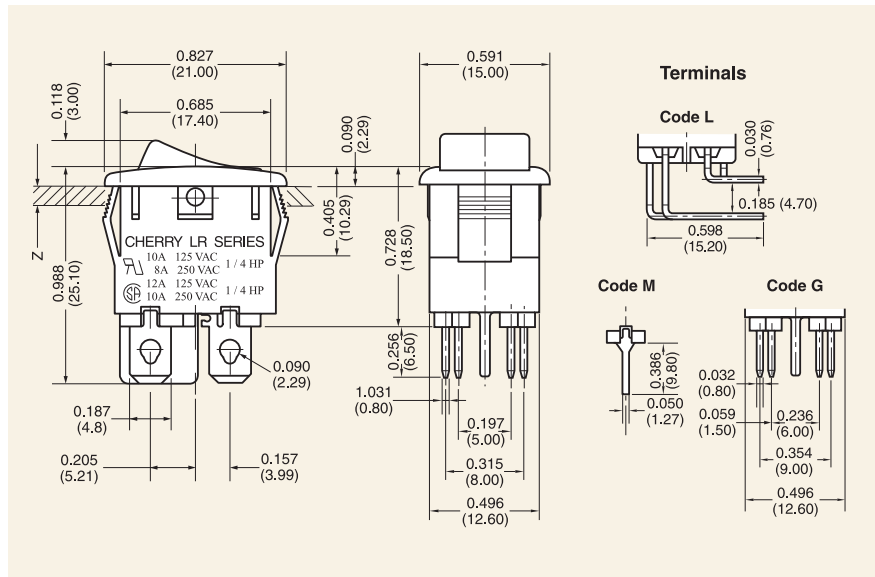
Dielectric Strength:	1000VAC for 1 minute
Insulation Resistance:	10 <sup>8</sup> ohms min at 500VDC
Initial Contact Resistance:	0.020 ohms max
Temperature Range:	-20°C to +65°C

#### Materials

Actuator (non-lighted):	Nylon 66 94V-2
Actuator (lighted):	Polycarbonate
Case:	Nylon 66 94V-2
Contacts:	Silver Alloy
Movable Arm:	Copper Alloy
Terminals:	Tin-Plated Copper Alloy



### Dimensions inches (mm)



Z = Panel Thickness

### Recommended Panel Cut-Out Dimensions

Dim. Z	Dim. X	Dim. Y
0.030 to 0.049 (0.75 to 1.25)	0.752 (19.10)	0.508 (12.90)
0.049 to 0.079 (1.25 to 2.00)	0.760 (19.30)	0.508 (12.90)
0.079 to 0.118 (2.00 to 3.00)	0.775 (19.69)	0.508 (12.90)

### Examples of Common Part Numbers and Descriptions inches (mm)

Part Number	Circuitry	Switch Function	Terminal Type	Actuator/ Housing Color	Legend Marking
LRA22H2FBBNN		On - Off	0.187 (4.8) Quick-Connect	Black/Black	
LRA32H2FBBNN		On - Off	0.187 (4.8) Quick-Connect	Black/Black	
LRA22H2BBBNN		On - Off	0.187 (4.8) Quick-Connect	Black/Black	
LRA32H2BBBNN		On - Off	0.187 (4.8) Quick-Connect	Black/Black	
LRA22H2BBRLN		On - Off/Lighted	0.187 (4.8) Quick-Connect	Red/Black	
LRA32H2BBRLN		On - Off/Lighted	0.187 (4.8) Quick-Connect	Red/Black	

Boot #0015-0644

### Ordering Information

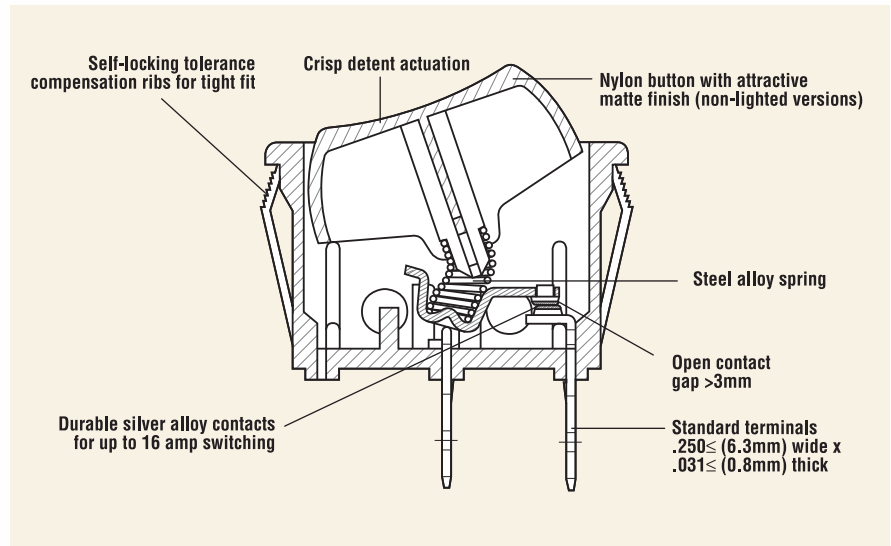
<b>LR</b> Series	<b>A</b> Code 2 Single-Pole 3 Double-Pole	<b>2</b> Code 2 On - Off	<b>H</b> Code 2 Curve	<b>F B</b> Code E Charcoal Grey B Black W White Y Grey C Brown	<b>B N</b> Code N Non-Lighted L Lighted (Bulb 125VAC) E Lighted (Bulb 250VAC) F Lighted 5VDC Incandescent G Lighted 6VDC Incandescent H Lighted 12VDC Incandescent
<b>Code</b> A 10A, 125VAC; 8A, 250VAC; 1/4HP, 125/250VAC (UL) 12A, 125VAC; 10A, 250VAC; 1/4HP, 125/250VAC (CSA) 10(4)A 250 V-, T125/55 (VDE)	<b>Code</b> H 0.187 (4.8) QC L PC Thru-Hole Right Angle M PC Thru-Hole Straight G Flat Bezel; 0.240 (6.10) QC Terminal Spacing	<b>Code</b> B Blank D OFF E O I F O - G •	<b>Code</b> E Charcoal Grey B Black G Green A Amber R Red W White Y Grey S Semi-transparent Nylon Red C Brown	<b>Code</b> N No Rocker Boot S Rocker Boot	

# THIN POWER ROCKER SWITCH

## TR Series

### Features

- 16A switching in 11mm wide package
- Lighted and non-lighted versions
- Available in a wide variety of colors
- Double-throw and three-position versions available
- Fits industry-standard cut-outs
- Mechanical life: min. 50,000 operations



### Electrical Ratings

Switch Series	EN61058 Rating	UL1054 Rating	Electrical Life at Rated Load	
			According to VDE (Min. Operations)	According to UL (Min. Operations)
TR	16(4)A, 250V~, T85 1E4	16A, 125/250VAC, 1/4HP@125V; 3/4HP@250V	10,000	6,000

### Specifications

#### Electrical

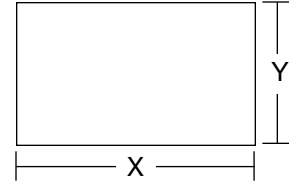
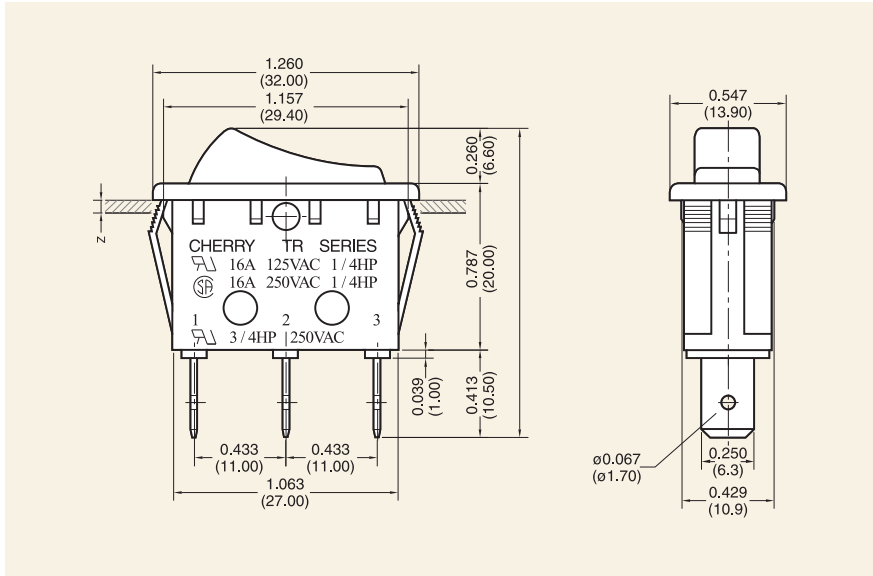
Dielectric Strength:	1000VAC for 1 minute
Insulation Resistance:	10 <sup>8</sup> ohms min at 500VDC
Initial Contact Resistance:	0.020 ohms max
Temperature Range:	-20°C to +65°C

#### Materials

Actuator (non-lighted):	Nylon 66 94V-2
Actuator (lighted):	Polycarbonate
Case:	Nylon 66 94V-2
Spring:	Steel Wire
Contacts:	Silver Alloy
Movable Arm:	Silver-Plated Copper Alloy
Fixed Contact Terminals:	Tin-Plated Copper Alloy



### Dimensions inches (mm)



Z = Panel Thickness

### Recommended Panel Cut-Out Dimensions

Dim. Z	Dim. X	Dim. Y
0.030 to 0.049 (0.75 to 1.25)	1.19 (30.23)	0.433 (11.00)
0.049 to 0.079 (1.25 to 2.00)	1.20 (30.48)	0.433 (11.00)
0.079 to 0.118 (2.00 to 3.00)	1.21 (30.73)	0.433 (11.00)

### Examples of Common Part Numbers and Descriptions inches (mm)

Part Number	Circuitry	Switch Function	Terminal Type	Actuator/ Housing Color	Legend Marking
TRG22F2FBBNN		On - Off	0.250 (6.3) Quick-Connect	Black/Black	
TRG23F2BBBNN		On - On	0.250 (6.3) Quick-Connect	Black/Black	
TRG22F2BBRLN		On - Off/Lighted	0.250 (6.3) Quick-Connect	Red/Black	

Boot #0015-0662

### Ordering Information

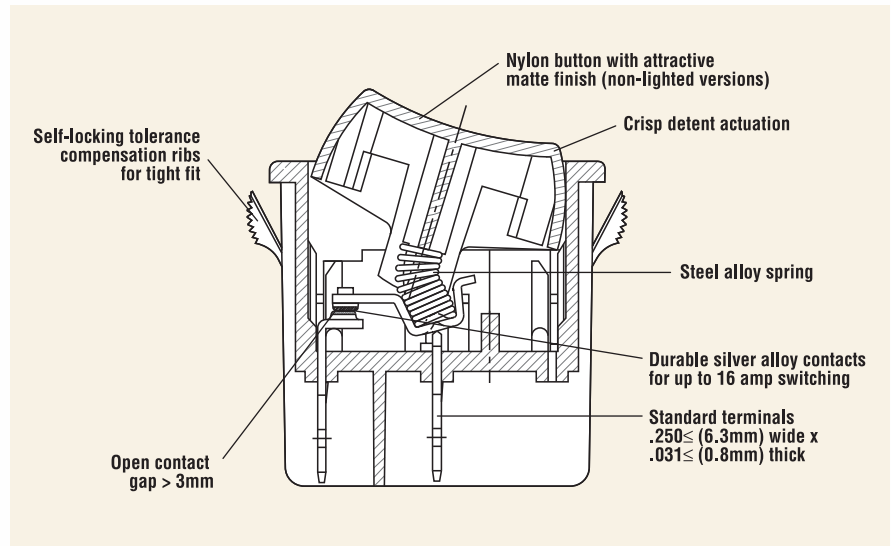
<b>TR</b>	<b>G</b>	<b>2</b>	<b>2</b>	<b>F</b>	<b>2</b>	<b>F</b>	<b>B</b>	<b>B</b>	<b>N</b>	<b>N</b>
<b>Series</b>	<b>Code</b> <b>Circuitry</b>	<b>Code</b> <b>Switch Function</b>	<b>Code</b> <b>Actuator Type</b>	<b>Code</b> <b>Actuator Marking</b>	<b>Code</b> <b>Housing Color</b>	<b>Code</b> <b>Actuator Color</b>	<b>Code</b> <b>Lighted</b>	<b>Code</b> <b>Splashproof</b>		
	2 Single-Pole	2 On - Off 3 On - On 4 On - Off - On 5 (On) - Off 6 (On) - On	2 Curve 5 Flat	B Blank C LO HI D OFF ON E O I F O - H I O II	E Charcoal Grey Y Grey B Black W White C Brown	Y Grey B Black G Green A Amber R Red W White C Brown E Charcoal Grey	N Non-Lighted L Lighted (Bulb 125VAC) E Lighted (Bulb 250VAC) F Lighted 5VDC Incandescent G Lighted 6VDC Incandescent H Lighted 12VDC Incandescent	N No Rocker Boot S Rocker Boot		
<b>Code</b> <b>Contact Rating</b>										
G 16A, 125/250VAC; 1/4HP@125V 3/4HP@250V (UL) 16A, 125/250VAC; 1/4HP@125/250VAC (CSA) 16(4)A, 250V~ (VDE)										
		<b>Code</b> <b>Terminal Type</b> inches (mm)								
		F 0.250 (6.3) QC								

## DOUBLE-POLE POWER ROCKER SWITCH

# WR Series

### Features

- Rugged construction for 2-pole, high-current applications
- Lighted and non-lighted
- Maintained-action and momentary
- Single-throw and double-throw
- Available in a variety of colors
- Mechanical life: min. 50,000 operations



### Electrical Ratings

Switch Series	EN61058 Rating	UL1054 Rating	Electrical Life at Rated Load	
			According to VDE (Min. Operations)	According to UL (Min. Operations)
WR	16(4)A, 250V~, T125 1E4	16A, 125/250VAC; 1/4HP@125V; 3/4HP@250V	10,000	6,000

### Specifications

#### Electrical

Dielectric Strength:	1000VAC for 1 minute
Insulation Resistance:	10 <sup>8</sup> ohms min at 500VDC
Initial Contact Resistance:	0.020 ohms max
Temperature Rating:	-20°C to +65°C

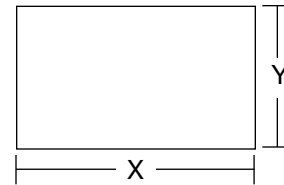
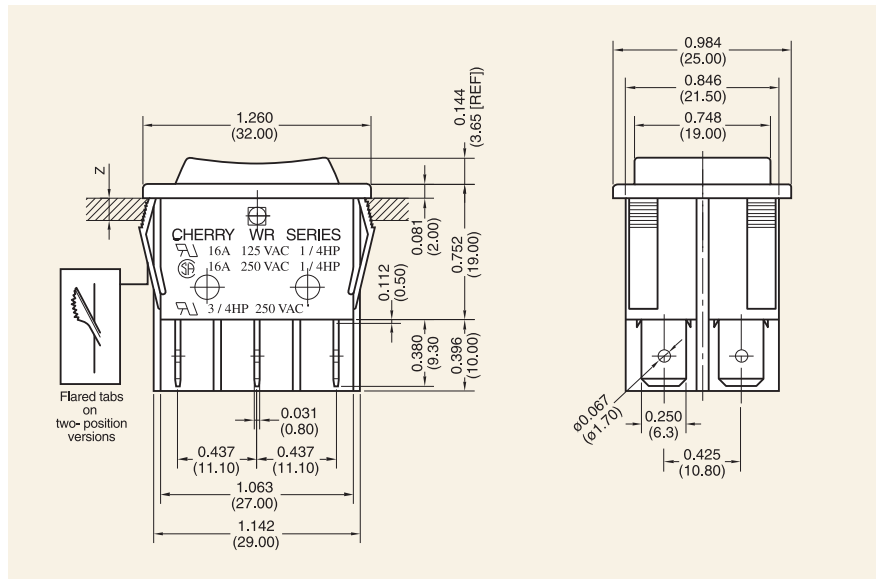
#### Materials

Actuator (non-lighted):	Nylon 66 94V-2
Actuator (lighted):	Polycarbonate
Case:	Nylon 66 94V-2
Spring:	Steel Wire
Contacts:	Silver Alloy
Movable Arm:	Silver-Plated Copper Alloy
Terminals:	Tin-Plated Copper Alloy





### Dimensions inches (mm)



Z = Panel Thickness

### Recommended Panel Cut-Out Dimensions

inches (mm)

Dim. Z	Dim. X	Dim. Y
0.030 to 0.049 (0.75 to 1.25)	1.180 (30.00)	0.867 (22.02)
0.049 to 0.079 (1.25 to 2.00)	1.190 (30.25)	0.867 (22.02)
0.079 to 0.118 (2.00 to 3.00)	1.200 (30.48)	0.867 (22.02)

### Examples of Common Part Numbers and Descriptions inches (mm)

Part Number	Circuitry	Switch Function	Terminal Type	Actuator/Housing Color	Legend Marking
WRG32F2FBBNN		On - Off	0.250 (6.3) Quick-Connect	Black/Black	
WRG34F2HBBNN		On - Off - On	0.250 (6.3) Quick-Connect	Black/Black	
WRG32F2BBRLN		On - Off/Lighted	0.250 (6.3) Quick-Connect	Red/Black	

Boot #0015-0646

### Ordering Information

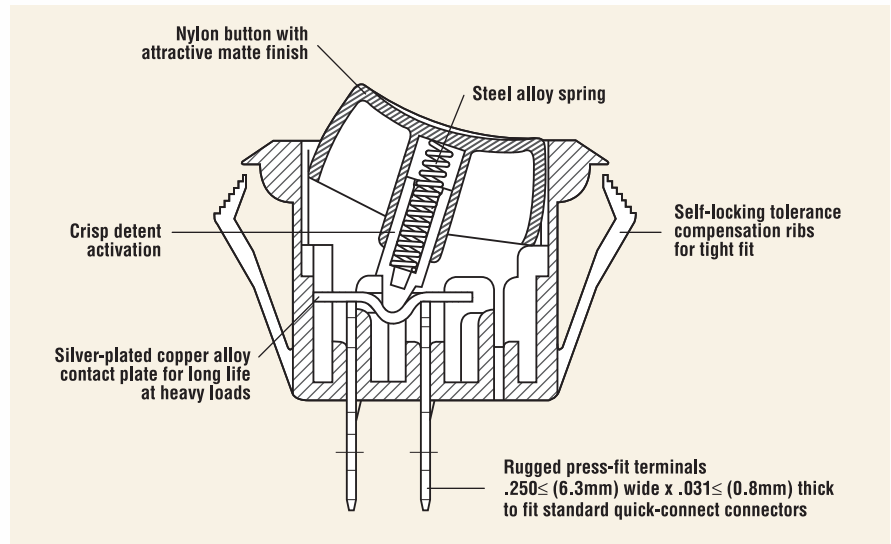
WR	G	3	2	F 2	F B	B N	N
<b>Series</b>	<b>Code</b> <b>Contact Rating</b>	<b>Code</b> <b>Circuitry</b>	<b>Code</b> <b>Switch Function</b>	<b>Code</b> <b>Actuator Type</b>	<b>Code</b> <b>Housing Color</b>	<b>Code</b> <b>Lighted</b>	<b>Code</b> <b>Splashproof</b>
G	16A, 125/250VAC: 1/4HP@125V: 3/4HP@250V (UL) 16A, 125/250VAC: 1/4HP@125/250VAC (CSA) 16(4)A, 250V-, T125 1E4 (VDE)	2 Single-Pole 3 Double-Pole	2 On - Off 3 On - On 4 On - Off - On 5 (On) - Off 6 (On) - On 7 (On) - Off - (On) 8 (On) - Off - On	2 Curve 5 Flat Actuator 7 Curve - Dual Actuator	E Charcoal Grey Y Grey B Black W White C Brown	N Non-Lighted L Lighted (Bulb 125VAC) E Lighted (Bulb 250VAC) F Lighted 5VDC Incandescent G Lighted 6VDC Incandescent H Lighted 12VDC Incandescent	N No Rocker Boot S Rocker Boot
	<b>Code</b> <b>Terminal Type</b> inches (mm)			<b>Code</b> <b>Actuator Marking</b>	<b>Code</b> <b>Actuator Color</b>		
	A 0.187 (4.8) QC F 0.250 (6.3) QC S 0.250 (6.3) M3 Tapped Screw T 0.250 (6.3) Solder Tag			B Blank C LO II D OFF ON E O I F O - G - • H I O II	Y Grey B Black G Green A Amber R Red W White C Brown E Charcoal Grey		

## COMPACT ROCKER SWITCH

# GR Series

### Features

- Economical 15 amp switching
- Lighted and non-lighted versions
- Available in a wide variety of colors
- Single- and double-throw options
- Optional wire leads available
- Mechanical life: min. 50,000 operations



### Electrical Ratings

Switch Series	EN61058 Rating	UL1054 Rating	Electrical Life at Rated Load	
			According to VDE (Min. Operations)	According to UL (Min. Operations)
GR	N/A	15A, 125VAC; 10A, 250VAC	N/A	6,000

### Specifications

#### Electrical

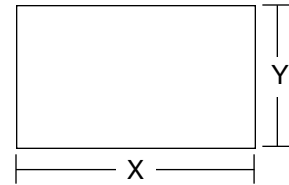
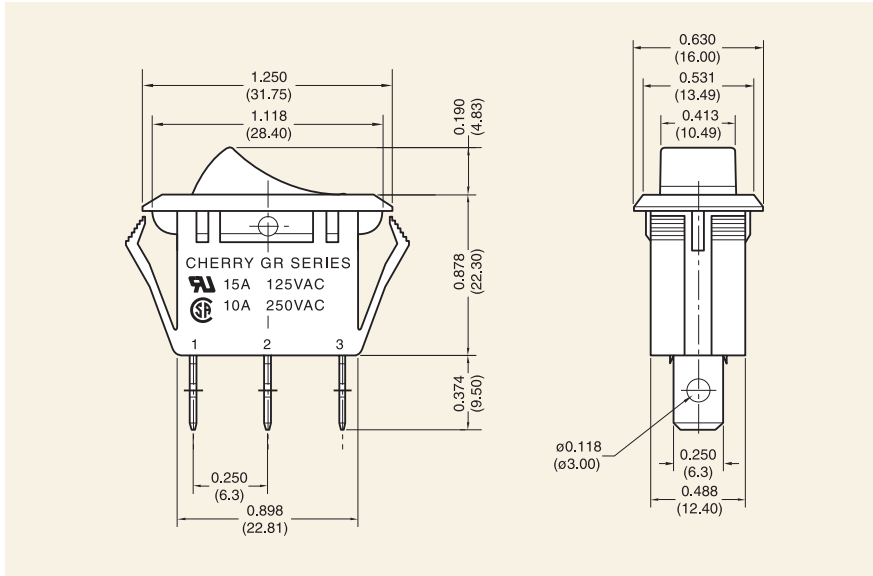
Dielectric Strength:	1000VAC for 1 minute
Insulation Resistance:	10 <sup>9</sup> ohms min at 500VDC
Initial Contact Resistance:	.020 ohms max
Temperature Range:	-20°C to +85°C

#### Materials

Actuator (non-lighted):	Nylon 66 94V-2
Actuator (lighted):	Polycarbonate
Housing:	Nylon 66 94V-2
Base:	Nylon 66 94V-2
Spring:	Steel Wire
Contact Plate:	Copper Alloy
Terminals:	Tin-Plated Copper Alloy



### Dimensions inches (mm)



Z = Panel Thickness

### Recommended Panel Cut-Out Dimensions

inches (mm)

Dim. Z	Dim. X	Dim. Y
0.030 to 0.049 (0.76 to 1.25)	1.120 (28.45)	0.535 (13.59)
0.049 to 0.079 (1.25 to 2.01)	1.130 (28.70)	0.535 (13.59)
0.079 to 0.118 (2.01 to 3.00)	1.150 (29.21)	0.535 (13.59)

### Examples of Common Part Numbers and Descriptions inches (mm)

Part Number	Circuitry	Switch Function	Terminal Type	Actuator/ Housing Color	Legend Marking
GRF22N2BBBNN		On - Off	0.250 (6.3) Quick-Connect	Black/ Black	
GRF22N2FBBNN		On - Off	0.250 (6.3) Quick-Connect	Black/ Black	
GRF23N2BBBNN		On - On	0.250 (6.3) Quick-Connect	Black/ Black	
GRF22N2BBRLN		On - Off/Lighted	0.250 (6.3) Quick-Connect	Red/ Black	

### Ordering Information

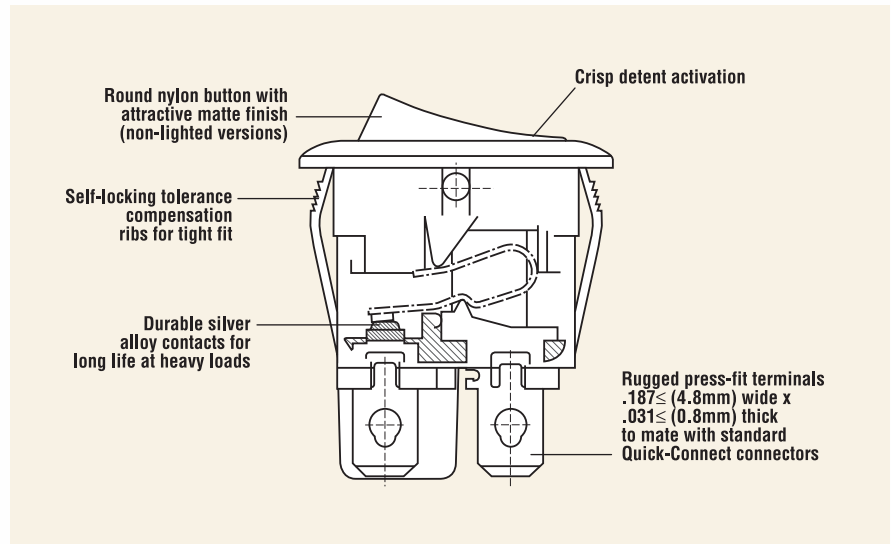
<b>GR</b>	<b>F</b>	<b>2</b>	<b>2</b>	<b>N</b>	<b>2</b>	<b>F</b>	<b>B</b>	<b>B</b>	<b>N</b>	<b>N</b>
<b>Series</b>		<b>Code</b> <b>Circuitry</b>	<b>Code</b> <b>Switch Function</b>	<b>Code</b> <b>Actuator Type</b>	<b>Code</b> <b>Actuator Marking</b>	<b>Code</b> <b>Housing Color</b>	<b>Code</b> <b>Housing Color</b>	<b>Code</b> <b>Lighted</b>	<b>Code</b> <b>Lighted</b>	<b>Code</b> <b>Body Type</b>
		2 Single-Pole	2 On - Off 3 On - On	2 Curve	B Blank C D E O I F O - K OFF ON	B Black W White Y Grey C Brown	B Black W White Y Grey C Brown	N Non-Lighted L Lighted (Bulb 125VAC) E Lighted (Bulb 250VAC) G Lighted 6VDC Incandescent H Lighted 12VDC Incandescent	N No Splashproof Rocker Boot	
<b>Code</b> <b>Contact Rating</b>							<b>Code</b> <b>Actuator Color</b>			
F 15A, 125VAC (UL, CSA) 10A, 250VAC (UL, CSA)							B Black G Green A Amber R Red Y Grey C Brown M Yellow W White			
		<b>Code</b> <b>Terminal Type</b> inches (mm)								
		N 0.250 (6.3) QC, Straight W Wire Lead 16 AWG, UL 1015, 6" Long, White								

# ROUND ROCKER SWITCH

## RR Series

### Features

- Single-pole and double-pole configurations
- Lighted and non-lighted options
- Available in a wide variety of colors
- High current switching in a compact round package
- Self-locking tabs to fit industry-standard panel cut-outs
- Mechanical life: min. 100,000 operations



### Electrical Ratings

Switch Series	EN61058 Rating	UL1054 Rating	Electrical Life at Rated Load	
			According to VDE (Min. Operations)	According to UL (Min. Operations)
RR	10(4)A, 250V~, $\mu$ T125/55	10A, 125VAC; 8A, 250VAC, 1/4 HP; 125/250VAC	10,000	6,000

### Specifications

#### Electrical

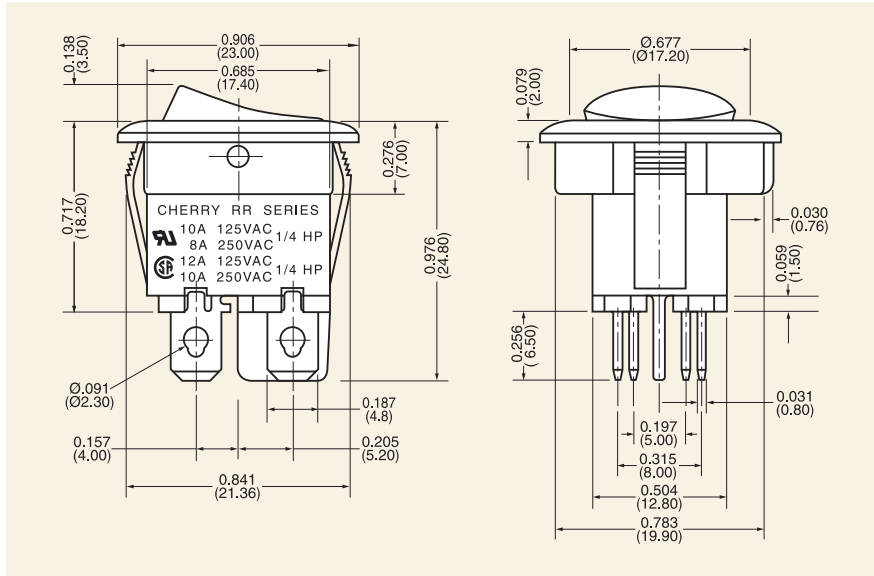
Dielectric Strength:	1000VAC for 1 minute
Insulation Resistance:	10 <sup>8</sup> ohms min at 500VDC
Initial Contact Resistance:	.020 ohms max
Temperature Range:	-20°C to +85°C

#### Materials

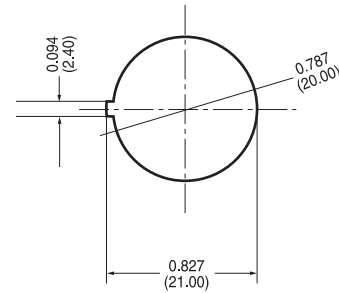
Actuator (non-lighted):	Nylon 66 94V-2
Actuator (lighted):	Polycarbonate
Base:	Nylon 66 94V-2
Contacts:	Silver Alloy
Movable Arm:	Copper Alloy
Terminals:	Tin-Plated Copper Alloy



### Dimensions inches (mm)



### Panel Cut-Out Dimensions for Panel Thickness inches (mm) 0.039 to 0.078 (1.0 to 2.0)



### Examples of Common Part Numbers and Descriptions inches (mm)

Part Number	Circuitry	Switch Function	Terminal Type	Actuator/Housing Color	Legend Marking
RRA22H3BBBNN		On - Off	0.187 (4.8) Quick-Connect	Black/ Black	
RRA32H3FBBNN		On - Off	0.187 (4.8) Quick-Connect	Black/ Black	
RRA22H3BWWNN		On - Off	0.187 (4.8) Quick-Connect	White/ White	
RRA22H3FBRNN		On - Off	0.187 (4.8) Quick-Connect	Red/ Black	
RRA22H3BBRLN		On - Off/Lighted	0.187 (4.8) Quick-Connect	Red/ Black	
RRA32H3BBRLN		On - Off/Lighted	0.187 (4.8) Quick-Connect	Red/ Black	

### Ordering Information

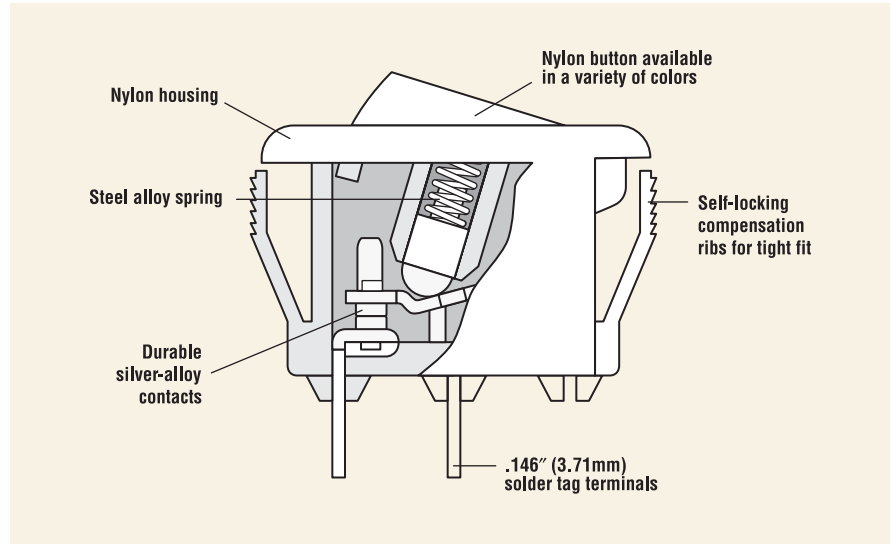
<b>RR</b> Series	<b>A</b>	<b>2</b> Code Circuitry 2 Single-Pole 3 Double-Pole	<b>2</b> Code Switch Function 2 On - Off	<b>H 3</b> Code Actuator Type 3 Round	<b>F B</b> Code Housing Color B Black W White Y Grey C Brown E Charcoal Grey	<b>B N</b> Code Lighted N Non-Lighted L Lighted (Bulb 125VAC) E Lighted (Bulb 250VAC) G Lighted 6VDC Incandescent H Lighted 12VDC Incandescent	<b>N</b>
<b>Code Contact Rating</b> A 10A, 125VAC; 8A, 250VAC; 1/4HP, 125/250VAC (UL) 12A, 125VAC; 10A, 250VAC; 1/4HP, 125/250VAC (CSA) 10(4)A, 250V~, µT125/55 (VDE)			<b>Code Terminal Type inches (mm)</b> H 0.187 (4.8) QC L PC Thru-Hole Right Angle M PC Thru-Hole Straight	<b>Code Actuator Marking</b> B Blank D OFF NO E O I F O - G •	<b>Code Actuator Color</b> B Black G Green A Amber R Red W White Y Grey C Brown E Charcoal Grey	<b>Code Body Type</b> N No Splashproof Rocker Boot S Rocker Boot	

## PANEL-MOUNT POWER ROCKER SWITCH

# PR Series

### Features

- Smallest agency-approved panel-mount power rocker switch
- Available in a variety of colors
- Low-profile design
- Mechanical life: min. 50,000 operations



### Electrical Ratings

Switch Series	EN61058 Rating	UL1054 Rating	Electrical Life at Rated Load	
			According to VDE (Min. Operations)	According to UL (Min. Operations)
PR	3A, 250VAC, T100/55	6A, 125VAC, 3A 250VAC	10,000	6,000

### Specifications

#### Electrical

Dielectric Strength:	1000VAC for 1 minute
Insulation Resistance:	10 <sup>9</sup> ohms min at 500VDC
Initial Contact Resistance:	20μ ohms max
Temperature Range:	0°C to +100°C (VDE), -20°C to +65°C (UL)

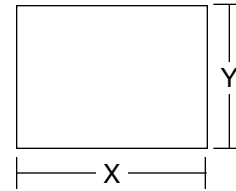
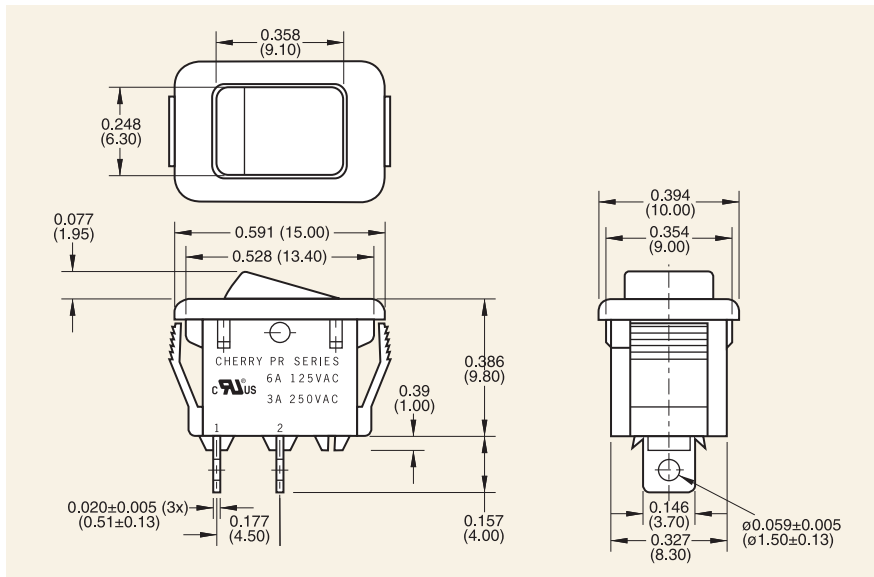
#### Materials

Actuator:	Nylon 66, UL rated 94V-2
Base:	Nylon 66, UL rated 94V-2
Spring:	Piano Wire
Contacts:	Steel Alloy
Terminals:	Silver-Plated Copper Alloy





### Dimensions inches (mm)



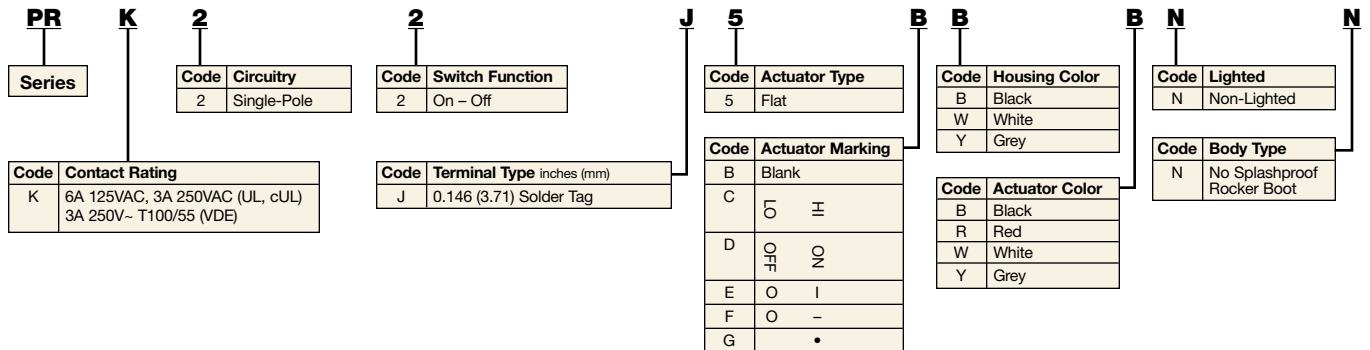
Z = Panel Thickness

### Recommended Panel Cut-Out Dimensions

inches (mm)

Dim. Z	Dim. X	Dim. Y
0.030 to 0.049 (0.75 to 1.25)	0.535 (13.6)	0.362 ± 0.04 (9.2 ± 0.10)
0.049 to 0.079 (1.25 to 2.00)	0.539 (13.7)	0.362 ± 0.04 (9.2 ± 0.10)
0.079 to 0.098 (2.00 to 2.50)	0.543 (13.8)	0.362 ± 0.04 (9.2 ± 0.10)

### Ordering Information



### Examples of Common Part Numbers and Descriptions inches (mm)

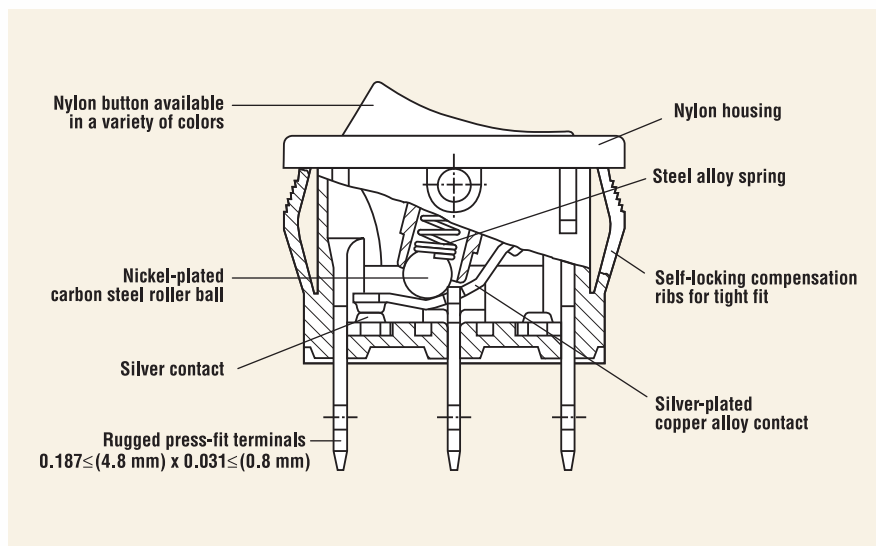
Part Number	Circuitry	Switch Function	Terminal Type	Actuator/Housing Color	Legend Marking
PRK22J5BBBNN		On - Off	0.146 (3.71) Solder Tag	Black/Black	
PRK22J5DBBNN		On - Off	0.146 (3.71) Solder Tag	Black/Black	

## DOUBLE-POLE ROCKER SWITCH

# FR Series

### Features

- 12 amp switching in a compact design
- Single-throw and double-throw options
- Choice of actuator and housing color
- Mechanical life: min. 50,000 operations



### Electrical Ratings

Switch Series	EN61058 Rating	UL1054 Rating	Electrical Life at Rated Load	
			According to VDE (Min. Operations)	According to UL (Min. Operations)
FR	16(4)A, 250V~, T125/55	12A, 125/250VAC	10,000	6,000

### Specifications

#### Electrical

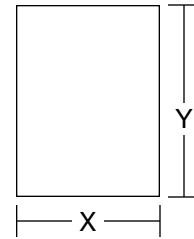
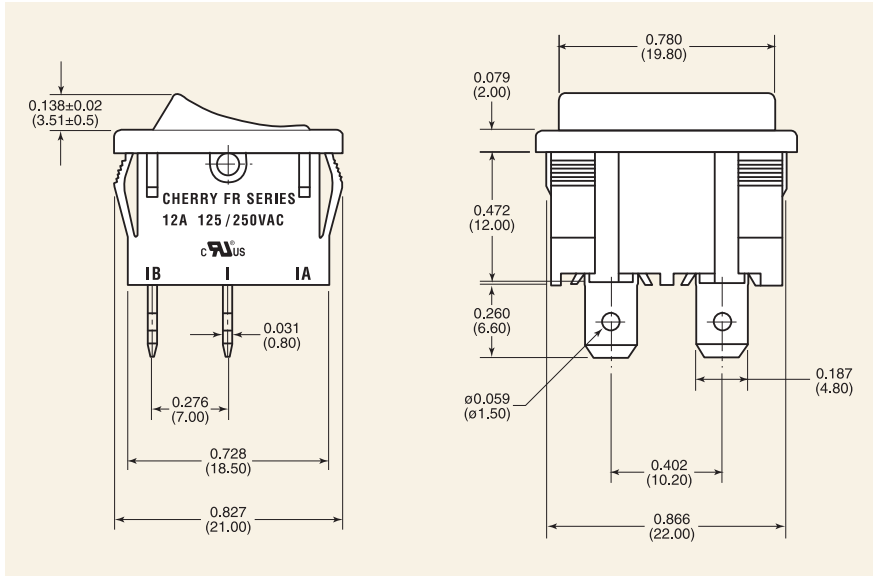
Ratings:	12A, 125/250VAC (UL, cUL) 16A, (4) 250V~, T125/55 (VDE)
Dielectric Strength:	1000VAC for 1 minute
Insulation Resistance:	10 <sup>8</sup> ohms min at 500VDC
Initial Contact Resistance:	0.030 ohms max
Temperature Range:	-20°C to +125°C (VDE) -20°C to +55°C (UL)

#### Materials

Actuator:	Nylon 66 94V-2
Base:	Nylon 66 94V-2
Spring:	Steel Wire
Contacts:	Silver Alloy
Movable Arm:	Silver-Plated Copper Alloy
Terminals:	Tin-Plated Copper Alloy



### Dimensions inches (mm)



Z = Panel Thickness

### Recommended Panel Cut-Out Dimensions

inches (mm) ±0.002 (0.005)

Dim. Z	Dim. X	Dim. Y
0.030 to 0.049 (0.76 to 1.25)	0.752 (19.15)	0.862 (21.90)
0.049 to 0.079 (1.24 to 2.00)	0.760 (19.35)	0.862 (21.90)
0.079 to 0.118 (2.01 to 3.00)	0.775 (19.75)	0.862 (21.90)

### Ordering Information

<b>FR</b>	<b>H</b>	<b>2</b>	<b>2</b>	<b>A</b>	<b>2</b>	<b>F</b>	<b>B</b>	<b>B</b>	<b>N</b>	<b>N</b>
<b>Series</b>		<b>Code</b> <b>Circuitry</b>	<b>Code</b> <b>Switch Function</b>	<b>Code</b> <b>Terminal Type</b> inches (mm)	<b>Code</b> <b>Actuator Type</b>	<b>Code</b> <b>Actuator Marking</b>	<b>Code</b> <b>Housing Color</b>	<b>Code</b> <b>Actuator Color</b>	<b>Code</b> <b>Lighted</b>	<b>Code</b> <b>Body Type</b>
		2 Single-Pole	2 On - Off	A 0.187 (4.80) Quick-Connect	2 Curve - One Color	B Blank	B Black	B Black	N Non-Lighted	N No Splashproof Rocker Boot
		3 Double-Pole	3 On - On	U 0.118 (3.0) Solder Tag		C	W White	D Orange		
<b>Code</b> <b>Contact Rating</b>						D	Y Grey	G Green		
H 12A 125/250VAC (UL, cUL) 16(4)A 250V~ T125 (VDE)						E		R Red		
						F		W White		
						G		Y Grey		

### Examples of Common Part Numbers and Descriptions inches (mm)

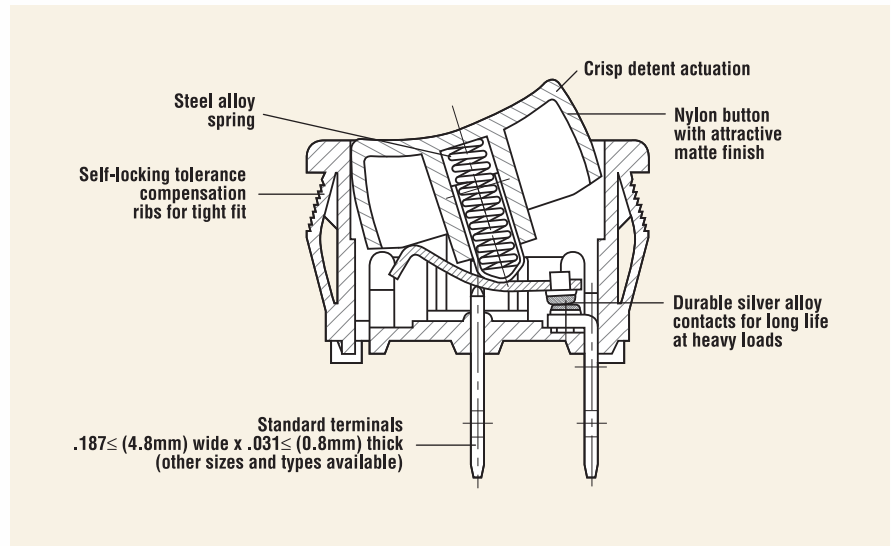
Part Number	Circuitry	Switch Function	Terminal Type	Actuator/Housing Color	Legend Marking
FRH32A2DBBNN		On - Off	0.187 (4.80) Quick-Connect	Black/Black	
FRH33A2BBBNN		On - On	0.187 (4.80) Quick-Connect	Black/Black	
FRH32A2BBBNN		On - Off	0.187 (4.80) Quick-Connect	Black/Black	
FRH32A2FWWNN		On - Off	0.187 (4.80) Quick-Connect	White/White	
FRH32A2BBWNN		On - Off	0.187 (4.80) Quick-Connect	White/Black	
FRH32A2FBBNN		On - Off	0.187 (4.80) Quick-Connect	Black/Black	

## MINIATURE ROUND ROCKER SWITCH

# SR Series

### Features

- 20 amp switching in a compact design
- Available in a variety of colors
- Self-locking tabs and anti-rotation pin for snug fit
- Mechanical life: min. 50,000 operations



### Electrical Ratings

Switch Series	EN61058 Rating	UL1054 Rating	Electrical Life at Rated Load	
			According to VDE (Min. Operations)	According to UL (Min. Operations)
SR	N/A	20A, 125VAC; 12A, 250VAC	N/A	6,000

### Specifications

#### Electrical

Dielectric Strength:	1000VAC for 1 minute
Insulation Resistance:	10 <sup>9</sup> ohms min at 500VDC
Initial Contact Resistance:	0.020 ohms max
Temperature Range:	-20°C to +65°C

#### Materials

Actuator (non-lighted):	Nylon 66 94V-2
Base:	Nylon 66 94V-2
Contacts:	Silver Alloy
Movable Arm:	Silver-Plated Copper Alloy
Terminals:	Tin-Plated Copper Alloy





## SELECTOR SWITCHES

# Pushwheel

### PUSHWHEEL SELECTOR SWITCH

## PA Series

#### Features

- Very small dimensions: 0.3 x 0.6 x 0.7" (7.62 x 15 x 18mm); Mounting depth: 0.9" (24mm) or 1.4" (34.5mm)
- 10 or 16 switching positions
- Front Mounting
- Integrated pins for module mounting
- Integrated snap-in endcaps
- Black housing
- Extended PCB available for mounting additional components
- Connection using QC terminal or solder pins



### PUSHWHEEL SELECTOR SWITCH

## PE Series

#### Features

- Dimensions: 0.3 x 0.9 x 1.0" (7.62 x 24 x 26mm); Mounting depth: 1.3" (32mm) or 1.7" (42mm)
- Standard selector switch with 10 or 16 switching positions
- Front mounting
- Integrated pins for module mounting
- Integrated snap-in endcaps
- Black housing
- Extended PCB available for mounting additional components
- Connection using QC terminal or solder pins



### PUSHWHEEL SELECTOR SWITCH

## PB Series

#### Features

- Dimensions: 0.2 x 0.7 x 0.6" (6 x 18 x 15.6mm); Mounting depth: 0.8" (19.5mm)
- 10 switching positions
- Housing only 0.2" (6mm) wide
- Front mounting
- Integrated pins for module mounting
- Integrated snap-in endcaps
- Black housing
- Connection using solder pins



## DESKTOP AND NOTEBOOK PROFILE

# Keyswitches

### LOW NOTEBOOK PROFILE

## ML Series

#### Features

- 0.272" (6.9mm) from PCB (no keycap)
- 3mm travel
- Long life: 20 million operations minimum
- 12V maximum AC/DC
- Current rating: 100µA min., 10µA max.
- Insulation Resistance: <100M



### DESKTOP PROFILE

## MX Series

#### Features

- 0.060" (15.2mm) from PCB (no keycap)
- Choice of feel: Linear, soft tactile or click tactile
- PCB or frame mount
- Long life: 50 million operations (linear) and 20 million operations minimum (tactile)
- 4mm travel
- LED, diode or jumper option
- 12V maximum AC/DC
- Current rating: 10mA
- Insulation Resistance: <100M @100VDC





ADDITIONAL

# Switch Products

LIGHTED PUSHBUTTON

## L4 Series

**Features**

- Standard or recessed buttons
- Lighted or non-lighted
- Icons and legends
- Variety of lens cap colors
- Chrome or brass plating on bezel at nominal charge
- Other styles available. Contact factory.



SUB-SUBMINIATURE

## CS Series

**Features**

- 5mm stroke and 4mm over-travel give designers large mechanical margin
- Sliding contact technology ensures high reliability
- Snap-in panel mounting or PC board mounting
- Easy connection by a connector (snap-in panel mounting type)



LINE INTERRUPT

## DD Series

**Features**

- Small size
- Low operation force
- Meets UL 1950
- Dielectric strength: 2000VAC
- Various terminal and actuator types
- Double return springs
- 3mm minimum contact gap
- Double make contact bar



TWO-CIRCUIT LINE INTERRUPT

## FA Series

**Features**

- Compact size
- Low operating force
- Long stroke
- Snap in panel mounting
- Three-circuit model available



TERMINATOR

## DN Series

**Features**

- Plug-in termination saves time and money
- Mates with standard 0.025" (0.64mm) square pin connectors on 0.100" (2.54mm) centers (Example: Molex 50-57-9402)
- Three methods of mounting: Traditional screw mount, Vertical snap-in mount and Horizontal snap-in mount
- Long life coil spring mechanism
- Two current ratings
- SPST NO



THREE-CIRCUIT LINE INTERRUPT

## F85 Series

**Features**

- Meets UL 1950
- 8mm contact gap (4mm/side)
- Snap in panel mounting
- Agency approved extended life versions available



## TECHNICAL SECTION

# Glossary

### Actuation Force

Force measured exactly when switch changes state; when the actuator is moved from rest to operating position.

### Auxiliary Actuator

An external switch component that will increase travel and/or reduce the actuating force.

### Actuation Length

The external actuator's dimension from the round (versus elongated) mounting hole to the actuation line.

### Break-Before-Make

This term is used in connection with contacts where the moving contact, in transferring from one position to another, interrupts one circuit before establishing the next.

### Contact

In devices used for making and breaking electrical currents, the component that disengages to cause the actual circuit rupture.

### Contact Configuration

A desired arrangement of contacts/circuits. See switch abbreviations, forms and poles.

### Contact Gap

The distance between a pair of open contacts.

### Contact Pressure

Contact pressure is the amount of force holding the movable and stationary contacts together. While this should be termed **Contact Force**, by convention in the United States, it is called Contact Pressure.

### Contact Resistance

The junction resistance between two contacts, but usually measured at contact terminals. It includes the terminal resistance. Measuring volts and amps should be similar to intended application.

### Contact Wipe

Sliding of one contact over another during actuation of switch.

### Crosspoint

Gold contact prisms are welded at right angles to each other providing maximum contact pressure and minimum hazard of contact closure interference. Used exclusively for low energy switching.

### Dielectric Strength

The property of an insulating material which determines the maximum potential gradient that the material can withstand without rupture.

### Double Break

A form of switch contact construction in which a current carrying member bridges a gap at two adjacent points, one at each end of the bridging member.

### Form A

A single pole, single throw, normally open contact or SPST NO.

### Form B

A single pole, single throw, normally closed contact or SPST NC.

### Form C

A single pole double throw contact or SPDT.

### 2-Form C

A double pole, double throw contact or DPDT.

### High Ratio Position

The actuator mounting position closest to the switch button.

### Make

A term used to indicate that a switch has completed the dynamics of closing an electrical circuit.

### Momentary Action

The circuit is either opened or closed, only as long as the switch is actuated.

### Normally Open

A term used to describe contacts that are open in the rest position.

### Normally Closed

A term used to describe contacts which establish a circuit when in the rest position.

### Poles

The number of separate circuits that can be activated through a switch at any one time.

### Reference Line

Also known as datum line. Used as a basis for calculating the operating characteristics of a switch.

### Standard Ratio Position

The actuator mounting position furthest from the switch button.

### Switch Abbreviations

**SPST:** Single pole single throw

**SPDT:** Single pole double throw

**DPST:** Double pole single throw

**DPDT:** Double pole double throw

**3PDT:** Three pole double throw

**4PDT:** Four pole double throw

**5PDT:** Five pole double throw

### Throw

The number of circuit paths that can be controlled by one pole.

## Agency Approvals



### File E23301

Canadian approval through UL



**File 16503 – Canada**  
Canadian Standards Association



### File E23301

(per UL 1054 for special use switches) – **USA**  
Underwriters Laboratories, Inc.



**File No. on Request –**  
VDE Verband Deutscher Elektrotechniker



## Government Listings

**Cage Code:** 01963

**Federal ID:** 36-2977756

**Federal**

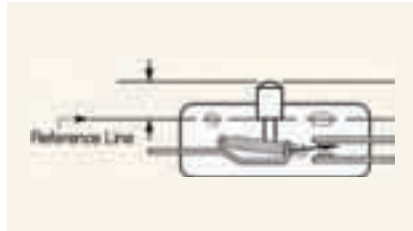
**Business Code:** 03680



## Switch Terminology

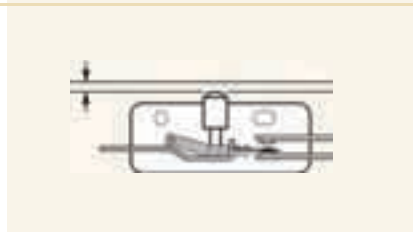
### Rest Position

The position the switch button (or actuator) assumes when no force is exerted against it. Measured from the reference line to the top of the button or actuator. Frequently specified as a maximum.



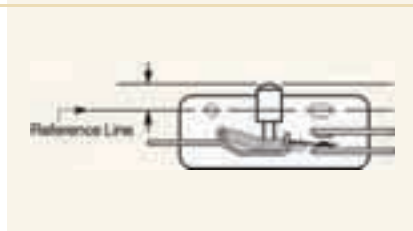
### Pre-Travel

The distance of button (or actuator) travel from rest position to the point of operation. Pre-travel is frequently specified as a maximum.



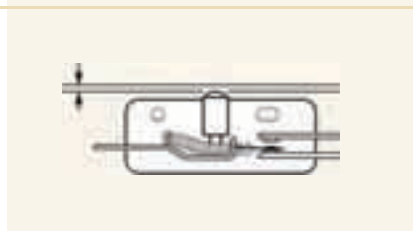
### Operating Point

The position of the switch button (or actuator) at which initial switch contact transfer takes place. Measured from the reference line to the top of the button or actuator.



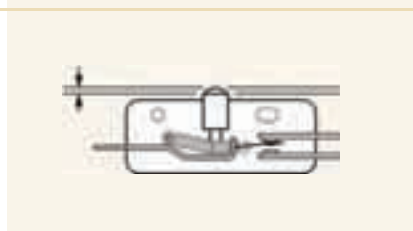
### Over-Travel

The continued distance the switch button (or actuator) can travel after contact transfer, without damage to the switch mechanism. Over-travel is frequently specified as a minimum.



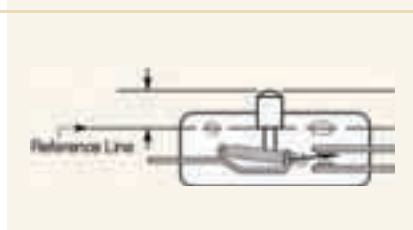
### Movement Differential

The button (or actuator) movement required between operating point and the reset point. This is frequently dimensioned as a maximum.



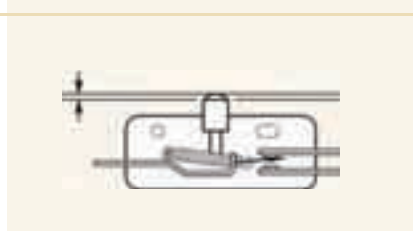
### Reset Point

The point of actuation at which the second or return contact transfer takes place. At this point the contacts snap back to their original position. Measured from the reference line to the top of the button or actuator.



### Reset Travel

The distance the switch button (or actuator) travels back from reset point to rest position.

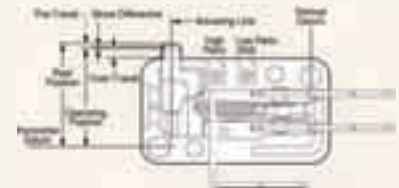


## Switch Characteristics

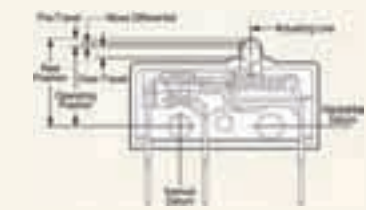
### Dimensional Tolerances

All assembly dimensions shown carry the following tolerances unless otherwise specified: Decimals:  $\pm 0.002$  (2 place),  $\pm 0.005$  (3 place). Angles:  $\pm 5^\circ$ .

### Miniature



### Subminiature



## Circuitry

**Single-Pole  
Double-Throw  
Double-Break**



**Single-Pole  
Single-Throw**



**Single-Pole  
Single-Throw  
Double-Break**



**Single-Pole  
Double-Throw**



**Double-Pole  
Single-Throw**



**Double-Pole  
Single-Throw  
Double-Make**



**Double-Pole  
Double-Throw**



## Selection, Quality and Support

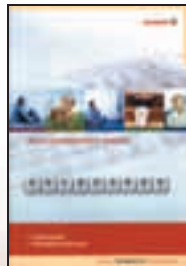
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