



## Datasheet

### RS PRO Sub-Miniature Pushbutton Switches

**Stock number: 175-9XXX (Details as follows)**

EN



The picture above is for reference only.

#### Specifications:

RATING : 2A/36VDC.

ELECTRICAL LIFE : 100,000 Make-And-Break cycles at full load.

INSULATION RESISTANCE : 1,000M $\Omega$  Min. at 500VDC.

DIELECTRIC STRENGTH : 2,000V RMS@sea level.

CONTACT RESISTANCE : 50m $\Omega$  Max.@1A/12VDC(Initial value)

OPERATION TEMPERATURE : -20°C~+70°C

TRAVEL: About 2.3mm.

OPERATION PRESSURE : 4.5N $\pm$ 1.5N

INGRESS PROTECTION : IP67

TORQUE : 11.5 kgf · cm

THICKNESS : 6.0mm (Max.)

CAP Keeps same high.

Current limiting resistor is required to limit LED forward current to 20mA.

**RS Part no.**

<b>RS Pro MPN</b>	<b>Packs of 1</b>	<b>Packs of 20</b>
MPB16L-CARE-01-JR-3V	1759544	1759168
MPB16L-CARE-01-JR-12V	1759485	1759170
MPB16L-CARE-01-JR-24V	1759569	1759169
MPB16L-CARE-03-JR-3V	1759471	1759165
MPB16L-CARE-03-JR-12V	1759519	1759167
MPB16L-CARE-03-JR-24V	1759495	1759166
MPB16L-CARE-05-JR-3V	1759579	1759147
MPB16L-CARE-05-JR-12V	1759458	1759164
MPB16L-CARE-05-JR-24V	1759649	1759162
MPB16L-CARE-06-JR-3V	1759582	1759158
MPB16L-CARE-06-JR-12V	1759631	1759160
MPB16L-CARE-06-JR-24V	1759643	1759173
MPB16L-CARE-07-JR-3V	1759510	1759154
MPB16L-CARE-07-JR-12V	1759557	1759156
MPB16L-CARE-07-JR-24V	1759535	1759155
MPB16L-CARE-36-JR-3V	1759647	1759151
MPB16L-CARE-36-JR-12V	1759486	1759153
MPB16L-CARE-36-JR-24V	1759466	1759152
MPB16L-CARE-37-JR-3V	1759690	1759253
MPB16L-CARE-37-JR-12V	1759639	1759150
MPB16L-CARE-37-JR-24V	1759632	1759149
MPB16L-CARE-71-JR-3V	1759724	1759307
MPB16L-CARE-71-JR-12V	1759532	1759145
MPB16L-CARE-71-JR-24V	1759633	1759216
MPB16L-CARP-01-JR-3V	1759699	1759304
MPB16L-CARP-01-JR-12V	1759716	1759306
MPB16L-CARP-01-JR-24V	1759708	1759305
MPB16L-CARP-03-JR-3V	1759758	1759301
MPB16L-CARP-03-JR-12V	1759771	1759303
MPB16L-CARP-03-JR-24V	1759764	1759302
MPB16L-CARP-05-JR-3V	1759728	1759298
MPB16L-CARP-05-JR-12V	1759747	1759300
MPB16L-CARP-05-JR-24V	1759739	1759299
MPB16L-CARP-06-JR-3V	1759733	1759308
MPB16L-CARP-06-JR-12V	1759665	1759283
MPB16L-CARP-06-JR-24V	1759712	1759296
MPB16L-CARP-07-JR-3V	1759687	1759292
MPB16L-CARP-07-JR-12V	1759694	1759294
MPB16L-CARP-07-JR-24V	1759689	1759293
MPB16L-CARP-36-JR-3V	1759748	1759289
MPB16L-CARP-36-JR-12V	1759675	1759291
MPB16L-CARP-36-JR-24V	1759767	1759290
MPB16L-CARP-37-JR-3V	1759695	1759285
MPB16L-CARP-37-JR-12V	1759734	1759288
MPB16L-CARP-37-JR-24V	1759715	1759287
MPB16L-CARP-71-JR-3V	1759722	1759297
MPB16L-CARP-71-JR-12V	1759745	1759322
MPB16L-CARP-71-JR-24V	1759704	1759295

# Specifications:

## 1. Style :

This specification describes "Metal Pushbutton Switch", mainly used as signal switch of electric devices, with the general requirements of mechanical and electrical characteristic.

- ① Switch combination : Off-On. (Single Pole)
- ② Enclosure material : Aluminum alloy.
- ③ Operating Type : Lock ;Cap reversion.
- ④ Operating Temperature Range : -20 °C~+70 °C.
- ⑤ Degrees of protection provided by enclosures .  
IP code: IP67.

**2. Electrical Rating :** 2A /36VDC (resistive load).

**3. Type of Actuation :** Pushbutton Switch.

## 4. Test Sequence :

	ITEM	DESCRIPTION	TEST CONDITIONS	REQUIREMENTS
APPEARANCE	1	Visual Examination	By Visual Examination check without and out pressure & testing.	There shall be no defects that affect the serviceability of the product.
	2	Contact Resistance	To be measured between the two terminals associated with each switch pole.	50mΩ Max.
ELECTRIC PERFORMANCE	3	Insulation Resistance	Measurements shall be made following application of 500 VDC / 100mA potential across terminals and cover for 1 minute.	1000MΩ/500VDC min.
	4	Dielectric Withstanding Voltage	2000VAC(50Hz or 60Hz) / between terminals /1minute.	There shall be no breakdown or flashover.

	ITEM	DESCRIPTION	TEST CONDITIONS	REQUIREMENTS
MECHANICAL PERFORMANCE	5	Operation pressure	MODEL-1305N MECHANICAL TEST 500gram、1000gram、2000gram.	4.5N±1.5N
	6	Operation Travel	Full Travel.	2.3mm±0.40
	7	Torque	Applied to nut.	11.5kgf·cm.
	8	Panel Thickness	Applied to nut.	6.0mm Max.
OPERATING LIFE	9	Operating Life	<p>Measurements shall be made following the test forth below :</p> <p>① 2A / 36VDC. ( resistive load)</p> <p>② Electronics Life Test : 100,000 cycles.</p> <p>③ Rate of Operation : 6-8 operation cycles per minute.</p> <p>④ Operating force:8N (MAX).</p>	<p>①Dielectric Strength : between terminals :1000VAC.</p> <p>②Insulation Resistance : 1000MΩ (at 500VDC)min.</p> <p>③Contact Resistance : 150mΩ Max.</p>
			<p>① Mechanical Life Test : 100,000 cycles.</p> <p>② Operating force:8N (MAX).</p>	<p>④Operation pressure: 3N±1.5N (for Mechanical Life Test).</p>

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		HUMIDITY RESISTANCE		ITEM	DESCRIPTION	TEST CONDITIONS	REQUIREMENTS
				10	Resistance Low Temperature	Following the test set forth below the sample shall be left in normal temperature and humidity conditions for 1 hour before the measurements are made: ① Temperature : $-20\pm 3^{\circ}\text{C}$ . ② Time : 96 hours.	As shown in item 2-4.
11	Resistance High Temperature	Following the test set forth below the sample shall be left in normal temperature and humidity conditions for 1 hour before the measurements are made: ① Temperature : $70\pm 3^{\circ}\text{C}$ . ② Time : 96 hours.	As shown in item 2-4.				
12	Resistance Humidity	Following the test set forth below the sample shall be left in normal temperature and humidity conditions for 1 hour before the measurements are made: ① Temperature: $40\pm 2^{\circ}\text{C}$ ② Relative Humidity: 90-95% ③ Time: 96 hours.	① Contact Resistance: 100 m $\Omega$ Max.  ② Insulation Resistance: 1000M $\Omega$ min.				

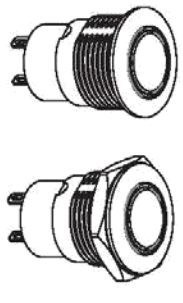
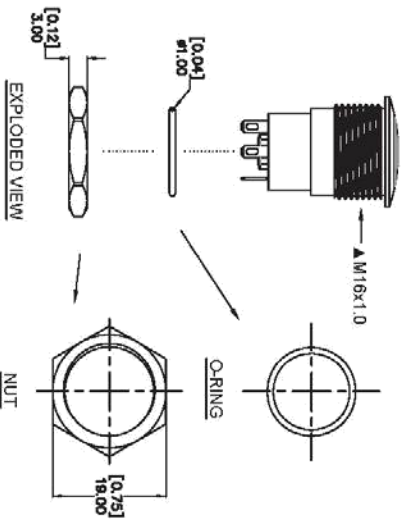
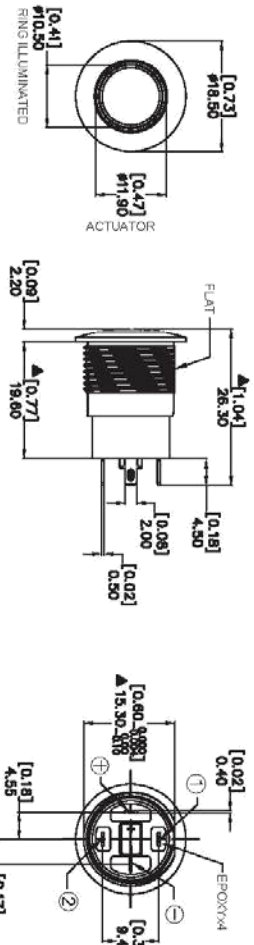
	ITEM	DESCRIPTION	TEST CONDITIONS	REQUIREMENTS
HUMIDITY RESISTANCE	13	Salt spray Testing	Following the test set forth below the sample shall be left in normal temperature and humidity conditions for an hour before the measurements are made: ⊙Temperature:35±2°C. ⊙The ratio of salt-water : 5%. ⊙The spray amount of salt- water : 1~2 ml/h. ⊙Time:48 hours.	The testing standard based on bubble, crack, And magnifying glass with gauge.
	14	Test of IP 67	Protected against the effects of Temporary immersion in water. (1m below the surface of the water for a duration of 30 min).	IP67 According to EN 60529 : 1991+A1 : 2000 IEC 60529 : 2001
Rolls	15	HSF	Refer RoHS Standard : The electronic electrical machinery product limits with six big chemical materials.	Cd : 100ppm Pb : 1000ppm Hg : 1000ppm Cr6+ : 1000ppm PBB · PBDE : 1000ppm
SOLDER HEAT RESISTANCE	16	Manual Soldering	■ hand Soldering : ⊙Soldering Temperature : 280°C ⊙Duration of Solder Heated : 3 seconds (Max). ■ Precautions in Handling: ⊙Please make sure that there is no flux rose over the surface of the PCB.	⊙Shall be free from pronounced backlash and falling-off or breakage terminals. ⊙As shown in item 2~4.

Wiring:

- 1.Solder the terminals using a 60W soldering iron at 260°C within 3 seconds. (Sn-Ag-Cu type solder is recommended.)
- 2.When soldering, be sure to keep the soldering iron as far away from the housing as possible.
- 3.Also ensure that no tensile force is applied to the terminal. Do not bend the terminal or apply excessive force to the terminal.

**4. LED Specifications : (LED Without resistor)**

Color	VF(V) Min.	VF(V) Typ.	VF(V) MAX.	IF(mA) Typ.	IF(mA) MAX.
White	2.8	3.1	3.7	20	30
Red	1.7	2.0	2.5	20	30
Yellow	1.7	2.0	2.5	20	30
Blue	2.8	3.1	3.7	20	30
Green	2.8	3.1	3.7	20	30



### MPB16L-XXXX-XX-JR-XV

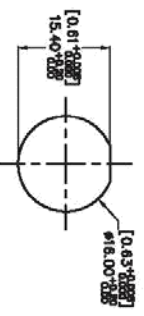
<b>Operating Type</b>	L Lock
<b>Cap reversion</b>	CA Natural Anodized
<b>Body type &amp; color</b>	CB Black Anodized
<b>Light type</b>	R Round
<b>Button type</b>	E Ring
<b>LED color</b>	XX(OFF/ON) 01 White 03 Red 05 Yellow 06 Green 07 Blue
<b>Terminal plating</b>	R Gold Flash
<b>Terminal shape</b>	J Solder terminal

<b>Accessories</b>	Resistance (About LED Voltage)
3V	LED (not voltage 3VDC (external Resistor))
6V	LED (input E/C/C, 180)
12V	LED (input 12VDC, 27 Ω)
24V	LED (input 24VDC, 1000)

\* Drive value of resistance  
Reference: 45%

<b>Light type</b>	R Round
<b>Button type</b>	E Ring
<b>LED color</b>	XX(OFF/ON) 01 White 03 Red 05 Yellow 06 Green 07 Blue
<b>Terminal plating</b>	R Gold Flash
<b>Terminal shape</b>	J Solder terminal

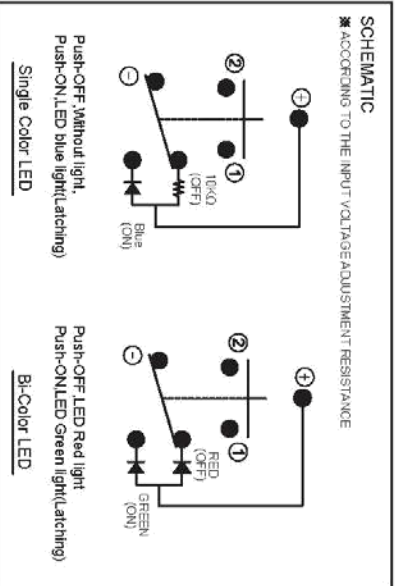
\* OFF/ON light  
Ex: 07  
\* OFF/Red, ON(Green)  
Ex: 35



PANEL CUTOUT  
Panel Thickness : 5.0mm Max.

- #### SPECIFICATIONS
- Rating : 2A/36V/DC.
  - Electrical Life : 100,000 Make-And-Break Cycles At Full Load.
  - Insulation Resistance : 1,000MΩ Min. at 500V/DC.
  - Dielectric Strength : 2,000V RMS@sea level.
  - Contact Resistance : 50mΩmax. @1A/12V/DC(initial value).
  - Operation Temperature : -20~+70°C.
  - Operation Pressure : 4.5±1.5N.
  - Travel : about 2.3mm.
  - Ingress Protection : IP67.
  - Torque : 11.5 kgf · cm.
  - Current limiting resistor is required to limit LED forward current to 20mA.
  - CAP Keeps same high.

- #### MATERIAL
- Bushing: Aluminum alloy Anodized.  
Base: Nylon 6/6  
Actuator: POM  
Cap: PC, Aluminum alloy Anodized.  
Spring: Steel.  
Sealing: Silicone.  
O-ring: Silicone.  
Nut: Brass (Nickel Plated)  
Terminal: Brass, Coin silver, Gold flash plated.  
Contact: Brass, Coin silver, Gold flash plated.



#### TOLERANCE (公差) :

0.00	mm ± 0.25mm
0.0	mm ± 0.40mm
ANGULAR:	±5°