

RTBH Series

1-2 Pole Coded Rotary Switches



Features/Benefits

- **Totally sealed**
- **Detent angles, 15 , 22.5 , 30 and 36**
- **Multi pole**
- **Coding functions**
- **Robust construction**
- **RoHS Compliant**

Typical Applications

- **Telecommunications**
- **Military**
- **Instrumentation**
- **Heavy-duty industrial equipment**

Electrical Data

SWITCHING MODE:
 MAX. SWITCHING POWER:
 Max. SWITCHING CURRENT:
 MIN. SWITCHING CURRENT:
 MAX. CARRYING CURRENT:
 MAX. VOLTAGE:
 MIN. VOLTAGE:
 BOUNCE:
 CONTACT RESISTANCE after life:
 DIALECTRIC STRENGTH between contacts or contacts and frame:
 INSULATION RESISTANCE between contacts or contacts and frame:

Silver

BBM*
 5VA
 250 mA
 10 mA
 5A
 25V
 5V
 <5ms
 <100mΩ
 500 V rms
 >10⁹Ω

Gold

BBM*
 0.2VA
 20 mA
 1 mA
 1A
 25V
 1V
 <5ms
 <100mΩ
 500 V rms
 >10⁹Ω

Environmental Data

OPERATING TEMPERATURE: -25°C to +70°C
 STORAGE TEMPERATURE: -40°C to +85°C
 TOTALLY SEALED: Immersion test acc. to MIL R22.097 F and NFC 20631/QF

* BBM= Break Before Make (non-starting)

Materials

HOUSING: PBT thermoplastic and PC thermoplastic
 STATIONARY CONTACTS & TERMINALS: Nickel plated Brass aith additional Gold or Silver plating, insert molded in PBT thermoplastic.
 ROTOR: Printed circuit, gold or silver plated.
 ACTUATOR: Steel
 BUSHING: Brass
 HARDWARE: Stop pin and spring: Stainless steel
 All models are RoHS compliant and compatible.

NOTE: Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

Mechanical Data

NUMBER OF BANKS: 1 to 4
 OPERATING TORQUE: 5 Ncm±30% (with 1 module)
 MECHANICAL STOP RESISTANCE: >70 Ncm
 BUSHING MOUNTING TORQUE: 100 Ncm

Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages K-19 thru K-23. For additional options not shown in catalog, consult Customer Service Center.



Designation

RTBH

Indexing

- 1 15°/24 positions max.
- 2 22.5°/16 positions max.
- 3 30°/12 positions max.
- 4 36°/10 positions max.

Number of Banks**

- 1 1 Bank
- 2 2 Banks
- 3 3 Banks
- 4 4 Banks

Switch Function Number of Poles or code (binary code = B, complement = C, direct +complement = BC) (first digit), Stop (with=S, without=W), Maximum Position (third & fourth digit)

- 1S02 SP, 02 positions with stop
- 1S03 SP, 03 positions with stop
- 1S04 SP, 04 positions with stop
- 1S05 SP, 05 positions with stop
- 1S06 SP, 06 positions with stop
- 1S07 SP, 07 positions with stop
- 1S10 SP, 10 positions with stop
- 1W10 SP, 10 positions without stop
- 1S11 SP, 11 positions with stop
- 1S12 SP, 12 positions with stop
- 1W12 SP, 12 positions without stop
- 1S14 SP, 14 positions with stop
- 1S16 SP, 16 positions with stop
- 1W16 SP, 16 positions without stop
- 1S24 SP, 24 positions with stop
- 1W24 SP, 24 positions without stop
- 2S04 DP, 4 positions with stop
- 2S05 DP, 5 positions with stop
- 2S06 DP, 6 positions with stop
- GS__ Gray Code with stop (indicate position)

Shaft Diameter & Style***

- N Metric shaft .236 (6,0)
- P Standard shaft .250 (6,35)
- F Metric shaft with flat .236 (6,0)
- G Standard shaft with flat .250 (6,35)
- S Metric shaft with slot .236 (6,0)
- T Standard shaft with slot .250 (6,35)

Seal

- A Standard bushing for panel mount
- D Sealed bushing for panel mount

- GW__ Gray Code without stop (indicate position) only can be 10,12, 16, 24 based on indexing
- BS__ Binary Code with stop (indicate position)
- BW__ Binary Code without stop (indicate position) only can be 10,12, 16, 24 based on indexing
- CS__ Complement with stop (indicate position)
- CW__ Complement without stop (indicate position) only can be 10,12, 16, 24 based on indexing
- ES__ Direct+Complement with stop (indicate position)
- EW__ Direct+Complement without stop (indicate position) only can be 10,12, 16, 24 based on indexing

Contact Material

- S Silver plated, matte-tin terminal
- P Gold plated, matte-tin terminal

Actuator Length

- Z (.984) 25 mm

Actuator Option Angle*

- N None for actuators without a flat
- 0 0° angle
- 3 30° angle
- 6 60° angle
- 9 90° angle
- 2 120° angle
- 8 180° angle
- 7 270° angle

* Other angles available by request

** Several functions can be combined. For more information consult us.

***Note: Metric diameter shafts are only available with metric diameter bushings, standard 1.250 inch diameter shafts are only available with standard 3/8 diameter bushings.

NOTE: S&T Shaft Diameter and Style are only available with Actuator Option angle 0, 6, 9, 2.



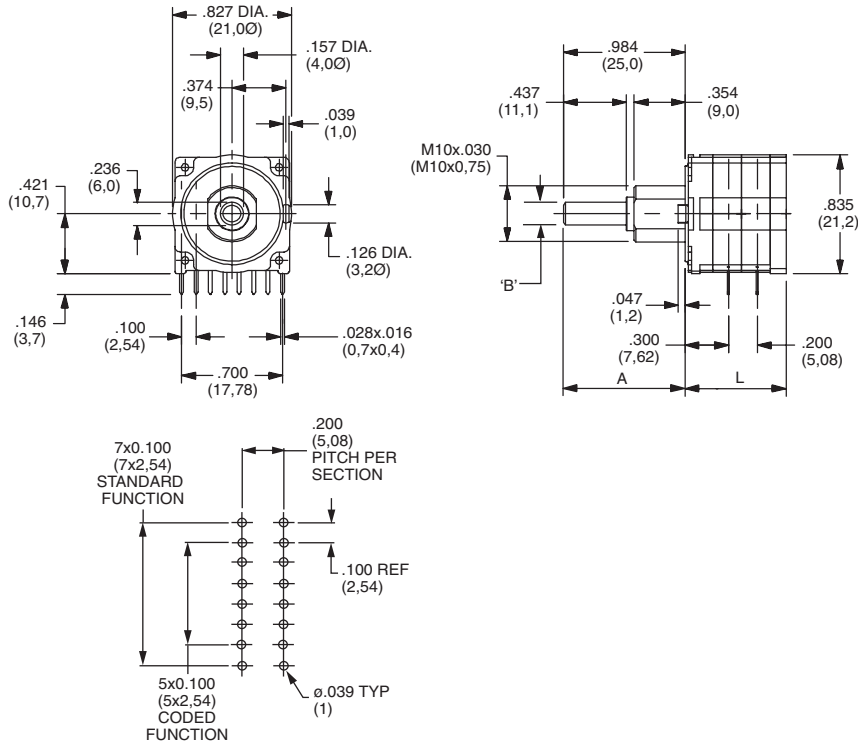
Dimensions are shown: Inch (mm)
 Specifications and dimensions subject to change

RTBH Series 1-2 Pole Coded Rotary Switches

DESIGNATION



RTBH



Dimensions L		
Number modules	inch	L mm
1	0.500	12.7
2	0.700	17.78
3	0.900	22.86
4	1.10	27.94

Dimensions A	
A: (standard) 0.984 inch (25 mm)	

Dimensions B	
0.236 or 0.250 inch (Ø6 or 6.35 mm)	

INDEXING



- 1** 15° index/24 positions
- 2** 22.5° index/16 positions
- 3** 30° index/12 positions
- 4** 36° index/10 positions

NUMBER OF BANKS



- 1** 1 BANK
- 2** 2 BANKS
- 3** 3 BANKS
- 4** 4 BANKS

NOTE: Several functions can be combined. For more information consult customer service.



K

Rotary

RTBH Series

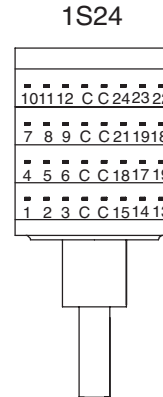
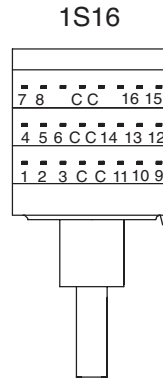
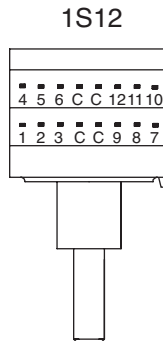
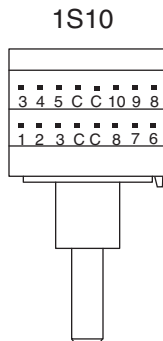
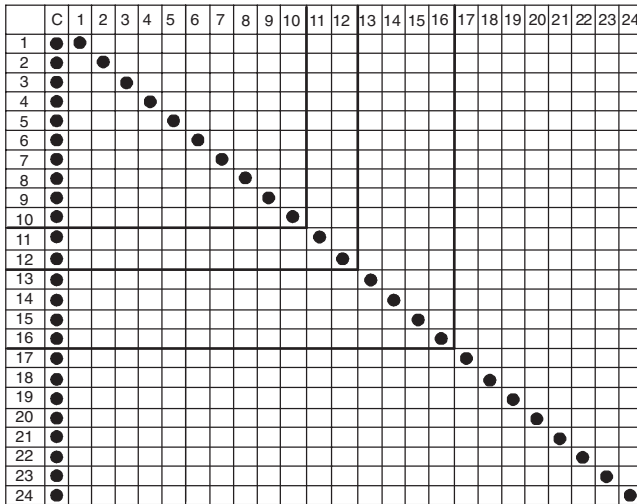
1-2 Pole Coded Rotary Switches

SWITCH FUNCTION

Switch Function Number of Poles or code (binary code = B, complement = C, direct +complement = BC)
 (first digit), Stop (with=S, without=W), Maximum Position (third & fourth digit)

- | | | | |
|-------------|-------------------------------|-------------|--|
| 1S02 | SP, 02 positions with stop | 2S04 | DP, 4 positions with stop |
| 1S03 | SP, 03 positions with stop | 2S05 | DP, 5 positions with stop |
| 1S04 | SP, 04 positions with stop | 2S06 | DP, 6 positions with stop |
| 1S05 | SP, 05 positions with stop | GS__ | Gray Code with stop (indicate position) |
| 1S06 | SP, 06 positions with stop | GW__ | Gray Code without stop (indicate position) only can be 10,12, 16, 24 based on indexing |
| 1S07 | SP, 07 positions with stop | BS__ | Binary Code with stop (indicate position) |
| 1S10 | SP, 10 positions with stop | BW__ | Binary Code without stop (indicate position) only can be 10,12, 16, 24 based on indexing |
| 1W10 | SP, 10 positions without stop | CS__ | Complement with stop (indicate position) |
| 1S11 | SP, 11 positions with stop | CW__ | Complement without stop (indicate position) only can be 10,12, 16, 24 based on indexing |
| 1S12 | SP, 12 positions with stop | ES__ | Direct+Complement with stop (indicate position) |
| 1W12 | SP, 12 positions without stop | EW__ | Direct+Complement without stop (indicate position) only can be 10,12, 16, 24 based on indexing |
| 1S14 | SP, 14 positions with stop | | |
| 1S16 | SP, 16 positions with stop | | |
| 1W16 | SP, 16 positions without stop | | |
| 1S24 | SP, 24 positions with stop | | |
| 1W24 | SP, 24 positions without stop | | |

1 Single Pole Function 1S10, 1S12, 1S16, 1S24



NOTE: Switch depicted from top down onto PCB.



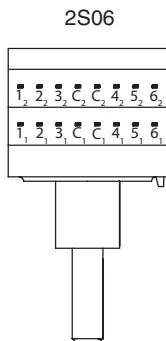
Dimensions are shown: Inch (mm)
 Specifications and dimensions subject to change

RTBH Series 1-2 Pole Coded Rotary Switches

SWITCH FUNCTION

2 DOUBLE POLE FUNCTION

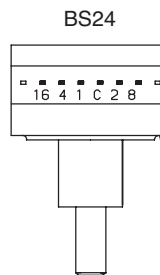
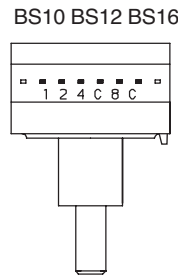
	C ₁	1 ₁	2 ₁	3 ₁	4 ₁	5 ₁	6 ₁	C ₂	1 ₂	2 ₂	3 ₂	4 ₂	5 ₂	6 ₂
1	●	●						●	●					
2	●		●					●		●				
3	●			●				●			●			
4	●				●			●				●		
5	●					●		●					●	
6	●						●	●						●



NOTE: Switch depicted from top down onto PCB.

B BINARY DIRECT CODE

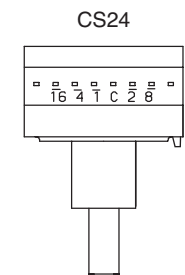
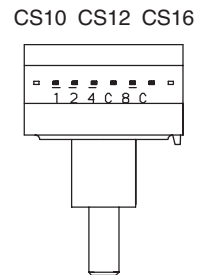
	C	1	2	4	8	16
0	●					
1	●	●				
2	●		●			
3	●	●	●			
4	●			●		
5	●	●			●	
6	●	●	●			
7	●	●	●	●		
8	●					●
9	●	●				●
10	●	●	●			●
11	●	●	●	●		●
12	●					●
13	●	●				●
14	●	●	●			●
15	●	●	●	●		●
16	●					●
17	●	●				●
18	●		●			●
19	●	●				●
20	●			●		●
21	●	●				●
22	●	●	●			●
23	●	●	●	●		●



NOTE: Switch depicted from top down onto PCB.

C COMPLEMENT BINARY CODE

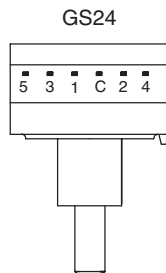
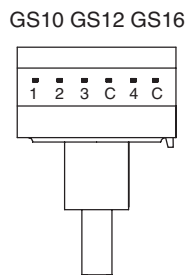
	C	1	2	4	8	16
0	●	●	●	●	●	●
1	●	●	●	●	●	●
2	●	●	●	●	●	●
3	●	●	●	●	●	●
4	●	●	●	●	●	●
5	●	●	●	●	●	●
6	●	●	●	●	●	●
7	●	●	●	●	●	●
8	●	●	●	●	●	●
9	●	●	●	●	●	●
10	●	●	●	●	●	●
11	●	●	●	●	●	●
12	●	●	●	●	●	●
13	●	●	●	●	●	●
14	●	●	●	●	●	●
15	●	●	●	●	●	●
16	●	●	●	●	●	●
17	●	●	●	●	●	●
18	●	●	●	●	●	●
19	●	●	●	●	●	●
20	●	●	●	●	●	●
21	●	●	●	●	●	●
22	●	●	●	●	●	●
23	●	●	●	●	●	●



NOTE: Switch depicted from top down onto PCB.

G GRAY CODE

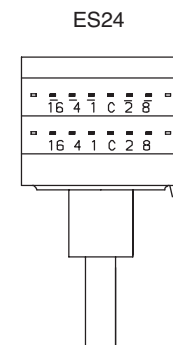
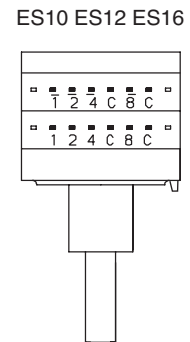
	C	1	2	3	4	5
1	●					
2	●	●				
3	●		●			
4	●	●	●			
5	●			●		
6	●	●	●	●		
7	●				●	
8	●	●	●			●
9	●			●		
10	●	●	●	●		
11	●	●	●	●	●	
12	●					●
13	●	●	●			
14	●	●	●	●		
15	●			●		
16	●				●	
17	●	●	●			●
18	●	●	●	●		
19	●				●	
20	●	●	●	●		
21	●	●	●	●	●	
22	●	●	●	●	●	
23	●	●	●	●	●	
24	●					●



NOTE: Switch depicted from top down onto PCB.

E DIRECT AND COMPLEMENT BINARY CODE

	C	1	2	4	8	16	C	1	2	4	8	16
0	●						●	●	●	●	●	●
1	●	●					●	●	●	●	●	●
2	●		●				●	●	●	●	●	●
3	●	●	●				●	●	●	●	●	●
4	●			●			●	●	●	●	●	●
5	●	●			●		●	●	●	●	●	●
6	●	●	●				●	●	●	●	●	●
7	●	●	●	●			●	●	●	●	●	●
8	●				●		●	●	●	●	●	●
9	●	●				●	●	●	●	●	●	●
10	●	●	●				●	●	●	●	●	●
11	●	●	●	●			●	●	●	●	●	●
12	●				●		●	●	●	●	●	●
13	●	●				●	●	●	●	●	●	●
14	●	●	●				●	●	●	●	●	●
15	●	●	●	●			●	●	●	●	●	●
16	●				●		●	●	●	●	●	●
17	●	●				●	●	●	●	●	●	●
18	●	●	●				●	●	●	●	●	●
19	●			●			●	●	●	●	●	●
20	●	●			●		●	●	●	●	●	●
21	●	●	●			●	●	●	●	●	●	●
22	●	●	●	●			●	●	●	●	●	●
23	●	●	●	●	●		●	●	●	●	●	●



NOTE: Switch depicted from top down onto PCB.



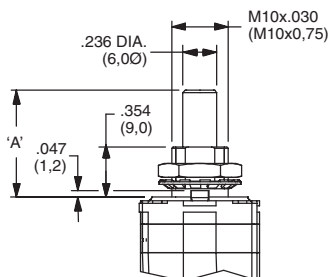
Dimensions are shown: mm
Specifications and dimensions subject to change



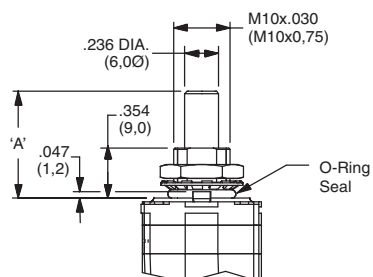
RTBH Series 1-2 Pole Coded Rotary Switches

SEAL

A STANDARD BUSHING FOR PANEL MOUNT

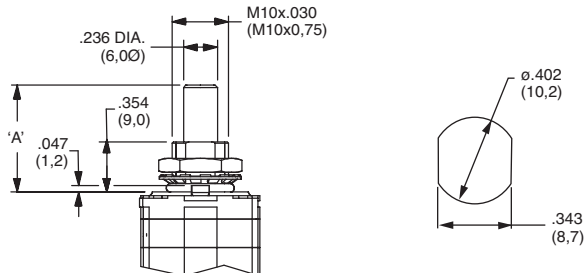


D SEALED BUSHING FOR PANEL MOUNT

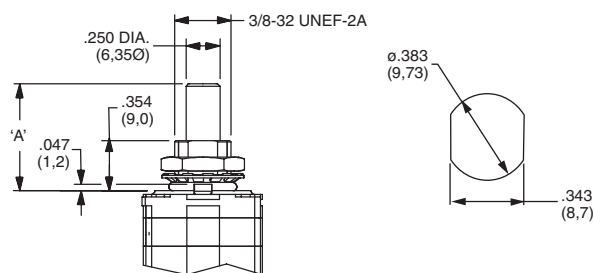


SHAFT DIAMETER & STYLE

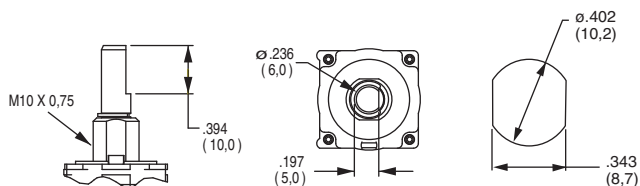
N METRIC SHAFT 0.236 (6,0)



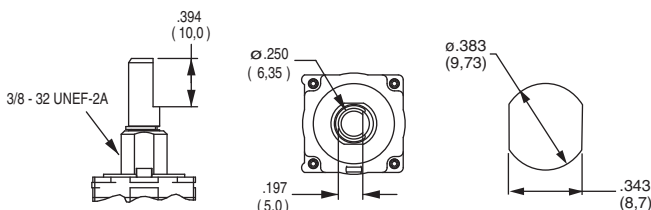
P STANDARD SHAFT 0.250 (6,35)



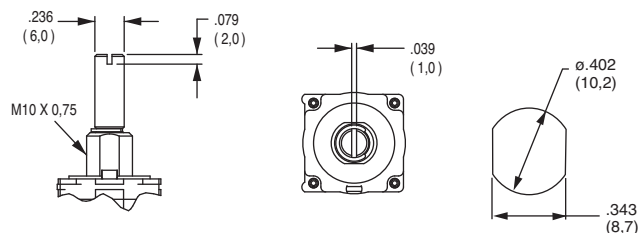
F METRIC SHAFT WITH FLAT 0.236 (6,0)



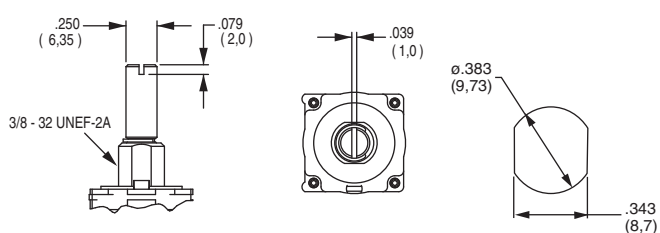
G STANDARD SHAFT WITH FLAT 0.250 (6,35)



S METRIC SHAFT WITH SLOT 0.236 (6,0)



T STANDARD SHAFT WITH SLOT 0.250 (6,35)



***Note: Metric diameter shafts are only available with metric diameter bushings, standard 1.250 inch diameter shafts are only available with standard 3/8 diameter bushings.



Third Angle
Projection

Dimensions are shown: Inch (mm)
Specifications and dimensions subject to change

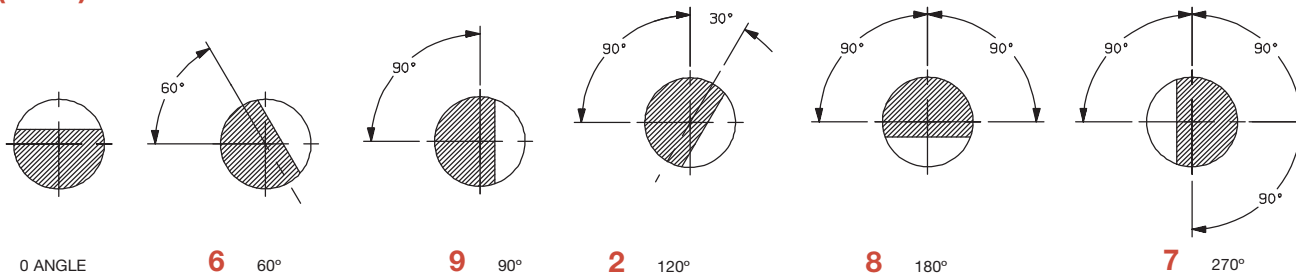
C&K RTBH Series 1-2 Pole Coded Rotary Switches

ACTUATOR OPTION ANGLE

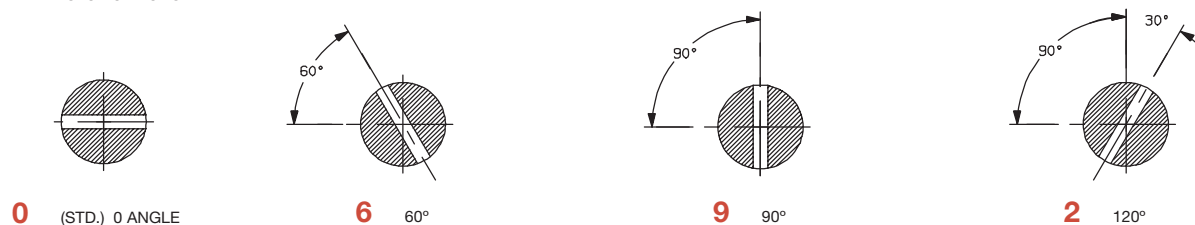


SHAFT WITH FLAT OPTIONS

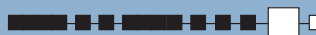
N (None) FOR ACTUATORS WITHOUT A FLAT



SHAFT WITH SLOT OPTIONS



ACTUATOR LENGTH



Z (.984) 0,25 mm STANDARD SHAFT

Other lengths available by request.

CONTACT MATERIAL

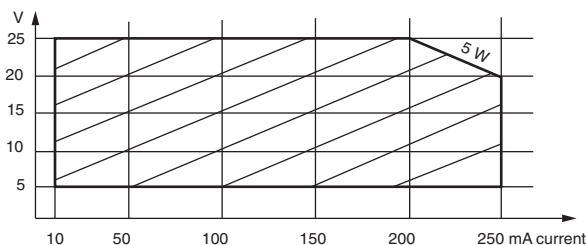


OPTION CODE	CONTACT AND TERMINAL MATERIAL	RATING
S	SILVER	SWITCH: 250 mA, POWER: 5 VA; CARRY: 5 AMPS
P	GOLD	SWITCH: 20 mA, POWER: 0.2 VA; CARRY: 1 AMP

* Note: See Technical Data section of this catalog for RoHS compliant and compatible definition and specifications.

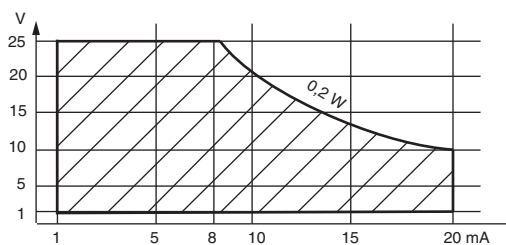
SWITCHING POWER

S (SILVER CONTACTS)



Switching power: 5 W
Max. voltage: 25 V
Min. voltage: 5 V
Max. switching current: 250 mA
Min. switching current: 10 mA

P (GOLD CONTACTS)



Switching power: 0.2 W
Max. voltage: 25 V
Min. voltage: 1 V
Max. switching current: 20 mA
Min. switching current: 1 mA



Third Angle
Projection

Dimensions are shown: mm
Specifications and dimensions subject to change



K

Rotary