RTBV 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*

Typical Applications

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

Electrical Data

	Silver	Gold
SWITCHING MODE:	BBM*	BBM*
MAX. SWITCHING POWER:	5VA	0.2VA
MAX. SWITCHING CURRENT:	250 mA	20 mA
MIN. SWITCHING CURRENT:	10 mA	1 mA
MAX. CARRYING CURRENT:	5A	1A
MAX. VOLTAGE:	25V	25V
MIN. VOLTAGE:	5V	1V
BOUNCE:	<5ms	<5ms
CONTACT RESISTANCE after life:	<100mΩ	<100mΩ
DIALECTRIC STRENGTH between contacts or contacts and frame:	500 V rms	500 V rms
INSULATION RESISTANCE between contacts or contacts and frame:	$>10^9\Omega$	$>10^9\Omega$

Mechanical Data

NUMBER OF BANKS:	1 to 10
OPERATING TORQUE:	5 Ncm±30% (with 1 module)
MECHANICAL STOP RESISTANCE:	>70 Ncm
BUSHING MOUNTING TORQUE:	100 Ncm

Environmental Data

OPERATING TEMPERATURE:	-25^0C to $+70^0$C
STORAGE TEMPERATURE:	-40^0C to $+85^0$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 with 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.

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-25 thru K-29. For additional options not shown in catalog, consult Customer Service Center.

Designation
RTBV

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	1S14	SP, 14 positions with stop	GS_ _	Gray Code with stop (indicate position)
1S06	SP, 06 positions with stop	1S16	SP, 16 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	1W16	SP, 16 positions without stop	BS_ _	Binary Code with stop (indicate position)
1S10	SP, 10 positions with stop	1S24	SP, 24 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	1W24	SP, 24 positions without stop	CS_ _	Complement with stop (indicate position)
1S11	SP, 11 positions with stop	2S04	DP, 4 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	2S05	DP, 5 positions with stop	ES_ _	Direct+Complement with stop (indicate position)
1W12	SP, 12 positions without stop	2S06	DP, 6 positions with stop	EW_ _	Direct+Complement without stop (indicate position) only can be 10,12, 16, 24 based on indexing

* Other angles available by request
** Several functions can be combined. For more information consult us.

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

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)

***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.

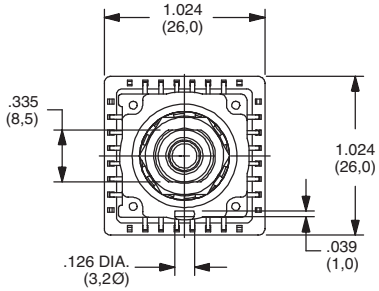
Actuator Option Angle*
N None for actuators without a flat
0 0° angle
3 30° angle
6 60° angle
9 90° angle
2 120° angle
8 180° angle
7 270° angle

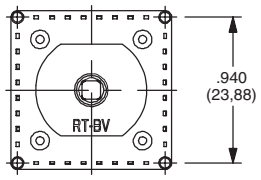
Actuator Length
Z (.984) 25 mm

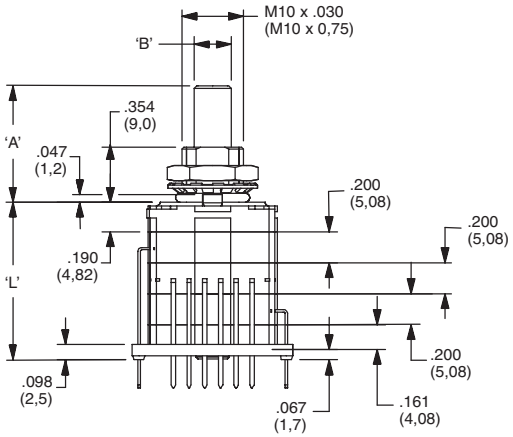
Contact Material
S Silver plated, matte-tin terminal
P Gold plated, matte-tin terminal

DESIGNATION

RTBV DIMENSIONAL DRAWINGS







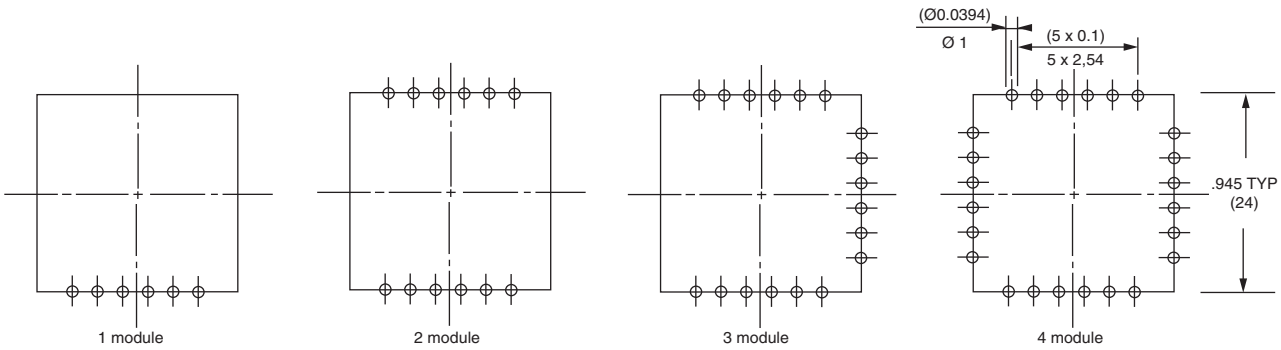
Dimensions L		
Number modules	L inch	mm
1	0.419	10.65
2	0.619	15.73
3	0.819	20.81
4	1.02	25.89

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

Third Angle Projection

Dimensions are shown: mm
Specifications and dimensions subject to change

RTBV Series
1-2 Pole Coded Rotary Switches

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.

SWITCH FUNCTION

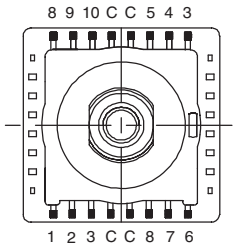
Switch Function Number of Poles or code (binary code = B, complement = C, direct +complement = BC) (first digit), Stop (with=S, without=W), Maximum Position (third & fourth digit)

1S02 SP, 02 positions with stop
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)
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

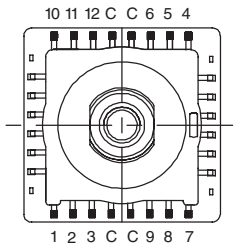
1 Single Pole Function 1S10, 1S12, 1S16, 1S24

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

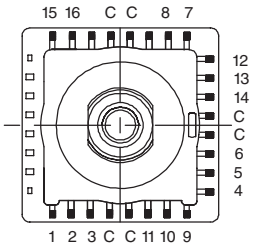
1S10



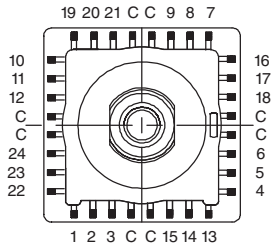
1S12



1S16



1S24



Third Angle Projection

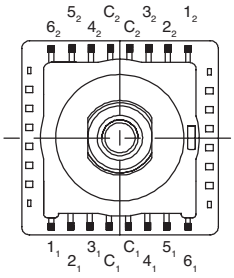
Dimensions are shown: Inch (mm)
Specifications and dimensions subject to change

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	●						●	●						●

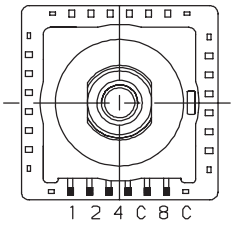
2S06



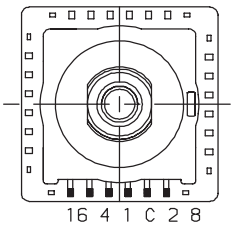
B BINARY DIRECT CODE

	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	●	●	●	●		●

BS10 BS12 BS16



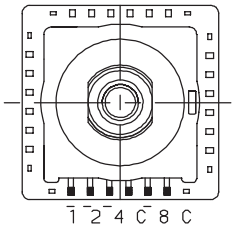
BS24



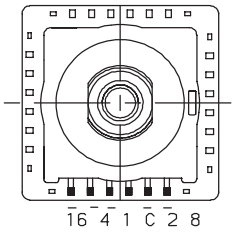
C COMPLEMENT BINARY CODE

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

CS10 CS12 CS16



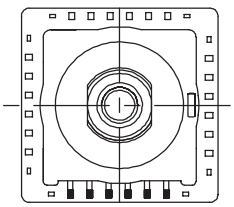
CS24



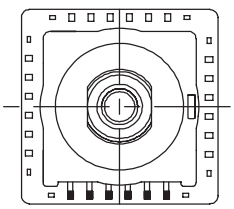
G GRAY CODE

	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	●			●	●	●

GS10 GS12 GS16



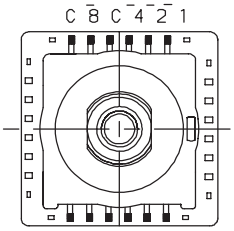
GS24



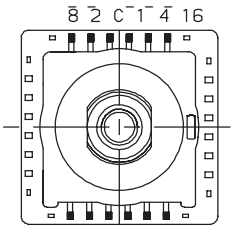
E DIRECT AND COMPLEMENT BINARY CODE

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

ES10 ES12 ES16



ES24



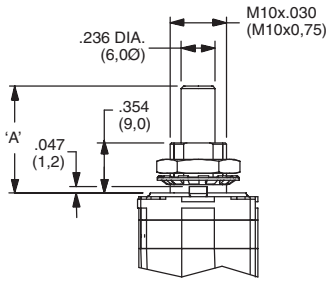
Third Angle Projection

Dimensions are shown: mm
Specifications and dimensions subject to change

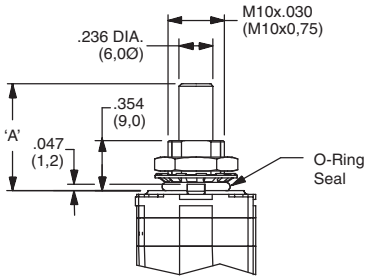
RTBV Series
1-2 Pole Coded Rotary Switches

SEAL

A STANDARD BUSHING FOR PANEL MOUNT

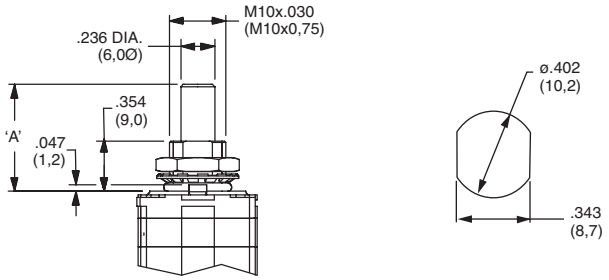


D SEALED BUSHING FOR PANEL MOUNT

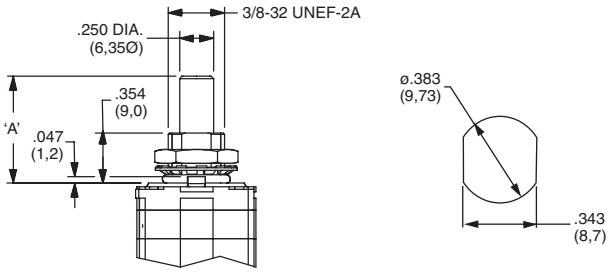


SHAFT DIAMETER & STYLE

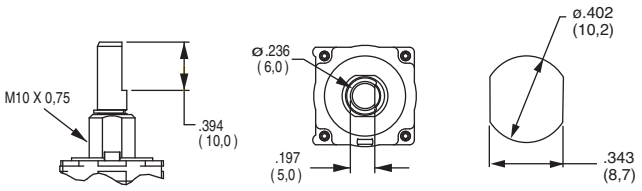
N METRIC SHAFT 0.236 (6,0)



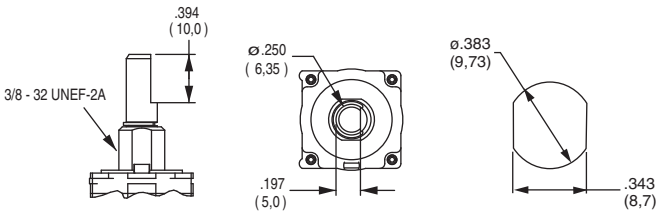
P STANDARD SHAFT 0.250(6,35)



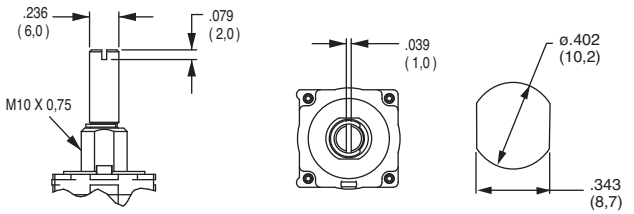
F METRIC SHAFT WITH FLAT 0.236 (6,0)



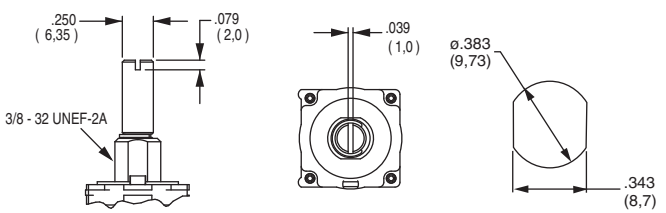
G STANDARD SHAFT WITH FLAT 0.250 (6,35)



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.

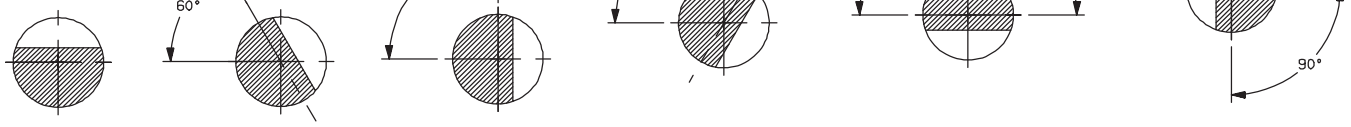
Third Angle Projection

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

ACTUATOR OPTION ANGLE

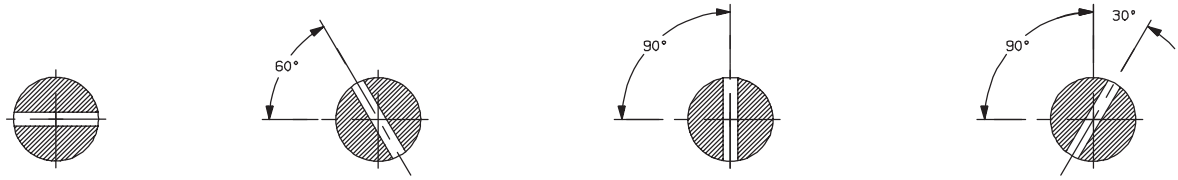
SHAFT WITH FLAT OPTIONS

N (None) FOR ACTUATORS WITHOUT A FLAT



0 0 ANGLE **6** 60° **9** 90° **2** 120° **8** 180° **7** 270°

SHAFT WITH SLOT OPTIONS



0 0 ANGLE **6** 60° **9** 90° **2** 120°

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

ACTUATOR LENGTH

Z (.984) 0,25 mm STANDARD SHAFT

Other lengths available by request.

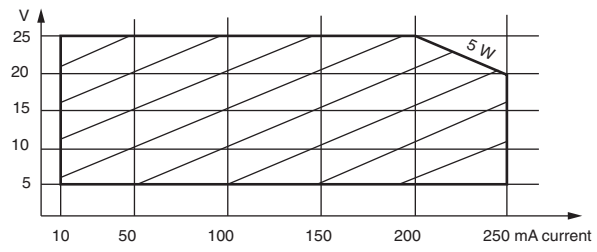
CONTACT MATERIAL

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.

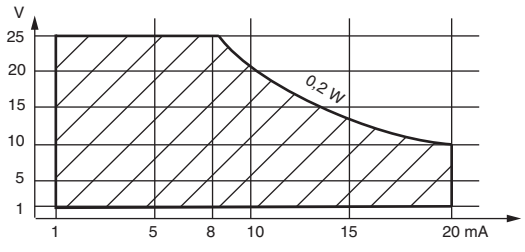
SWITCHING POWER

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