



Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of "Quality Parts,Customers Priority,Honest Operation,and Considerate Service",our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



Contact us

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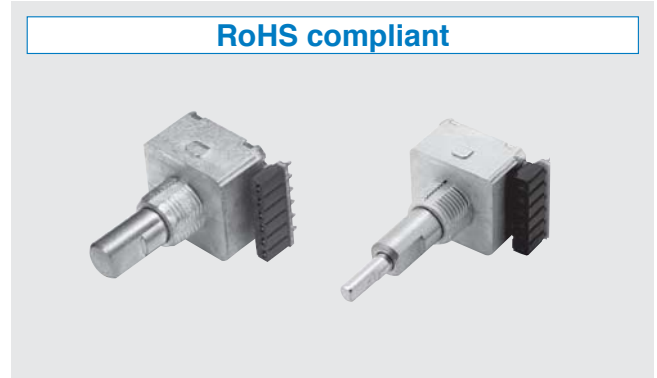
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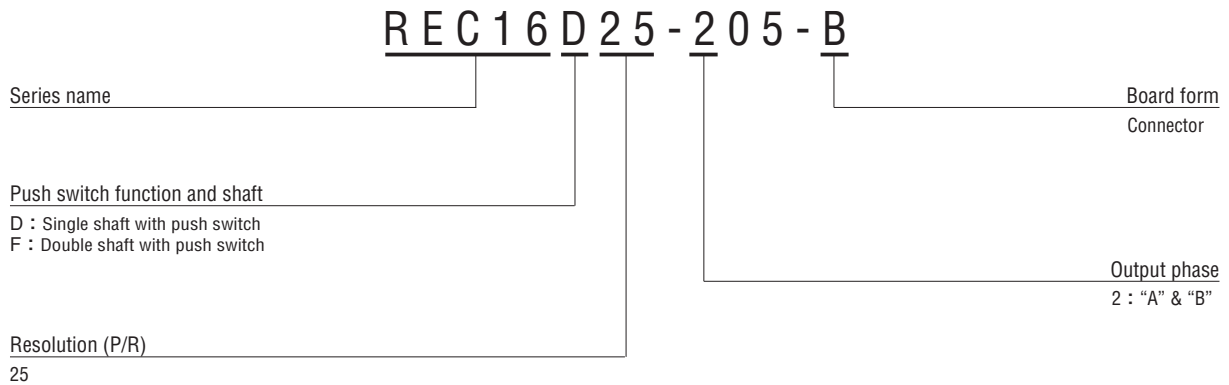


FEATURES

- Front mounting type for cost & space saving
- Double shaft that is divided into encoder function & switch function
- Metal shaft that is placed emphasis on shaft load
- RoHS compliant



PART NUMBER DESIGNATION



LIST OF PART NUMBERS

Resolution	Click	Push switch function	Shaft	Part number
25 (P/R)	With Click	Yes	single shaft	REC16D25-205-B
			double shaft	REC16F25-205-B

REC16D/REC16F

OPTICAL ENCODERS

STANDARD SPECIFICATIONS

Electrical characteristics

Input voltage	DC5 V \pm 5 %	
Input current	30 mA maximum	
Output wave form	Square wave	
Output phases	A, B	
(P/R) Resolution	25	
Phase difference of outputs A & B	$90^\circ \pm 45^\circ$	
Maximum frequency response	100 Hz	
Output signal	"1 (High)"	+ 4.5 V minimum
	"0 (Low)"	+ 0.5 V maximum
Light source	LED	

Switch characteristics

Maximum contact rating	DC15 V, 20 mA
Contact resistance	200 m Ω maximum (Initial value)

Note) Manual setting only.

Mechanical characteristics

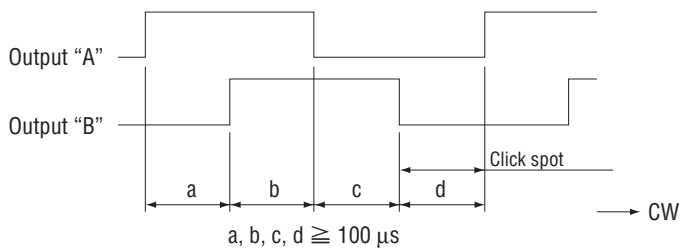
Click torque	6.87 mN·m \pm 3.43 maximum (70 \pm 35 gf·cm) <REC : With click>	
Click number	25	
Shaft loading (Pull-push)	49.0 N maximum (5 kgf)	
Switch operation force	single shaft	2.94 \pm 1.47 N (300 \pm 150 gf)
	double shaft	2.55 \pm 1.27 N (260 \pm 130 gf)
Travel	single shaft	0.3 $^{+0.1}_{-0.2}$ mm
	double shaft	0.3 $^{+0.3}_{-0.2}$ mm
Rotational life (Mechanical)	1 million cycles	
Switching life	1 million cycles	
Shaft loading (When mounting)	Radial	4.90 N maximum (500 gf)
	Axial	2.94 N maximum (300 gf)
Net weight	Approx. 10 g	
Strength of tighten screw	1 N·m {10.2 kgf·cm} maximum	

Note) Don't rotate shaft, making switch work.

Environmental characteristics

Operating temp. range	0 ~ 50 °C
Storage temp. range	-20 ~ 80 °C
Protection grade	IP40

OUTPUT



The click spot is located somewhere outputs A & B are at Lo level.

REC16D/REC16F

OPTICAL ENCODERS

RELIABILITY TEST

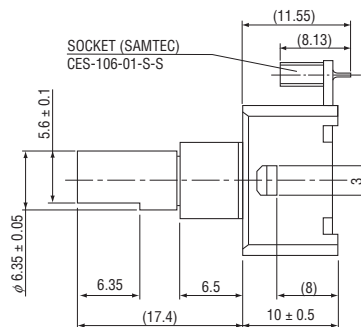
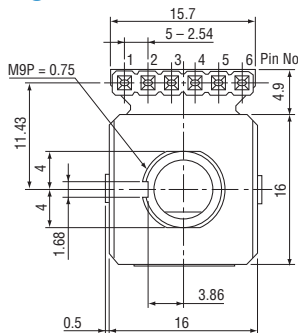
The output shall satisfy the criteria below after the following tests.

Test item		Test conditions
Vibration	Power OFF	Amplitude : 1.52 mm or 98.1 m/s ² (10 G) whichever is smaller. 10 ~ 500 Hz excursion 15 min/cycle, 8 cycles each for X, Z, directions.
Shock	Power OFF	3 times each in directions (X, Z) at 490 m/s ² (50 G), 11 ms.
High temperature exposure	Power OFF	80 °C 96 h
	Power ON	50 °C 96 h
Low temperature exposure	Power OFF	- 20 °C 96 h
	Power ON	0 °C 96 h
Humidity	Power OFF	40 °C Relative humidity 90 ~ 95 % 96 h (To be measured after wiping out moisture and leaving samples for 1 h at normal temperature and humidity after the test.)
Thermal shock	Power OFF	To be done 10 cycles with the following condition (To be measured after leaving samples for 1 h at normal temperature and humidity after the test.) 80 °C 0.5 h, - 20 °C 0.5 h

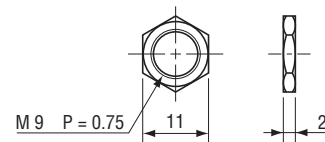
OUTLINE DIMENSIONS

Unless otherwise specified, tolerance: ± 0.4 (Unit: mm)

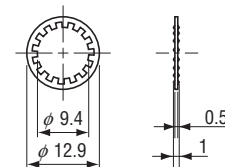
single shaft



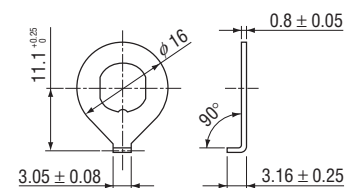
<Accessories>



1. Nut

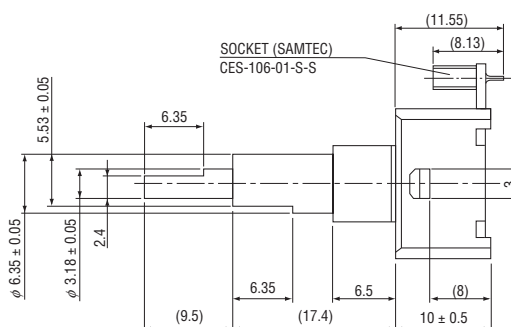
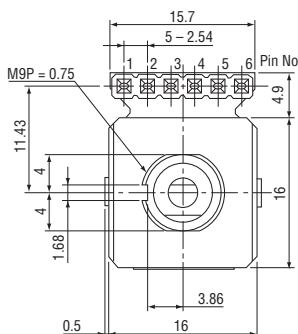


2. Washer



3. Locking Ring

double shaft



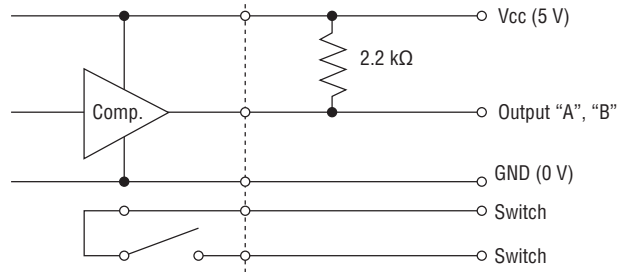
REC16D/REC16F

OPTICAL ENCODERS

PIN ASSIGNMENT

Pin No.	Function
1	Power 0 (V)
2	For switch
3	For switch
4	Output "B"
5	Output "A"
6	Power +5 V

OUTPUT CIRCUITRY AND RECEIVING CIRCUITRY



Encoder output circuit ← → Receiving circuit
 * Comparator IC : 393 equivalent

REFERENCE

The following type is available upon receipt of your order.

