



# Series 228C

## 7.2 x 6.8mm Illuminated Tactile Switch

- Surface mount gull-wing terminal and standard through hole configurations
- Compatible with IR reflow, and manual soldering
- Single, Bi-color or Tri-color display during illumination
- Variety of LED color options
- Variety of cap styles, colors, and laser etching options



### Ordering Information

Series	Terminal Type	Actuating Direction	Actuation Force	LED Color	LED Type	Cap Style	Cap Color	Laser Etching	Packaging
228C	M	V	A	R	F	A	MS	A	R

Code	Spec.
D	Standard through hole (white actuator)
M	Surface mount gull wing (black actuator)

Code	Spec.
V	Vertical

Code	Spec.
A	160 gf

Code	Spec.
R	Red
Y	Yellow
G	Green
B	Blue
W	White
A	Amber
RG	Red & Green
RB	Red & Blue
YG	Yellow & Green
RA	Red & Amber
AW	Amber & White
RGB	Red, Green & Blue

Code	Spec.
F	Flat

Blank – No Cap  
See table on pages 2 - 3

Note: Caps supplied in bulk for surface mount terminal constructions and must be installed after IR reflow soldering.

Blank – No Etching (only available on Natural color caps)  
See table on page.2

Code	Spec.
R	Tape & reel packaging (only available for surface mount type)
Blank	Tray packaging (only available for standard through hole type)

### Cap Style

Code	Spec.
A	Round (Dia 7.3mm)
B	Elliptical column on round
C	Cylinder on square
D	Cylinder
E	Cylinder on round
F	Joystick button on square

### Cap Etching

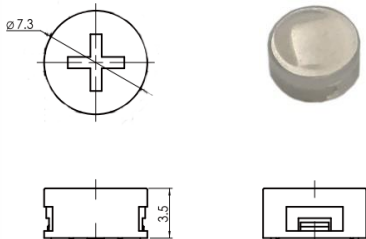
Code	Style
A	
B	
C	
D	OK

### Cap Color

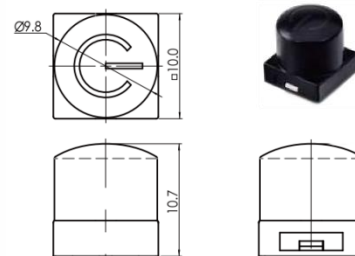
Code	Spec.
MS	Misty Silver
W	White
BB	Bright Black
R	Red
MB	Misty Black
A	Orange
N	Natural

### Cap Style Details

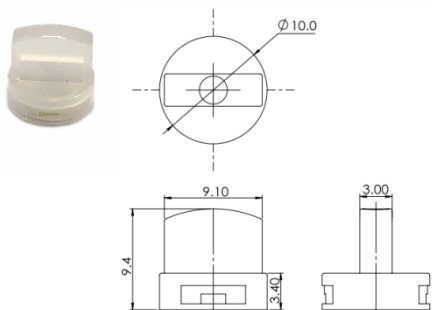
Style A: Round (Dia.7.3mm)



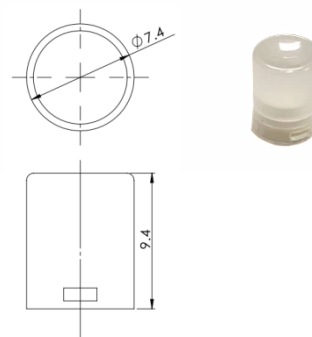
Style C: Cylinder on square



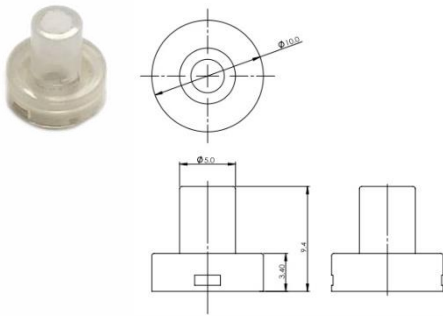
Style B: Elliptical column on round



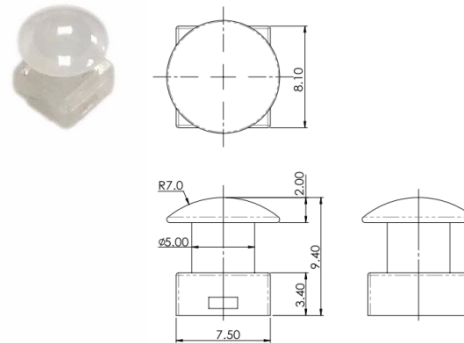
Style D: Cylinder



Style E: Cylinder on round



Style F: Joystick button on square



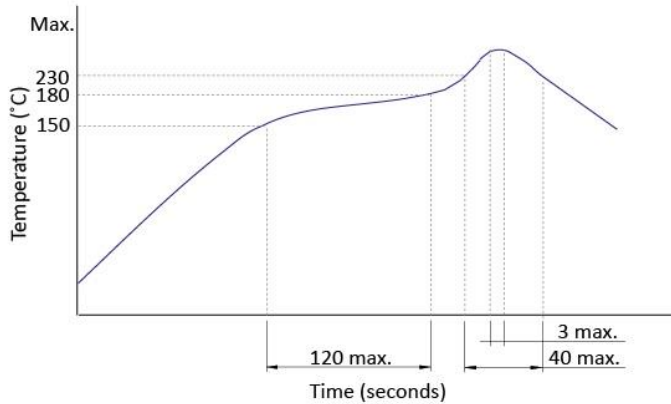
### Electrical Specifications

Parameter	Conditions & Remarks	Min	Max	Unit
Contact Resistance			100	milliohms
Insulation Resistance	Between insulated terminals	100		megohms
Dielectric Strength	1 minute between adjacent switches		250	VAC
Non-switching Rating			50 or 12	mA or VDC

### Mechanical and Environmental

Soldering	Maximum reflow temperature, 260°C for 5 seconds Maximum manual temperature, 350°C for 3 seconds
RoHS	Lead-Free. Fully compliant to RoHS Directive 2011/65/EU and 2015/863/EU
Operating Force	160±50 gf
Actuation Life	100,000 cycles
Actuator Strength	2 Kgf maximum
Travel	0.25±0.1mm
Packaging	Standard tape and reel packaging for surface mount gull wing terminal Tray packaging for standard through hole
Operating Temperature Range	-25°C to +70°C
Storage Temperature Range	-30°C to +80°C

### Soldering Profile



### LED Specifications

Color	Reversed Voltage	Forward Current	Recommended Operating Current	Forward Voltage	
				Nor	Max
Red	5 Vdc	20 mA	20 mA	1.7V	2.4V
Green	5 Vdc	20 mA	20 mA	1.9V	2.4V
Yellow	5 Vdc	20 mA	20 mA	1.9V	2.4V
Blue	5 Vdc	20 mA	20 mA	3.0V	3.6V
White	5 Vdc	20 mA	20 mA	3.0V	3.6V

### Mechanical Specifications

Figure 1 – 228CDV, Standard Though Hole, Vertical Actuation

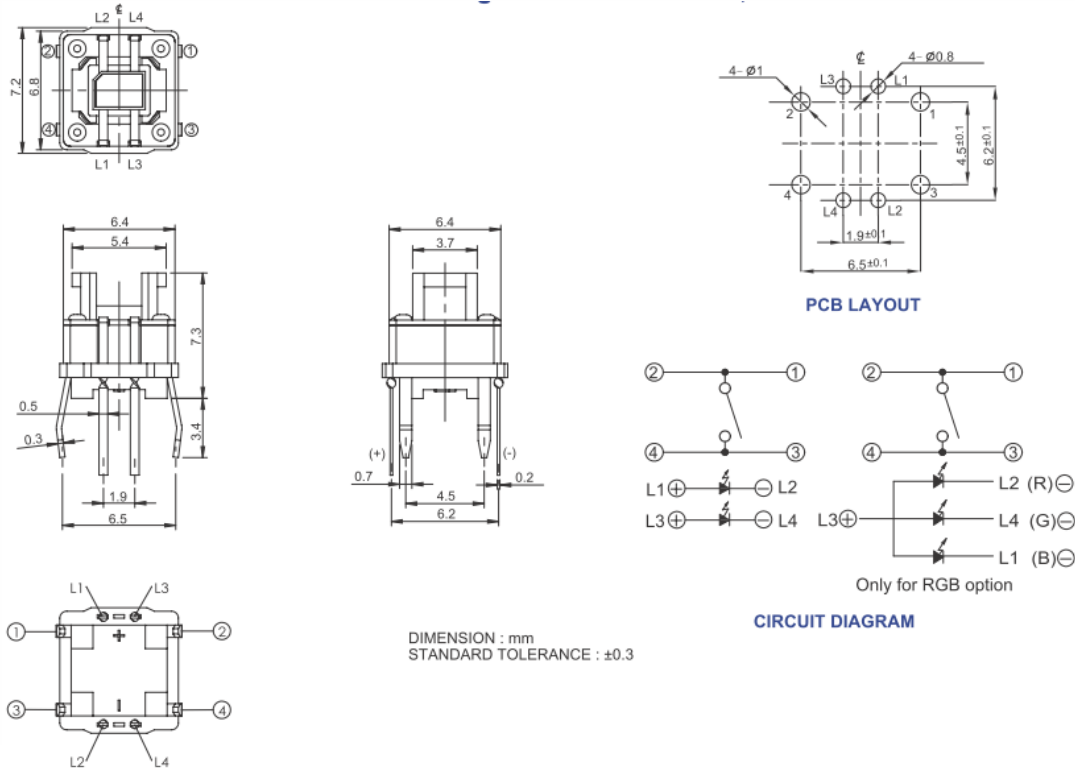


Figure 2 – 228CMV, Surface Mount Gull Wing, Vertical Actuation

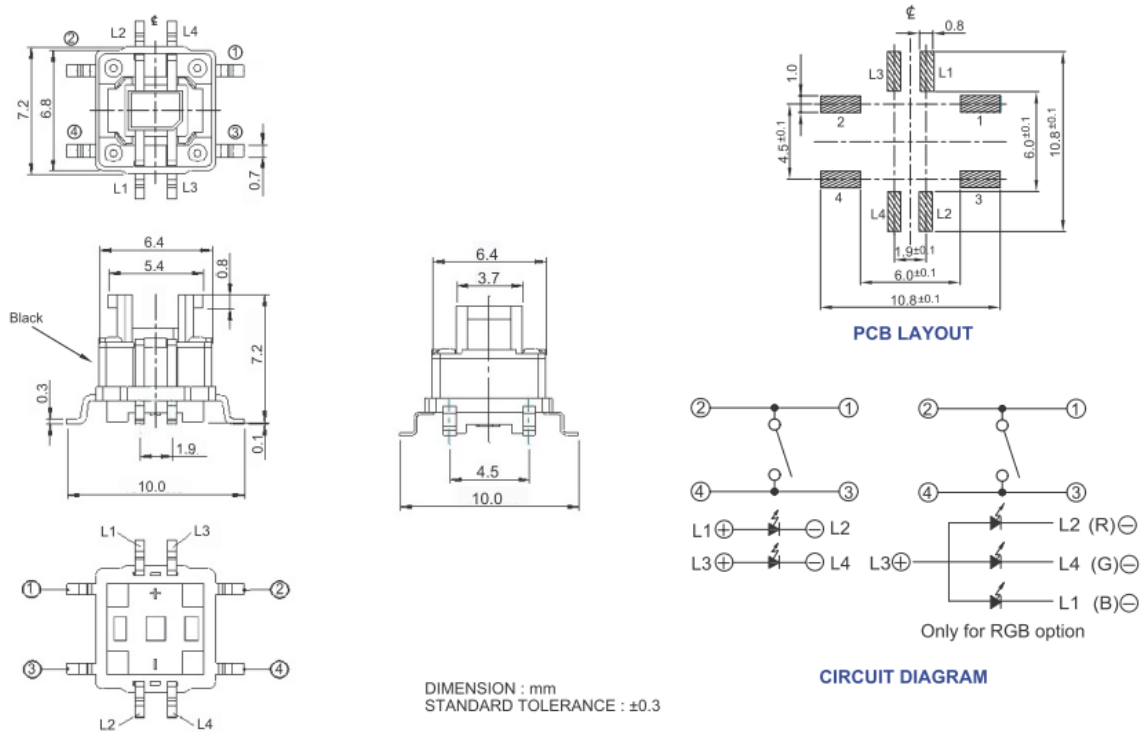


Figure 3 – 228CDV...F..., Standard Though Hole, Vertical Actuation, Joystick Button on Square

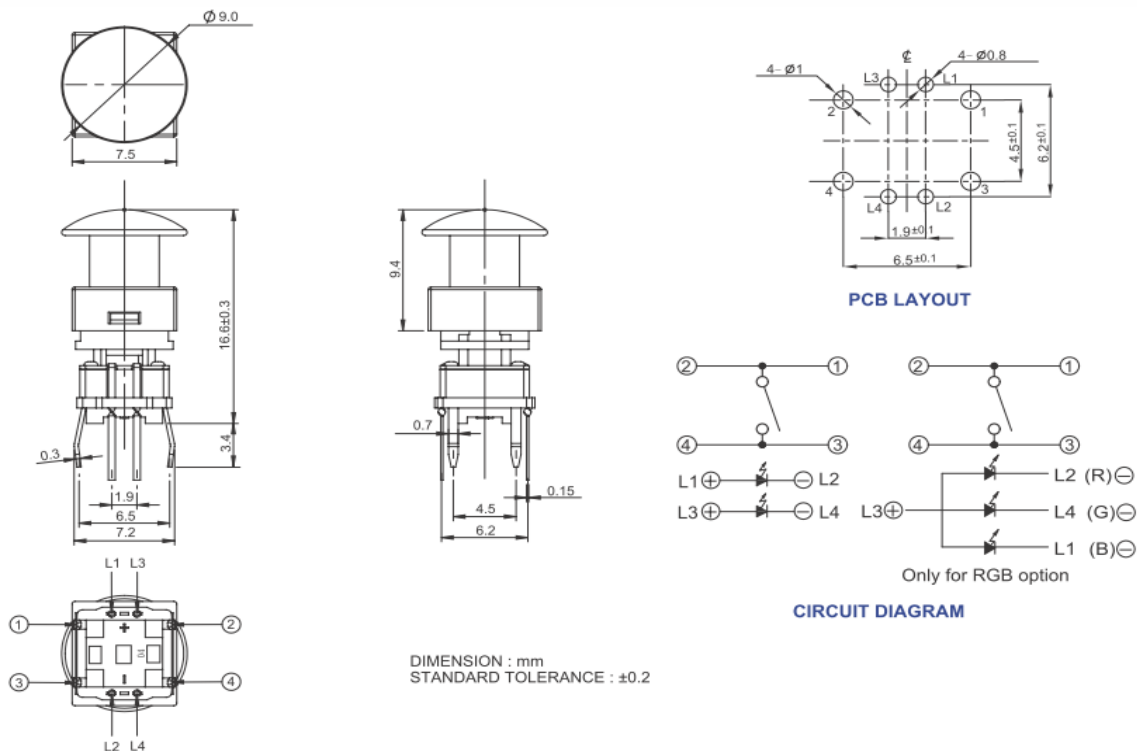
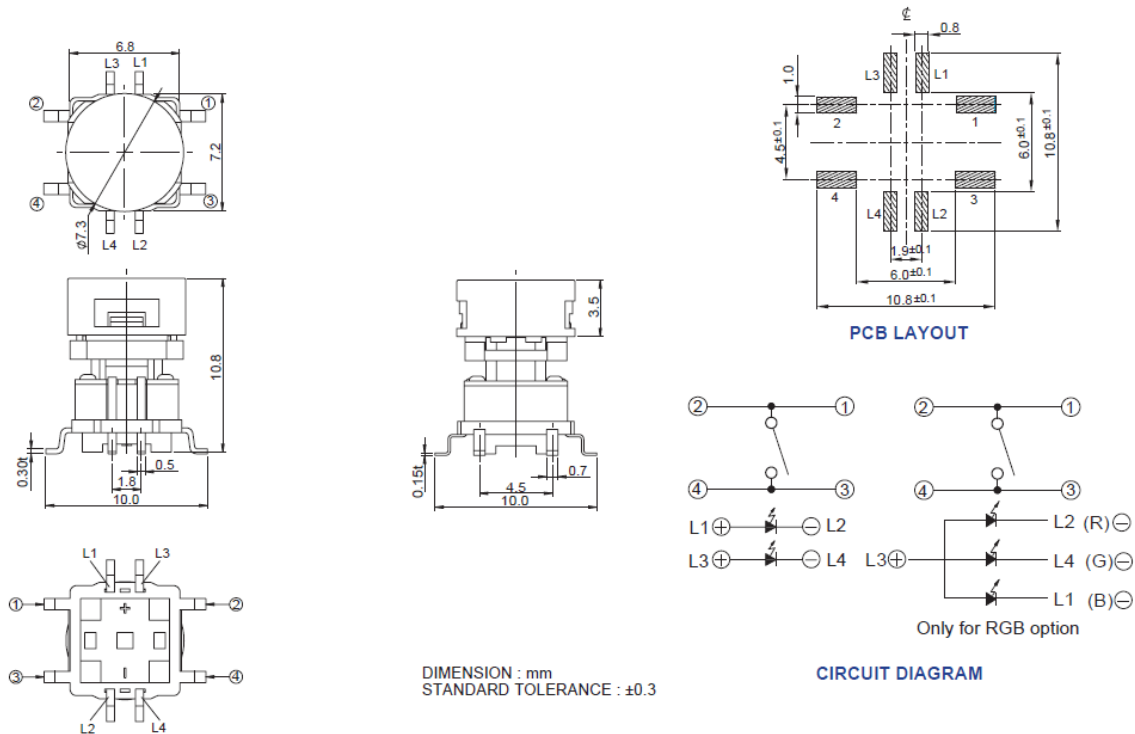


Figure 4 - 228CMV...A..., Standard Though Hole, Vertical Actuation, Round

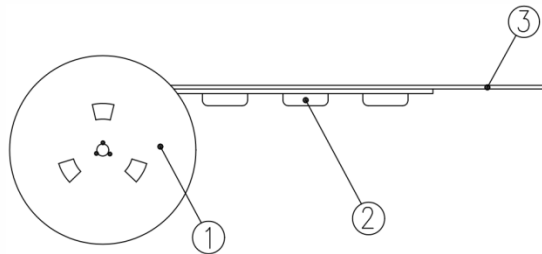


**Packing: Tape and Reel**

Surface Mount Gull Wing, Actuator Height 7.0mm

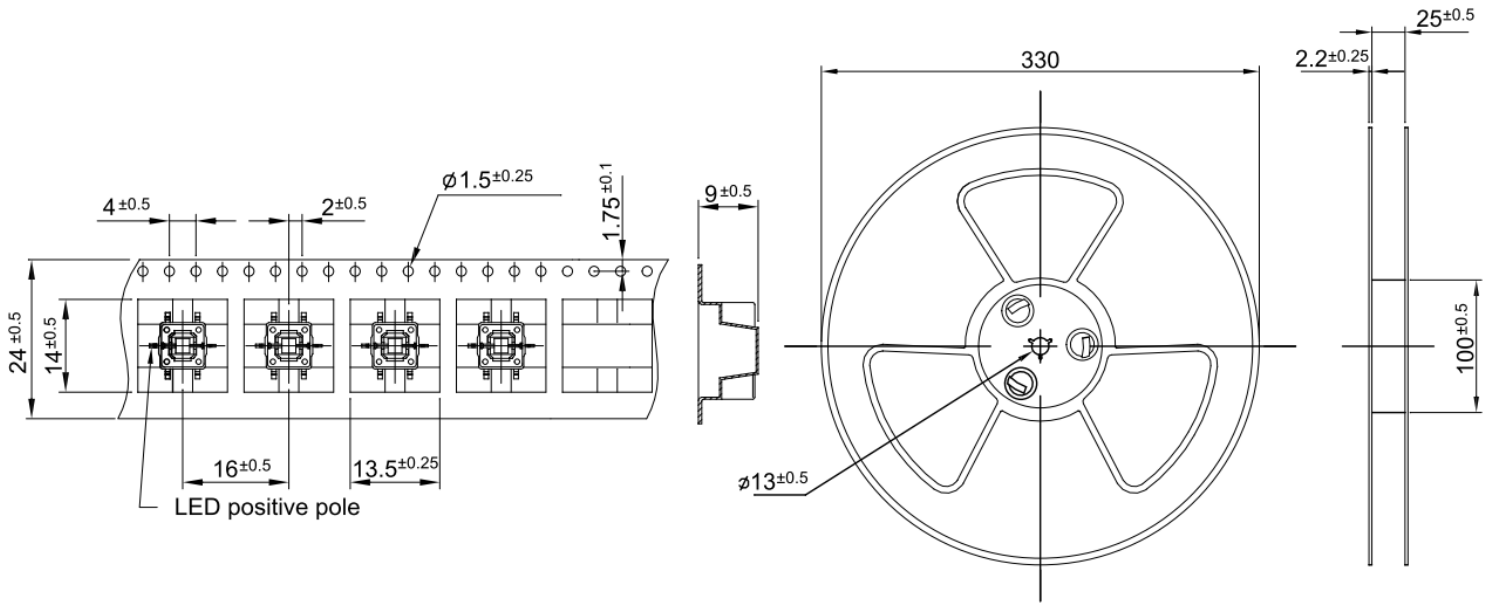
The packing specifications:

1. Structure and materials:



No	PART NAME	MATERIAL
①	REEL	POLYSTYRENE
②	CARRIER TAPE	POLYSTYRENE
③	COVER TAPE	POLYESTER

2. Packing quantity: 450 pcs/reel
3. More than 15 empty pockets should remain at each end of the carrier tape for each reel.
4. Shortage of less than 10 pcs a reel is acceptable but no more than 3 consecutive empty pockets are allowed.
5. Stripping strength of cover tape is between 10 gf to 130 gf and stripping angle should be within 165°~180°.
6. The product in the pocket of carrier tape should be placed in a specified correct position.
7. Tape and reel per EIA-481.
8. Dimensions:



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[228CDVARGFEMBA](#) [228CDVARGFEMBB](#) [228CDVARGFFMBD](#) [228CDVAWFAAB](#) [228CDVAWFARD](#)  
[228CDVAWFCDR](#) [228CDVAWFDMSD](#) [228CDVAWFFMSA](#) [228CDVAYFARC](#) [228CDVAYFARD](#) [228CDVAYFCWB](#)  
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