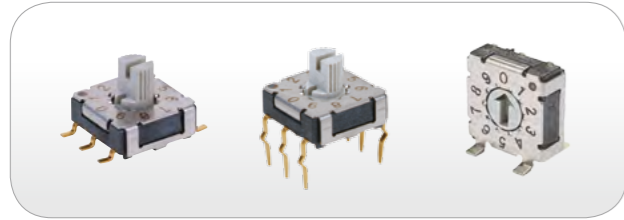


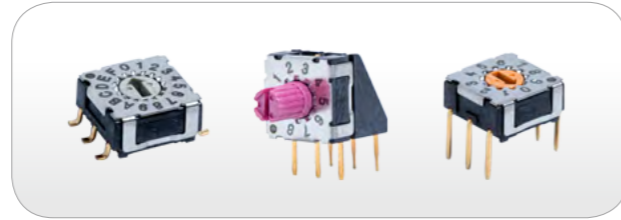
# Index

## ▶ ROTARY DIP SWITCH



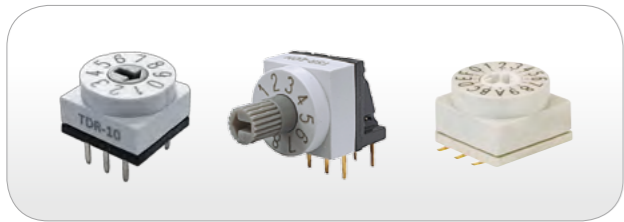
**G Series** ..... 10

COMPACT ROTARY DIP SWITCH  
7.2 x 7.2 SIZE, Height : 2.9mm



**M Series** ..... 14

MINI ROTARY DIP SWITCH  
7.4 x 7.4 x 3.65 SIZE



**T/S/Q Series** ..... 18

ROTARY DIP SWITCH  
10 x 10 x 6.5 SIZE (3x3 Ter')



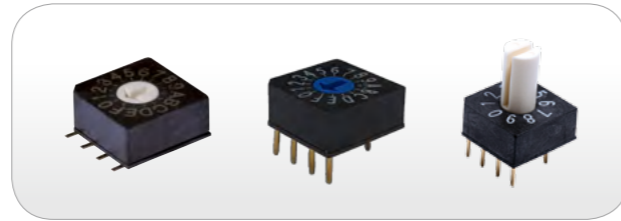
**F/E Series** ..... 21

ROTARY DIP SWITCH  
10 x 10 x 6.5 SIZE (4x1 Ter')



**U Series** ..... 24

ROTARY DIP SWITCH  
10 x 10 x 4.5 SIZE (3x3 Ter')



**H Series** ..... 27

ROTARY DIP SWITCH  
10 x 10 x 4.5 SIZE (4x1 Ter')

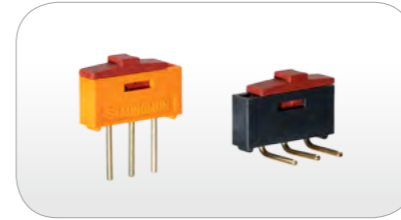


**RK Series** ..... 32

ACCESSORY

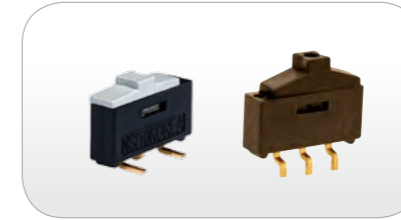
# Index

## ▶ MINI SLIDE SWITCH



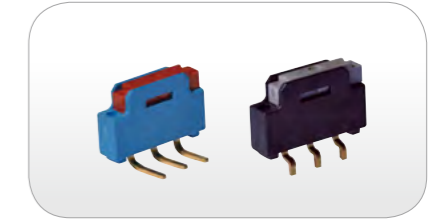
**SSI Series** ..... 34

CHANGE OVER TYPE



**NSI-10 Series** ..... 35

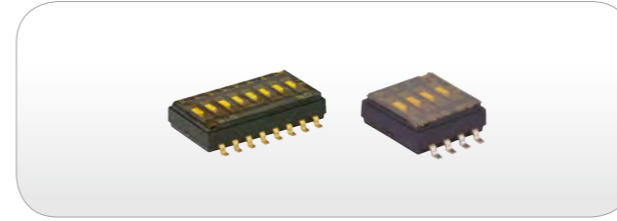
CHANGE OVER SMD TYPE



**NSI-20 Series** ..... 36

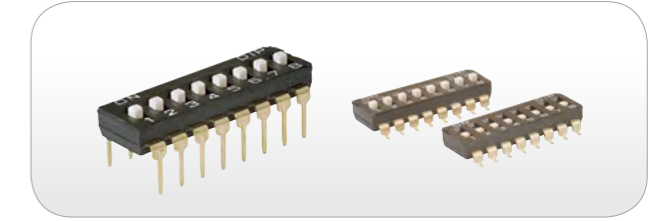
SWITCHING TYPE

## ▶ DIP SWITCH



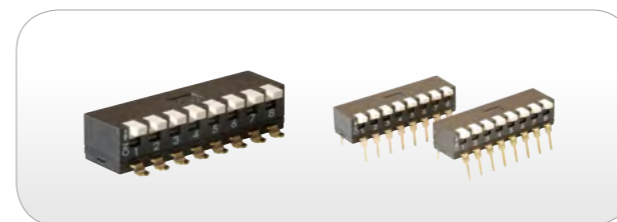
**SHK Series** ..... 39

HALF PITCH(1.27mm) DIP SWITCH



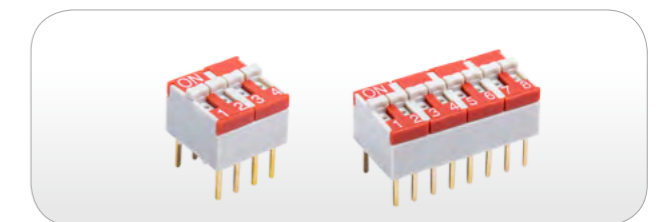
**SKD/SKS Series** ..... 40

IC TYPE DIP SWITCH



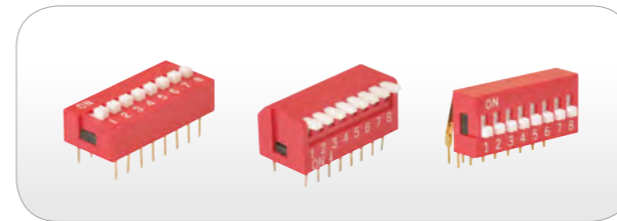
**SKP Series** ..... 41

PIANO TYPE DIP SWITCH



**BSD Series** ..... 42

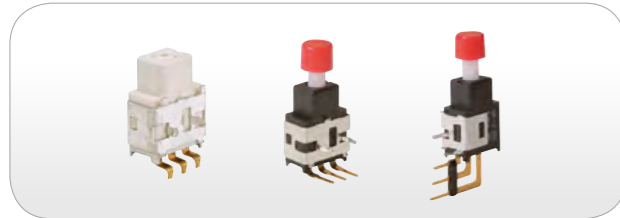
BOX TYPE DIP SWITCH



**DS/DA/DP Series** ..... 43

# Index

## ▶ MINIATURE PUSH BUTTON SWITCH



**SP Series** ..... 45  
Water Proof

## ▶ ILLUMINATE PUSH BUTTON SWITCH



**SLP Series** ..... 52

## ▶ TACT SWITCH



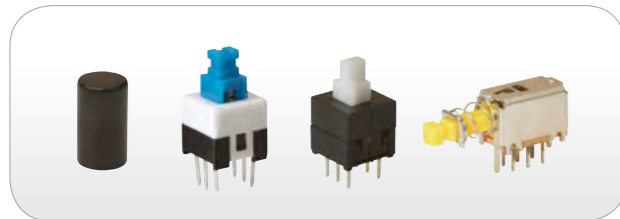
**STR/STP Series** ..... 54  
Mini Tact Switch

## ▶ HOOK SWITCH



**SH Series** ..... 65

## ▶ PUSH SWITCH



**SPS Series** ..... 66

## ▶ LED MODULE



**LED Module** ..... 68

## ▶ OPTO PIPE/FRAME GROUND/GUIDE RAIL



**SPLE / FGR / SCG Series** ..... 76

## ▶ CHIP LED/LED LAMP



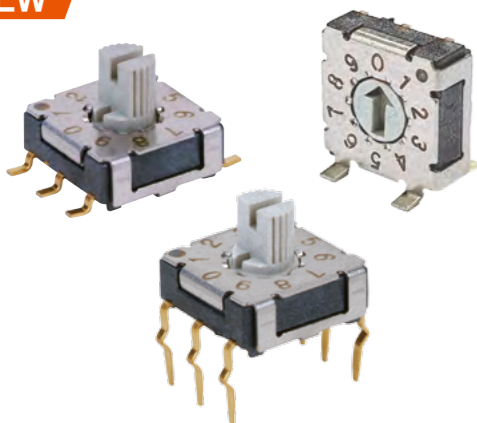
**CHIP LED/LED Lamp** ..... 78

# ROTARY DIP SWITCH

COMPACT ROTARY DIP SWITCH (G Series) ..... 10 7.2 x 7.2 x 2.9 SIZE	10
MINI ROTARY DIP SWITCH (M Series) ..... 14 7.4 x 7.4 x 3.65 SIZE	14
ROTARY DIP SWITCH (T/S/Q Series) ..... 18 10 x 10 x 6.5 SIZE (3x3 Ter')	18
ROTARY DIP SWITCH (F/E Series) ..... 21 10 x 10 x 6.5 SIZE (4x1 Ter')	21
ROTARY DIP SWITCH (U Series) ..... 24 10 x 10 x 4.5 SIZE (3x3 Ter')	24
ROTARY DIP SWITCH (H Series) ..... 27 10 x 10 x 4.5 SIZE (4x1 Ter')	27
ACCESSORY (RK Series) ..... 32	32

# COMPACT ROTARY DIP SWITCH 7.2x7.2 Size, Height: 2.9mm

NEW

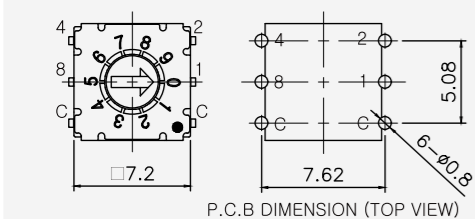


## General Specification

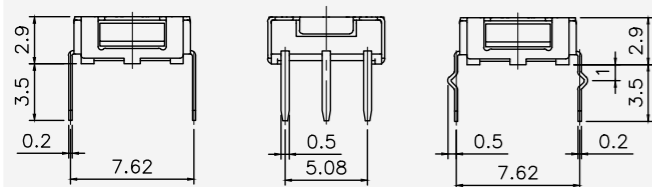
- Rating :** 100mA, DC 5V (Switching)  
100mA, DC 50V (None-Switching)
- Contact Resistance :** 100mΩ Max.
- Insulation Resistance :** 100MΩ Min. at DC 100V
- Operating Force :** 200gf Max.
- Life Cycle :** 25,000 steps
- Sealing :** IP67 (Dust & water proof)

## GENERAL DIMENSION

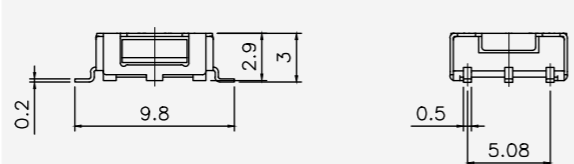
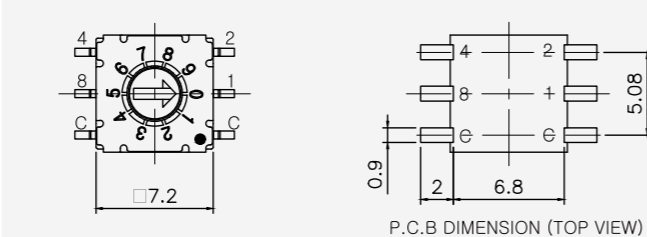
### Through Hole Type Layout



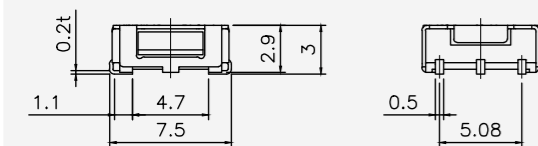
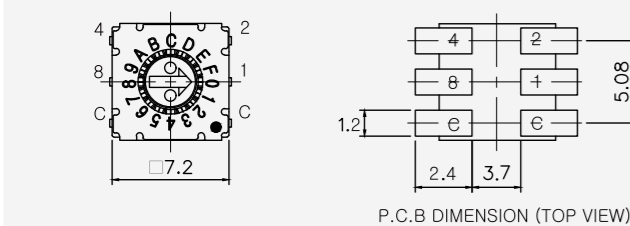
Crimped Type (K Type)



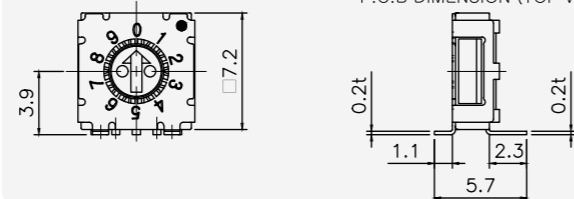
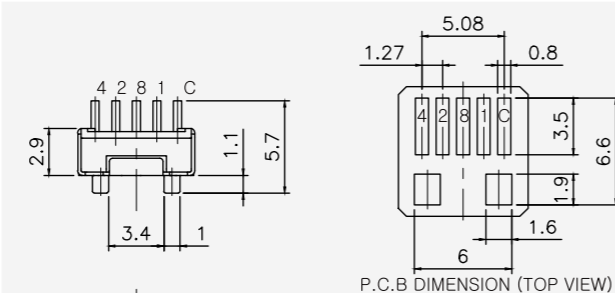
### SMD Gull Wing Type Layout



### SMD J-Hook Type Layout



### Angle Half pitch SMD Type Layout (Ter' 5)



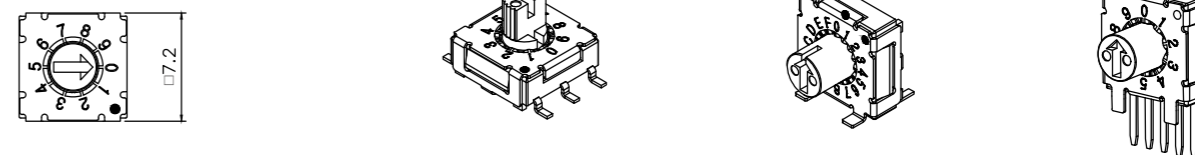
# COMPACT ROTARY DIP SWITCH 7.2x7.2 Size, Height: 2.9mm

## HOW TO ORDER

GS	D	R	-	10	S	TR
Type	Actuator	Code		Position	Terminal	Packing
GS 7.2 X 7.2 Size Height 2.9mm	D Arrow (Height = 0mm) M Slotted spindle (Height = 3mm) E Cross (Height = 0mm) P Arrow (Height = 3mm)	R Real Code C Complement Code G Gray code *Other codes are available upon the request.		04 04 Position 10 10 Position 16 16 Position	- Through-Hole (Ter' 3 X 3) S SMD Gull Wing K Crimped J J SMD M Angle Half Pitch (Through Hole) MS Angle Half Pitch SMD (Ter'5)	- Tube Packing TR Reel Packing

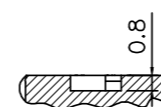
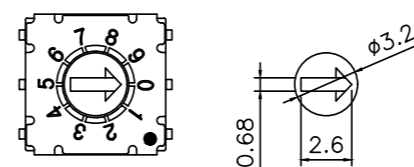
## 1. Type

GS Type

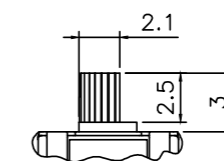
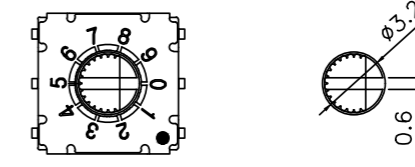


## 2. Actuators

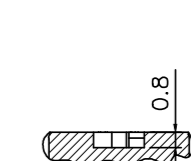
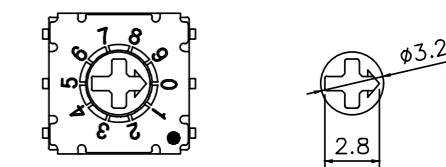
D Arrow (Height = 0mm)



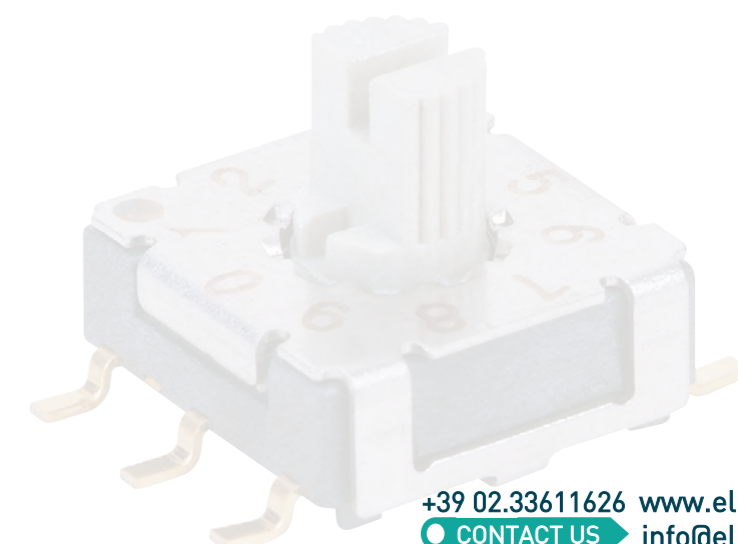
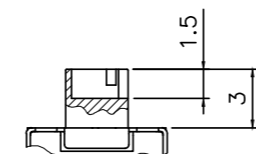
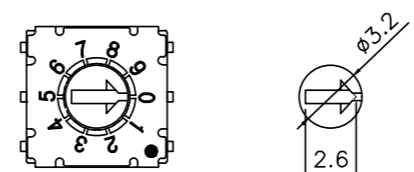
M Slotted Spindle Height = 3mm



E Cross (Height = 0mm)



P Arrow (Height = 3mm)





# COMPACT ROTARY DIP SWITCH 7.2x7.2 Size, Height: 2.9mm

## 3. Code & Position

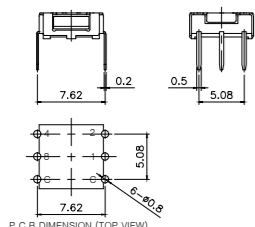
**R** — **10**

R Real Code			C Complement Code			G Gray Code																																																			
04 Position	10 Position	16 Position	04 Position	10 Position	16 Position	04 Position	10 Position	16 Position																																																	
0	C	1	2	0	C	1	2	0	0	C	1	2	4	8	0	C	1	2	4	8	0	C	1	2	4	8	0	C	1	2	4	8																									
1	.	.	.	1	.	.	.	1	1	.	.	.	1	.	.	.	1	.	.	.	1	1	.	.	.	1	.	.	.	1	1	.	.	.	1	.	.	.	1	1	.	.	.	1	.	.	.	1	1	.	.	.	1	.	.	.	1
2	.	.	.	2	.	.	.	2	2	.	.	.	2	.	.	.	2	.	.	.	2	2	.	.	.	2	.	.	.	2	2	.	.	.	2	.	.	.	2	2	.	.	.	2	.	.	.	2	2	.	.	.	2	.	.	.	2
3	.	.	.	3	.	.	.	3	3	.	.	.	3	.	.	.	3	.	.	.	3	3	.	.	.	3	.	.	.	3	3	.	.	.	3	.	.	.	3	3	.	.	.	3	.	.	.	3	3	.	.	.	3	.	.	.	3
4	.	.	.	4	.	.	.	4	4	.	.	.	4	.	.	.	4	.	.	.	4	4	.	.	.	4	.	.	.	4	4	.	.	.	4	.	.	.	4	4	.	.	.	4	.	.	.	4	4	.	.	.	4	.	.	.	4
5	.	.	.	5	.	.	.	5	5	.	.	.	5	.	.	.	5	.	.	.	5	5	.	.	.	5	.	.	.	5	5	.	.	.	5	.	.	.	5	5	.	.	.	5	.	.	.	5	5	.	.	.	5	.	.	.	5
6	.	.	.	6	.	.	.	6	6	.	.	.	6	.	.	.	6	.	.	.	6	6	.	.	.	6	.	.	.	6	6	.	.	.	6	.	.	.	6	6	.	.	.	6	.	.	.	6	6	.	.	.	6	.	.	.	6
7	.	.	.	7	.	.	.	7	7	.	.	.	7	.	.	.	7	.	.	.	7	7	.	.	.	7	.	.	.	7	7	.	.	.	7	.	.	.	7	7	.	.	.	7	.	.	.	7	7	.	.	.	7	.	.	.	7
8	.	.	.	8	.	.	.	8	8	.	.	.	8	.	.	.	8	.	.	.	8	8	.	.	.	8	.	.	.	8	8	.	.	.	8	.	.	.	8	8	.	.	.	8	.	.	.	8	8	.	.	.	8	.	.	.	8
9	.	.	.	9	.	.	.	9	9	.	.	.	9	.	.	.	9	.	.	.	9	9	.	.	.	9	.	.	.	9	9	.	.	.	9	.	.	.	9	9	.	.	.	9	.	.	.	9	9	.	.	.	9	.	.	.	9
10	.	.	.	A	.	.	.	A	10	.	.	.	A	.	.	.	A	.	.	.	A	10	.	.	.	A	.	.	.	A	10	.	.	.	A	.	.	.	A	10	.	.	.	A	.	.	.	A	10	.	.	.	A	.	.	.	A
11	.	.	.	B	.	.	.	B	11	.	.	.	B	.	.	.	B	.	.	.	B	11	.	.	.	B	.	.	.	B	11	.	.	.	B	.	.	.	B	11	.	.	.	B	.	.	.	B	11	.	.	.	B	.	.	.	B
12	.	.	.	C	.	.	.	C	12	.	.	.	C	.	.	.	C	.	.	.	C	12	.	.	.	C	.	.	.	C	12	.	.	.	C	.	.	.	C	12	.	.	.	C	.	.	.	C	12	.	.	.	C	.	.	.	C
13	.	.	.	D	.	.	.	D	13	.	.	.	D	.	.	.	D	.	.	.	D	13	.	.	.	D	.	.	.	D	13	.	.	.	D	.	.	.	D	13	.	.	.	D	.	.	.	D	13	.	.	.	D	.	.	.	D
14	.	.	.	E	.	.	.	E	14	.	.	.	E	.	.	.	E	.	.	.	E	14	.	.	.	E	.	.	.	E	14	.	.	.	E	.	.	.	E	14	.	.	.	E	.	.	.	E	14	.	.	.	E	.	.	.	E
15	.	.	.	F	.	.	.	F	15	.	.	.	F	.	.	.	F	.	.	.	F	15	.	.	.	F	.	.	.	F	15	.	.	.	F	.	.	.	F	15	.	.	.	F	.	.	.	F	15	.	.	.	F	.	.	.	F

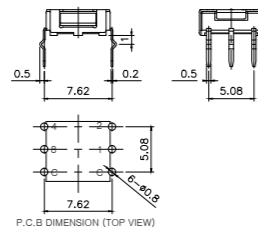
\* Special codes are available upon the request.

## 4. Terminals

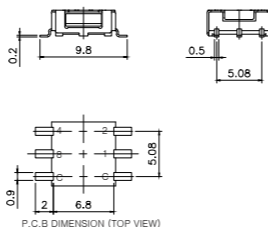
### Through-Hole (Ter' 3x3)



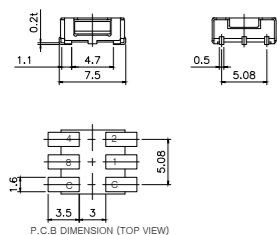
### Crimped (Ter' 3x3)



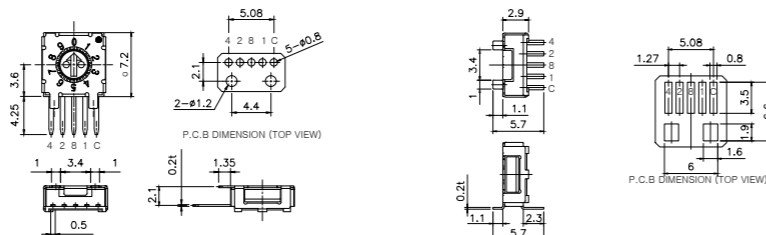
### SMD (Ter' 3x3)



### J - Hook SMD (Ter' 3x3)

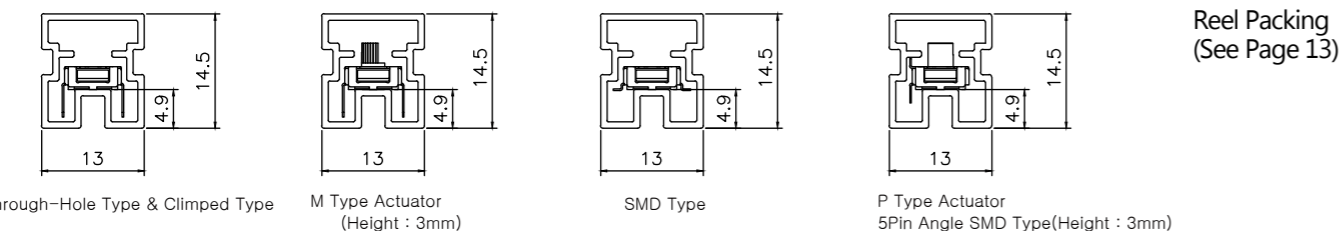


### M Angle Half pitch (Through Hole Ter'5) MS Angle Half pitch SMD (Ter' 5)



## 5. Packing

### Tube Packing (Q'ty: 70 pcs / Tube)

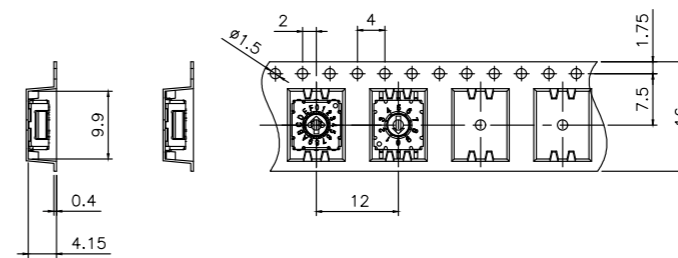


**TR**  
Reel Packing (See Page 13)

# COMPACT ROTARY DIP SWITCH 7.2x7.2 Size, Height: 2.9mm Tape & Reel Packing

### 1. 'D' & 'E' Type Actuator with SMD / J Terminal

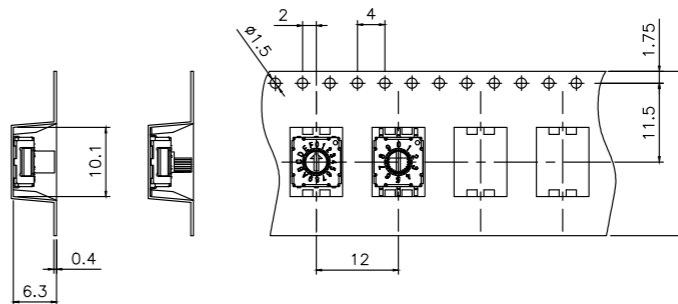
- (GSDR-S)
- (GSDR-J)
- (GSER-S)
- (GSER-J)



Units(pcs)
1,300

### 2. 'M' & 'P' Type Actuator with SMD / J Terminal

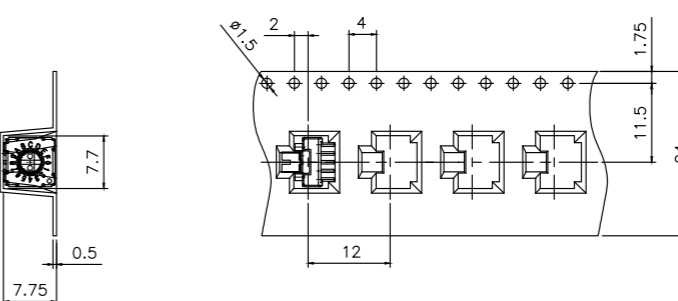
- (GSMR-S)
- (GSMR-J)
- (GSPR-S)
- (GSPR-J)



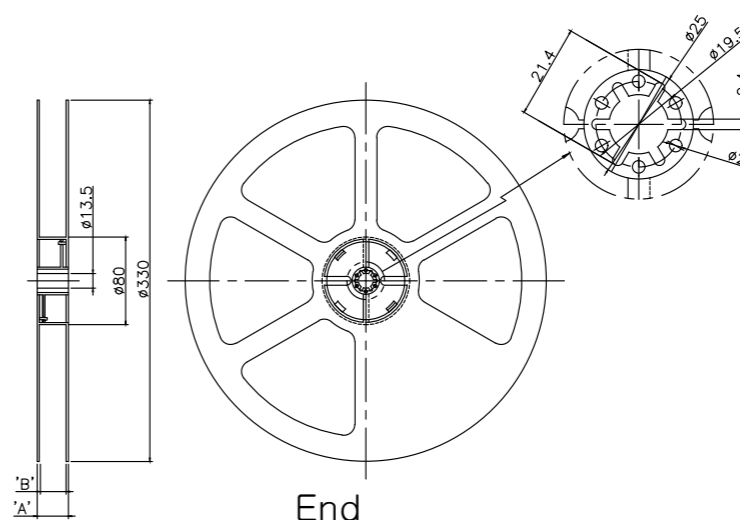
Units(pcs)
800

### 3. 'M' & 'P' Type Actuator with Angle Half pitch SMD (Ter' 5)

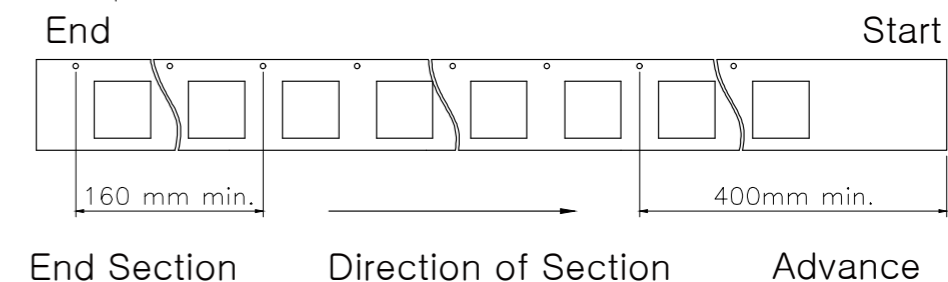
- (GSDR-MS)
- (GSER-MS)
- (GSMR-MS)
- (GSPR-MS)



Units(pcs)
580



Actuator	A	B
1. D&E Type	22.4	16.4
2. M&P Type	30.4	24.4



ROTARY DIP - G  
SLIDE SW  
DIP SW  
PUSH SW - SP  
TACT SW  
LED MODULE  
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SLIDE SW  
DIP SW  
PUSH SW  
TACT SW  
LED MODULE  
www.sunngm.com





# MINI ROTARY DIP SWITCH 7.4x7.4 Size, Height: 3.65mm

## 3. Code & Position

**R** Real Code **C** Complement Code **G** Gray Code **M** **N**

Real Code	
16 Position	10 Position
0	C 1 2 4 8
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	A
11	B
12	C
13	D
14	E
15	F

Complement Code	
16 Position	10 Position
0	C 1 2 4 8
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	A
11	B
12	C
13	D
14	E
15	F

Gray Code	
10 Position	16 Position
0	C 1 2 4 8
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	A
11	B
12	C
13	D
14	E
15	F

Decimal Code	
04 Position	Top View
0	1 2 3
1	
2	
3	

\* Other special codes are available upon the request.

## 4. Terminal

**-** Through-Hole (Ter' 3x3) **C** Through-Hole (Ter' 3x2) **S/SC** SMD Type (Ter' 3x3, Ter' 3x2)

**J/JC** J - Hook SMD (Ter' 3x3, Ter' 3x2) **H** Angle Type 5.08mm (Ter' 3x3) **H1** Angle Type 2.54mm (Ter' 3x3)

P.C.B DIMENSION (TOP VIEW)

## 5. Packing

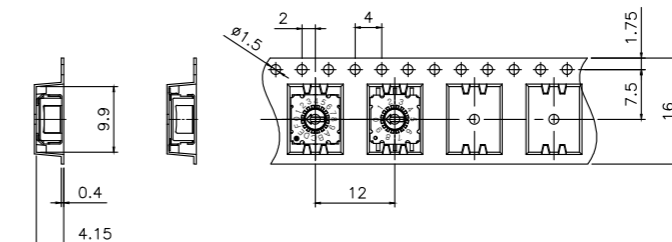
**-** Tube Packing (Q'ty: 70 pcs / Tube) & (Q'ty: 65 pcs / Angle Type Tube) **TR**

Reel Packing (See Page 17)

# MINI ROTARY DIP SWITCH 7.4x7.4 Size, Height: 3.65mm Tape & Reel Packing

### 1. 'D' Type Actuator with SMD / J Terminal

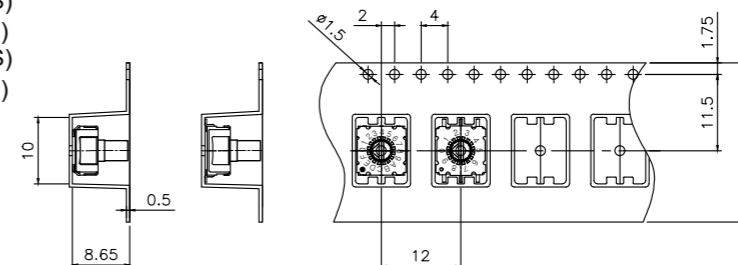
(MSDR-S)  
(MSDR-J)



Units(pcs)
1,300

### 2. 'S' & 'K' Type Actuator with SMD / J Terminal

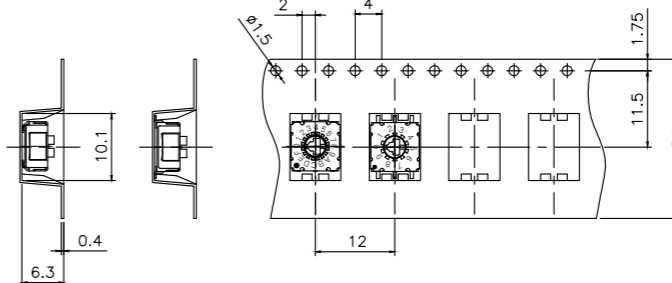
(MSSR-S)  
(MSSR-J)  
(MSKR-S)  
(MSKR-J)



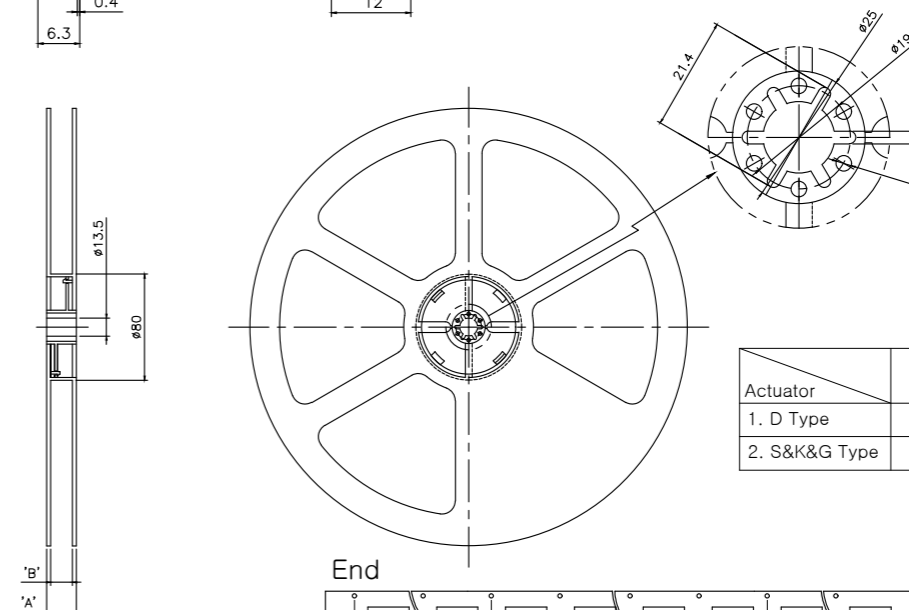
Units(pcs)
600

### 3. 'G' Type Actuator with SMD Terminal / J Terminal

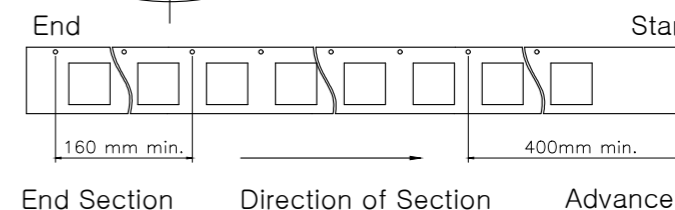
(MSGR-S)  
(MSGR-J)



Units(pcs)
800



Actuator	A	B
1. D Type	22.4	16.4
2. S&K&G Type	30.4	24.4



ROTARY DIP - M  
SLIDE SW  
DIP SW  
PUSH SW  
TACT SW  
LED MODULE

ROTARY DIP - M  
SLIDE SW  
DIP SW  
PUSH SW  
TACT SW  
LED MODULE

# ROTARY DIP SWITCH 10x10 Size, Height: 6.5mm, 3x3 Terminal

T/S/Q Series



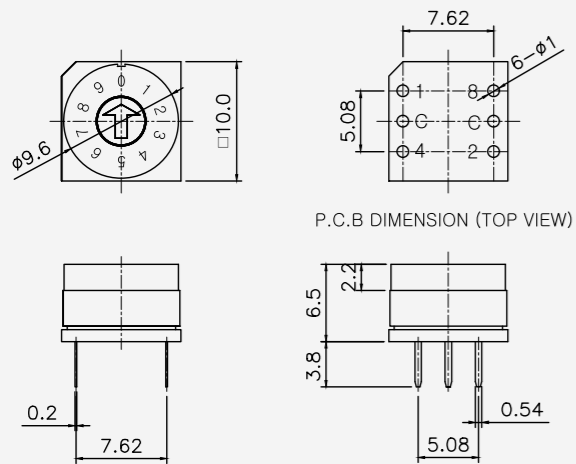
## General Specification

- Rating :** 150mA, DC 42V (Switching)  
200mA, DC 42V (None-Switching)
- Contact Resistance :** 80mΩ Max.
- Insulation Resistance :** 100MΩ Min at DC 250V
- Operating Force :** 700gf Max.
- Life Cycle :** 10,000 steps
- Sealing :** IP67 (Dust & Water proof)  
\*Except cross type of Actuator ("E" Type)

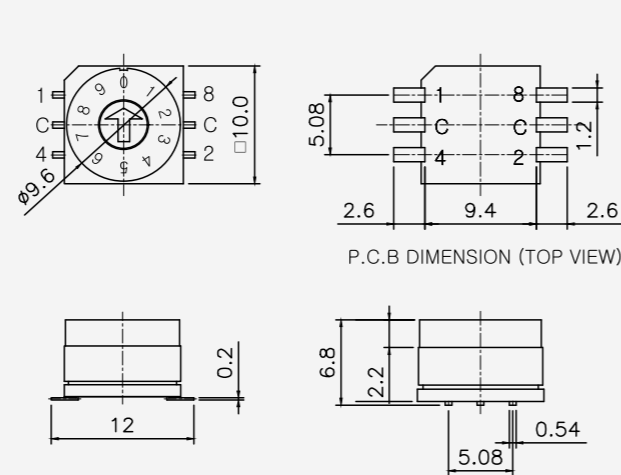
\*See page 32 for Accessories.

## GENERAL DIMENSION

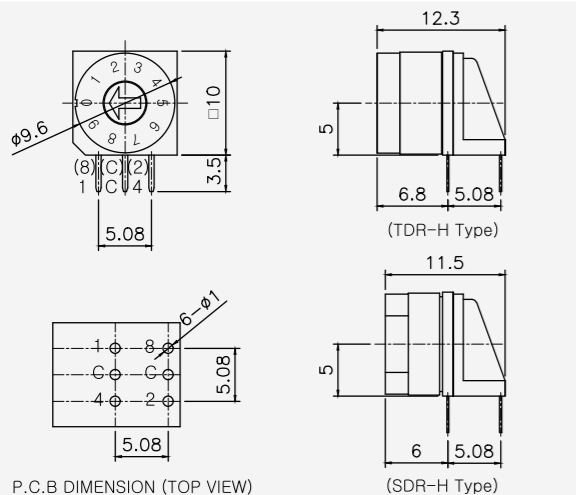
### Through Hole Type Layout



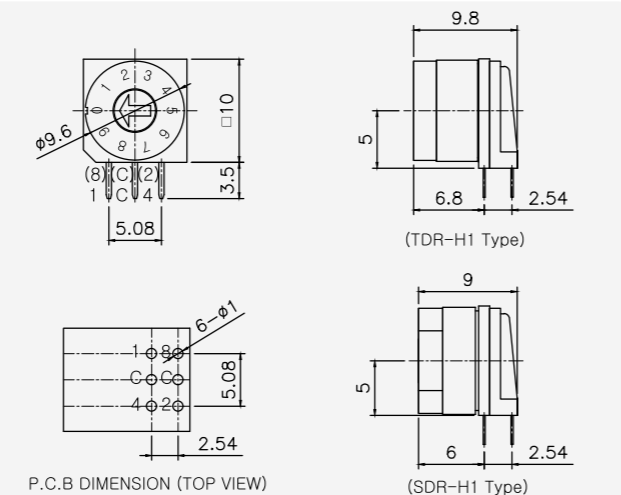
### SMD Gull Wing Type Layout



### Angle Type Layout (H:5.08mm)



### Angle Type Layout (H1:2.54mm)



# ROTARY DIP SWITCH 10x10 Size, Height: 6.5mm, 3x3 Terminal

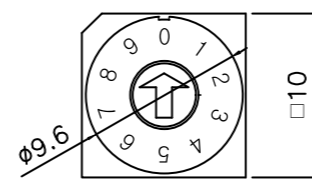
## HOW TO ORDER

T	D	R	-	10	S	TR
Cover Type	Actuator	Code		Position	Terminal	Packing
<b>T</b> Round (Ter' 3x3) <b>S</b> Octagon (Ter' 3x3) <b>Q</b> Square (Ter' 3x3)	<b>D</b> Arrow (Height = 0mm) <b>S</b> Height = 7.3mm <b>P</b> Height = 1.0mm <b>E</b> Cross (Height = 0mm)	<b>R</b> Real Code <b>C</b> Complement Code <b>G</b> Gray Code *Other special codes are available upon the request.		<b>04</b> 4 Position <b>06</b> 6 Position <b>08</b> 8 Position <b>10</b> 10 Position <b>16</b> 16 Position	- Through-Hole (Ter' 3x3) - Through-Hole (Ter' 3x2) <b>S</b> SMD Gull Wing (Ter' 3x3) <b>SC</b> SMD Gull Wing (Ter' 3x2) <b>H</b> Right Angle 5.08mm <b>H1</b> Right Angle 2.54mm	- Tube Packing <b>TR</b> Reel Packing

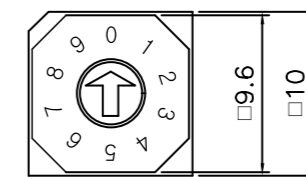
## 1. Cover Type



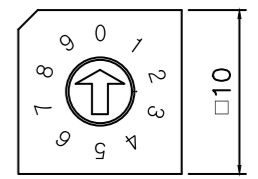
### T Type (Round)



### S Type (Octagon)



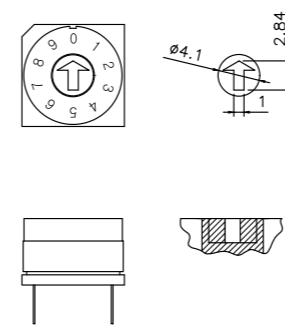
### Q Type (Square)



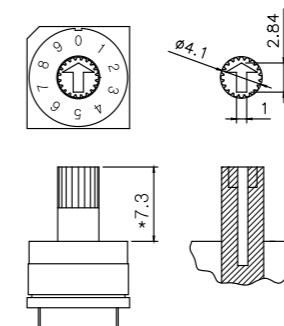
## 2. Actuator



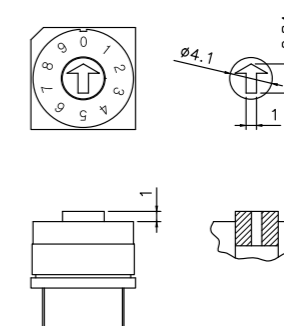
### D Arrow (Height = 0mm)



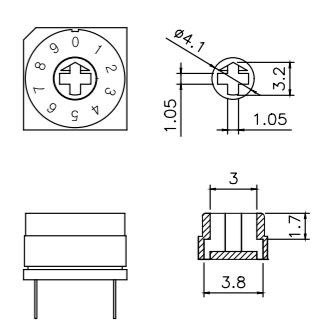
### S Height = 7.3mm



### P Height = 1mm



### E Cross (Height = 0mm)



\* Only T Type Right Angle : 6.3mm

ROTARY DIP - T/S/Q

SLIDE SW

DIP SW

PUSH SW

TACT SW

LED MODULE

www.sungrun.com

ROTARY DIP - T/S/Q

SLIDE SW

DIP SW

PUSH SW

TACT SW

LED MODULE

www.sungrun.com



# ROTARY DIP SWITCH 10x10 Size, Height: 6.5mm, 3x3 Terminal

## 3. Code & Position

**R** Real Code

**C** Complement Code

**G** Gray Code

16 Position	10 Position	08 Position	06 Position	04 Position		
0	C	1	2	4	8	0
1						1
2						2
3						3
4						4
5						5
6						6
7						7
8						8
9						9
10						A
11						B
12						C
13						D
14						E
15						F

16 Position	10 Position	08 Position	06 Position	04 Position		
0	C	1	2	4	8	0
1						1
2						2
3						3
4						4
5						5
6						6
7						7
8						8
9						9
10						A
11						B
12						C
13						D
14						E
15						F

10 Position	16 Position					
0	C	1	2	4	8	0
1						1
2						2
3						3
4						4
5						5
6						6
7						7
8						8
9						9
10						A
11						B
12						C
13						D
14						E
15						F

\* See page 30 for special codes.

## 4. Terminal

**T** Through-Hole (Ter' 3x3)

**C** Through-Hole (Ter' 3x2)

**S** SMD Type (Ter' 3x3)

**SC** SMD Type (Ter' 3x2)

**H** Angle Type 5.08mm (Ter' 3x3)

**H1** Angle Type 2.54mm (Ter' 3x3)

## 5. Packing

**T** Tube Packing (Q'ty: 50Pcs/Tube)

**TR** Reel Packing (See page 31)

# ROTARY DIP SWITCH 10x10 Size, Height: 6.5mm, 4x1 Terminal

F  
E  
Series



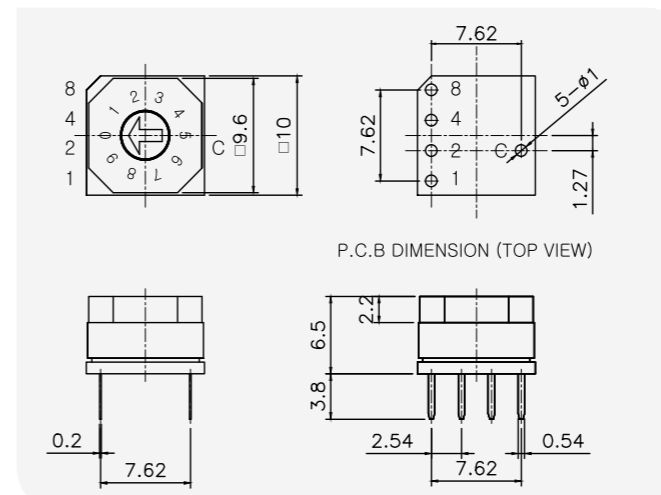
## General Specification

- Rating :** 150mA, DC 42V (Switching)  
200mA, DC 42V (None-Switching)
- Contact Resistance :** 80mΩ Max.
- Insulation Resistance :** 100MΩ Min at DC 250V
- Operating Force :** 700gf Max.
- Life Cycle :** 10,000 steps
- Sealing :** IP67 (Dust & Water proof)  
\*Except cross type of Actuator ("E" Type)

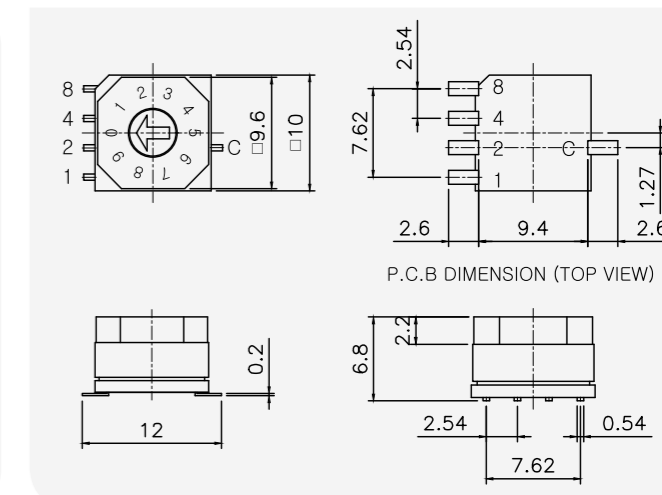
\*See page 32 for Accessories.

## GENERAL DIMENSION

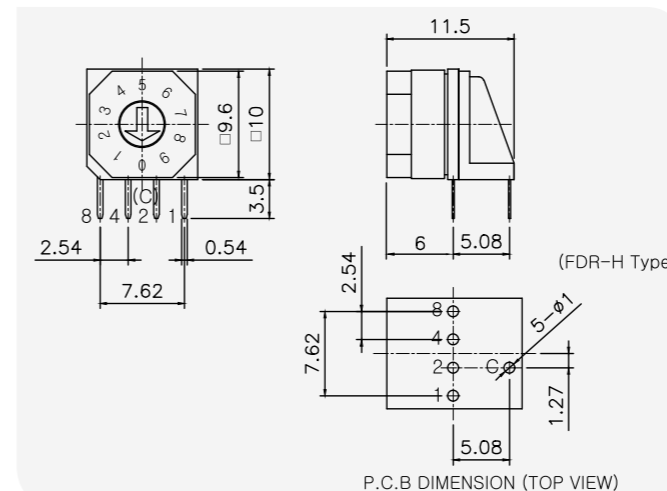
### Through Hole Type Layout



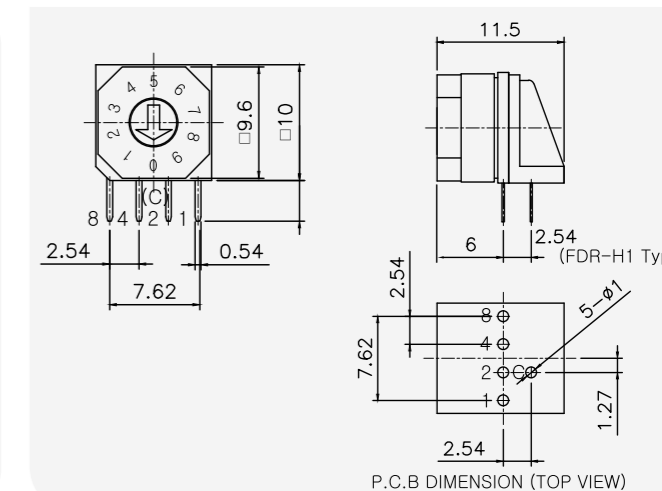
### SMD Gull Wing Type Layout



### Angle Type Layout (H:5.08mm)



### Angle Type Layout (H1:2.54mm)



ROTARY DIP - T/S/Q

SLIDE SW

DIP SW

PUSH SW

TACT SW

LED MODULE

www.sunngm.com

ROTARY DIP - F/E

SLIDE SW

DIP SW

PUSH SW

TACT SW

LED MODULE

www.sunngm.com

# ROTARY DIP SWITCH 10x10 Size, Height: 6.5mm, 4x1 Terminal

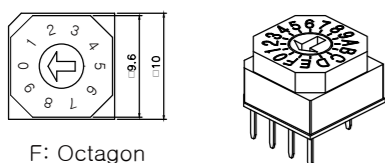
## HOW TO ORDER

**F** **D** **R** - **10** **S** **-**

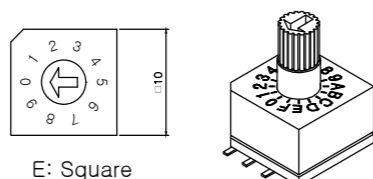
Cover Type	Actuator	Code	Position	Terminal	Packing
<b>F</b> Octagon Type (Ter' 4x1) <b>E</b> Square (Ter' 4x1)	<b>D</b> Arrow (Height = 0mm) <b>S</b> Height = 7.3mm <b>P</b> Height = 1.0mm <b>E</b> Cross (Height = 0mm)	<b>R</b> Real Code <b>C</b> Complement Code <b>G</b> Gray Code *Other special codes are available upon the request.	<b>04</b> 4 Position <b>06</b> 6 Position <b>08</b> 8 Position <b>10</b> 10 Position <b>16</b> 16 Position	<b>-</b> Through-Hole (Ter' 4x1) <b>S</b> SMD Gull Wing (Ter' 4x1) <b>H</b> Right Angle 5.08mm <b>H1</b> Right Angle 2.54mm	<b>-</b> Tube Packing <b>TR</b> Reel Packing

## 1. Cover Type

**F** Type [Octagon] 4x1 Ter'

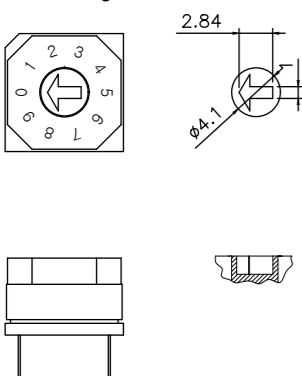


**E** Type [Square] 4x1 Ter'

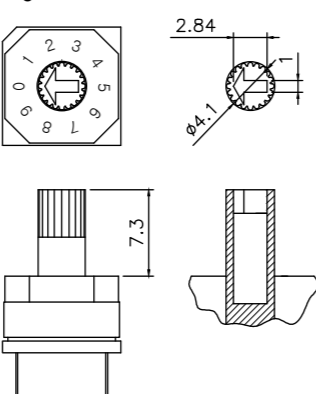


## 2. Actuator

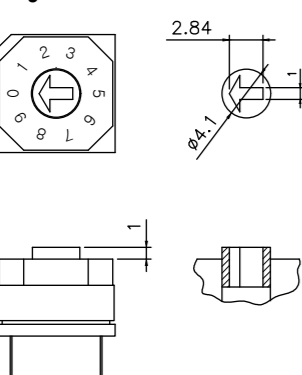
**D** Arrow (Height = 0mm)



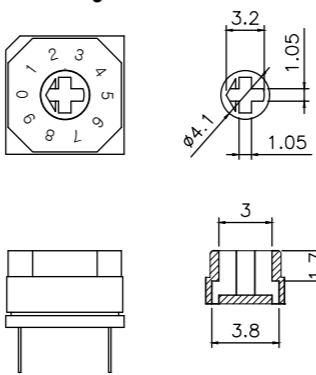
**S** Height = 7.3mm



**P** Height = 1mm



**E** Cross (Height = 0mm)



# ROTARY DIP SWITCH 10x10 Size, Height: 6.5mm, 4x1 Terminal

## 3. Code & Position

**R** Real Code

		Real Code																
04 POSITION	06 POSITION	08 POSITION	10 POSITION	16 POSITION	C 1 2 4 8													
					0	1	2	3	4	5	6	7	8	9	A	B	C	D
0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F			

**C** Complement Code

		Complement Code																
04 POSITION	06 POSITION	08 POSITION	10 POSITION	16 POSITION	C 1 2 3 4													
					0	1	2	3	4	5	6	7	8	9	A	B	C	D
0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F			

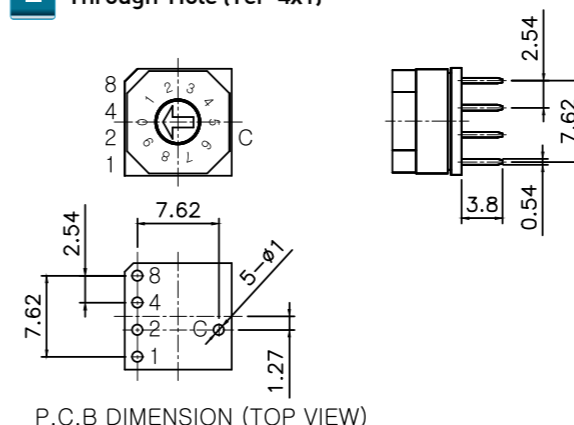
**S** Decimal Code

		Decimal Code			
04 POSITION	06 POSITION	C 1 2 3 4			
		0	1	2	3
0	1	2	3	4	

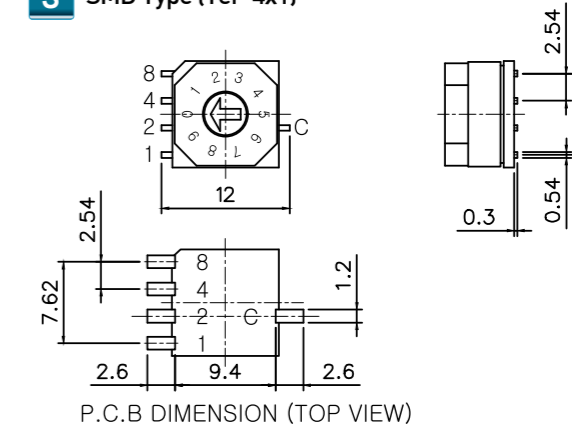
\* Special Codes are available upon the request.

## 4. Terminal

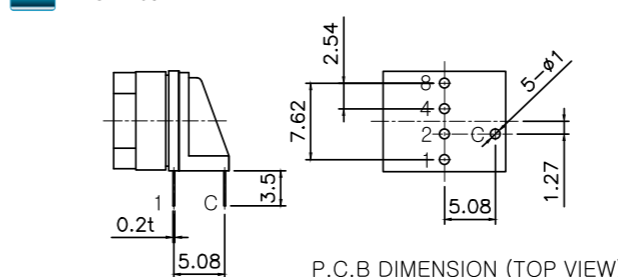
**-** Through-Hole (Ter' 4x1)



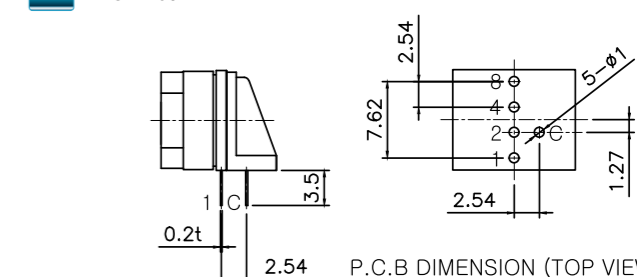
**S** SMD Type (Ter' 4x1)



**H** Angle Type 5.08mm (Ter' 4x1)

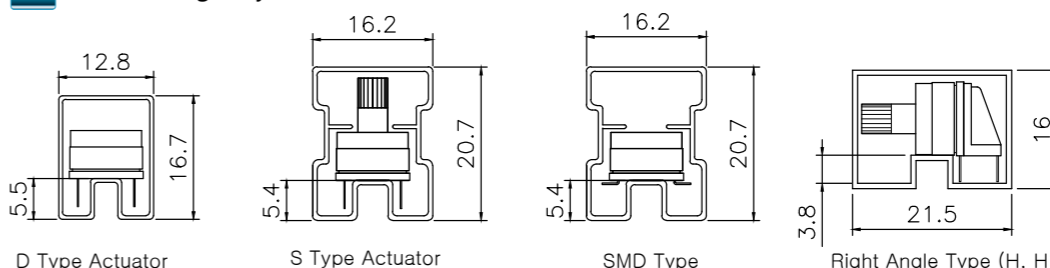


**H1** Angle Type 2.54mm (Ter' 4x1)



## 5. Packing

**-** Tube Packing (Q'ty: 50Pcs/Tube)



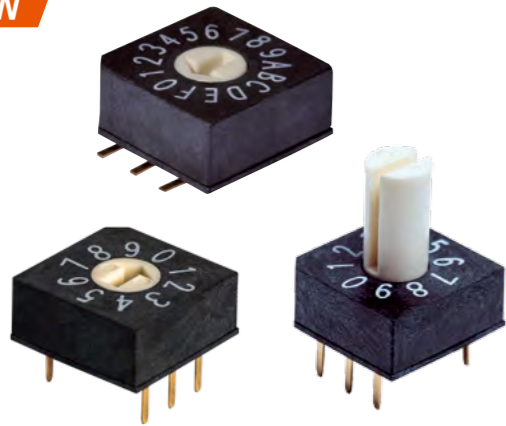
**TR**

Reel Packing (See Page 31)

# ROTARY DIP SWITCH 10x10 Size, Height: 4.5mm, 3x3 Terminal

NEW

U  
UA  
Series

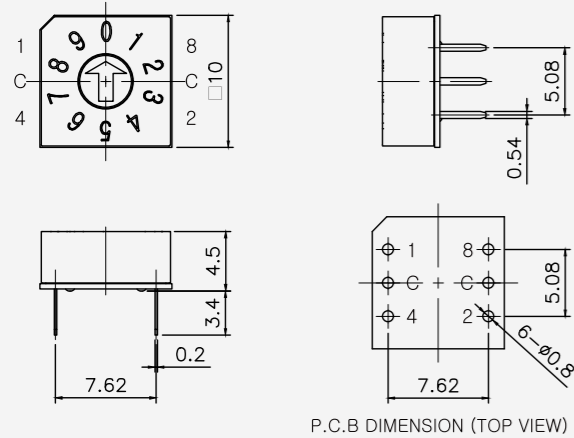


## General Specification

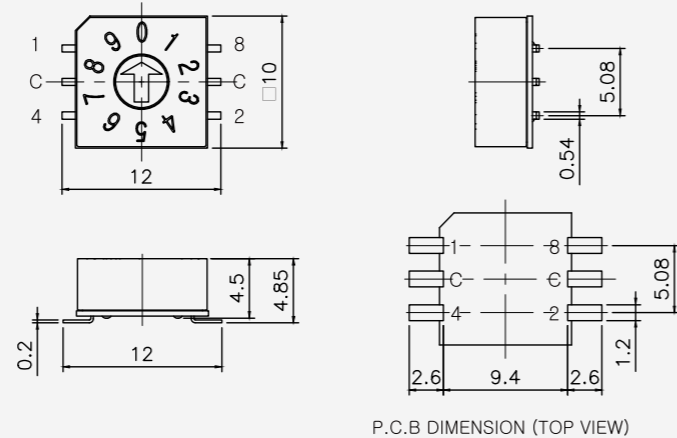
- Rating :** 25mA, 12V DC (Switching)  
25mA, 24V DC (None-Switching)
- Contact Resistance :** 100mΩ Max.
- Insulation Resistance :** 100MΩ Min at DC 250V
- Operating Force :** 700gf Max.
- Life Cycle :** 10,000 steps
- Sealing :** IP67 (Dust & Water proof)

## GENERAL DIMENSION

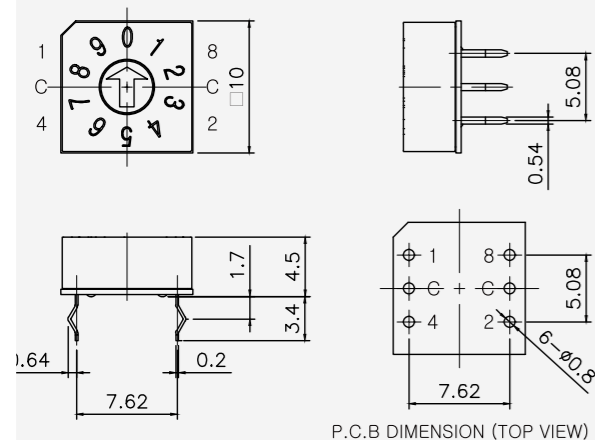
### Through Hole Type Layout



### SMD Gull Wing Type Layout



### Crimped Type Layout

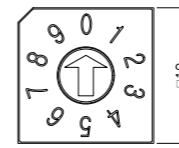


# ROTARY DIP SWITCH 10x10 Size, Height: 4.5mm, 3x3 Terminal

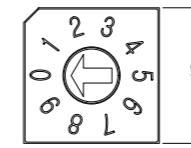
## HOW TO ORDER

U	D	R	-	10	S	TR
Cover Type	Actuator	Code		Position	Terminal	Packing
<b>U</b> Square (Ter' 3x3) Position of Number 0 = 0° <b>UA</b> Square (Ter' 3x3) Position of Number 0 = -90°	<b>D</b> Arrow (Height = 0mm) <b>E</b> Cross (Height = 0mm) <b>M</b> Slotted spindle (Height = 3.2mm) <b>S</b> Slotted spindle (Height = 7.3mm)	<b>R</b> Real Code <b>C</b> Complement Code <b>G</b> Gray Code  *Other special codes are available upon the request.		<b>04</b> 4 Position <b>06</b> 6 Position <b>08</b> 8 Position <b>10</b> 10 Position <b>16</b> 16 Position	<b>-</b> Through-Hole (Ter' 3x3) <b>S</b> SMD Gull Wing (Ter' 3x3) <b>K</b> Crimped	<b>-</b> Tube Packing <b>TR</b> Reel Packing

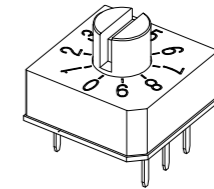
## 1. Cover Type



U Type

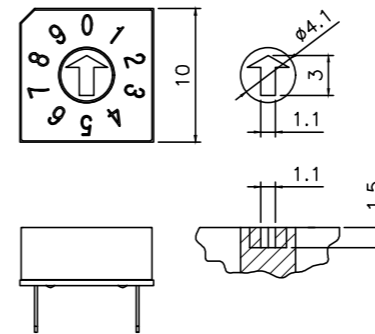


UA Type

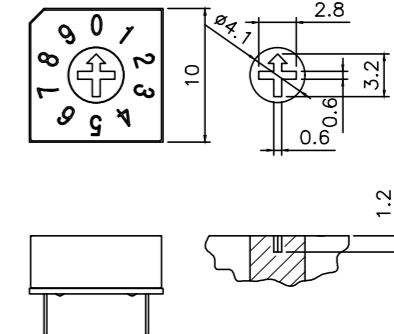


## 2. Actuator

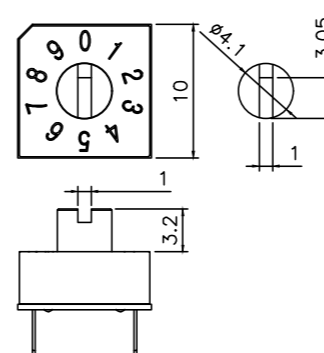
### D Arrow (Height = 0mm)



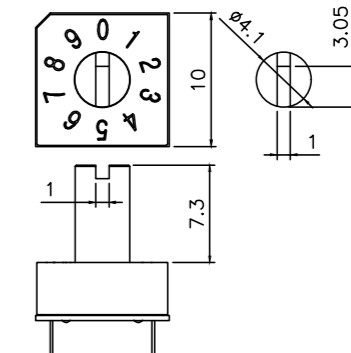
### E Cross (Height = 0mm)



### M Slotted Spindle Height = 3.2mm



### S Slotted spindle (Height = 7.3mm)





# ROTARY DIP SWITCH 10x10 Size, Height: 4.5mm, 3x3 Terminal

## 3. Code & Position

**R** Real Code      **C** Complement Code      **G** Gray Code

16 Position	10 Position	08 Position	06 Position	04 Position	Real Code
					C 1 2 4 8
0	0	0	0	0	0
1	0	0	0	1	1
2	0	0	1	0	2
3	0	0	1	1	3
4	0	1	0	0	4
5	0	1	0	1	5
6	0	1	1	0	6
7	0	1	1	1	7
8	1	0	0	0	8
9	1	0	0	1	9
10	1	0	1	0	A
11	1	0	1	1	B
12	1	1	0	0	C
13	1	1	0	1	D
14	1	1	1	0	E
15	1	1	1	1	F

**C** Complement Code

16 Position	10 Position	08 Position	06 Position	04 Position	Complement Code
					C 1 2 4 8
0	0	0	0	0	0
1	0	0	0	1	1
2	0	0	1	0	2
3	0	0	1	1	3
4	0	1	0	0	4
5	0	1	0	1	5
6	0	1	1	0	6
7	0	1	1	1	7
8	1	0	0	0	8
9	1	0	0	1	9
10	1	0	1	0	A
11	1	0	1	1	B
12	1	1	0	0	C
13	1	1	0	1	D
14	1	1	1	0	E
15	1	1	1	1	F

**G** Gray Code

10 Position	16 Position	Gray Code	Gray Code
		C 1 2 4 8	C 1 2 4 8
0	0	0	0
1	0	1	1
2	0	2	2
3	0	3	3
4	0	4	4
5	0	5	5
6	0	6	6
7	0	7	7
8	0	8	8
9	0	9	9
10	1	A	A
11	1	B	B
12	1	C	C
13	1	D	D
14	1	E	E
15	1	F	F

04 POSITION, 06/08/10/16 POSITION, 10/16 POSITION

\* See page 30 for special codes.

## 4. Terminal

**T** Through-Hole (Ter' 3x3)      **S** SMD Type (Ter' 3x3)      **K** Crimped (Ter' 3x3)

P.C.B DIMENSION (TOP VIEW)

## 5. Packing

**T** Tube Packing (Q'ty: 50Pcs/Tube)      **TR** Tape Reel Packing

Through-Hole Type, SMD Type, S, M Type Actuator (Height : S7.3mm, M3.2mm) Through-Hole Type & Climped Type

Apply to only SMD types (See Page 31)

# ROTARY DIP SWITCH 10x10 Size, Height: 4.5mm, 4x1 Terminal

NEW

H HA Series

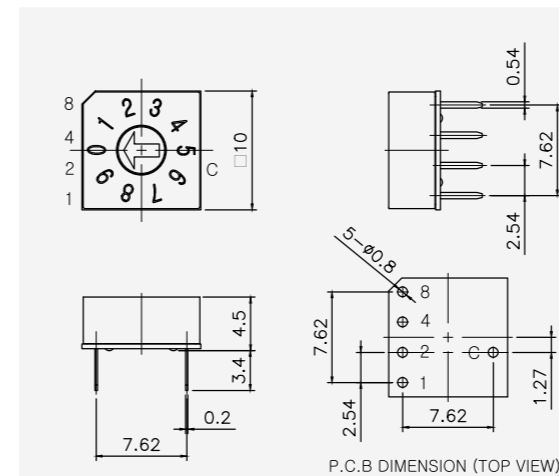


## General Specification

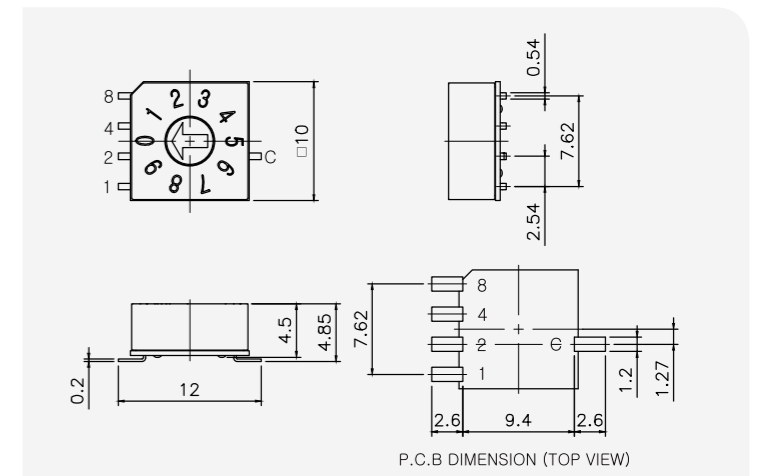
- Rating :** 25mA, 12V DC (Switching)  
25mA, 24V DC (None-Switching)
- Contact Resistance :** 100mΩ Max.
- Insulation Resistance :** 100MΩ Min at DC 250V
- Operating Force :** 700gf Max.
- Life Cycle :** 10,000 steps
- Sealing :** IP67 (Dust & Water proof)

## GENERAL DIMENSION

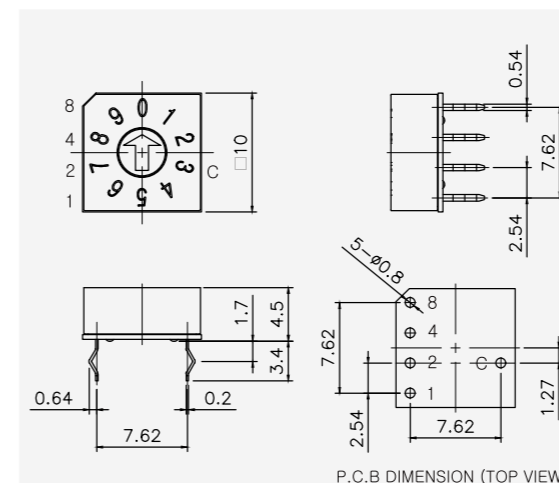
### Through Hole Type Layout



### SMD Gull Wing Type Layout



### Climped Type Layout

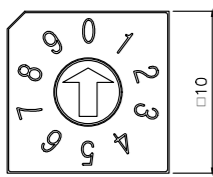


# ROTARY DIP SWITCH 10x10 Size, Height : 4.5mm, 4x1 Terminal

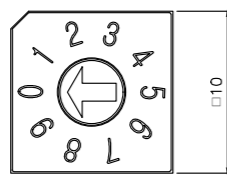
## HOW TO ORDER

<b>H</b>	<b>D</b>	<b>R</b>	<b>10</b>	<b>S</b>	<b>TR</b>
<b>Cover Type</b>	<b>Actuator</b>	<b>Code</b>	<b>Position</b>	<b>Terminal</b>	<b>Packing</b>
<b>H</b> Square (Ter' 4x1) Position of Number 0 = 0° <b>HA</b> Square (Ter' 4x1) Position of Number 0 = -90°	<b>D</b> Arrow (Height = 0mm) <b>E</b> Cross (Height = 0mm) <b>M</b> Slotted spindle (Height = 3.2mm) <b>S</b> Slotted spindle (Height = 7.3mm)	<b>R</b> Real Code <b>C</b> Complement Code <b>G</b> Gray Code  *Other special codes are available upon the request.	<b>04</b> 4 Position <b>06</b> 6 Position <b>08</b> 8 Position <b>10</b> 10 Position <b>16</b> 16 Position	<b>-</b> Through-Hole (Ter' 4x1) <b>S</b> SMD Gull Wing (Ter' 4x1) <b>K</b> Crimped	<b>-</b> Tube Packing <b>TR</b> Reel Packing

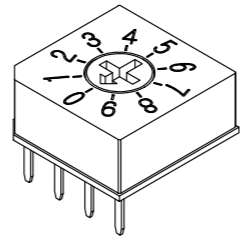
## 1. Cover Type



H Type

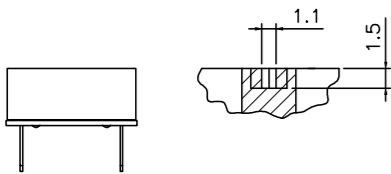
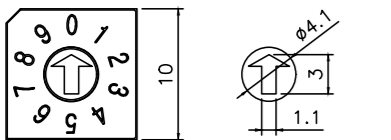


HA Type

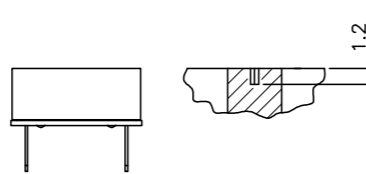
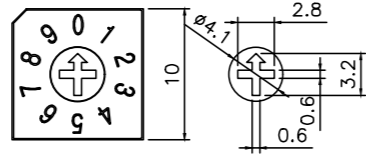


## 2. Actuator

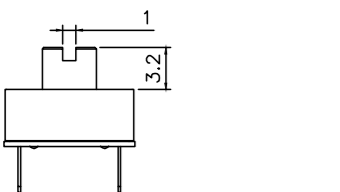
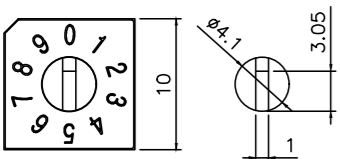
### D Arrow (Height = 0mm)



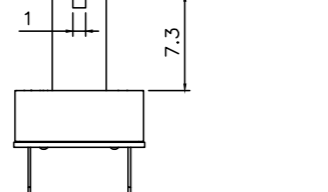
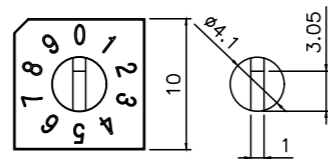
### E Cross (Height = 0mm)



### M Slotted Spindle (Height = 3.2mm)



### S Slotted spindle (Height = 7.3mm)

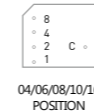


# ROTARY DIP SWITCH 10x10 Size, Height: 4.5mm, 4x1 Terminal

## 3. Code & Position

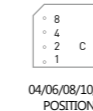
### R Real Code

16 Position	10 Position	08 Position	06 Position	04 Position	Real Code
					C 1 2 4 8
0					0
1					1
2					2
3					3
4					4
5					5
6					6
7					7
8					8
9					9
10					A
11					B
12					C
13					D
14					E
15					F



### C Complement Code

16 Position	10 Position	08 Position	06 Position	04 Position	Complement Code
					C 1 2 4 8
0					0
1					1
2					2
3					3
4					4
5					5
6					6
7					7
8					8
9					9
10					A
11					B
12					C
13					D
14					E
15					F



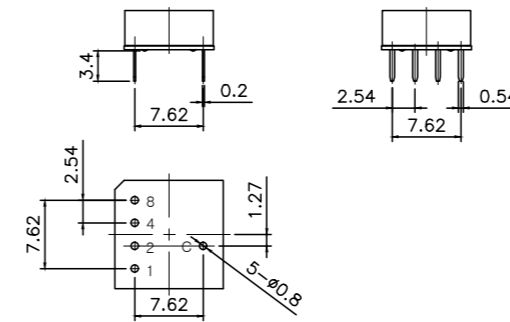
### S Decimal Code

04 Position	Decimal Code
	C 1 2 3 4
1	1
2	2
3	3
4	4

\* Special Codes are available upon the request.

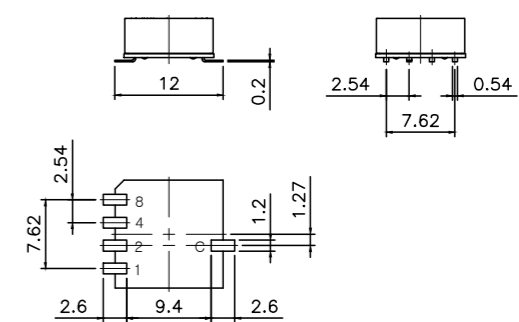
## 4. Terminal

### - Through-Hole (Ter' 4x1)



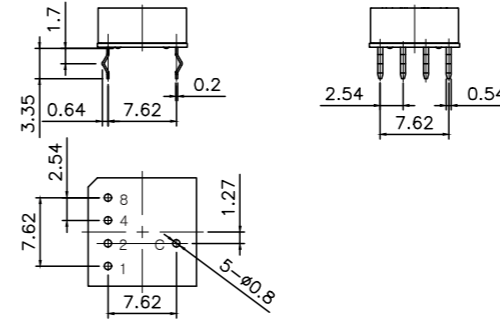
P.C.B DIMENSION (TOP VIEW)

### S SMD Type (Ter' 4x1)



P.C.B DIMENSION (TOP VIEW)

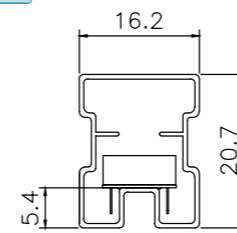
### K Crimped (Ter' 4x1)



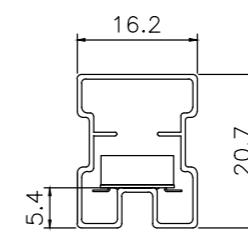
P.C.B DIMENSION (TOP VIEW)

## 5. Packing

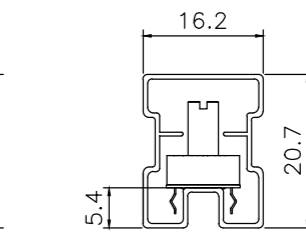
### - Tube Packing (Q'ty: 50Pcs/Tube)



Through-Hole Type



SMD Type



S, M Type Actuator (Height : S7.3mm, M3.2mm)  
Through-Hole Type & Crimped Type

### TR Tape Reel Packing

Apply to only SMD types  
(See Page 31)

ROTARY DIP SWITCH 10x10 Size, Height: 6.5 & 4.5mm, 3x3 Terminal

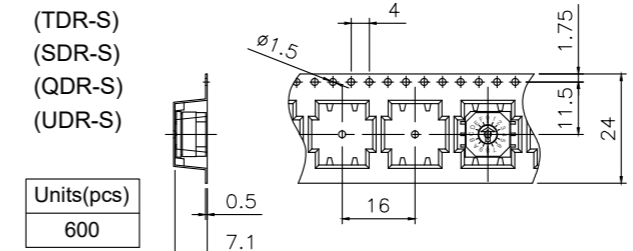
Special Codes

\* Other special codes are available upon the request.

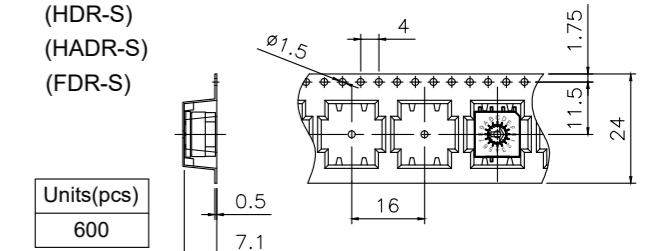
<b>A</b>	10 Position Real Code C 1 2 4 8	<b>B</b>	16 Position Complement Code C 1 2 4 8	<b>D</b>	04 Position Decimal Code C 1 2 3 4	<b>E</b>	06 Position Real Code C 1 2 4 8
<b>F</b>	04 Position Real Code C 1 2	<b>H</b>	16 Position Complement Code C 1 2 4 8	<b>I</b>	04 Position Real Code C 1 2	<b>J</b>	16 Position Real Code C 1 2 4 8
<b>K</b>	04 Position Special Code mit / with 2°C C 1 2 C' 1' 2'	<b>L</b>	06 Position Decimal Code C 1 2 3 4 5	<b>M</b>	04 Position Code C 0 1 2 3	<b>N</b>	04 Position Code C 1 2 3 4
<b>P</b>	10 Position BCD Code Intermittent Switching C 1 2 4 8	<b>Q</b>	10 Position Gray Complement Code C 1 2 4 8				

ROTARY DIP SWITCH 10x10 Size Tape & Reel Packing

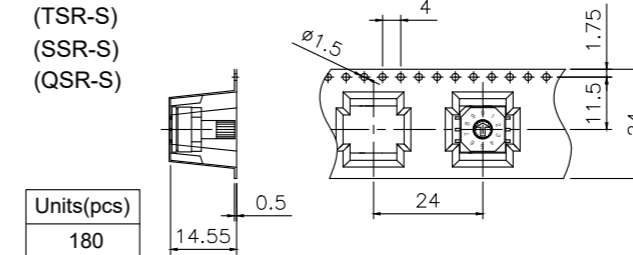
1. 'D' & 'E' Type Actuator with SMD Terminal (Ter'3x3 ,3x2)



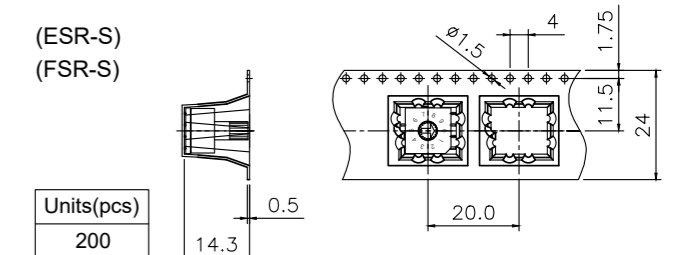
2. 'D' & 'E' Type Actuator with SMD Terminal (Ter'4x1)



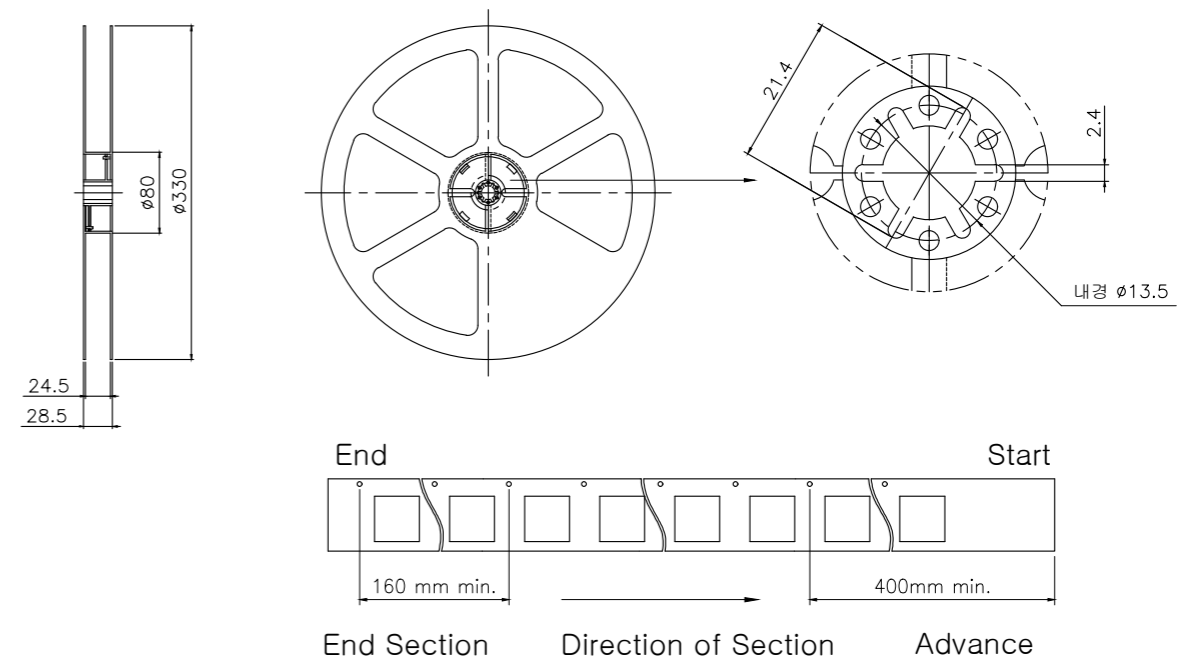
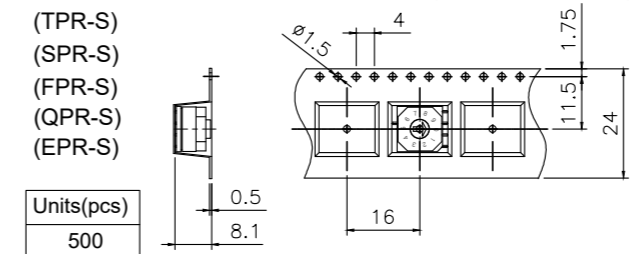
3. 'S' Type Actuator with SMD Terminal (Ter'3x3 ,3x2)



5. 'S' Type Actuator with SMD Terminal (Ter'4x1)



4. 'P' Type Actuator with SMD Terminal (Ter'3x3 , 3x2 , 4x1)



ROTARY DIP

SLIDE SW

DIP SW

PUSH SW

TACT SW

LED MODULE

www.sungrun.com

ROTARY DIP

SLIDE SW

DIP SW

PUSH SW

TACT SW

LED MODULE

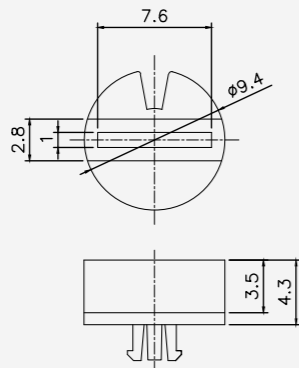
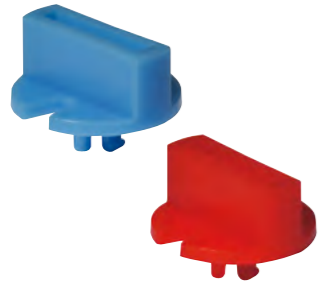
www.sungrun.com



# ROTARY DIP SWITCH ACCESSORY RK Series

\*\* Applicable to only 'E' Type Actuators / Should be mounted after soldering

## 1 RK-100 Series

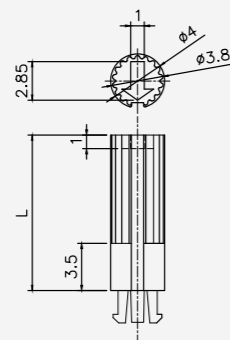


RK - 100

**Color**

- G : Gray
- R : Red
- K : Black
- Y : Yellow
- B : Blue
- GR : Green
- C : Clear

## 2 RK-200 Series



RK - 200

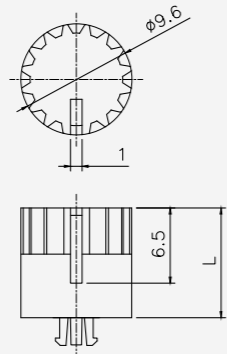
**Color**

- G : Gray
- R : Red
- K : Black
- Y : Yellow
- B : Blue
- GR : Green
- C : Clear

**L (Length)**

- 0 : 7.3
- 1 : 11.6
- 2 : 13.3

## 3 RK-300 Series



RK - 300

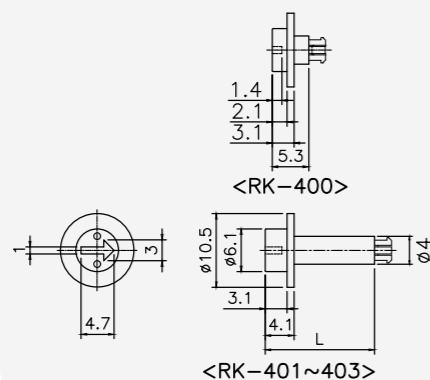
**Color**

- G : Gray
- R : Red
- K : Black
- Y : Yellow
- B : Blue
- GR : Green
- C : Clear

**L (Length)**

- 0 : 9.5
- 1 : 14.5
- 2 : 19.0

## 4 RK-400 Series



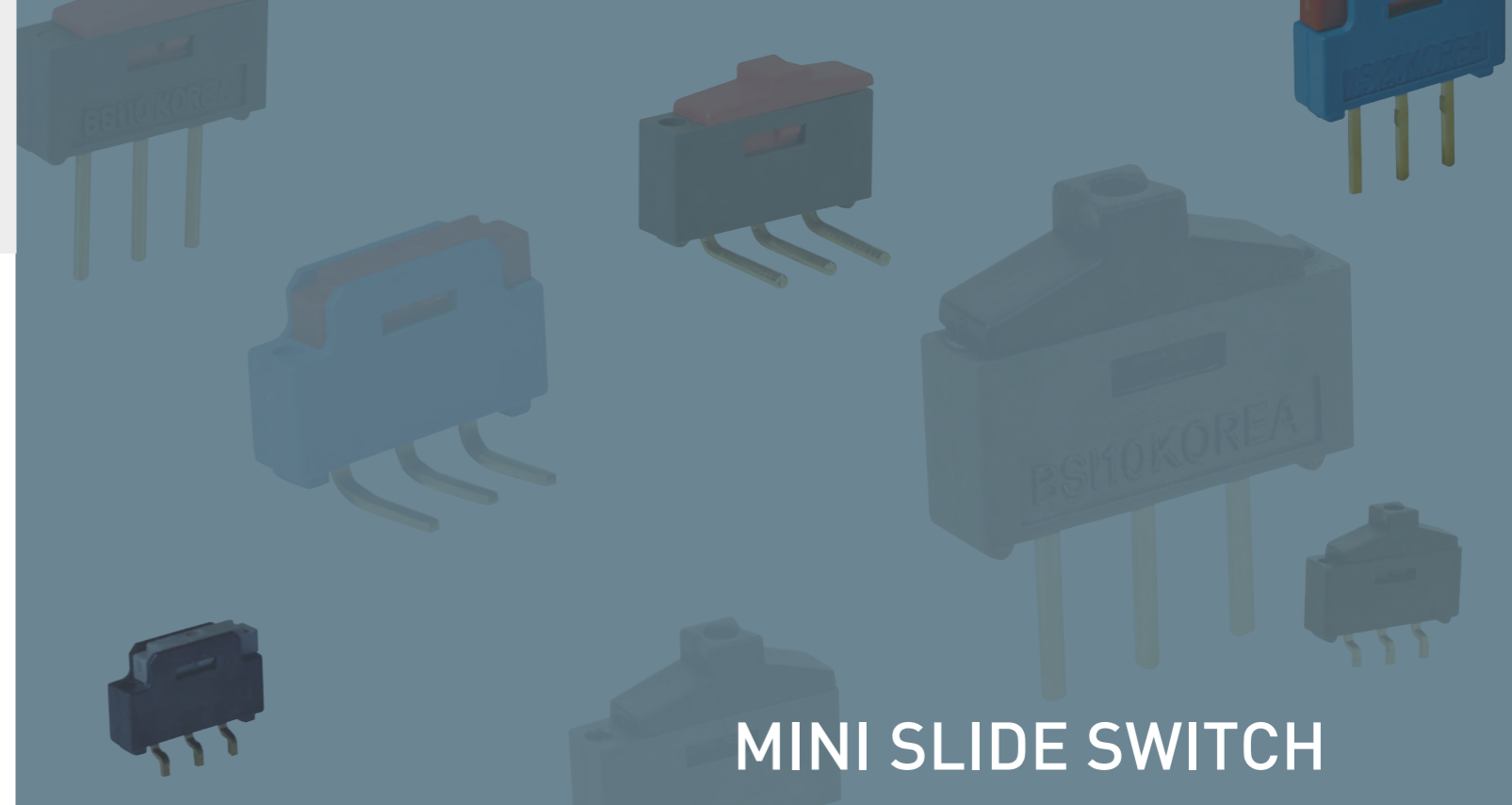
RK - 400

**Color**

- G : Gray
- R : Red
- K : Black
- Y : Yellow
- B : Blue
- GR : Green
- C : Clear

**L (Length)**

- 0 : 5.3
- 1 : 15.7
- 2 : 29.1
- 3 : 34.4



# MINI SLIDE SWITCH

CHANGE OVER TYPE (SSI Series) .....	34
CHANGE OVER SMD TYPE (NSI-10 Series) .....	35
SWITCHING TYPE (NSI-20 Series) .....	36

# MINI SLIDE SWITCH (JUMPER SWITCH)

NEW

SSI Series



## General Specification

- Rating :** DC 12V 0.5A~24V 0.3A
- Contact Resistance :** 30mΩ Max.
- Insulation Resistance :** Min 10,000 MΩ at DC 500V
- Operating Force :** 250gf ±150gf
- Travel :** 1.6mm
- Life Cycle :** 2,000 cycle(with load)

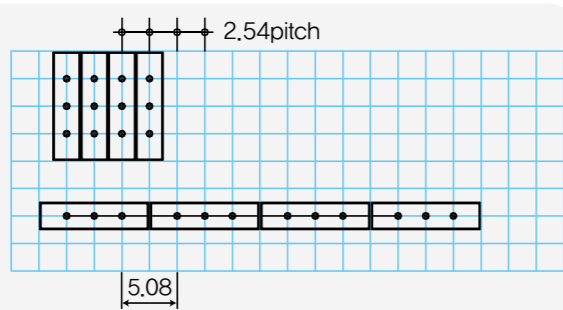
BSI series has been changed to SSI series

## HOW TO ORDER

SSI	Slider	10	Terminal	Body Color	Slider Color
<b>Type</b> SSI Through-Hole Type	<b>Blank</b> - Slider 1.4mm (Standard Type) <b>L</b> - Slider 2.8mm	10 Change over	<b>Blank</b> - Straight Ter' 5mm (Standard Type) <b>H</b> - Right Angle Ter' 3.7mm	<b>Blank('0')</b> - Dark Gray (Standard Type) <b>OR</b> - Orange	<b>Blank('0')</b> - Red(Standard Type) <b>K</b> - Black <b>V</b> - Ivory <b>Y</b> - Yellow

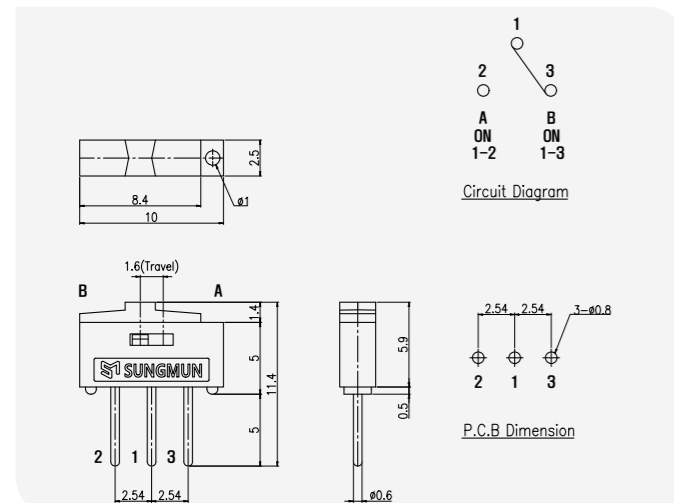
### MODULAR BUILDING BLOCK

Mini Slide Switch Modules can be mounted side by side

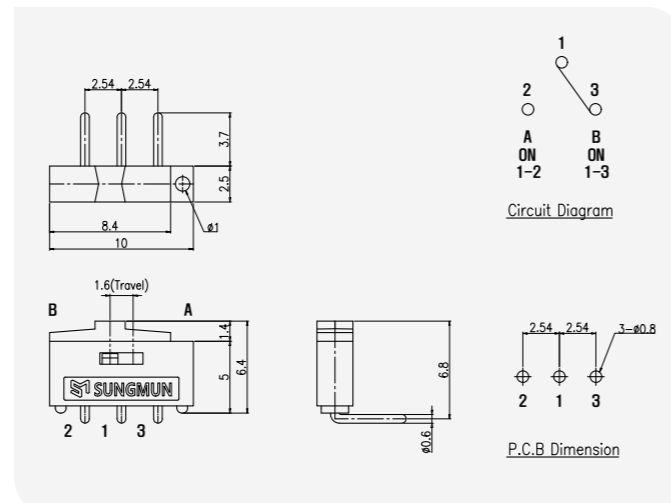


- ex) SSI-10  
SLIDER COLOR : BLANK RED (STANDARD TYPE)  
BODY COLOR : BLANK DARK GRAY (STANDARD TYPE)
- ex) SSI-10-GK  
SLIDER COLOR : BLACK  
BODY COLOR : BLANK DARK GRAY (STANDARD TYPE)
- ex) SSI-10-ORO  
SLIDER COLOR : BLANK RED (STANDARD TYPE)  
BODY COLOR : ORANGE
- # Number "0" instead of Blank: To distinguish slider & body colors

### SSI-10 Type [Change over Through Hole]



### SSI-10H Type [Change over Right Angled]



# MINI SLIDE SWITCH (JUMPER SWITCH)

NEW

NSI-10 Series



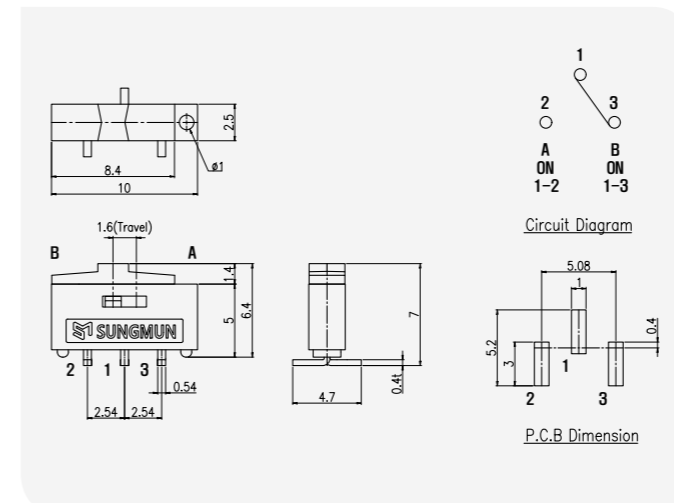
## General Specification

- Rating :** DC 12V 0.5A~24V 0.3A
- Contact Resistance :** 30mΩ Max.
- Insulation Resistance :** Min 10,000 MΩ at DC 500V
- Operating Force :** 250gf ±150gf
- Travel :** 1.6mm
- Life Cycle :** 2,000 cycle(with load)

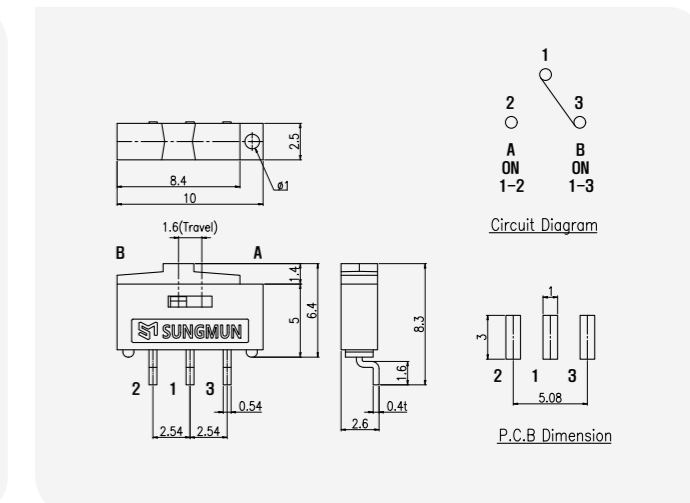
## HOW TO ORDER

NSI	Slider	10	S	Terminal	T R
<b>Type</b> NSI SMD Type	<b>Blank</b> - Slider 1.4mm (Standard Type) <b>L</b> - Slider 2.8mm	10 Change over	<b>[Terminal (Body Color)]</b> <b>S</b> - Straight SMD(Black) <b>HS</b> - Right Angle SMD(Black)	<b>Slider Color</b> <b>Blank</b> - Gray (Standard Type)	<b>PACKING</b> <b>TR</b> - Reel Packing (SMD Only)

### NSI-10S Type [Change over SMD]



### NSI-10HS Type [Change over Right Angled SMD]



# MINI SLIDE SWITCH (JUMPER SWITCH)

NEW

NSI-20 Series

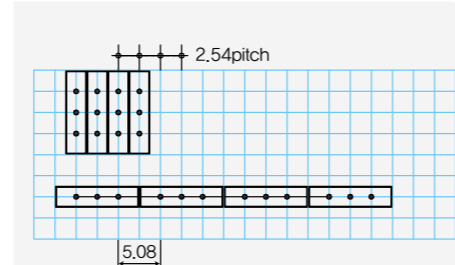


## General Specification

- Rating :** DC 12V 0.5A~24V 0.3A
- Contact Resistance :** 30mΩ Max.
- Insulation Resistance :** Min 10,000 MΩ at DC 500V
- Operating Force :** 250gf ±150gf
- Travel :** 1.6mm
- Life Cycle :** 2,000 cycle(with load)

### MODULAR BUILDING BLOCK

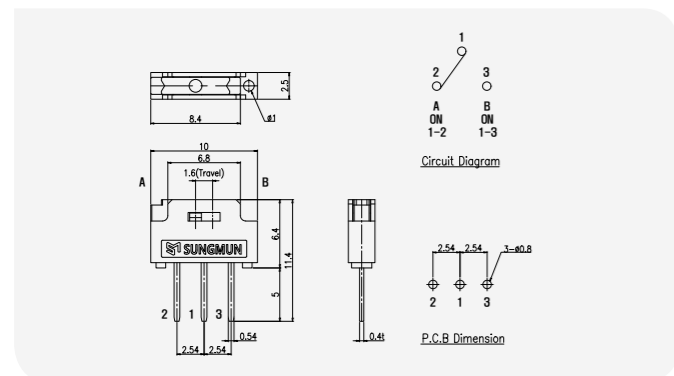
Mini Slide Switch Modules can be mounted side by side



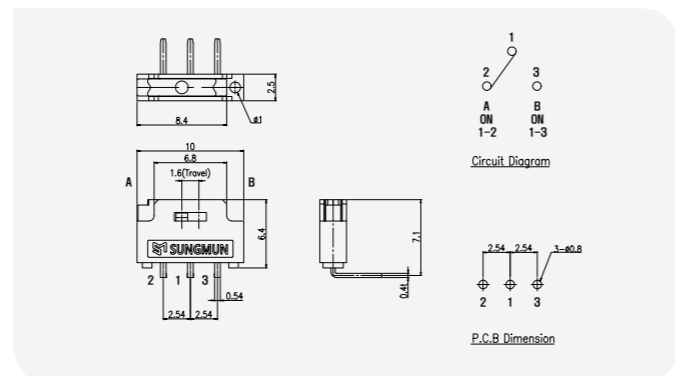
## HOW TO ORDER

<b>NSI</b>	<b>20</b>	<b>H</b>	
<b>Type</b>	<b>Circuit</b>	<b>Terminal</b>	<b>PACKING</b>
NSI Through-Hole Type / SMD Type	20 Switching Type	[Terminal (Body Color)] Blank - Straight Ter' 5mm (Blue) H - Right Angle Ter' 3.3mm (Blue) S - Straight SMD (Black) HS - Right Angle SMD (Black)	Slider Color Blank - Bulk In Plastic Bag (Standard Type) Red(THT)/Gray(SMD) (Standard Type) TR - Reel Packing (SMD Only)

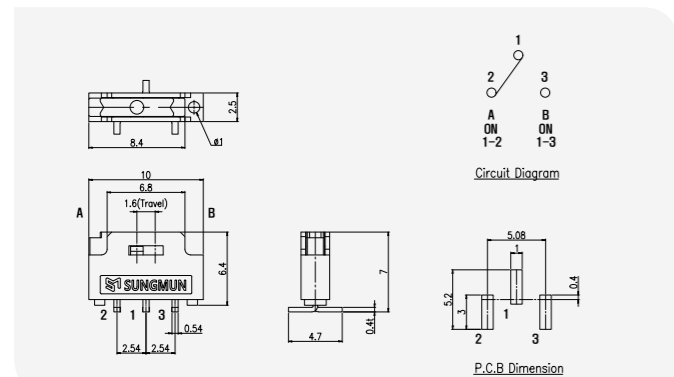
### NSI-20 Type [Switching Through Hole]



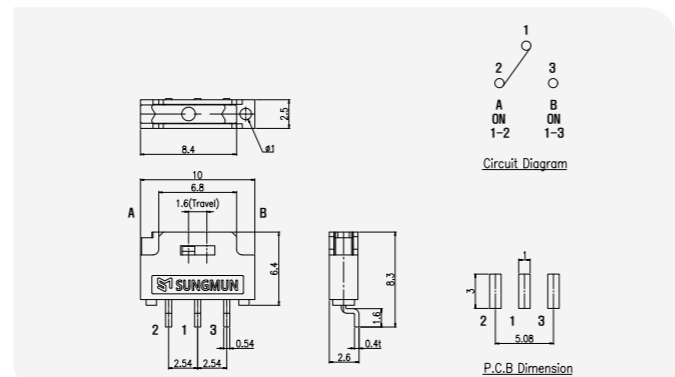
### NSI-20H Type [Switching Right Angled]



### NSI-20S Type [Switching SMD]



### NSI-20HS Type [Switching Right Angled SMD]

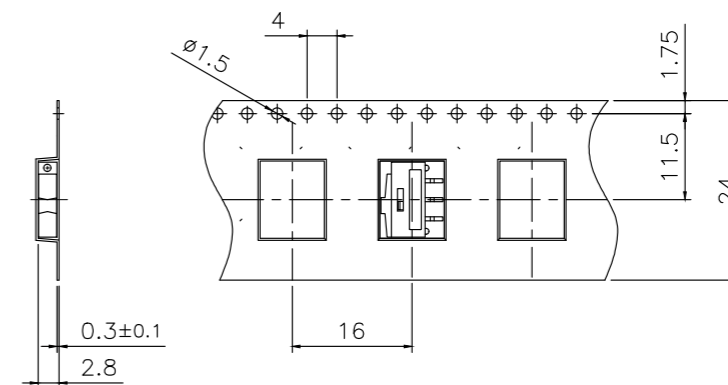


# MINI SLIDE SWITCH (JUMPER SWITCH)

## NSI Series & Reel Packing

### 1. SMD Type of Angle Terminal

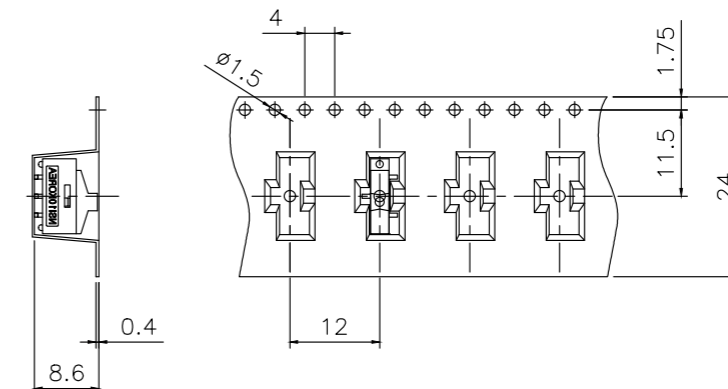
- ( NSI-10HS )
- ( NSI-20HS )



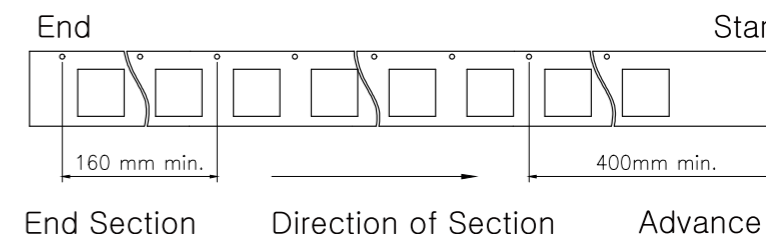
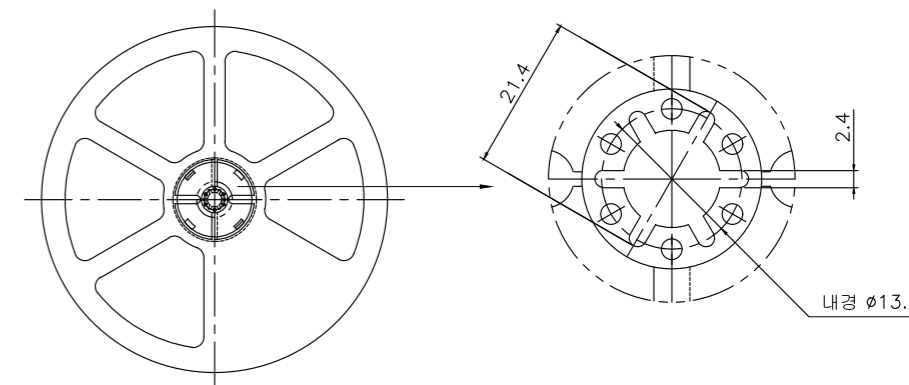
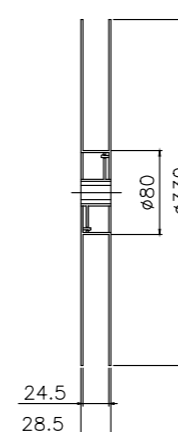
Units(pcs)  
1,500

### 2. SMD Type of Vertical Terminal

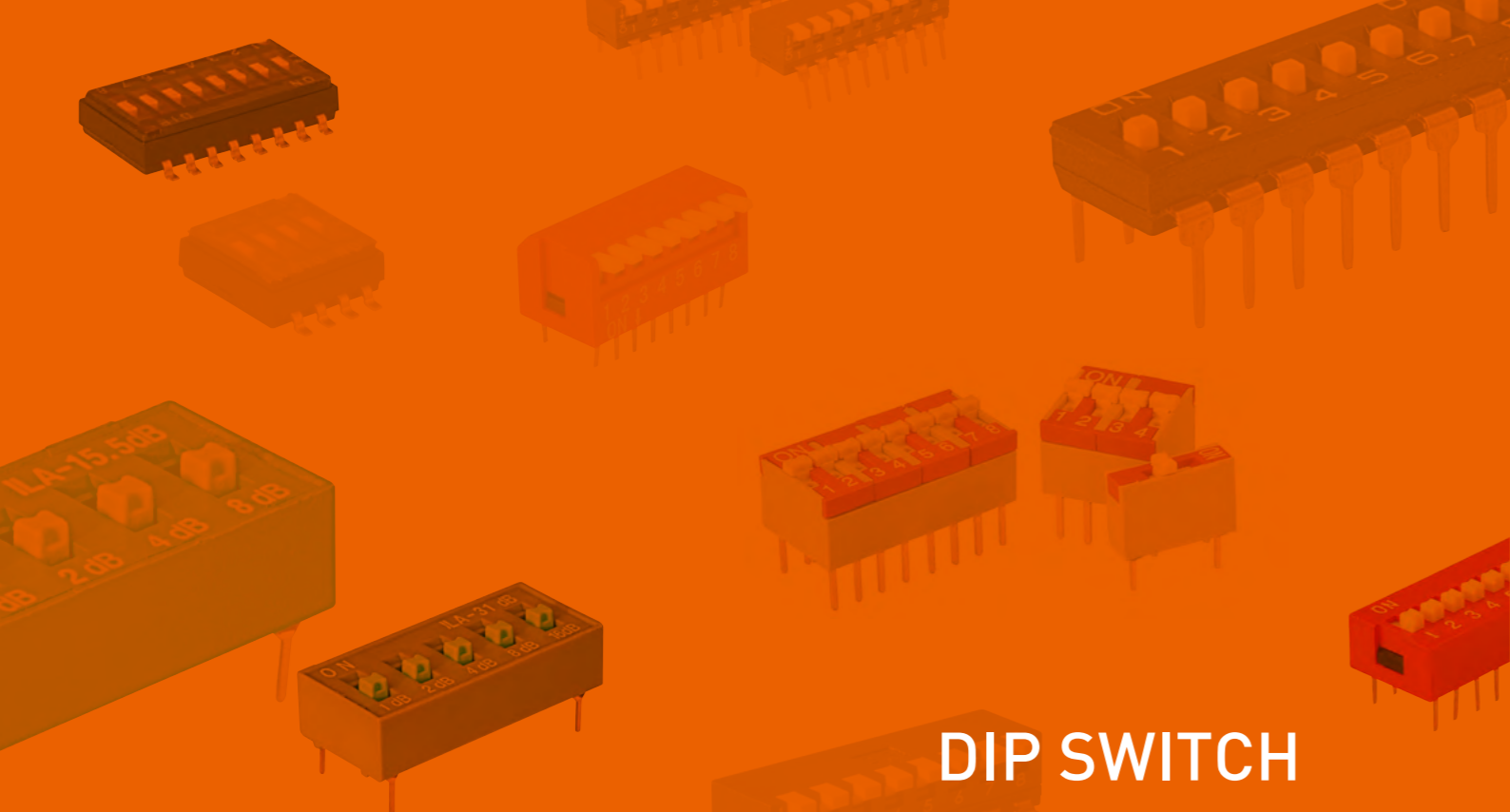
- ( NSI-10S )
- ( NSI-20S )
- ( NSIL-10S )



Units(pcs)  
700







# DIP SWITCH

HALF PITCH(1.27mm) DIP SWITCH (SHK Series) .....	39
IC TYPE DIP SWITCH (SKD/SKS Series) .....	40
PIANO TYPE DIP SWITCH (SKP Series) .....	41
BOX TYPE DIP SWITCH (BSD Series) .....	42
DS/DA/DP Series .....	43



## MINI DIP SWITCH HALF-PITCH: 1.27mm

### SHK Series



### General Specification

1. Rating : 25mA, 24V DC
2. Contact Resistance : 100mΩ Max.
3. Insulation Resistance : Min 100 MΩ at DC 500V
4. Operating Force : Max 500gf
5. Travel : 0.8mm
6. Life Cycle : 1,000 cycle

### HOW TO ORDER

**SHK**

Type

**02**

POLE

**TR**

Terminal

**TR**

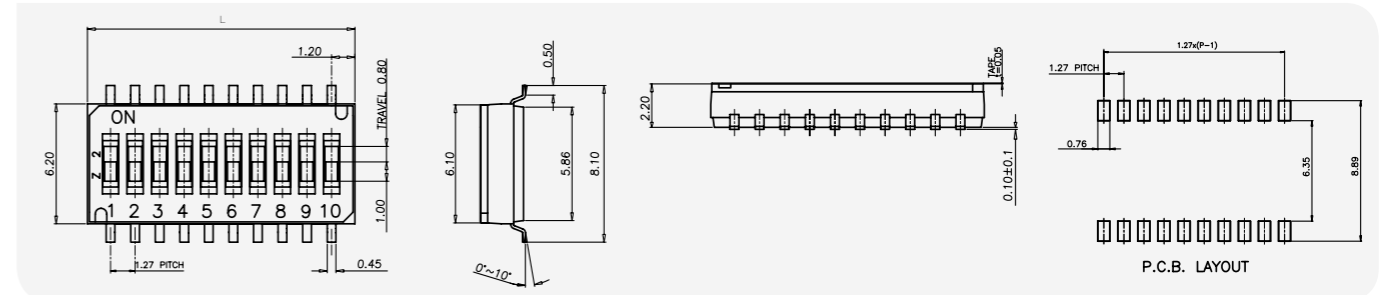
Packing

Pole	L(mm)
02 2pole	3.67
04 4pole	6.21
06 6pole	8.75
08 8pole	11.29
10 10pole	13.83

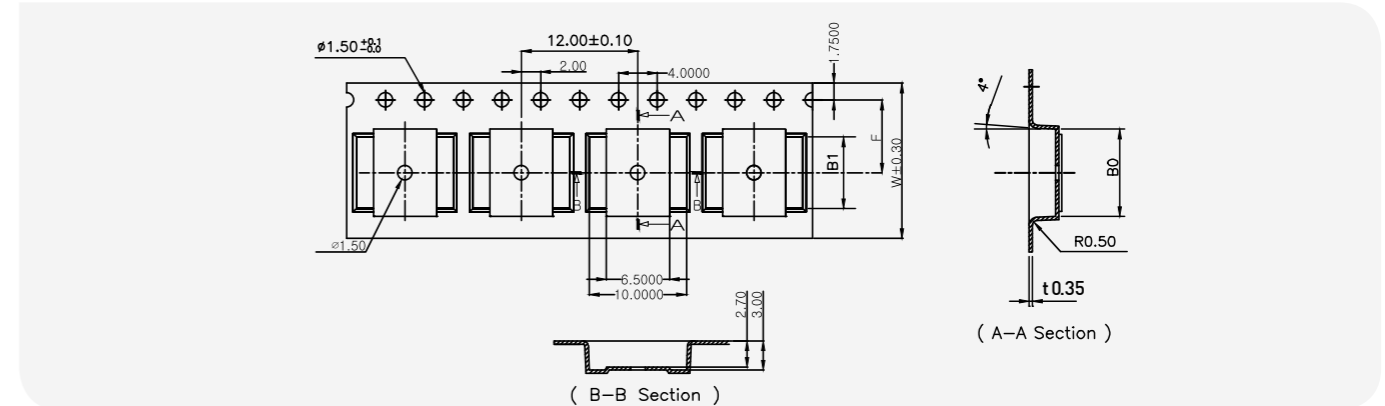
- SMD Type

- TR Reel Package (with Tape-Sealed)
- R Reel Package (without Tape-sealed)
- Stick Package

### SHK Type



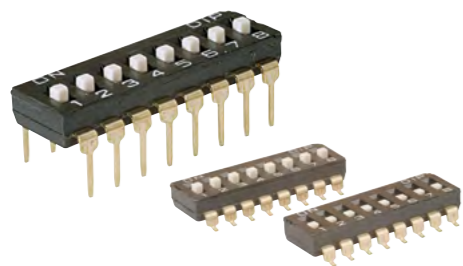
### Reel Packing



TYPE	DIM W	DIM F	DIM B0	DIM B1
SHK-10	24.00±0.3	11.50±0.1	14.20	12.65
SHK-08	24.00±0.3	11.50±0.1	11.65	10.10
SHK-06	16.00±0.3	7.50±0.1	9.10	7.55
SHK-04	16.00±0.3	7.50±0.1	6.55	5.00
SHK-02	16.00±0.3	7.50±0.1	4.00	2.45

DIP SWITCH IC TYPE

SKD  
SKS  
Series



General Specification

- 1. Rating : 25mA, 24V DC
- 2. Contact Resistance : 100mΩ Max.
- 3. Insulation Resistance : Min 100 MΩ at DC 500V
- 4. Operating Force : Max 1,000gf
- 5. Travel : 1.0mm
- 6. Life Cycle : 2,000 cycle

HOW TO ORDER

SKD

Type

SKD Actuators Height: 0.7mm  
SKS Actuators Height: 0mm

02

Pole

- 01 1pole
- 02 2pole
- 03 3pole
- 04 4pole
- 05 5pole
- 06 6pole
- 07 7pole
- 08 8pole
- 09 9pole
- 10 10pole
- 12 12pole

S

Terminal

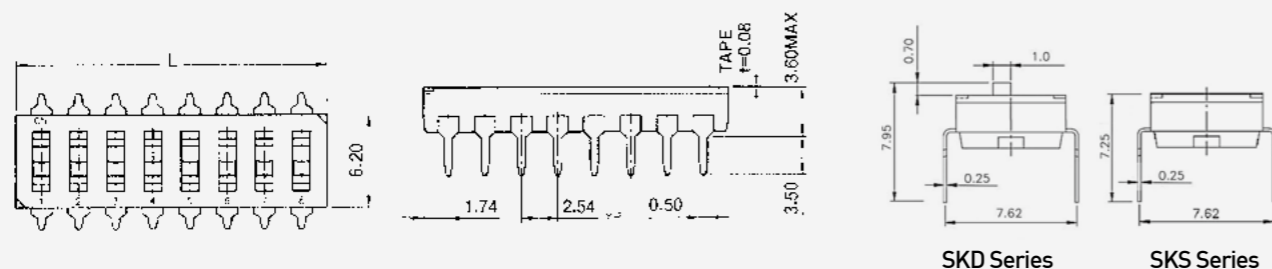
- Through-Hole Type
- S SMD Type

TR

Reel Packing

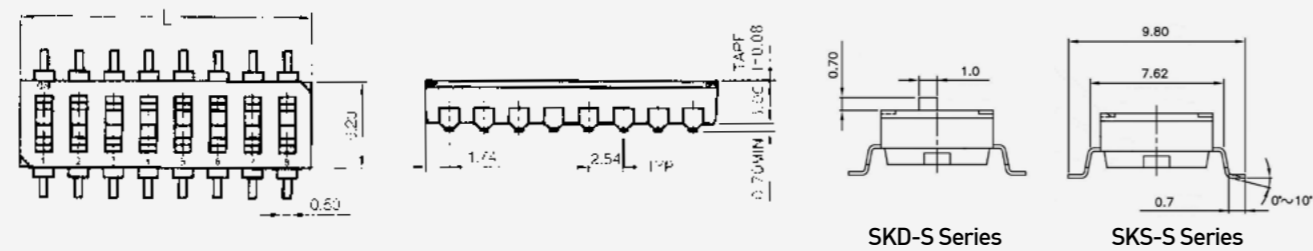
- Tube Packing
- TR Reel Packing

SKD/SKS Type(IC TYPE)



Model	SKD-01 SKS-01	SKD-02 SKS-02	SKD-03 SKS-03	SKD-04 SKS-04	SKD-05 SKS-05	SKD-06 SKS-06	SKD-07 SKS-07	SKD-08 SKS-08	SKD-09 SKS-09	SKD-10 SKS-10	SKD-11 SKS-11
Pole	1	2	3	4	5	6	7	8	9	10	12
L (mm)	3.48	6.02	8.56	11.10	13.64	16.18	18.72	21.26	23.80	26.34	31.42

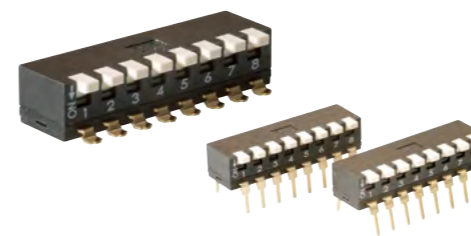
SKD-S/SKS-S Type (SMD IC TYPE)



Model	SKD-01S SKS-01S	SKD-02S SKS-02S	SKD-03S SKS-03S	SKD-04S SKS-04S	SKD-05S SKS-05S	SKD-06S SKS-06S	SKD-07S SKS-07S	SKD-08S SKS-08S	SKD-09S SKS-09S	SKD-10S SKS-10S	SKD-12S SKS-12S
Pole	1	2	3	4	5	6	7	8	9	10	12
L (mm)	3.48	6.02	8.56	11.10	13.64	16.18	18.72	21.26	23.80	26.34	31.42

DIP SWITCH PIANO TYPE PITCH: 2.54mm

SKP  
Series



General Specification

- 1. Rating : 25mA, 24V DC
- 2. Contact Resistance : 100mΩ Max.
- 3. Insulation Resistance : Min 100 MΩ at DC 500V
- 4. Operating Force : Max 800gf
- 5. Travel : 20°
- 6. Life Cycle : 2,000 cycle

HOW TO ORDER

SKP

Type

SKP PIANO Type

02

Pole

- 02 2pole
- 04 4pole
- 06 6pole
- 08 8pole
- 10 10pole

S

Terminal

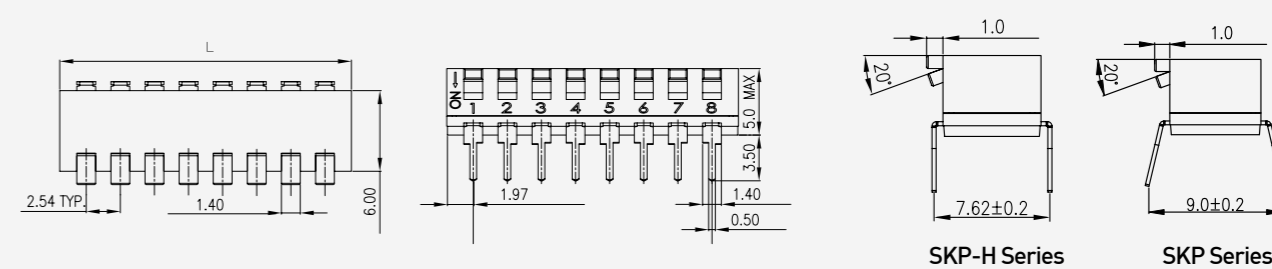
- Through-Hole Type (Splay Type 9.0mm)
- H Through-Hole Type(7.62mm)
- S SMD Type

TR

Packing

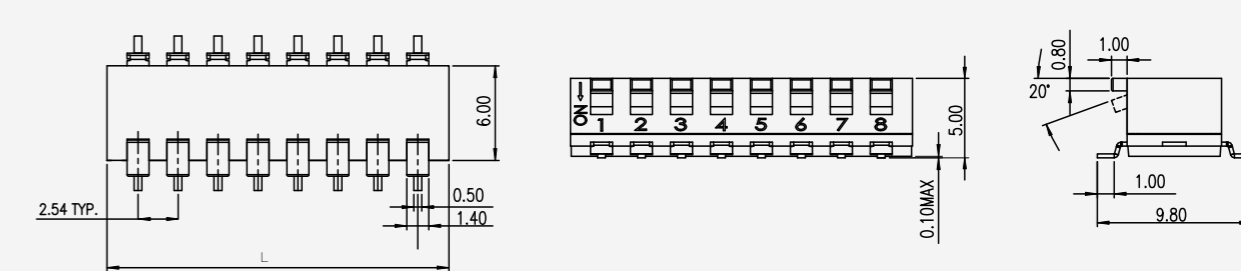
- Tube Packing
- TR Reel Packing

SKP/SKP-H TYPE(PIANO TYPE)



Model	SKP-02H	SKP-02	SKP-04H	SKP-04	SKP-06H	SKP-06	SKP-08H	SKP-08	SKP-10H	SKP-10
Pole	2		4		6		8		10	
L (mm)	4.98	6.48	10.06	11.56	15.14	16.64	20.22	21.72	25.30	26.80

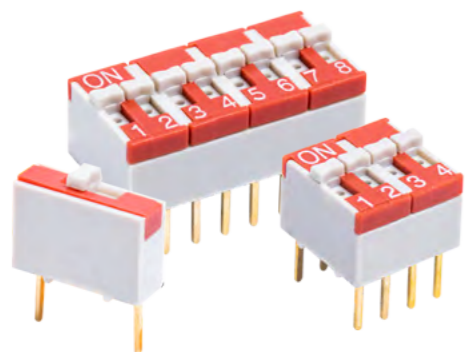
SKP-S TYPE(PIANO TYPE)



Model	SKP-02S	SKP-04S	SKP-06S	SKP-08S	SKP-10S
Pole	2	4	6	8	10
L (mm)	6.48	11.56	16.64	21.72	26.80

# DIP SWITCH BOX TYPE

BSD Series



## General Specification

1. Rating : 0.5A, 12V DC
2. Contact Resistance : 50mΩ Max.
3. Insulation Resistance : Min 500 MΩ at DC 500V
4. Operating Force : Max 800gf
5. Travel : 1.5mm
6. Life Cycle : 3,000 cycle

## HOW TO ORDER

BSD

Type

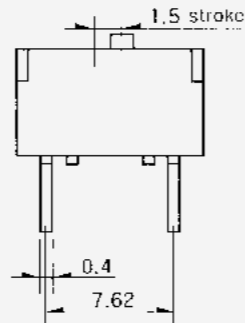
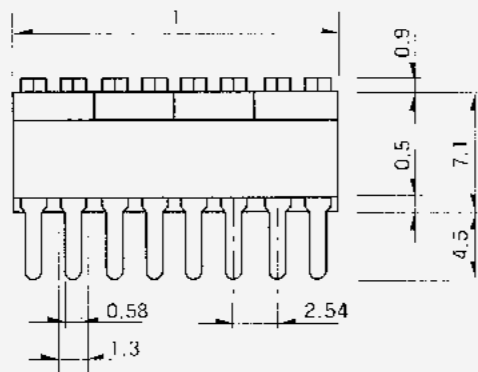
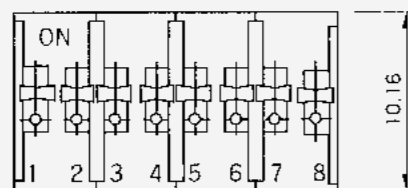
1

01

No. of Pole

01 1pole	05 5pole	09 9pole
02 2pole	06 6pole	10 10pole
03 3pole	07 7pole	
04 4pole	08 8pole	

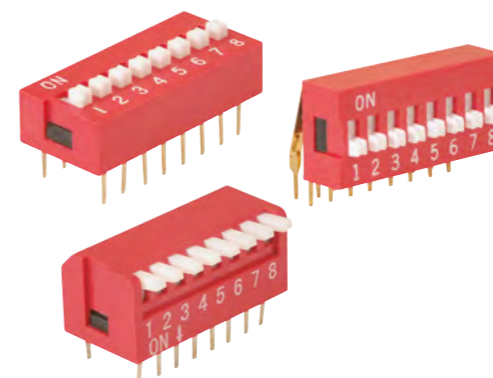
BSD Type



Model	BSD-101	BSD-102	BSD-103	BSD-104	BSD-105	BSD-106	BSD-107	BSD-108	BSD-109	BSD-1010
Pole	1	2	3	4	5	6	7	8	9	10
L (mm)	3.2	5.0	8.2	10.1	13.3	15.2	18.4	20.2	22.8	25.3

# DIP SWITCH

DS  
DA  
DP  
Series



## General Specification

1. Rating : 25mA, 24V DC
2. Contact Resistance : 100mΩ Max.
3. Insulation Resistance : Min 1,000 MΩ at DC 100V
4. Operating Force : Max 800gf
5. Travel : 2.0 mm
6. Life Cycle : 2,000 cycle

## HOW TO ORDER

DS

Type

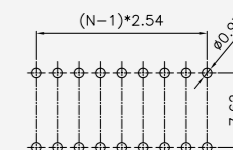
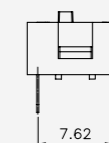
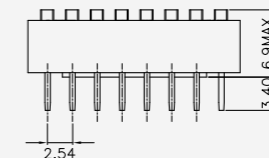
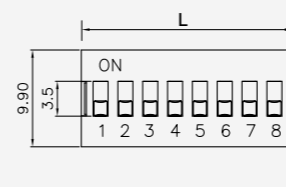
DS Standard  
DA Angle  
DP Piano

02

No. of Pole

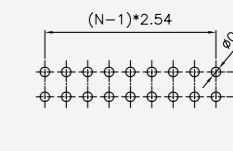
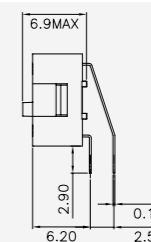
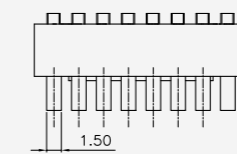
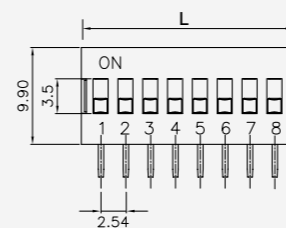
02 2pole (L=6.64)	06 6pole (L=16.8)	10 10pole (L=26.92)
03 3pole (L=9.18)	07 7pole (L=19.3)	12 12pole (L=32.04)
04 4pole (L=11.72)	08 8pole (L=21.88)	
05 5pole (L=14.2)	09 9pole (L=24.42)	

DS Type



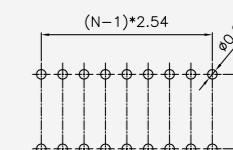
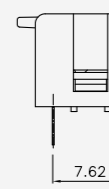
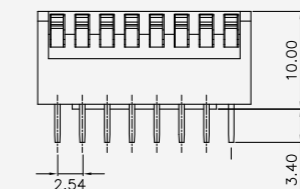
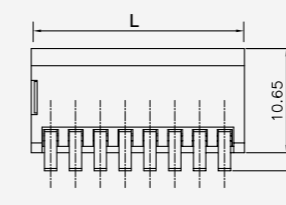
PCB LAYOUT

DA Type

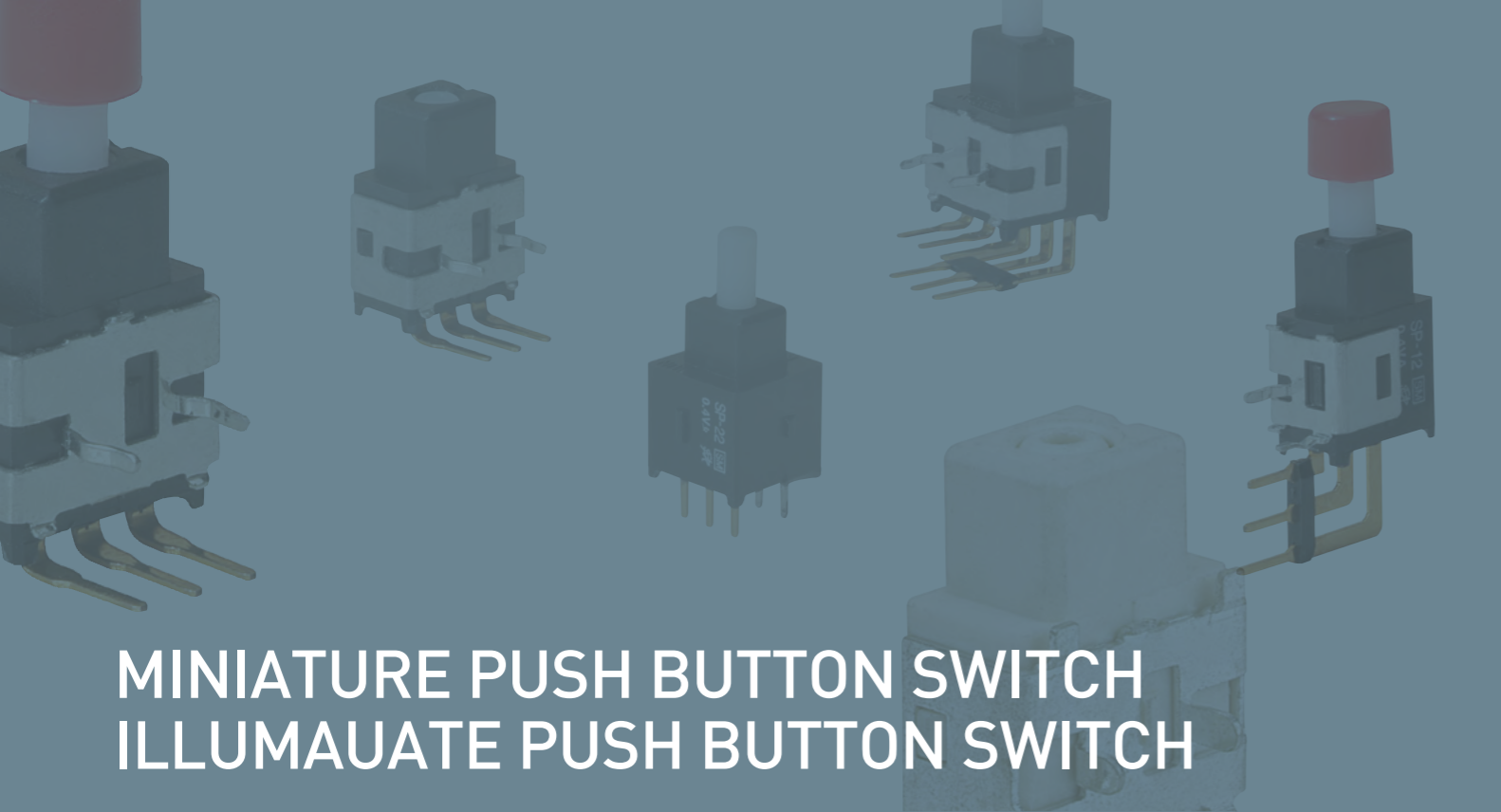


PCB LAYOUT

DP Type



PCB LAYOUT



# MINIATURE PUSH BUTTON SWITCH ILLUMAUATE PUSH BUTTON SWITCH

## (Water Proof) (SP Series)

SPST Series .....	46
SPDT Series .....	47
DPST Series .....	49
DPDT Series .....	49
ACCESSORY (SK Series) .....	50

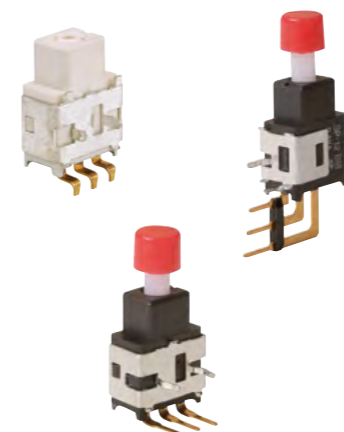
## ILLUMINATE (SLP Series)

.....	52
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# MINIATURE PUSH BUTTON SWITCH (Water Proof)

## SP Series



## General Specification

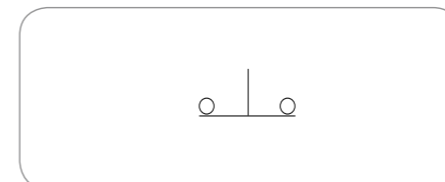
- Rating :** 0.4VA at 28V AC or DC Max
- Contact Resistance :** 50mΩ Max.
- Insulation Resistance :** Min 500MΩ at DC 500V
- Withstanding Voltage :** 1 Minute at AC 500V
- Operating Force :** 250gf ±100gf(1 Pole)  
350gf ±100gf(2 Pole)
- Travel :** 1.1mm

\* Non-Lock Type  
\* Waterproof is optional, except F type(0mm) push length.  
F type is not available for waterproof.

## HOW TO ORDER

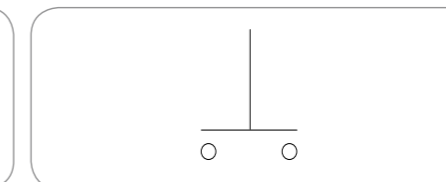
<b>SP</b>	<b>1</b>	<b>2</b>	-	<b>S</b>	<b>H</b>	-	<b>S</b>	<b>TR</b>
<b>Type</b>	<b>Poles</b>	<b>Circuit</b>		<b>Push Length</b>	<b>Terminal</b>		<b>SMD</b>	<b>Packing</b>
	1 Single 2 Double	0 ON-(OFF) 1 OFF-(ON) 2 ON-(ON) *( ): Momentary		F 0mm P 3.3mm S 5.4mm L 7.8mm	P Straight B Straight W/Bracket H Right Angle V Vertical W/Bracket		- Through-Hole S SMD	- Tray 100Pcs TR 500Pcs/Reel

SP-10



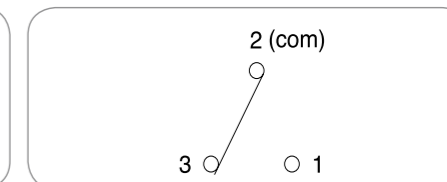
Pole	CIRCUIT	
	NORMAL	DOWN
SPST	ON	(OFF)

SP-11



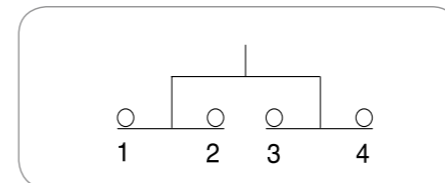
Pole	CIRCUIT	
	NORMAL	DOWN
SPST	OFF	(ON)

SP-12



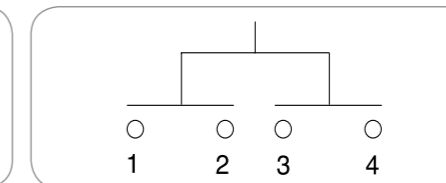
Pole	CIRCUIT	
	NORMAL	DOWN
SPDT	ON 2-3	(ON) 1-2

SP-20



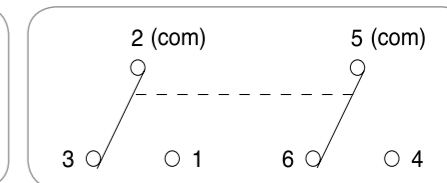
Pole	CIRCUIT	
	NORMAL	DOWN
DPST	ON 1-2 3-4	(OFF)

SP-21



Pole	CIRCUIT	
	NORMAL	DOWN
DPST	OFF	(ON) 1-2 3-4

SP-22



Pole	CIRCUIT	
	NORMAL	DOWN
DPDT	ON 2-3 5-6	(ON) 1-2 4-5

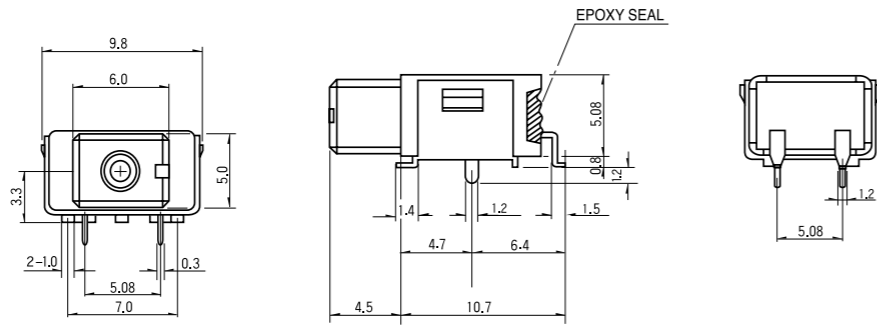
\*[ ]: Momentary



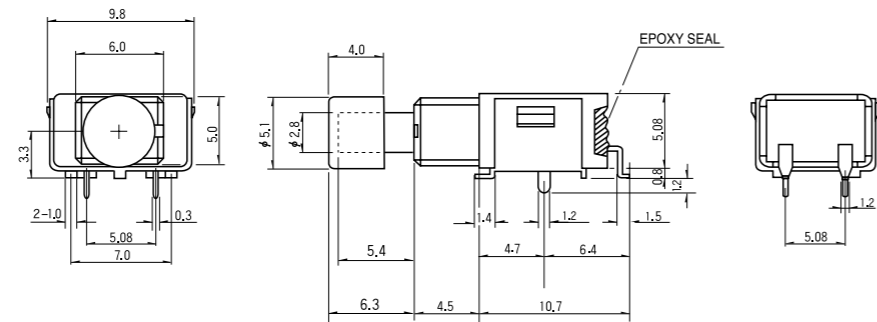
# MINIATURE PUSH BUTTON SWITCH (Water Proof)

## SPST Series

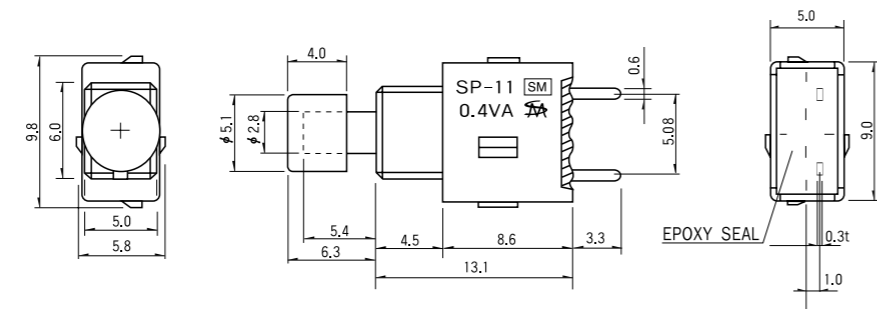
**SP-11FH-S**  
(SMD Type)



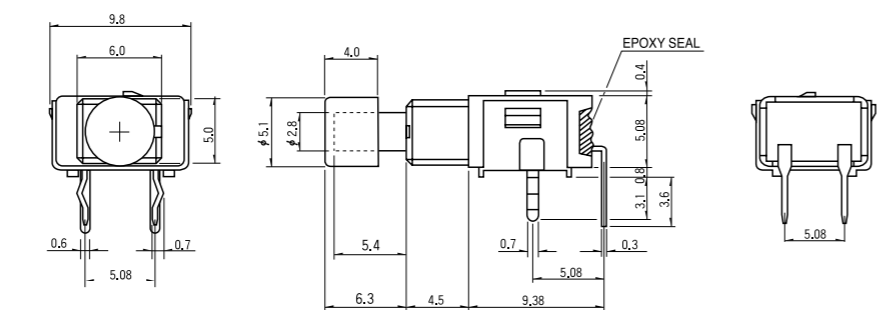
**SP-11SH-S**  
(SMD Type)



**SP-11SP**



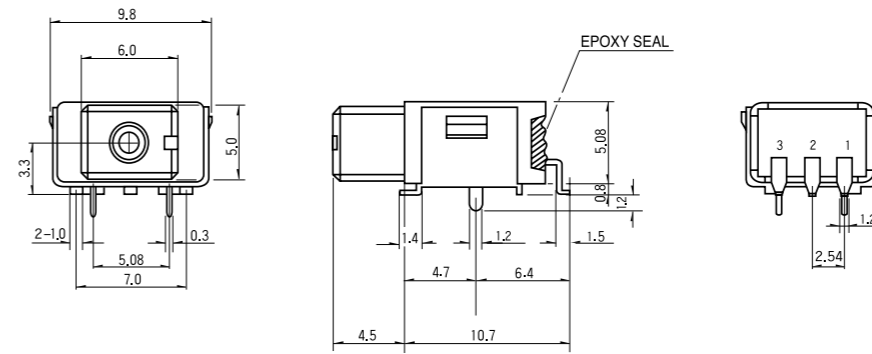
**SP-11SH**



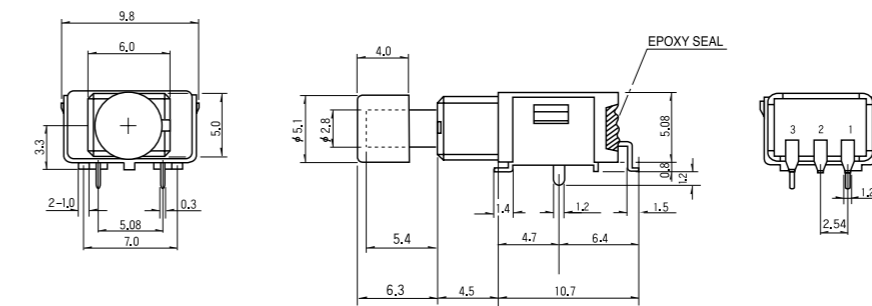
# MINIATURE PUSH BUTTON SWITCH (Water Proof)

## SPDT Series

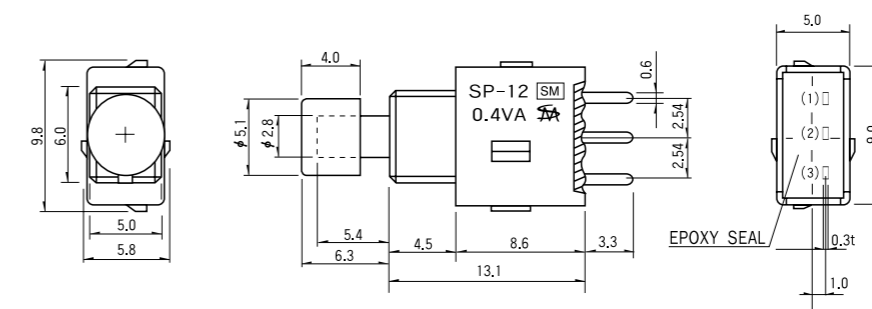
**SP-12FH-S**  
(SMD Type)



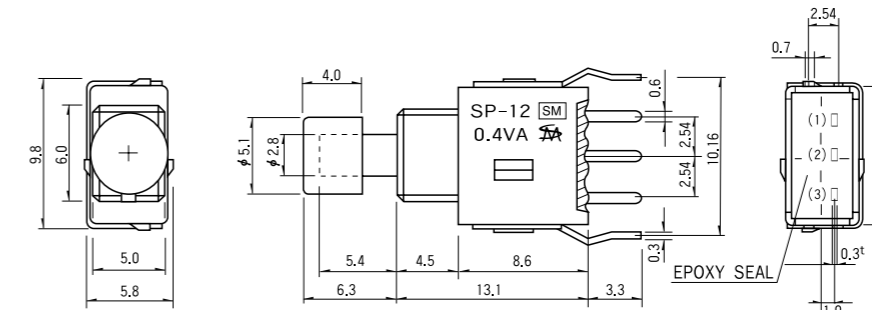
**SP-12SH-S**  
(SMD Type)



**SP-12SP**



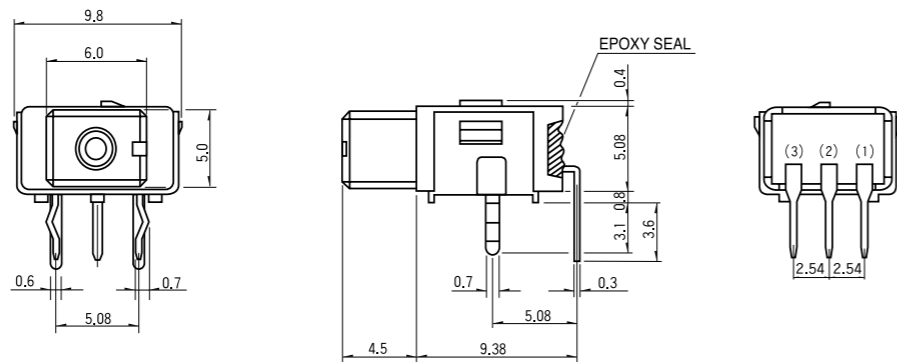
**SP-12SB**



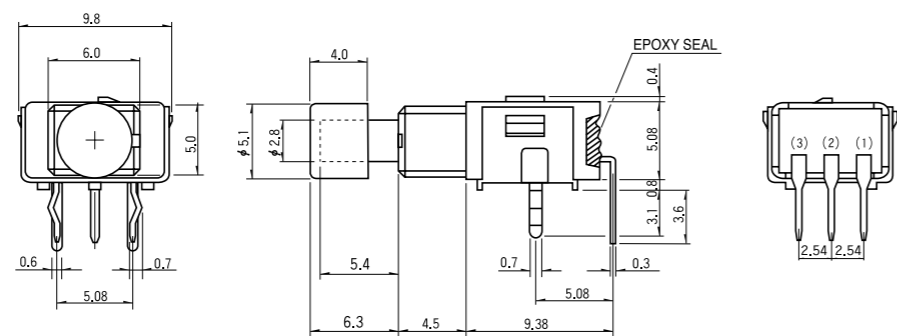
# MINIATURE PUSH BUTTON SWITCH (Water Proof)

## SPDT Series

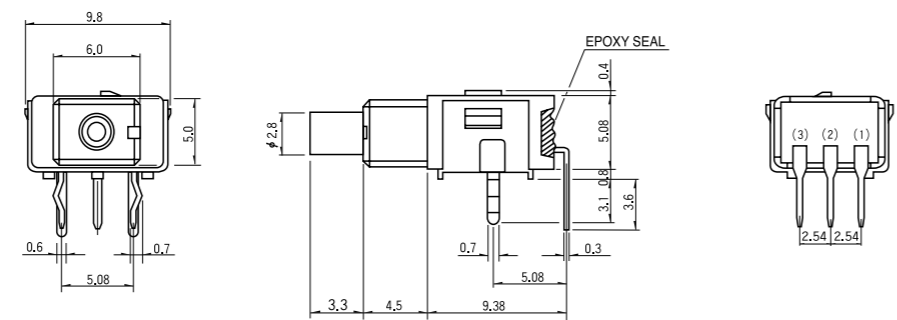
### SP-12FH



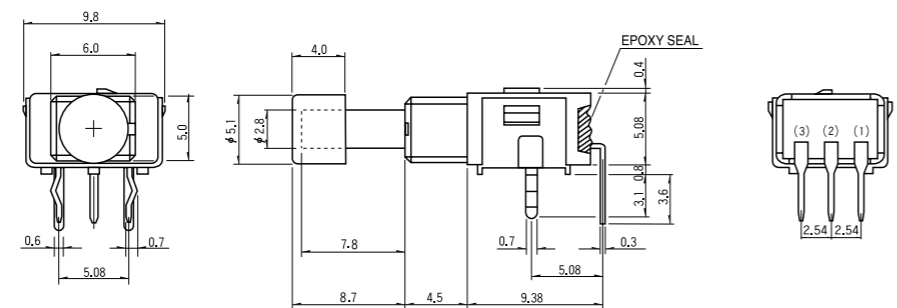
### SP-12SH



### SP-12PH



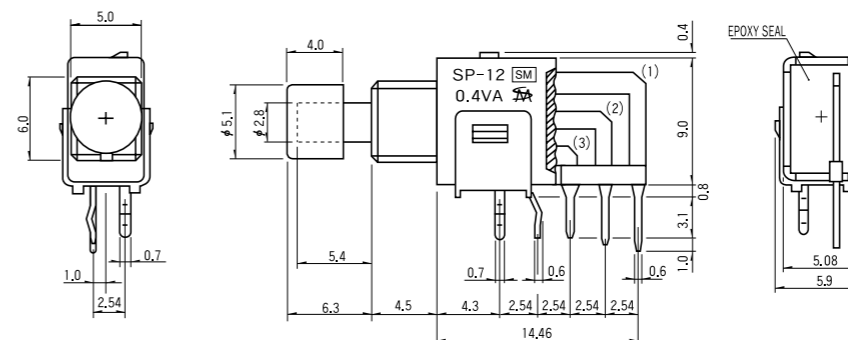
### SP-12LH



# MINIATURE PUSH BUTTON SWITCH (Water Proof)

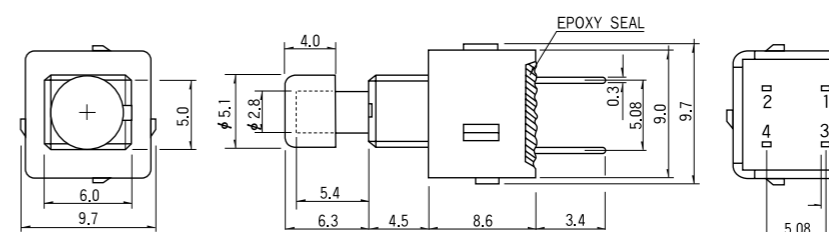
## SPDT Series

### SP-12SV

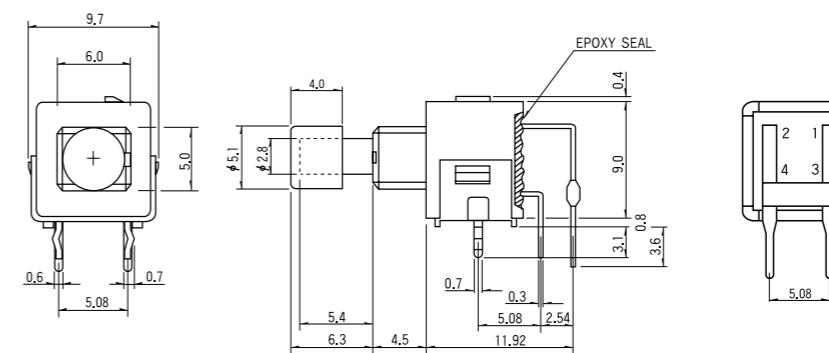


## DPST Series

### SP-21SP

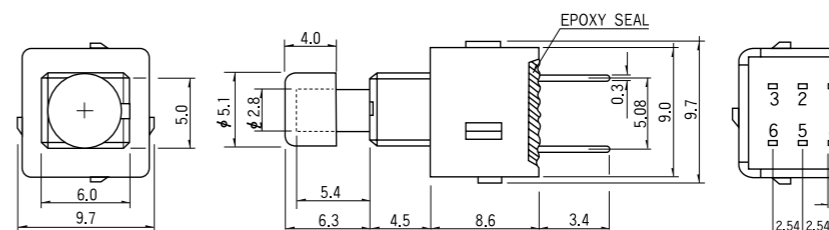


### SP-21SH



## DPDT Series

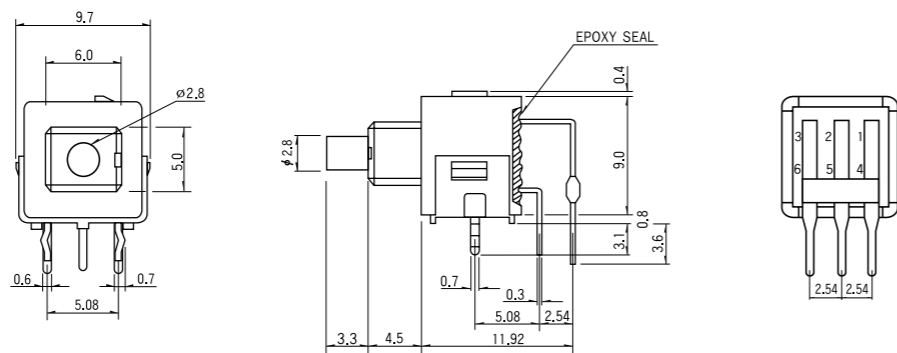
### SP-22SP



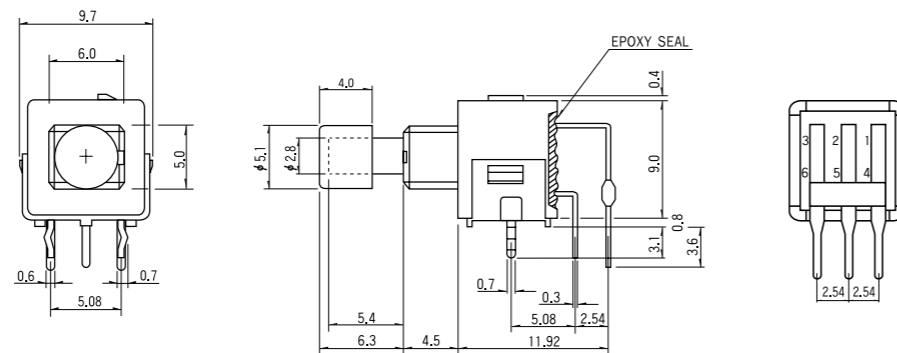
# MINIATURE PUSH BUTTON SWITCH (Water Proof)

## DPDT Series

### SP-22PH



### SP-22SH



### SK-100 R CAP



R: Red K: Black W: White

P.C.B DIMENSION				
	"P" TYPE	"B" TYPE	"H" TYPE	"V" TYPE
SPDT				
DPDT				

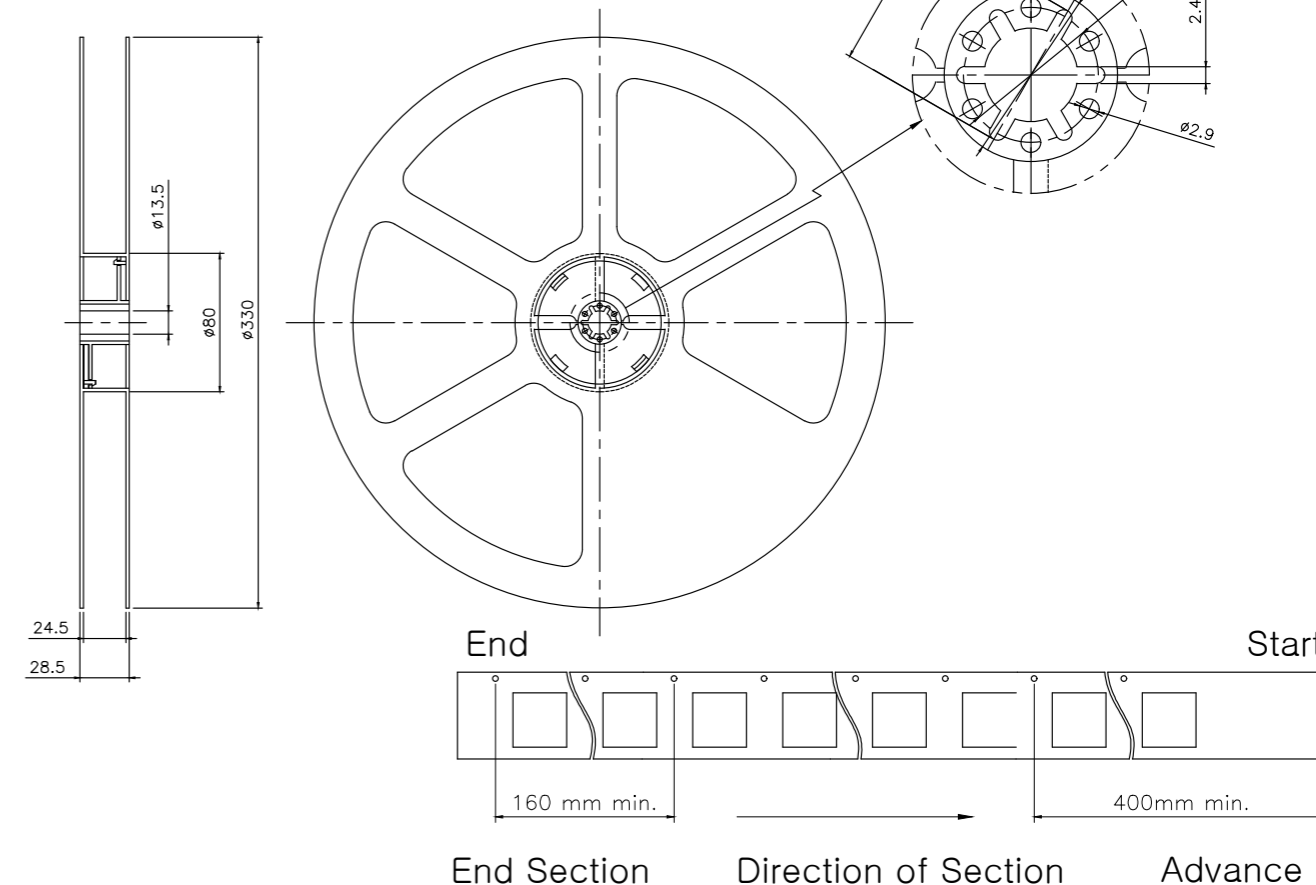
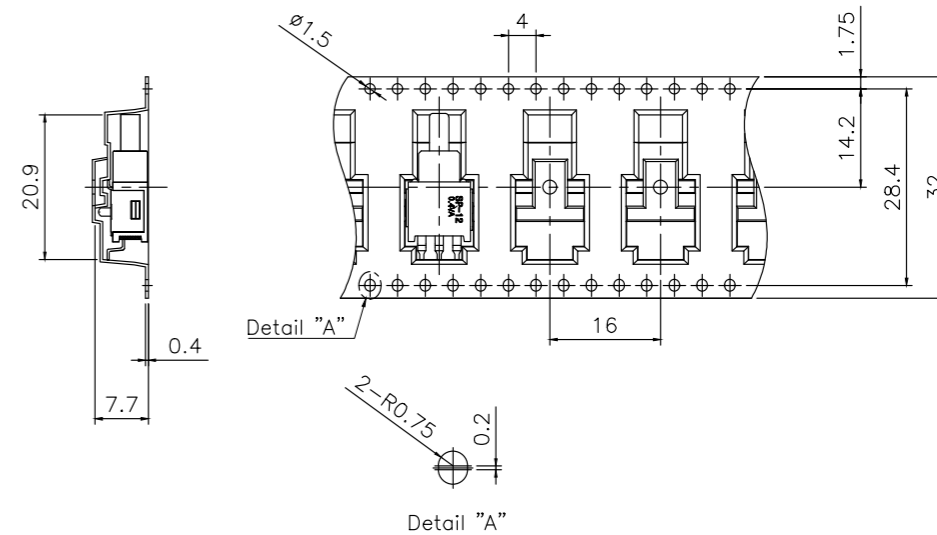
# MINIATURE PUSH BUTTON SWITCH (Water Proof)

## SP Series & Reel Packing

### 1. SMD Type of Angle Terminal

- ( SP-12FH-S )
- ( SP-12PH-S )
- ( SP-12SH-S )

Units(pcs)  
500



ROTARY DIP  
SLIDE SW  
DIP SW  
PUSH SW - SP  
TACT SW  
LED MODULE

ROTARY DIP  
SLIDE SW  
DIP SW  
PUSH SW - SP  
TACT SW  
LED MODULE

# ILLUMINATE PUSH BUTTON SWITCH (SLP Series)

NEW



## General Specification

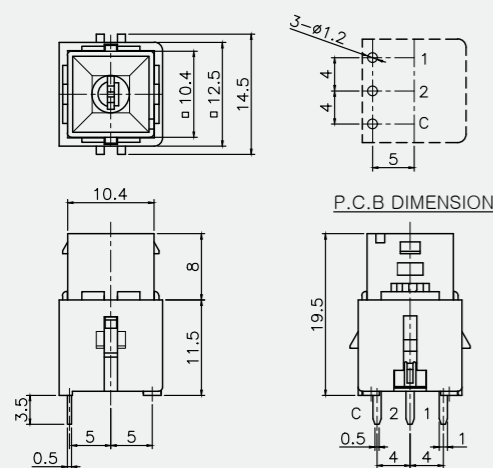
- Life Cycle :** Min 20,000 Switching Cycles  
Operating Voltage 13.5V  
Buld Load Max 30W.
- Storke :** - Lock Stroke : 2.35  
- Full Stroke : 3.5
- Operating Force :** 5N±1.

## HOW TO ORDER

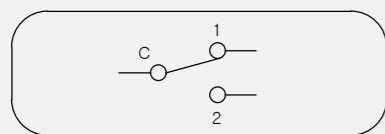
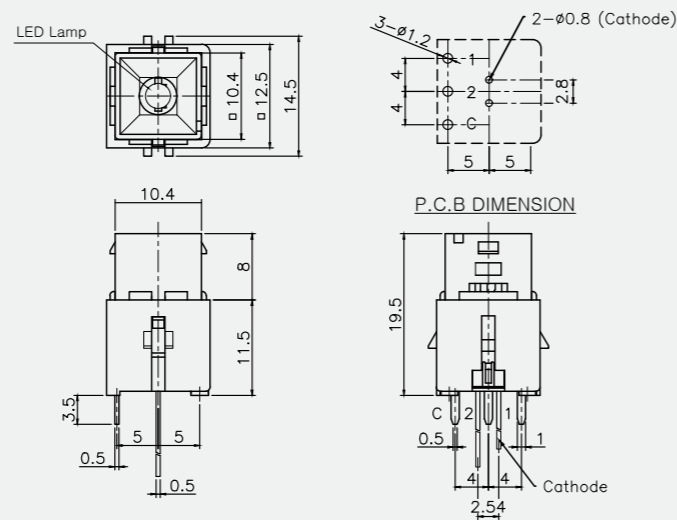
<b>SLP</b>	<b>1</b>	<b>5</b>	-	<b>01</b>
<b>Type</b>	<b>Poles</b>	<b>Circuit</b>		<b>LED</b>
	1 Single	5 ON-ON (C-1) (C-2) 6 ON-(ON) (C-1) (C-2) *( ): Momentary		- Without LED <b>01</b> Red Diffused <b>02</b> Green Diffused <b>03</b> Yellow Diffused <b>04</b> Amber <b>08</b> Blue Diffused <b>09</b> White Diffused <b>12</b> Red/Green Diffused <b>32</b> Yellow/Green Diffused

## GENERAL DIMENSION

1. None Illumination Type.



2. Illumination Type.



Pole	Circuit	
	NOMAL	DOWN
SPDT	ON C-1	(ON) C-2

# PUSH, TACT SWITCH

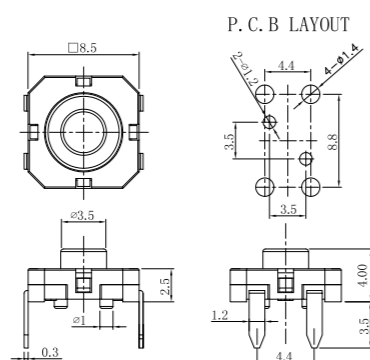
RUBBER TACT SWITCH .....	54
TACT SWITCH (DIP TYPE) .....	55
LED TACT SWITCH .....	58
TACT SWITCH (SMD TYPE) .....	59
HOOK SWITCH .....	65
PUSH SWITCH .....	66

ROTARY DIP  
SLIDE SW  
DIP SW  
PUSH SW - SLP  
TACT SW  
LED MODULE



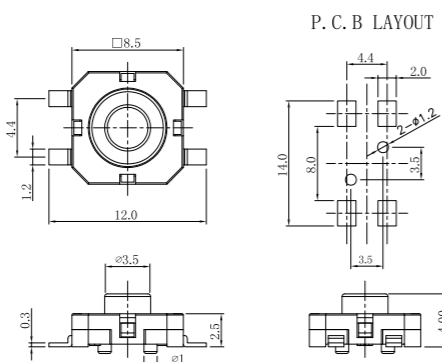
# RUBBER TACT SWITCH

## STR-8501



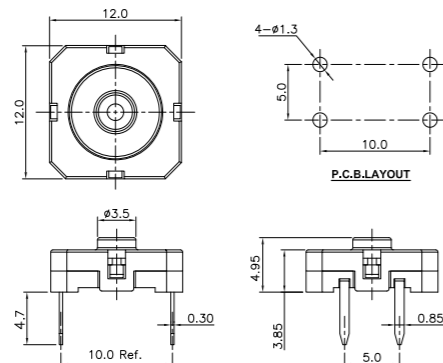
1. Rating : DC 12V, 50mA
2. Contact Resistance : 100mΩ Max.
3. Insulation Resistance : 100mΩ, DC500V
4. Operating Force : 800gf Max
5. Travel : 0.8mm
6. Life Cycle : 100,000 Cycle

## STR-8501S



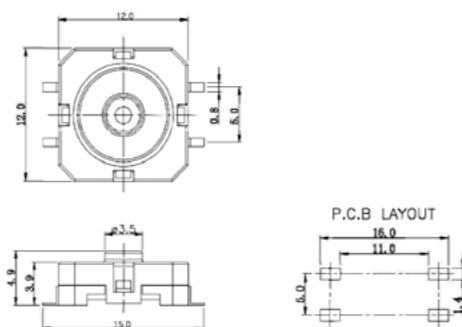
1. Rating : DC 12V, 50mA
2. Contact Resistance : 100mΩ Max.
3. Insulation Resistance : 100mΩ, DC500V
4. Operating Force : 800gf Max
5. Travel : 0.8mm
6. Life Cycle : 100,000 Cycle

## STR-1201



1. Rating : DC 12V, 50mA
2. Contact Resistance : 100mΩ Max.
3. Insulation Resistance : 100mΩ, DC500V
4. Operating Force : 800gf Max
5. Travel : 0.8mm
6. Life Cycle : 100,000 Cycle

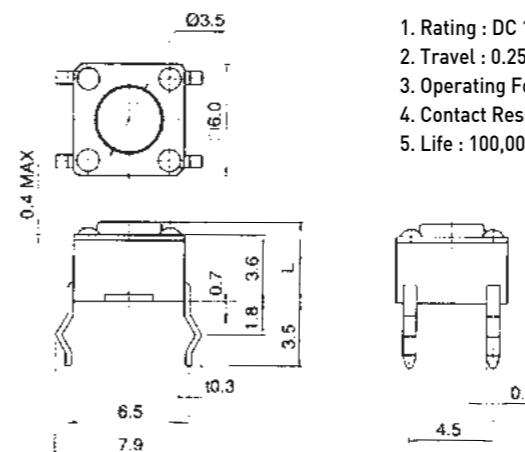
## STR-1201S



1. Rating : DC 12V, 50mA
2. Contact Resistance : 100mΩ Max.
3. Insulation Resistance : 100mΩ, DC500V
4. Operating Force : 800gf Max
5. Travel : 0.8mm
6. Life Cycle : 100,000 Cycle

# TACT SWITCH(DIP TYPE)

## STP-1230

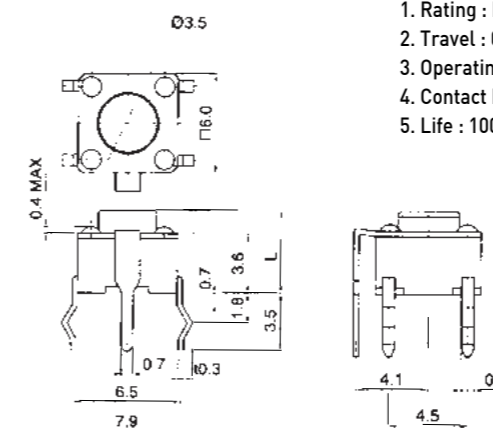


1. Rating : DC 12V, 50mA
2. Travel : 0.25±0.1m/m
3. Operating Force : 160±50gf
4. Contact Resistance : 100mΩ Max.
5. Life : 100,000 Cycles

Model No.	Operating Force
STP-1230	160 ±50gf
STP-1230W	250±50gf

Model No.	STP 1230	STP 1230A	STP 1230B	STP 1230C	STP 1230D	STP 1230E	STP 1230F	STP 1230G	STP 1230J
L	4.3	5.0	9.5	8.0	13.0	7.3	8.5	7.0	17.0

## STP-1232

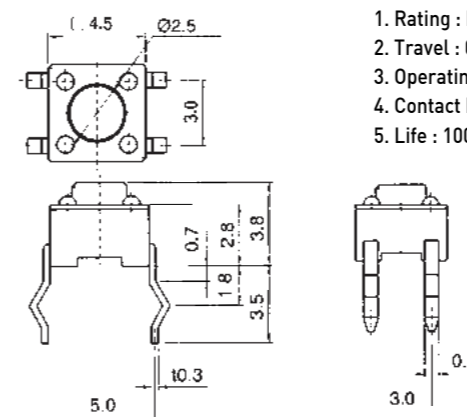


1. Rating : DC 12V, 50mA
2. Travel : 0.25±0.1m/m
3. Operating Force : 160±50gf
4. Contact Resistance : 100mΩ Max.
5. Life : 100,000 Cycles

Model No.	Operating Force
STP-1232	160 ±50gf
STP-1232W	250±50gf

Model No.	STP 1232	STP 1232A	STP 1232B	STP 1232C	STP 1232D	STP 1232E	STP 1232F	STP 1232G	STP 1232J
L	4.3	5.0	9.5	8.0	13.0	7.3	8.5	7.0	17.0

## STP-1145



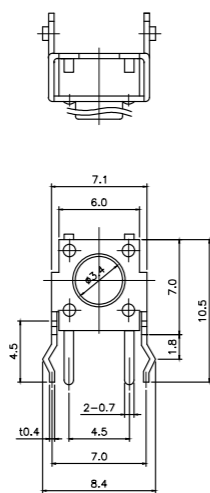
1. Rating : DC 12V, 50mA
2. Travel : 0.25±0.1m/m
3. Operating Force : 160±50gf
4. Contact Resistance : 100mΩ Max.
5. Life : 100,000 Cycles

ROTARY DIP  
SLIDE SW  
DIP SW  
PUSH SW  
TACT SW - STR  
LED MODULE

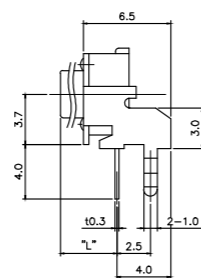
ROTARY DIP  
SLIDE SW  
DIP SW  
PUSH SW  
TACT SW - STP  
LED MODULE

# TACT SWITCH(DIP TYPE)

## STP-1236

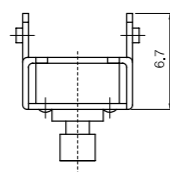
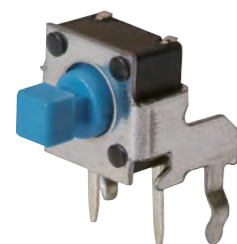


1. Rating : DC 12V, 50mA
2. Travel : 0.25±0.1m/m
3. Contact Resistance : 100mΩ Max.
4. Life : 80,000 Cycles
5. Operating Force : 160±50gf

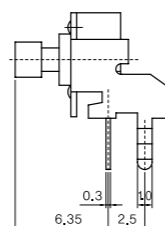
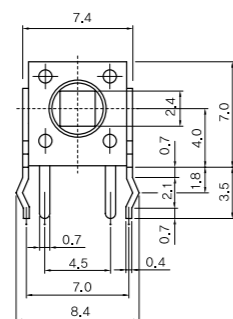


Model No.	STP 1236	STP 1236A	STP 1236B	STP 1236C	STP 1236D	STP 1236E	STP 1236F	STP 1236G	STP 1236J
L	3.15	3.85	8.35	6.85	11.85	6.15	7.35	5.85	15.85

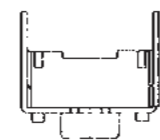
## STP-1236T



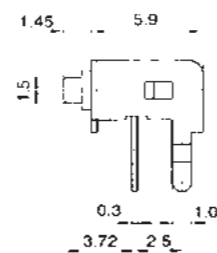
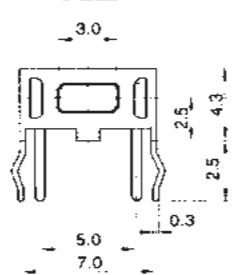
1. Rating : DC 12V, 50mA
2. Travel : 0.25±0.1m/m
3. Operating Force : 160±50gf
4. Contact Resistance : 100mΩ Max.
5. Life : 80,000 Cycles



## STP-1117



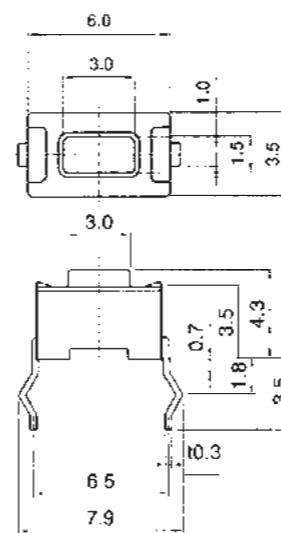
1. Rating : DC 12V, 50mA
2. Travel : 0.25± m/m
3. Operating Force : 180±50gf
4. Contact Resistance : 100mΩ Max.
5. Life : 50,000 Cycles



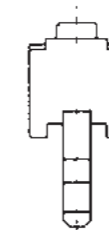
Model No.	Operating Force
STP 1117	180±50gf
STP 1117W	250±50gf

# TACT SWITCH(DIP TYPE)

## STP-1243

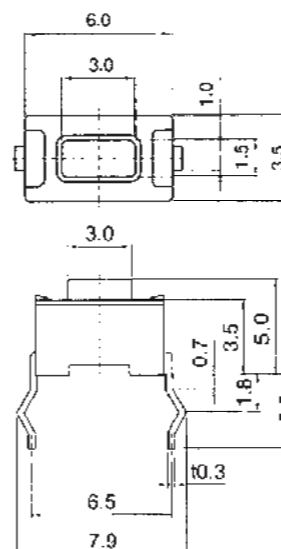


1. Rating : DC 12V, 50mA
2. Travel : 0.25±0.1m/m
3. Contact Resistance : 100mΩ Max.
4. Life : 50,000 Cycles

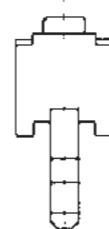


Model No.	Operating Force
STP-1243	180 ±50gf
STP-1243W	250±50gf

## STP-1250

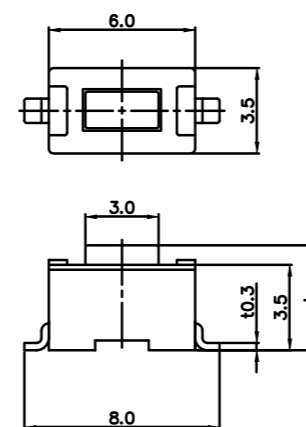


1. Rating : DC 12V, 50mA
2. Travel : 0.25±0.1m/m
3. Contact Resistance : 100mΩ Max.
4. Life : 50,000 Cycles

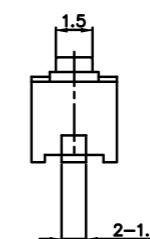


Model No.	Operating Force
STP-1250	180 ±50gf
STP-1250W	250±50gf

## STP-1243S STP-1250S



1. Rating : DC 12V, 50mA
2. Travel : 0.25±0.1m/m
3. Contact Resistance : 100mΩ Max.
4. Life : 50,000 Cycles



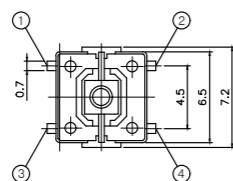
Model No.	Stem(L)	Operating Force
STP-1243S	4.3mm	180 ±50gf
STP-1250S	5.0mm	180 ±50gf
STP-1243SW	4.3mm	250±50gf
STP-1250SW	5.0mm	250±50gf

# LED TACT SWITCH

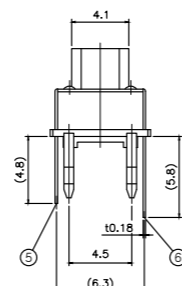
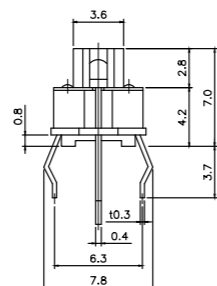
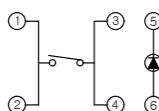
## STP-1194



Model No.	Color (Led)
STP 1194R	Red
STP 1194G	Green
STP 1194Y	Yellow
STP 1194B	Blue



CIRCUIT DIAGRAM

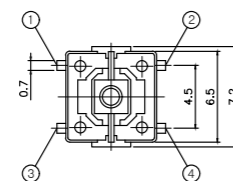


1. Rating : DC 12V, 50mA
2. Travel : 0.25±0.1m/m
3. Operating Force : 160±30gf
4. Contact Resistance : 100mΩ Max.
5. Life : 100,000 Cycles
6. With Led : Option

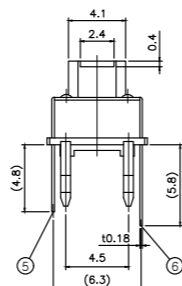
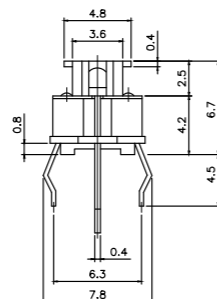
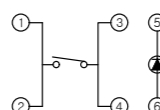
## STP-1193



Model No.	Color (Led)
STP 1193R	Red
STP 1193G	Green
STP 1193Y	Yellow
STP 1193B	Blue

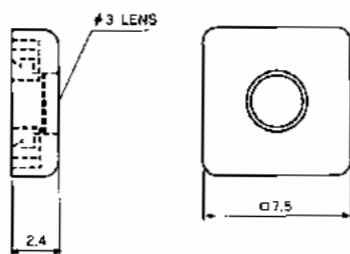


CIRCUIT DIAGRAM



1. Rating : DC 12V, 50mA
2. Travel : 0.25±0.1m/m
3. Operating Force : 160±30gf
4. Contact Resistance : 100mΩ Max.
5. Life : 100,000 Cycles
6. With Led : Option

## STP-1193 CAP



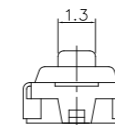
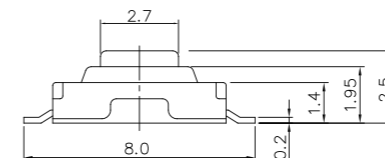
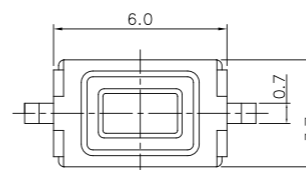
Model No.	Color
TC 1193 W	White
TC 1193 BL	Blue
TC 1193 R	Red
TC 1193 B	Black

# TACT SWITCH (SMD TYPE)

## STP-1126

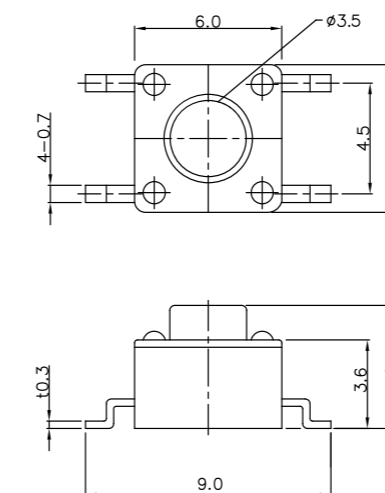


Model No.	Operating Force
STP1126	180±50gf
STP1126S	250±50gf



1. Rating : DC 12V, 50mA
2. Travel : 0.25±0.1m/m
3. Contact Resistance : 100mΩ Max.
4. Life : 50,000 Cycles

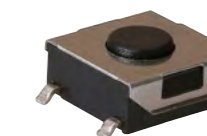
## STP-1238



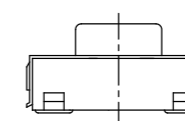
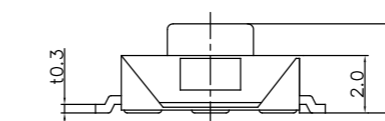
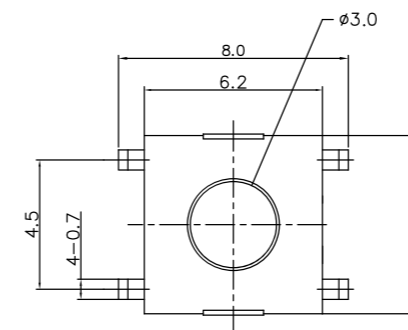
Model No.	STP 1238	STP 1238A	STP 1238H	STP 1238B	STP 1238C	STP 1238D	STP 1238E	STP 1238F	STP 1238G
L	4.3	5.0	6.0	9.5	8.0	13.0	7.3	8.5	7.0

1. Rating : DC 12V, 50mA
2. Travel : 0.25±0.1m/m
3. Contact Resistance : 100mΩ Max.
4. Operating Force : 160±50gf

## STP-1122



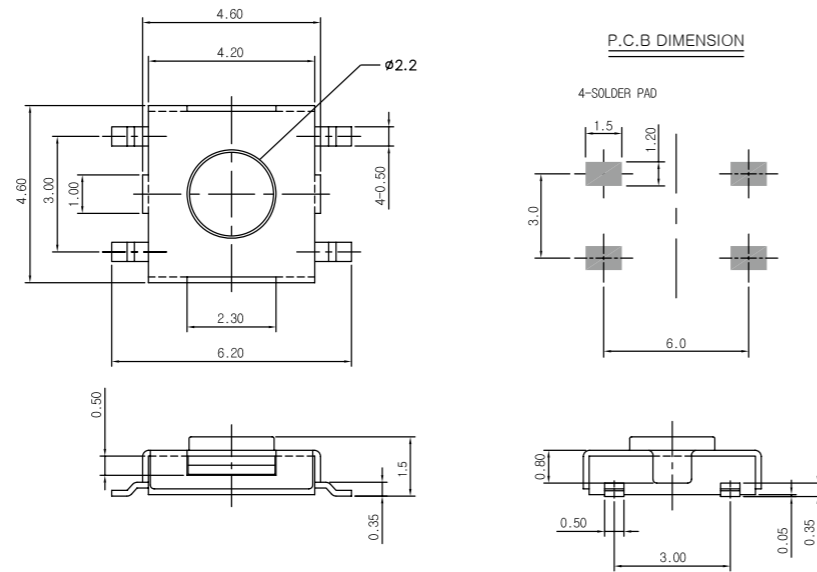
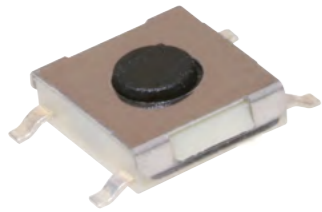
Model No.	Operating Force
STP 1122	160gf
STS 1122W	250gf



1. Rating : DC 15V, 50mA
2. Travel : 0.25±0.1m/m
3. Operating Force : 160±30gf
4. Contact Resistance : 100mΩ Max.
5. Life : 80,000 Cycles

# TACT SWITCH (SMD TYPE)

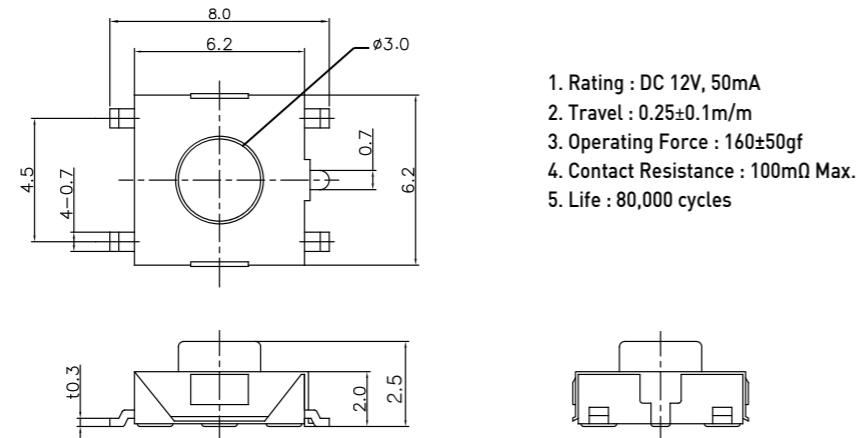
## STP-1127



Model No.	Stem(L)
STP - 1127	1.5

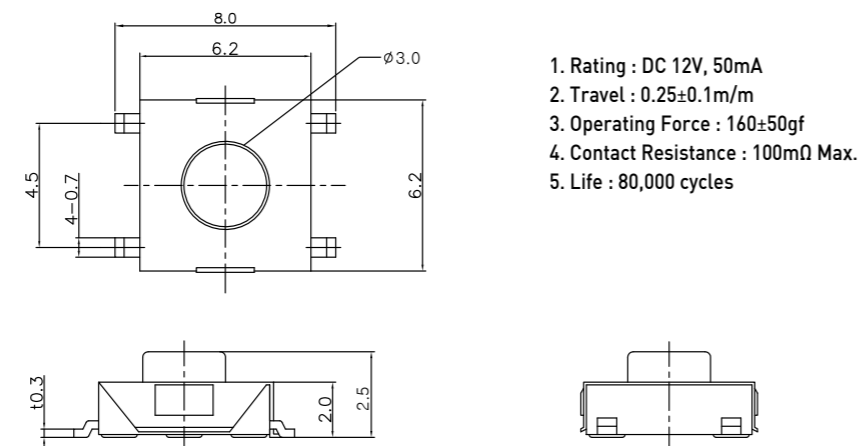
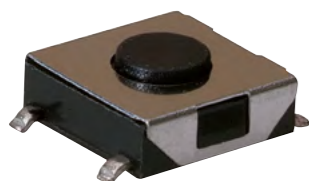
1. Rating : DC 12V, 50mA
2. Travel : 0.20±0.1m/m
3. Operating Force : 250±50gf
4. Contact Resistance : 100mΩ Max.
5. Life : 100,000 cycles

## STP-1125



1. Rating : DC 12V, 50mA
2. Travel : 0.25±0.1m/m
3. Operating Force : 160±50gf
4. Contact Resistance : 100mΩ Max.
5. Life : 80,000 cycles

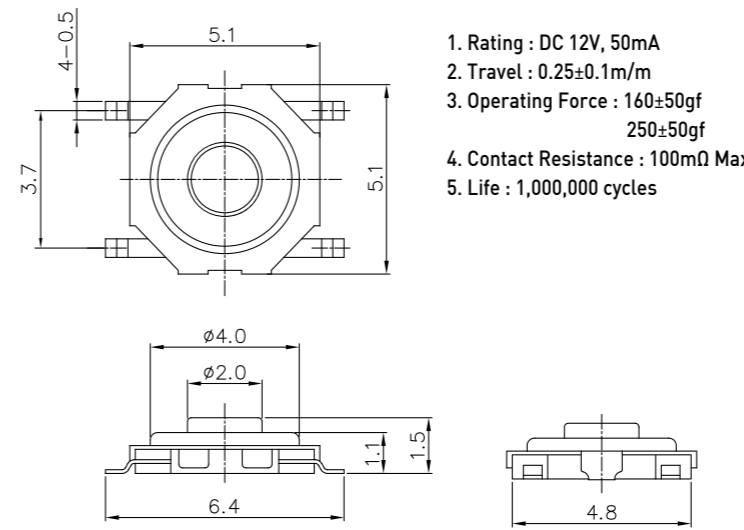
## STP-1125B



1. Rating : DC 12V, 50mA
2. Travel : 0.25±0.1m/m
3. Operating Force : 160±50gf
4. Contact Resistance : 100mΩ Max.
5. Life : 80,000 cycles

# TACT SWITCH (SMD TYPE)

## STP-1152

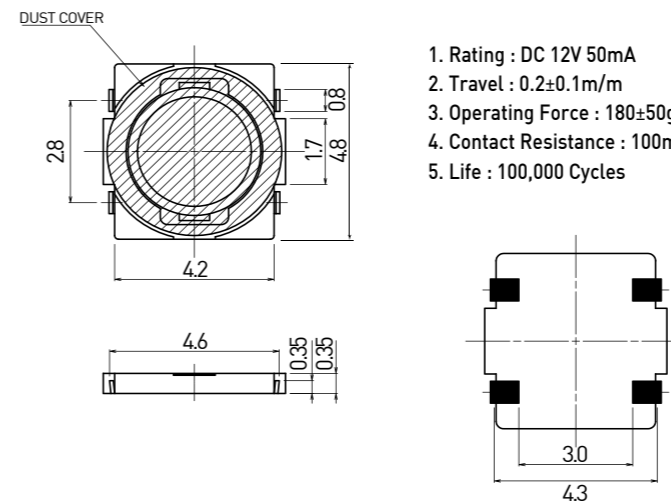
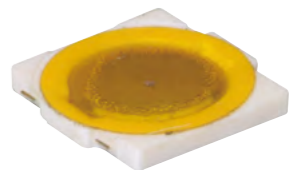


1. Rating : DC 12V, 50mA
2. Travel : 0.25±0.1m/m
3. Operating Force : 160±50gf  
250±50gf
4. Contact Resistance : 100mΩ Max.
5. Life : 1,000,000 cycles

Model No.	Stem (L)
STP - 1152	1.5
STP - 1152A	4.3

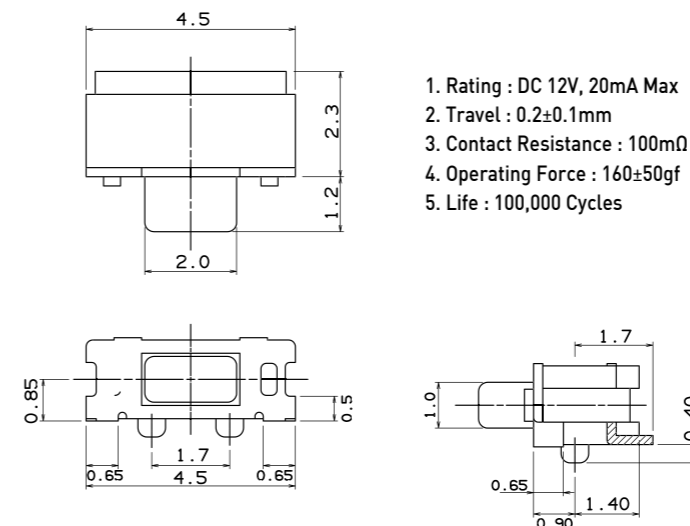
Stem : Metal, Plastic

## STP-1197



1. Rating : DC 12V 50mA
2. Travel : 0.2±0.1m/m
3. Operating Force : 180±50gf
4. Contact Resistance : 100mΩ Max.
5. Life : 100,000 Cycles

## STP-1100



1. Rating : DC 12V, 20mA Max
2. Travel : 0.2±0.1mm
3. Contact Resistance : 100mΩ Max.
4. Operating Force : 160±50gf
5. Life : 100,000 Cycles

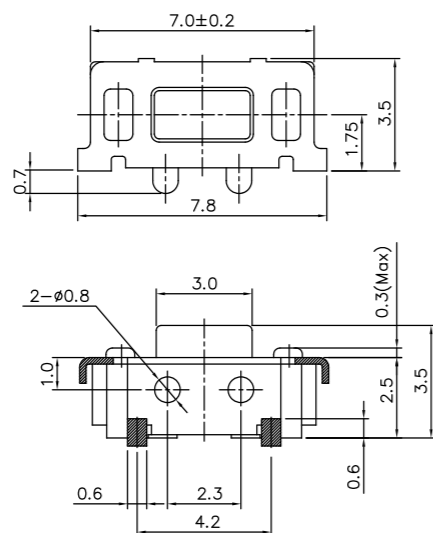


# TACT SWITCH (SMD TYPE)

## STP-1112E

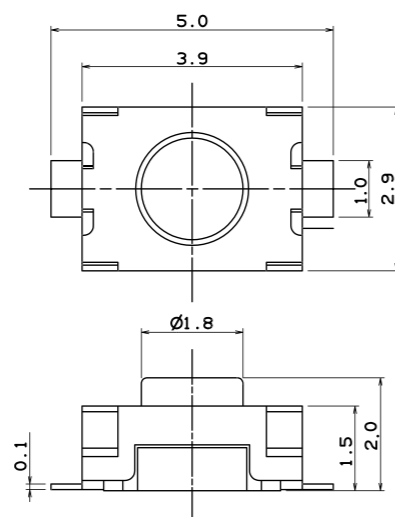


Model No.	Operating Force
STP 1112E	180gf
STP 1112ES	250gf



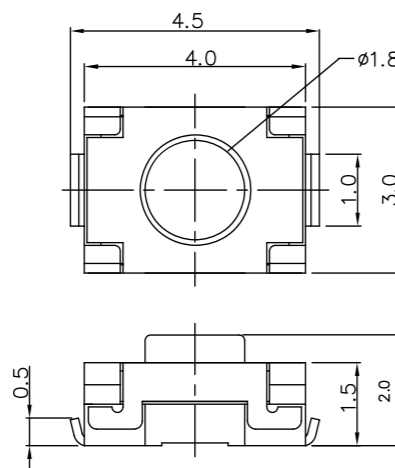
1. Rating : DC 12V, 50mA
2. Travel : 0.25mm
3. Contact Resistance : 100mΩ Max.
4. Life : 50,000 Cycles

## STP-1185



1. Rating : DC 12V, 50mA
2. Travel : 0.15mm
3. Contact Resistance : 100mΩ Max.
4. Life : 100,000 Cycles
5. Operating Force : 160±50gf

## STP-1185U



1. Rating : DC 12V, 50mA
2. Travel : 0.2mm
3. Contact Resistance : 100mΩ Max.
4. Life : 100,000 Cycles
5. Operating Force : 250±50gf

# TACT SWITCH

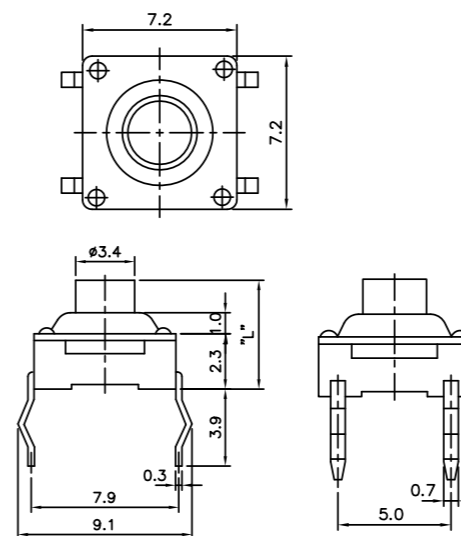
## STP-1159

WATER PROOF SWITCH



Model No.	L
STP 1159	4.3
STP 1159A	5.0
STP 1159B	7.0
STP 1159C	10.0

1. Rating : D.C 12V, 50mA
2. Contact Resistance : 100mΩ Max.
3. Operating force : 160gf, 180gf, 200gf±70gf
4. Travel : 0.30±0.1mm
5. Life : 100,000 cycles



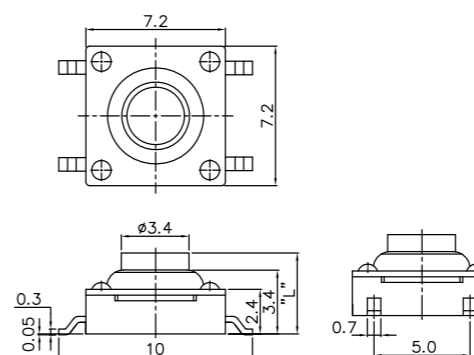
## STP-1159S

WATER PROOF SWITCH

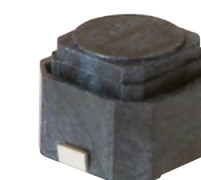


Model No.	L
STP 1159S	4.3
STP 1159SA	5.0
STP 1159SB	7.0

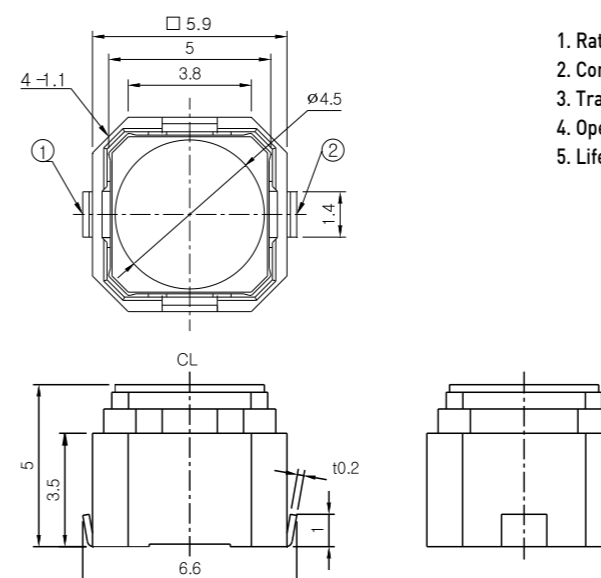
1. Rating : D.C 12V, 50mA
2. Contact Resistance : 100mΩ Max.
3. Operating force : 200gf±70gf
4. Travel : 0.30±0.1mm
5. Life : 100,000 cycles



## STP-1199



1. Rating : DC 16V, 50mA
2. Contact Resistance : 100mΩ Max.
3. Travel : 1.3mm±0.3mm
4. Operating Force : 250/300gf±70gf
5. Life : 100,000 cycle



ROTARY DIP

SLIDE SW

DIP SW

PUSH SW

TACT SW - STP

LED MODULE

www.sungrun.com

ROTARY DIP

SLIDE SW

DIP SW

PUSH SW

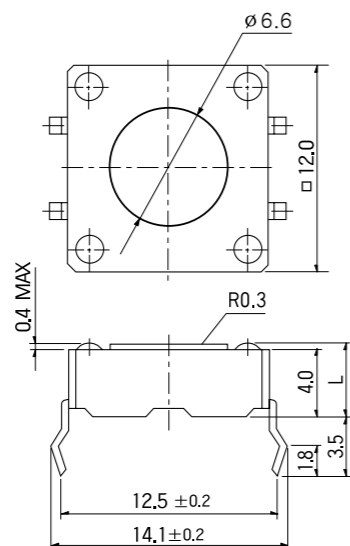
TACT SW - STP

LED MODULE

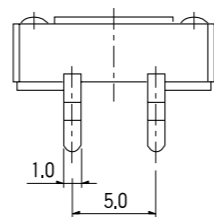
www.sungrun.com

# TACT SWITCH

## STP-1212

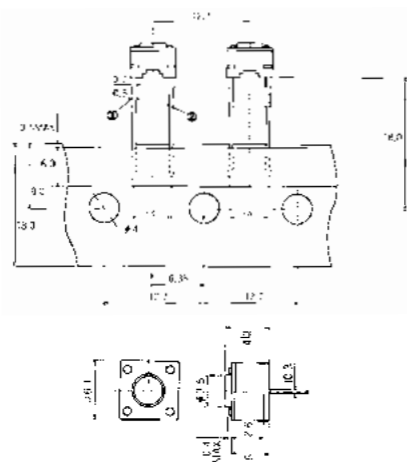


1. Rating : DC 12V, 50mA
2. Operating Force : 160±50gf
3. Travel : 0.3±0.1m/m
4. Contact Resistance : 100mΩ Max.
5. Life : 300,000 Cycles



Model No.	L
STP 1212	4.3
STP 1212A	7.5

## STP-1280

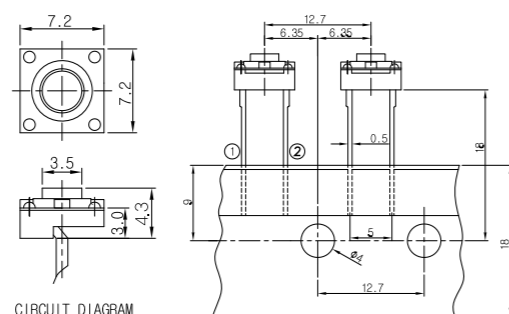
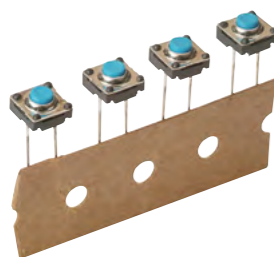


1. Rating : DC 12V, 50mA
2. Travel : 0.25±0.1m/m
3. Contact Resistance : 100mΩ Max.
4. Life : 100,000 Cycles

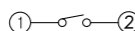
Model No.	L
STP 1280	4.3
STP 1280A	5.0

## STP-1179

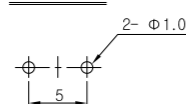
WATER PROOF SWITCH



CIRCUIT DIAGRAM



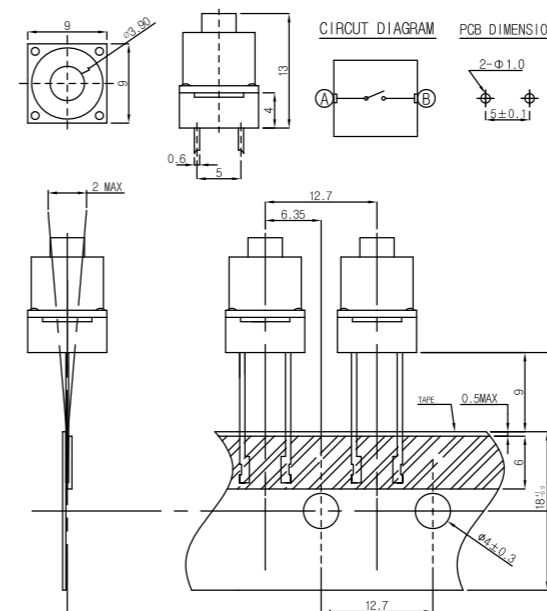
P.C.B LAYOUT



1. Rating : DC 12V 50mA
2. Contact Resistance : 100mΩ Max.
3. Operating Force : 260gf±70gf
4. Travel : 0.25±0.1mm
5. Life Cycle : 100,000 cycle

# TACT, HOOK SWITCH

## TACT SWITCH



## STP-1129

WATER PROOF SWITCH



1. Rating : DC 12V, 50mA
2. Contact Resistance : 100mΩ Max.
3. Operating Force : 160gf±70gf  
260gf±70gf
4. General Tolerance : ±0.3mm
5. Travel : 0.35±0.1m/m
6. Life Cycle : 100,000 cycle
7. Packing : 700pcs/box

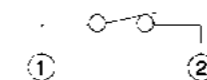
Model No.	Operating Force
STP 1129	160gf
STP 1129A	260gf

## HOOK SWITCH

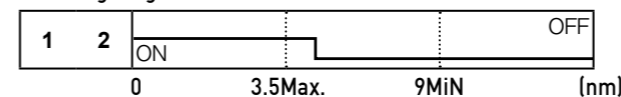
P.C.B Mounting Hole Dimensions



Circuit Diagram



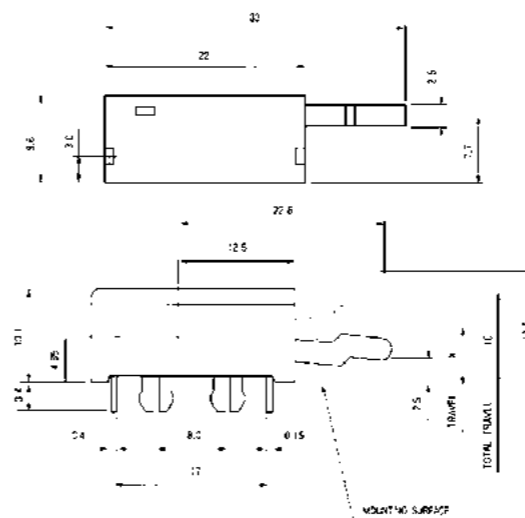
Time Lag Diagram



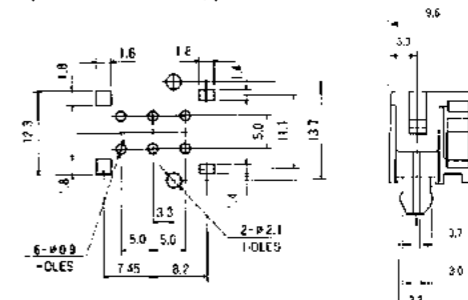
## SH-1240A



1. Rating : DC 48V, 0.2A
2. Circuit : 1C-1P
3. Contact Resistance : 50mΩ Max.
4. Operating Force : 12~20gf

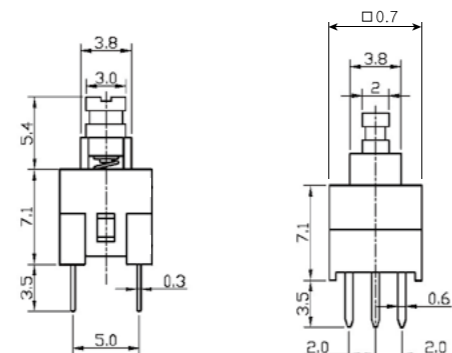


P.C.B Mounting Hole Dimensions  
(View from Direction "A")



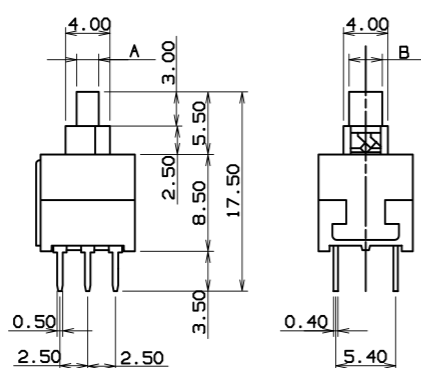
# PUSH SWITCH

## SPS-2271



1. Rating : DC 30V, 0.1A
2. Circuit : 2C-2P
3. Timing : Shorting or Non-shorting
4. Operating Mode : Self-Lock, Non-Lock
5. Travel : Full 2.1 / Lock 1.0
6. Operating Force : 200±50gf

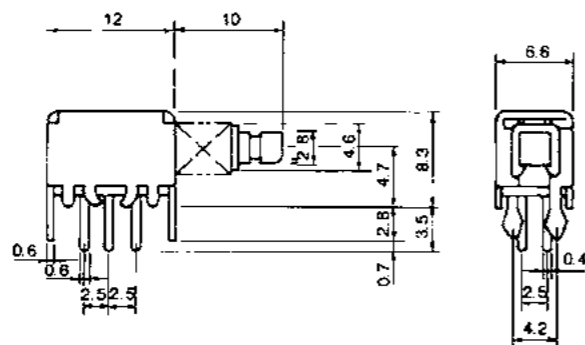
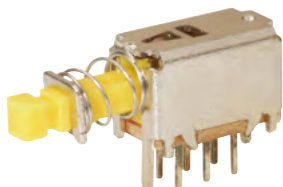
## SPS-2284



1. Rating : DC 30V, 0.1A
2. Circuit : 2C-2P
3. Timing : Non-shorting
4. Operating Mode : Self-Lock, Non-Lock
5. Travel : Full 2.5 / Lock 1.5
6. Operating Force : 200±50gf

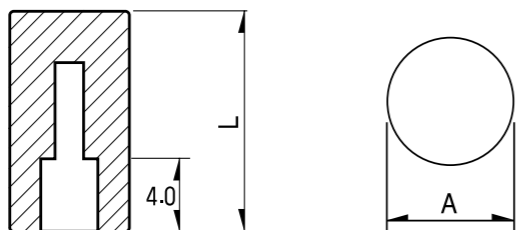
Model No.	A	B
SPS 2284	2.0	3.0
SPS 2284A	3.0	3.0
SPS 2284B	3.3	3.3

## SPS-2259



1. Rating : DC 50V, 0.3A
2. Circuit : 2C-2P
3. Timing : Shorting or Non-Shorting
4. Terminal : P.C. Board Terminal
5. Operating Mode : Self Lock, Non-Lock
6. Stroke : Full 3.5, Lock 2.5
7. Operating Force : 330±100gf

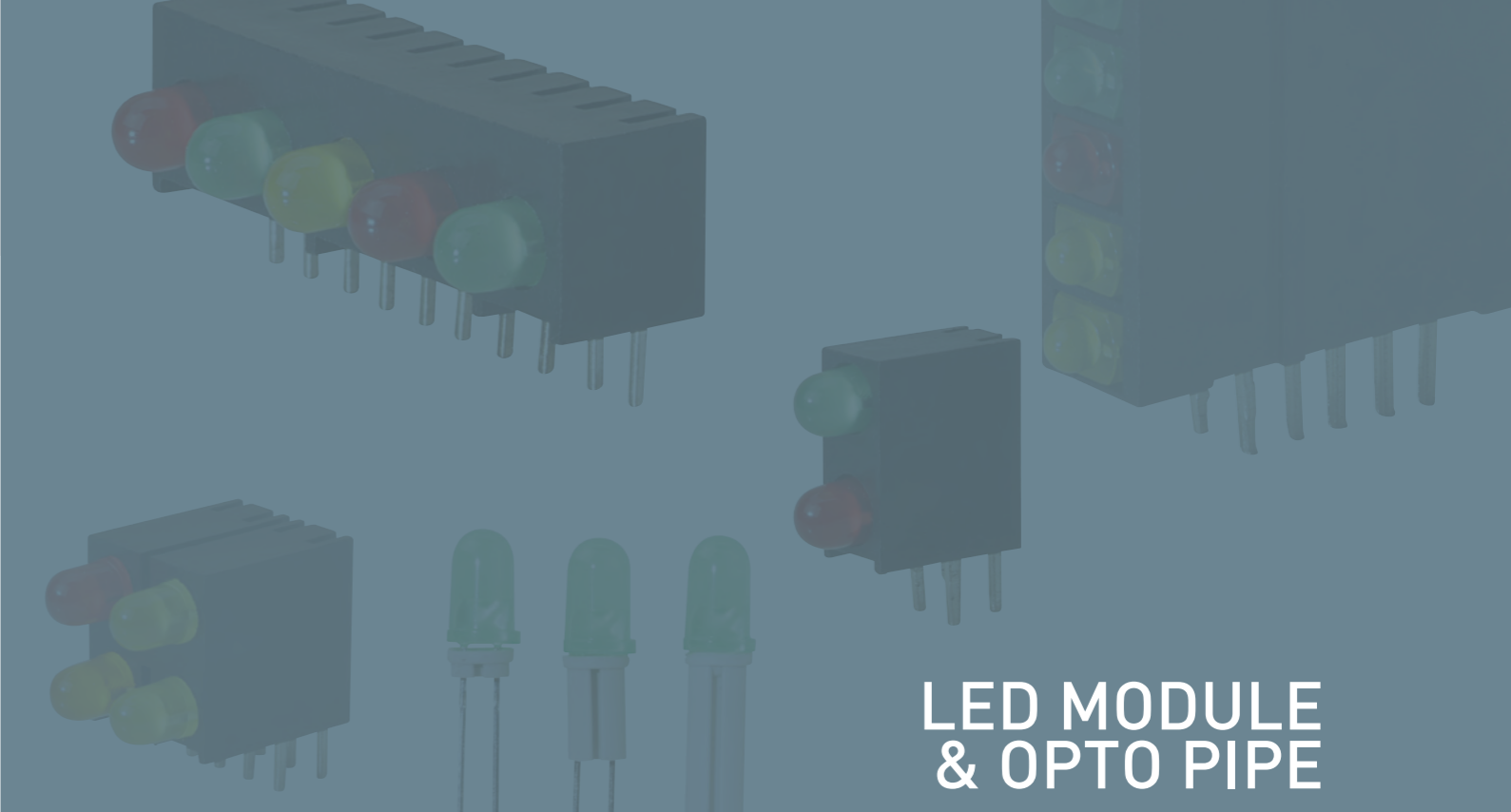
## TC-1104 TC-1108 CAP



• Application model  
SPS-2259

COLOR : White(W), Blue(BL),  
Red(R), Ivory(V),  
Black(B), Gray(GR)

Model No.	A	L
TC 1104	∅ 5.0	9.0
TC 1108	∅ 7.0	12.0



# LED MODULE & OPTO PIPE

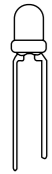
<b>LED SPECIFICATION</b> .....	68
∅ 3 LED Module .....	69
∅ 5 LED Module .....	73
∅ 2 LED Module .....	74
2×3, 2×5, ARRAY LED Module .....	75
∅ 3, ∅ 5 LED Holder .....	75
<b>OPTO PIPE</b> .....	76
<b>FRAME GROUND &amp; GUIDE RAIL</b> .....	77

ROTARY DIP  
SLIDE SW  
DIP SW  
PUSH SW  
PUSH SW-SPS  
LED MODULE

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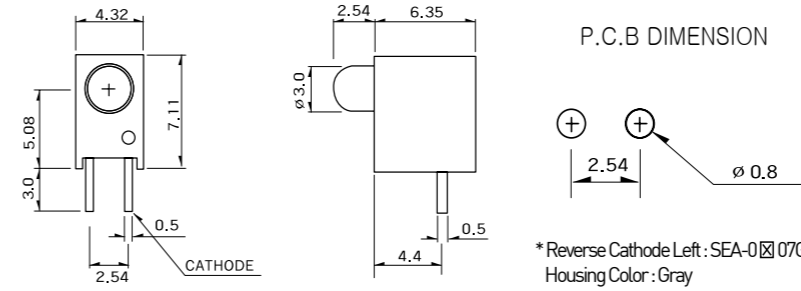
# LED MODULE

## LED SPECIFICATION

Package	LED TYPE	Chip		Lens Appearance	Absolute Maximum Ratings				Electro-optical Data (At 20mA)			Viewing Angle 2θ1/2 (deg)	
		Emitted Color	Peak Wave Length λP(nm)		Δλ (nm)	Pd (mW)	If (mA)	Peak If(mA)	Vf(V)		Iv Typ. (mcd)		
									Typ.	Max.			
	High Efficiency	01	Green	568	Green Diffused	30	100	30	150	2.2	2.6	30.0	50
			Yellow	585	Yellow Diffused	35	100	30	150	2.1	2.6	20.0	50
			Amber	610	Amber Diffused	35	100	30	150	2.0	2.6	60.0	50
			Bright Red	700	Red Diffused	90	50	15	50	2.2	2.6	10.0	50
			Super Blue	470	Blue Diffused	30	100	30	100	3.5	4.0	550	45
	Low Current	02	Hi-Eff Red	635	Red Diffused	45	15	7	-	1.7	2.2	4.5	50
			Green	568	Green Diffused	30	16	7	-	1.9	2.3	7.0	50
			Yellow	585	Yellow Diffused	35	15	7	-	1.8	2.2	3.5	50
	Integral Resistor 5V	03	Hi-Eff Red	635	Red Diffused	-	-	8	-	5	-	15.5	-
			Green	568	Green Diffused	-	-	8	-	5	-	15.5	-
			Yellow	585	Yellow Diffused	-	-	8	-	5	-	14.0	-
	Bi-color	07	Hi-Eff Red	635	White Diffused	45	100	30	150	2.0	2.6	25.0	45
Green			568	30		100	30	150	2.2	2.6	30.0	45	
Yellow			585	White Diffused	35	100	30	150	2.1	2.6	20.0	45	
Green			568		30	100	30	150	2.2	2.6	30.0	45	
1.0" Lead Flangeless 4.8 φ	01	Bright Red	700	Red Diffused	90	50	15	50	2.2	2.6	50.0	40	
		Green	568	Green Diffused	30	100	30	150	2.2	2.6	65.0	40	
		Yellow	585	Yellow Diffused	35	100	30	150	2.1	2.6	50.0	40	
	T-1 3/4 1.0" Lead Flangeless 5 φ	01	Bright Red	700	Red Diffused	90	50	15	50	2.2	2.6	13.0	45
			Green	568	Green Diffused	30	100	30	150	2.2	2.6	90.0	45
			Yellow	585	Yellow Diffused	35	100	30	150	2.1	2.6	70.0	45
			Super Blue	470	Blue Diffused	30	100	30	100	3.5	4.0	550	45
		07	Hi-Eff Red	635	White Diffused	45	100	30	150	2.0	2.6	45.0	45
			Green	568		30	100	30	150	2.2	2.6	50.0	45
			Yellow	585	White Diffused	35	100	30	150	2.1	2.6	35.0	45
Green	568	30	100	30		150	2.2	2.6	50.0	45			
T-1 3/4 1.0" Lead Standard 5 φ	01	Hi-Eff Red	635	White Diffused	45	100	30	150	2.0	2.6	35.0	40	
		Green	568		30	100	30	150	2.2	2.6	45.0	40	
		Yellow	585	White Diffused	35	100	30	150	2.1	2.6	30.0	40	
		Green	568		30	100	30	150	2.2	2.6	45.0	40	
2.0x5.0x7.0 1.0" Lead Rectangular	01	Hi-Eff Red	635	Water Clear	45	100	30	150	2.0	2.6	4.0	80	
		Green	568		30	100	30	150	2.2	2.6	4.5	80	

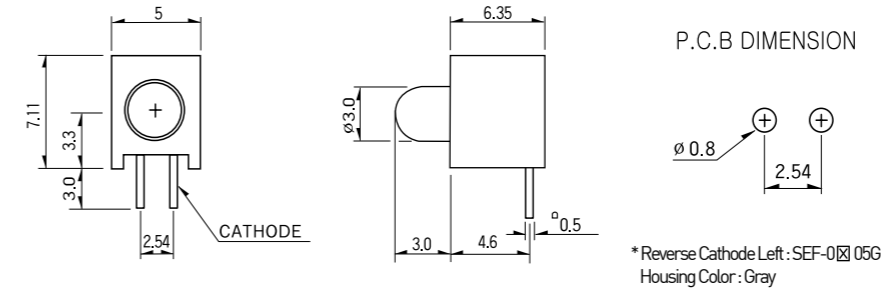
# LED MODULE(φ3)

## SEA-0□07



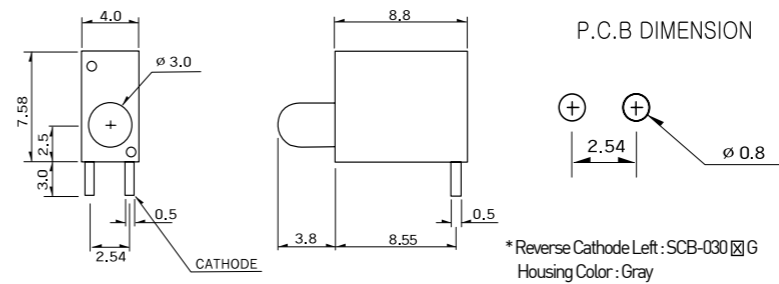
Model	SEA-0207	SEA-0307	SEA-0407	SEA-2507	SEA-0507	SEA-0607	SEA-0707	SEA-0807	SEA-1107	SEA-1207	SEA-1307	SAA-0312	SAA-0332
LED Color	Green	Yellow	Red	Amber	Red (5V)	Green (5V)	Yellow (5V)	Blue	Red (Low)	Yellow (Low)	Green (Low)	Red/Green	Yellow/Green

## SEF-0□05



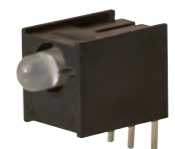
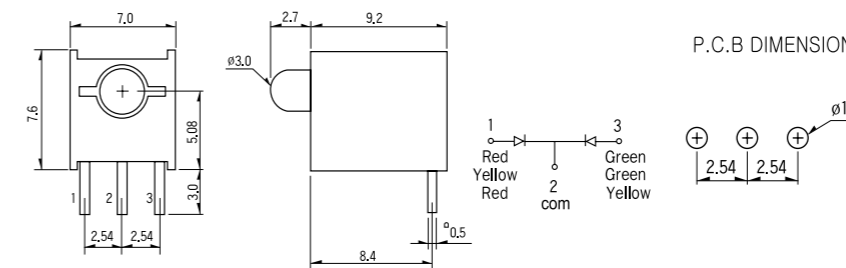
Model	SEF-0205	SEF-0305	SEF-0405	SEF-2505	SEF-0505	SEF-0605	SEF-0705	SEF-0805	SEF-1105	SEF-1205	SEF-1305	SEF-3005	SEF-3105
LED Color	Green	Yellow	Red	Amber	Red (5V)	Green (5V)	Yellow (5V)	Blue	Red (Low)	Yellow (Low)	Green (Low)	Red/Green	Yellow/Green

## SCB-030□B



Model	SCB-0302B	SCB-0303B	SCB-0301B	SCB-0304B	SCB-0315B	SCB-0305B	SCB-0306B	SCB-0307B	SCB-0308B	SCB-0309B	SCB-0310B	SCB-3007B	SCB-3107B
LED Color	Green	Yellow	Red	Amber	Blue	Red (5V)	Green (5V)	Yellow (5V)	Red (Low)	Yellow (Low)	Green (Low)	Red/Green	Yellow/Green

## SER-3□10

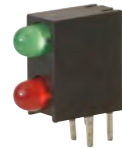


Model	SER-3510	SER-3610	SER-3710
LED Color	Red/Green	Yellow/Green	Red/Yellow



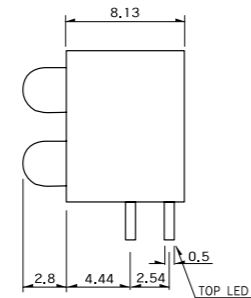
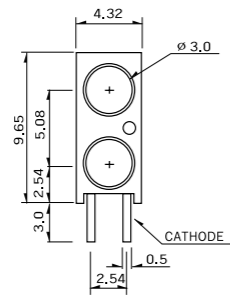
# LED MODULE(φ3)

## SEC-01

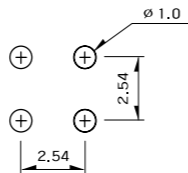


SEC - 0 1 X X

LED TYPE  
SEE PAGE #68  
Top Position Color  
Bottom Position Color



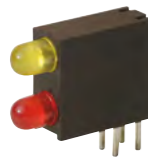
P.C.B DIMENSION



\* Reverse Cathode Left : SEC-01 G  
Housing Color : Gray

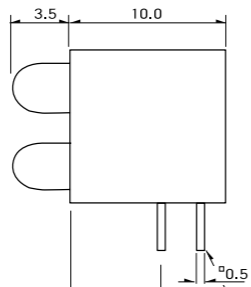
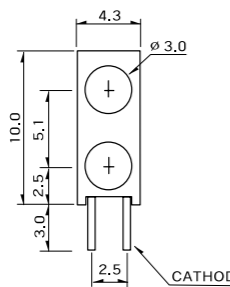
Number	0	1 [Bi-Color]	2	3	4 [Bi-Color]	8	9
Color	Blank	Red (Red/Green)	Green	Yellow	Amber (Yellow/Green)	Blue	White

## SCD-01

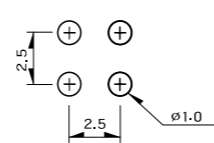


SCD - 0 1 X X

LED TYPE  
SEE PAGE #68  
Top Position Color  
Bottom Position Color



P.C.B DIMENSION



\* Reverse Cathode Left : SCD-01 G  
Housing Color : Gray

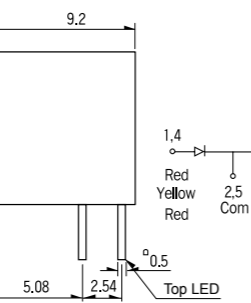
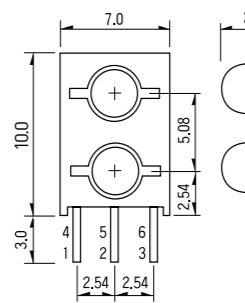
Number	0	1 [Bi-Color]	2	3	4 [Bi-Color]	8	9
Color	Blank	Red (Red/Green)	Green	Yellow	Amber (Yellow/Green)	Blue	White

## SEJ-30

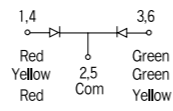
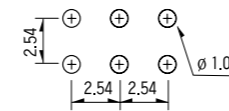


SEJ - 3 0 X X

Top Position Color  
Bottom Position Color

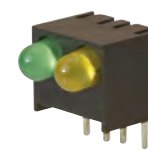


P.C.B DIMENSION



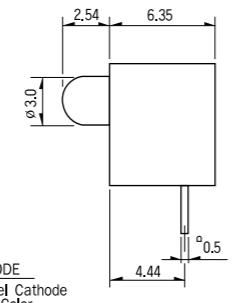
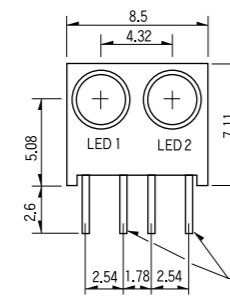
MODEL	0	5	6	7
LED Color	Blank	Red/Green	Yellow/Green	Red/Yellow

## SEA-01

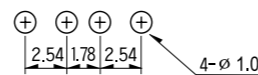


SEA - 0 1 X X

LED TYPE  
SEE PAGE #68  
LED1  
LED2



P.C.B DIMENSION

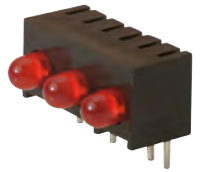


\* Reverse Cathode Left : SEA-01 G  
Housing Color : Gray

Number	0	1 [Bi-Color]	2	3	4 [Bi-Color]	8	9
Color	Blank	Red (Red/Green)	Green	Yellow	Amber (Yellow/Green)	Blue	White

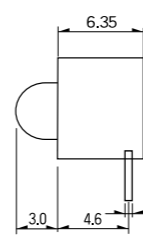
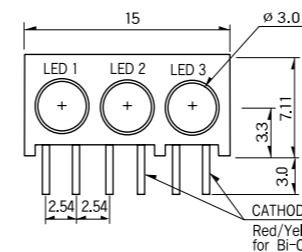
# LED MODULE(φ3)

## SEF-01

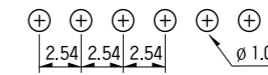


SEF - 0 1 X X X

LED TYPE  
SEE PAGE #68  
LED1 LED2 LED3

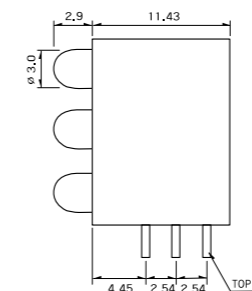
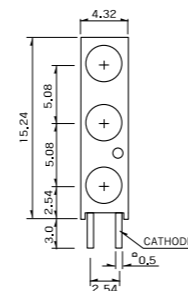


P.C.B DIMENSION



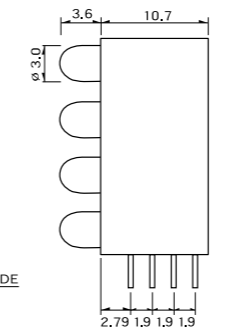
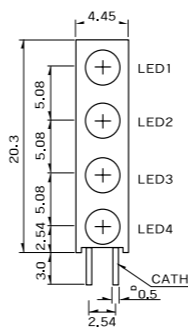
\* Reverse Cathode Left : SEF-01 G  
Housing Color : Gray

Number	0	1 [Bi-Color]	2	3	4 [Bi-Color]	8	9
Color	Blank	Red (Red/Green)	Green	Yellow	Amber (Yellow/Green)	Blue	White

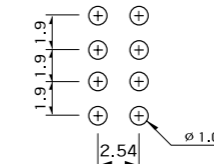


\* Reverse Cathode Left : SFD-0100 G  
Housing Color : Gray

Number	0	1 [Bi-Color]	2	3	4 [Bi-Color]	8	9
Color	Blank	Red (Red/Green)	Green	Yellow	Amber (Yellow/Green)	Blue	White

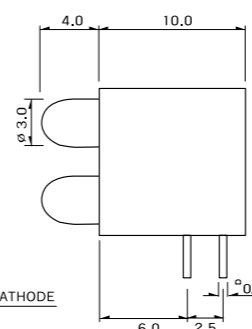
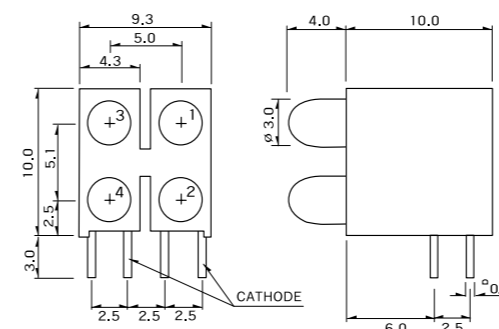


P.C.B DIMENSION

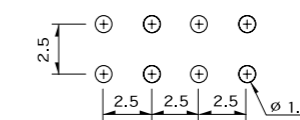


\* Reverse Cathode Left : SFH-010 G  
Housing Color : Gray

Number	0	1 [Bi-Color]	2	3	4 [Bi-Color]	8	9
Color	Blank	Red (Red/Green)	Green	Yellow	Amber (Yellow/Green)	Blue	White



P.C.B DIMENSION



\* Reverse Cathode Left : SCE G  
Housing Color : Gray

Number	0	1 [Bi-Color]	2	3	4 [Bi-Color]	8	9
Color	Blank	Red (Red/Green)	Green	Yellow	Amber (Yellow/Green)	Blue	White

## SFD-0100



SFD - 0 1 0 0 - X X X

LED TYPE  
SEE PAGE #68  
Top LED Position  
Middle LED Position  
Bottom LED Position

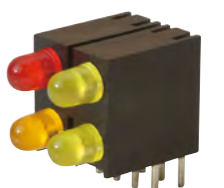
## SFH-010



SFH - 0 1 0 - X X X X

LED TYPE  
SEE PAGE #68  
LED1 LED2 LED3 LED4

## SCE



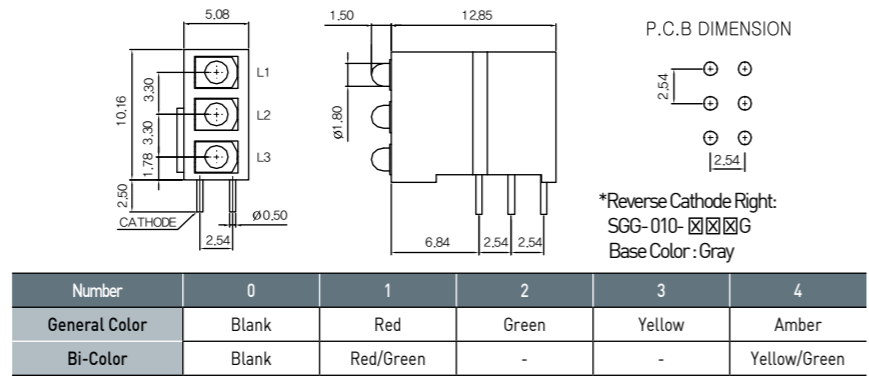
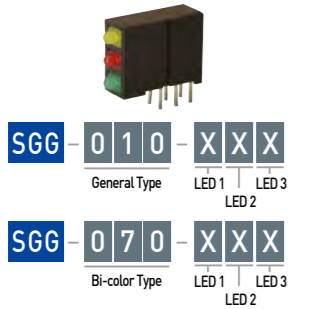
SCE - X X X X - 0 1

LED1 LED2 LED3 LED4  
LED TYPE  
SEE PAGE #68

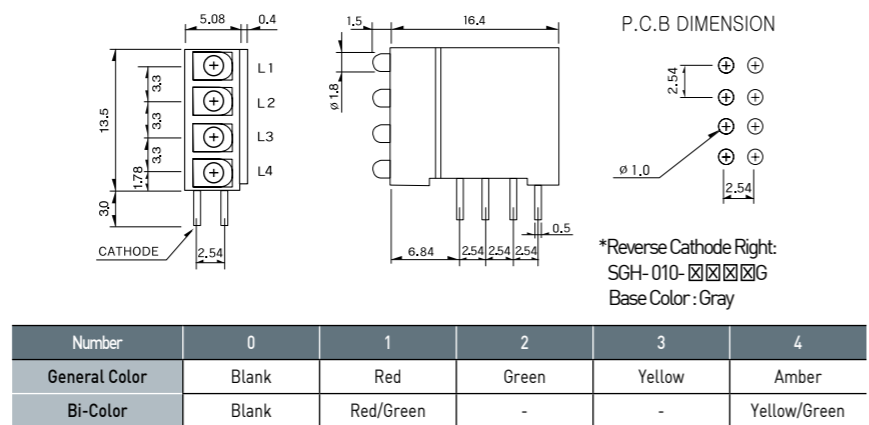
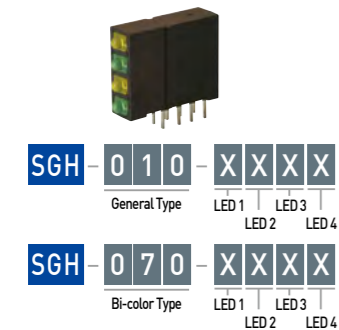


# LED MODULE(φ2), (2x3)

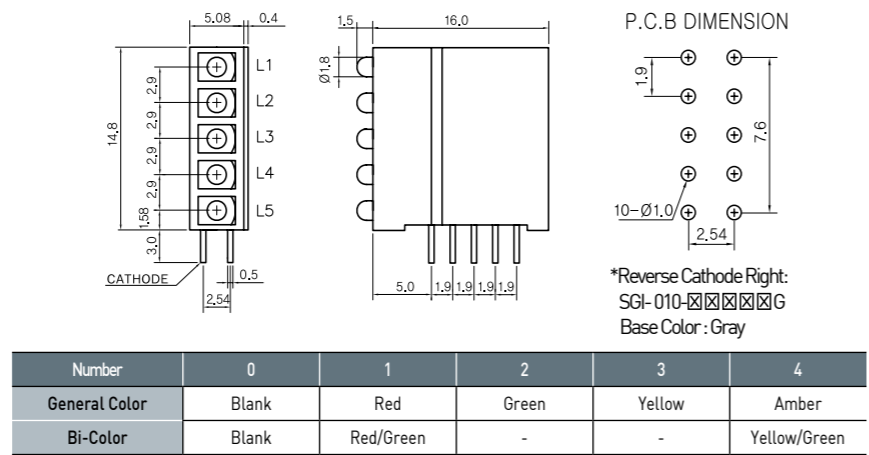
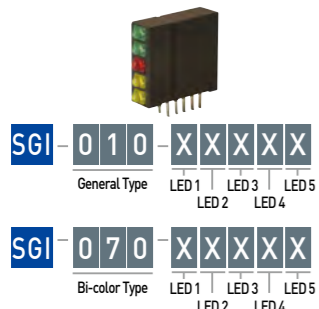
## SGG-010-XX



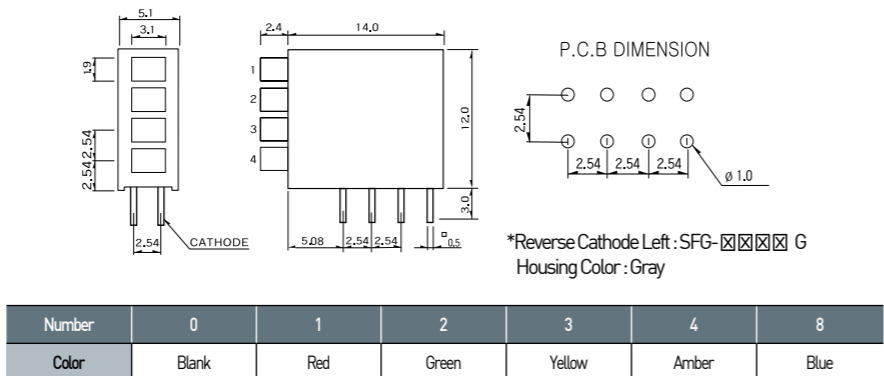
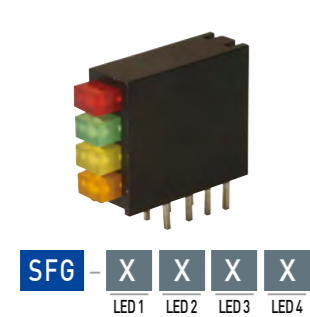
## SGH-010-XXXX



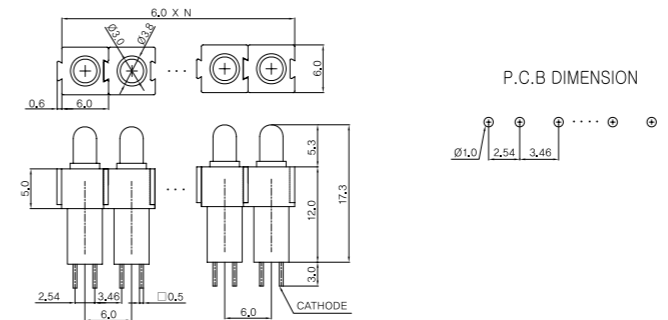
## SGI-010-XXXX



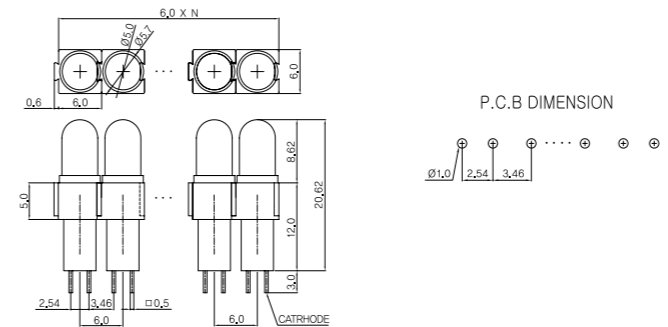
## SFG-XXXX



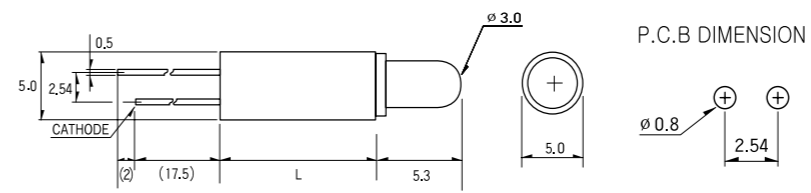
# LED ARRAY, LED HOLDER(φ3, φ5)



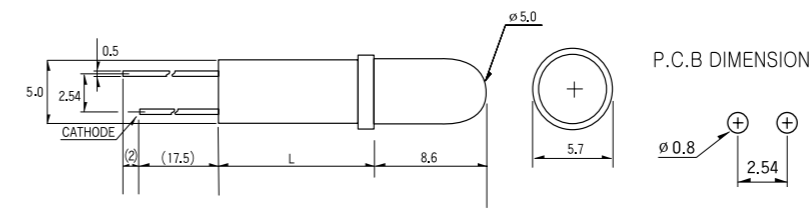
MODEL	1[Bi-Color]	2	3	4[Bi-Color]
LED Color	(Red/Green)	Green	Yellow	(Yellow/Green)



MODEL	1	2	3	4
LED Color	Red	Green	Yellow	Amber

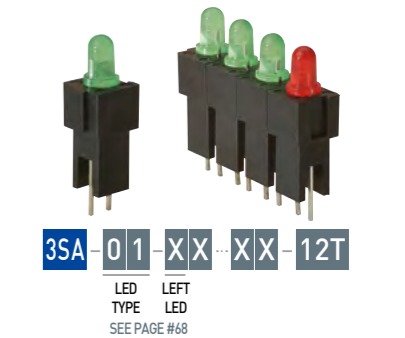


MODEL	3S-2141-S	3S-3141-S	3S-5141-S	3S-1141-S	3S-2441-S	3S-3441-S	3S-5441-S	3S-BB33-S
LED Color	Green	Yellow	Red	Amber	Green Color Clear	Yellow Color Clear	Red Color Clear	Blue Water Clear



MODEL	5S-2134-S	5S-3134-S	5S-5134-S	5S-1134-S	5S-2434-S	5S-3434-S	5S-5434-S	5S-BB41-S
LED Color	Green	Yellow	Red	Amber	Green Color Clear	Yellow Color Clear	Red Color Clear	Blue Water Clear

## 3SA-XX-XX-12T



## 5SA-XX-XX-12T



## 3S-XX41-SXXT



## 5S-XX34-SXXT



ROTARY DIP SLIDE SW DIP SW PUSH SW TACT SW LED MODULE

ROTARY DIP SLIDE SW DIP SW PUSH SW TACT SW LED MODULE







# CHIP LED & LED LAMP

GENERAL INFORMATION (CHIP LED) ..... 79  
 GENERAL LED LAMP ( 3, 5) ..... 90



RoHS

## GENERAL INFORMATION (CHIP LED)

### PRECAUTIONS FOR USING BRIGHT CHIP LED PRODUCTS

#### 1. SOLDERING

##### Manual Of Soldering

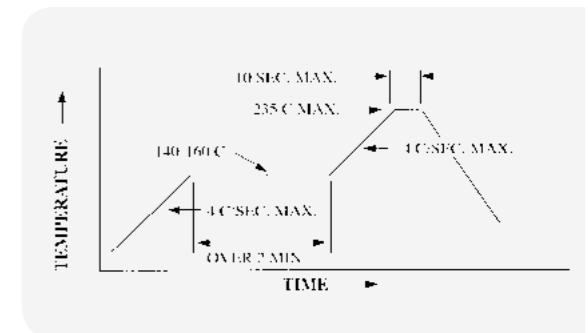
The temperature of the iron tip should not be higher than 300°C(572°F) and soldering within 3 seconds per solder-land is to be observed.

##### Reflow Soldering

Preheating : 140°C-160°C±5°C, within 2 minutes.

Operation heating : 235°C(Max.), within 10 seconds.(Max.)

Gradual Cooling(Avoid quenching)



#### 2. Handling

Care must be taken not to cause stress to the epoxy resin portion of **BRIGHT LEDs** while it is exposed to high temperature

Care must be taken not to rub the epoxy resin portion of **BRIGHT LEDs** with hard or sharp article such as the sand blast and the metal hook.

#### 3. Notes for designing

Care must be taken not to provide the current limiting resistor in the circuit so as to drive the **BRIGHT LEDs** within the rated figures. Also, caution should be taken not to overload **BRIGHT LEDs** with instantaneous voltage at the turning ON and OFF of the circuit.

When using the pulse drive, care must be taken to keep the average current within the rated figures. Also, the circuit should be designed so as not to be subjected to reverse voltage when turning off the **BRIGHT LEDs**.

#### 4. Storage

In order to avoid the absorption of moisture. It is recommended to solder **BRIGHT LEDs** as soon as possible after unpacking the sealed envelope.

If the envelope is still packed, to store it in the environment as following :  
 Temperature : 5°C-30°C(41°F-86°F) Humidity : RH 60% Max.

# GENERAL INFORMATION (CHIP LED)

## QUALITY CONTROL AND ASSURANCE

### 1. SAMPLING PLAN

U.S. Ministry of defense MIL-STD-105D level II (single sampling plans)

### 2. INSPECTION ITEMS AND CRITERIONS FOR JUDGEMENTS

Measuring Methods for light Emitting Diode (No.11830)and Light Emitting Diodes(NO.11829)  
Stipulated by ministry of economical affairs of R.O.C. and by reference to Q.C. Standards prevailing in prominent LED plants worldwide.

### 3. RELIABILITY TESTS

General Provisions for Environmental Tests of CNS-Categorized Electronic Parts, 3623-3634, 5637, 11233-11238, and U.S. Ministry of National Defense MIL-STD-750 Specifications.

Test Item	Test Conditions
Operation Life Test	LED connected to a source of power and charged with 20mA at room temperature (25°C) for 1000 hours.
Temperature Cycle Test	-35°C~+25°C RH=80%~+85°C RH=80% as 1 cycle (60minutes) (20minutes) (60minutes) The duration of the test shall be for 5 complete cycle.
Thermal Shock Test	LED placed in a chamber(-35°C)for 20 minutes, temperature increased instantaneously to +85°C for 20minutes. The duration of the test shall be for 10 complete cycles.(MIL-STD-202:107D)
High Temperature Storage Test	Ta=85°C±5°C RH=50% Test Time : 1000 hours.
Low Temperature Storage Test	Ta=35°C±5°C Test Time : 1000 hours.
Humidity Storage Test	Ta=65°C±5°C RH=90~95% Test Time : 1000 hours.
Solderability Test	Preheating : 140°C-160°C, within 2 minutes. Operation heating : 235°C(Max.), within 10 seconds.(Max.)

The measuring terms after test and failure criteria as follows:

Measuring Terms	Failure Criteria
Luminous Intensity(Iv)	Lower Standard Limit x0.5
Forward Voltage(Vf)	Lower Standard Limit x1.2
Reverse Current(Ir)	Lower Standard Limit x2.0

# GENERAL INFORMATION (CHIP LED)

## ABSOLUTE MAXIMUM RATINGS

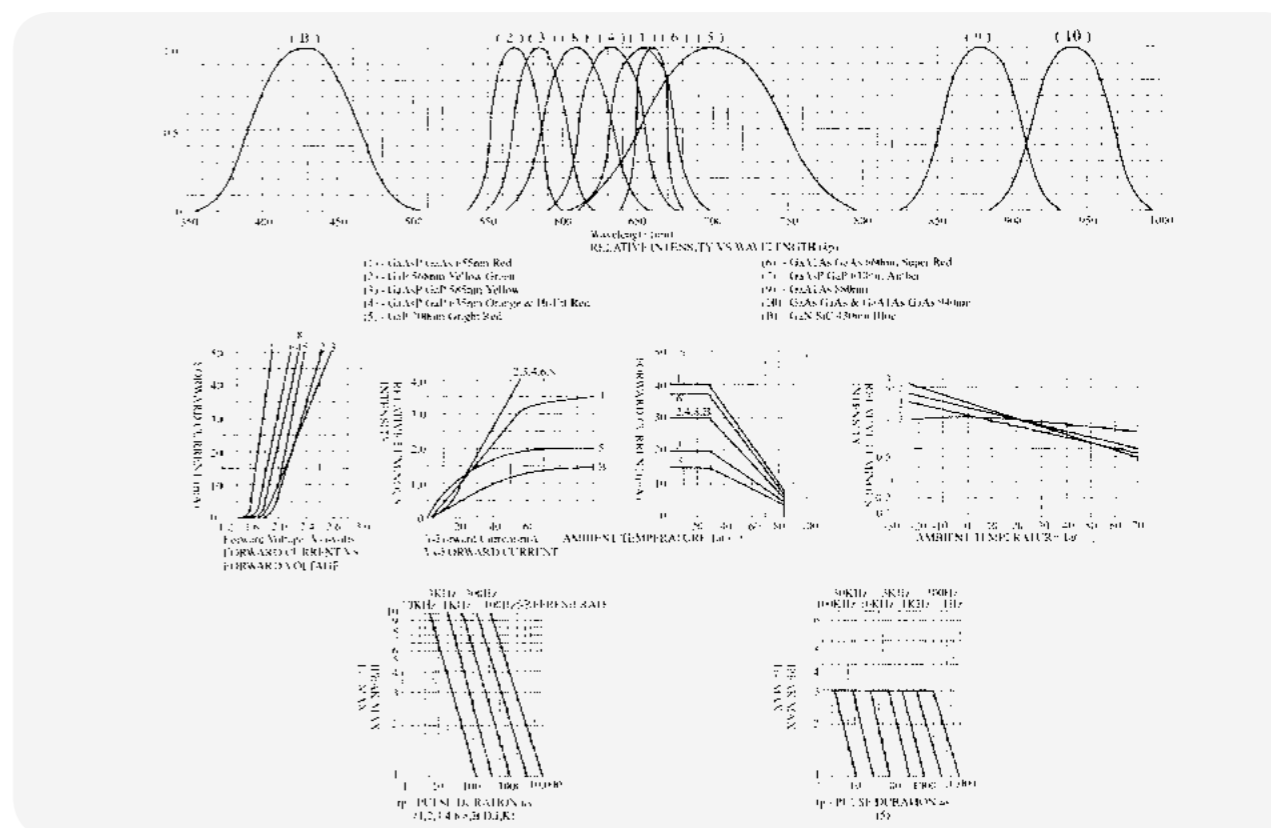
### 1. Test condition For Each Parameter

Parameter	Symbol	Unit	Test condition
Reverse voltage	VR	V	-
Reverse Current	IR	UA	VR=5.0Volt
Forward Voltage	VF	V	IF=20mA
Luminous Intensity	IV	Mcd	IF=10mA
Viewing Angle	2θ1/2	Degree	IF=20mA
Spectral Line Half-Width	Δλ	nm	IF=20mA
Power Dissipation	PD	mw	IF=20mA
Peak Forward Current(Duty 1/10 1KHZ)	IFP	mA	IFP=150mA

### 2. Absolute Maximum Ratings

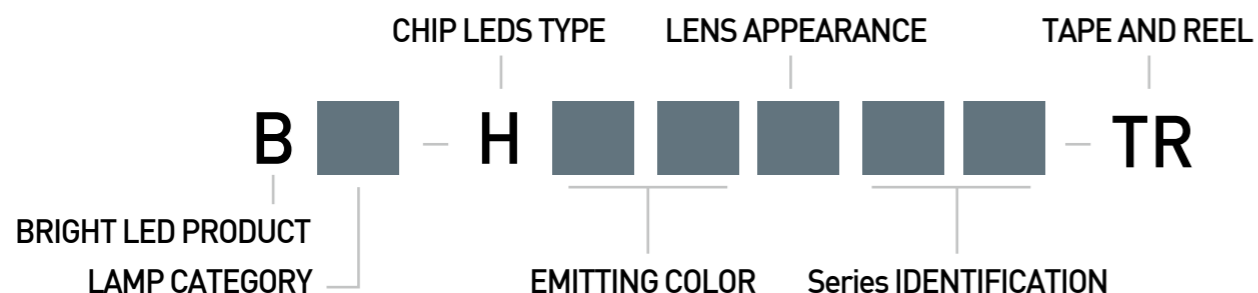
Reverse Voltage	5.0 Volt
Reverse Current(VR=5V)	≤ 100uA
Operating Temperature Range	-25°C~+80°C
Storage Temperature Range	-30°C~+85°C

### TYPICAL ELECTICAL-OPTICAL CHARACTERISTICS CURVES



# GENERAL INFORMATION (CHIP LED)

## SELECTION GUIDE TO CHIP LED LAMP(PART NO. SYSTEM)



### LAMP CATEGORY : Series IDENTIFICATION:

L : Standard Lamp	1 : Ceramics Chip Type	2 : Reflectors Chip Type	3 : 1206/Flat Chip Type
B : Blinking Lamp	3A : 1206/Lens Chip type	4A : 1204/Oval Chip type	4B : 1210/Flat Chip Type
R : Resistor Lamp	4F : 1210/Flat Chip type	5 : 0805/Flat Chip type	6 : 0603/Flat Chip type

### LENS APPERANCE:

1 : Color Diffused	2 : White Diffused
3 : Water Clear	4 : Color Transparent

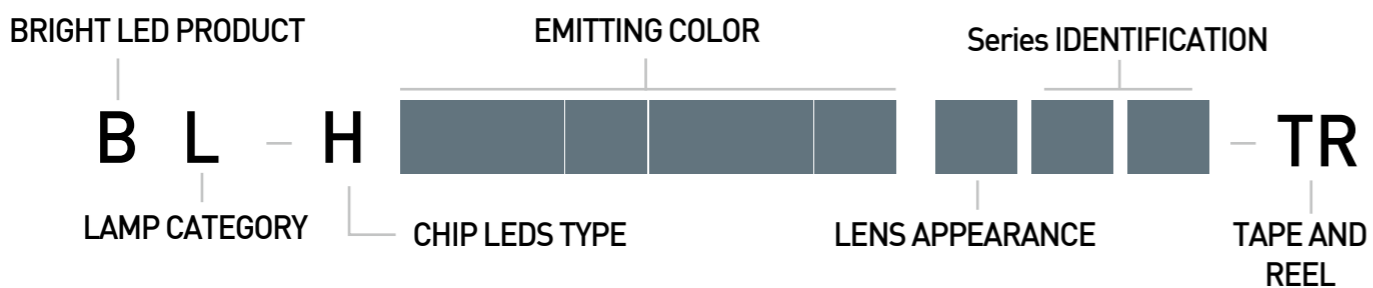
### PACKAGE TYPE:

H: Chip Lamp	X : Axial
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### EMITTING COLOR:

Ax : GaAsp/Gap 610nm/Amber(7)	Bo : GaN/Sic 430nm/Super Blue(7)	B <sub>1</sub> : InGaN/Sic 450nm/Super Blue
B <sub>2</sub> : InGaN/Sic 470nm/Super Blue	Dx : GaAlAs/GaAs 660nm/DH Red	Ex : GaAsp/Gap 635nm/Super Orange(4)
Fx : GaAlAs/GaAlAs 660nm/DDH	Gx : Gap/Gap 568nm/Yellow Green(2)	G4 : InGaN/Sic 505nm/Super B/G
Hx : Gap/Gap 700nm/Bright Red(5)	Jx : AlGaInP 620nm/Super Orange	Kx : AlGaInP 595nm/Super Yellow
Rx : GaAsp/GaAs 655nm/Red(1)	Sx : GaAlAs/GaAs 660nm/SH Red(6)	Wx : Gap/Gap 555nm/Pure Green(9)
Xx : Gap/Gap 568nm/Hi-Eff. Green	Yx : GaAsp/Gap 585nm/Yellow(3)	

## CHIP LEDS : (Dual Color & Full Color Type)

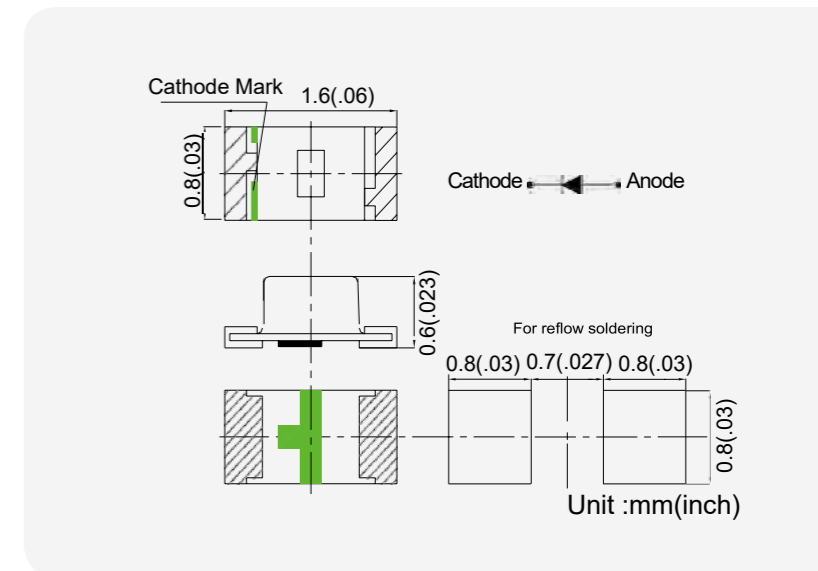


### Series IDENTIFICATION :

3 : 1206/Dual-Color Chip Type	3B : 1210/Dual-Color Chip Type	3F : 1210/Dual-Color Type
3F : 1210/Full-Color Chip Type		

# SURFACE MOUNT CHIP LED LAMP

## SMD LED 0603-0.6T



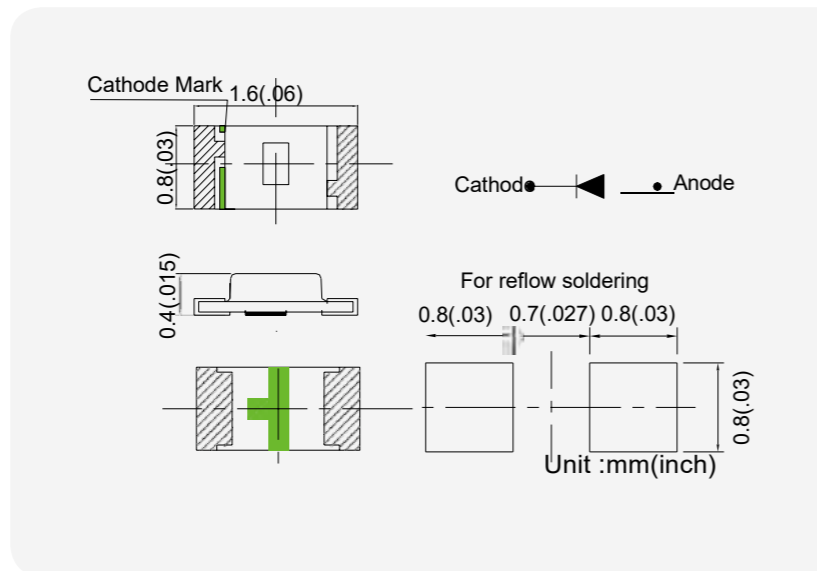
Part No.	Emitted Color	λd(nm)	Lens Appearance	Vf(V) @I <sub>F</sub> =5 mA		IV(mcd) @I <sub>F</sub> =5m A		Viewing Angle 2θ1/2 (deg)
				Typ.	Max.	Typ.	Max.	
BL-HB336A	Blue	460-475	Transparent	2.8	3.2	28	63	120°
BL-HGK36A	Green	520-535		2.6	3.2	63	140	

Part No.	Emitted Color	λd(nm)	Lens Appearance	Vf(V) @I <sub>F</sub> =20 mA		IV(mcd) @I <sub>F</sub> =20m A		Viewing Angle 2θ1/2 (deg)
				Typ.	Max.	Typ.	Max.	
BL-HG036A	Yellow Green	566-576	Transparent	2.2	2.6	3.7	10	120°
BL-HY036A	Yellow	584-594		2.2	2.6	3.7	8.2	
BL-HS136A	Red	638-648		2.2	2.6	5.5	12.3	
BL-HUE136A	Super Red	625-635		2.0	2.6	63	100	
BL-HE136A	Super Red	626-636		2.0	2.6	3.7	8.2	
BL-HG836A	Green	520-535		3.2	3.6	140	317	
BL-HGE36A	Yellow Green	566-576		2.2	2.6	18.5	42	
BL-HKC36A	Yellow	584-594		2.2	2.6	63	120	
BL-HJF36A	Super Amber	600-610		2.1	2.6	28	50	
BL-HJC36A	Amber	600-610		2.2	2.6	63	140	
BL-HJE36A	Orange Red	615-625		2.2	2.6	63	100	
BL-HUB36A	Red	620-640		2.2	2.6	28	63	

Part No.	Emitted Color	λd(nm)	Lens Appearance	Vf(V) @I <sub>F</sub> =20 mA		IV(mcd) @I <sub>F</sub> =20m A		Viewing Angle 2θ1/2 (deg)
				Typ.	Max.	Typ.	Max.	
BIR-HM136A	IR	940	Transparent	1.2	1.7	0.92	2.57	120°

# SURFACE MOUNT CHIP LED LAMP

## SMD LED 0603-0.4T



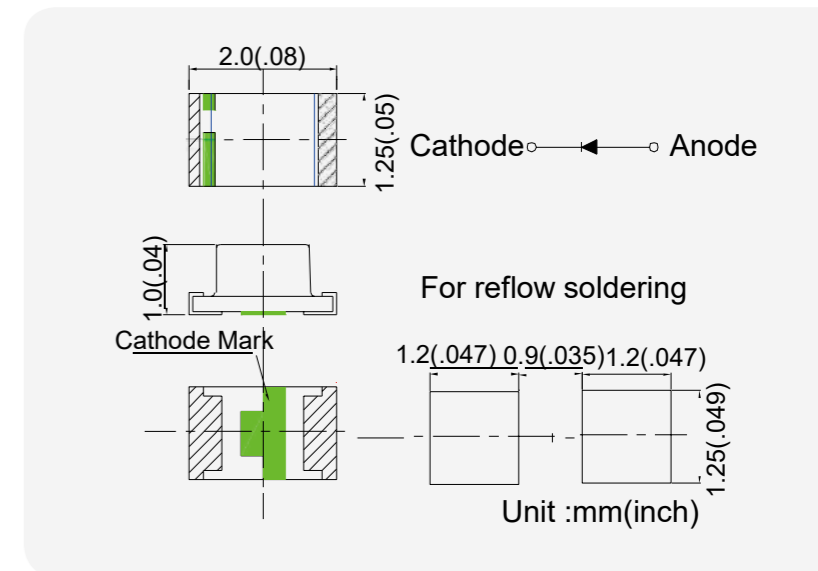
Part No.	Emitted Color	X Typ.	Y Typ.	Lens Appearance	Vf(V) @I <sub>f</sub> = 5 mA		IV(mcd) @I <sub>f</sub> = 5 mA		Viewing Angle 2θ1/2 (deg)
					Typ.	Max.	Typ.	Max.	
BL-HZ336G-L8	White	0.28	0.28	Yellow Clear	2.8	3.2	42	140	120°

Part No.	Emitted Color	λd(nm)	Lens Appearance	Vf(V) @I <sub>f</sub> = 5 mA		IV(mcd) @I <sub>f</sub> = 5 mA		Viewing Angle 2θ1/2 (deg)
				Typ.	Max.	Typ.	Max.	
BL-HB336G	Blue	460-475	Transparent	2.8	3.2	28	63	120°
BL-HGK36G	Green	520-535		2.6	3.2	63	140	

Part No.	Emitted Color	λd(nm)	Lens Appearance	Vf(V) @I <sub>f</sub> = 20 mA		IV(mcd) @I <sub>f</sub> = 20 mA		Viewing Angle 2θ1/2 (deg)
				Typ.	Max.	Typ.	Max.	
BL-HG836G	Green	520-535	Brilliant Blue	3.2	3.6	140	317	120°
BL-HGE36G	Yellow Green	566-576		2.2	2.6	18.5	42	
BL-HKC36G	Yellow	584-594		2.2	2.6	63	120	
BL-HJC36G	Amber	600-610		2.2	2.6	63	140	
BL-HJE36G	Orange Red	615-625		2.2	2.6	63	100	
BL-HBH36G	Super Blue	465-470		3.2	3.6	63	100	
BL-HUB36G	Red	465-470		2.2	2.6	28	63	

# SURFACE MOUNT CHIP LED LAMP

## SMD LED 0805-1.0T



Part No.	Emitted Color	λd(nm)	Lens Appearance	Vf(V) @I <sub>f</sub> = 5 mA		IV(mcd) @I <sub>f</sub> = 5 mA		Viewing Angle 2θ1/2 (deg)
				Typ.	Max.	Typ.	Max.	
BL-HB335A	Blue	460-475	Transparent	2.8	3.2	28	63	120°
BL-HGK35A	Green	520-535		2.6	3.2	63	140	

Part No.	Emitted Color	λd(nm)	Lens Appearance	Vf(V) @I <sub>f</sub> = 20 mA		IV(mcd) @I <sub>f</sub> = 20 mA		Viewing Angle 2θ1/2 (deg)
				Typ.	Max.	Typ.	Max.	
BL-HG835A	Green	520-535	Transparent	3.2	3.6	140	317	120°
BL-HGE35A	Yellow Green	566-576		2.2	2.6	18.5	42	
BL-HG035A	Yellow Green	566-576		2.2	2.6	3.7	8.2	
BL-HY035A	Yellow	580-592		2.1	2.6	2.4	6.0	
BL-HUE35A	Super Red	620-635		2.0	2.6	63	120	
BL-HE135A	Super Red	626-636		2.0	2.6	2.4	8.0	
BL-HKC35A	Yellow	584-594		2.2	2.6	63	120	
BL-HJF35A	Super Amber	600-610		2.1	2.6	28	55	
BL-HJC35A	Amber	600-610		2.2	2.6	63	140	
BL-HJE35A	Orange Red	615-625		2.2	2.6	63	100	
BL-HUB35A	Brilliant Red	620-640		2.2	2.6	28	63	
BL-HB435A	Super Blue	465-470		3.2	3.6	28	40	
BL-HB535A	Super Blue	470-475		2.8	3.2	8.2	20	
BL-HS135A	Red	638-648	2.2	2.6	5.5	12.3		

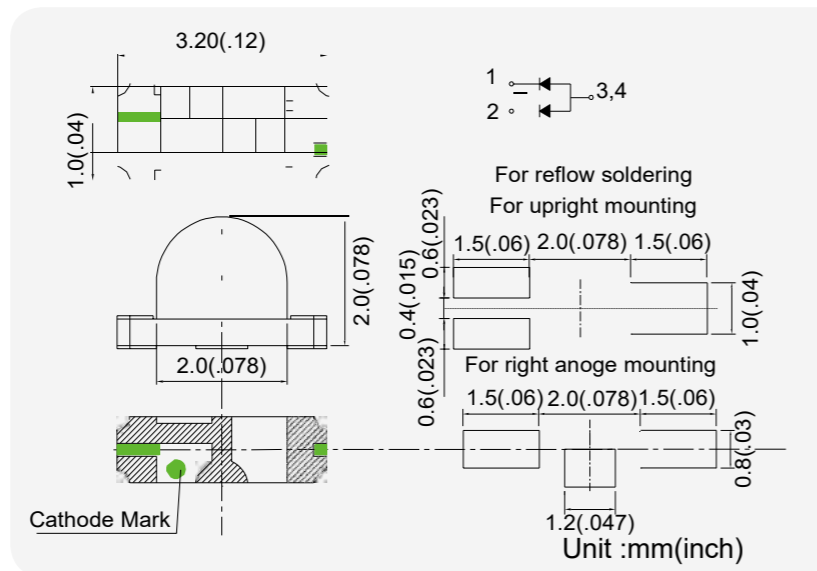
ROTARY DIP  
SLIDE SW  
DIP SW  
PUSH SW  
TACT SW  
CHIP LED

ROTARY DIP  
SLIDE SW  
DIP SW  
PUSH SW  
TACT SW  
CHIP LED



# SURFACE MOUNT CHIP LED LAMP

## SMD LED 1204-2.0T(Bi-color)

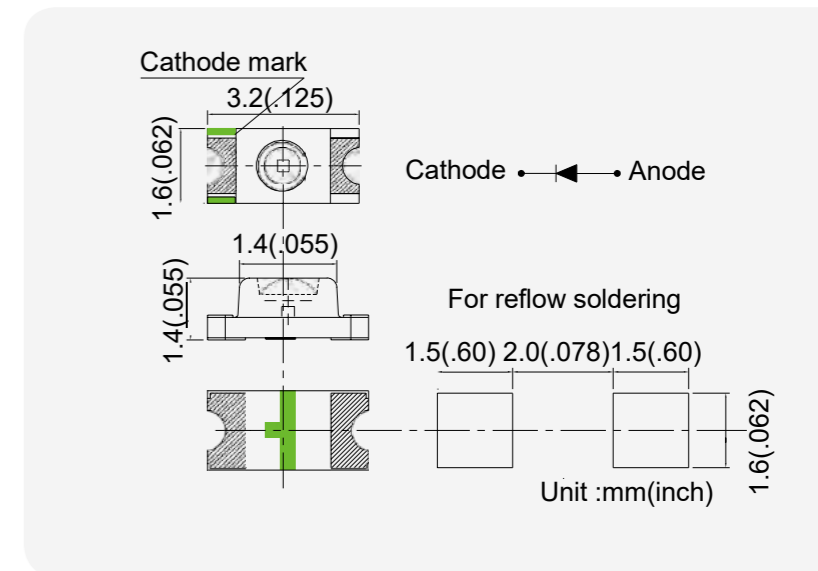


Part No.	Emitted Color	λd(nm)	Lens Appearance	Vf(V) @I <sub>f</sub> =5 mA		IV[mcd] @I <sub>f</sub> =5 mA		Viewing Angle 2θ1/2 (deg)
				Typ.	Max.	Typ.	Max.	
BL-HUBGK34B	Red	620-640	Transparent	2.0	2.4	18.5	35	120°
	Green	620-640		2.8	3.2	63	120	
BL-HUBB534B	Red	620-640		2.0	2.4	18.5	35	
	Blue	460-475		2.8	3.2	28	63	

Part No.	Emitted Color	λd(nm)	Lens Appearance	Vf(V) @I <sub>f</sub> =20 mA		IV[mcd] @I <sub>f</sub> =20 mA		Viewing Angle 2θ1/2 (deg)
				Typ.	Max.	Typ.	Max.	
BL-HUBGE34B	Red	620-640	Transparent	2.2	2.6	28	63	120°
	Yellow Green	566-576		2.2	2.6	18.5	35	
BL-HE1G034B	Yellow	582-592		2.2	2.6	42	94	
	Yellow Green	566-576		2.2	2.6	18.5	35	
BL-HE1G034B	Red	626-636		2.2	2.6	3.7	1.0	
	Yellow Green	626-636		2.2	2.6	3.7	1.0	

# SURFACE MOUNT CHIP LED LAMP

## SMD LED 1206-1.4T

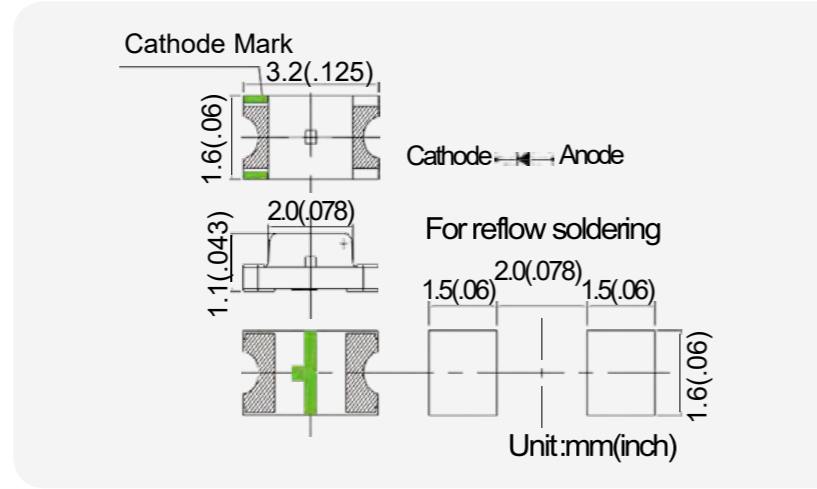


Part No.	Emitted Color	λd(nm)	Lens Appearance	Vf(V) @I <sub>f</sub> =20 mA		IV[mcd] @I <sub>f</sub> =20 mA		Viewing Angle 2θ1/2 (deg)
				Typ.	Max.	Typ.	Max.	
BL-HY033A	Yellow	584-594	Transparent	2.2	2.6	8.2	18.5	60°
BL-HG033A-	Yellow Green	565-577		2.2	2.6	12	25	
BL-HX133A	Green	566-576		2.2	2.6	18.5	35	
BL-HUB33A	Red	620-640		2.2	2.6	63	140	
BL-HS133A	Red	638-648		2.2	2.6	12.3	28	
BL-HKD33A	Yellow	588-598		2.2	2.6	94	210	
BL-HJE33A	Orange Red	615-625		2.2	2.6	210	475	
BL-HGE33A	Yellow Green	566-576		2.2	2.6	42	94	
BL-HB433A	Blue	460-475		3.2	3.6	94	210	

Part No.	Emitted Color	λd(nm)	Lens Appearance	Vf(V) @I <sub>f</sub> =50 mA		IV[mcd] @I <sub>f</sub> =50 mA		Viewing Angle 2θ1/2 (deg)
				Typ.	Max.	Typ.	Max.	
BIR-HM133A	IR	940	Transparent	1.2	1.8	2.57	7.07	60°

# SURFACE MOUNT CHIP LED LAMP

## SMD LED 1206-1.1T



Part No.	Emitted Color	X	Y	Lens Appearance	Vf(V) @I <sub>f</sub> =5 mA		IV[mcd] @I <sub>f</sub> =5 mA		Viewing Angle 2θ1/2 (deg)
		Typ.	Typ.		Typ.	Max.	Typ.	Max.	
BL-HZ333-L21	White	0.28	0.29	Yellow Clear	2.8	3.2	42	80	120°

Part No.	Emitted Color	λd(nm)	Lens Appearance	Vf(V) @I <sub>f</sub> =20 mA		IV[mcd] @I <sub>f</sub> =20 mA		Viewing Angle 2θ1/2 (deg)
				Typ.	Max.	Typ.	Max.	
BL-HBH33	Blue	460-475	Transparent	3.2	3.6	63	120	120°
BL-HG033	Yellow Green	566-576		2.2	2.6	3.7	8.2	
BL-HUF33	Red	625-635		2.2	2.6	42	94	

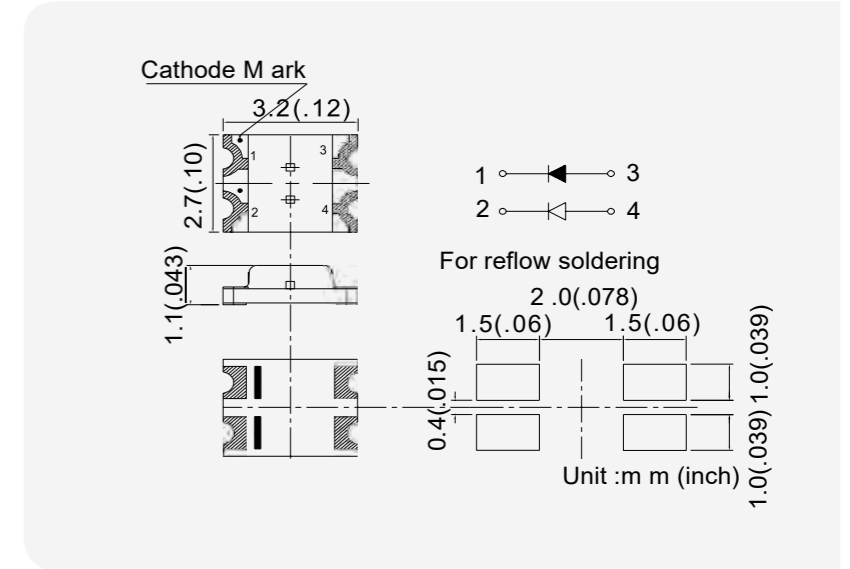
Part No.	Emitted Color	λd(nm)	Lens Appearance	Vf(V) @I <sub>f</sub> =5 mA		IV[mcd] @I <sub>f</sub> =5 mA		Viewing Angle 2θ1/2 (deg)
				Typ.	Max.	Typ.	Max.	
BL-HGK33	Green	520-535	Transparent	2.8	3.2	63	140	120°
BL-HB333	Blue	460-475		2.8	3.2	28	63	

Part No.	Emitted Color	λd(nm)	Lens Appearance	Vf(V) @I <sub>f</sub> =50 mA		IV[mcd] @I <sub>f</sub> =50 mA		Viewing Angle 2θ1/2 (deg)
				Typ.	Max.	Typ.	Max.	
BIR-HM133	IR	940	Transparent	1.25	1.7	0.92	1.8	120°

Part No.	Emitted Color	λd(nm)	Lens Appearance	Vf(V) @I <sub>f</sub> =50 mA		IV[mcd] @I <sub>f</sub> =50 mA		Viewing Angle 2θ1/2 (deg)
				Typ.	Max.	Typ.	Max.	
BPT-HPG33	PT	940	Transparent			0.8	1.66	120°
BPT-HP233	PT					2.39	4.97	

# SURFACE MOUNT CHIP LED LAMP





## SMD LED 1210-1.1T(Bi-color)



Part No.	Emitted Color	λd(nm)	Lens Appearance	Vf(V) @I <sub>f</sub> =20 mA		IV[mcd] @I <sub>f</sub> =20 mA		Viewing Angle 2θ1/2 (deg)
				Typ.	Max.	Typ.	Max.	
BL-HUBGE33B	Red	620-640	Transparent	2.2	2.6	42	94	120°
	Yellow Green	566-576		2.2	2.6	18.5	35	
BL-HY0G033B	Yellow	584-594		2.2	2.6	3.7	10	
	Yellow Green	566-576		2.2	2.6	3.7	10	
BL-HKBGE33B	Yellow	582-592		2.2	2.6	42	94	
	Yellow Green	566-576		2.2	2.6	18.5	35	
BL-HE1G033B	Red	626-636		2.2	2.6	3.7	10	
	Yellow Green	566-576		2.2	2.6	3.7	10	
BL-HD1X133B	Red	638-648		2.2	2.6	12.3	28	
	Green	566-576		2.2	2.6	8.2	20	
BL-HA1GE33B	Amber	600-615		2.2	2.6	3.7	10	
	Yellow Green	566-576		2.2	2.6	18.5	35	

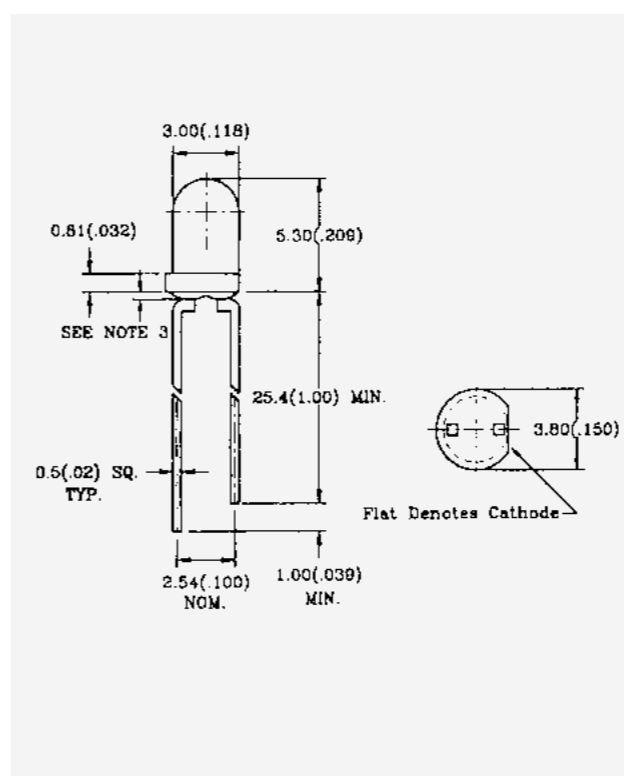
# LED LAMP

## STANDARD LED LAMP (ROUND TYPES)

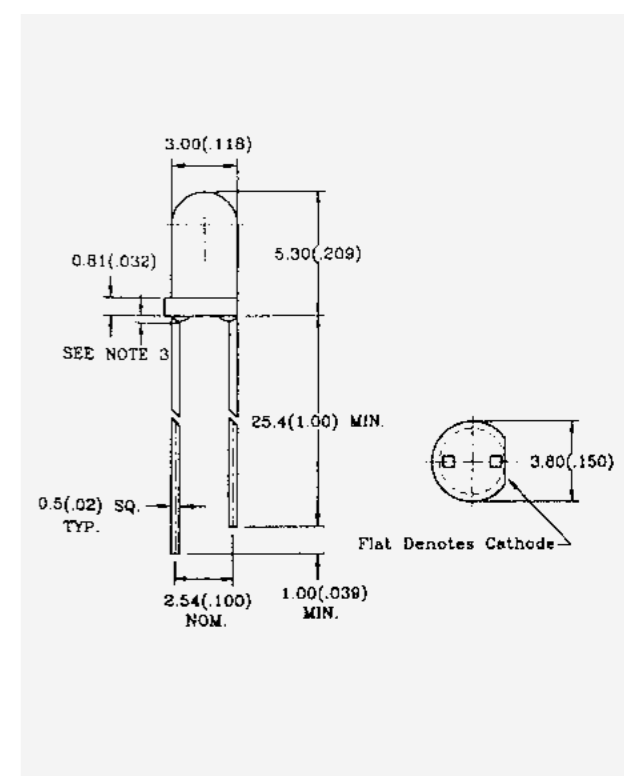
Package	Chip		Lens Appearance	Absolute Maximum Ratings				Electro-optical Data (At 20mA)			Viewing Angle 2θ1/2 (deg)	Drawing No.
	Emitted Color	Peak Wave Length λP(nm)		Δλ (nm)	Pd (mW)	If (mA)	Peak If (mA)	Vf(V)		Iv Typ. (mcd)		
								Typ.	Max.			
 T-1 Standard 0.5" Lead 3 φ	Red	655	Red Diffused	40	110	40	200	1.7	2.0	6.0	40	L-01
	Bright Red	700	Red Diffused	90	50	15	50	2.2	2.6	8.0	40	
	Hi-Eff Red	635	Red Diffused	45	100	30	150	2.0	2.6	40.0	40	
	Green	568	Green Diffused	30	100	30	150	2.2	2.6	40.0	40	
	Yellow	585	Yellow Diffused	35	100	30	150	2.1	2.6	30.0	40	
	Orange	635	Orange Diffused	45	100	30	150	2.0	2.6	40.0	40	
	Bright Red	700	Red Trans	90	50	15	50	2.2	2.6	50.0	30	
	Hi-Eff Red	635	Red Trans	45	100	30	150	2.0	2.6	100.0	30	
	Green	568	Green Trans	30	100	30	150	2.2	2.6	80.0	30	
	Yellow	585	Yellow Trans	35	100	30	150	2.1	2.6	70.0	30	
 T-1 Standard 1.0" Lead 3 φ	Red	655	Red Diffused	40	110	40	200	1.7	2.0	6.0	40	L-02
	Bright Red	700	Red Diffused	90	50	15	50	2.2	2.6	8.0	40	
	Hi-Eff Red	635	Red Diffused	45	100	30	150	2.0	2.6	40.0	40	
	Green	568	Green Diffused	30	100	30	150	2.2	2.6	40.0	40	
	Yellow	585	Yellow Diffused	35	100	30	150	2.1	2.6	30.0	40	
	Orange	635	Orange Diffused	45	100	30	150	2.0	2.6	40.0	40	
	Bright Red	700	Water Clear	90	50	15	50	2.2	2.6	50.0	30	
	Green	568	Water Clear	30	100	30	150	2.2	2.6	80.0	30	
	Hi-Eff Green	568	Water Clear	30	100	30	150	2.2	2.6	110.0	30	
	Yellow	585	Water Clear	35	100	30	150	2.1	2.6	70.0	30	
 T-1 Low Profile 1.0" Lead 3 φ	Red	655	Red Diffused	40	110	40	200	1.7	2.0	8.0	50	L-03
	Bright Red	700	Red Diffused	90	50	15	50	2.2	2.6	10.0	50	
	Hi-Eff Red	635	Red Diffused	45	100	30	150	2.0	2.6	60.0	50	
	Green	568	Green Diffused	30	100	30	150	2.2	2.6	70.0	50	
	Yellow	585	Yellow Diffused	35	100	30	150	2.1	2.6	60.0	50	
	Orange	635	Orange Diffused	45	100	30	150	2.0	2.6	60.0	50	
	Amber	610	Orange Diffused	35	100	30	150	2.0	2.6	70.0	50	
	Bright Red	700	Water Clear	90	50	15	50	2.2	2.6	60.0	40	
	Green	568	Water Clear	30	100	30	150	2.2	2.6	110.0	40	
	Yellow	585	Water Clear	35	100	30	150	2.1	2.6	90.0	40	
 3 φ Standard 1.0" Lead	Red	655	Red Diffused	40	110	40	200	1.7	2.0	8.0	60	L-04
	Bright Red	700	Red Diffused	90	50	15	50	2.2	2.6	10.0	60	
	Hi-Eff Red	635	Red Diffused	45	100	30	150	2.0	2.6	60.0	60	
	Green	568	Green Diffused	30	100	30	150	2.2	2.6	70.0	60	
	Yellow	585	Yellow Diffused	35	100	30	150	2.1	2.6	60.0	60	
	Orange	635	Orange Diffused	45	100	30	150	2.0	2.6	60.0	60	
	Amber	610	Orange Diffused	35	100	30	150	2.0	2.6	70.0	60	
	Bright Red	700	Water Clear	90	50	15	50	2.2	2.6	60.0	35	
	Green	568	Water Clear	30	100	30	150	2.2	2.6	110.0	35	
	Yellow	585	Water Clear	35	100	30	150	2.1	2.6	90.0	35	
Hi-Eff Red	635	Water Clear	45	100	30	150	2.0	2.6	100.0	35		

# LED LAMP

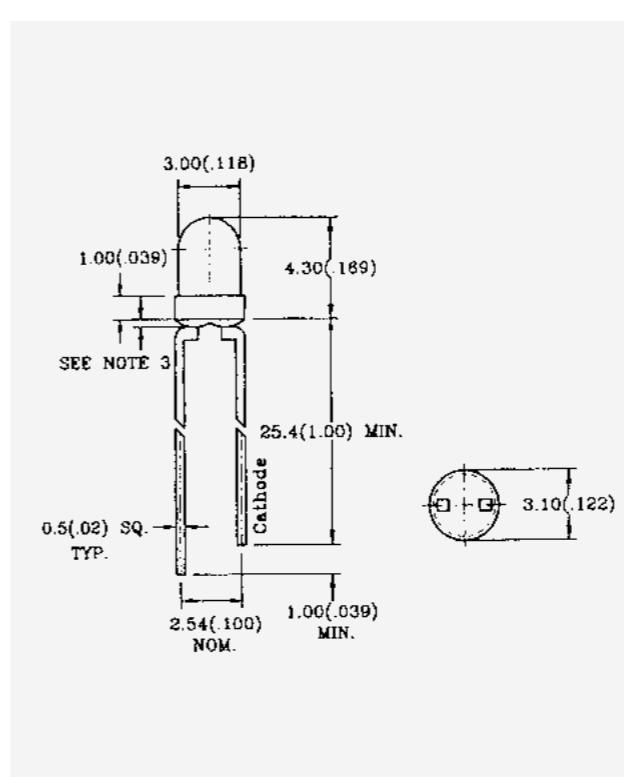
## L-01 BL-Bxx31 Series



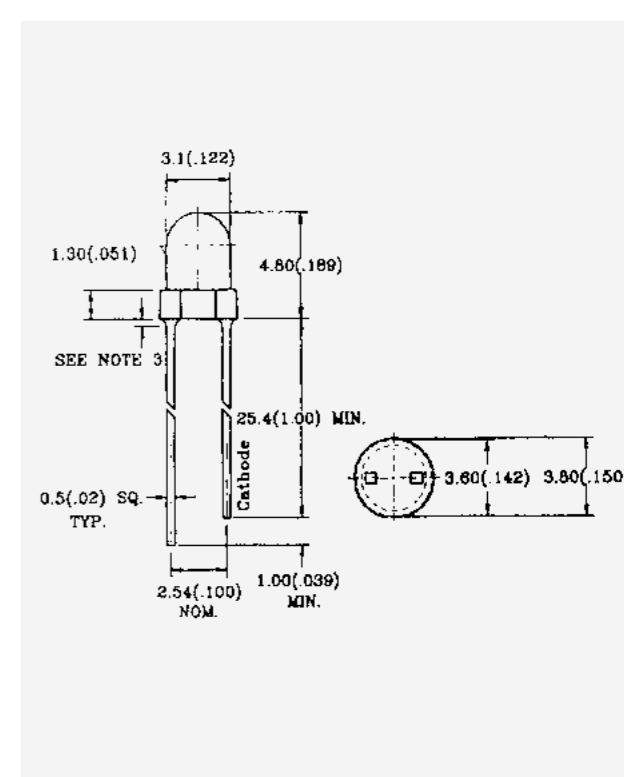
## L-02 BL-Bxx41 Series



## L-03 BL-Bxx31E Series



## L-04 BL-Bxx41Q Series

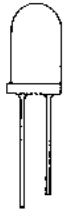
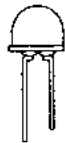

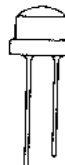


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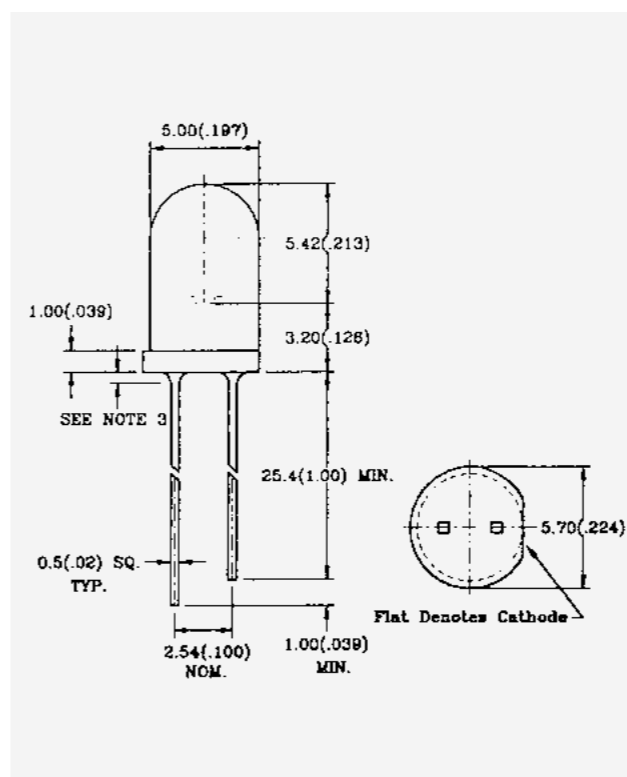
# LED LAMP

## STANDARD LED LAMP (ROUND TYPES)

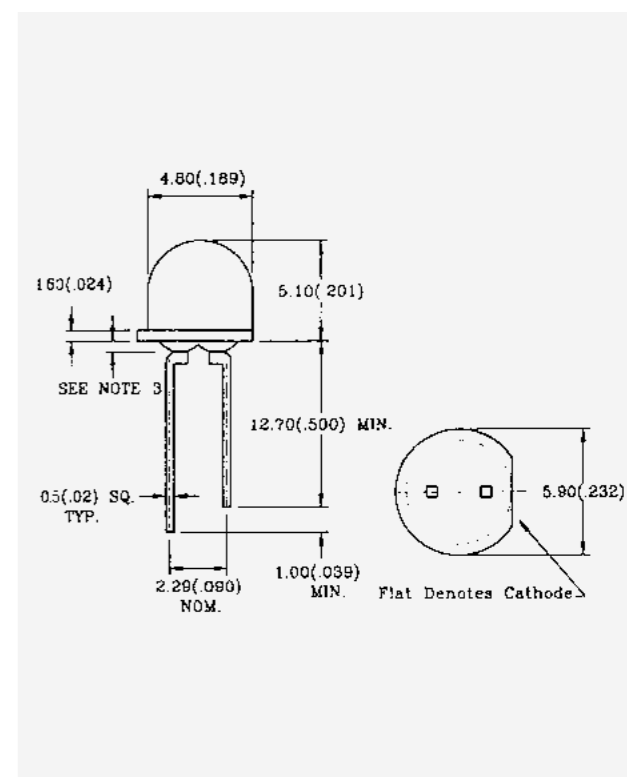
Package	Chip		Lens Appearance	Absolute Maximum Ratings				Electro-optical Data (At 20mA)			Viewing Angle 2θ1/2 (deg)	Drawing No.
	Emitted Color	Peak Wave Length λP(nm)		Δλ (nm)	Pd (mW)	If (mA)	Peak If (mA)	Vf(V)		Iv Typ. (mcd)		
								Typ.	Max.			
	Red	655	Red Diffused	40	110	40	200	1.7	2.0	6.0	30	L-05
	Bright Red	700	Red Diffused	90	50	15	50	2.2	2.6	9.0	30	
	Hi-Eff Red	635	Red Diffused	45	100	30	150	2.0	2.6	80.0	30	
	Green	568	Green Diffused	30	100	30	150	2.2	2.6	80.0	30	
	Hi-Eff Green	568	Green Diffused	30	100	30	150	2.2	2.6	110.0	30	
	Yellow	585	Yellow Diffused	35	100	30	150	2.01	2.6	80.0	30	
	Orange	635	Orange Diffused	45	100	30	150	2.0	2.6	80.0	30	
	Bright Red	700	Red Trans	90	50	15	50	2.2	2.6	60.0	20	
	Hi-Eff Red	635	Red Trans	45	100	30	150	2.0	2.6	200.0	20	
	Green	568	Green Trans	30	100	30	150	2.2	2.6	200.0	20	
	Yellow	585	Yellow Trans	35	100	30	150	2.1	2.6	180.0	20	
	Orange	635	Orange Trans	45	100	30	150	2.0	2.6	200.0	20	
Bright Red	700	Water Clear	90	50	15	50	2.2	2.6	60.0	20		
	Red	655	Red Diffused	40	110	40	200	1.7	2.0	1.5	45	L-06
	Bright Red	700	Red Diffused	90	50	15	50	2.2	2.6	2.0	45	
	Hi-Eff Red	635	Red Diffused	45	100	30	150	2.0	2.6	12.0	45	
	Green	568	Green Diffused	30	100	30	150	2.2	2.6	16.0	45	
	Yellow	585	Yellow Diffused	35	100	30	150	2.1	2.6	12.0	45	
Orange	635	Orange Diffused	45	100	30	150	2.0	2.6	12.0	45		
	Red	655	Red Diffused	40	110	40	200	1.7	2.0	2.0	60	L-07
	Bright Red	700	Red Diffused	90	50	15	50	2.2	2.6	3.0	60	
	Hi-Eff Red	635	Red Diffused	45	100	30	150	2.0	2.6	16.0	60	
	Green	568	Green Diffused	30	100	30	150	2.2	2.6	22.0	60	
	Orange	635	Orange Diffused	45	100	30	150	2.0	2.6	16.0	60	
	Red	655	Water Clear	40	40	40	200	1.7	2.0	8.0	50	L-08
	Bright Red	700	Water Clear	90	90	90	50	2.2	2.6	12.0	50	
	Hi-Eff Red	635	Water Clear	45	45	45	150	2.0	2.6	55.0	50	
	Green	568	Water Clear	30	30	30	150	2.2	2.6	60.0	50	
	Yellow	585	Water Clear	35	35	35	150	2.1	2.6	50.0	50	
	Hi-Eff Red	635	Red Trans	45	45	45	150	2.0	2.6	55.0	50	
	Bright Red	700	Red Trans	90	90	90	50	2.2	2.6	12.0	50	
Green	568	Green Trans	30	30	30	150	2.2	2.6	60.0	50		

# LED LAMP

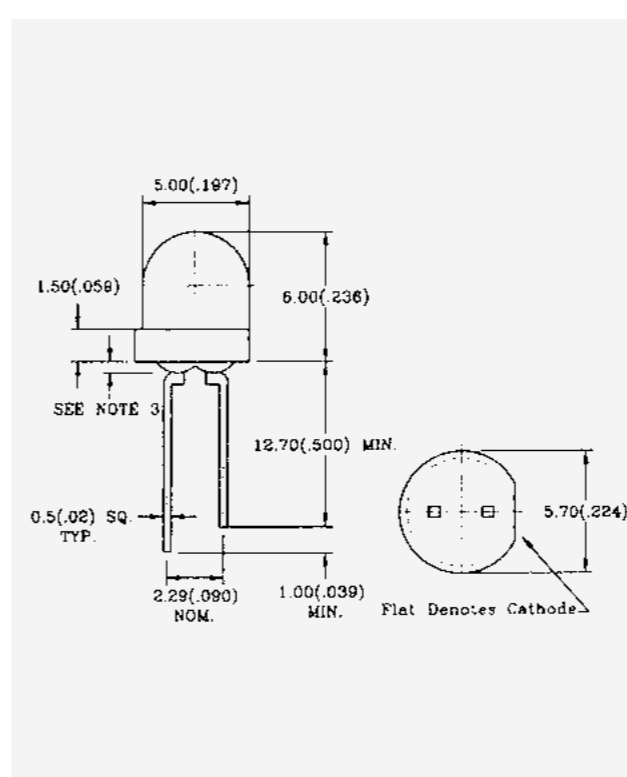
## L-05 BL-Bxx34 Series



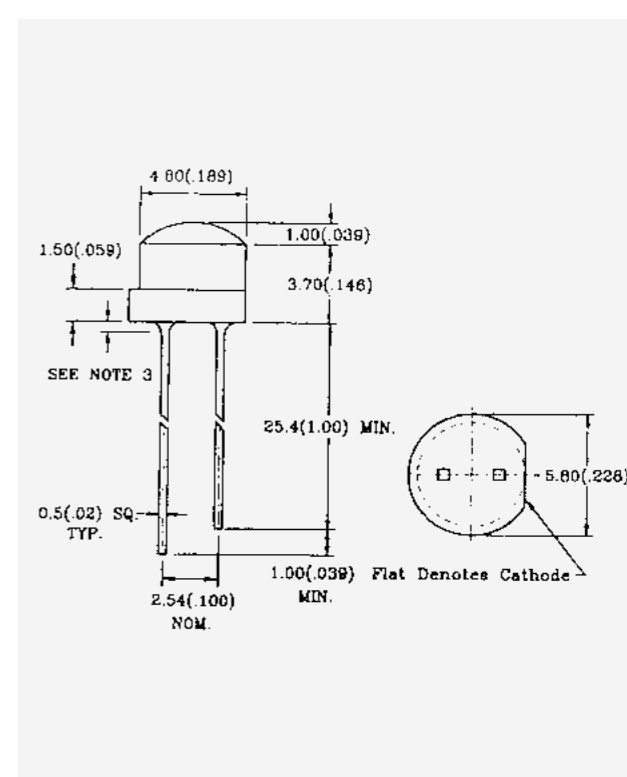
## L-06 BL-Bxx24B Series



## L-07 BL-Bxx24C Series



## L-08 BL-Bxx3B Series





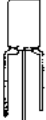

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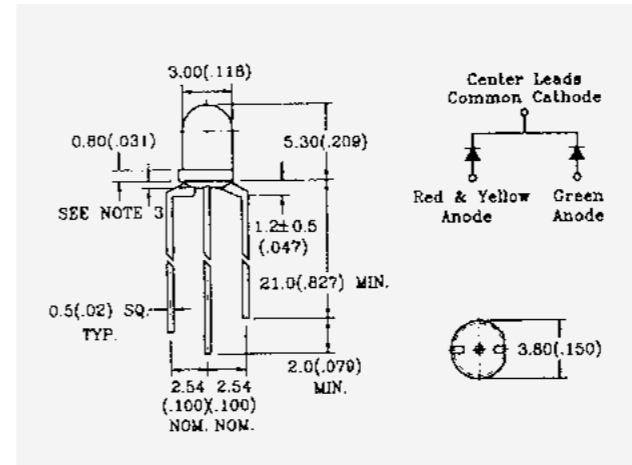
# LED LAMP

## DUAL-CHIP & TRI-STATE LED LAMP

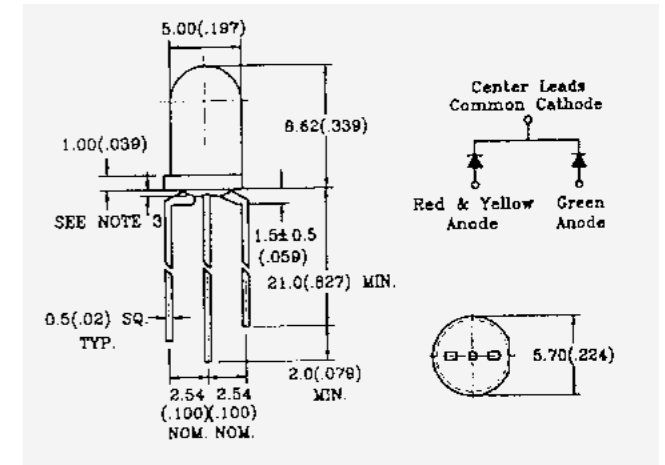
Package	Chip		Lens Appearance	Absolute Maximum Ratings				Electro-optical Data (At 20mA)			Viewing Angle 2θ1/2 (deg)	Drawing No.				
	Emitted Color	Peak Wave Length λP(nm)		Δλ (nm)	Pd (mW)	If (mA)	Peak If(mA)	Vf(V)		Iv Typ. (mcd)						
 T-1 1.0" Lead Standard 3 φ	Bright Red	700	White diffused	90	50	15	50	2.2	2.6	7.0	40	L-09				
	Green	568		30	100	30	150	2.2	2.6	35.0						
	Hi-Eff Red	635	White diffused	45	100	30	150	2.0	2.6	25.0						
	Green	568		30	100	30	150	2.2	2.6	35.0						
	Yellow	585	White diffused	35	100	30	150	2.1	2.6	20.0						
	Green	568		30	100	30	150	2.2	2.6	35.0						
 T-13/4 1.0" Lead Standard 5 φ	Bright Red	700	White diffused	90	50	15	50	2.2	2.6	8.0	40	L-10				
	Green	568		30	100	30	150	2.2	2.6	45.0						
	Hi-Eff Red	635	White diffused	45	100	30	150	2.0	2.6	35.0						
	Green	568		30	100	30	150	2.2	2.6	45.0						
	Yellow	585	White diffused	35	100	30	150	2.1	2.6	30.0						
	Green	568		30	100	30	150	2.2	2.6	45.0						
	Bright Red	700	White diffused	90	50	15	50	2.2	2.6	3.5			55	L-11		
	Green	568		30	100	30	150	2.2	2.6	20.0						
	Hi-Eff Red	635	White diffused	45	100	30	150	2.0	2.6	15.0						
	Green	568		30	100	30	150	2.2	2.6	20.0						
	Yellow	585	White diffused	35	100	30	150	2.1	2.6	10.0						
	Green	568		30	100	30	150	2.2	2.6	20.0						
	Bright Red	700	White diffused	90	50	15	50	2.2	2.6	3.5					55	L-12
	Green	568		30	100	30	150	2.2	2.6	20.0						
	Hi-Eff Red	635	White diffused	45	100	30	150	2.0	2.6	15.0						
	Green	568		30	100	30	150	2.2	2.6	20.0						
	Yellow	585	White diffused	35	100	30	150	2.1	2.6	10.0						
	Green	568		30	100	30	150	2.2	2.6	20.0						
 2.0x5.0x7.0 1.0" Lead Rectangular	Bright Red	700	White diffused	90	50	15	50	2.2	2.6	0.8	125	L-13				
	Green	568		30	100	30	150	2.2	2.6	7.0						
	Hi-Eff Red	635	White diffused	45	100	30	150	2.0	2.6	6.5						
	Green	568		30	100	30	150	2.2	2.6	7.0						
	Yellow	585	White diffused	35	100	30	150	2.1	2.6	5.5						
	Green	568		30	100	30	150	2.2	2.6	7.0						
 2.0x5.0x7.0 1.0" Lead Rectangular	Bright Red	700	White diffused	90	50	15	50	2.2	2.6	0.8	125	L-14				
	Green	568		30	100	30	150	2.2	2.6	7.0						
	Hi-Eff Red	635	White diffused	45	100	30	150	2.0	2.6	6.5						
	Green	568		30	100	30	150	2.2	2.6	7.0						
	Hi-Eff Red	635	White diffused	45	100	30	150	2.0	2.6	6.5						
	Green	568		30	100	30	150	2.2	2.6	7.0						

# LED LAMP

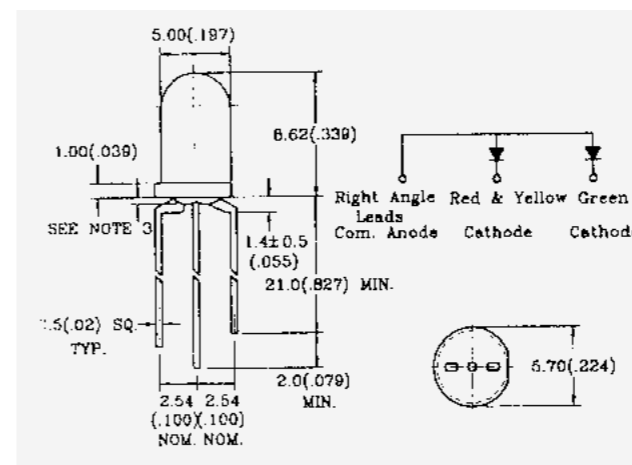
## L-09 BL-Bxxx01 Series



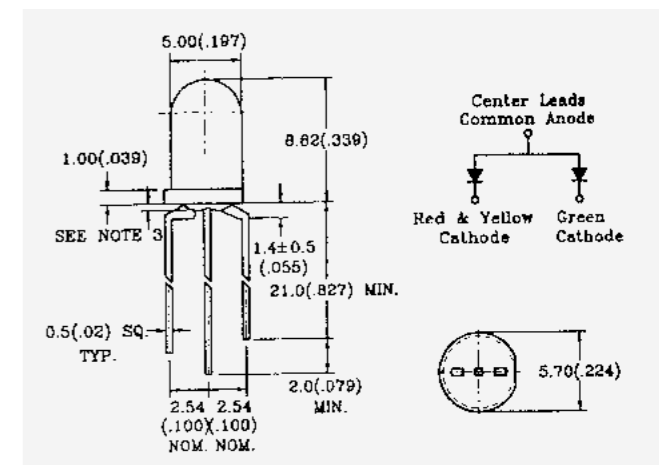
## L-10 BL-Bxxx04 Series



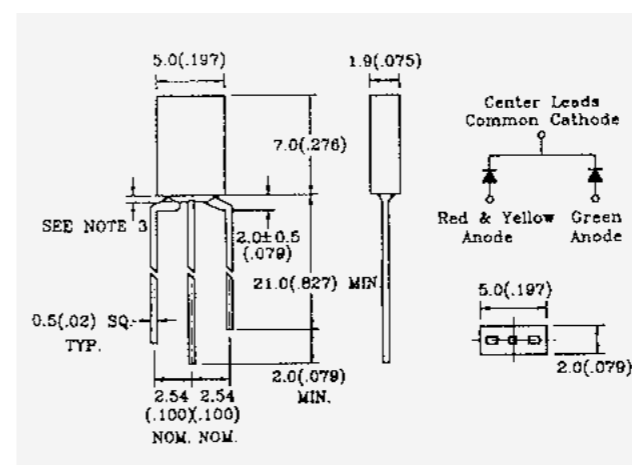
## L-11 BL-Bxxx04-A Series



## L-12 BL-Bxxx04-B Series



## L-13 BL-Rxxx02N Series



## L-14 BL-Rxxx02B Series

