

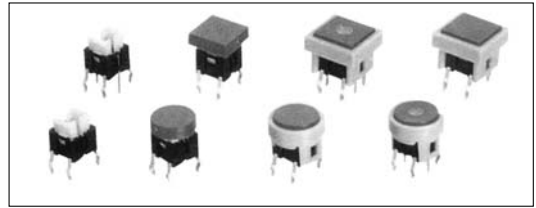
## TS series

### Specifications

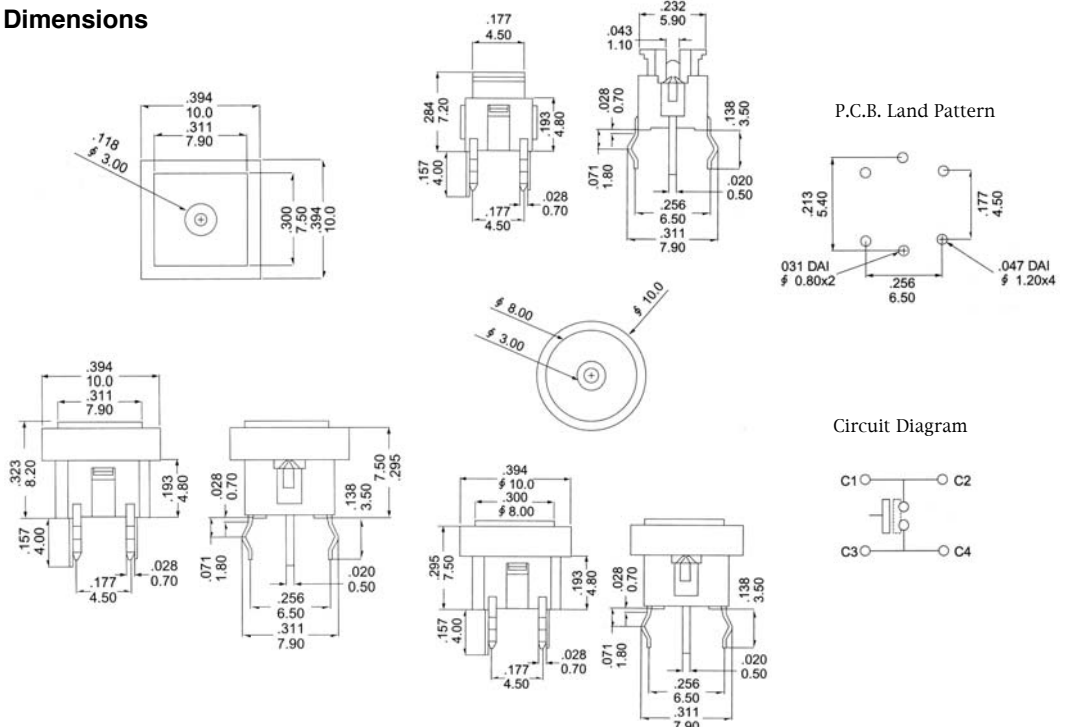
Rating	12 VDC 50mA
Operating Force	200±50gf
Life	100,000 Cycles Min
Total Travel	0.25±0.1mm
Contact Resistance	100mΩ Max(intial)
Insulation Resistance	100MΩ Min(at 250VDC)
Dielectric Withstanding Voltage	250VAC for 1 minute
Operating Temperature	-20°C~+70°C
Ambient Humidity	75%RH Max
Malfunction Durability	10 to 55Hz 0.75mm double amplitude during 2 hours
Solder Ability	Solder bath:260°C Max 3 Seconds Hand soldering:260°C Max 3 Seconds

### Material

1. Terminal:Brass plated Ag
2. Housing:Nylon 66.
3. Movable blade:SUS 301 plated Au
4. Botton:PBT
5. Cap:ABS
6. Switch body:Nylon 66

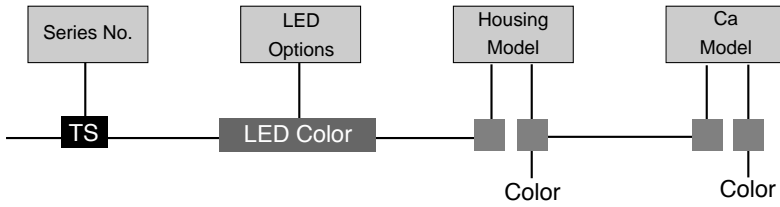


### Dimensions

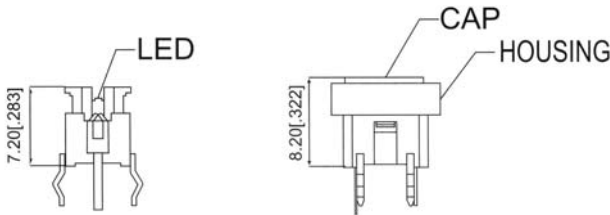


# TS series

## How to order



## LED Color Options







Code	LED Color
1	Red
2	Green
3	Orange
0	Without LED

## Housing Model & Color

Code	Housing Model
A	
B	
C	Without Housing

Code	LED Color
5	Gray
6	Black
0	Without Housing

## Cap Model & Color

Code	CAP Model
A	 Without LED only
B	 With LED only
C	 Without LED only
D	 With LED only
E	Without CAP

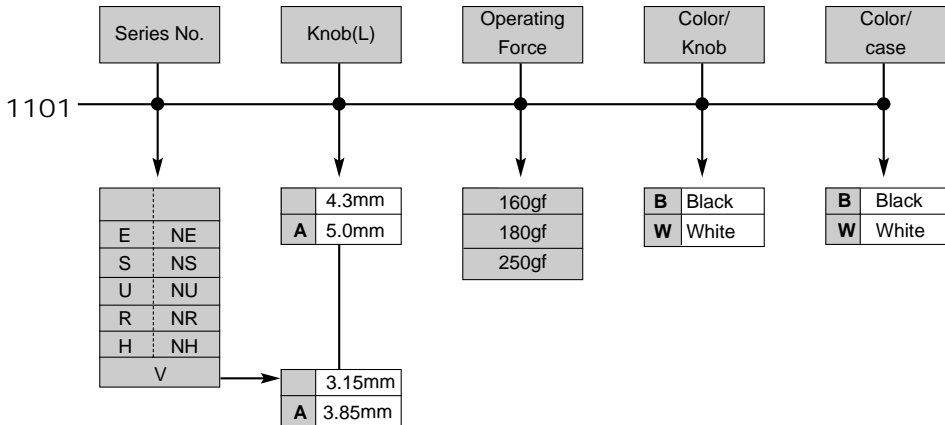
Code	LED Color
1	Red
2	Green
3	Orange
4	Ivory
5	Gray
6	Black
0	Without CAP

## 1101 series

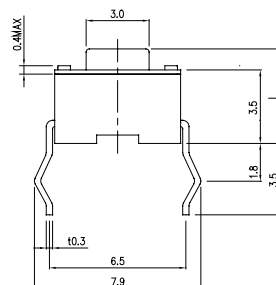
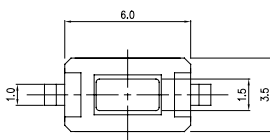
### Specifications

Rating	DC12V 50mA
Travel	0.25±0.1mm
Contact Resistance	100mΩ Max.
Operating Life	a) 50,000 Cycles Min. for 160g, 180g b) 30,000 Cycles Min. for 250g

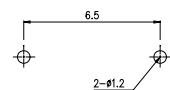
### How to order



### 1101



### P.C.B. Land Pattern

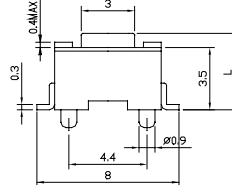
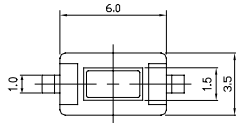
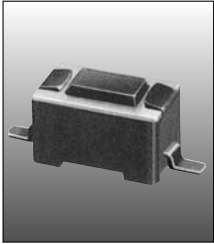


### Circuit Diagram

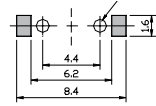


# 1101 series

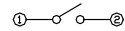
**1101E** With Embossing Body  
**1101NE** Without Embossing Body



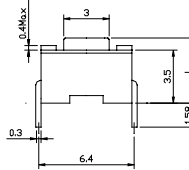
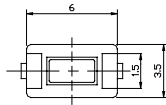
P.C.B. Land Pattern



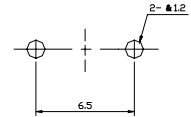
Circuit Diagram



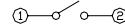
**1101R** With Embossing Body  
**1101NR** Without Embossing Body



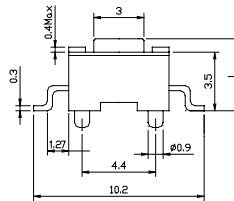
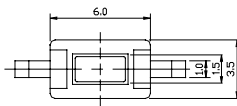
P.C.B. Land Pattern



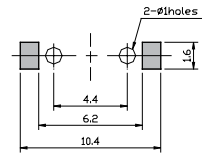
Circuit Diagram



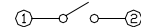
**1101S** With Embossing Body  
**1101NS** Without Embossing Body



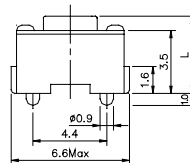
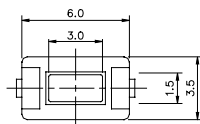
P.C.B. Land Pattern



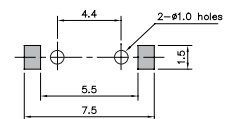
Circuit Diagram



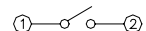
**1101H** With Embossing Body  
**1101NH** Without Embossing Body



P.C.B. Land Pattern



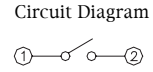
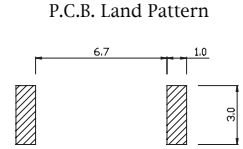
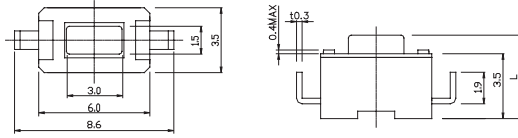
Circuit Diagram



# TACT SWITCHES

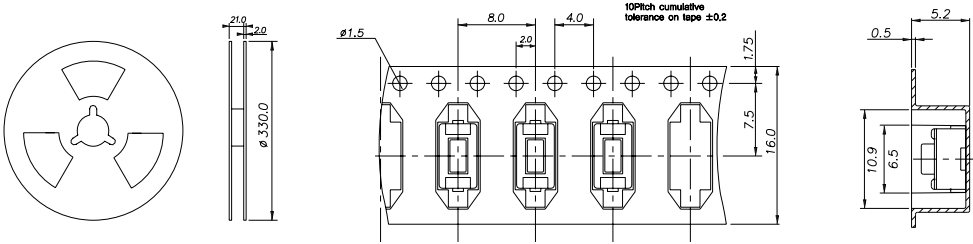
## 1101 series

- 1101U With Embossing Body
- 1101NU Without Embossing Body

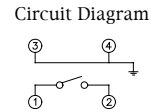
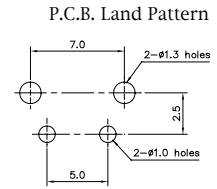
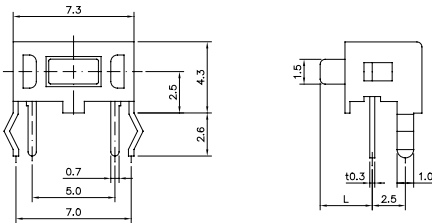


### 1101 SMD Carrier Taping Dimension

Qty / Reel: 1,500pcs



### 1101V

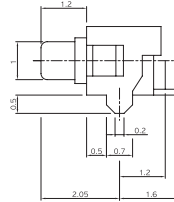
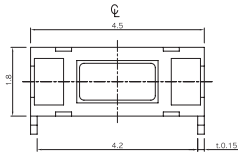


# 1100 Series

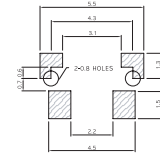
## Specifications

Rating	DC12V 20mA
Contact Resistance	100mΩ Max.
Stroke	0.2mm
Operating Force	160 ± 50gf
Operating Life	100,000 Cycles
Non Specified Dimensions Tolerance	±0.2

### 1100NDP



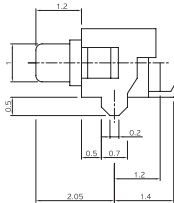
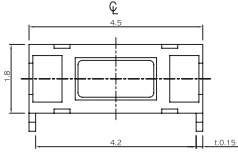
P.C.B. Land Pattern



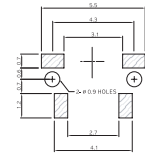
Circuit Diagram



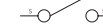
### 1100NDB



P.C.B. Land Pattern

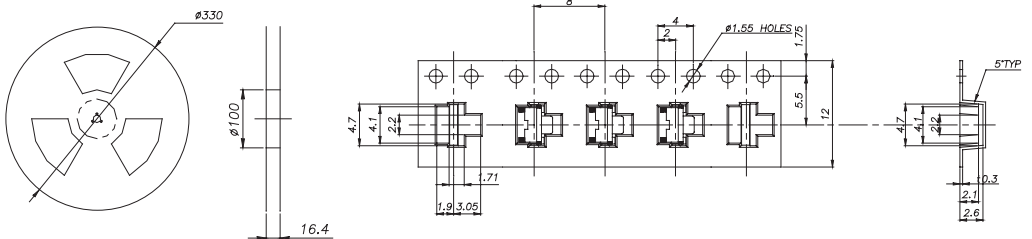


Circuit Diagram



### 1100SMD Carrier Taping Dimension

Qty / Reel: 3,000pcs



# TACT SWITCHES

## 1102 series

### Specifications

Rating	DC12V 50mA
Travel	0.25±0.1mm
Contact Resistance	100mΩ Max.
Operating Life	100,000 Cycles Min.

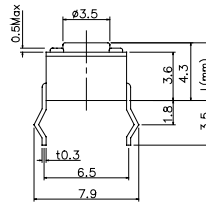
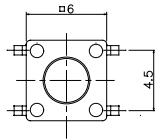
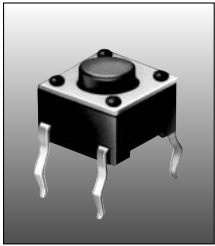
### How to order

Series No.	Knob(L)	Operating Force
1102		
P	Standard	100gf
V	Bracket	130gf
N		160gf
U		200gf
S		250gf
W		

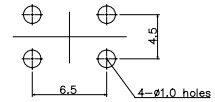
  

	Standard	Bracket
A	4.3mm	3.15mm
B	5.0mm	3.85mm
C	7.0mm	5.85mm
D	8.0mm	6.85mm
E	9.5mm	8.35mm
F	7.3mm	6.15mm
G	12.5mm	11.35mm
H	13.0mm	11.85mm
I	11.0mm	9.85mm
J	12.0mm	10.85mm
K	15.0mm	13.85mm
L	13.5mm	12.35mm

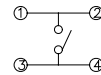
### 1102



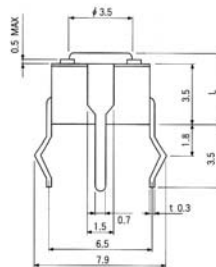
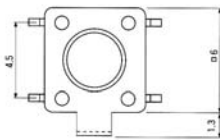
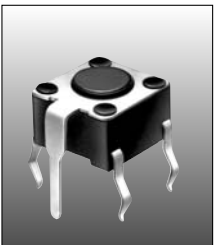
#### P.C.B. Land Pattern



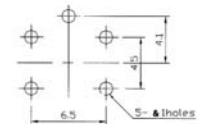
#### Circuit Diagram



### 1102P



#### P.C.B. Land Pattern

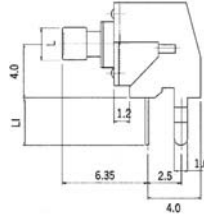
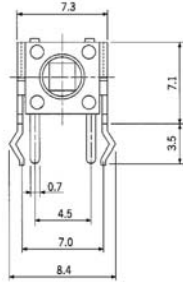
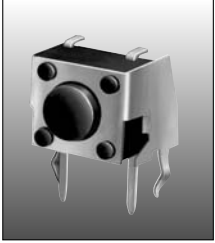


#### Circuit Diagram

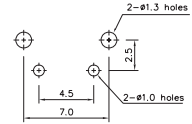


# 1102 series

## 1102N



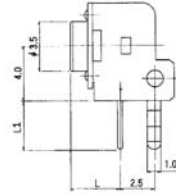
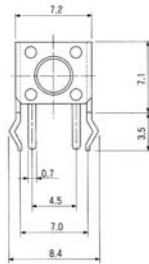
P.C.B. Land Pattern



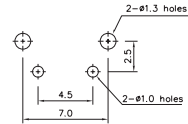
Circuit Diagram



## 1102V



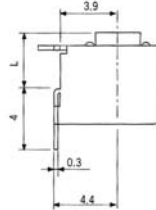
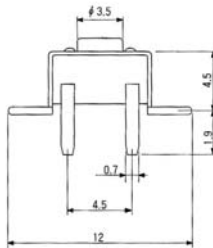
P.C.B. Land Pattern



Circuit Diagram



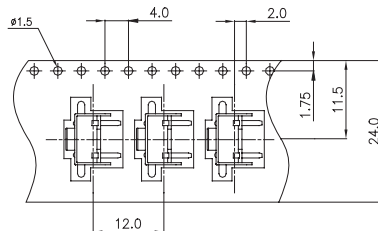
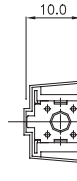
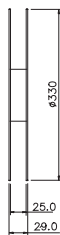
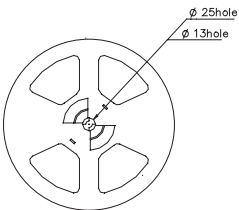
## 1102U



Rating:DC12V 50mA  
 Travel:0.25±0.1mm  
 Operating Force:100,130,160,250±50gf  
 Contact Resistance:100mΩ MAX  
 Life:80,000 Cycles Min

## 1102US(H:10mm) Carrier Taping Dimension

Qty / Reel: 600pcs

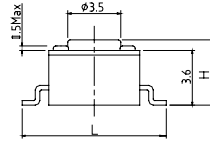
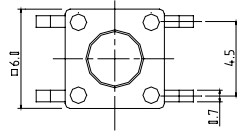
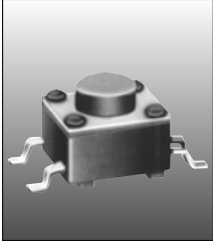




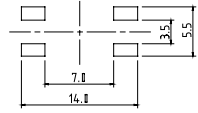
# TACT SWITCHES

## 1102/1109 series

**1102S9** Terminal Length: 9mm  
**1102S10** Terminal Length: 10mm



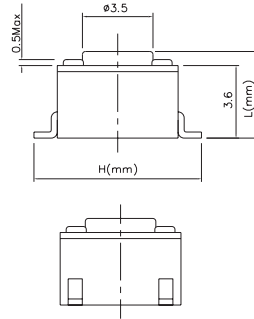
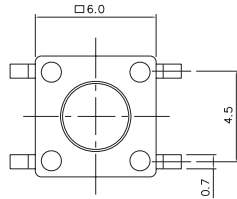
P.C.B. Land Pattern



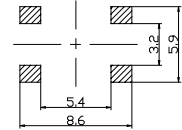
Circuit Diagram



**1102W8** Terminal Length: 10mm  
**1102W9** Terminal Length: 9mm



P.C.B. Land Pattern

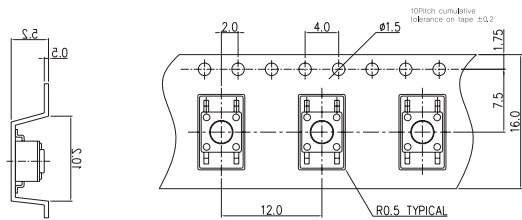
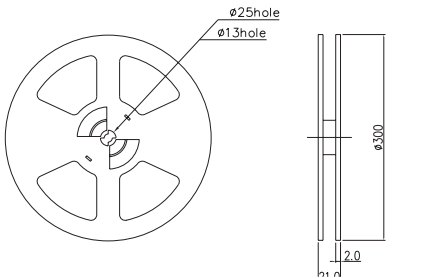


Circuit Diagram

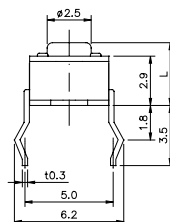
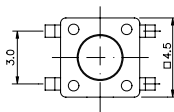


### 1102S & 1102W Carrier Taping Dimension

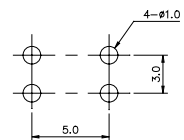
Qty / Reel: 1,000pcs



### 1109



P.C.B. Land Pattern

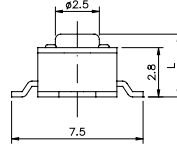
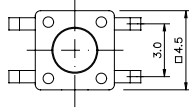
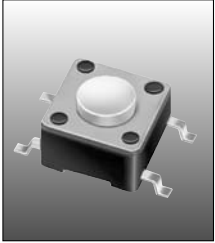


Circuit Diagram

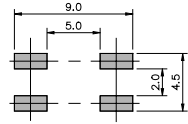


# 1109 series

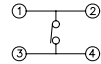
**1109S** Knob: 3.8mm  
**1109SA** Knob: 7.0mm



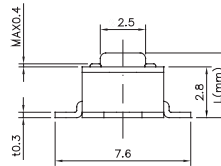
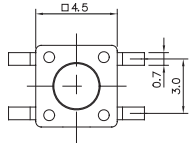
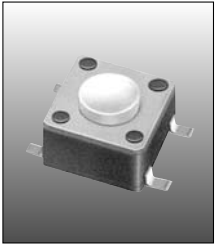
P.C.B. Land Pattern



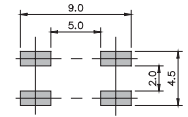
Circuit Diagram



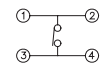
**1109W** Knob: 3.8mm  
**1109WA** Knob: 7.0mm



P.C.B. Land Pattern

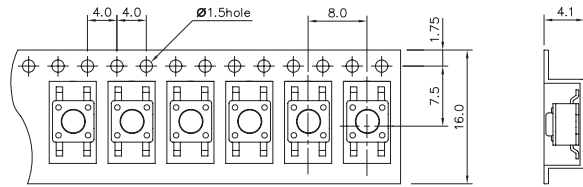
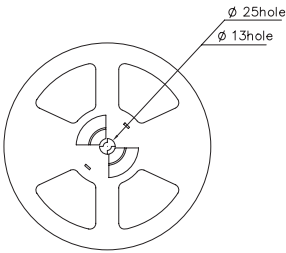


Circuit Diagram



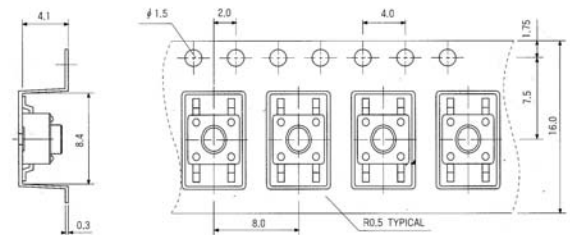
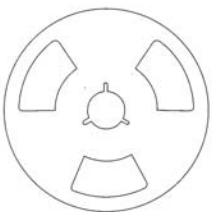
**1109S & 1109W Carrier Taping Dimension**

Qty / Reel: 2,000pcs



**1109SA & 1109WA Carrier Taping Dimension**

Qty / Reel: 1,000pcs

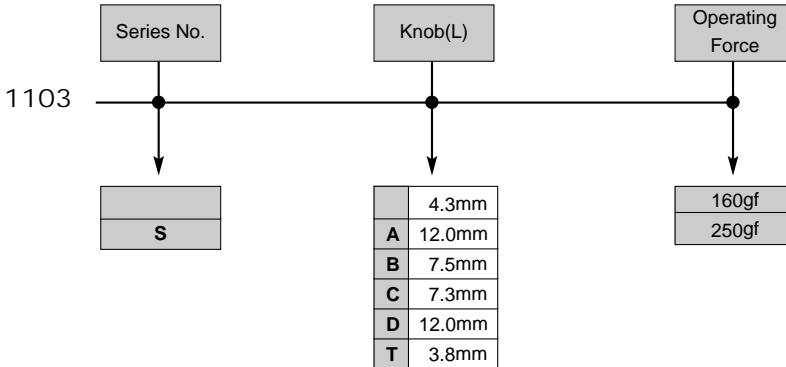


## 1103 series

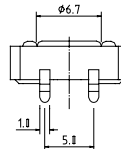
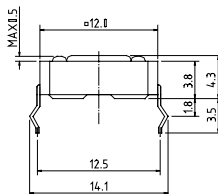
### Specifications

Rating	DC12V 50mA
Travel	0.3±0.1mm
Contact Resistance	100mΩ Max.
Operating Life	100,000 Cycles Min.

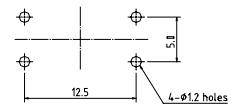
### How to order



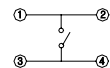
### 1103



#### P.C.B. Land Pattern

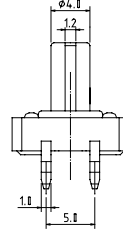
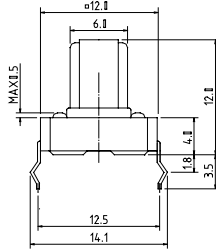


#### Circuit Diagram

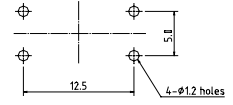


# 1103 series

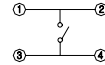
## 1103A



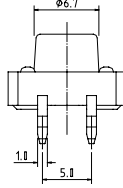
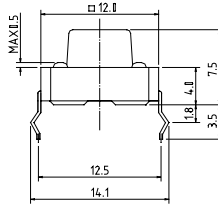
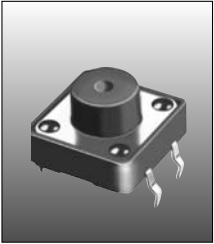
P.C.B. Land Pattern



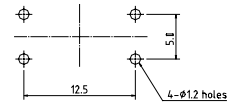
Circuit Diagram



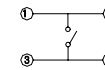
## 1103B



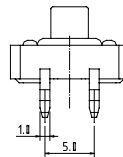
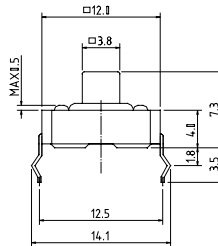
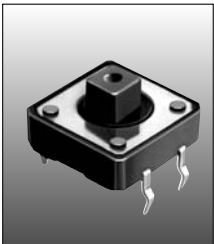
P.C.B. Land Pattern



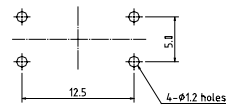
Circuit Diagram



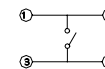
## 1103C



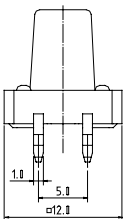
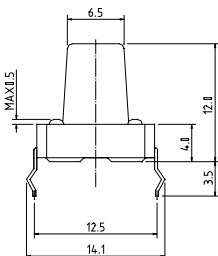
P.C.B. Land Pattern



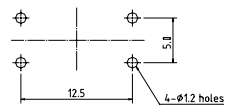
Circuit Diagram



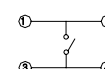
## 1103D



P.C.B. Land Pattern



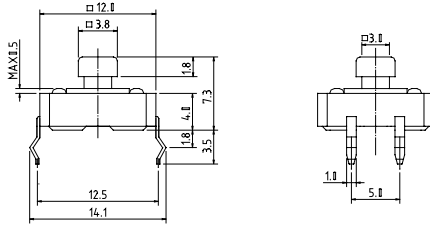
Circuit Diagram



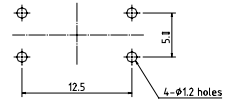
# TACT SWITCHES

## 1103 series

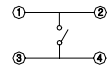
### 1103T



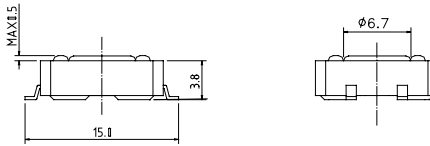
P.C.B. Land Pattern



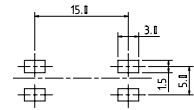
Circuit Diagram



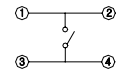
### 1103S



P.C.B. Land Pattern

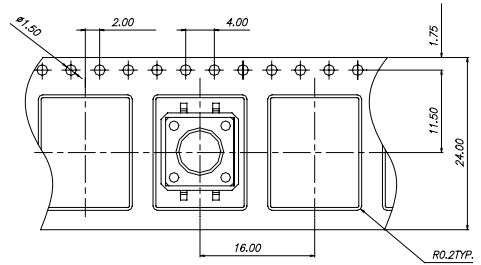
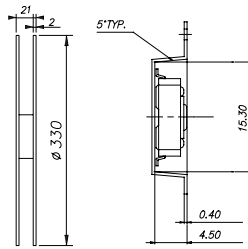
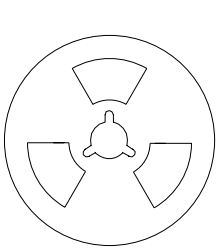


Circuit Diagram

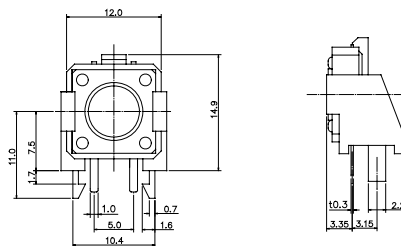
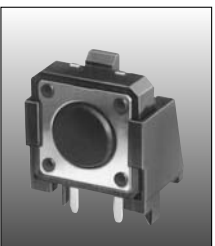


### 1103S Carrier Taping Dimension

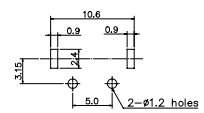
Qty / Reel: 800pcs



### 1103V



P.C.B. Land Pattern



Circuit Diagram

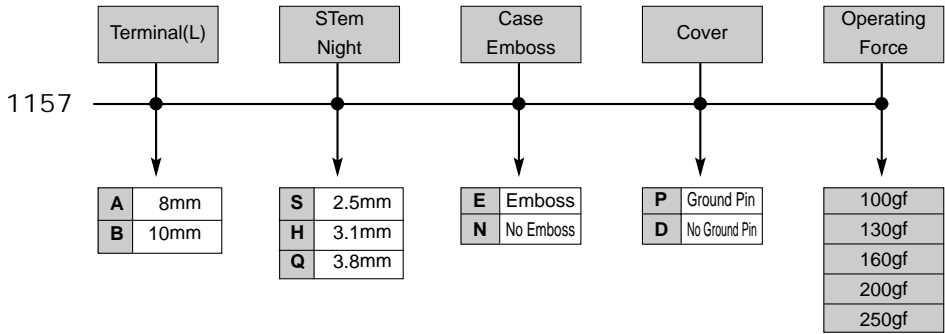


# 1157 series

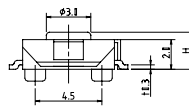
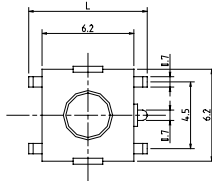
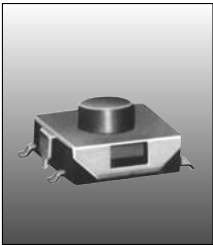
## Specifications

Rating	DC12V 50mA
Travel	0.25±0.1mm
Contact Resistance	100mΩ Max.
Operating Life	100,000 Cycles Min.

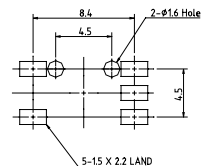
## How to order



### 1157



P.C.B. Land Pattern

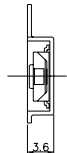
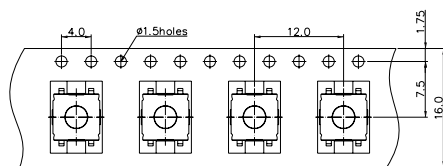
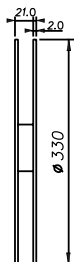
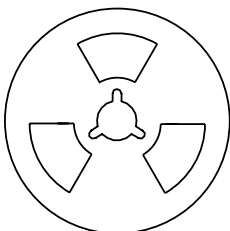


Circuit Diagram



### 1157 Carrier Taping Dimension

Qty / Reel: 1,500pcs

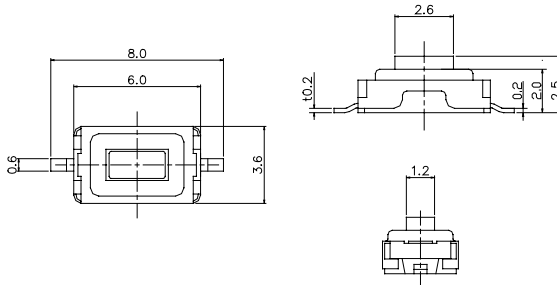
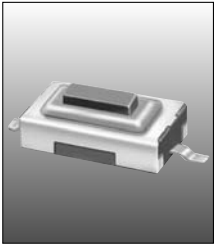


## 1181 series

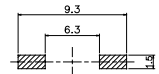
### Specifications

Rating	DC12V 50mA
Travel	0.25 ± 1mm
Contact Resistance	100mΩ Max
Operating Life	a) 50,000 Cycles Min. for 160g, 180g b) 30,000 Cycles Min. for 250g

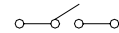
#### 1181



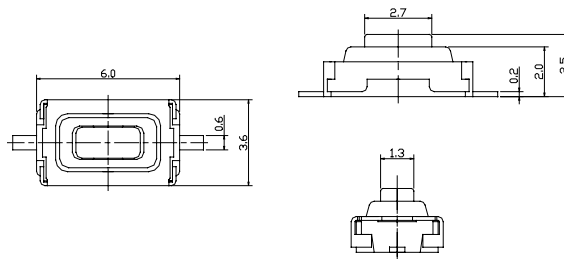
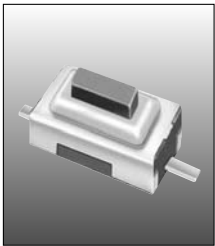
P.C.B. Land Pattern



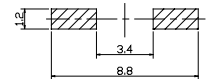
Circuit Diagram



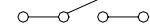
#### 1181F



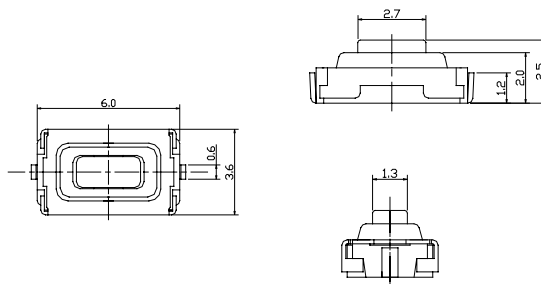
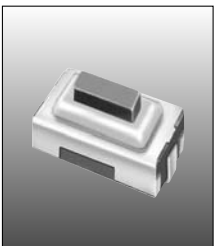
P.C.B. Land Pattern



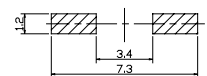
Circuit Diagram



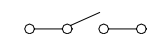
#### 1181U



P.C.B. Land Pattern



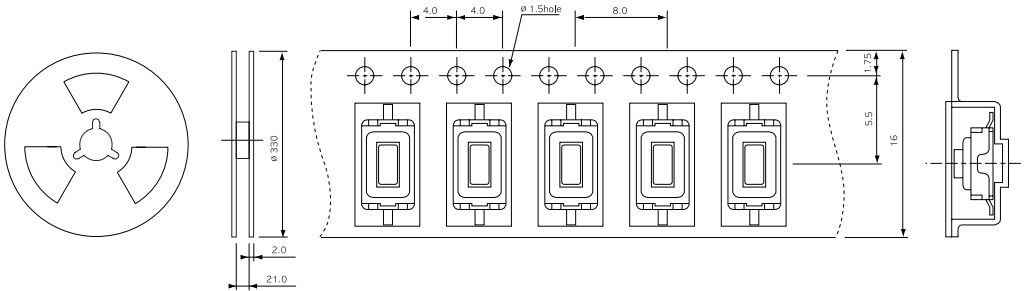
Circuit Diagram



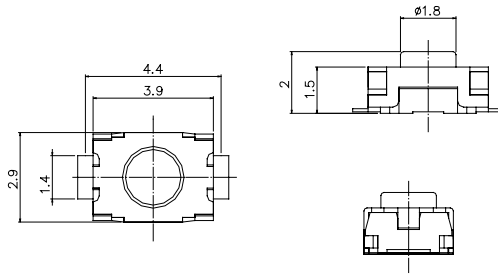
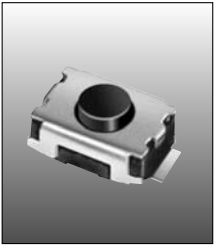
# 1181/1185 series

## 1181 Carrier Taping Dimension

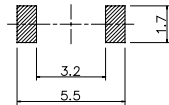
Qty / Reel: 3,000pcs



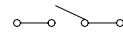
## 1185



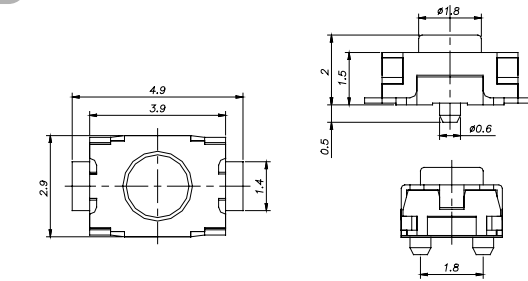
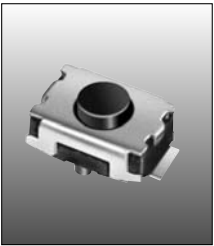
P.C.B. Land Pattern



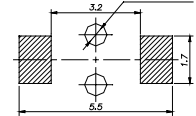
Circuit Diagram



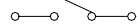
## 1185E



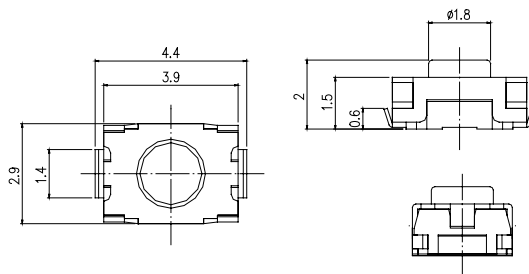
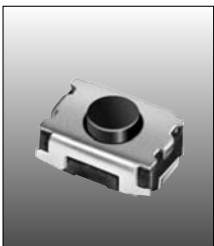
P.C.B. Land Pattern



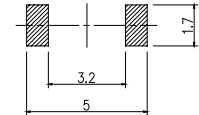
Circuit Diagram



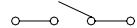
## 1185U



P.C.B. Land Pattern



Circuit Diagram

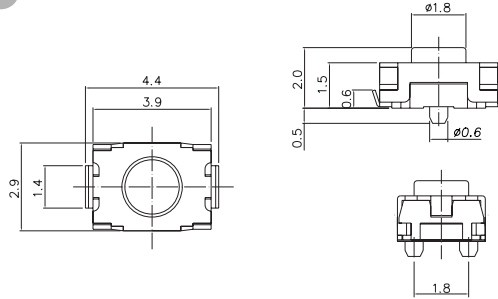
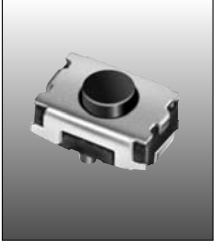




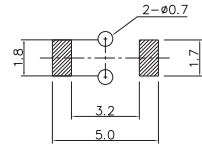
# TACT SWITCHES

## 1185/1186 series

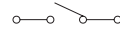
### 1185UE



P.C.B. Land Pattern

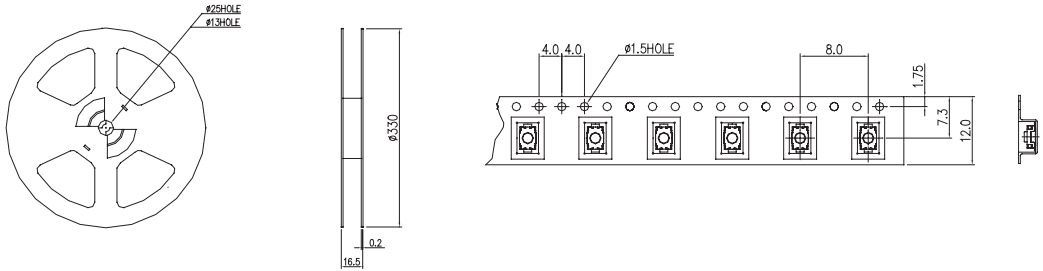


Circuit Diagram

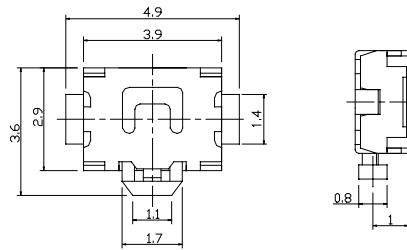
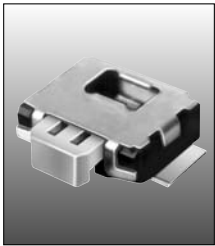


### 1185 Carrier Taping Dimension

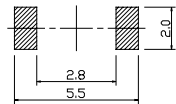
Qty / Reel: 2,500pcs



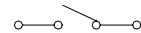
### 1186



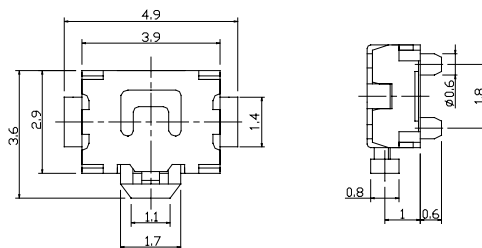
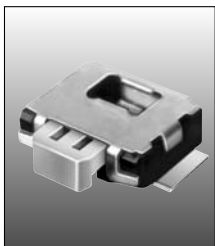
P.C.B. Land Pattern



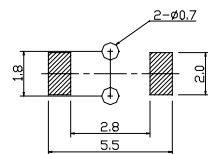
Circuit Diagram



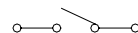
### 1186E



P.C.B. Land Pattern

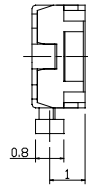
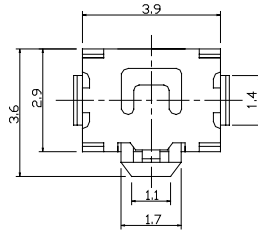


Circuit Diagram

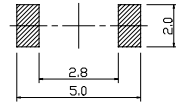


# 1186/1187 series

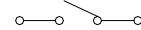
## 1186U



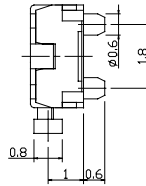
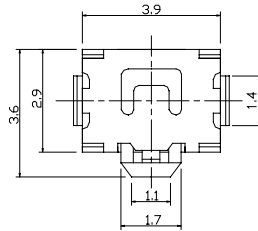
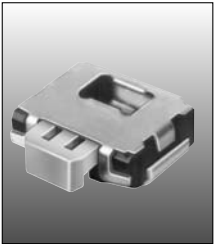
P.C.B. Land Pattern



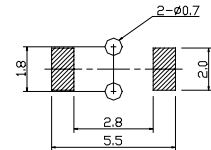
Circuit Diagram



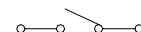
## 1186UE



P.C.B. Land Pattern

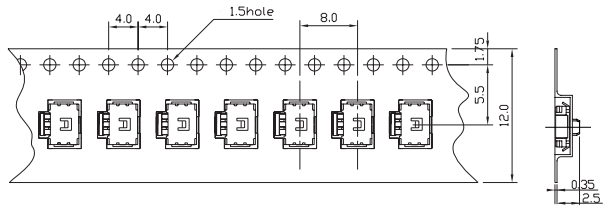
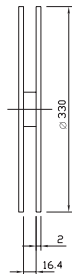
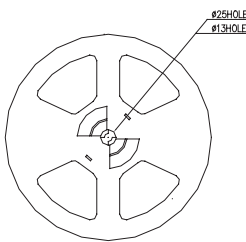


Circuit Diagram



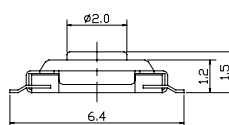
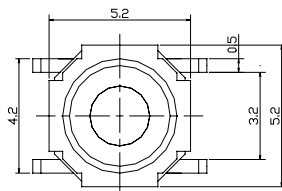
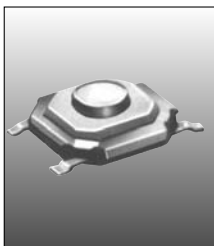
## 1186 Carrier Taping Dimension

Qty / Reel: 3,000pcs

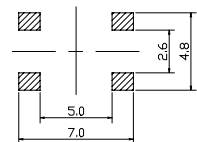


## 1187 1.5mm Height

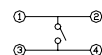
## 1187B 1.7mm Height



P.C.B. Land Pattern

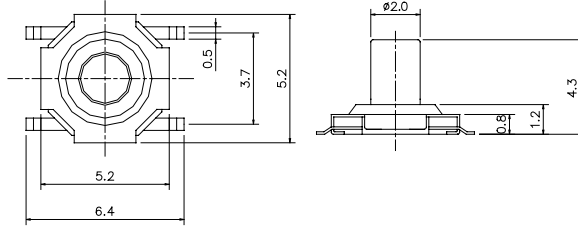
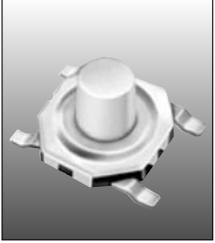


Circuit Diagram

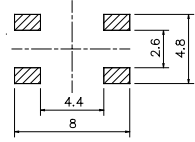


## 1187 series

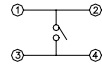
### 1187A



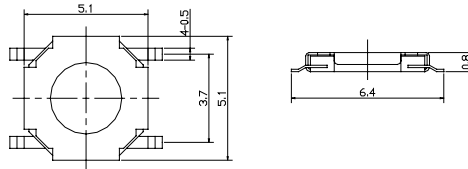
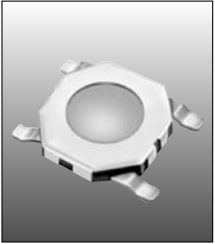
P.C.B. Land Pattern



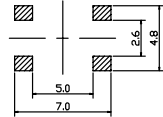
Circuit Diagram



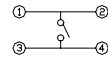
### 1187N



P.C.B. Land Pattern

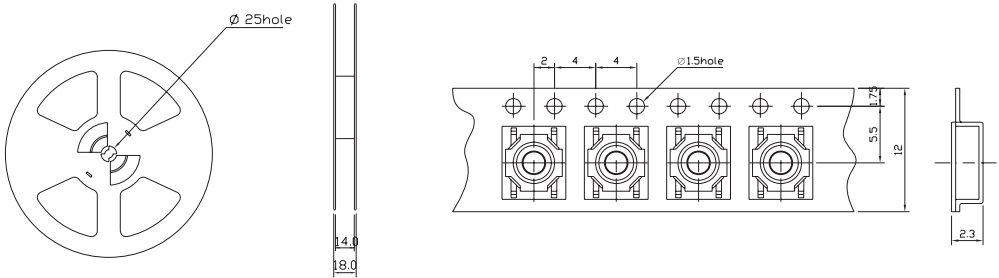


Circuit Diagram



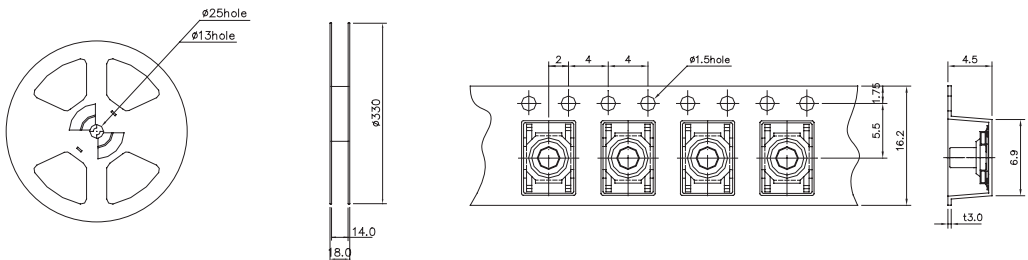
### 1187 Carrier Taping Dimension

Qty / Reel: 4,000pcs



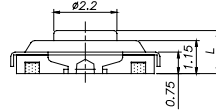
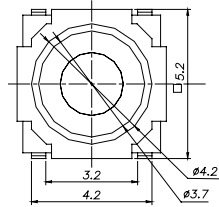
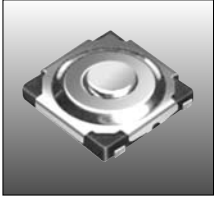
### 1187A Carrier Taping Dimension

Qty / Reel: 2,000pcs

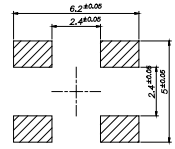


# 1187/1188 series

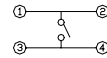
- 1187U** 1.5mm Height
- 1187UA** 4.3mm Height
- 1187UB** 1.7mm Height



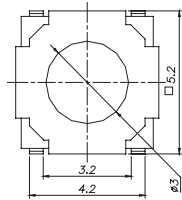
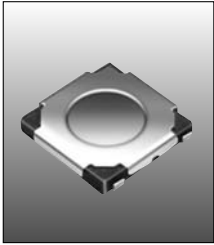
P.C.B. Land Pattern



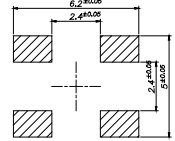
Circuit Diagram



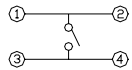
## 1187UN



P.C.B. Land Pattern

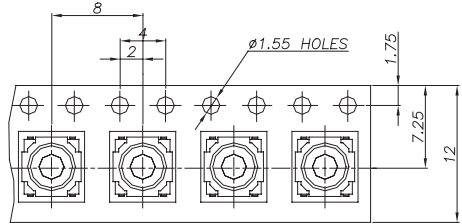
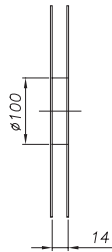
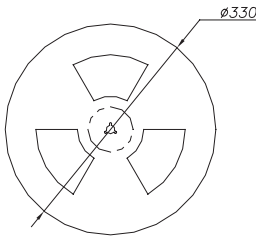


Circuit Diagram

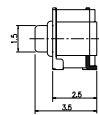
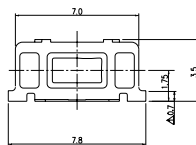
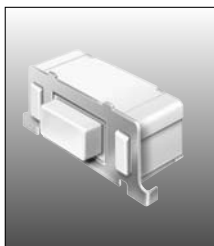


## 1187U Carrier Taping Dimension

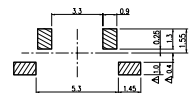
Qty / Reel: 4,000pcs



## 1188



P.C.B. Land Pattern



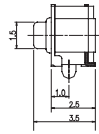
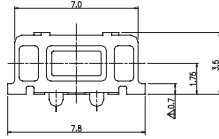
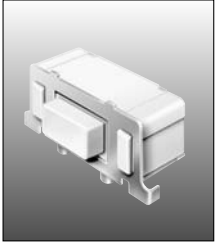
Circuit Diagram



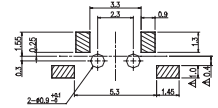
# TACT SWITCHES

## 1188/1189 series

### 1188E



P.C.B. Land Pattern

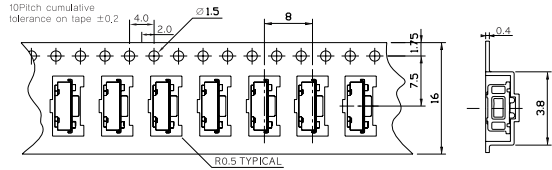
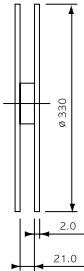
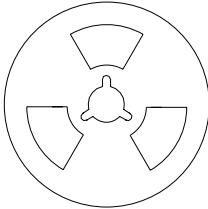


Circuit Diagram

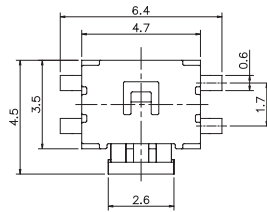
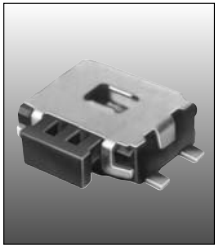


### 1188 Carrier Taping Dimension

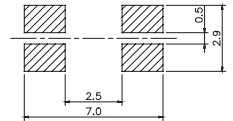
Qty / Reel: 2,000pcs



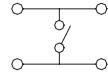
### 1189



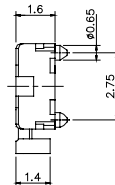
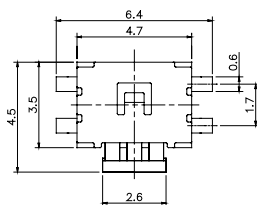
P.C.B. Land Pattern



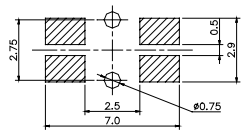
Circuit Diagram



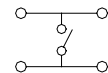
### 1189E



P.C.B. Land Pattern

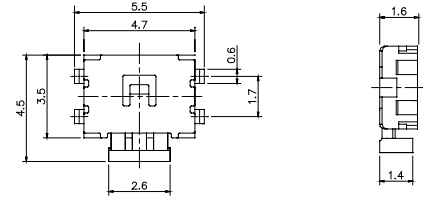


Circuit Diagram

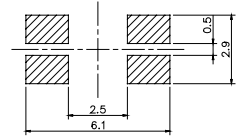


# 1189 series

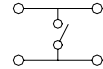
## 1189U



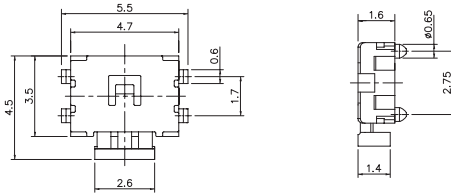
P.C.B. Land Pattern



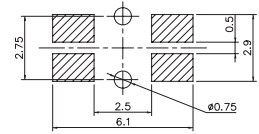
Circuit Diagram



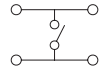
## 1189UE



P.C.B. Land Pattern

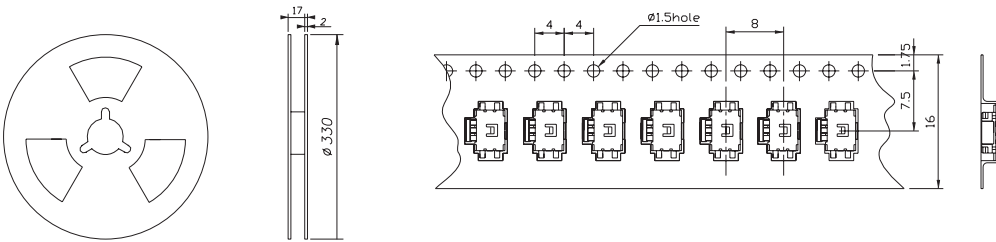


Circuit Diagram



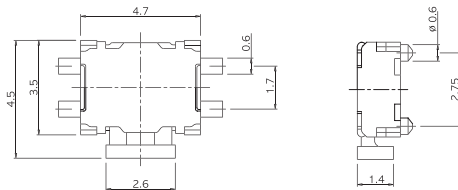
## 1189 Carrier Taping Dimension

Qty / Reel: 3,000pcs

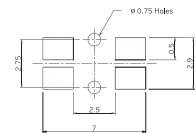


## 1189NE

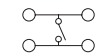
NEW



P.C.B. Land Pattern

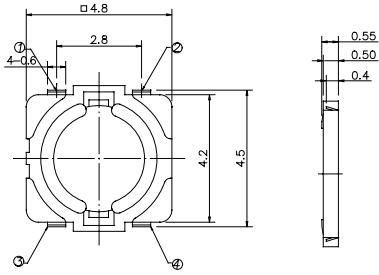
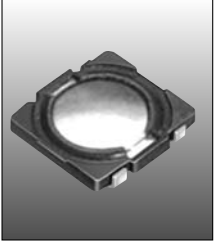


Circuit Diagram

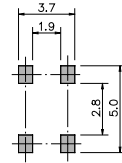


## 1197 series

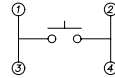
1197



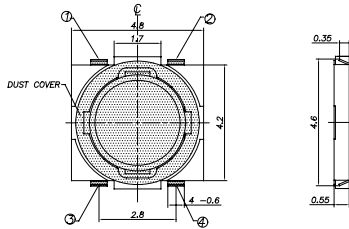
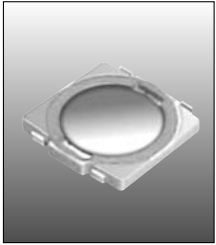
P.C.B. Land Pattern



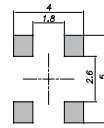
Circuit Diagram



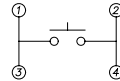
1197A



P.C.B. Land Pattern

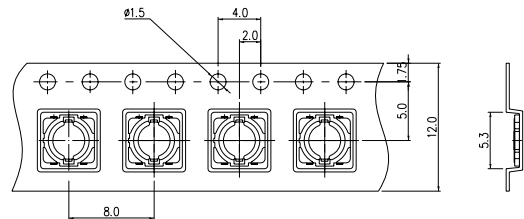
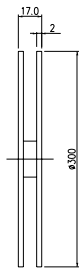
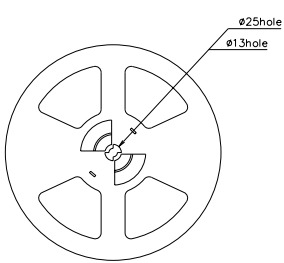


Circuit Diagram



11197 Carrier Taping Dimension

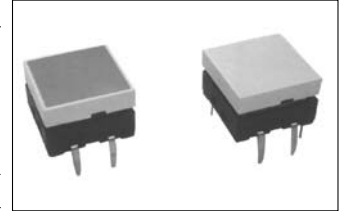
Qty / Reel: 7,000pcs



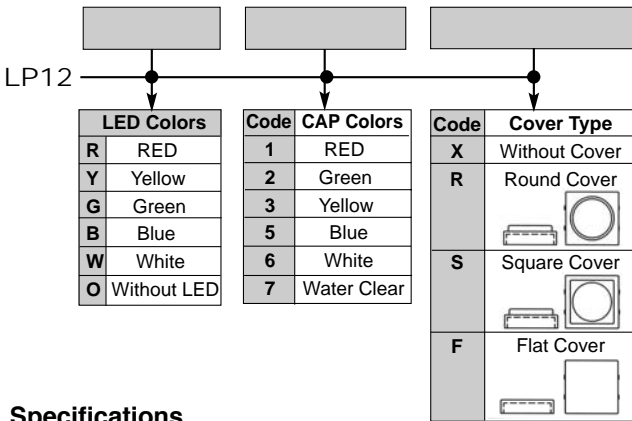
# LP/SP86 series

## Specifications

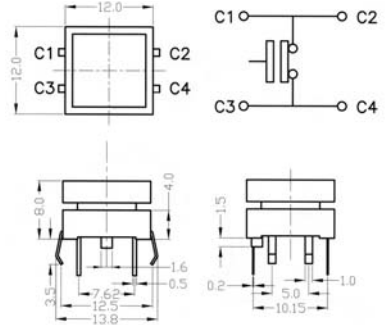
Rating	24VDC 50mA
Operating Force	250gf (Max)
Life	300,000 cycles Min
Travel	0.3±0.1mm
Contct Resistance	100mΩ Max (initial)
Insulation Resistance	100MΩ Min (at 250VDC)
Dielectric Withstanding Voltage	250VAC 1 minute
Operating Temperature	- 10°C ~ + 60°C
Ambient Humidity	75%RH Max
Maifunction Durability	10 to 55Hz 0.75mm double amplitude during 2 hours



## How to order

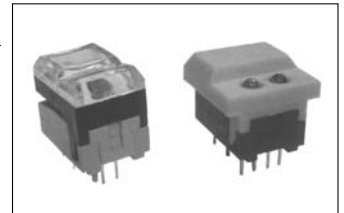


## Dimensions

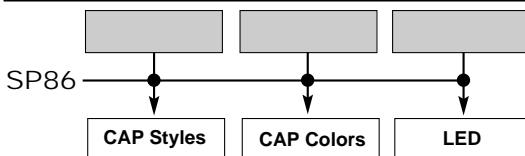


## Specifications

Rating	24VDC 50mA (Minimum 1 μ A)
Contct Resistance	20mΩ Max(initial), AC200 μ V, 5mA
Life	200,000 cycles Min
Insulation Resistance	100MΩ Min (at 250VDC)
Dielectric Withstanding Voltage	250VAC 1 minute (Except between terminals of LED)
Static Capacity	1.5pf max. (1MHz)
Shock Resistance	30G (3 directions perpendicular to each other 3 times for each direction)
Operating Temperature Range	- 25°C ~ + 75°C



## How to order



## Dimensions

