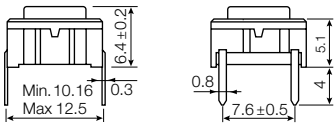


### Technical Data:

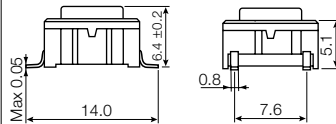
- through-hole or SMD
- 50mA/24VDC
- single pole/momentary
- 10.000.000 operations life time
- IP67 sealing
- temperature range:  
low temp: -40/+115°C  
high temp: -40/+160°C

### STANDARD 3C

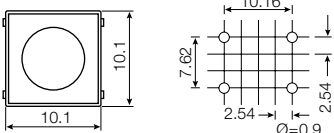
#### Dimensions (Through-hole)



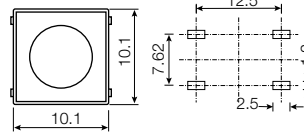
#### Dimensions (SMD)



#### PCB layout

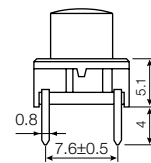
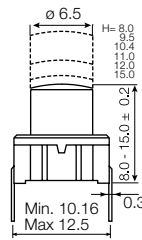


#### PCB layout

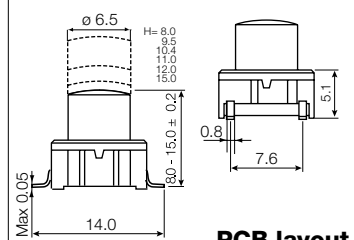


### VARIABLE HEIGHTS 3E

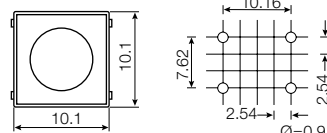
#### Dimensions (Through-hole)



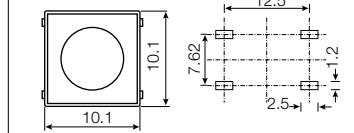
#### Dimensions (SMD)



#### PCB layout



#### PCB layout



### HOW TO ORDER

**3 C**

**Switch**

**Mounting**

**T** through-hole

**S** surface mount

**L 6** low temp. white

**L 9** low temp. black

**H 9** high temp.

#### Standard versions:

3CTL6  
3CTL9  
3CTH9  
3CSH9  
3CSH9R (tape/reel)

**3 E**

**Switch**

**Mounting**

**T** through-hole

**S** surface mount

**L 9** low temp.

**H 9** high temp.

**Standard overall height**

**08.0**

**09.5**

**10.4**

**11.0**

**12.0**

**15.0**

#### Standard versions:

3ETL9  
3ETH9  
3ESH9  
3ESH9R

#### Custom heights:

3E is available in any height from 08.0 to 15.0 mm.  
Min. order qty. for custom heights is 2.000 pcs. / A start-up charge will apply.

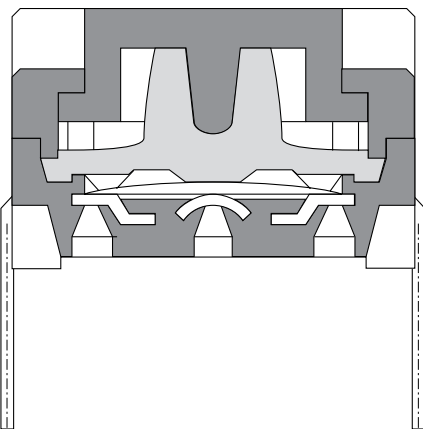
**Ordering example:** 3CTL6 and 3ETL9 - 09.5

Through-hole Version						
3A	3C	3E	3F	3F	3F	3F
For 1A/1B/1M	w/LED for 1C/1H			For 1D/1K/1N/1P/1S/1T/1U/1V/1X/1GA/1GC	w/LED for 1E/1F/1N/1Q/1R/1S/1X	w/LED for 1K1116/1T/1U/1V
Standard Versions						
3ATL6 3ATH9	3ATL600/20/40/80	3CTL6/3CTL9 3CTH9	3ETL9-H* 3ETH9-H*	3FTL6 3FTH9	3FTL600/20/40/80/ 2040/8020/8040	3FTL623/44/88
* 3E available in 6 standard heights: 08.0, 09.5, 10.4, 11.0, 12.0, 15.0 mm Other heights between 08.0 and 15.0 mm are available upon request						
Specials: Gold contacts, quiet version and actuation force other than 3.0N						

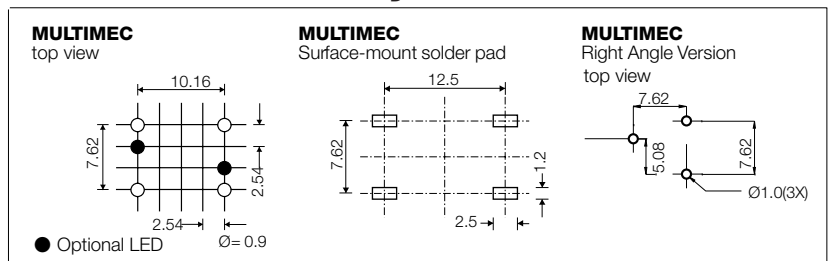
Surface Mount Versions			
3A	3C	3E	3F
3ASH9/3ASH9R	3CSH9/3CSH9R	3ESH9/3ESH9R	3FSH9 / 3FSH9R
For 1A/1B/1M			For 1D/1K/1N/1P/1S/1T/1U/1V/1X/1GA/1GC

Right Angle Versions	
3C	3F
3CTL6RAS	3FTL6RAS
	For 1D/1K/1P/1S

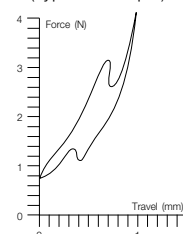
### multimec® Cross Section



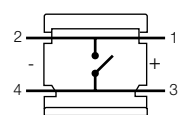
### Recommended PCB layout



**Operating Force**  
(Typical example)



**Circuit diagram**



DIMENSIONS (mm) Unless otherwise specified, all tolerances  $\pm 0.2$

	Low Temperature Versions		High Temperature Versions	
	Silver	Gold	Silver	Gold
<b>Electrical Specifications</b>				
Contact resistance	<30 mΩ - typically 10mΩ			
Insulation resistance	>10M Ω			
Recommended load	0.5-50mA 24VDC	0.5μ-50mA 24VDC	0.5-50mA 24VDC	0.5μ-50mA 24VDC
Contact bounce	<2mS - typically 0.5mS			
<b>Mechanical Specifications</b>				
Standard actuation force (switch)	3.0N typ.			
Max. actuation force without cap	100N for 10 sec.			
Key travel (switch)	1 mm			
Life time (switch)	>10.000.000 cycles			
<b>Temperature Range</b>				
Working temperature	Min. -40°C Max. +115°C		Min. -40°C Max. +160°C	
Storage temperature	Min. -40°C Max. +115°C		Min. -40°C Max. +160°C	
Soldering IEC 68-2-20	Wave -max. 260°C for max. 10 sec., please refer to usage guidelines		Infrared, vapour phase, wave - max. 260°C for max. 30 sec.	
	Soldering iron - max. 350°C for max. 3 sec. Flux tight.		Soldering iron - max. 350°C for max. 3 sec. Flux tight.	
<b>Environmental Endurance IEC-68-2-3</b>				
Temperature	+40°C			
Humidity	93% RH			
Duration	56 Days			
<b>Temperature Cycling IEC 68-2-14</b>				
Temperature limit	Min. -55°C - Max. +85°C			
Number of cycles	200			
Exposure time at each temperature	10 min.			
Recovery time before measurements	16 hrs.			
Sealing IEC 529	IP-67			
Cleaning	Standard methods such as freon and water			
<b>Material Specifications - Switches</b>				
Housing	PBT UL94VO		PPS UL94VO	
Actuator	PBT UL94VO		PPS UL94VO	
Sealing + spring	Silicone rubber			
Contact spring	Stainless steel + 3μAg	Stainless steel + 3μAg + 1μAu	Stainless steel + 3μAg	Stainless steel + 3μAg + 1μAu
Fixed Contacts	SnCu + 2μNi + 3μAg	SnCu + 2μNi + 3μAg + 1μAu	SnCu + 2μNi + 3μAg	SnCu + 2μNi + 3μAg + 1μAu
Terminals	SnCu + 2μNi + 3μSnPb	SnCu + 2μNi + 3μSnPb	SnCu + 2μNi + 3μSnPb	SnCu + 2μNi + 3μSnPb
<b>Material Specifications - Caps &amp; Bezels</b>				
<b>Material</b>	<b>Parts</b>	<b>Temp limit</b>	<b>UL rating</b>	
ABS Standard	Standard parts except the below mentioned	Max 65°C	UL94HB	
Polycarbonate	All lenses	Max. 85°C	UL94V1	
LCP	Actuator of 3E	Max. 160°C	UL94VO	
PPS	1S, 2S	Max. 160°C	UL94VO	
Polyamide	Actuator of Varimec , 1GA/ 1GC	Max. 160°C	UL94VO	
<b>Legends Adhesion</b>	ISO Class.: 1/ ASTM Class.: 4B DIN EN ISO 2409			

Specifications are subject to change without notice

Existing and New Part Nos. for Lead Free, RoHS compatible and Proces compatible mec products

**MULTIMEC**

Part No.	Part Name	Lead Free	RoHS Comp.	Proces Comp.	New Part No. Comments	Lead Free	RoHS Comp.	Proces Comp.	UL
3ASH9	Switch Surface Ag/High Temp	N	N	Y	RA3ASH9	Y	Y	Y	V0
3AXXXG	All 3A Switches with Au	N	N	Y	RA3AXXXG	Y	Y	Y	V0
3AXXXQ	All 3A Quiet Switches	N	N	Y	RA3AXXXQ	Y	Y	Y	VO
3ASH9R	All 3A Switches delivered on Tape	N	N	Y	RA3ASH9R	Y	Y	Y	V0
3ATH9	Switch Th Ag/High Temp.	N	N	Y	RA3ATH9	Y	Y	Y	V0
3ATL6	Switch Th Ag/White But/Low Temp.	N	N	Y	RA3ATL6	Y	Y	Y	V0
3ATL6 w/LED	Switch Th Ag/Low Temp w/LED	N	N	Y	RA3ATL6 w/LED	Y	Y	Y	V0
3CSH9	Switch Surface Ag/High Temp.	N	N	Y	RA3CSH9	Y	Y	Y	V0
3CXXXG	All 3C Switches with Au	N	N	Y	RA3CXXXG	Y	Y	Y	V0
3CXXXQ	All 3C Quiet Switches	N	N	Y	RA3CXXXQ	Y	Y	Y	V0
3CSH9R	All 3C Switches delivered on Tape	N	N	Y	RA3CSH9R	Y	Y	Y	V0
3CTH9	Switch Th Ag/High Temp	N	N	Y	RA3CTH9	Y	Y	Y	V0
3CTL6	Switch Th/White But/Low Temp	N	N	Y	RA3CTL6	Y	Y	Y	V0
3CTL6-2SL	Switch Low Temp. 2 Straight Legs	N	N	Y	RA3CTL6-2SL	Y	Y	Y	V0
3CTL6RAS	Right Angle Switch Low Temp.	N	N	Y	RA3CTL6RAS	Y	Y	Y	V0
3CTL9	Switch Th Ag/Black But/Low Temp	N	N	Y	RA3CTL9	Y	Y	Y	V0
3ESH9	Switch Surface Ag High Temp.	N	N	Y	RA3ESH9	Y	Y	Y	V0
3ESH9-XX.X	Switch Ag/High Temp./w Actuator	N	N	Y	RA3ESH9-XX.X	Y	Y	Y	V0
3EXXXG	All 3E Switches with Au	N	N	Y	RA3EXXXG	Y	Y	Y	V0
3EXXXQ	All 3E Quiet Switches	N	N	Y	RA3EXXXQ	Y	Y	Y	V0
3ESH9R	All 3E Switches delivered on Tape	N	N	Y	RA3ESH9R	Y	Y	Y	V0
3ETH9	Switch Th Ag High Temp.	N	N	Y	RA3ETH9	Y	Y	Y	V0

3ETH9-XX.X	Switch Th Ag/High Temp. w/Actuator	N	N	Y	RA3ETH9-XX.X	Y	Y	Y	V0
3ETL9	Switch Th Ag/Low Temp.	N	N	Y	RA3ETL9	Y	Y	Y	V0
3ETL9-XX.X	Switch Th Ag/Low Temp. w/Actuator	N	N	Y	RA3ETL9-XX.X	Y	Y	Y	V0
3FSH9	Switch Surface Ag/High Temp.	N	N	Y	RA3FSH9	Y	Y	Y	V0
3FXXXG	All 3F Switches with Au	N	N	Y	RA3FXXXG	Y	Y	Y	V0
3FXXXQ	All 3F Quiet Switches	N	N	Y	RA3FXXXQ	Y	Y	Y	V0
3FSH9R	All 3F Switches delivered on Tape	N	N	Y	RA3FSH9R	Y	Y	Y	V0
3FTH9	Switch Th Ag/High Temp.	N	N	Y	RA3FTH9	Y	Y	Y	V0
3FTH9 w/LED	Switch Th High Temp w/ LED	N	N	Y	RA3FTH9 w/LED	Y	Y	Y	V0
3FTL6	Switch Th Ag/Low Temp.	N	N	Y	RA3FTL6	Y	Y	Y	V0
3FTL6 w/LED	Switch Th Ag/Low Temp w/LED	N	N	Y	RA3FTL6 w/LED	Y	Y	Y	V0
3FTL6-2SL	Switch Low Temp. 2 Straight Legs	N	N	Y	RA3FTL6-2SL	Y	Y	Y	V0
3FTL6RAS	Right Angle Switch Low Temp.	N	N	Y	RA3FTL6RAS	Y	Y	Y	V0
1CXXXX	Leds for 1C or 1H Button	N	N	N	RA1CXXXX	Y	Y	Y	
2BXXXX	Leds for 2B Bezel	N	N	N	RA2BXXXX	Y	Y	Y	
3FXXXXX	Leds Bent for 3F	N	N	N	RA3FXXXXX	Y	Y	Y	
1AXX	DI Buttons all colours for 3A	Y	Y	N	No change, pls see note 1				HB
1BXX	DI Buttons f. Bezels all colours	Y	Y	N	No change, pls see note 1				HB
1CXXX	DI Buttons w/Lens all colours	Y	Y	N	No change, pls see note 1				HB
1DXX	Lk Buttons all colours	Y	Y	N	No change, pls see note 1				HB
1EXXX	Lk Buttons w/Lens all colours	Y	Y	N	No change, pls see note 1				HB
1FXXX	Lk Buttons w/Lens all colours	Y	Y	N	No change, pls see note 1				HB
1GA09	Cap black 11	Y	Y	Y	No change				V0
1GC09	Cap black 15	Y	Y	Y	No change				V0
1HXXX	DI Buttons w/Lens all colours	Y	Y	N	No change, pls see note 1				HB
1KXX	Lk Lid all colours	Y	Y	N	No change, pls see note 1				HB
1KXX16	Lid all colours/Lens/Reflector	Y	Y	N	No change, pls see note 1				HB

1KXX1	Lens Milky White For 1K Button	Y	Y	N	No change, pls see note 1			HB
1KXXX6	Reflector For 1K Button White	Y	Y	N	No change, pls see note 1			HB
1MXX	DI Button Double Width all colours	Y	Y	N	No change, pls see note 1			HB
1NXX	Teardrop Buttons all colours	Y	Y	N	No change, pls see note 1			HB
1PXX	Gf Buttons all colours	Y	Y	N	No change, pls see note 1			HB
1QXXX	1P But. W/Square Hole, all colours	Y	Y	N	No change, pls see note 1			HB
1RXXX	1P Button w/Round Hole, all colours	Y	Y	N	No change, pls see note 1			HB
1S09-XX.X	Lk Button Black, all heights	Y	Y	Y	No change			V0
1S11-XX.X	Lk Button Transparent, all heights	Y	Y	N	No change, pls see note 2			V1
1TXX	Sq. Button, all colours	Y	Y	N	No change, pls see note 1			HB
1UXX	Round Button, all colours	Y	Y	N	No change, pls see note 1			HB
1VXX	Arrow Button, all colours	Y	Y	N	No change, pls see note 1			HB
1X XX	Rectangular Button, all colours	Y	Y	N	No change, pls see note 1			HB
1ZAXX	DL Button, all colours	Y	Y	N	No change, pls see note 1			HB
1ZBXX	Curved Button, all colours	Y	Y	N	No change, pls see note 1			HB
1ZCXX	Round Button, all colours	Y	Y	N	No change, pls see note 1			HB
3E-XX.X	Actuator f. 3E Switch, all heights	Y	Y	Y	No change			V0
3E-AXXXX	Varimec cap 5.2 Round, all heights	Y	Y	Y	No change			V0
3E-BXXXX	Varimec cap 5.2 Square, all heights	Y	Y	Y	No change			V0
3E-EXXXX	Varimec cap 7.8 Round, all heights	Y	Y	Y	No change			V0
3E-FXXXX	Varimec cap 7.8 Square, all heights	Y	Y	Y	No change			V0
3E-KXXXX	Varimec cap 11.6 Round, all heights	Y	Y	Y	No change			V0
3E-LXXXX	Varimec cap 11.6 Square, all heights	Y	Y	Y	No change			V0
AQB01XX	Sealing Boot (incl. Sea.ring)	Y	Y	Y	No change			
AQB0111	Sealing Boot Trans. (incl. Sea.ring)	Y	Y	Y	No change			
AQC09-XX.X	Cap Black, all overall heights	Y	Y	Y	No change			V0
AQC11-XX.X	Cap Trans. all overall heights	Y	Y	N	No change, pls see note 2			V1

AQN-X.X	Bushing, all heights	Y	Y	Y	No change			
1CXXX	Lens f. 1C/1H/1Q Buttons, all colours	Y	Y	N	No change, pls see note 2			V1
1EXXX	Lens f. 1E Buttons, all colours	Y	Y	N	No change, pls see note 2			V1
1FXXX	Lens f. 1F Buttons, all colours	Y	Y	N	No change, pls see note 2			V1
1RXX1	Round Transparent Lens For 1R	Y	Y	N	No change, pls see note 2			V1
2AXX	DI Bezel, all colours	Y	Y	N	No change, pls see note 1			HB
2BXXX	Bezel/Lens, all colours	Y	Y	N	No change, pls see note 1			HB
2BXXX	Lens f. 2B Bezel, all colours	Y	Y	N	No change, pls see note 2			V1
2KXX	Lk Bezel f. 1K, all colours	Y	Y	N	No change, pls see note 1			HB
2RAS	Right Angle Support.	Y	Y	Y	No change			
2S09-XX.X	Extender, Black Pps, all heights	Y	Y	Y	No change			V0
1A09DXXX	Button 1A Down/all legends	Y	Y	N	No change, pls see note 1			HB
1A09UXXX	Button 1A Up/all legends	Y	Y	N	No change, pls see note 1			HB
1B09DXXX	Button 1b Down/0	Y	Y	N	No change, pls see note 1			HB
1B09UXXX	Button 1B Up/all legends	Y	Y	N	No change, pls see note 1			HB
1D09XXX	Round Button/all legends	Y	Y	N	No change, pls see note 1			HB
1F096XXX	1F Button/Inverse legends	Y	Y	N	No change, pls see note 1			HB
1ZB09DXXX	Button1ZB09 Down / all legends	Y	Y	N	No change, pls see note 1			HB
1ZC09XXX	Button 1ZC09 / all legends	Y	Y	N	No change, pls see note 1			HB

**Note 1:** Complies with RoHS, however plastic material limited to 65°C.  
Accessories must be mounted after soldering.

**Note 2:** Complies with RoHS, however plastic material is limited to 85°C,  
so excessive proces heat must be avoided.

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