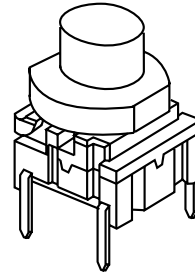


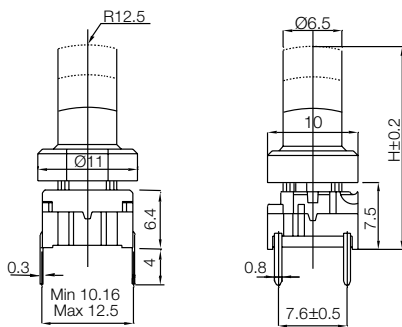
multimec® 3F+1S



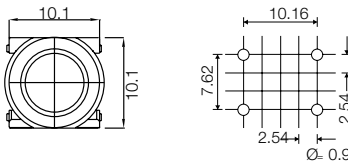
Technical Data:

- 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

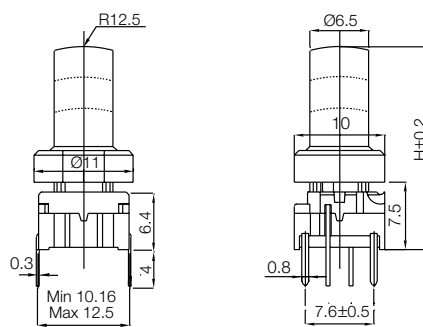
Dimensions (through-hole)



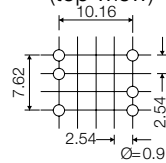
PCB layout



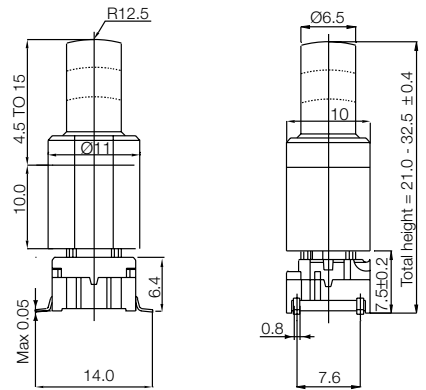
Dimensions (w/LED)



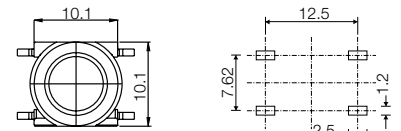
PCB layout (top view)




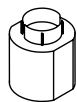
Dimensions (SMD)




PCB layout



HOW TO ORDER

3 F	<input type="checkbox"/>	<input type="checkbox"/>	+	1 S 0 9 - . . .	+	2 S 0 9 - . . . 0
Switch	Mounting	L 6 low temp. T through-hole S surface mount		Cap black	Height	Extender black Height
					16.0 19.0 22.5	 05.0 (Optional) 06.0 Adds 5-10mm 07.0 to total height. 08.0 09.0 10.0

Standard versions:
3FTL6, 3FTH9, 3FSH9, 3FSH9R

3 F	T	<input type="checkbox"/>	<input type="checkbox"/>	+	1 S 1 1 - . . .
Switch	Mounting	L 6 low temp. T through-hole H 9 high temp.	LED		Cap transparent Height
			00 blue 20 green 40 yellow 80 red 2040 green/yellow 8020 red/green 8040 red/yellow		16.0 19.0 22.5

Standard versions:
3FTL600, 3FTL620, 3FTL640, 3FTL680
3FTL62040, 3FTL68020, 3FTL68040

Customised heights:
3F + 1S is available in any height from 12.0 to 24 mm.
3F + 1S + 2S is available in any height from 17.0 to 34 mm.
Min. order qty. for custom heights is 2.000 pcs. A start-up charge will apply.
For heights less than 12.0 mm, please refer to 3E switch range.

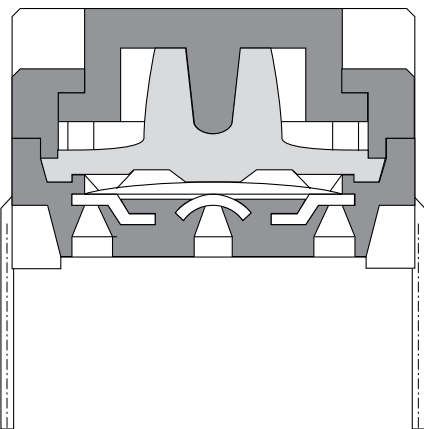
Ordering example: 3FTL640 + 1S11-19.0

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						

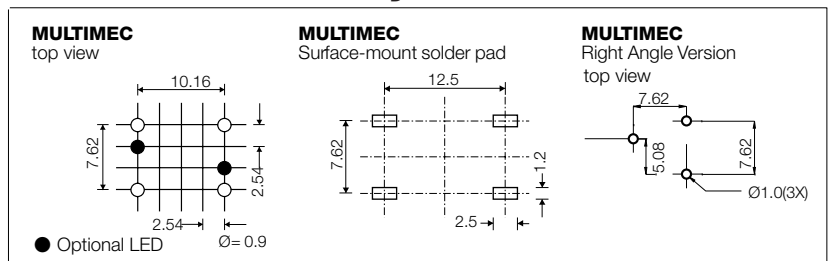
Surface Mount Versions			
3A	3C	3E	3F
3ASH9/3ASH9R	3CSH9/3CSH9R	3ESH9/3ESH9R	3FSH9 / 3FSH9R
For 1A/1B/1M			For 1D/1K/1N/1P/1S/1T/1U/1V/1X/1GA/1GC

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

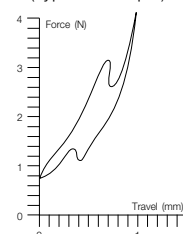
multimec® Cross Section



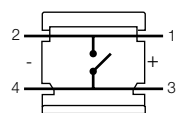
Recommended PCB layout



Operating Force
(Typical example)



Circuit diagram



DIMENSIONS (mm) Unless otherwise specified, all tolerances ± 0.2

	Low Temperature Versions		High Temperature Versions	
	Silver	Gold	Silver	Gold
Electrical Specifications				
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			
Mechanical Specifications				
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			
Temperature Range				
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.	
Environmental Endurance IEC-68-2-3				
Temperature	+40°C			
Humidity	93% RH			
Duration	56 Days			
Temperature Cycling IEC 68-2-14				
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			
Material Specifications - Switches				
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
Material Specifications - Caps & Bezels				
Material	Parts	Temp limit	UL rating	
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	
Legends Adhesion	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
3ASH9	Switch Surface Ag/High Temp	N	N	Y	RA3ASH9	Y
3AXXXG	All 3A Switches with Au	N	N	Y	RA3AXXXG	Y
3AXXXQ	All 3A Quiet Switches	N	N	Y	RA3AXXXQ	Y
3ASH9R	All 3A Switches delivered on Tape	N	N	Y	RA3ASH9R	Y
3ATH9	Switch Th Ag/High Temp.	N	N	Y	RA3ATH9	Y
3ATL6	Switch Th Ag/White But/Low Temp.	N	N	Y	RA3ATL6	Y
3ATL6 w/LED	Switch Th Ag/Low Temp w/LED	N	N	Y	RA3ATL6 w/LED	Y
3CSH9	Switch Surface Ag/High Temp.	N	N	Y	RA3CSH9	Y
3CXXXG	All 3C Switches with Au	N	N	Y	RA3CXXXG	Y
3CXXXQ	All 3C Quiet Switches	N	N	Y	RA3CXXXQ	Y
3CSH9R	All 3C Switches delivered on Tape	N	N	Y	RA3CSH9R	Y
3CTH9	Switch Th Ag/High Temp	N	N	Y	RA3CTH9	Y
3CTL6	Switch Th/White But/Low Temp	N	N	Y	RA3CTL6	Y
3CTL6-2SL	Switch Low Temp. 2 Straight Legs	N	N	Y	RA3CTL6-2SL	Y
3CTL6RAS	Right Angle Switch Low Temp.	N	N	Y	RA3CTL6RAS	Y
3CTL9	Switch Th Ag/Black But/Low Temp	N	N	Y	RA3CTL9	Y
3ESH9	Switch Surface Ag High Temp.	N	N	Y	RA3ESH9	Y
3ESH9-XX.X	Switch Ag/High Temp./w Actuator	N	N	Y	RA3ESH9-XX.X	Y
3EXXXG	All 3E Switches with Au	N	N	Y	RA3EXXXG	Y
3EXXXQ	All 3E Quiet Switches	N	N	Y	RA3EXXXQ	Y
3ESH9R	All 3E Switches delivered on Tape	N	N	Y	RA3ESH9R	Y
3ETH9	Switch Th Ag High Temp.	N	N	Y	RA3ETH9	Y

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

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

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
1EXXX	Lens f. 1E Buttons, all colours	Y	Y	N	No change, pls see note 2
1FXXX	Lens f. 1F Buttons, all colours	Y	Y	N	No change, pls see note 2
1RXX1	Round Transparent Lens For 1R	Y	Y	N	No change, pls see note 2
2AXX	DI Bezel, all colours	Y	Y	N	No change, pls see note 1
2BXXX	Bezel/Lens, all colours	Y	Y	N	No change, pls see note 1
2BXXX	Lens f. 2B Bezel, all colours	Y	Y	N	No change, pls see note 2
2KXX	Lk Bezel f. 1K, all colours	Y	Y	N	No change, pls see note 1
2RAS	Right Angle Support.	Y	Y	Y	No change
2S09-XX.X	Extender, Black Pps, all heights	Y	Y	Y	No change
1A09XDXXX	Button 1A Down/all legends	Y	Y	N	No change, pls see note 1
1A09UXXXX	Button 1A Up/all legends	Y	Y	N	No change, pls see note 1
1B09XDXXX	Button 1b Down/0	Y	Y	N	No change, pls see note 1
1B09UXXXX	Button 1B Up/all legends	Y	Y	N	No change, pls see note 1
1D09XXX	Round Button/all legends	Y	Y	N	No change, pls see note 1
1F096XXX	1F Button/Inverse legends	Y	Y	N	No change, pls see note 1
1ZB09XDXXX	Button1ZB09 Down / all legends	Y	Y	N	No change, pls see note 1
1ZC09XXX	Button 1ZC09 / all legends	Y	Y	N	No change, pls see note 1

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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