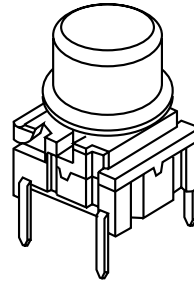


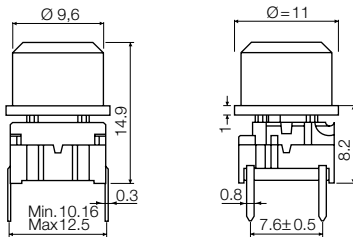
multimec® 3F + 1D/1E/1F



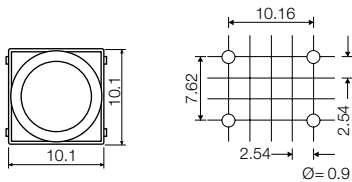
Technical Data:

- 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

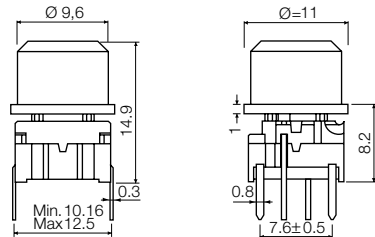
Dimensions (through-hole)



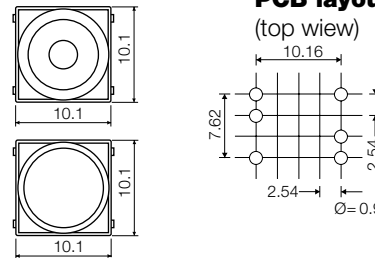
PCB layout



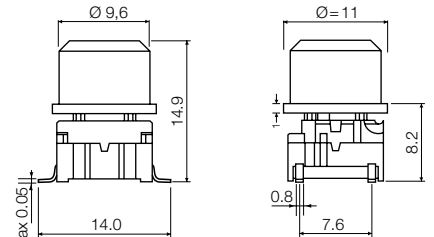
Dimensions (w/LED)



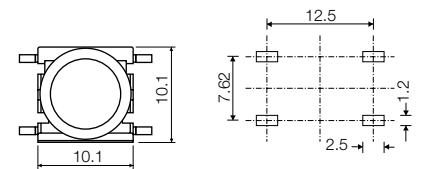
PCB layout (top view)




Dimensions (SMD)



PCB layout






HOW TO ORDER

3 F	<input type="checkbox"/>	<input type="checkbox"/>	+	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Switch	Mounting	L 6 low temp.		1 D	00 blue	30 ultra blue	50 metal dark blue	
	T through-hole	H 9 high temp.		Cap	02 green	40 dusty blue	53 metal light grey	
	S surface mount				03 grey	42 aqua blue	57 metal dark grey	
					04 yellow	32 mint green	58 metal bordeaux	
					06 white	33 tele grey		
					08 red	34 melon		
					09 black	38 noble red		

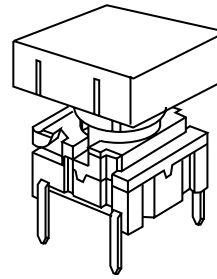
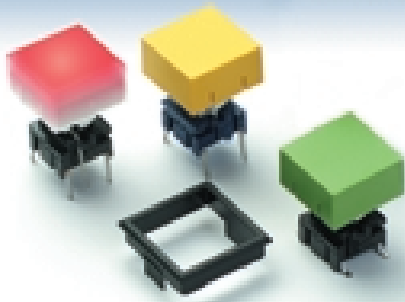
Standard versions:

3FTL6
3FTH9
3FSH9
3FSH9R

3 F	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Switch	Mounting	L 6 low temp.		LED	Cap 1D	1 1	Lens	
	T through-hole	H 9 high temp.		00 blue		transparent		
				20 green	Cap 1E	00 blue	1 transparent	
				40 yellow		02 green	2 green	
				80 red	Cap 1F	03 grey	4 yellow	
				2040 green/yellow		04 yellow	8 red	
				8020 red/green		06 white		
				8040 red/yellow		08 red		
						09 black		

Ordering example: 3FTL620 + 1E032

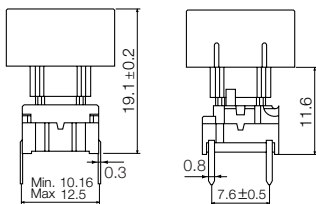
multimec® 3F + 1K + 2K



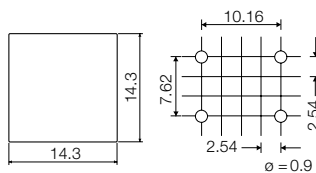
Technical Data:

- 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

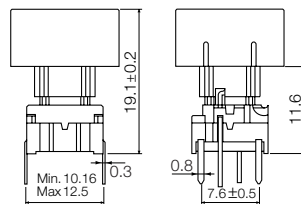
Dimensions (through-hole)



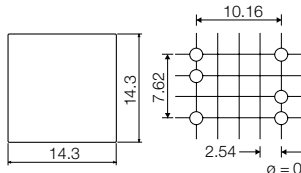
PCB layout



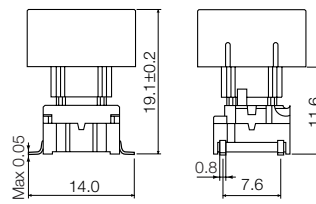
Dimensions (w/LED)



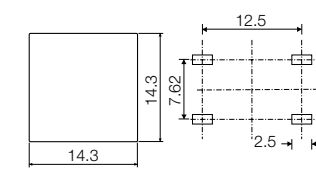
PCB layout (top view)



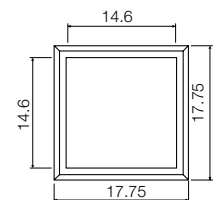
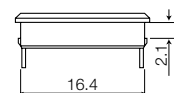
Dimensions (SMD)



PCB layout



Dimensions (Bezel) (Optional)



HOW TO ORDER

3 F	<input type="checkbox"/>	<input type="checkbox"/>	+	1 K	1 6	+	2 K	<input type="checkbox"/>
Switch	Mounting	L 6 low temp. H 9 high temp.		Cap	00 blue 02 green 03 grey 04 yellow 06 white 08 red 09 black		Bezel	03 grey 06 white 08 red 09 black

Standard versions:

3FTL6
3FTH9
3FSH9
3FSH9R

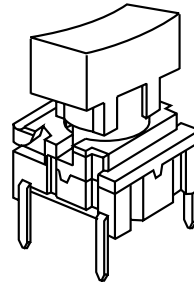
3 F	T	<input type="checkbox"/>	<input type="checkbox"/>	+	1 K 1 1 1 6	+	2 K	<input type="checkbox"/>
Switch	Mounting	L 6 low temp. H 9 high temp.	LED		Cap transparent		Bezel	03 grey 06 white 08 red 09 black
	T through-hole		23 green 44 yellow 88 red					

Standard versions:

3FTL622
3FTL644
3FTL688

Ordering example: 3FTL688 + 1K1116

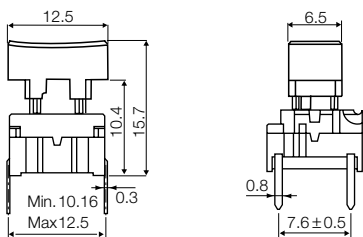
multimec® 3F + 1P/1Q/1R



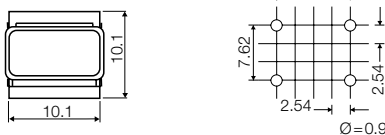
Technical Data:

- 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

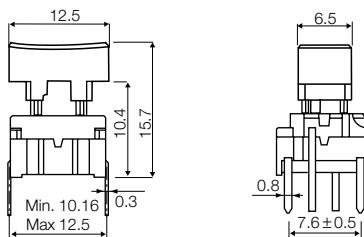
Dimensions (through-hole)



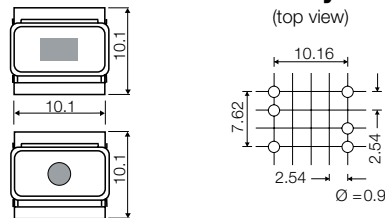
PCB layout



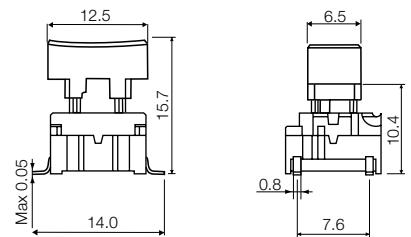
Dimensions (w/LED)



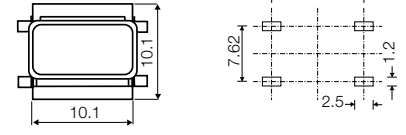
PCB layout (top view)



Dimensions (SMD)



PCB layout



How to order

3 F

Switch



Mounting

T through-hole
S surface mount



L 6 low temp.
H 9 high temp.

+

1 P

Cap



00 blue
02 green
03 grey
04 yellow
06 white
08 red
09 black

Standard versions:

3FTL6
3FTH9
3FSH9
3FSH9R

3 F

Switch



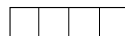
Mounting

T through-hole



L 6 low temp.
H 9 high temp.

+



LED

00 blue
20 green
40 yellow
80 red
2040 green/yellow
8020 red/green
8040 red/yellow



1Q



00 blue
03 grey
08 red
09 black

1

Lens

1 transparent

Standard versions:

3FTL600
3FTL620
3FTL640
3FTL680
3FTL62040
3FTL68020
3FTL68040

1R

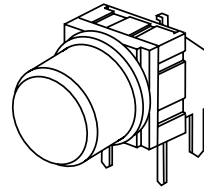


Ordering example: 3 FTL680 + 1Q091

multimec® RAS + 1D/1K/1P/1S

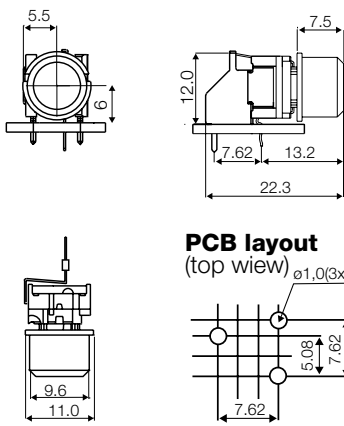


Technical Data:

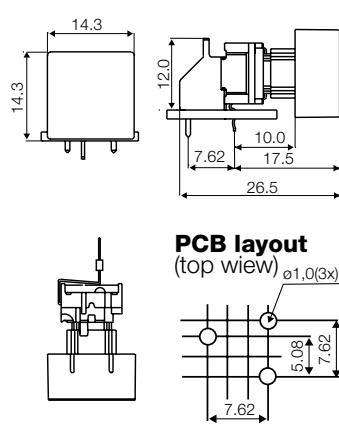


- through-hole only
- 50mA/24VDC
- single pole/momentary
- 10.000.000 operations life time
- IP67 sealing
- temperature range:
low temp: -40/+115°C

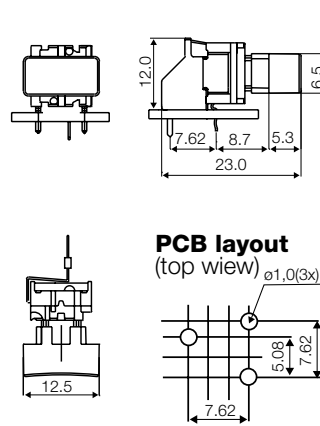
Dimensions 1D



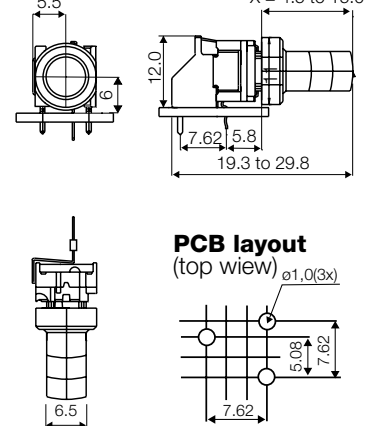
Dimensions 1K






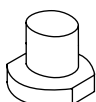
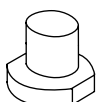
Dimensions 1P



Dimensions 1S



HOW TO ORDER

3 F Switch	T Mounting T through-hole	L 6 L 6 low temp.	R A S + Right angle support	1 D Cap 	00 blue 02 green 03 grey 04 yellow 06 white 08 red 09 black	30 ultra blue 40 dusty blue 42 aqua blue 32 mint green 33 tele grey 34 melon 38 noble red	50 metal dark blue 53 metal light grey 57 metal dark grey 58 metal bordeaux
				1 P Cap 	00 blue 03 grey 08 red 09 black		
				1 K + 1 6 Cap 	00 blue 02 green 03 grey 04 yellow 06 white 08 red 09 black	2 K Bezel 	03 grey 06 white 08 red 09 black
				1 S 0 9 - . Cap black 	H 16.0 19.0 22.5	X * 8.5 11.5 15.0	

Standard versions:

3FTL6RAS, 3CTL6RAS,

*Any cap height X from 8.5 to 15.0 mm is available. Please order 1S09-H, where H = X+7.5 mm
Min. order Qty for custom heights is 2.000 pcs. A start-up charge will apply.
3CTL6 also available as right angle switch 3CTL6RAS. Please see multimec basic switch modules.

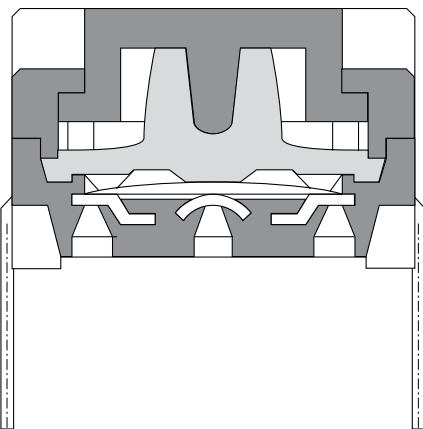
Ordering example: 3FTL6RAS + 1K0016 + 2K03

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						

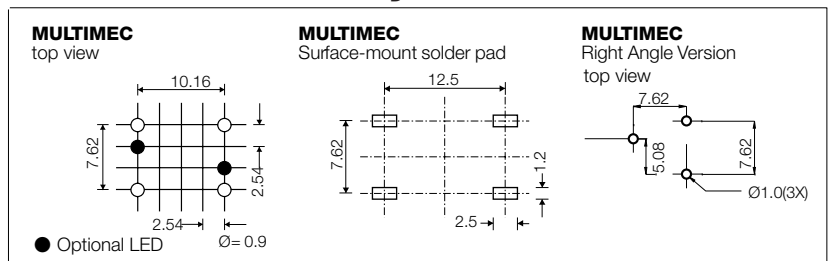
Surface Mount Versions			
3A	3C	3E	3F
3ASH9/3ASH9R	3CSH9/3CSH9R	3ESH9/3ESH9R	3FSH9 / 3FSH9R
For 1A/1B/1M			For 1D/1K/1N/1P/1S/1T/1U/1V/1X/1GA/1GC

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

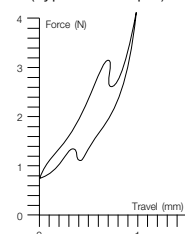
multimec® Cross Section



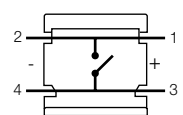
Recommended PCB layout



Operating Force
(Typical example)



Circuit diagram

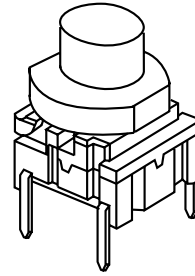


DIMENSIONS (mm) Unless otherwise specified, all tolerances ± 0.2

	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

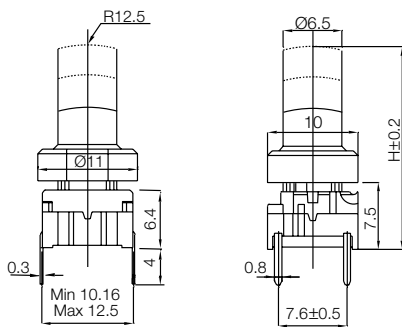
multimec® 3F+1S



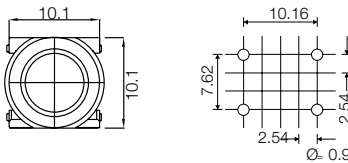
Technical Data:

- 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

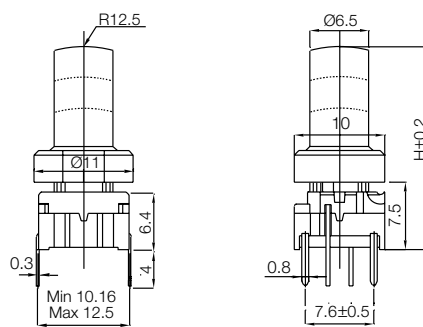
Dimensions (through-hole)



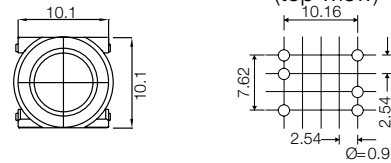
PCB layout



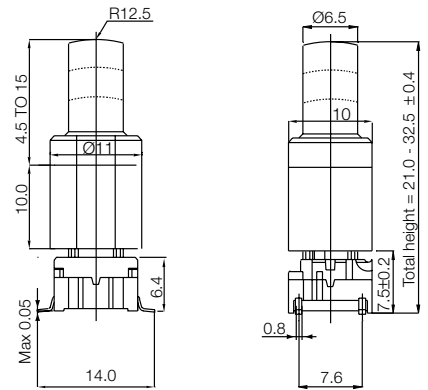
Dimensions (w/LED)



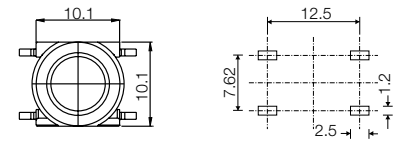
PCB layout (top view)




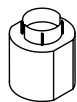
Dimensions (SMD)




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. H 9 high temp.		Cap black	Height	Extender black Height
	T through-hole S surface mount				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. H 9 high temp.	LED		Cap transparent Height
	T through-hole		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.

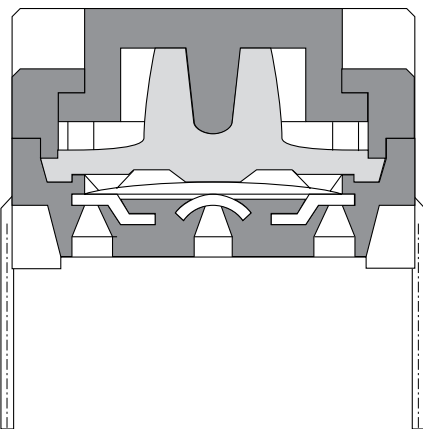
Ordering example: 3FTL640 + 1S11-19.0

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						

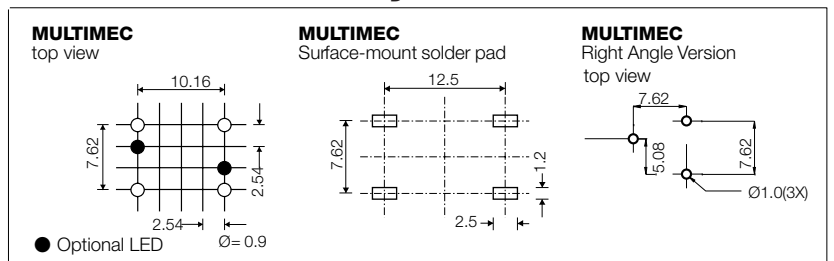
Surface Mount Versions			
3A	3C	3E	3F
3ASH9/3ASH9R	3CSH9/3CSH9R	3ESH9/3ESH9R	3FSH9 / 3FSH9R
For 1A/1B/1M			For 1D/1K/1N/1P/1S/1T/1U/1V/1X/1GA/1GC

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

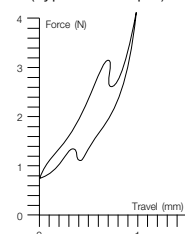
multimec® Cross Section



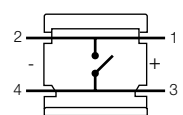
Recommended PCB layout



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