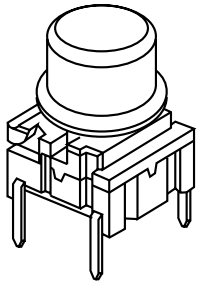
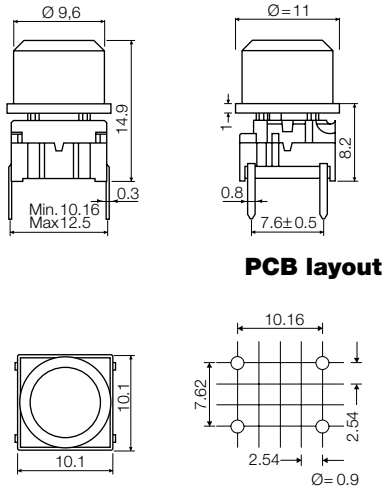
multimec® 3F + 1D/1E/1F



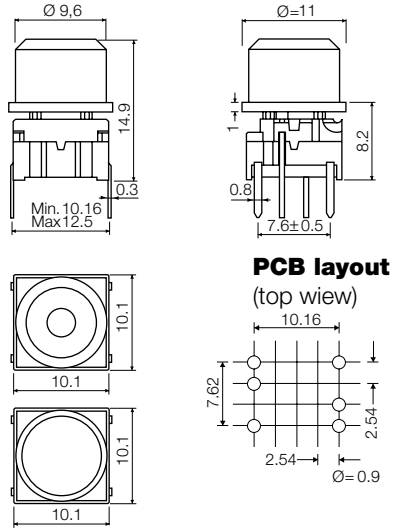
Technical Data:

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

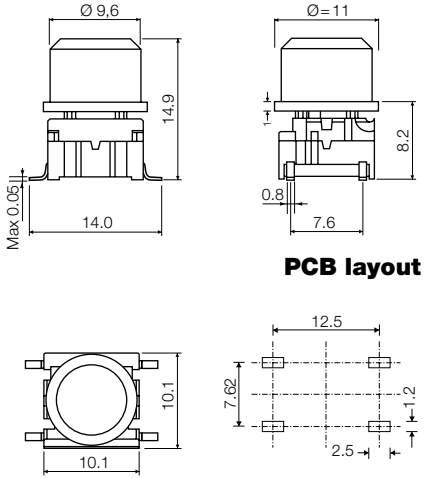
Dimensions (through-hole)



Dimensions (w/LED)



Dimensions (SMD)



HOW TO ORDER

3 F	☐	☐☐ +	1 D	☐☐
Switch	**Mounting** **T** through-hole **S** surface mount	**L 6** low temp. **H 9** high temp.	**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

Standard versions:
3FTL6
3FTH9
3FSH9
3FSH9R

3 F	T	☐☐	☐☐☐☐ +	☐☐	1 1	☐
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	**Cap 1D** **Cap 1E** **Cap 1F**	transparent **00** blue **02** green **03** grey **04** yellow **06** white **08** red **09** black	**Lens** **1** transparent **2** green **4** yellow **8** red

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

Ordering example: 3FTL620 + 1E032

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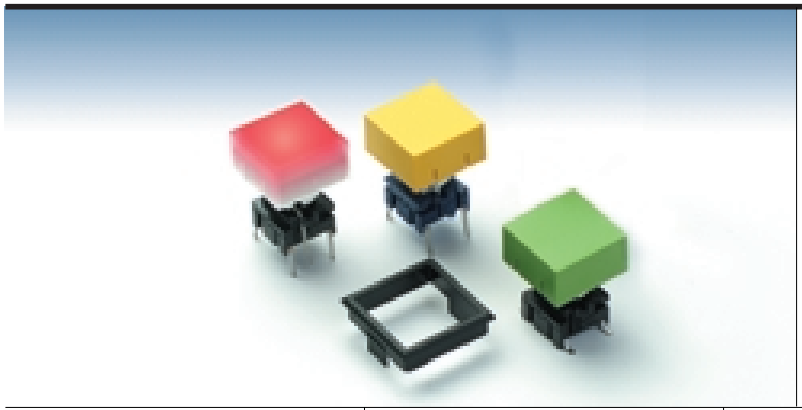
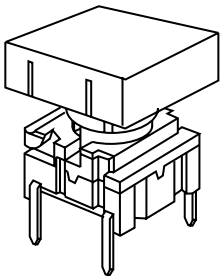
multimec® 3F + 1K + 2K

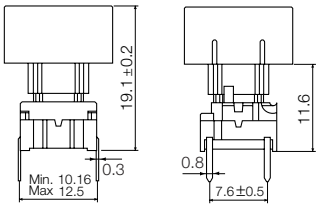




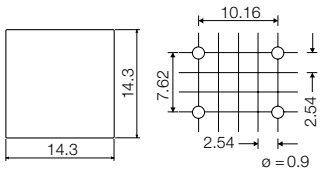
Technical Data:

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

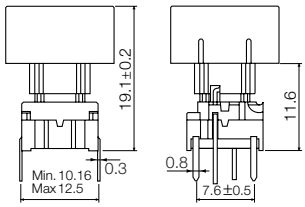
Dimensions (through-hole)



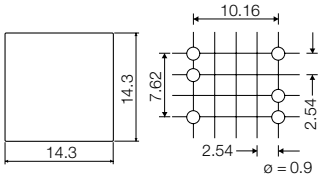
PCB layout



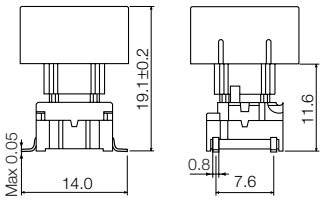
Dimensions (w/LED)



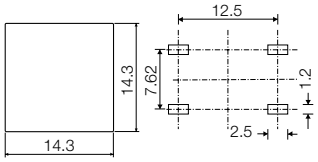
PCB layout
(top view)



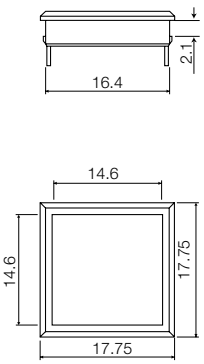
Dimensions (SMD)



PCB layout



Dimensions (Bezel)
(Optional)



HOW TO ORDER

3 F **Switch**

Mounting
T through-hole
S surface mount

L 6 low temp.
H 9 high temp.

+

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

Standard versions:
3FTL6
3FTH9
3FSH9
3FSH9R

3 F **Switch**

T **Mounting**
T through-hole

L 6 low temp.
H 9 high temp.

LED
23 green
44 yellow
88 red

+

1 K 1 1 1 6 **Cap** transparent

+

2 K **Bezel**
03 grey
06 white
08 red
09 black

Standard versions:
3FTL622
3FTL644
3FTL688

Ordering example: 3FTL688 + 1K1116

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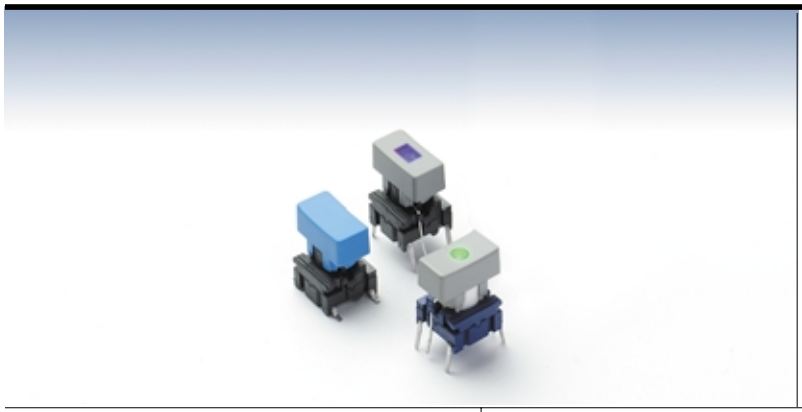
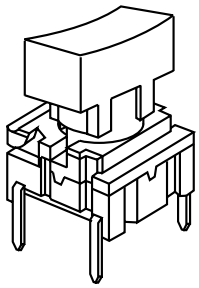
mec a/s may 2003

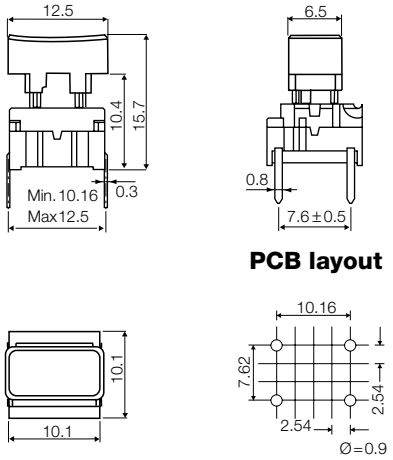
multimec® 3F + 1P/1Q/1R





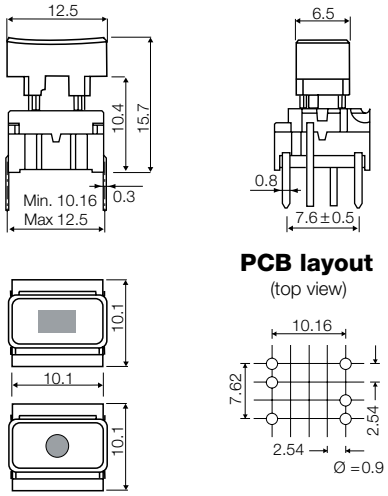
Technical Data:
- through-hole or SMD
- 50mA/24VDC
- single pole/momentary
- 10.000.000 operations life time
- IP67 sealing
- temperature range:
  low temp: -40/+115ºC
  high temp: -40/+160ºC

Dimensions (through-hole)



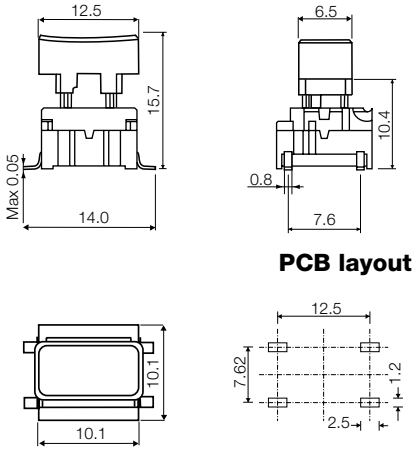
PCB layout

Dimensions (w/LED)



PCB layout
(top view)

Dimensions (SMD)



PCB layout

How to order

3 F			+	1 P	
Switch	**Mounting** **T** through-hole **S** surface mount	**L 6** low temp. **H 9** high temp.		**Cap**	**00** blue **02** green **03** grey **04** yellow **06** white **08** red **09** black

Standard versions:
3FTL6
3FTH9
3FSH9
3FSH9R

3 F	T			+			1
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	**Lens** **1** transparent

1R

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

Ordering example: 3 FTL680 + 1Q091

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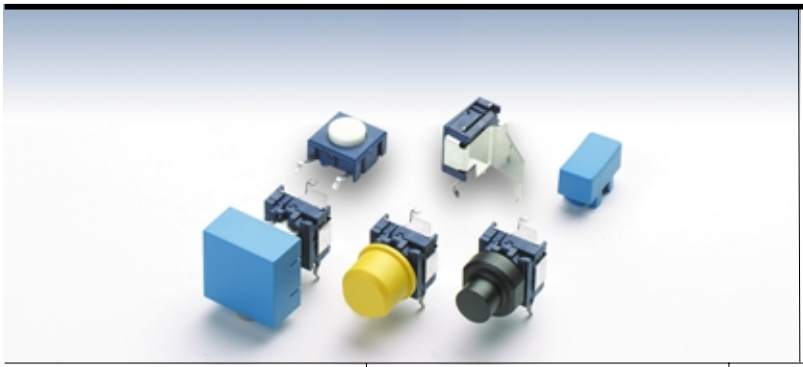
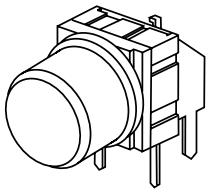
multimec® RAS + 1D/1K/1P/1S

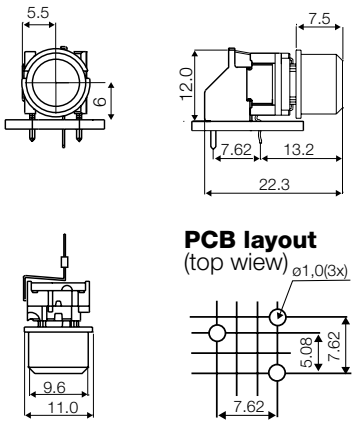




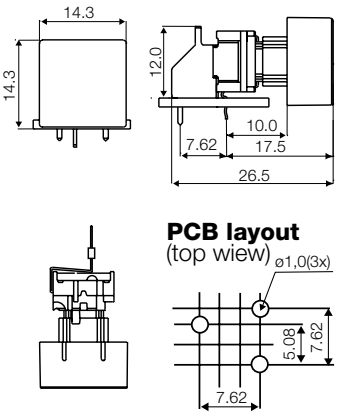
Technical Data:

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

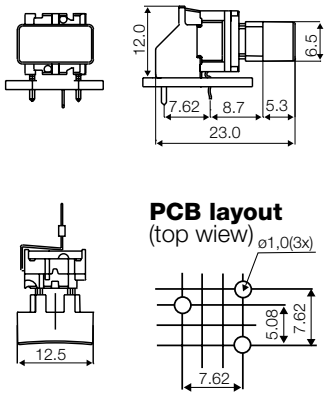
Dimensions 1D



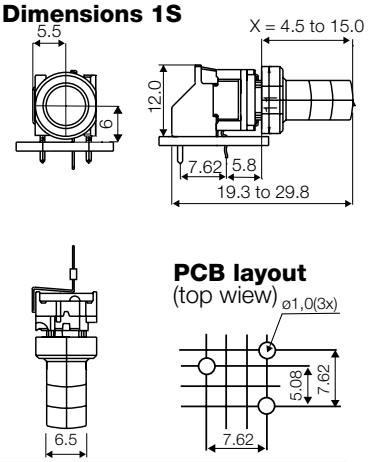
Dimensions 1K



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

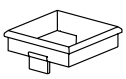
1 P **Cap**

00 blue
03 grey
08 red
09 black

1 K **1 6** + **2 K** **Cap**

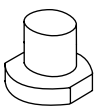
00 blue
02 green
03 grey
04 yellow
06 white
08 red
09 black

Bezel



03 grey
06 white
08 red
09 black

1 S 0 9 - . ** **Cap black



H	X *
16.0	8.5
19.0	11.5
22.5	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

mec a/s jan. 2003

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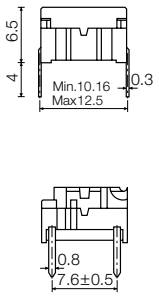
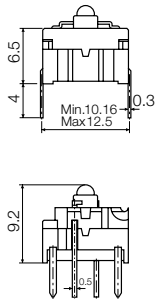
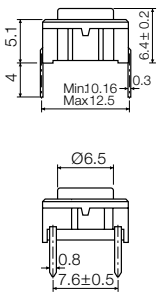
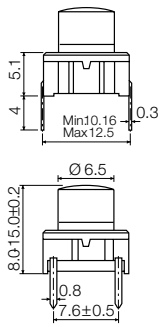
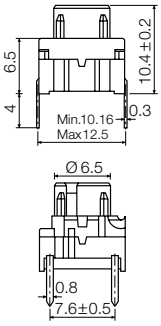
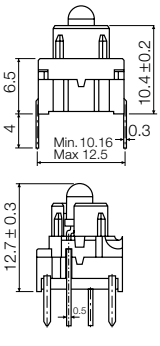
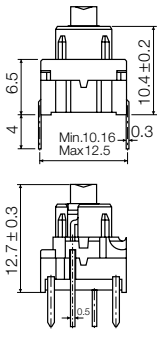
multimec® basic switch modules

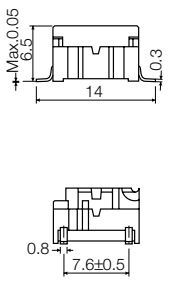
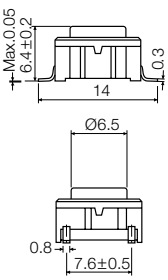
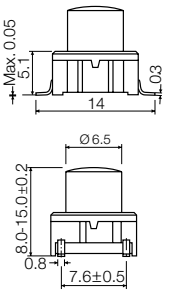
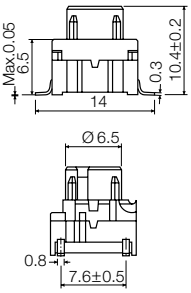
Through-hole Version

3A		3C	3E	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

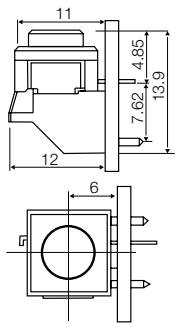
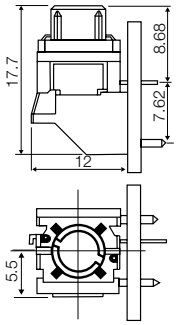
* 3E available in 6 standard heights: 08.0, 09.5, 10.4, 11.0, 12.0, 15.0 mm
Other heights between 08.0 and 15.0 mm are available upon request

Specials: Gold contacts, quiet version and actuation force other than 3.0N

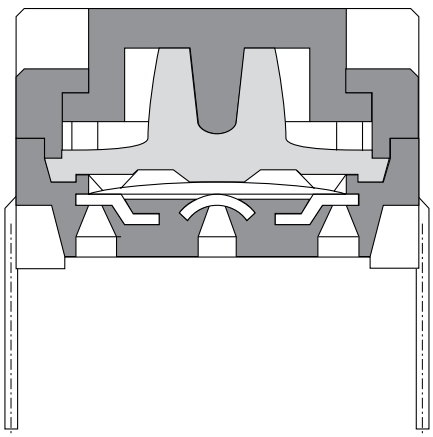
Surface Mount Versions

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

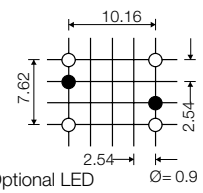
3C	3F
	
3CTL6RAS	3FTL6RAS
	For 1D/1K/1P/1S

multimec® Cross Section



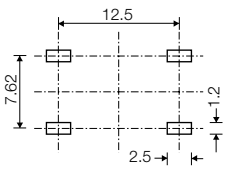
Recommended PCB layout

MULTIMEC
top view

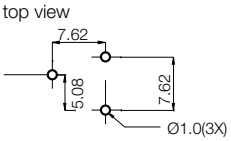


● Optional LED

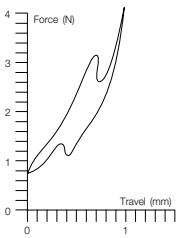
MULTIMEC
Surface-mount solder pad



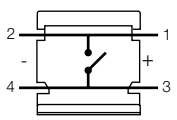
MULTIMEC
Right Angle Version
top view



Operating Force
(Typical example)



Circuit diagram



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

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mec a/s may 2003

multimec® technical specifications

	Low Temperature Versions		High Temperature Versions	
	Silver	Gold	Silver	Gold
Electrical Specifications				
Contact resistance	<30 m Ω - typically 10m Ω			
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

mec a/s may 2003

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Exisiting 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	Dl Buttons all colours for 3A	Y	Y	N	No change, pls see note 1				HB
1BXX	Dl Buttons f. Bezels all colours	Y	Y	N	No change, pls see note 1				HB
1CXXX	Dl 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	Dl 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	Dl 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	Dl 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
1A09XDXXX	Button 1A Down/all legends	Y	Y	N	No change, pls see note 1			HB
1A09XUXXX	Button 1A Up/all legends	Y	Y	N	No change, pls see note 1			HB
1B09XDXXX	Button 1b Down/0	Y	Y	N	No change, pls see note 1			HB
1B09XUXXX	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
1ZB09XDXXX	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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