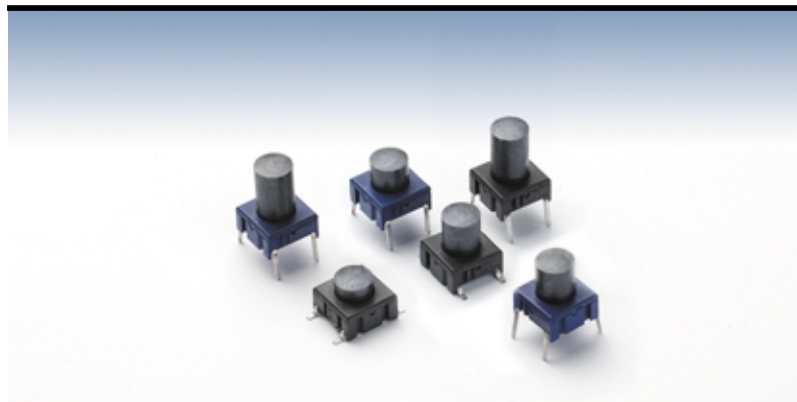
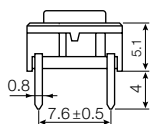
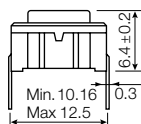


## Technical Data:

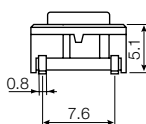
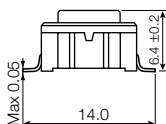
- through-hole or SMD
- 50mA/24VDC
- single pole/momentary
- 10.000.000 operations life time
- IP67 sealing
- temperature range:  
low temp: -40/+115°C  
high temp: -40/+160°C

## STANDARD 3C

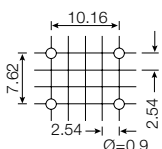
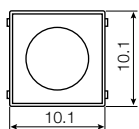
### Dimensions (Through-hole)



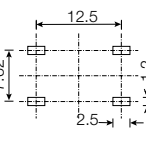
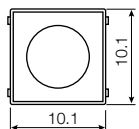
### Dimensions (SMD)



### PCB layout

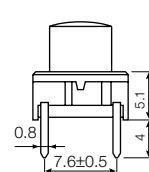
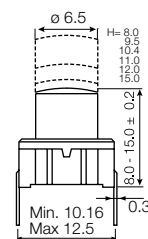


### PCB layout

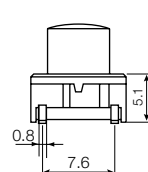
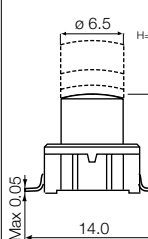


## VARIABLE HEIGHTS 3E

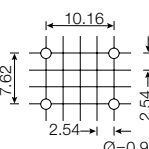
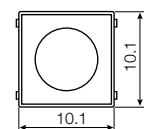
### Dimensions (Through-hole)



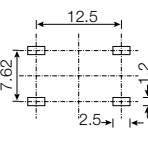
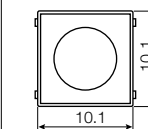
### Dimensions (SMD)



### 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

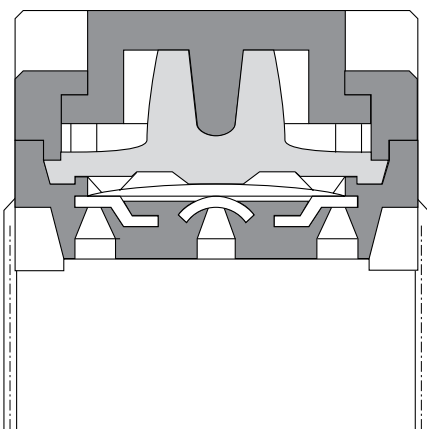
# multimec® basic switch modules

| 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<br>3ATH9                                                                                                                                   | 3ATL600/20/40/80 | 3CTL6/3CTL9<br>3CTH9 | 3ETL9-H*<br>3ETH9-H* | 3FTL6<br>3FTH9                         | 3FTL600/20/40/80/<br>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<br>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 |

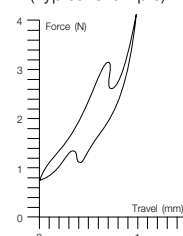
## multimec® Cross Section



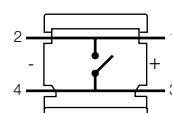
## Recommended PCB layout

|                                 |                                                 |                                                        |
|---------------------------------|-------------------------------------------------|--------------------------------------------------------|
| <b>MULTIMEC</b><br>top view<br> | <b>MULTIMEC</b><br>Surface-mount solder pad<br> | <b>MULTIMEC</b><br>Right Angle Version<br>top view<br> |
|---------------------------------|-------------------------------------------------|--------------------------------------------------------|

### Operating Force (Typical example)



### Circuit diagram



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

# 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<br>- 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<br>+ 3μAg                                           | Stainless steel<br>+ 3μAg + 1μAu | Stainless steel<br>+ 3μAg                                     | Stainless steel<br>+ 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 | 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 |
| 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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