



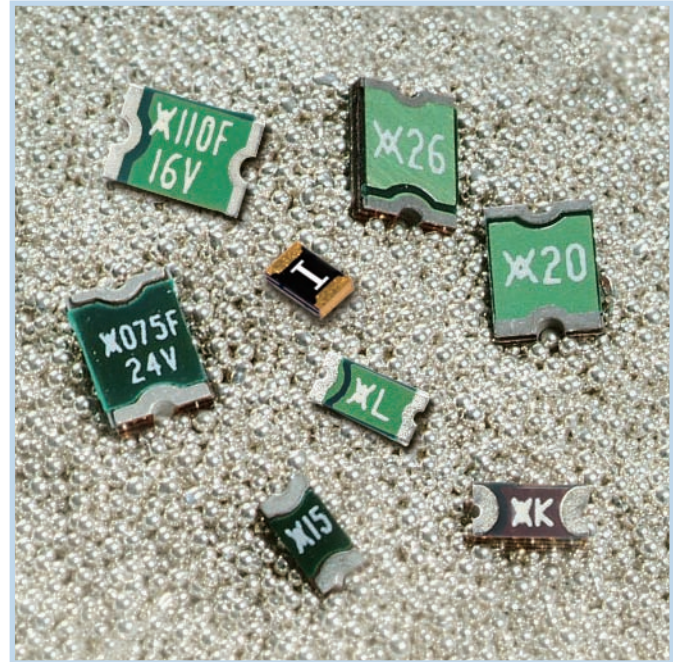
# PolySwitch Resettable Devices

## Surface-mount Devices

PolySwitch surface-mount devices are the preferred circuit protection method for computer, consumer, multimedia, portable, and automotive electronics applications.

In an effort to reduce the size and cost of surface mount devices, we introduced the miniSMD product series in 1995. Subsequently, we developed the microSMD, nanoSMD and picoSMD family of products. The picoSMD series reduced the device size to a 2012mm (0805 mils) foot print, one fourth the size of the popular miniSMD series.

Recent additions to the PolySwitch surface-mount series include 24V miniSMD 4532mm (1812 mils), 60V decaSMD 5050mm (2018 mils), and 2.0A microSMD 3225mm (1210 mils) devices.



### Benefits

- Smaller size saves board space and cost
- Many product choices give engineers more design flexibility
- Compatible with high-volume electronics assembly
- Assists in meeting regulatory requirements
- Higher voltage ratings allow use in new applications

### Features

- RoHS compliant
- Broadest range of resettable devices available in the industry
- Current ratings from 0.05 to 3A
- Voltage ratings from 6V computer and electronic applications to 60V telecom applications
- Agency recognition: UL, CSA, TÜV
- Small footprint
- Fast time-to-trip
- Low resistance

### Applications

- |                        |                           |                       |
|------------------------|---------------------------|-----------------------|
| • Computer             | • Game machines           | • Automotive          |
| • Portable electronics | • Telephony and broadband | • Industrial controls |
| • Multimedia           | • Mobile phones           | • Battery             |

## Protection Application Selection Table for Surface-mount Devices

- The table below lists PolySwitch devices and SiBar devices typically used in these applications.
- Specifications for the suggested PolySwitch surface-mount device part numbers can be found in this section.
- Once a part has been selected, the user should evaluate and test each product for the intended application.

| Protection Application      | Additional Comments  | Overcurrent<br>Overvoltage | PolySwitch Resettable Devices - Key Selection Criteria |                   |   |
|-----------------------------|----------------------|----------------------------|--|-------------------|---|
|                             |                      |                            | Small Size   | Low Resistance    | Fast Time-to-trip<br>(Temperature Protection) |
| AC adapter input power      | use w/ Zener & triac |                            | SMD250F  | SMD250F           | SMD200F                                       |
| Battery pack protection     |                      |                            | nanoSMDC150F   | miniSMDC260F      | miniSMDE190F                                  |
| Charger protection          |                      |                            | nanoSMDC050F   | miniSMDC110F/16   | nanoSMDC075F                                  |
| CPU/IC protection           |                      |                            | nanoSMDC110F   | nanoSMDC150F      | nanoSMDC075F                                  |
| Data acquisition/sensor     |                      |                            | microSMD005F   | -                 | microSMD005F                                  |
| DC input/output power       | ≤6V                  |                            | nanoSMDC075F   | nanoSMDC150F      | nanoSMDC050F/13.2                             |
|                             | ≤12V                 |                            | miniSMDC075F   | miniSMDC110F/16   | miniSMDC075F                                  |
| DDC                         |                      |                            | nanoSMDC075F   | nanoSMDC110F      | nanoSMDC050F/13.2                             |
| Device Bay system           | DB12, DB20           |                            | miniSMDC200F   | miniSMDC260F      | miniSMDC200F                                  |
|                             | DB32                 |                            | miniSMDC260F   | SMD300F           | miniSMDC200F                                  |
| Ethernet/Lan                |                      |                            | nanoSMDC050F/13.2                                      | miniSMDC110F/16   | nanoSMDC075F                                  |
| Fan                         |                      |                            | microSMD035F   | microSMD050F      | microSMD035F                                  |
| HDMI                        |                      |                            | picoSMD035F  | picoSMD035F       | picoSMD035F                                   |
| IEEE 802.3af                | VOIP                 |                            | decaSMDC050F/60  | decaSMDC050F/60   | decaSMDC050F/60                               |
| IEEE-1394                   | power provider       |                            | SMD100F/33   | SMD185F           | SMD100F/33                                    |
|                             | alt. power provider  |                            | SMD185F  | SMD185F           | SMD150F/33                                    |
|                             | self-powered         |                            | SMD185F  | SMD185F           | SMD150F/33                                    |
| LCD inverter                |                      |                            | nanoSMDC050F/13.2                                      | miniSMDC110F/16   | nanoSMDC075F                                  |
| LCD screen power            |                      |                            | nanoSMDC050F/13.2                                      | nanoSMDC050F/13.2 | microSMD035F                                  |
| LNB (Low Noise Block)       |                      |                            | SMD075F  | SMD075F           | SMD050F                                       |
| Motor                       | ≤6V                  |                            | nanoSMDC110F   | nanoSMDC150F      | microSMD075F                                  |
|                             | ≤13.2V               |                            | miniSMDC075F   | miniSMDC110F/16   | miniSMDC075F                                  |
| PS/2 mouse/keyboard         |                      |                            | nanoSMDC075F   | nanoSMDC110F      | nanoSMDC050F/13.2                             |
| Signal - data communication | ≤6V                  |                            | nanoSMDC075F   | nanoSMDC075F      | nanoSMDC075F                                  |
|                             | ≤13.2V               |                            | miniSMDC050F   | miniSMDC075F      | miniSMDC020F                                  |
|                             | ≤30V                 |                            | SMD030F-2018   | SMD075F           | SMD050F                                       |
| SCSI                        |                      |                            | nanoSMDC110F   | nanoSMDC150F      | nanoSMDC075F                                  |
| Smart card reader           |                      |                            | microSMD010F   | microSMD035F      | microSMD005F                                  |
| Telecom - modem             | Digital line         | OC                         | miniSMDC014F   | miniSMDC014F      | miniSMDC014F                                  |
|                             |                      | OV                         | TVBxxx(N)SC-L*   | TVBxxx(N)SC-L*    | TVBxxx(N)SC-L*                                |
| Telecom - PBX               | Subscriber           | OC                         | miniSMDC014F   | miniSMDC014F      | miniSMDC014F                                  |
| Temperature sensor          | CPU                  |                            | nanoSMDC050F/13.2                                      | nanoSMDC075F      | nanoSMDC050F/13.2                             |
| USB                         | Individual Port      |                            | nanoSMDC075F   | nanoSMDC110F      | nanoSMDC050F/13.2                             |
|                             | 2 port ganged        |                            | nanoSMDC150F   | miniSMDC150F      | miniSMDC125F                                  |
|                             | 3 port ganged        |                            | miniSMDC200F   | miniSMDC200F      | miniSMDC200F                                  |

**Note:** This list is not exhaustive. Tyco Electronics welcomes our customers' input for additional application ideas for PolySwitch resettable devices.

\*Refer to the SiBar product section for more information.

**Table S1 Product Series: Size, Current Rating, Voltage Rating/Maximum Resistance for Surface-mount Devices**

|                         | picoSMD                 | nanoSMD                    | microSMD                   | miniSMD                     | midSMD                   | SMD                      | SMD2                      | miniSMDE                 | decaSMD                  |
|-------------------------|-------------------------|----------------------------|----------------------------|-----------------------------|--------------------------|--------------------------|---------------------------|--------------------------|--------------------------|
| <b>Size mm (mils)</b>   | 2012 (0805)             | 3216 (1206)                | 3225 (1210)                | 4532 (1812)                 | 5050 (2018)              | 7555 (2920)              | 8763 (3425)               | 11550 (4420)             | 5050 (2018)              |
| <b>Hold Current (A)</b> | -                       | -                          | -                          | -                           | -                        | -                        | -                         | -                        | -                        |
| 0.050                   | -                       | -                          | 30V <sub>DC</sub> /50Ω     | -                           | -                        | -                        | -                         | -                        | -                        |
| 0.100                   | -                       | -                          | 30V <sub>DC</sub> /15Ω     | -                           | -                        | -                        | -                         | -                        | -                        |
| 0.120                   | -                       | 48V <sub>DC</sub> /6.50Ω   | -                          | -                           | -                        | -                        | -                         | -                        | -                        |
| 0.140                   | -                       | -                          | -                          | 60V <sub>DC</sub> /6.00Ω    | -                        | -                        | -                         | -                        | -                        |
| 0.160                   | -                       | 48V <sub>DC</sub> /5.00Ω   | -                          | -                           | -                        | -                        | -                         | -                        | -                        |
| 0.200                   | -                       | 24V <sub>DC</sub> /3.10Ω   | -                          | 30V <sub>DC</sub> /3.30Ω    | -                        | -                        | -                         | -                        | -                        |
| 0.300                   | -                       | -                          | -                          | -                           | 60V <sub>DC</sub> /2.30Ω | 60V <sub>DC</sub> /4.80Ω | -                         | -                        | -                        |
| 0.350                   | 6V <sub>DC</sub> /1.40Ω | 16V <sub>DC</sub> /1.35Ω   | 6V <sub>DC</sub> /1.30Ω    | -                           | -                        | -                        | -                         | -                        | -                        |
| 0.500                   | -                       | 13.2V <sub>DC</sub> /0.75Ω | 13.2V <sub>DC</sub> /0.90Ω | 24V <sub>DC</sub> /1.00Ω    | -                        | 60V <sub>DC</sub> /1.40Ω | -                         | -                        | 60V <sub>DC</sub> /1.10Ω |
| 0.750                   | -                       | 6V <sub>DC</sub> /0.30Ω    | 6V <sub>DC</sub> /0.40Ω    | 13.2V <sub>DC</sub> /0.45Ω  | -                        | 30V <sub>DC</sub> /1.00Ω | -                         | -                        | -                        |
|                         | -                       | -                          | -                          | 24V <sub>DC</sub> /0.29Ω    | -                        | 60V <sub>DC</sub> /1.00Ω | -                         | -                        | -                        |
| 1.000                   | -                       | -                          | -                          | -                           | 15V <sub>DC</sub> /0.40Ω | 30V <sub>DC</sub> /0.48Ω | -                         | -                        | -                        |
|                         | -                       | -                          | -                          | -                           | -                        | 33V <sub>DC</sub> /0.41Ω | -                         | -                        | -                        |
| 1.100                   | -                       | 6V <sub>DC</sub> /0.20Ω    | 6V <sub>DC</sub> /0.21Ω    | 8V <sub>DC</sub> /0.21Ω     | -                        | -                        | -                         | -                        | -                        |
|                         | -                       | -                          | -                          | 16V <sub>DC</sub> /0.18Ω    | -                        | -                        | -                         | -                        | -                        |
|                         | -                       | -                          | -                          | 24V <sub>DC</sub> /0.18Ω    | -                        | -                        | -                         | -                        | -                        |
| 1.200                   | -                       | -                          | -                          | -                           | -                        | 16V <sub>DC</sub> /0.34Ω | -                         | -                        | -                        |
| 1.250                   | -                       | -                          | -                          | 6V <sub>DC</sub> /0.14Ω     | -                        | 15V <sub>DC</sub> /0.25Ω | -                         | -                        | -                        |
|                         | -                       | -                          | -                          | 16V <sub>DC</sub> /0.14Ω    | -                        | -                        | -                         | -                        | -                        |
| 1.500                   | -                       | 6V <sub>DC</sub> /0.11Ω    | 6V <sub>DC</sub> /0.11Ω    | 6V <sub>DC</sub> /0.11Ω     | 15V <sub>DC</sub> /0.18Ω | -                        | 15V <sub>DC</sub> /0.25Ω  | -                        | -                        |
|                         | -                       | -                          | -                          | 12V <sub>DC</sub> /0.11Ω    | -                        | -                        | 33V <sub>DC</sub> /0.23Ω  | -                        | -                        |
|                         | -                       | -                          | -                          | 16V <sub>DC</sub> /0.11Ω    | -                        | -                        | -                         | -                        | -                        |
|                         | -                       | -                          | -                          | 24V <sub>DC</sub> /0.12Ω    | -                        | -                        | -                         | -                        | -                        |
| 1.600                   | -                       | -                          | -                          | 9V <sub>DC</sub> /0.10Ω     | -                        | -                        | 16V <sub>DC</sub> /0.15Ω  | -                        | -                        |
| 1.750                   | -                       | -                          | 6V <sub>DC</sub> /0.08Ω    | -                           | -                        | -                        | -                         | -                        | -                        |
| 1.850                   | -                       | -                          | -                          | -                           | -                        | -                        | 33V <sub>DC</sub> /0.165Ω | -                        | -                        |
| 1.900                   | -                       | -                          | -                          | -                           | -                        | -                        | -                         | 16V <sub>DC</sub> /0.08Ω | -                        |
| 2.000                   | -                       | 6V <sub>DC</sub> /0.07Ω*   | 6V <sub>DC</sub> /0.06Ω    | 8V <sub>DC</sub> /0.07Ω     | 6V <sub>DC</sub> /0.10Ω  | -                        | 15V <sub>DC</sub> /0.125Ω | -                        | -                        |
| 2.500                   | -                       | -                          | -                          | -                           | -                        | -                        | 15V <sub>DC</sub> /0.85Ω  | -                        | -                        |
| 2.600                   | -                       | -                          | -                          | 6V <sub>DC</sub> /0.043Ω    | -                        | 6V <sub>DC</sub> /0.075Ω | -                         | -                        | -                        |
|                         | -                       | -                          | -                          | 12V <sub>DC</sub> /0.047Ω   | -                        | -                        | -                         | -                        | -                        |
|                         | -                       | -                          | -                          | 13.2V <sub>DC</sub> /0.050Ω | -                        | -                        | -                         | -                        | -                        |
|                         | -                       | -                          | -                          | 16V <sub>DC</sub> /0.050Ω   | -                        | -                        | -                         | -                        | -                        |
| 3.000                   | -                       | -                          | -                          | -                           | -                        | 6V <sub>DC</sub> /0.048Ω | -                         | -                        | -                        |

**Table S2 Thermal Derating for Surface-mount Devices [Hold Current (A) at Ambient Temperature (°C)]**

| Part Number                   | Maximum Ambient Temperature |       |      |      |      |      |      |      |      |      |      |       |
|-------------------------------|-----------------------------|-------|------|------|------|------|------|------|------|------|------|-------|
|                               | -40°C                       | -20°C | 0°C  | 20°C | 25°C | 40°C | 50°C | 60°C | 70°C | 80°C | 85°C | 125°C |
| <b>picoSMD Series</b>         |                             |       |      |      |      |      |      |      |      |      |      |       |
| <b>Size 2012 mm/0805 mils</b> |                             |       |      |      |      |      |      |      |      |      |      |       |
| picoSMD035F                   | 0.58                        | 0.51  | 0.44 | 0.35 | 0.32 | 0.31 | 0.28 | 0.24 | 0.21 | 0.18 | 0.16 | -     |
| <b>nanoSMDC Series</b>        |                             |       |      |      |      |      |      |      |      |      |      |       |
| <b>Size 3216 mm/1206 mils</b> |                             |       |      |      |      |      |      |      |      |      |      |       |
| nanoSMDC012F                  | 0.20                        | 0.17  | 0.15 | 0.13 | 0.12 | 0.11 | 0.10 | 0.09 | 0.08 | 0.07 | 0.07 | -     |
| nanoSMDC016F                  | 0.21                        | 0.20  | 0.18 | 0.16 | 0.16 | 0.14 | 0.13 | 0.12 | 0.11 | 0.10 | 0.09 | -     |
| nanoSMDC020F                  | 0.34                        | 0.30  | 0.26 | 0.22 | 0.20 | 0.17 | 0.15 | 0.13 | 0.11 | 0.09 | 0.08 | -     |
| nanoSMDC035F                  | 0.58                        | 0.51  | 0.44 | 0.38 | 0.35 | 0.31 | 0.28 | 0.24 | 0.21 | 0.18 | 0.16 | -     |
| nanoSMDC050F/13.2             | 0.78                        | 0.69  | 0.61 | 0.52 | 0.50 | 0.44 | 0.39 | 0.35 | 0.30 | 0.25 | 0.24 | -     |
| nanoSMDC075F                  | 1.15                        | 1.04  | 0.92 | 0.78 | 0.75 | 0.69 | 0.63 | 0.58 | 0.51 | 0.46 | 0.43 | -     |
| nanoSMDC110F                  | 1.64                        | 1.46  | 1.30 | 1.10 | 1.06 | 0.92 | 0.83 | 0.80 | 0.65 | 0.56 | 0.52 | -     |
| nanoSMDC150F                  | 2.20                        | 1.99  | 1.77 | 1.55 | 1.50 | 1.34 | 1.23 | 1.10 | 1.01 | 0.90 | 0.84 | -     |
| coming soon nanoSMDC200F*     | 3.56                        | 3.08  | 2.60 | 2.12 | 2.00 | 1.79 | 1.64 | 1.50 | 1.36 | 1.21 | 1.14 | -     |

\* Data is preliminary

**Table S2 Thermal Derating for Surface-mount Devices**  
**[Hold Current (A) at Ambient Temperature (°C)]**

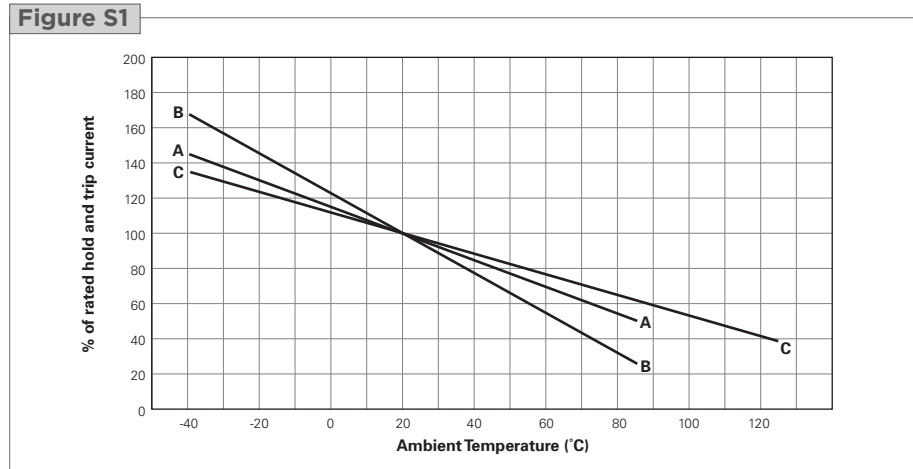
... Cont'd

| Part Number                    | Maximum Ambient Temperature |       |      |      |      |      |      |      |      |      |      |       |
|--------------------------------|-----------------------------|-------|------|------|------|------|------|------|------|------|------|-------|
|                                | -40°C                       | -20°C | 0°C  | 20°C | 25°C | 40°C | 50°C | 60°C | 70°C | 80°C | 85°C | 125°C |
| <b>microSMD Series</b>         |                             |       |      |      |      |      |      |      |      |      |      |       |
| <b>Size 3225 mm/1210 mils</b>  |                             |       |      |      |      |      |      |      |      |      |      |       |
| microSMD005F                   | 0.08                        | 0.07  | 0.06 | 0.05 | 0.05 | 0.04 | 0.04 | 0.03 | 0.03 | 0.02 | 0.02 | -     |
| microSMD010F                   | 0.15                        | 0.13  | 0.12 | 0.10 | 0.10 | 0.09 | 0.08 | 0.06 | 0.06 | 0.05 | 0.05 | -     |
| microSMD035F                   | 0.51                        | 0.46  | 0.40 | 0.35 | 0.34 | 0.30 | 0.27 | 0.24 | 0.22 | 0.19 | 0.18 | -     |
| microSMD050F                   | 0.76                        | 0.66  | 0.58 | 0.50 | 0.48 | 0.42 | 0.38 | 0.35 | 0.29 | 0.25 | 0.23 | -     |
| microSMD075F                   | 1.10                        | 0.97  | 0.86 | 0.75 | 0.72 | 0.64 | 0.58 | 0.55 | 0.47 | 0.42 | 0.39 | -     |
| microSMD110F                   | 1.60                        | 1.42  | 1.26 | 1.10 | 1.06 | 0.94 | 0.86 | 0.80 | 0.70 | 0.62 | 0.58 | -     |
| microSMD150F                   | 2.30                        | 2.02  | 1.76 | 1.50 | 1.43 | 1.24 | 1.11 | 1.00 | 0.85 | 0.72 | 0.65 | -     |
| microSMD175F                   | 2.80                        | 2.45  | 2.10 | 1.75 | 1.70 | 1.55 | 1.45 | 1.35 | 1.25 | 1.15 | 1.10 | -     |
| microSMD200F                   | 2.60                        | 2.44  | 2.35 | 2.00 | 1.96 | 1.78 | 1.67 | 1.50 | 1.45 | 1.15 | 1.10 | -     |
| <b>miniSMDC Series</b>         |                             |       |      |      |      |      |      |      |      |      |      |       |
| <b>Size 4532 mm/1812 mils</b>  |                             |       |      |      |      |      |      |      |      |      |      |       |
| miniSMDC014F                   | 0.23                        | 0.20  | 0.17 | 0.14 | 0.13 | 0.11 | 0.10 | 0.09 | 0.07 | 0.06 | 0.05 | -     |
| miniSMDC020F                   | 0.30                        | 0.27  | 0.23 | 0.20 | 0.19 | 0.17 | 0.15 | 0.13 | 0.12 | 0.10 | 0.09 | -     |
| miniSMDC050F                   | 0.59                        | 0.57  | 0.55 | 0.50 | 0.48 | 0.45 | 0.43 | 0.35 | 0.30 | 0.25 | 0.23 | -     |
| miniSMDC075F                   | 1.10                        | 0.99  | 0.87 | 0.75 | 0.72 | 0.63 | 0.57 | 0.49 | 0.45 | 0.39 | 0.35 | -     |
| miniSMDC075F/24                | 1.50                        | 1.25  | 1.00 | 0.75 | 0.73 | 0.65 | 0.60 | 0.55 | 0.50 | 0.45 | 0.43 | -     |
| miniSMDC100F                   | 1.60                        | 1.45  | 1.28 | 1.10 | 1.07 | 0.92 | 0.83 | 0.71 | 0.66 | 0.57 | 0.52 | -     |
| miniSMDC110F                   | 1.60                        | 1.45  | 1.28 | 1.10 | 1.07 | 0.92 | 0.83 | 0.71 | 0.66 | 0.57 | 0.52 | -     |
| miniSMDC110F/16                | 1.68                        | 1.49  | 1.30 | 1.10 | 1.05 | 0.92 | 0.83 | 0.75 | 0.64 | 0.55 | 0.50 | -     |
| miniSMDC110F/24                | 2.00                        | 1.70  | 1.40 | 1.10 | 1.06 | 0.95 | 0.88 | 0.80 | 0.73 | 0.65 | 0.61 | -     |
| miniSMDC125F                   | 2.00                        | 1.69  | 1.47 | 1.25 | 1.17 | 1.03 | 0.92 | 0.90 | 0.69 | 0.58 | 0.53 | -     |
| miniSMDC125F/16                | 2.00                        | 1.69  | 1.47 | 1.25 | 1.17 | 1.03 | 0.92 | 0.90 | 0.69 | 0.58 | 0.53 | -     |
| miniSMDC150F                   | 2.30                        | 2.05  | 1.77 | 1.50 | 1.44 | 1.23 | 1.09 | 0.95 | 0.82 | 0.68 | 0.61 | -     |
| miniSMDC150F/12                | 2.40                        | 2.10  | 1.80 | 1.50 | 1.44 | 1.25 | 1.13 | 1.00 | 0.88 | 0.75 | 0.69 | -     |
| <b>NEW</b> miniSMDC150F/16     | 2.40                        | 2.10  | 1.80 | 1.50 | 1.44 | 1.25 | 1.13 | 1.00 | 0.88 | 0.75 | 0.69 | -     |
| miniSMDC150F/24                | 2.10                        | 1.90  | 1.70 | 1.50 | 1.44 | 1.25 | 1.13 | 1.00 | 0.88 | 0.75 | 0.69 | -     |
| miniSMDC160F                   | 2.50                        | 2.19  | 1.89 | 1.60 | 1.53 | 1.31 | 1.16 | 1.10 | 0.95 | 0.79 | 0.71 | -     |
| miniSMDC200F                   | 2.60                        | 2.44  | 2.22 | 2.00 | 1.96 | 1.78 | 1.67 | 1.50 | 1.45 | 1.34 | 1.29 | -     |
| <b>NEW</b> miniSMDC200S        | 2.60                        | 2.40  | 2.10 | 2.00 | 1.93 | 1.77 | 1.66 | 1.60 | 1.44 | 1.33 | 1.27 | -     |
| miniSMDC260F                   | 3.40                        | 3.16  | 2.80 | 2.60 | 2.54 | 2.32 | 2.18 | 2.00 | 1.90 | 1.76 | 1.69 | -     |
| miniSMDC260F/12                | 3.40                        | 3.16  | 3.00 | 2.60 | 2.54 | 2.32 | 2.18 | 2.00 | 1.90 | 1.76 | 1.69 | -     |
| miniSMDC260F/13.2              | 3.40                        | 3.16  | 3.00 | 2.60 | 2.54 | 2.32 | 2.18 | 2.00 | 1.90 | 1.76 | 1.69 | -     |
| miniSMDC260F/16                | 3.50                        | 3.20  | 3.00 | 2.60 | 2.53 | 2.30 | 2.15 | 2.00 | 1.85 | 1.70 | 1.63 | -     |
| <b>miniSMDE Series</b>         |                             |       |      |      |      |      |      |      |      |      |      |       |
| <b>Size 11550 mm/4420 mils</b> |                             |       |      |      |      |      |      |      |      |      |      |       |
| miniSMDE190F                   | 3.16                        | 2.74  | 2.20 | 1.90 | 1.74 | 1.48 | 1.27 | 1.10 | 0.80 | 0.50 | 0.35 | -     |
| <b>midSMD Series</b>           |                             |       |      |      |      |      |      |      |      |      |      |       |
| <b>Size 5050 mm/2018 mils</b>  |                             |       |      |      |      |      |      |      |      |      |      |       |
| SMD030F-2018                   | 0.48                        | 0.42  | 0.35 | 0.30 | 0.28 | 0.24 | 0.21 | 0.17 | 0.15 | 0.12 | 0.10 | -     |
| decaSMDC050F/60                | 1.00                        | 0.85  | 0.70 | 0.55 | 0.53 | 0.45 | 0.40 | 0.35 | 0.30 | 0.25 | 0.23 | -     |
| SMD100F-2018                   | 1.59                        | 1.43  | 1.20 | 1.10 | 1.03 | 0.94 | 0.85 | 0.72 | 0.69 | 0.61 | 0.57 | -     |
| SMD150F-2018                   | 2.21                        | 1.97  | 1.70 | 1.50 | 1.43 | 1.26 | 1.15 | 1.00 | 0.91 | 0.79 | 0.73 | -     |
| SMD200F-2018                   | 2.81                        | 2.54  | 2.27 | 2.00 | 1.93 | 1.73 | 1.59 | 1.46 | 1.32 | 1.19 | 1.12 | -     |
| <b>SMD Series</b>              |                             |       |      |      |      |      |      |      |      |      |      |       |
| <b>Size 7555 mm/2920 mils</b>  |                             |       |      |      |      |      |      |      |      |      |      |       |
| SMD030F                        | 0.44                        | 0.39  | 0.32 | 0.30 | 0.28 | 0.26 | 0.23 | 0.19 | 0.18 | 0.17 | 0.15 | -     |
| SMD050F                        | 0.73                        | 0.65  | 0.55 | 0.50 | 0.47 | 0.43 | 0.39 | 0.33 | 0.31 | 0.28 | 0.26 | -     |
| SMD075F                        | 1.11                        | 0.99  | 0.84 | 0.75 | 0.71 | 0.63 | 0.57 | 0.49 | 0.45 | 0.39 | 0.36 | -     |
| SMD075F/60                     | 1.11                        | 0.99  | 0.84 | 0.75 | 0.71 | 0.63 | 0.57 | 0.49 | 0.45 | 0.39 | 0.36 | -     |
| SMD100F                        | 1.59                        | 1.43  | 1.20 | 1.10 | 1.03 | 0.94 | 0.85 | 0.72 | 0.69 | 0.61 | 0.57 | -     |
| SMD100F/33                     | 1.48                        | 1.35  | 1.20 | 1.10 | 1.06 | 0.98 | 0.91 | 0.83 | 0.79 | 0.73 | 0.69 | -     |
| SMDH120                        | 2.34                        | 1.96  | 1.58 | 1.20 | 1.15 | 1.02 | 0.92 | 0.83 | 0.74 | 0.65 | 0.60 | 0.26  |
| SMD125F                        | 1.89                        | 1.68  | 1.50 | 1.25 | 1.21 | 1.04 | 0.93 | 0.85 | 0.71 | 0.61 | 0.55 | -     |
| SMD260F                        | 3.82                        | 3.41  | 2.90 | 2.60 | 2.45 | 2.19 | 1.99 | 1.70 | 1.58 | 1.38 | 1.28 | -     |
| SMD300F                        | 4.13                        | 3.75  | 3.30 | 3.00 | 2.87 | 2.62 | 2.43 | 2.25 | 2.00 | 1.87 | 1.78 | -     |
| <b>SMD2 Series</b>             |                             |       |      |      |      |      |      |      |      |      |      |       |
| <b>Size 8763 mm/3425 mils</b>  |                             |       |      |      |      |      |      |      |      |      |      |       |
| SMD150F                        | 2.30                        | 2.04  | 1.80 | 1.50 | 1.45 | 1.23 | 1.10 | 0.99 | 0.83 | 0.70 | 0.63 | -     |
| SMD150F/33                     | 2.30                        | 2.04  | 1.80 | 1.50 | 1.45 | 1.23 | 1.10 | 0.99 | 0.83 | 0.70 | 0.63 | -     |
| SMDH160                        | 2.14                        | 1.96  | 1.78 | 1.60 | 1.56 | 1.42 | 1.33 | 1.24 | 1.15 | 1.06 | 1.02 | 0.44  |
| SMD185F                        | 2.54                        | 2.29  | 2.20 | 1.85 | 1.80 | 1.55 | 1.43 | 1.31 | 1.19 | 1.06 | 1.00 | -     |
| SMD200F                        | 3.01                        | 2.67  | 2.30 | 2.00 | 1.90 | 1.66 | 1.50 | 1.30 | 1.16 | 0.99 | 0.91 | -     |
| SMD250F                        | 3.72                        | 3.31  | 2.80 | 2.50 | 2.35 | 2.09 | 1.89 | 1.60 | 1.48 | 1.28 | 1.18 | -     |

15

**Figure S1 Thermal Derating Curve for Surface-mount Devices**

- A =** picoSMD / nanoSMD / microSMD / miniSMD / decaSMD and SMD
- B =** miniSMDE190F
- C =** SMDH120 and SMDH160



**Table S3 Electrical Characteristics for Surface-mount Devices at Room Temperature**

| Part Number                   | I <sub>H</sub> (A) | I <sub>T</sub> (A) | V <sub>MAX</sub> (V <sub>DC</sub> ) | I <sub>MAX</sub> (A) | P <sub>D</sub> MAX (W) | Max. Time-to-Trip (A) (S) |       | R <sub>MIN</sub> (Ω) | R <sub>1MAX</sub> (Ω) | Figure for Dimensions |
|-------------------------------|--------------------|--------------------|-------------------------------------|----------------------|------------------------|---------------------------|-------|----------------------|-----------------------|-----------------------|
| <b>picoSMD Series</b>         |                    |                    |                                     |                      |                        |                           |       |                      |                       |                       |
| <b>Size 2012 mm/0805 mils</b> |                    |                    |                                     |                      |                        |                           |       |                      |                       |                       |
| picoSMD035F                   | 0.35               | 0.75               | 6                                   | 20                   | 0.60                   | 3.50                      | 0.10  | 0.42                 | 1.40                  | S6                    |
| <b>nanoSMDC Series</b>        |                    |                    |                                     |                      |                        |                           |       |                      |                       |                       |
| <b>Size 3216 mm/1206 mils</b> |                    |                    |                                     |                      |                        |                           |       |                      |                       |                       |
| nanoSMDC012F                  | 0.12               | 0.39               | 48                                  | 10                   | 0.50                   | 1.00                      | 0.20  | 1.40                 | 6.50                  | S2                    |
| nanoSMDC016F                  | 0.16               | 0.45               | 48                                  | 10                   | 0.50                   | 1.00                      | 0.30  | 1.10                 | 5.00                  | S2                    |
| nanoSMDC020F                  | 0.20               | 0.42               | 24                                  | 100                  | 0.60                   | 8.00                      | 0.10  | 0.65                 | 3.10                  | S2                    |
| nanoSMDC035F                  | 0.35               | 0.75               | 16                                  | 20                   | 0.60                   | 3.50                      | 0.10  | 0.45                 | 1.35                  | S2                    |
| nanoSMDC050F/13.2             | 0.50               | 1.10               | 13.2                                | 100                  | 0.80                   | 8.00                      | 0.10  | 0.20                 | 0.75                  | S2                    |
| nanoSMDC075F                  | 0.75               | 1.50               | 6                                   | 100                  | 0.80                   | 8.00                      | 0.10  | 0.09                 | 0.30                  | S2                    |
| nanoSMDC110F                  | 1.10               | 2.20               | 6                                   | 100                  | 0.80                   | 8.00                      | 0.10  | 0.07                 | 0.20                  | S2                    |
| nanoSMDC150F                  | 1.50               | 3.00               | 6                                   | 100                  | 0.80                   | 8.00                      | 0.30  | 0.04                 | 0.11                  | S2                    |
| coming soon nanoSMDC200F*     | 2.00               | 4.00               | 6                                   | 100                  | 1.00                   | 8.00                      | TBD   | 0.02                 | 0.07                  | S2                    |
| <b>microSMD Series</b>        |                    |                    |                                     |                      |                        |                           |       |                      |                       |                       |
| <b>Size 3225 mm/1210 mils</b> |                    |                    |                                     |                      |                        |                           |       |                      |                       |                       |
| microSMD005F                  | 0.05               | 0.15               | 30                                  | 10                   | 1.00                   | 0.25                      | 1.50  | 3.60                 | 50.00                 | S3                    |
| microSMD010F                  | 0.10               | 0.25               | 30                                  | 10                   | 0.80                   | 0.50                      | 1.00  | 2.10                 | 15.00                 | S2                    |
| microSMD035F                  | 0.35               | 0.75               | 6                                   | 40                   | 0.80                   | 8.00                      | 0.20  | 0.32                 | 1.30                  | S2                    |
| microSMD050F                  | 0.50               | 1.00               | 13.2                                | 40                   | 0.80                   | 8.00                      | 0.05  | 0.25                 | 0.90                  | S2                    |
| microSMD075F                  | 0.75               | 1.50               | 6                                   | 40                   | 0.80                   | 8.00                      | 0.10  | 0.11                 | 0.40                  | S2                    |
| microSMD110F                  | 1.10               | 2.20               | 6                                   | 40                   | 0.80                   | 8.00                      | 0.20  | 0.07                 | 0.21                  | S2                    |
| microSMD150F                  | 1.50               | 3.00               | 6                                   | 40                   | 0.80                   | 8.00                      | 1.00  | 0.04                 | 0.11                  | S2                    |
| microSMD175F                  | 1.75               | 3.50               | 6                                   | 40                   | 0.80                   | 8.00                      | 0.80  | 0.025                | 0.08                  | S2                    |
| microSMD200F                  | 2.00               | 4.00               | 6                                   | 100                  | 0.80                   | 8.00                      | 2.50  | 0.020                | 0.06                  | S2                    |
| <b>miniSMDC Series</b>        |                    |                    |                                     |                      |                        |                           |       |                      |                       |                       |
| <b>Size 4532 mm/1812 mils</b> |                    |                    |                                     |                      |                        |                           |       |                      |                       |                       |
| miniSMDC014F                  | 0.14               | 0.28               | 60                                  | 10                   | 0.75                   | 8.00                      | 0.008 | 1.50                 | 6.00                  | S2                    |
| miniSMDC020F                  | 0.20               | 0.40               | 30                                  | 10                   | 0.80                   | 8.00                      | 0.02  | 0.60                 | 3.30                  | S2                    |
| miniSMDC050F                  | 0.50               | 1.00               | 24                                  | 100                  | 0.80                   | 8.00                      | 0.15  | 0.15                 | 1.00                  | S2                    |
| miniSMDC075F                  | 0.75               | 1.50               | 13.2                                | 100                  | 1.00                   | 8.00                      | 0.20  | 0.11                 | 0.45                  | S2                    |
| miniSMDC075F/24               | 0.75               | 1.50               | 24                                  | 40                   | 0.80                   | 8.00                      | 0.30  | 0.09                 | 0.29                  | S2                    |
| miniSMDC100F                  | 1.10               | 2.20               | 8                                   | 100                  | 1.20                   | 8.00                      | 0.30  | 0.04                 | 0.21                  | S2                    |
| miniSMDC110F                  | 1.10               | 2.20               | 8                                   | 100                  | 1.20                   | 8.00                      | 0.30  | 0.04                 | 0.21                  | S2                    |
| miniSMDC110F/16               | 1.10               | 2.20               | 16                                  | 100                  | 0.80                   | 8.00                      | 0.30  | 0.06                 | 0.18                  | S2                    |
| miniSMDC110F/24               | 1.10               | 2.20               | 24                                  | 20                   | 0.80                   | 8.00                      | 0.50  | 0.06                 | 0.18                  | S2                    |
| miniSMDC125F                  | 1.25               | 2.50               | 6                                   | 100                  | 0.80                   | 8.00                      | 0.40  | 0.05                 | 0.14                  | S2                    |
| miniSMDC125F/16               | 1.25               | 2.50               | 16                                  | 100                  | 0.80                   | 8.00                      | 0.40  | 0.05                 | 0.14                  | S2                    |
| miniSMDC150F                  | 1.50               | 3.00               | 6                                   | 100                  | 0.80                   | 8.00                      | 0.50  | 0.04                 | 0.11                  | S2                    |
| miniSMDC150F/12               | 1.50               | 2.80               | 12                                  | 100                  | 0.80                   | 8.00                      | 0.50  | 0.04                 | 0.11                  | S2                    |
| NEW miniSMDC150F/16           | 1.50               | 2.80               | 16                                  | 100                  | 0.80                   | 8.00                      | 0.50  | 0.04                 | 0.11                  | S2                    |
| miniSMDC150F/24               | 1.50               | 3.00               | 24                                  | 20                   | 1.00                   | 8.00                      | 1.50  | 0.04                 | 0.12                  | S2                    |
| miniSMDC160F                  | 1.60               | 3.20               | 9                                   | 100                  | 0.80                   | 8.00                      | 1.00  | 0.03                 | 0.10                  | S2                    |

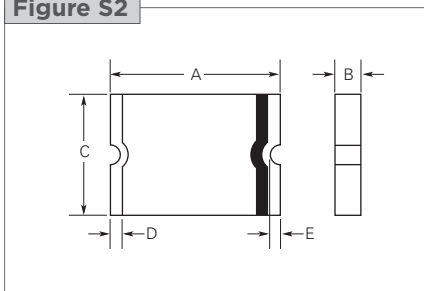
\* Data is preliminary

**Table S3 Electrical Characteristics for Surface-mount Devices at Room Temperature** ... Cont'd

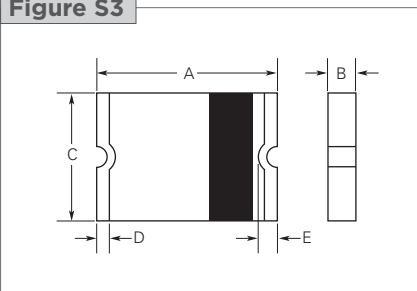
| Part Number                                       | $I_H$<br>(A) | $I_T$<br>(A) | $V_{MAX}$<br>(V <sub>DC</sub> ) | $I_{MAX}$<br>(A) | $P_{D MAX}$<br>(W) | Max. Time-to-Trip<br>(A) (S) |       | $R_{MIN}$<br>( $\Omega$ ) | $R_{1MAX}$<br>( $\Omega$ ) | Figure for<br>Dimensions |
|---|--------------|--------------|---------------------------------|------------------|--------------------|------------------------------|-------|---------------------------|----------------------------|--------------------------|
| <b>miniSMDC Series</b><br>Size 4532 mm/1812 mils  |              |              |                                 |                  |                    |                              |       |                           |                            |                          |
| miniSMDC200F                                      | 2.00         | 4.00         | 8                               | 100              | 1.00               | 8.00                         | 5.00  | 0.020                     | 0.070                      | S2                       |
| <b>NEW</b> miniSMDC200S                           | 2.00         | 4.00         | 8                               | 100              | 1.00               | 8.00                         | 5.00  | 0.020                     | 0.060                      | S2                       |
| miniSMDC260F                                      | 2.60         | 5.00         | 6                               | 100              | 1.00               | 8.00                         | 5.00  | 0.015                     | 0.043                      | S2                       |
| miniSMDC260F/12                                   | 2.60         | 5.00         | 12                              | 100              | 1.00               | 8.00                         | 5.00  | 0.015                     | 0.047                      | S2                       |
| miniSMDC260F/13.2                                 | 2.60         | 5.00         | 13.2                            | 100              | 1.20               | 8.00                         | 5.00  | 0.015                     | 0.050                      | S2                       |
| miniSMDC260F/16                                   | 2.60         | 5.00         | 16                              | 100              | 1.20               | 8.00                         | 5.00  | 0.015                     | 0.050                      | S2                       |
| <b>miniSMDE Series</b><br>Size 11550 mm/4420 mils |              |              |                                 |                  |                    |                              |       |                           |                            |                          |
| miniSMDE190F                                      | 1.90         | 3.80         | 16                              | 100              | 1.50               | 10.00                        | 2.00  | 0.024                     | 0.08                       | S2                       |
| <b>midSMD Series</b><br>Size 5050 mm/2018 mils    |              |              |                                 |                  |                    |                              |       |                           |                            |                          |
| SMD030F-2018                                      | 0.30         | 0.80         | 60                              | 20               | 1.50               | 1.50                         | 1.50  | 0.500                     | 2.30                       | S4                       |
| decaSMD050F/60                                    | 0.55         | 1.10         | 60                              | 10               | 1.00               | 8.00                         | 0.10  | 0.400                     | 1.10                       | S2                       |
| SMD100F-2018                                      | 1.10         | 2.20         | 15                              | 40               | 1.40               | 8.00                         | 0.50  | 0.100                     | 0.40                       | S4                       |
| SMD150F-2018                                      | 1.50         | 3.00         | 15                              | 40               | 1.80               | 8.00                         | 1.00  | 0.070                     | 0.18                       | S4                       |
| SMD200F-2018                                      | 2.00         | 4.20         | 6                               | 40               | 1.50               | 8.00                         | 3.00  | 0.048                     | 0.10                       | S4                       |
| <b>SMD Series</b><br>Size 7555 mm/2920 mils       |              |              |                                 |                  |                    |                              |       |                           |                            |                          |
| SMD030F   | 0.30         | 0.60         | 60                              | 10               | 1.70               | 1.50                         | 3.00  | 1.200                     | 4.800                      | S5                       |
| SMD050F   | 0.50         | 1.00         | 60                              | 10               | 1.70               | 2.50                         | 4.00  | 0.350                     | 1.400                      | S5                       |
| SMD075F   | 0.75         | 1.50         | 30                              | 40               | 1.70               | 8.00                         | 0.30  | 0.350                     | 1.000                      | S5                       |
| SMD075F/60  | 0.75         | 1.50         | 60                              | 10               | 1.70               | 8.00                         | 0.30  | 0.350                     | 1.000                      | S5                       |
| SMD100F   | 1.10         | 2.20         | 30                              | 40               | 1.70               | 8.00                         | 0.50  | 0.120                     | 0.480                      | S5                       |
| SMD100F/33  | 1.10         | 2.20         | 33                              | 40               | 1.70               | 8.00                         | 0.50  | 0.120                     | 0.410                      | S5                       |
| SMDH120   | 1.20         | 2.30         | 16                              | 50               | 2.00               | 8.00                         | 2.00  | 0.150                     | 0.340                      | S5                       |
| SMD125F   | 1.25         | 2.50         | 15                              | 40               | 1.70               | 8.00                         | 2.00  | 0.070                     | 0.250                      | S5                       |
| SMD260F   | 2.60         | 5.20         | 6                               | 40               | 1.70               | 8.00                         | 20.00 | 0.025                     | 0.075                      | S5                       |
| SMD300F   | 3.00         | 6.00         | 6                               | 40               | 1.50               | 8.00                         | 35.00 | 0.015                     | 0.048                      | S5                       |
| <b>SMD2 Devices</b><br>Size 8763 mm/3425 mils     |              |              |                                 |                  |                    |                              |       |                           |                            |                          |
| SMD150F   | 1.50         | 3.00         | 15                              | 40               | 1.90               | 8.00                         | 5.00  | 0.060                     | 0.250                      | S5                       |
| SMD150F/33  | 1.50         | 3.00         | 33                              | 40               | 1.90               | 8.00                         | 5.00  | 0.080                     | 0.230                      | S5                       |
| SMDH160   | 1.60         | 3.20         | 16                              | 70               | 2.20               | 8.00                         | 15.00 | 0.050                     | 0.150                      | S5                       |
| SMD185F   | 1.85         | 3.60         | 33                              | 40               | 1.50               | 8.00                         | 5.00  | 0.065                     | 0.165                      | S5                       |
| SMD200F   | 2.00         | 4.00         | 15                              | 40               | 1.90               | 8.00                         | 12.00 | 0.050                     | 0.125                      | S5                       |
| SMD250F   | 2.50         | 5.00         | 15                              | 40               | 1.90               | 8.00                         | 25.00 | 0.035                     | 0.085                      | S5                       |

**Figure S2-S6 Dimension Figures for Surface-mount Devices**

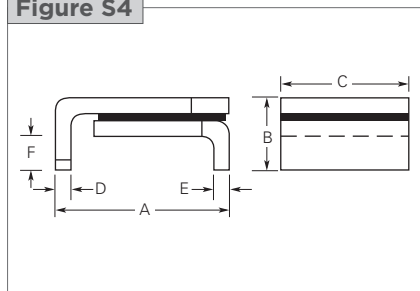
**Figure S2**



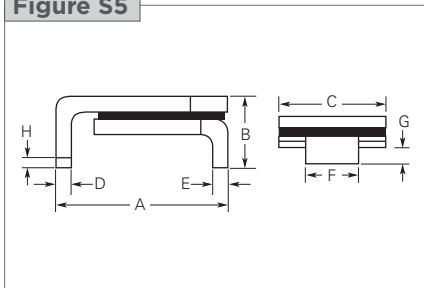
**Figure S3**



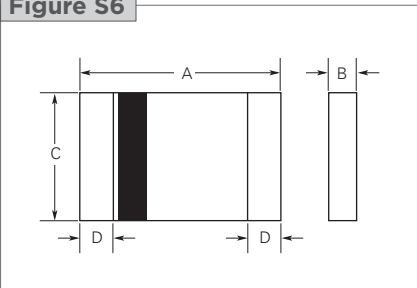
**Figure S4**



**Figure S5**



**Figure S6**



15

**Table S4 Dimensions for Surface-mount Devices in Millimeters (Inches)**

| Part Number                   | A               |                 | B                |                 | C               |                 | D               |                 | E                |      | F    |      | G    |      | H    | Figure |
|-------------------------------|-----------------|-----------------|------------------|-----------------|-----------------|-----------------|-----------------|-----------------|------------------|------|------|------|------|------|------|--------|
|                               | Min.            | Max.            | Min.             | Max.            | Min.            | Max.            | Min.            | Max.            | Min.             | Max. | Min. | Max. | Min. | Max. | Min. |        |
| <b>picoSMD Series</b>         |                 |                 |                  |                 |                 |                 |                 |                 |                  |      |      |      |      |      |      |        |
| <b>Size 2012 mm/0805 mils</b> |                 |                 |                  |                 |                 |                 |                 |                 |                  |      |      |      |      |      |      |        |
| picoSMD035F                   | 1.80<br>(0.071) | 2.21<br>(0.087) | 0.38<br>(0.015)  | 0.81<br>(0.032) | 1.17<br>(0.046) | 1.45<br>(0.057) | 0.15<br>(0.006) | 0.60<br>(0.024) | -                | -    | -    | -    | -    | -    | -    | S6     |
| <b>nanoSMDC Series</b>        |                 |                 |                  |                 |                 |                 |                 |                 |                  |      |      |      |      |      |      |        |
| <b>Size 3216 mm/1206 mils</b> |                 |                 |                  |                 |                 |                 |                 |                 |                  |      |      |      |      |      |      |        |
| nanoSMDC012F                  | 3.00<br>(0.118) | 3.40<br>(0.134) | 0.62<br>(0.024)  | 1.00<br>(0.039) | 1.37<br>(0.054) | 1.80<br>(0.071) | 0.25<br>(0.010) | 0.75<br>(0.030) | 0.076<br>(0.003) | -    | -    | -    | -    | -    | -    | S2     |
| nanoSMDC016F                  | 3.00<br>(0.118) | 3.40<br>(0.134) | 0.62<br>(0.024)  | 1.00<br>(0.039) | 1.37<br>(0.054) | 1.80<br>(0.071) | 0.25<br>(0.010) | 0.75<br>(0.030) | 0.076<br>(0.003) | -    | -    | -    | -    | -    | -    | S2     |
| nanoSMDC020F                  | 3.00<br>(0.118) | 3.40<br>(0.134) | 0.58<br>(0.023)  | 0.82<br>(0.032) | 1.37<br>(0.054) | 1.80<br>(0.071) | 0.25<br>(0.010) | 0.75<br>(0.030) | 0.076<br>(0.003) | -    | -    | -    | -    | -    | -    | S2     |
| nanoSMDC035F                  | 3.00<br>(0.118) | 3.40<br>(0.134) | 0.58<br>(0.023)  | 0.82<br>(0.032) | 1.37<br>(0.054) | 1.80<br>(0.071) | 0.25<br>(0.010) | 0.75<br>(0.030) | 0.076<br>(0.003) | -    | -    | -    | -    | -    | -    | S2     |
| nanoSMDC050F/13.2             | 3.00<br>(0.118) | 3.40<br>(0.134) | 0.50<br>(0.019)  | 0.74<br>(0.029) | 1.37<br>(0.054) | 1.80<br>(0.071) | 0.25<br>(0.010) | 0.75<br>(0.030) | 0.076<br>(0.003) | -    | -    | -    | -    | -    | -    | S2     |
| nanoSMDC075F                  | 3.00<br>(0.118) | 3.40<br>(0.134) | 0.44<br>(0.017)  | 0.68<br>(0.027) | 1.37<br>(0.054) | 1.80<br>(0.071) | 0.25<br>(0.010) | 0.75<br>(0.030) | 0.076<br>(0.003) | -    | -    | -    | -    | -    | -    | S2     |
| nanoSMDC110F                  | 3.00<br>(0.118) | 3.40<br>(0.134) | 0.28<br>(0.011)  | 0.67<br>(0.026) | 1.37<br>(0.054) | 1.80<br>(0.071) | 0.25<br>(0.010) | 0.75<br>(0.030) | 0.076<br>(0.003) | -    | -    | -    | -    | -    | -    | S2     |
| nanoSMDC150F                  | 3.00<br>(0.118) | 3.40<br>(0.134) | 0.55<br>(0.022)  | 0.89<br>(0.035) | 1.37<br>(0.054) | 1.80<br>(0.071) | 0.25<br>(0.010) | 0.75<br>(0.030) | 0.076<br>(0.003) | -    | -    | -    | -    | -    | -    | S2     |
| coming soon nanoSMDC200F*     | 3.00<br>(0.118) | 3.40<br>(0.134) | 0.68<br>(0.027)  | 1.25<br>(0.049) | 1.37<br>(0.054) | 1.80<br>(0.071) | 0.25<br>(0.010) | 0.75<br>(0.030) | 0.076<br>(0.003) | -    | -    | -    | -    | -    | -    | S2     |
| <b>microSMD Series</b>        |                 |                 |                  |                 |                 |                 |                 |                 |                  |      |      |      |      |      |      |        |
| <b>Size 3225 mm/1210 mils</b> |                 |                 |                  |                 |                 |                 |                 |                 |                  |      |      |      |      |      |      |        |
| microSMD005F                  | 3.0<br>(0.118)  | 3.43<br>(0.135) | 0.50<br>(0.019)  | 0.85<br>(0.034) | 2.35<br>(0.092) | 2.80<br>(0.110) | 0.25<br>(0.010) | 0.75<br>(0.030) | 0.076<br>(0.003) | -    | -    | -    | -    | -    | -    | S3     |
| microSMD010F                  | 3.0<br>(0.118)  | 3.43<br>(0.135) | 0.50<br>(0.019)  | 0.85<br>(0.034) | 2.35<br>(0.092) | 2.80<br>(0.110) | 0.25<br>(0.010) | 0.75<br>(0.030) | 0.076<br>(0.003) | -    | -    | -    | -    | -    | -    | S2     |
| microSMD035F                  | 3.0<br>(0.118)  | 3.43<br>(0.135) | 0.38<br>(0.015)  | 0.62<br>(0.025) | 2.35<br>(0.092) | 2.80<br>(0.110) | 0.25<br>(0.010) | 0.75<br>(0.030) | 0.076<br>(0.003) | -    | -    | -    | -    | -    | -    | S2     |
| microSMD050F                  | 3.0<br>(0.118)  | 3.43<br>(0.135) | 0.38<br>(0.015)  | 0.62<br>(0.025) | 2.35<br>(0.092) | 2.80<br>(0.110) | 0.25<br>(0.010) | 0.75<br>(0.030) | 0.076<br>(0.003) | -    | -    | -    | -    | -    | -    | S2     |
| microSMD075F                  | 3.0<br>(0.118)  | 3.43<br>(0.135) | 0.38<br>(0.015)  | 0.62<br>(0.025) | 2.35<br>(0.092) | 2.80<br>(0.110) | 0.25<br>(0.010) | 0.75<br>(0.030) | 0.076<br>(0.003) | -    | -    | -    | -    | -    | -    | S2     |
| microSMD110F                  | 3.0<br>(0.118)  | 3.43<br>(0.135) | 0.28<br>(0.011)  | 0.48<br>(0.019) | 2.35<br>(0.092) | 2.80<br>(0.110) | 0.25<br>(0.010) | 0.75<br>(0.030) | 0.076<br>(0.003) | -    | -    | -    | -    | -    | -    | S2     |
| microSMD150F                  | 3.0<br>(0.118)  | 3.43<br>(0.135) | 0.51<br>(0.020)  | 1.22<br>(0.048) | 2.35<br>(0.092) | 2.80<br>(0.110) | 0.25<br>(0.010) | 0.75<br>(0.030) | 0.076<br>(0.003) | -    | -    | -    | -    | -    | -    | S2     |
| microSMD175F                  | 3.0<br>(0.118)  | 3.43<br>(0.135) | 0.40<br>(0.016)  | 0.76<br>(0.030) | 2.35<br>(0.092) | 2.80<br>(0.110) | 0.25<br>(0.010) | 0.75<br>(0.030) | 0.076<br>(0.003) | -    | -    | -    | -    | -    | -    | S2     |
| microSMD200F                  | 3.0<br>(0.118)  | 3.43<br>(0.135) | 0.79<br>(0.031)  | 1.17<br>(0.046) | 2.35<br>(0.092) | 2.80<br>(0.110) | 0.25<br>(0.010) | 0.75<br>(0.030) | 0.076<br>(0.003) | -    | -    | -    | -    | -    | -    | S2     |
| <b>miniSMDC Series</b>        |                 |                 |                  |                 |                 |                 |                 |                 |                  |      |      |      |      |      |      |        |
| <b>Size 4532 mm/1812 mils</b> |                 |                 |                  |                 |                 |                 |                 |                 |                  |      |      |      |      |      |      |        |
| miniSMDC014F                  | 4.37<br>(0.172) | 4.73<br>(0.186) | 0.635<br>(0.025) | 0.89<br>(0.035) | 3.07<br>(0.121) | 3.41<br>(0.134) | 0.25<br>(0.010) | 0.95<br>(0.040) | 0.20<br>(0.008)  | -    | -    | -    | -    | -    | -    | S2     |
| miniSMDC020F                  | 4.37<br>(0.172) | 4.73<br>(0.186) | 0.635<br>(0.025) | 0.89<br>(0.035) | 3.07<br>(0.121) | 3.41<br>(0.134) | 0.25<br>(0.010) | 0.95<br>(0.040) | 0.20<br>(0.008)  | -    | -    | -    | -    | -    | -    | S2     |
| miniSMDC050F                  | 4.37<br>(0.172) | 4.73<br>(0.186) | 0.38<br>(0.015)  | 0.62<br>(0.025) | 3.07<br>(0.121) | 3.41<br>(0.134) | 0.25<br>(0.010) | 0.95<br>(0.040) | 0.20<br>(0.008)  | -    | -    | -    | -    | -    | -    | S2     |
| miniSMDC075F                  | 4.37<br>(0.172) | 4.73<br>(0.186) | 0.38<br>(0.015)  | 0.62<br>(0.025) | 3.07<br>(0.121) | 3.41<br>(0.134) | 0.25<br>(0.010) | 0.95<br>(0.040) | 0.20<br>(0.008)  | -    | -    | -    | -    | -    | -    | S2     |
| miniSMDC075F/24               | 4.37<br>(0.172) | 4.83<br>(0.190) | 0.81<br>(0.032)  | 1.46<br>(0.057) | 3.07<br>(0.121) | 3.41<br>(0.134) | 0.25<br>(0.010) | 0.95<br>(0.040) | 0.20<br>(0.008)  | -    | -    | -    | -    | -    | -    | S2     |
| miniSMDC100F                  | 4.37<br>(0.172) | 4.73<br>(0.186) | 0.38<br>(0.015)  | 0.62<br>(0.025) | 3.07<br>(0.121) | 3.41<br>(0.134) | 0.25<br>(0.010) | 0.95<br>(0.040) | 0.20<br>(0.008)  | -    | -    | -    | -    | -    | -    | S2     |
| miniSMDC110F                  | 4.37<br>(0.172) | 4.73<br>(0.186) | 0.38<br>(0.015)  | 0.62<br>(0.025) | 3.07<br>(0.121) | 3.41<br>(0.134) | 0.25<br>(0.010) | 0.95<br>(0.040) | 0.20<br>(0.008)  | -    | -    | -    | -    | -    | -    | S2     |
| miniSMDC110F/16               | 4.37<br>(0.172) | 4.83<br>(0.190) | 0.28<br>(0.011)  | 0.48<br>(0.019) | 3.07<br>(0.121) | 3.41<br>(0.134) | 0.25<br>(0.010) | 0.95<br>(0.040) | 0.20<br>(0.008)  | -    | -    | -    | -    | -    | -    | S2     |
| miniSMDC110F/24               | 4.37<br>(0.172) | 4.83<br>(0.190) | 0.81<br>(0.032)  | 1.46<br>(0.057) | 3.07<br>(0.121) | 3.41<br>(0.134) | 0.25<br>(0.010) | 0.95<br>(0.040) | 0.20<br>(0.008)  | -    | -    | -    | -    | -    | -    | S2     |

\* Data is preliminary

**Table S4 Dimensions for Surface-mount Devices in Millimeters (Inches)**

... Cont'd

| Part Number                    | A                |                  | B               |                 | C               |                 | D               |                 | E                |                 | F               |                 | G               |                 | H               | Figure |
|--------------------------------|------------------|------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|--------|
|                                | Min.             | Max.             | Min.            | Max.            | Min.            | Max.            | Min.            | Max.            | Min.             | Max.            | Min.            | Max.            | Min.            | Max.            | Min.            |        |
| <b>miniSMDC Series</b>         |                  |                  |                 |                 |                 |                 |                 |                 |                  |                 |                 |                 |                 |                 |                 |        |
| <b>Size 4532 mm/1812 mils</b>  |                  |                  |                 |                 |                 |                 |                 |                 |                  |                 |                 |                 |                 |                 |                 |        |
| miniSMDC125F                   | 4.37<br>(0.172)  | 4.73<br>(0.186)  | 0.28<br>(0.011) | 0.48<br>(0.019) | 3.07<br>(0.121) | 3.41<br>(0.134) | 0.25<br>(0.010) | 0.95<br>(0.040) | 0.20<br>(0.008)  | -               | -               | -               | -               | -               | -               | S2     |
| miniSMDC125F/16                | 4.37<br>(0.172)  | 4.83<br>(0.190)  | 0.28<br>(0.011) | 0.48<br>(0.019) | 3.07<br>(0.121) | 3.41<br>(0.134) | 0.25<br>(0.010) | 0.95<br>(0.040) | 0.20<br>(0.008)  | -               | -               | -               | -               | -               | -               | S2     |
| miniSMDC150F                   | 4.37<br>(0.172)  | 4.73<br>(0.186)  | 0.28<br>(0.011) | 0.48<br>(0.019) | 3.07<br>(0.121) | 3.41<br>(0.134) | 0.25<br>(0.010) | 0.95<br>(0.040) | 0.20<br>(0.008)  | -               | -               | -               | -               | -               | -               | S2     |
| miniSMDC150F/12                | 4.37<br>(0.172)  | 4.83<br>(0.190)  | 0.28<br>(0.011) | 0.48<br>(0.019) | 3.07<br>(0.121) | 3.41<br>(0.134) | 0.25<br>(0.010) | 0.95<br>(0.040) | 0.20<br>(0.008)  | -               | -               | -               | -               | -               | -               | S2     |
| <b>NEW</b> miniSMDC150F/16     | 4.37<br>(0.172)  | 4.83<br>(0.190)  | 0.28<br>(0.011) | 0.48<br>(0.019) | 3.07<br>(0.121) | 3.41<br>(0.134) | 0.25<br>(0.010) | 0.95<br>(0.040) | 0.20<br>(0.008)  | -               | -               | -               | -               | -               | -               | S2     |
| miniSMDC150F/24                | 4.37<br>(0.172)  | 4.83<br>(0.190)  | 1.00<br>(0.040) | 1.94<br>(0.077) | 3.07<br>(0.121) | 3.41<br>(0.134) | 0.25<br>(0.010) | 0.95<br>(0.040) | 0.20<br>(0.008)  | -               | -               | -               | -               | -               | -               | S2     |
| miniSMDC160F                   | 4.37<br>(0.172)  | 4.73<br>(0.186)  | 0.28<br>(0.011) | 0.48<br>(0.019) | 3.07<br>(0.121) | 3.41<br>(0.134) | 0.25<br>(0.010) | 0.95<br>(0.040) | 0.20<br>(0.008)  | -               | -               | -               | -               | -               | -               | S2     |
| miniSMDC200F                   | 4.37<br>(0.172)  | 4.73<br>(0.186)  | 0.51<br>(0.020) | 1.22<br>(0.048) | 3.07<br>(0.121) | 3.41<br>(0.134) | 0.25<br>(0.010) | 0.95<br>(0.040) | 0.20<br>(0.008)  | -               | -               | -               | -               | -               | -               | S2     |
| <b>NEW</b> miniSMDC200S        | 4.37<br>(0.172)  | 4.73<br>(0.186)  | 0.36<br>(0.014) | 0.60<br>(0.024) | 3.07<br>(0.121) | 3.41<br>(0.134) | 0.25<br>(0.010) | 0.95<br>(0.040) | 0.20<br>(0.008)  | -               | -               | -               | -               | -               | -               | S2     |
| miniSMDC260F                   | 4.37<br>(0.172)  | 4.73<br>(0.186)  | 0.48<br>(0.019) | 0.78<br>(0.031) | 3.07<br>(0.121) | 3.41<br>(0.134) | 0.25<br>(0.010) | 0.95<br>(0.040) | 0.20<br>(0.008)  | -               | -               | -               | -               | -               | -               | S2     |
| miniSMDC260F/12                | 4.37<br>(0.172)  | 4.83<br>(0.190)  | 1.02<br>(0.042) | 1.52<br>(0.060) | 3.07<br>(0.121) | 3.41<br>(0.134) | 0.25<br>(0.010) | 0.95<br>(0.040) | 0.20<br>(0.008)  | -               | -               | -               | -               | -               | -               | S2     |
| miniSMDC260F/13.2              | 4.37<br>(0.172)  | 4.83<br>(0.190)  | 1.02<br>(0.042) | 1.52<br>(0.060) | 3.07<br>(0.121) | 3.41<br>(0.134) | 0.25<br>(0.010) | 0.95<br>(0.040) | 0.20<br>(0.008)  | -               | -               | -               | -               | -               | -               | S2     |
| miniSMDC260F/16                | 4.37<br>(0.172)  | 4.83<br>(0.190)  | 1.02<br>(0.042) | 1.52<br>(0.060) | 3.07<br>(0.121) | 3.41<br>(0.134) | 0.25<br>(0.010) | 0.95<br>(0.040) | 0.20<br>(0.008)  | -               | -               | -               | -               | -               | -               | S2     |
| <b>miniSMDE Series</b>         |                  |                  |                 |                 |                 |                 |                 |                 |                  |                 |                 |                 |                 |                 |                 |        |
| <b>Size 11550 mm/4420 mils</b> |                  |                  |                 |                 |                 |                 |                 |                 |                  |                 |                 |                 |                 |                 |                 |        |
| miniSMDE190F                   | 11.15<br>(0.439) | 11.51<br>(0.453) | 0.33<br>(0.013) | 0.53<br>(0.021) | 4.83<br>(0.190) | 5.33<br>(0.210) | 0.51<br>(0.020) | 1.02<br>(0.040) | 0.381<br>(0.015) | -               | -               | -               | -               | -               | -               | S2     |
| <b>midSMD Series</b>           |                  |                  |                 |                 |                 |                 |                 |                 |                  |                 |                 |                 |                 |                 |                 |        |
| <b>Size 5050 mm/2018 mils</b>  |                  |                  |                 |                 |                 |                 |                 |                 |                  |                 |                 |                 |                 |                 |                 |        |
| SMD030F-2018                   | 4.72<br>(0.186)  | 5.44<br>(0.214)  | -               | 1.78<br>(0.070) | 4.22<br>(0.166) | 4.93<br>(0.194) | 0.25<br>(0.010) | 0.36<br>(0.014) | 0.25<br>(0.010)  | 0.36<br>(0.014) | 0.30<br>(0.012) | 0.46<br>(0.018) | -               | -               | -               | S4     |
| decaSMD050F/60                 | 4.70<br>(0.185)  | 5.31<br>(0.209)  | 0.63<br>(0.025) | 0.89<br>(0.035) | 4.19<br>(0.165) | 4.81<br>(0.189) | 0.25<br>(0.010) | 0.95<br>(0.040) | 0.25<br>(0.010)  | -               | -               | -               | -               | -               | -               | S2     |
| SMD100F-2018                   | 4.72<br>(0.186)  | 5.44<br>(0.214)  | -               | 1.52<br>(0.060) | 4.22<br>(0.166) | 4.93<br>(0.194) | 0.25<br>(0.010) | 0.36<br>(0.014) | 0.25<br>(0.010)  | 0.36<br>(0.014) | 0.30<br>(0.012) | 0.46<br>(0.018) | -               | -               | -               | S4     |
| SMD150F-2018                   | 4.72<br>(0.186)  | 5.44<br>(0.214)  | -               | 1.52<br>(0.060) | 4.22<br>(0.166) | 4.93<br>(0.194) | 0.25<br>(0.010) | 0.36<br>(0.014) | 0.25<br>(0.010)  | 0.36<br>(0.014) | 0.30<br>(0.012) | 0.46<br>(0.018) | -               | -               | -               | S4     |
| SMD200F-2018                   | 4.72<br>(0.186)  | 5.44<br>(0.214)  | -               | 1.52<br>(0.060) | 4.22<br>(0.166) | 4.93<br>(0.194) | 0.25<br>(0.010) | 0.36<br>(0.014) | 0.25<br>(0.010)  | 0.36<br>(0.014) | 0.30<br>(0.012) | 0.46<br>(0.018) | -               | -               | -               | S4     |
| <b>SMD Series</b>              |                  |                  |                 |                 |                 |                 |                 |                 |                  |                 |                 |                 |                 |                 |                 |        |
| <b>Size 7555 mm/2920 mils</b>  |                  |                  |                 |                 |                 |                 |                 |                 |                  |                 |                 |                 |                 |                 |                 |        |
| SMD030F                        | 6.73<br>(0.265)  | 7.98<br>(0.314)  | -               | 3.18<br>(0.125) | 4.80<br>(0.19)  | 5.44<br>(0.214) | 0.56<br>(0.022) | 0.71<br>(0.028) | 0.56<br>(0.022)  | 0.71<br>(0.028) | 2.16<br>(0.085) | 2.41<br>(0.095) | 0.66<br>(0.026) | 1.37<br>(0.054) | 0.43<br>(0.017) | S5     |
| SMD050F                        | 6.73<br>(0.265)  | 7.98<br>(0.314)  | -               | 3.18<br>(0.125) | 4.80<br>(0.19)  | 5.44<br>(0.214) | 0.56<br>(0.022) | 0.71<br>(0.028) | 0.56<br>(0.022)  | 0.71<br>(0.028) | 2.16<br>(0.085) | 2.41<br>(0.095) | 0.66<br>(0.026) | 1.37<br>(0.054) | 0.43<br>(0.017) | S5     |
| SMD075F                        | 6.73<br>(0.265)  | 7.98<br>(0.314)  | -               | 3.18<br>(0.125) | 4.80<br>(0.19)  | 5.44<br>(0.214) | 0.56<br>(0.022) | 0.71<br>(0.028) | 0.56<br>(0.022)  | 0.71<br>(0.028) | 2.16<br>(0.085) | 2.41<br>(0.095) | 0.66<br>(0.026) | 1.37<br>(0.054) | 0.43<br>(0.017) | S5     |
| SMD075F/60                     | 6.73<br>(0.265)  | 7.98<br>(0.314)  | -               | 3.18<br>(0.125) | 4.80<br>(0.19)  | 5.44<br>(0.214) | 0.56<br>(0.022) | 0.71<br>(0.028) | 0.56<br>(0.022)  | 0.71<br>(0.028) | 2.16<br>(0.085) | 2.41<br>(0.095) | 0.66<br>(0.026) | 1.37<br>(0.054) | 0.43<br>(0.017) | S5     |
| SMD100F                        | 6.73<br>(0.265)  | 7.98<br>(0.314)  | -               | 3.00<br>(0.118) | 4.80<br>(0.19)  | 5.44<br>(0.214) | 0.56<br>(0.022) | 0.71<br>(0.028) | 0.56<br>(0.022)  | 0.71<br>(0.028) | 2.16<br>(0.085) | 2.41<br>(0.095) | 0.66<br>(0.026) | 1.37<br>(0.054) | 0.43<br>(0.017) | S5     |
| SMD100F/33                     | 6.73<br>(0.265)  | 7.98<br>(0.314)  | -               | 3.00<br>(0.118) | 4.80<br>(0.19)  | 5.44<br>(0.214) | 0.56<br>(0.022) | 0.71<br>(0.028) | 0.56<br>(0.022)  | 0.71<br>(0.028) | 2.16<br>(0.085) | 2.41<br>(0.095) | 0.66<br>(0.026) | 1.37<br>(0.054) | 0.43<br>(0.017) | S5     |
| SMDH120                        | 6.73<br>(0.265)  | 7.98<br>(0.314)  | -               | 3.00<br>(0.118) | 4.80<br>(0.19)  | 5.44<br>(0.214) | 0.56<br>(0.022) | 0.71<br>(0.028) | 0.56<br>(0.022)  | 0.71<br>(0.028) | 2.16<br>(0.085) | 2.41<br>(0.095) | 0.66<br>(0.026) | 1.37<br>(0.054) | 0.43<br>(0.017) | S5     |
| SMD125F                        | 6.73<br>(0.265)  | 7.98<br>(0.314)  | -               | 3.00<br>(0.118) | 4.80<br>(0.19)  | 5.44<br>(0.214) | 0.56<br>(0.022) | 0.71<br>(0.028) | 0.56<br>(0.022)  | 0.71<br>(0.028) | 2.16<br>(0.085) | 2.41<br>(0.095) | 0.66<br>(0.026) | 1.37<br>(0.054) | 0.43<br>(0.017) | S5     |
| SMD260F                        | 6.73<br>(0.265)  | 7.98<br>(0.314)  | -               | 3.00<br>(0.118) | 4.80<br>(0.19)  | 5.44<br>(0.214) | 0.56<br>(0.022) | 0.71<br>(0.028) | 0.56<br>(0.022)  | 0.71<br>(0.028) | 2.16<br>(0.085) | 2.41<br>(0.095) | 0.66<br>(0.026) | 1.37<br>(0.054) | 0.43<br>(0.017) | S5     |
| SMD300F                        | 6.73<br>(0.265)  | 7.98<br>(0.314)  | -               | 3.00<br>(0.118) | 4.80<br>(0.19)  | 5.44<br>(0.214) | 0.56<br>(0.022) | 0.71<br>(0.028) | 0.56<br>(0.022)  | 0.71<br>(0.028) | 2.16<br>(0.085) | 2.41<br>(0.095) | 0.66<br>(0.026) | 1.37<br>(0.054) | 0.43<br>(0.017) | S5     |

15



**Table S4** Dimensions for Surface-mount Devices in Millimeters (Inches) ... Cont'd

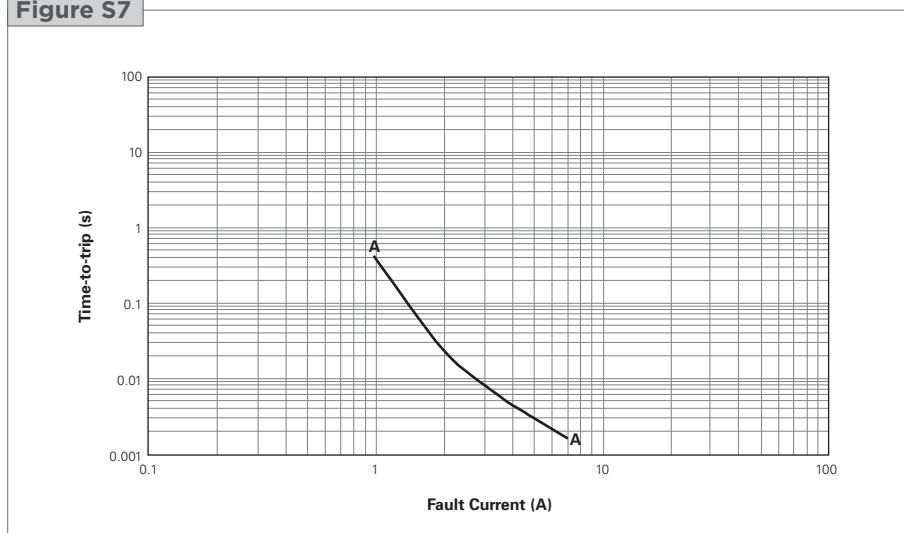
| Part Number                   | A               |                 | B    |                 | C               |                 | D               |                 | E               |                 | F               |                 | G               |                 | H               |      | Figure |
|-------------------------------|-----------------|-----------------|------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|------|--------|
|                               | Min.            | Max.            | Min. | Max.            | Min.            | Max.            | Min.            | Max.            | Min.            | Max.            | Min.            | Max.            | Min.            | Max.            | Min.            | Max. |        |
| <b>SMD2 Devices</b>           |                 |                 |      |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |      |        |
| <b>Size 8763 mm/3425 mils</b> |                 |                 |      |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |      |        |
| SMD150F                       | 8.00<br>(0.315) | 9.40<br>(0.370) | -    | 3.00<br>(0.118) | 6.00<br>(0.236) | 6.71<br>(0.264) | 0.56<br>(0.022) | 0.71<br>(0.028) | 0.56<br>(0.022) | 0.71<br>(0.028) | 3.68<br>(0.145) | 3.94<br>(0.155) | 0.66<br>(0.026) | 1.37<br>(0.054) | 0.43<br>(0.017) | -    | S5     |
| SMD150F/33                    | 8.00<br>(0.315) | 9.40<br>(0.370) | -    | 3.00<br>(0.118) | 6.00<br>(0.236) | 6.71<br>(0.264) | 0.56<br>(0.022) | 0.71<br>(0.028) | 0.56<br>(0.022) | 0.71<br>(0.028) | 3.68<br>(0.145) | 3.94<br>(0.155) | 0.66<br>(0.026) | 1.37<br>(0.054) | 0.43<br>(0.017) | -    | S5     |
| SMDH160                       | 8.00<br>(0.315) | 9.40<br>(0.370) | -    | 3.00<br>(0.118) | 6.00<br>(0.236) | 6.71<br>(0.264) | 0.56<br>(0.022) | 0.71<br>(0.028) | 0.56<br>(0.022) | 0.71<br>(0.028) | 3.68<br>(0.145) | 3.94<br>(0.155) | 0.66<br>(0.026) | 1.37<br>(0.054) | 0.43<br>(0.017) | -    | S5     |
| SMD185F                       | 8.00<br>(0.315) | 9.40<br>(0.370) | -    | 3.00<br>(0.118) | 6.00<br>(0.236) | 6.71<br>(0.264) | 0.56<br>(0.022) | 0.71<br>(0.028) | 0.56<br>(0.022) | 0.71<br>(0.028) | 3.68<br>(0.145) | 3.94<br>(0.155) | 0.66<br>(0.026) | 1.37<br>(0.054) | 0.43<br>(0.017) | -    | S5     |
| SMD200F                       | 8.00<br>(0.315) | 9.40<br>(0.370) | -    | 3.00<br>(0.118) | 6.00<br>(0.236) | 6.71<br>(0.264) | 0.56<br>(0.022) | 0.71<br>(0.028) | 0.56<br>(0.022) | 0.71<br>(0.028) | 3.68<br>(0.145) | 3.94<br>(0.155) | 0.66<br>(0.026) | 1.37<br>(0.054) | 0.43<br>(0.017) | -    | S5     |
| SMD250F                       | 8.00<br>(0.315) | 9.40<br>(0.370) | -    | 3.00<br>(0.118) | 6.00<br>(0.236) | 6.71<br>(0.264) | 0.56<br>(0.022) | 0.71<br>(0.028) | 0.56<br>(0.022) | 0.71<br>(0.028) | 3.68<br>(0.145) | 3.94<br>(0.155) | 0.66<br>(0.026) | 1.37<br>(0.054) | 0.43<br>(0.017) | -    | S5     |

**Figure S7-S13** Typical Time-to-trip Curves at 20°C for Surface-mount Devices

**picoSMDxxxF**

A = picoSMD035F

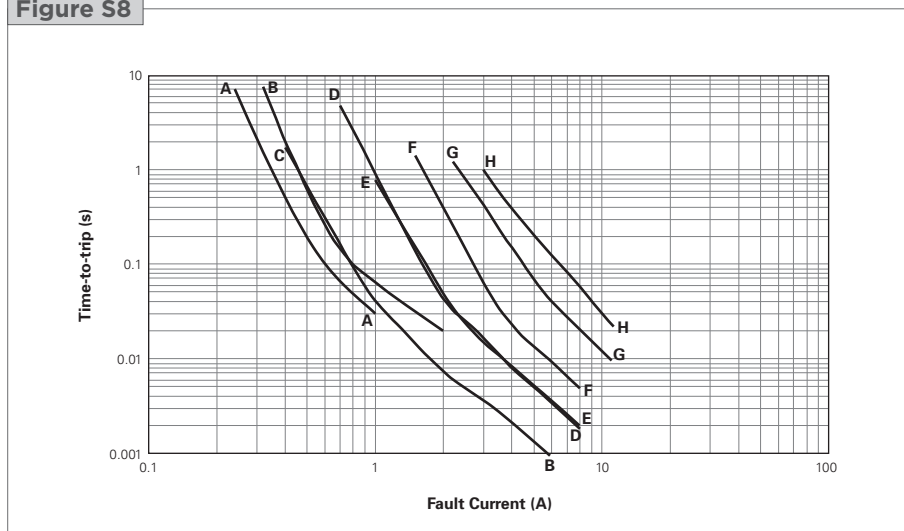
**Figure S7**



**nanoSMDCxxxF**

- A = nanoSMDC012F
- B = nanoSMDC016F
- C = nanoSMDC020F
- D = nanoSMDC035F
- E = nanoSMDC050F/13.2
- F = nanoSMDC075F
- G = nanoSMDC110F
- H = nanoSMDC150F

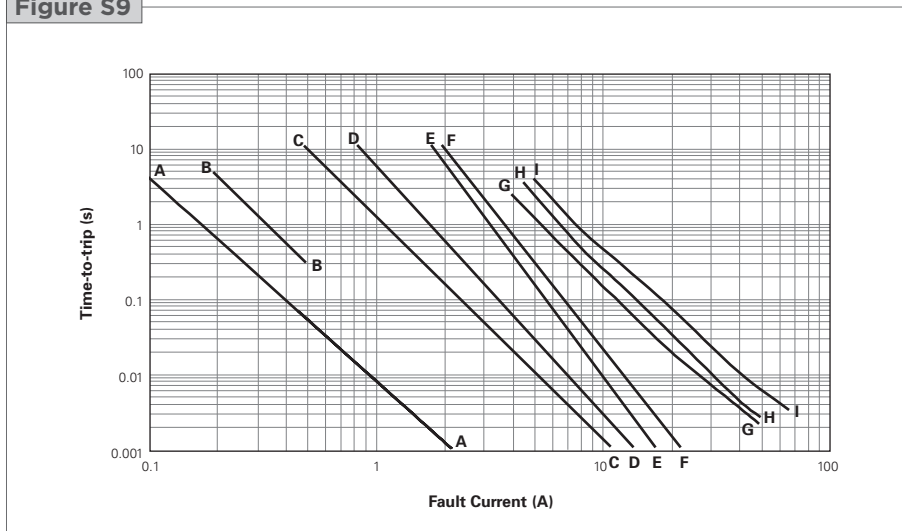
**Figure S8**



**microSMDxxxF**

- A = microSMD005F
- B = microSMD010F
- C = microSMD035F
- D = microSMD050F
- E = microSMD075F
- F = microSMD110F
- G = microSMD150F
- H = microSMD175F
- I = microSMD200F

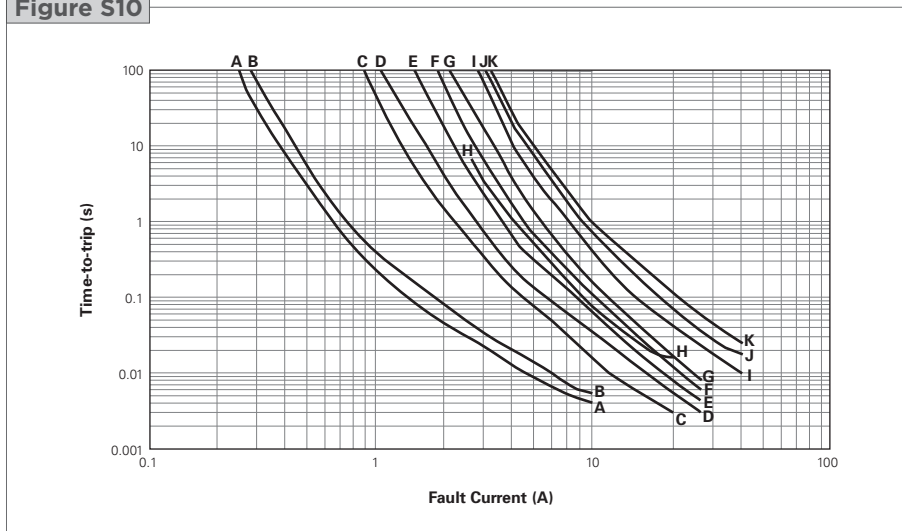
**Figure S9**



**miniSMDCxxxF and miniSMDExxxF**

- A = miniSMDC014F
- B = miniSMDC020F
- C = miniSMDC050F
- D = miniSMDC075F, miniSMDC075F/24
- E = miniSMDC100F, miniSMDC110F, miniSMDC110F/16, miniSMDC110F/24
- F = miniSMDC125F, miniSMDC125F/16
- G = miniSMDC150F, miniSMDC150F/12, miniSMDC150F/16, miniSMDC150F/24
- H = miniSMDC160F
- I = miniSMDC200F, miniSMDC200S
- J = miniSMDE190F
- K = miniSMDC260F, miniSMDC260F/12, miniSMDC260F/13.2, miniSMDC260F/16

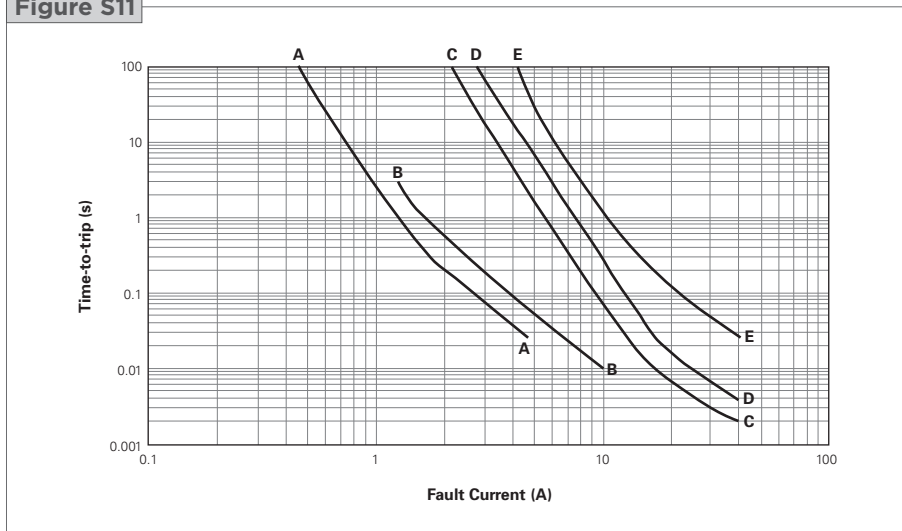
**Figure S10**



**midSMD**

- A = SMD030F-2018
- B = decaSMDC050F/60
- C = SMD100F-2018
- D = SMD150F-2018
- E = SMD200F-2018

**Figure S11**



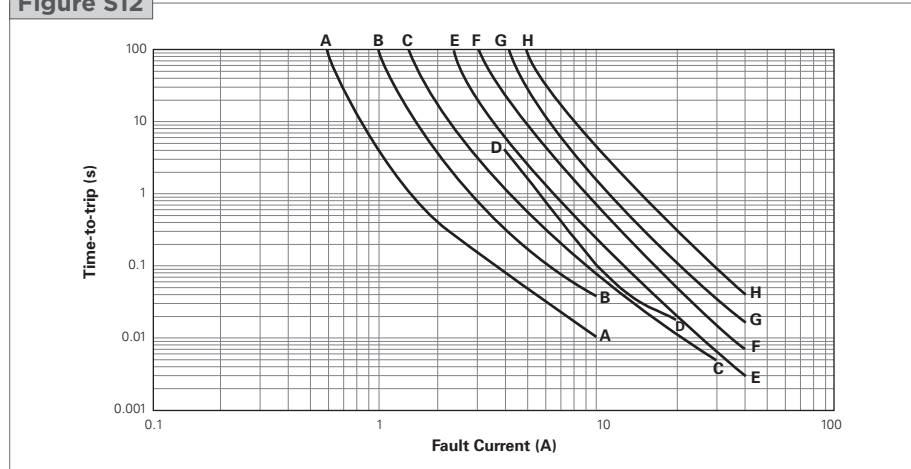
**Figure S7-S13** Typical Time-to-trip Curves at 20°C for Surface-mount Devices

... Cont'd

**SMDxxxF**

- A = SMD030F
- B = SMD050F
- C = SMD075F, SMD075F/60
- D = SMDH120
- E = SMD100F, SMD100F/33
- F = SMD125F
- G = SMD260F
- H = SMD300F

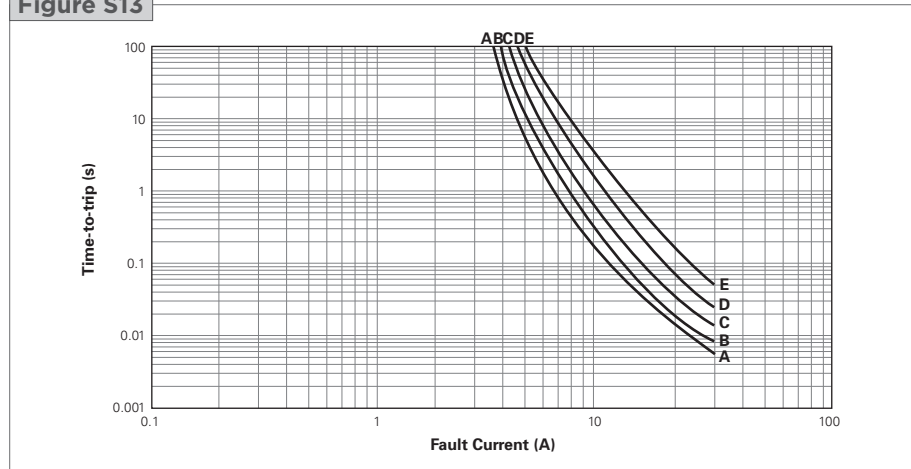
**Figure S12**



**SMD2xxxF**

- A = SMD150F, SMD150F/33
- B = SMDH160
- C = SMD185F
- D = SMD200F
- E = SMD250F

**Figure S13**



**Table S5** Physical Characteristics and Environmental Specifications for Surface-mount Devices  
Operating temperature range -40°C to 85°C, -40°C to 125°C for SMDH120 and SMDH160

**Physical Characteristics**

|                                |   |
|--------------------------------|---|
| Terminal pad material          | 100% matte tin with nickel underplate; gold with nickel underplate for picoSMD  |
| Soldering characteristics      | ANSI/J-STD-002 Category 3 for picoSMD, nanoSMD, microSMD and miniSMD series<br>ANSI/J-STD-002 Category 1 for SMD series |
| Solder heat withstand          | per IEC-STD 68-2-20, Test Tb, Section 5, Method 1A  |
| Flammability resistance        | per IEC 695-2-2 Needle Flame Test for 20 sec.   |
| Recommended storage conditions | 40°C max, 70% R.H. max; devices may not meet specified ratings if storage conditions are exceeded.                      |

**Environmental Specifications**

| Test               | Test Method                  | Conditions              | Resistance Change |
|--------------------|------------------------------|-------------------------|-------------------|
| Storage life       | Raychem PS300, Section 5.3.2 | 60°C, 1000 hours        | ±3% typical       |
|                    |                              | 85°C, 1000 hours        | ±5% typical       |
| Humidity aging     | Raychem PS300, Section 5.3.1 | 85°C, 85% RH, 100 hours | ±1.2% typical     |
| Thermal shock      | MIL-STD-202, Method 107G     | 85°C, -40°C (20 times)  | -33% typical      |
|                    |                              | 125°C, -55°C (10 times) | -33% typical      |
| Vibration          | MIL-STD-883C                 | per MIL-STD-883C        | No change         |
| Solvent resistance | Raychem PS300, Section 5.2.2 | Freon                   | No change         |
|                    |                              | Trichloroethane         | No change         |
|                    |                              | Hydrocarbons            | No change         |

**Table S6 Packaging and Marking Information for Surface-mount Devices**

| Part Number                                       | Tape & Reel Quantity | Standard Package | Part Marking | Recommended Pad Layout Figures [mm(In.)] |                    |                    | Agency Recognition |
|---|----------------------|------------------|--------------|--|--------------------|--------------------|--------------------|
|   |                      |                  |              | Dimension A (Nom.)                       | Dimension B (Nom.) | Dimension C (Nom.) |                    |
| <b>picoSMD Series</b><br>Size 2012 mm/0805 mils   |                      |                  |              |  |                    |                    |                    |
| picoSMD035F                                       | 4,000                | 20,000           | I            | 1.50 (0.060)                             | 1.17(0.046)        | 1.00(0.040)        | UL, CSA, TÜV       |
| <b>nanoSMDC Series</b><br>Size 3216 mm/1206 mils  |                      |                  |              |  |                    |                    |                    |
| nanoSMDC012F                                      | 3,000                | 15,000           | P            | 1.60 (0.063)                             | 1.00 (0.039)       | 2.00 (0.079)       | UL, CSA, TÜV       |
| nanoSMDC016F                                      | 3,000                | 15,000           | N            | 1.60 (0.063)                             | 1.00 (0.039)       | 2.00 (0.079)       | UL, CSA, TÜV       |
| nanoSMDC020F                                      | 3,000                | 15,000           | 02           | 1.60 (0.063)                             | 1.00 (0.039)       | 2.00 (0.079)       | UL, CSA, TÜV       |
| nanoSMDC035F                                      | 3,000                | 15,000           | 03           | 1.60 (0.063)                             | 1.00 (0.039)       | 2.00 (0.079)       | UL, CSA, TÜV       |
| nanoSMDC050F/13.2                                 | 3,000                | 15,000           | M            | 1.60 (0.063)                             | 1.00 (0.039)       | 2.00 (0.079)       | UL, CSA, TÜV       |
| nanoSMDC075F                                      | 3,000                | 15,000           | L            | 1.60 (0.063)                             | 1.00 (0.039)       | 2.00 (0.079)       | UL, CSA, TÜV       |
| nanoSMDC110F                                      | 3,000                | 15,000           | K            | 1.60 (0.063)                             | 1.00 (0.039)       | 2.00 (0.079)       | UL, CSA, TÜV       |
| nanoSMDC150F                                      | 3,000                | 15,000           | 15           | 1.60 (0.063)                             | 1.00 (0.039)       | 2.00 (0.079)       | UL, CSA, TÜV       |
| coming soon nanoSMDC200F*                         | TBD                  | TBD              | TBD          | 1.60 (0.063)                             | 1.00 (0.039)       | 2.00 (0.079)       | Pending            |
| <b>microSMD Series</b><br>Size 3225 mm/1210 mils  |                      |                  |              |  |                    |                    |                    |
| microSMD005F                                      | 4,000                | 20,000           | 05           | 2.50 (0.098)                             | 1.00 (0.039)       | 2.00 (0.079)       | UL, CSA, TÜV       |
| microSMD010F                                      | 4,000                | 20,000           | 10           | 2.50 (0.098)                             | 1.00 (0.039)       | 2.00 (0.079)       | UL, CSA, TÜV       |
| microSMD035F                                      | 4,000                | 20,000           | 3            | 2.50 (0.098)                             | 1.00 (0.039)       | 2.00 (0.079)       | UL, CSA, TÜV       |
| microSMD050F                                      | 4,000                | 20,000           | 50           | 2.50 (0.098)                             | 1.00 (0.039)       | 2.00 (0.079)       | UL, CSA, TÜV       |
| microSMD075F                                      | 4,000                | 20,000           | 75           | 2.50 (0.098)                             | 1.00 (0.039)       | 2.00 (0.079)       | UL, CSA, TÜV       |
| microSMD110F                                      | 4,000                | 20,000           | 11           | 2.50 (0.098)                             | 1.00 (0.039)       | 2.00 (0.079)       | UL, CSA, TÜV       |
| microSMD150F                                      | 4,000                | 20,000           | 15           | 2.50 (0.098)                             | 1.00 (0.039)       | 2.00 (0.079)       | UL, CSA, TÜV       |
| microSMD175F                                      | 4,000                | 20,000           | 17           | 2.50 (0.098)                             | 1.00 (0.039)       | 2.00 (0.079)       | UL, CSA, TÜV       |
| microSMD200F                                      | 3,000                | 15,000           | 20           | 2.50 (0.098)                             | 1.00 (0.039)       | 2.00 (0.079)       | UL, CSA, TÜV       |
| <b>miniSMDC Series</b><br>Size 4532 mm/1812 mils  |                      |                  |              |  |                    |                    |                    |
| miniSMDC014F                                      | 2,000                | 10,000           | 14           | 2.95 (0.114)                             | 1.68 (0.066)       | 3.10 (0.122)       | UL, CSA, TÜV       |
| miniSMDC020F                                      | 2,000                | 10,000           | 2            | 2.95 (0.114)                             | 1.68 (0.066)       | 3.10 (0.122)       | UL, CSA, TÜV       |
| miniSMDC050F                                      | 2,000                | 10,000           | 5            | 2.95 (0.114)                             | 1.68 (0.066)       | 3.10 (0.122)       | UL, CSA, TÜV       |
| miniSMDC075F                                      | 2,000                | 10,000           | 7            | 2.95 (0.114)                             | 1.68 (0.066)       | 3.10 (0.122)       | UL, CSA, TÜV       |
| miniSMDC075F/24                                   | 1,500                | 7,500            | 075F 24V     | 2.95 (0.114)                             | 1.68 (0.066)       | 3.10 (0.122)       | UL, CSA, TÜV       |
| miniSMDC100F                                      | 2,000                | 10,000           | 1            | 2.95 (0.114)                             | 1.68 (0.066)       | 3.10 (0.122)       | UL, CSA, TÜV       |
| miniSMDC110F                                      | 2,000                | 10,000           | 1            | 2.95 (0.114)                             | 1.68 (0.066)       | 3.10 (0.122)       | UL, CSA, TÜV       |
| miniSMDC110F/16                                   | 2,000                | 10,000           | 110F 16V     | 2.95 (0.114)                             | 1.68 (0.066)       | 3.10 (0.122)       | UL, CSA, TÜV       |
| miniSMDC110F/24                                   | 1,500                | 7,500            | 110F 24V     | 2.95 (0.114)                             | 1.68 (0.066)       | 3.10 (0.122)       | UL, CSA, TÜV       |
| miniSMDC125F                                      | 2,000                | 10,000           | 12           | 2.95 (0.114)                             | 1.68 (0.066)       | 3.10 (0.122)       | UL, CSA, TÜV       |
| miniSMDC125F/16                                   | 2,000                | 10,000           | 125F 16V     | 2.95 (0.114)                             | 1.68 (0.066)       | 3.10 (0.122)       | UL, CSA, TÜV       |
| miniSMDC150F                                      | 2,000                | 10,000           | 15           | 2.95 (0.114)                             | 1.68 (0.066)       | 3.10 (0.122)       | UL, CSA, TÜV       |
| miniSMDC150F/12                                   | 2,000                | 10,000           | 150F 12V     | 2.95 (0.114)                             | 1.68 (0.066)       | 3.10 (0.122)       | UL, CSA, TÜV       |
| NEW miniSMDC150F/16                               | 2,000                | 10,000           | 150 16V      | 2.95 (0.114)                             | 1.68 (0.066)       | 3.10 (0.122)       | UL, CSA            |
| miniSMDC150F/24                                   | 1,000                | 5,000            | 150F 24V     | 2.95 (0.114)                             | 1.68 (0.066)       | 3.10 (0.122)       | UL, CSA, TÜV       |
| miniSMDC160F                                      | 2,000                | 10,000           | 16           | 2.95 (0.114)                             | 1.68 (0.066)       | 3.10 (0.122)       | UL, CSA, TÜV       |
| miniSMDC200F                                      | 2,000                | 10,000           | 20           | 2.95 (0.114)                             | 1.68 (0.066)       | 3.10 (0.122)       | UL, CSA, TÜV       |
| NEW miniSMDC200S                                  | 2,000                | 10,000           | 20           | 2.95 (0.114)                             | 1.68 (0.066)       | 3.10 (0.122)       | UL, CSA, TÜV       |
| miniSMDC260F                                      | 2,000                | 10,000           | 260F         | 2.95 (0.114)                             | 1.68 (0.066)       | 3.10 (0.122)       | UL, CSA, TÜV       |
| miniSMDC260F/12                                   | 1,500                | 7,500            | 260F 12V     | 2.95 (0.114)                             | 1.68 (0.066)       | 3.10 (0.122)       | UL, CSA, TÜV       |
| miniSMDC260F/13.2                                 | 1,500                | 7,500            | 260F 13V     | 2.95 (0.114)                             | 1.68 (0.066)       | 3.10 (0.122)       | UL, CSA, TÜV       |
| miniSMDC260F/16                                   | 1,500                | 7,500            | 260F 16V     | 2.95 (0.114)                             | 1.68 (0.066)       | 3.10 (0.122)       | UL, CSA, TÜV       |
| <b>miniSMDE Series</b><br>Size 11550 mm/4420 mils |                      |                  |              |  |                    |                    |                    |
| miniSMDE190F                                      | 5,000                | 20,000           | 19           | 4.75 (0.187)                             | 1.45 (0.057)       | 9.57 (0.377)       | UL, CSA, TÜV       |
| <b>midSMD Series</b><br>Size 5050 mm/2018 mils    |                      |                  |              |  |                    |                    |                    |
| SMD030F-2018                                      | 4,000                | 20,000           | A03F         | 4.60 (0.18)                              | 1.50 (0.059)       | 3.40 (0.134)       | UL, CSA, TÜV       |
| decaSMDC050F/60                                   | 1,000                | 5,000            | 050F 60V     | 4.32 (0.17)                              | 1.40 (0.055)       | 3.61 (0.142)       | UL, CSA, TÜV       |
| SMD100F-2018                                      | 4,000                | 20,000           | A10F         | 4.60 (0.18)                              | 1.50 (0.059)       | 3.40 (0.134)       | UL, CSA, TÜV       |
| SMD150F-2018                                      | 4,000                | 20,000           | A15F         | 4.60 (0.18)                              | 1.50 (0.059)       | 3.40 (0.134)       | UL, CSA, TÜV       |
| SMD200F-2018                                      | 4,000                | 20,000           | A20F         | 4.60 (0.18)                              | 1.50 (0.059)       | 3.40 (0.134)       | UL, CSA, TÜV       |

\* Data is preliminary

**Table S6 Packaging and Marking Information for Surface-mount Devices** ... Cont'd

| Part Number                   | Tape & Reel Quantity | Standard Package | Part Marking | Recommended Pad Layout Figures [mm(In.)] |                    |                    | Agency Recognition |
|-------------------------------|----------------------|------------------|--------------|--|--------------------|--------------------|--------------------|
|                               |                      |                  |              | Dimension A (Nom.)                       | Dimension B (Nom.) | Dimension C (Nom.) |                    |
| <b>SMD Series</b>             |                      |                  |              |  |                    |                    |                    |
| <b>Size 7555 mm/2920 mils</b> |                      |                  |              |  |                    |                    |                    |
| SMD030F                       | 2,000                | 10,000           | 030F         | 3.10 (0.12)                              | 2.30 (0.09)        | 5.10 (0.201)       | UL, CSA, TÜV       |
| SMD050F                       | 2,000                | 10,000           | 050F         | 3.10 (0.12)                              | 2.30 (0.09)        | 5.10 (0.201)       | UL, CSA, TÜV       |
| SMD075F                       | 2,000                | 10,000           | 075F         | 3.10 (0.12)                              | 2.30 (0.09)        | 5.10 (0.201)       | UL, CSA, TÜV       |
| SMD075F/60                    | 2,000                | 10,000           | 756F         | 3.10 (0.12)                              | 2.30 (0.09)        | 5.10 (0.201)       | UL, CSA, TÜV       |
| SMD100F                       | 2,000                | 10,000           | 100F         | 3.10 (0.12)                              | 2.30 (0.09)        | 5.10 (0.201)       | UL, CSA, TÜV       |
| SMD100F/33                    | 2,000                | 10,000           | 103F         | 3.10 (0.12)                              | 2.30 (0.09)        | 5.10 (0.201)       | UL, CSA, TÜV       |
| SMDH120                       | 2,000                | 10,000           | H12          | 3.10 (0.12)                              | 2.30 (0.09)        | 5.10 (0.201)       | UL, CSA, TÜV       |
| SMD125F                       | 2,000                | 10,000           | 125F         | 3.10 (0.12)                              | 2.30 (0.09)        | 5.10 (0.201)       | UL, CSA, TÜV       |
| SMD260F                       | 2,000                | 10,000           | 260F         | 3.10 (0.12)                              | 2.30 (0.09)        | 5.10 (0.201)       | UL, CSA, TÜV       |
| SMD300F                       | 2,000                | 10,000           | 300F         | 3.10 (0.12)                              | 2.30 (0.09)        | 5.10 (0.201)       | UL, CSA, TÜV       |
| <b>SMD2 Devices</b>           |                      |                  |              |  |                    |                    |                    |
| <b>Size 8763 mm/3425 mils</b> |                      |                  |              |  |                    |                    |                    |
| SMD150F                       | 1,500                | 7,500            | 150F         | 4.60 (0.18)                              | 2.30 (0.09)        | 6.10 (0.240)       | UL, CSA, TÜV       |
| SMD150F/33                    | 1,500                | 7,500            | 153F         | 4.60 (0.18)                              | 2.30 (0.09)        | 6.10 (0.240)       | UL, CSA, TÜV       |
| SMDH160                       | 1,500                | 7,500            | 160F         | 4.60 (0.18)                              | 2.30 (0.09)        | 6.10 (0.240)       | UL, CSA, TÜV       |
| SMD185F                       | 1,500                | 7,500            | 185F         | 4.60 (0.18)                              | 2.30 (0.09)        | 6.10 (0.240)       | UL, CSA, TÜV       |
| SMD200F                       | 1,500                | 7,500            | 200F         | 4.60 (0.18)                              | 2.30 (0.09)        | 6.10 (0.240)       | UL, CSA, TÜV       |
| SMD250F                       | 1,500                | 7,500            | 250F         | 4.60 (0.18)                              | 2.30 (0.09)        | 6.10 (0.240)       | UL, CSA, TÜV       |

**Figure S14 Recommended Pad Layout for Surface-mount Devices**



**Agency Recognition for Surface-mount Devices**

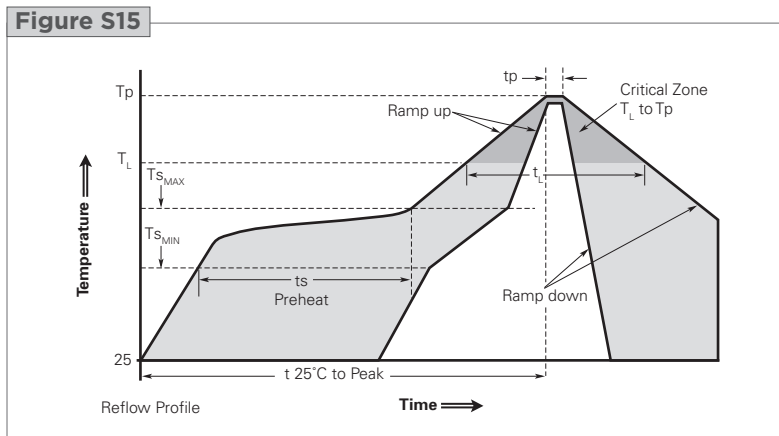
|     |   |
|-----|---|
| UL  | File # E74889 for all surface-mount devices             |
| CSA | File # CA78165 for all surface-mount devices            |
| TÜV | Certificate # R72072068 for picoSMD series              |
|     | Certificate # R72041439 for nanoSMD series              |
|     | Certificate # R72041438 for microSMD and miniSMD series |
|     | Certificate # R72090019 for decaSMD series              |
|     | Certificate # R72041427 for SMD series                  |
|     | Certificate # R72072048 for SMDH series                 |

## Solder Reflow and Rework Recommendation for Surface-mount Devices

### Classification Reflow Profiles

| Profile Feature                                      | Sn-Pb Eutectic Assembly | Pb-Free Assembly |
|--|-------------------------|------------------|
| <b>Average ramp up rate (Ts<sub>MAX</sub> to Tp)</b> | 3°C/second max.         | 3°C/second max.  |
| <b>Preheat</b>                                       |                         |                  |
| • Temperature min. (Ts <sub>MIN</sub> )              | 100°C                   | 150°C            |
| • Temperature max. (Ts <sub>MAX</sub> )              | 150°C                   | 200°C            |
| • Time (ts <sub>MIN</sub> to ts <sub>MAX</sub> )     | 60-120 seconds          | 60-180 seconds   |
| <b>Time maintained above:</b>                        |                         |                  |
| • Temperature (T <sub>L</sub> )                      | 183°C                   | 217°C            |
| • Time (t <sub>L</sub> )                             | 30-70 seconds           | 30-70 seconds    |
| <b>Peak/Classification temperature (Tp)</b>          | 240°C                   | 260°C            |
| <b>Time within 5°C of actual peak temperature</b>    |                         |                  |
| Time (tp)  | 10-30 seconds           | 20-40 seconds    |
| <b>Ramp down rate</b>                                | 6°C/second max.         | 6°C/second max.  |
| <b>Time 25°C to peak temperature</b>                 | 6 minutes max.          | 8 minutes max.   |

Note: All temperatures refer to topside of the package, measured on the package body surface.



### Solder Reflow

- Recommended reflow methods:
  - IR
  - Hot air
  - Nitrogen
- Recommended maximum paste thickness: 0.25mm (0.010 inch)
- Devices can be cleaned using standard methods and aqueous solvents.
- We believe the optimum conditions for forming acceptable solder fillets occur when a reasonable amount of solder paste is placed underneath each device's termination. As such, we request that customers comply with our recommended solder pad layouts.
- Customer should validate that the solder paste amount and reflow recommendations meet its application.
- We request that customer board layouts refrain from placing raised features (e.g. vias, nomenclature, traces, etc.) underneath PolySwitch devices. It is possible that raised features could negatively impact solderability performance of our devices.

### Rework

- picoSMD, nanoSMD, microSMD and miniSMD series: standard industry practices. Please also avoid direct contact to the device.
- SMD series: rework should be confined to removal of the installed product and replacement with a fresh device.

**Table S7 Tape and Reel Specifications for Surface-mount Devices (in Millimeters)**

| Description         | picoSMDC    | nanoSMDC    | microSMD    | miniSMDC                            | miniSMDE190  | midSMD                                 | SMD              | SMD2             |
|---------------------|-------------|-------------|-------------|-------------------------------------|--------------|--|------------------|------------------|
|                     | EIA 481-1   | EIA 481-1   | EIA 481-1   | and<br>decaSMDC050F/60<br>EIA 481-1 | EIA 481-2    | except<br>decaSMDC050F/60<br>EIA 481-2 | EIA 481-2        | EIA 481-2        |
| W                   | 8.0 ± 0.30  | 8.0 ± 0.30  | 8.0 ± 0.30  | 12.0 ± 0.30                         | 24.0 ± 0.30  | 16.0 ± 0.30                            | 16.0 ± 0.30      | 16.0 ± 0.30      |
| P <sub>0</sub>      | 4.0 ± 0.10  | 4.0 ± 0.10  | 4.0 ± 0.10  | 4.0 ± 0.10                          | 4.0 ± 0.10   | 4.0 ± 0.10                             | 4.0 ± 0.10       | 4.0 ± 0.10       |
| P <sub>1</sub>      | 4.0 ± 0.10  | 4.0 ± 0.10  | 4.0 ± 0.10  | 8.0 ± 0.10                          | 8.0 ± 0.10   | 8.0 ± 0.10                             | 8.0 ± 0.10       | 12.0 ± 0.10      |
| P <sub>2</sub>      | 2.0 ± 0.05  | 2.0 ± 0.05  | 2.0 ± 0.05  | 2.0 ± 0.05                          | 2.0 ± 0.10   | 2.0 ± 0.10                             | 2.0 ± 0.10       | 2.0 ± 0.10       |
| A <sub>0</sub>      | Table S8    | 1.95 ± 0.10 | 2.9 ± 0.10  | Table S8                            | 5.70 ± 0.10  | 5.11 ± 0.15                            | 5.6 ± 0.23       | 6.9 ± 0.23       |
| B <sub>0</sub>      | Table S8    | Table S8    | 3.50 ± 0.10 | Table S8                            | 11.90 ± 0.10 | 5.6 ± 0.23                             | 8.1 ± 0.15       | 9.6 ± 0.15       |
| B <sub>1</sub> max. | 4.35        | 4.35        | 4.35        | 8.2                                 | 20.1         | 12.1                                   | 12.1             | 12.1             |
| D <sub>0</sub>      | 1.55 ± .05  | 1.55 ± .05  | 1.55 ± .05  | 1.5 + 0.10/ -.00                    | 1.55 ± .05   | 1.5 + 0.10/ -.00                       | 1.5 + 0.10/ -.00 | 1.5 + 0.10/ -.00 |
| F                   | 3.50 ± 0.05 | 3.50 ± 0.05 | 3.50 ± 0.05 | 5.50 ± 0.05                         | 11.50 ± 0.10 | 7.50 ± 0.10                            | 7.50 ± 0.10      | 7.50 ± 0.10      |
| E <sub>1</sub>      | 1.75 ± 0.10 | 1.75 ± 0.10 | 1.75 ± 0.10 | 1.75 ± 0.10                         | 1.75 ± 0.10  | 1.75 ± 0.10                            | 1.75 ± 0.10      | 1.75 ± 0.10      |
| E <sub>2</sub> min. | 6.25        | 6.25        | 6.25        | 10.25                               | 22.25        | 14.25                                  | 14.25            | 14.25            |
| T max.              | 0.6         | 0.6         | 0.6         | 0.6                                 | 0.6          | 0.6                                    | 0.6              | 0.6              |
| T <sub>1</sub> max. | 0.1         | 0.1         | 0.1         | 0.1                                 | 0.1          | 0.1                                    | 0.1              | 0.1              |
| K <sub>0</sub>      | Table S8    | Table S8    | Table S8    | Table S8                            | 0.95 ± 0.10  | 1.8 ± 0.15                             | 3.2 ± 0.15       | 3.4 ± 0.15       |
| Leader min.         | 390         | 390         | 390         | 390                                 | 400          | 400                                    | 400              | 400              |
| Trailer min.        | 160         | 160         | 160         | 160                                 | 160          | 160                                    | 160              | 160              |

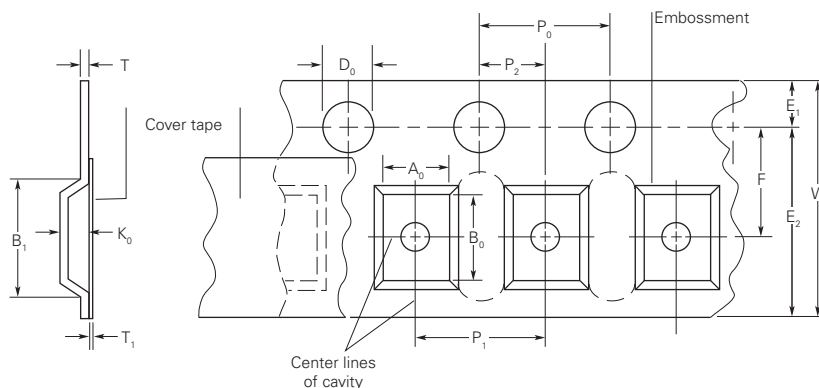
**Table S8 Tape and Reel Specifications for Surface-mount Devices (in Millimeters)**

| Description    | All nanoSMDC series except nanoSMDC012F nanoSMDC016F |                           | All microSMD series except microSMD200F |              | miniSMDC014F-075F miniSMDC100F-110F/16 miniSMDC125F-150F/16 miniSMDC160F-260F | miniSMDC075F/24 miniSMDC110F/24 miniSMDC260F/12 miniSMDC260F/13.2 miniSMDC260F/16 | miniSMDC150F/24 | decaSMDC050F/60 |           |
|----------------|--|---------------------------|---|--------------|---|---|-----------------|-----------------|-----------|
|                | picoSMD035F  | nanoSMDC012F nanoSMDC016F | nanoSMDC012F nanoSMDC016F               | microSMD200F | microSMD200F  |   |                 |                 |           |
| A <sub>0</sub> | 1.70 ± 0.1   | 1.95 ± 0.1                | 1.95 ± 0.1                              | 2.9 ± 0.1    | 2.90 ± 0.1  | 3.50 ± 0.1  | 3.7 ± 0.1       | 3.70 ± 0.1      | 5.0 ± 0.1 |
| B <sub>0</sub> | 2.45 ± 0.1   | 3.50 + 0.1/-0.08          | 3.50 ± 0.1                              | 3.5 ± 0.1    | 3.50 ± 0.1  | 4.95 ± 0.1  | 4.9 ± 0.1       | 4.90 ± 0.1      | 5.4 ± 0.1 |
| K <sub>0</sub> | 0.86 ± 0.1   | 0.89 ± 0.1                | 1.27 ± 0.1                              | 0.9 ± 0.1    | 1.27 ± 0.1  | 0.90 ± 0.1  | 1.4 ± 0.1       | 1.78 ± 0.1      | 1.7 ± 0.1 |

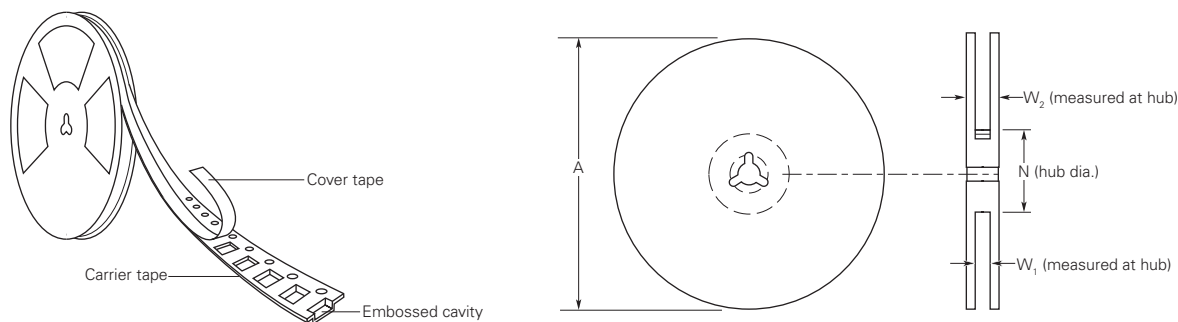
**Table S9 Reel Dimensions for Surface-mount Devices (in Millimeters)**

|                     | pico/nano/microSMD | miniSMDC         | miniSMDE190      | midSMD           | SMD              | SMD2             |
|---------------------|--------------------|------------------|------------------|------------------|------------------|------------------|
| A max.              | 185                | 185              | 330              | 330              | 330              | 330              |
| N min.              | 50                 | 50               | 60               | 50               | 50               | 50               |
| W <sub>1</sub>      | 8.4 + 1.5/-0.00    | 12.4 + 2.0/-0.00 | 24.4 + 2.0/-0.00 | 16.4 + 2.0/-0.00 | 16.4 + 2.0/-0.00 | 16.4 + 2.0/-0.00 |
| W <sub>2</sub> max. | 14.4               | 18.4             | 30.4             | 22.4             | 22.4             | 22.4             |

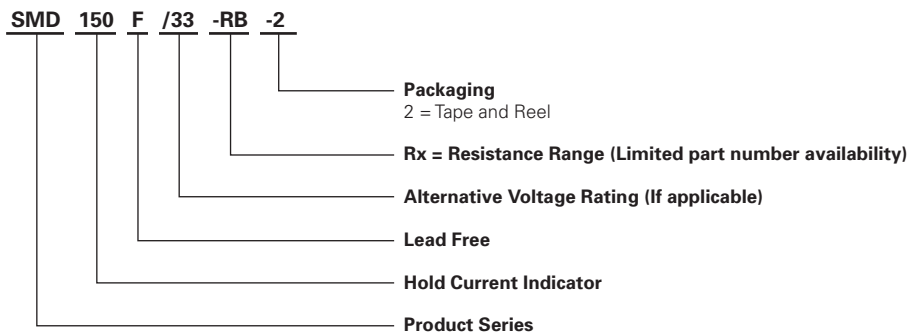
**Figure S16 EIA Referenced Taped Component Dimensions for Surface-mount Devices**



**Figure S17 EIA Referenced Reel Dimensions for Surface-mount Devices**



**Part Numbering System for Surface-mount Devices**



**Warning :**

- Operation beyond the maximum ratings or improper use may result in device damage and possible electrical arcing and flame.
- These devices are intended for protection against damage caused by occasional overcurrent or overtemperature fault conditions and should not be used when repeated fault conditions or prolonged trip events are anticipated.
- Contamination of the PPTC material with certain silicone-based oils or some aggressive solvents can adversely impact the performance of the devices.
- Device performance can be impacted negatively if devices are handled in a manner inconsistent with recommended electronic, thermal, and mechanical procedures for electronic components.
- PPTC devices are not recommended for installation in applications where the device is constrained such that its PTC properties are inhibited, for example in rigid potting materials or in rigid housings, which lack adequate clearance to accommodate device expansion.
- Operation in circuits with a large inductance can generate a circuit voltage ( $Ldi/dt$ ) above the rated voltage of the device.