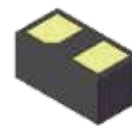


## FEATURES

- | 63 Watts Peak Pulse Power per Line (tp=8/20μs)
- | Protects one data or power line
- | Working voltages : 24 V
- | Fast turn-on and low clamping voltage
- | Response Time is Typically < 1 ns
- | Solid-state silicon-avalanche and active circuit triggering technology
- | Meet MSL level 1

## APPLICATIONS

- | USB3.0, HDMI2.0, Thunderbolt
- | Laptop Computers
- | Cellular Phones
- | Digital Cameras
- | Personal Digital Assistants (PDAs)



DFN0603



Marking



Schematic Symbol

## IEC COMPATIBILITY

- | IEC61000-4-2 (ESD) ±15kV (air), ±15kV (contact)
- | IEC61000-4-4 (EFT) 40A (5/50ns)

## APPROVALS

|             |                                    |
|-------------|------------------------------------|
| <b>RoHS</b> | Compliance with 2011/65/EU         |
| <b>HF</b>   | Compliance with IEC61249-2-21:2003 |

## THERMAL CONSIDERATIONS

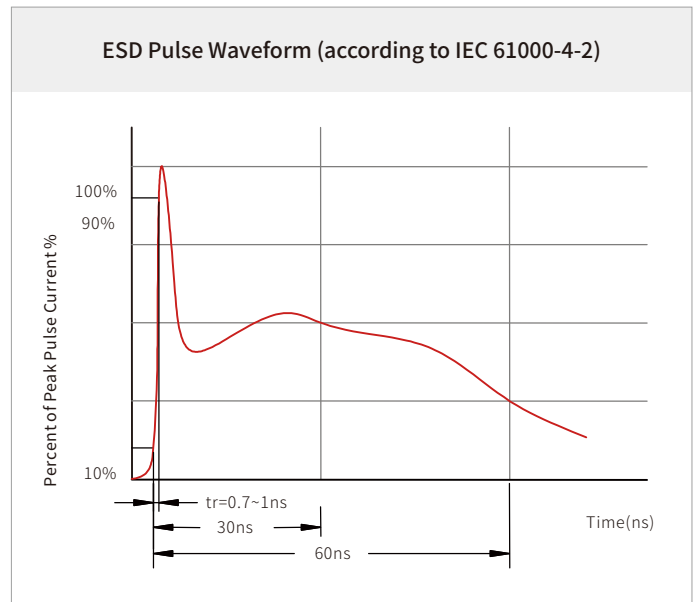
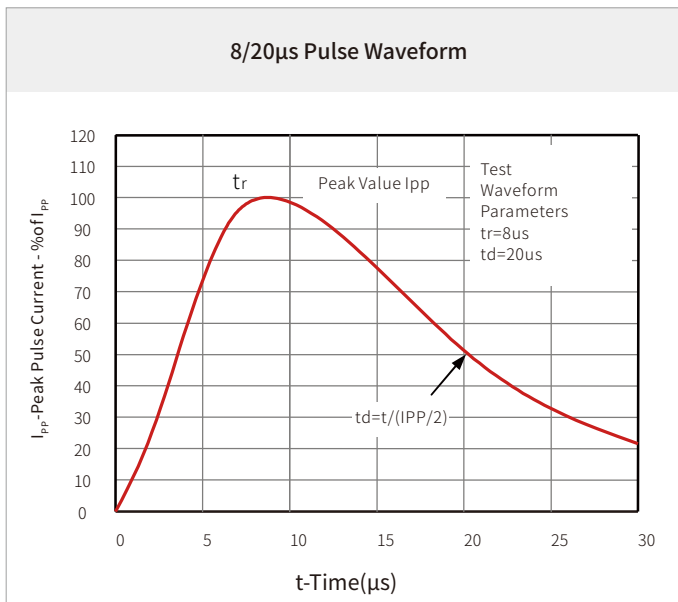
| Symbol    | Parameter                             | Value       | Unit  |
|-----------|---------------------------------------|-------------|-------|
| $P_{pp}$  | Peak Pulse Power (tp=8/20μs waveform) | 63          | Watts |
| $T_j$     | Operating Temperature Range           | -55 to +125 | °C    |
| $T_{STG}$ | Storage Temperature Range             | -55 to +150 | °C    |

## ELECTRICAL CHARACTERISTICS

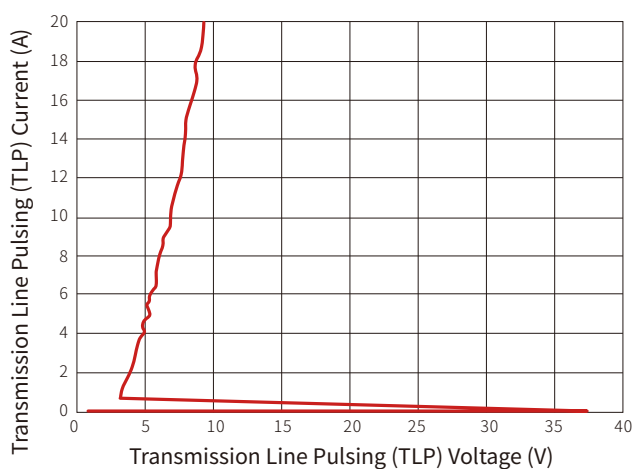
| Symbol    | Parameter                      | Condition                    | Min. | Typ. | Max. | Unit     |
|-----------|--------------------------------|------------------------------|------|------|------|----------|
| $V_{RWM}$ | Reverse Stand-off Voltage      |                              |      |      | 24.0 | V        |
| $V_{BR}$  | Reverse Breakdown Voltage      | $I_T=1mA$                    | 25.5 |      |      | V        |
| $V_H$     | Holding Voltage                | $I_T=I_H$                    |      | 2.0  |      | V        |
| $I_H$     | Holding Current                |                              |      | 4.5  |      | mA       |
| $I_R$     | Reverse Leakage Current        | $V_{RWM}=24V$                |      | 1.0  | 100  | nA       |
| $V_C$     | Clamping Voltage               | $I_{PP}=3A, tp=8/20\mu s$    |      |      | 4.0  | V        |
| $V_C$     | Clamping Voltage               | $I_{PP}=9A, tp=8/20\mu s$    |      |      | 7.0  | V        |
| $V_C$     | Clamping Voltage               | $I_{PP}=8A, tp=TLP(Notes1)$  |      | 4.8  |      | V        |
| $V_C$     | Clamping Voltage               | $I_{PP}=16A, tp=TLP(Notes1)$ |      | 8.0  |      | V        |
| $I_{PP}$  | Peak Pulse Current             | $tp=8/20\mu s$               |      |      | 9    | A        |
| $R_{DYN}$ | Dynamic resistance             | $tp=100ns(Notes1)$           |      | 0.26 |      | $\Omega$ |
| $C_J$     | Off State Junction Capacitance | $V_R=0V, f=1MHz$             |      | 0.30 |      | pF       |

Note1: Non-repetitive current pulse, Transmission Line Pulse (TLP)  $tr=0.2ns$ ,  $tp=100ns$ ; square pulse. RDYN is calculated from 4A to 16A.

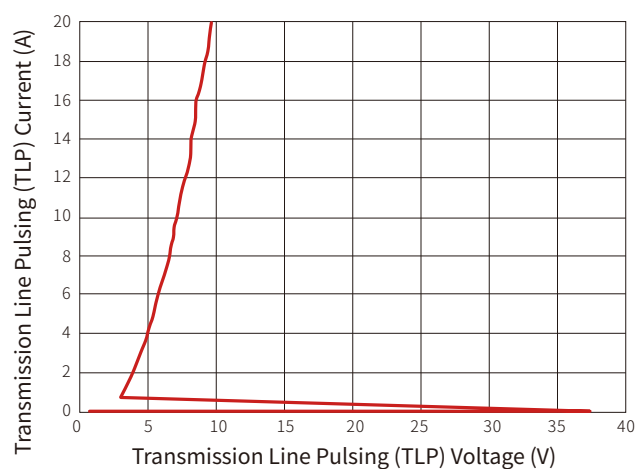
## CHARACTERISTIC CURVES



Positive TLP Curve

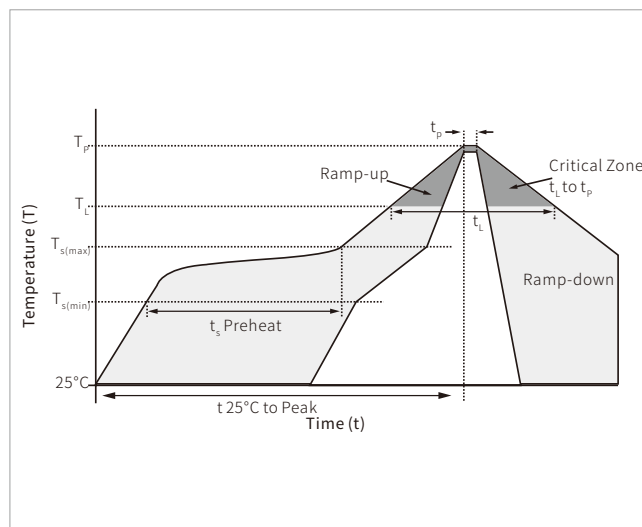


Negative TLP Curve

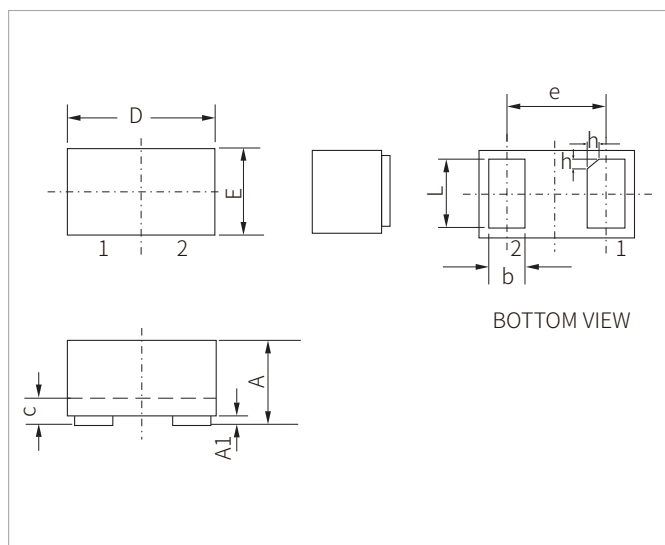


## SOLDERING PARAMETERS

| Reflow Condition                                       |                                  | Lead-free assembly |
|--------------------------------------------------------|----------------------------------|--------------------|
| Pre Heat                                               | Temperature Max ( $T_{s(min)}$ ) | 150°C              |
|                                                        | Temperature Max ( $T_{s(max)}$ ) | 200°C              |
|                                                        | Time (min to max) ( $t_s$ )      | 60 – 180 secs      |
| Average ramp up rate (Liquidus Temp ( $T_L$ ) to peak) |                                  | 3°C/second max     |
| $T_{s(max)}$ to $T_L$ - Ramp-up Rate                   |                                  | 3°C/second max     |
| Reflow                                                 | Temperature ( $T_L$ ) (Liquidus) | 217°C              |
|                                                        | Time (min to max) ( $t_L$ )      | 60 – 150 seconds   |
| Peak Temperature ( $T_p$ )                             |                                  | 260°C              |
| Time within 5°C of actual peak Temperature ( $t_p$ )   |                                  | 20 – 40 seconds    |
| Ramp-down Rate                                         |                                  | 6°C/second max     |
| Time 25°C to peak Temperature ( $T_p$ )                |                                  | 8 minutes max.     |
| Do not exceed                                          |                                  | 260°C              |

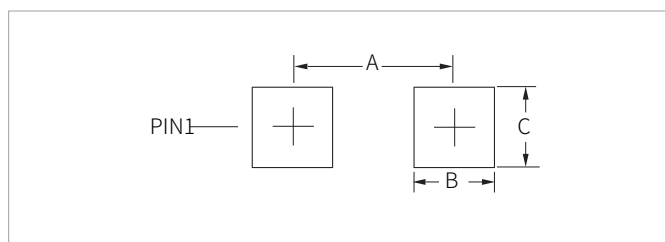


## DFN0603 PACKAGE INFORMATION



| Ref. | Millimeters |      |      | Inches   |       |       |
|------|-------------|------|------|----------|-------|-------|
|      | Min.        | Nom. | Max. | Min.     | Nom.  | Max.  |
| A    | 0.28        | 0.30 | 0.36 | 0.011    | 0.012 | 0.014 |
| A1   | 0           | 0    | 0.05 | 0        | 0     | 0.002 |
| b    | 0.13        | 0.18 | 0.24 | 0.005    | 0.007 | 0.009 |
| c    | 0.05        | -    | 0.15 | 0.002    | -     | 0.006 |
| D    | 0.55        | 0.60 | 0.70 | 0.022    | 0.024 | 0.028 |
| e    | 0.35BSC     |      |      | 0.014BSC |       |       |
| E    | 0.25        | 0.30 | 0.35 | 0.010    | 0.012 | 0.014 |
| L    | 0.20        | 0.25 | 0.30 | 0.008    | 0.010 | 0.012 |
| h    | 0           | -    | 0.10 | 0        | -     | 0.004 |

## RECOMMENDED PAD LAYOUT DIMENSIONS



| Ref. | Millimeters | Inches |
|------|-------------|--------|
| A    | 0.38        | 0.015  |
| B    | 0.23        | 0.009  |
| C    | 0.30        | 0.012  |

## ORDERING INFORMATION

| Part Number     | Component Package | QTY/Reel | Reel Size |
|-----------------|-------------------|----------|-----------|
| SE06F06B24UA-SP | DFN0603           | 10000PCS | 7"        |

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