

### Features

- This series is designed for average power 320W approximated ESD protection, different  $V_{RWM}$ , different peak pulse power available.
- Protects one I/O or power line.
- Low clamping voltage.
- Working voltages: 3.3V, 5.0V, 12V, 15V, 24V, 36V.
- Low leakage current.
- Lead-free parts meet environmental standards of MIL-STD-19500 /228.
- Compliant to Halogen-free.
- Suffix "-Q1" for AEC-Q101.

### IEC compatibility

- IEC61000-4-2 (ESD)  $\pm 15\text{kV}$  (air),  $\pm 8\text{kV}$  (contact)
- IEC61000-4-4 (EFT) 40A (5/50ns)

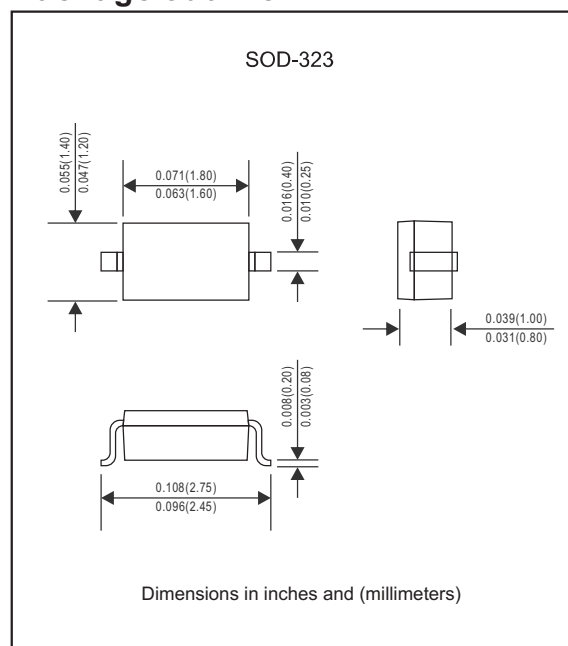
### Applications

- Cell Phone Handsets and Accessories
- Microprocessor based equipment
- Personal Digital Assistants (PDA's)
- Notebooks, Desktops, and Servers
- Portable Instrumentation

### Mechanical data

- Epoxy:UL94-V0 rated flame retardant
- Case : Molded plastic, SOD-323
- Terminals : Solder plated, solderable per MIL-STD-750, Method 2026
- Mounting Position : Any

### Package outline



### Maximum ratings (at $T_A=25^\circ\text{C}$ unless otherwise noted)

| PARAMETER                            | CONDITIONS                                   | SYMBOL    | VALUE       | UNIT             |
|--------------------------------------|----------------------------------------------|-----------|-------------|------------------|
| Total power dissipation              | Peak pulse power ( $t_p = 8/20\mu\text{s}$ ) | $P_{PP}$  | 320         | W                |
| Operating junction temperature range |                                              | $T_J$     | -55 to +125 | $^\circ\text{C}$ |
| Storage temperature range            |                                              | $T_{STG}$ | -55 to +150 | $^\circ\text{C}$ |

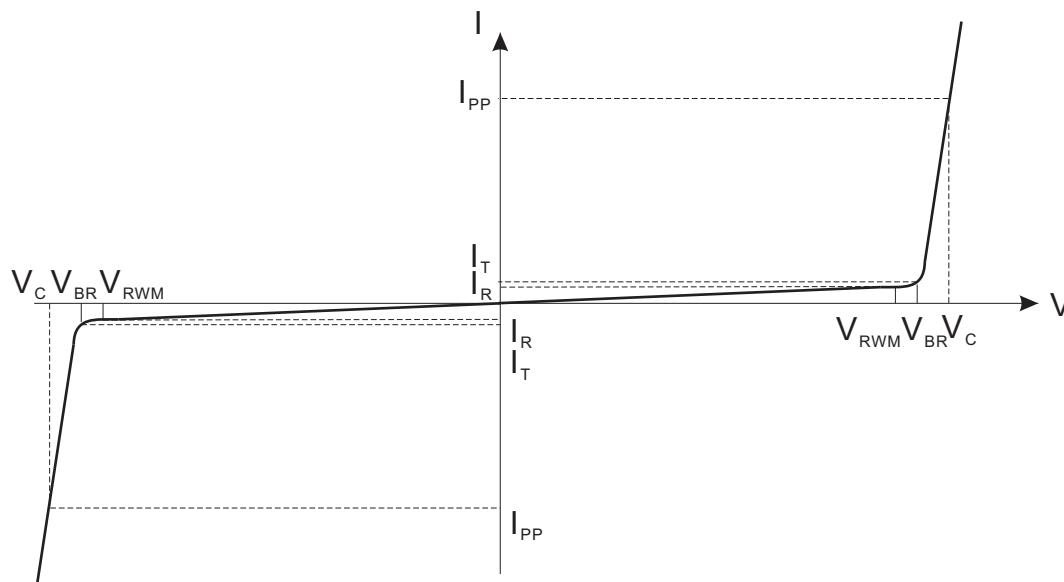
### Electrical characteristics (at $T_A=25^\circ\text{C}$ unless otherwise noted)

| Part No.     | $V_{RWM}$<br>(V)<br>(Max.) | $I_R(\mu\text{A})$<br>@ $V_{RWM}$<br>(Max.) | $V_{BR}(\text{V})$<br>@ $I_T$<br>(Note 2)<br>(Min.) | $I_T$<br>(mA) | $V_C(\text{V})$<br>@ $I_{PP}=1.0\text{A}$<br>(Typ.) | $I_{PP}$<br>(A)<br>(Max.) | $V_C(\text{V})$<br>@ $I_{PP}$<br>(Max.) | $C_J$<br>(pF)<br>(Typ.) |
|--------------|----------------------------|---------------------------------------------|-----------------------------------------------------|---------------|-----------------------------------------------------|---------------------------|-----------------------------------------|-------------------------|
| ESD3Z3.3C-Q1 | 3.3                        | 200                                         | 4.0                                                 | 1.0           | 7.0                                                 | 20.0                      | 19.0                                    | 450                     |
| ESD3Z5.0C-Q1 | 5.0                        | 10                                          | 6.0                                                 | 1.0           | 9.8                                                 | 17.0                      | 21.0                                    | 200                     |
| ESD3Z12C-Q1  | 12                         | 1                                           | 13.3                                                | 1.0           | 19.0                                                | 11.0                      | 32.0                                    | 75                      |
| ESD3Z15C-Q1  | 15                         | 1                                           | 16.7                                                | 1.0           | 24.0                                                | 10.0                      | 38.0                                    | 68                      |
| ESD3Z24C-Q1  | 24                         | 1                                           | 26.7                                                | 1.0           | 43.0                                                | 7.0                       | 52.0                                    | 57                      |
| ESD3Z36C-Q1  | 36                         | 1                                           | 40.0                                                | 1.0           | 63.0                                                | 5.0                       | 80.0                                    | 35                      |

Note 1. Surge current waveform per Fig.1

2.  $V_{BR}$  is measured with a pulse test current  $I_T$  at an ambient temperature of  $25^\circ\text{C}$ .

**Typical characteristics** (at  $T_A=25^{\circ}\text{C}$  unless otherwise noted)



Bi-Directional TVS

$V_C$  : Clamping voltage @  $I_{PP}$

$I_{PP}$  : Maximum reverse peak pulse current

$V_{RWM}$  : Maximum working peak reverse voltage

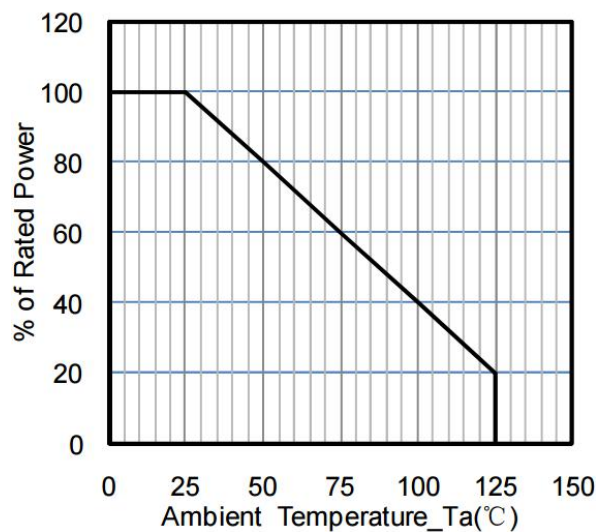
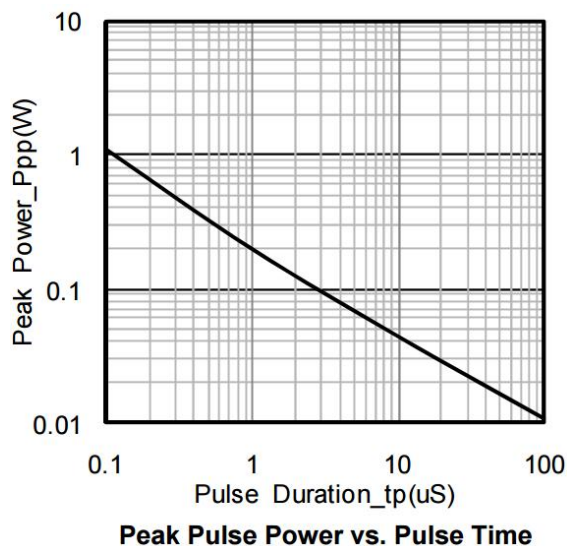
$I_R$  : Maximum reverse leakage current @  $V_{RWM}$

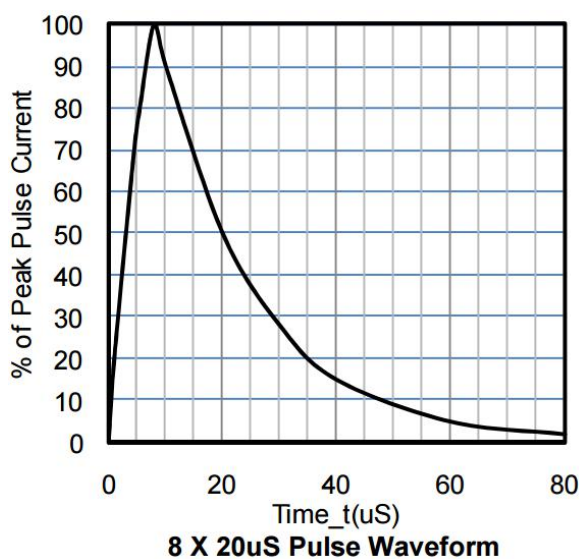
$V_{BR}$  : Breakdown voltage @  $I_T$

$I_T$  : Test current

$C_J$  : Max. capacitance @  $V_R = 0\text{V}$  and  $f = 1\text{MHz}$

### Rating and characteristic curves (ESD3ZxxC-Q1 SERIES)





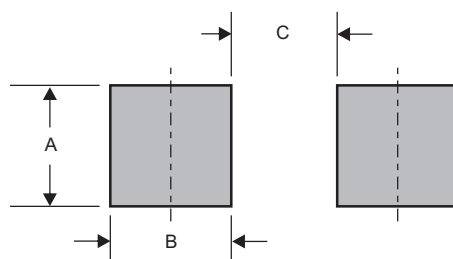
### Pinning information

| Pin            | Simplified outline                                                                 | Symbol                                                                                |
|----------------|------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| Bi-Directional |  |  |

### Marking

| Type numbre  | Marking code |
|--------------|--------------|
| ESD3Z3.3C-Q1 | 03B/2A       |
| ESD3Z5.0C-Q1 | 05B/3M       |
| ESD3Z12C-Q1  | 12B/12C      |
| ESD3Z15C-Q1  | 15B/2J       |
| ESD3Z24C-Q1  | 24B/M        |
| ESD3Z36C-Q1  | 36B/2N       |

### Suggested solder pad layout



Dimensions in inches and (millimeters)

| PACKAGE | A            | B            | C            |
|---------|--------------|--------------|--------------|
| SOD-323 | 0.033 (0.83) | 0.025 (0.63) | 0.063 (1.60) |