## Features

450W peak pulse power (8/20μs)

Protects two ui-directional lines

Ultra low leakage: nA level

Operating voltage: 24V

Low clamping voltage

Complies with following standards:

– IEC 61000-4-2 (ESD) immunity test

Air discharge: ±30kV

Contact discharge: ±30kV

– IEC61000-4-4 (EFT) 40A (5/50ns)

– IEC61000-4-5 (Lightning) 8A (8/20μs)

RoHS Compliant

## Applications

Cellular Handsets and Accessories

Notebooks and Handhelds

Portable Instrumentation

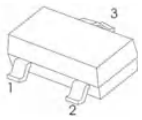
Set Top Box

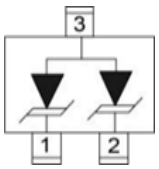
Industrial Controls

Server and Desktop PC

27A.8

**SOT-23**




**Schematic & PIN Configuration**

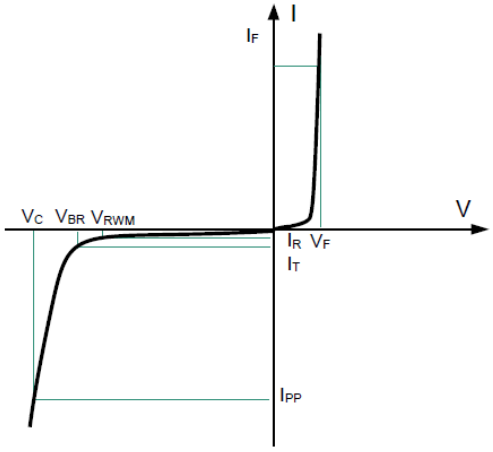
## Absolute Maximum Rating

| Parameter | Symbol | Value | Unit |
|---|---|---|---|
| Peak Pulse Power (8/20μs) | Ppk | 450 | W |
| Peak Pulse Current (8/20μs) | IPP | 8 | A |
| ESD per IEC 61000−4−2 (Air)<br>ESD per IEC 61000−4−2 (Contact) | VESD | ±30<br>±30 | kV |
| Operating Temperature Range | TJ | −55 to +125 | °C |
| Storage Temperature Range | Tstg | −55 to +150 | °C |

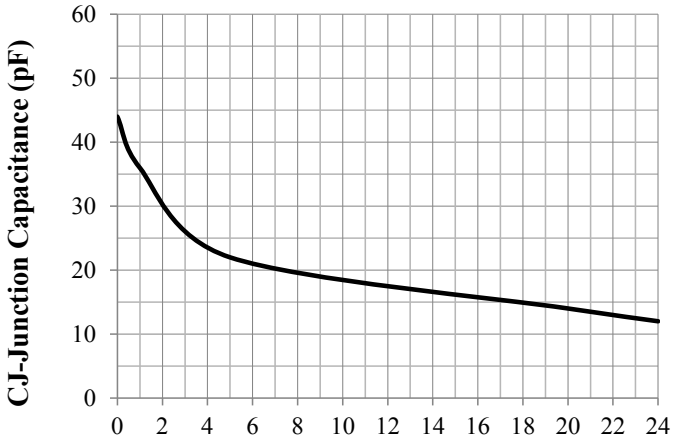
## Electrical Characteristics (TA=25°C unless otherwise specified)

| Parameter | Symbol | Test Condition | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| Reverse Working Voltage | $V_{RWM}$ | | | | 24 | V |
| Breakdown Voltage | $V_{BR}$ | $I_T$ = 1mA | 25.5 | 27.0 | 29.9 | V |
| Reverse Leakage Current | $I_R$ | $V_{RWM}$ = 24V | | | 0.5 | μA |
| Clamping Voltage | $V_C$ | $I_{PP}$ = 1A (8 x 20μs pulse) | | 32 | 35 | V |
| Clamping Voltage | $V_C$ | $I_{PP}$ = 8A (8 x 20μs pulse) | | 50 | 65 | V |
| Junction Capacitance | $C_J$ | VR = 0V, f = 1MHz | | 45 | 60 | pF |

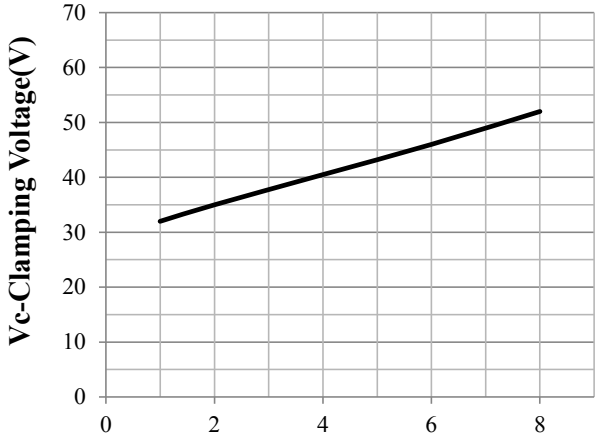
| Symbol | Parameter |
|---|---|
| $I_T$ | Test Current |
| $I_{PP}$ | Maximum Reverse Peak Pulse Current |
| Vc | Clamping Voltage @Ic |



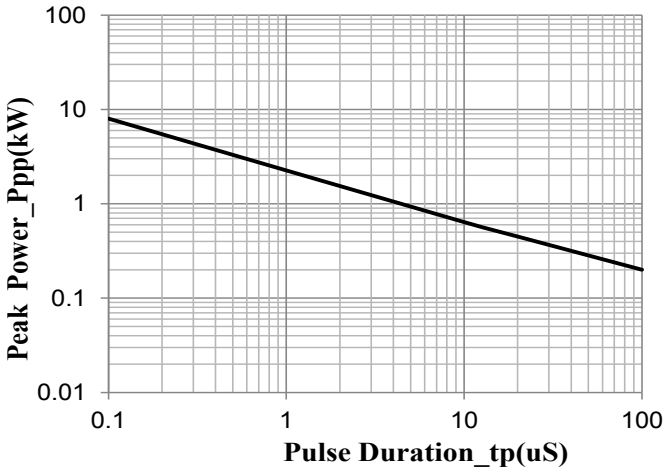
## RATING AND CHARACTERISTIC CURVES



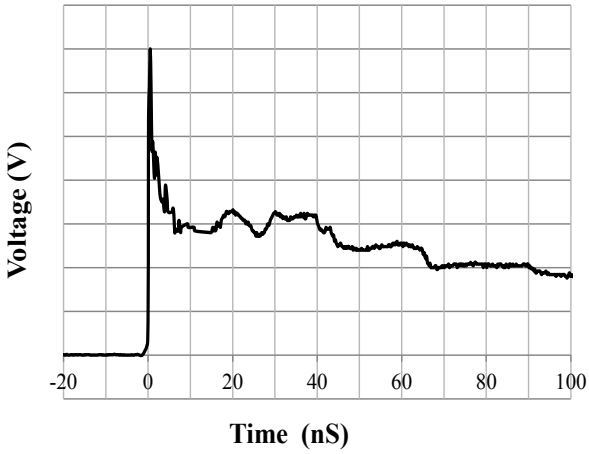

**Junction Capacitance vs. Reverse Voltage**



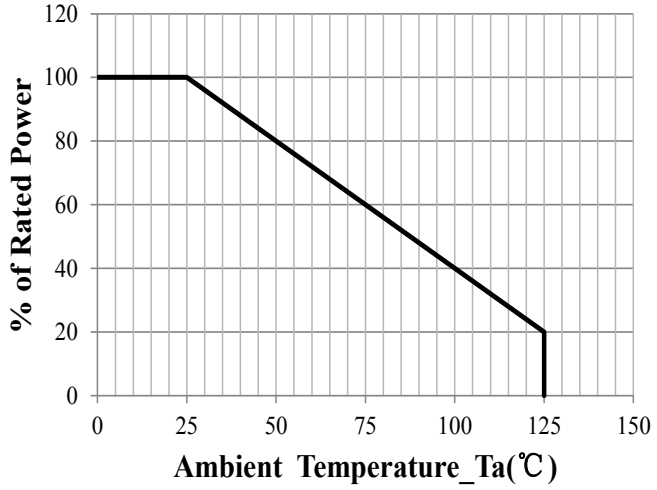

**Clamping Voltage vs. Peak Pulse Current**



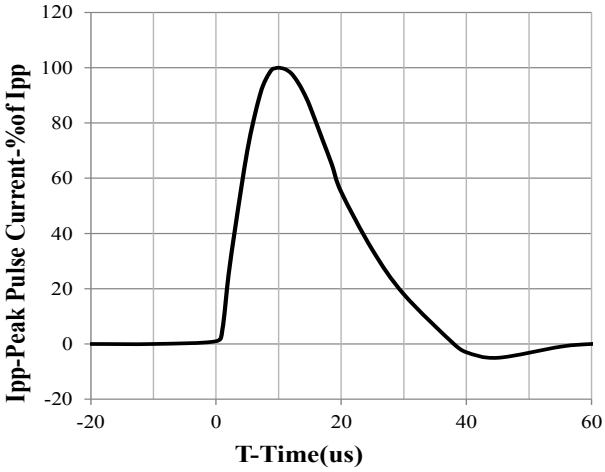

**Peak Pulse Power vs. Pulse Time**




**IEC61000−4−2 Pulse Waveform**




**Power Derating Curve**

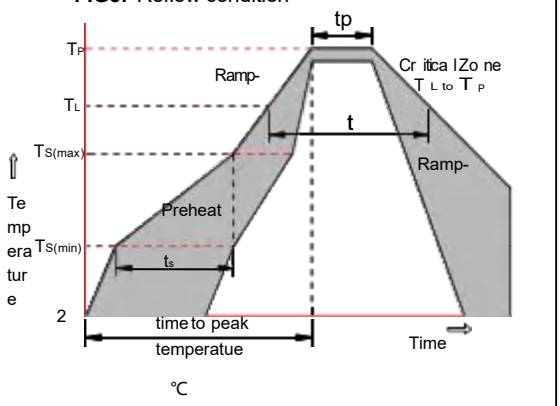



**8 X 20us Pulse Waveform**

## Soldering parameters

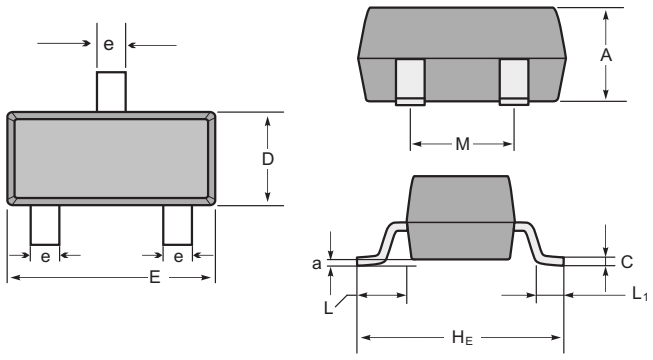
| Reflow Condition | | Pb-Free assembly (see as bellow) |
|---|---|---|
| Pre Heat | -Temperature Min ($T_{s(min)}$) | +150℃ |
| | -Temperature Max($T_{s(max)}$) | +200℃ |
| | -Time (Min to Max) (ts) | 60-180 secs. |
| Average ramp up rate (Liquid us Temp ($T_L$) to peak) | | 3℃/sec. Max |
| $T_{s(max)}$ to $T_L$ - Ramp-up Rate | | 3℃/sec. Max |
| Reflow | -Temperature($T_L$)(Liquid us) | +217℃ |
| | -Temperature($t_L$) | 60-150 secs. |
| Peak Temp ($T_p$) | | +260(+0/-5)℃ |
| Time within 5℃ of actual Peak Temp ($t_p$) | | 30 secs. Max |
| Ramp-down Rate | | 6℃/sec. Max |
| Time 25℃ to Peak Temp ($T_P$) | | 8 min. Max |
| Do not exceed | | +260℃ |

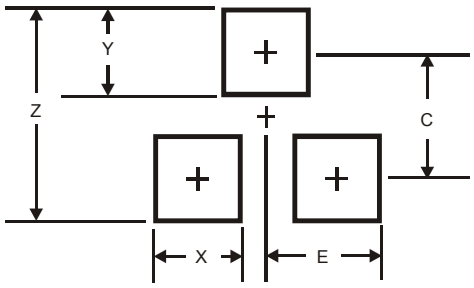
**FIG5:** Reflow condition




## Package Dimensions & Suggested Pad Layout

**SOT23**



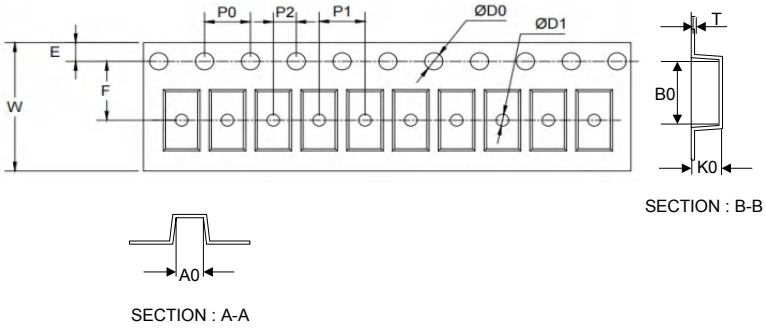

SOT-23 mechanical data

| UNIT | | A | C | D | E | $H_E$ | e | M | L | $L_1$ | a |
|---|---|---|---|---|---|---|---|---|---|---|---|
| mm | max | 1.1 | 0.15 | 1.4 | 3.0 | 2.6 | 0.5 | 1.95 | 0.55 (ref) | 0.36 (ref) | 0.0 |
| | min | 0.9 | 0.08 | 1.2 | 2.8 | 2.2 | 0.3 | 1.7 | | | 0.15 |
| mil | max | 43 | 6 | 55 | 118 | 102 | 20 | 77 | 22 (ref) | 14 (ref) | 0.0 |
| | min | 35 | 3 | 47 | 110 | 87 | 12 | 67 | | | 6 |

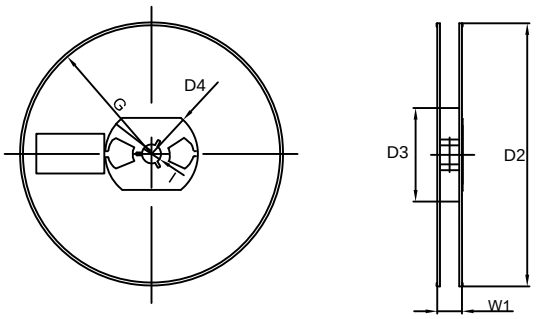
| Dimensions | SOT23 |
|---|---|
| Z | 2.9 |
| X | 0.8 |
| Y | 0.9 |
| C | 2.0 |
| E | 1.35 |

## Tape & rell specification

Tape




7” Reel




| Symbol | Dimension (mm) |
|---|---|
| P0 | 4.00±0.10 |
| P1 | 4.00±0.10 |
| P2 | 2.00±0.10 |
| D0 | 1.55±0.10 |
| D1 | 1.05±0.10 |
| E | 1.55±0.10 |
| F | 3.60±0.10 |
| W | 8.00±0.10 |
| A0 | 3.80±0.20 |
| B0 | 3.25±0.20 |
| K0 | 1.45±0.10 |
| T | 0.25±0.05 |
| D2 | 178.0±3.0 |
| D3 | 55Min. |
| D4 | R24.0±3.0 |
| G | R82.0±3.0 |
| I | 13.0±2.0 |
| W1 | 11.0±3.0 |
| Quantity: 3000PCS | |