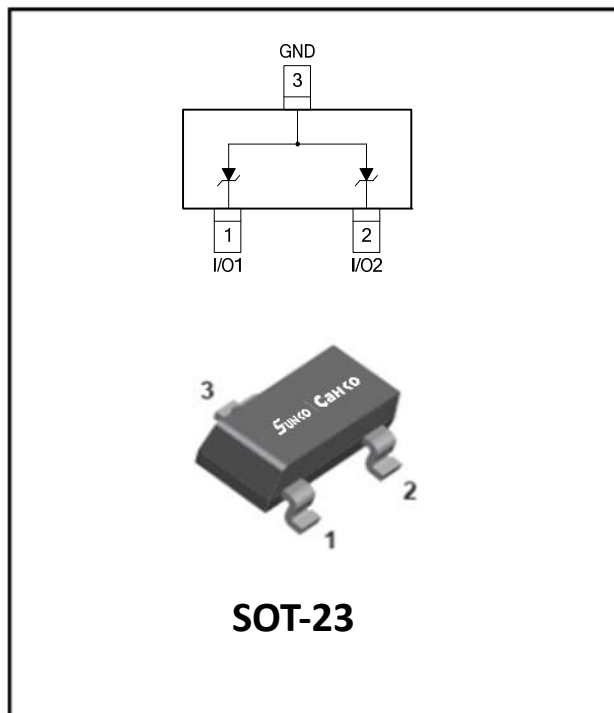


## 2-Line, Uni-directional, Transient Voltage Suppressor



### Features

- Stand-off voltage: 17V
- Transient protection for each line according to  
IEC61000-4-2(ESD):  $\pm 30\text{kV}$  (contact)  
IEC61000-4-5(surge): 1.4A (10/1000 $\mu\text{s}$ )
- Low leakage current:
- Ultra low clamping voltage
- Compliant

### Applications

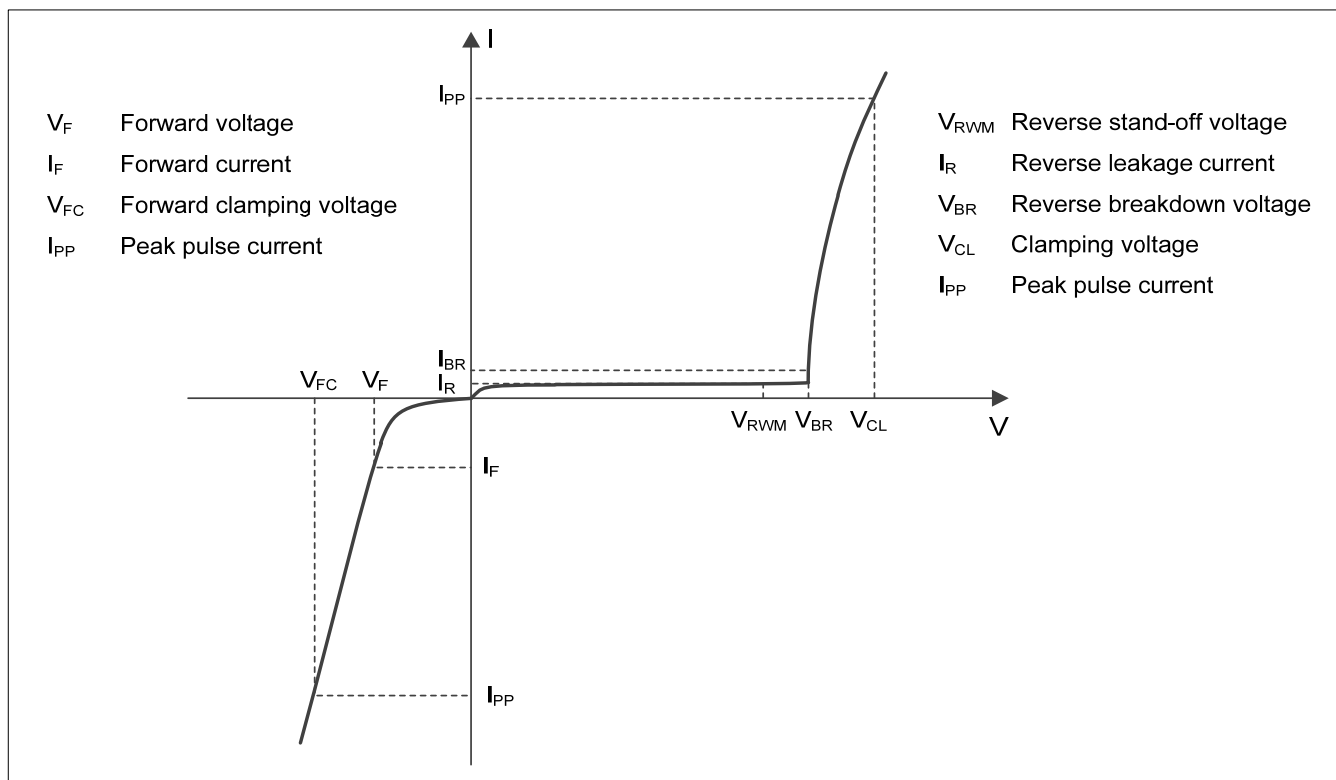
- Cellular Handsets and Accessories
- Notebooks and Handhelds
- Portable Instrumentation
- Set Top Box
- Industrial Controls
- Server and Desktop PC

### Mechanical Data

- Package: SOT-23
- Lead Finish: Matte Tin
- Case Material: "Green" Molding Compound
- Moisture Sensitivity: Level 1 per J-STD-020
- Marking Information: See Below



### Definitions of electrical characteristics



**■Maximum Ratings**

| PARAMETER                                       | SYMBOL    | LIMITS   | UNIT        |
|-------------------------------------------------|-----------|----------|-------------|
| Peak pulse power ( $t_p = 10/1000\mu s$ )       | $P_{pk}$  | 39.2     | W           |
| Peak pulse current ( $t_p = 10/1000\mu s$ )     | $I_{PP}$  | 1.4      | A           |
| ESD according to IEC61000-4-2 air discharge     | $V_{ESD}$ | $\pm 30$ | KV          |
| ESD according to IEC61000-4-2 contact discharge |           | $\pm 30$ |             |
| Junction temperature                            | $T_J$     | -55~150  | $^{\circ}C$ |
| Storage temperature                             | $T_{STG}$ | -55~150  | $^{\circ}C$ |

**■Electrical Characteristics ( $T_a=25^{\circ}C$  Unless otherwise specified)**

| PARAMETER                       | Symbol    | UNIT | Conditions                          | Min   | Typ | Max   |
|---------------------------------|-----------|------|-------------------------------------|-------|-----|-------|
| Reverse maximum working voltage | $V_{RWM}$ | V    |                                     |       |     | 17    |
| Reverse leakage current         | $I_R$     | nA   | $V_{RWM} = 17V$                     |       |     | 50    |
| Reverse breakdown voltage       | $V_{BR}$  | V    | $I_{BR} = 1mA$                      | 19.00 |     | 21.00 |
| Clamping voltage <sup>2)</sup>  | $V_{CL}$  | V    | $I_{PP} = 1.4A, t_p = 10/1000\mu s$ |       |     | 28    |
| Junction Capacitance            | CJ        | pF   | $V_R=0V, f=1MHz$                    |       | 77  |       |

Notes:

- (1). TLP parameter:  $Z_0 = 50\Omega$ ,  $t_p = 100ns$ ,  $t_r = 2ns$ , averaging window from 60ns to 80ns.  $R_{DYN}$  is calculated from 4A to 16A.  
 (2). Non-repetitive current pulse, according to IEC61000-4-5.

**■Ordering Information (Example)**

| PREFERED P/N | PACKING CODE | UNIT WEIGHT(mg) | MINIMUM PACKAGE(pcs) | INNER BOX QUANTITY(pcs) | OUTER CARTON QUANTITY(pcs) | DELIVERY MODE |
|--------------|--------------|-----------------|----------------------|-------------------------|----------------------------|---------------|
| MMBZ20VA     | F2           | Approximate 10  | 3000                 | 30000                   | 120000                     | 7" reel       |

## ■ Characteristics (Typical)

Fig1: Pulse Waveform

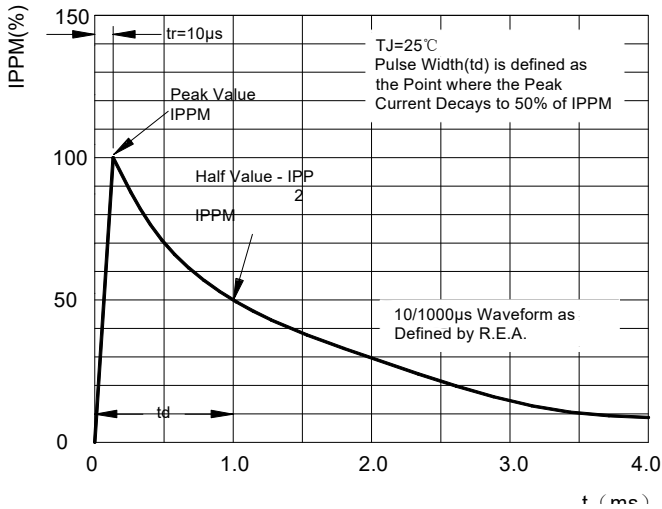


Fig 2: Contact discharge current waveform per IEC61000-4-2

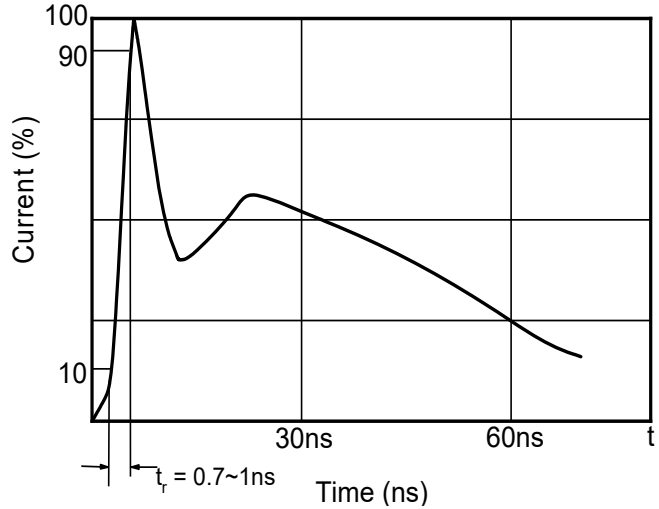


Fig3: Clamping voltage vs. Peak pulse current

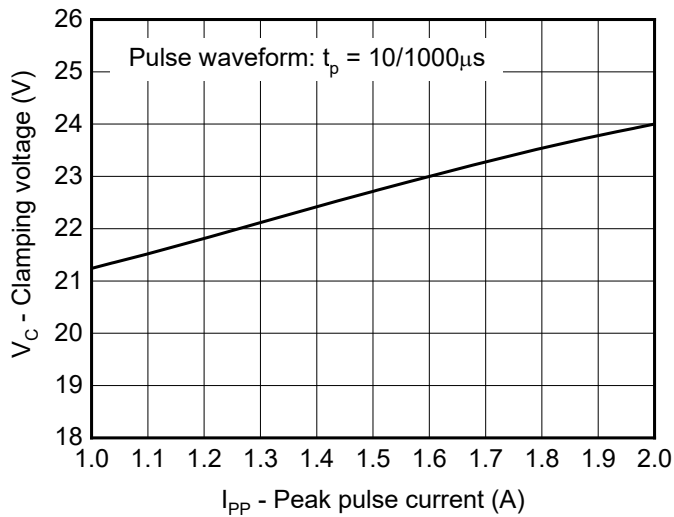


Fig4: Capacitance vs. Reverse voltage

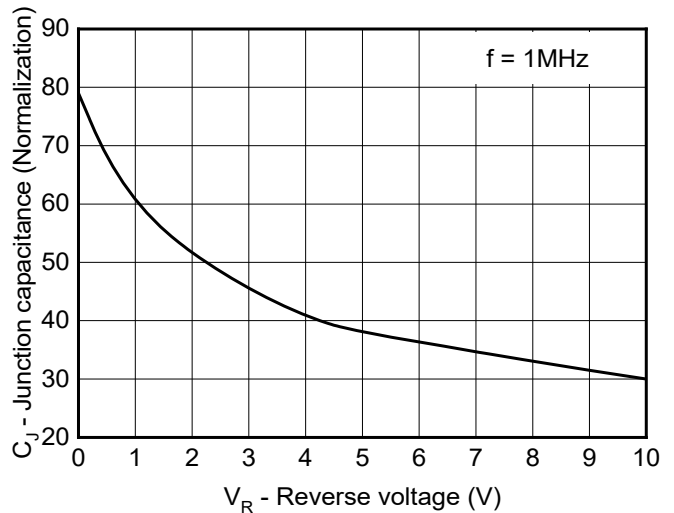


Fig5: Non-repetitive peak pulse power vs. Pulse time

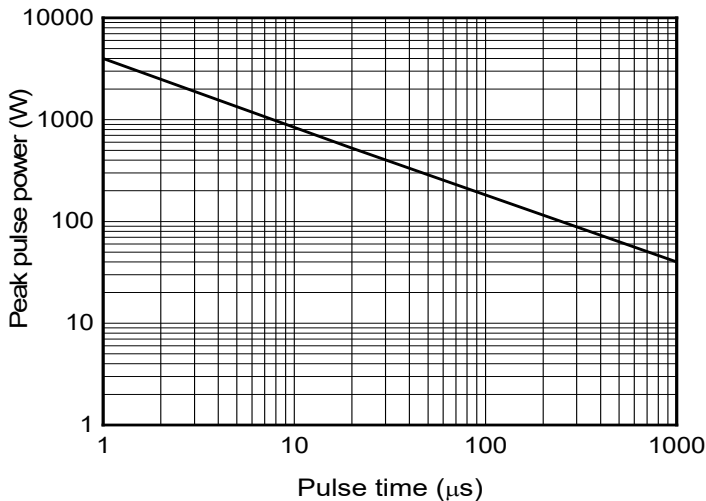
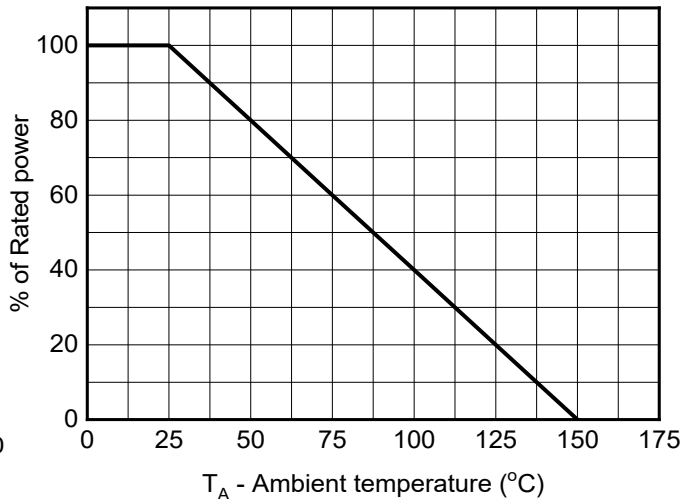
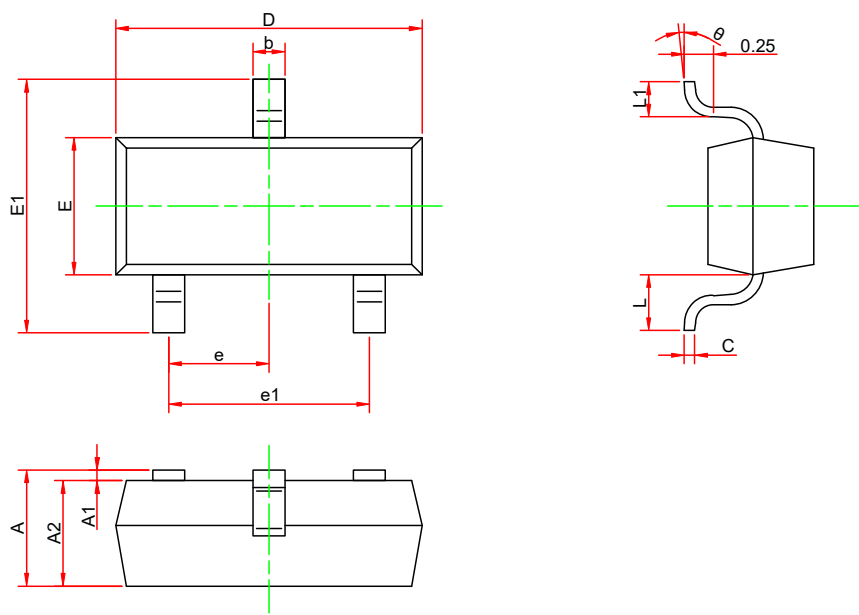


Fig6: Power derating vs. Ambient temperature

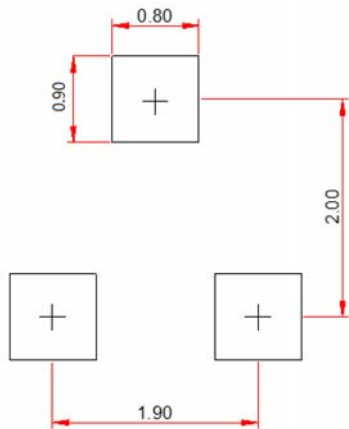


■ Outline Dimensions



| Symbol   | Dimensions in millimeters |      |       |
|----------|---------------------------|------|-------|
|          | Min.                      | Typ. | Max.  |
| A        | 0.900                     | -    | 1.150 |
| A1       | 0.000                     | -    | 0.100 |
| A2       | 0.900                     | -    | 1.050 |
| b        | 0.300                     | -    | 0.500 |
| c        | 0.100                     | -    | 0.200 |
| D        | 2.800                     | -    | 3.000 |
| E        | 1.200                     | -    | 1.400 |
| E1       | 2.250                     | -    | 2.550 |
| e        | 0.950TYP                  |      |       |
| e1       | 1.800                     | -    | 2.000 |
| L        | 0.550REF                  |      |       |
| L1       | 0.300                     | -    | 0.500 |
| $\theta$ | 0°                        | -    | 8°    |

■ Soldering Footprint



Notes:  
This recommended land pattern is for reference purposes only. Please consult your manufacturing group to ensure your PCB design guidelines are met.

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