

RoHS Compliant Product  
A suffix of "-C" specifies halogen & lead-free

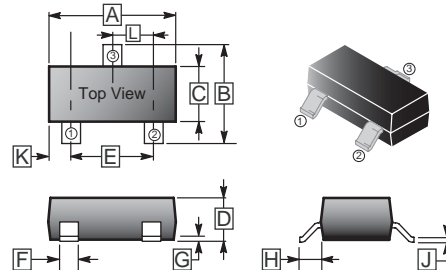
## FEATURES

- SOT-23 package for surface mount application
- Protects 5V components
- Protects two unidirectional line or one bi-directional line
- Provides electrically isolated protection

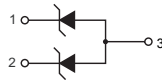
## APPLICATIONS

- Cellular Handsets and Accessories
- Portable devices
- Industrial Controls
- Set -Top Box
- Servers, Notebook, and Desktop PC

### SOT-23



| REF. | Millimeter |      | REF. | Millimeter |      |
|------|------------|------|------|------------|------|
|      | Min.       | Max. |      | Min.       | Max. |
| A    | 2.80       | 3.00 | G    | 0.10       | REF. |
| B    | 2.25       | 2.55 | H    | 0.55       | REF. |
| C    | 1.20       | 1.40 | J    | 0.08       | 0.15 |
| D    | 0.90       | 1.15 | K    | 0.5        | REF. |
| E    | 1.80       | 2.00 | L    | 0.95       | TYP. |
| F    | 0.30       | 0.50 |      |            |      |



## Marking Code

KDB

## ABSOLUTE RATINGS (T<sub>amb</sub> = 25°C )

| Rating  | Symbol                            | Value      | Units |
|---|-----------------------------------|------------|-------|
| IEC 61000-4-2 (ESD)   | Air contact                       | ±15        | kV    |
|   | Contact discharge                 | ±8         | kV    |
| ESD voltage   | Per human body model              | 16         | kV    |
| Total power dissipation on FR-5 Board (Note 1) @ T <sub>A</sub> =25°C | P <sub>D</sub>                    | 150        | m/W   |
| Junction and storage temperature range                                | T <sub>J</sub> , T <sub>STG</sub> | -55 ~ +150 | °C    |
| Lead solder temperature – maximum (10 Second duration)                | T <sub>L</sub>                    | 260        | °C    |

Stresses exceeding Maximum Ratings may damage the device. Maximum Rating are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.  
1. FR-5 = 1.0\*0.75\*0.62 in.

## ELECTRICAL CHARACTERISTICS

(Ratings at 25°C ambient temperature unless otherwise specified. V<sub>F</sub> = 0.9V at I<sub>F</sub> = 10mA)

| Device  | V <sub>RWM</sub> (V) | I <sub>R</sub> (uA) @ V <sub>RWM</sub> | V <sub>BR</sub> (V) @ I <sub>T</sub> (Note 2) | I <sub>T</sub> (mA) | V <sub>C</sub> (V) @ Max I <sub>PP</sub> (Note 3) | I <sub>PP</sub> (A) (Note 3) | P <sub>PK</sub> (W)* | C (pF) (Note 4) |
|---------|----------------------|--|---|---------------------|---|------------------------------|----------------------|-----------------|
|         | Max                  | Max                                    | Min   | mA                  | Max   | Max                          | Max                  | Typ             |
| SZMD05C | 5                    | 0.1                                    | 6.4   | 5.0                 | 13.0  | 14.0                         | 150                  | 50              |

Other voltages available upon request.

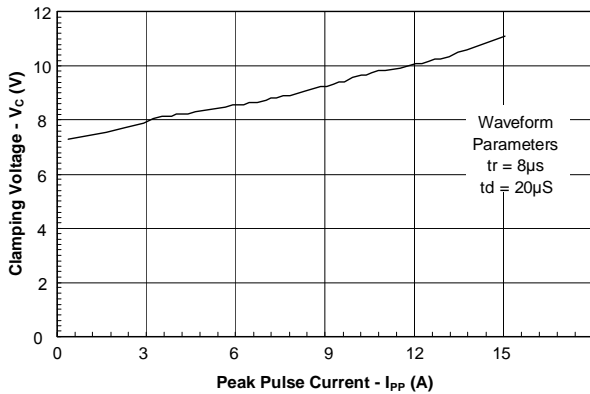
2. V<sub>BR</sub> is measured with a pulse test current I<sub>T</sub> at an ambient temperature of 25°C

3. Surge current waveform per Figure 3.

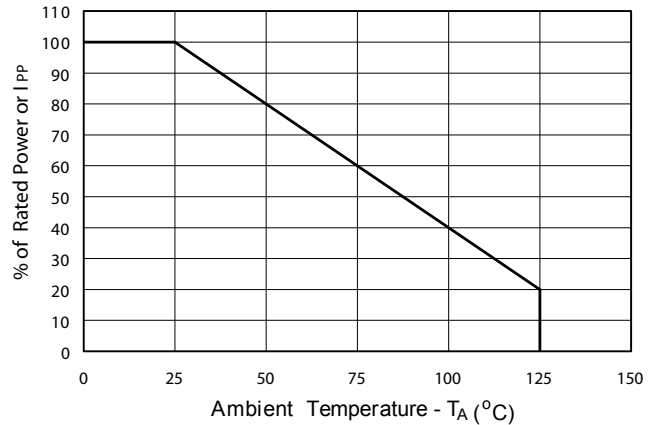
4. Measured at 1MHz 3V.

## RATINGS AND CHARACTERISTICS CURVES

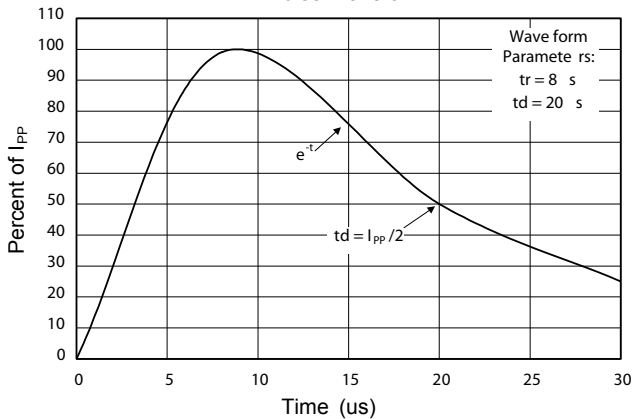
Clamping Voltage vs. Peak Pulse Current



Power Derating Curve



Pulse Waveform



## Applications Information

### Device Connection Options

The SZMD05C is designed to protect one bi-directional or two uni-directional data or I/O lines operating at 5 volts. Connection options are as follows:

- Bidirectional: Pin 1 is connected to the data line and pin 2 is connected to ground (Since the device is symmetrical, these connections may be reversed). For best results, the ground connection should be made directly to a ground plane on the board. The path length should be kept as short as possible to minimize parasitic inductance. Pin 3 is not connected.
  - Unidirectional: Data lines are connected to pin 1 and pin 2. Pin 3 is connected to ground. For best results, this pin should be connected directly to a ground plane on the board. The path length should be kept as short as possible to minimize parasitic inductance.
- Circuit Board Layout Recommendations for suppression of ESD.** Good circuit board layout is critical for the suppression of fast rise-time transients such as ESD. The following guidelines are recommended (Refer to application note SI99.01 for more detailed information):
- Place the TVS near the input terminals or connectors to restrict transient coupling.
  - Minimize the path length between the TVS and the protected line.
  - Minimize all conductive loops including power and ground loops.
  - The ESD transient return path to ground should be kept as short as possible.
  - Never run critical signals near board edges.
  - Use ground planes whenever possible.