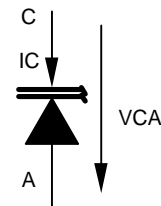


SPECIAL FEATURES

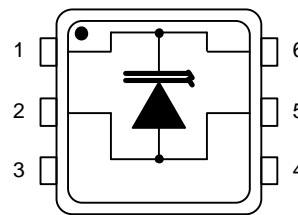
- Zener characteristic with voltage snap-back to protect against ESD hits
- High avalanche voltage, low leakage and low capacitance avoid signal attenuation
- Compatible to all 5V logic families
- Space saving, low inductance TSOC surface mount package
- Symmetric dual-port bondout to maximize energy dissipation in protection device
- Industrial temperature range

SYMBOL AND CONVENTIONS



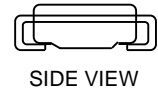
PACKAGE OUTLINE

TSOC SURFACE MOUNT PACKAGE



TOP VIEW

3.7 X 4.0 X 1.5 mm
 See Mech. Drawings
 Section



SIDE VIEW

ORDERING INFORMATION

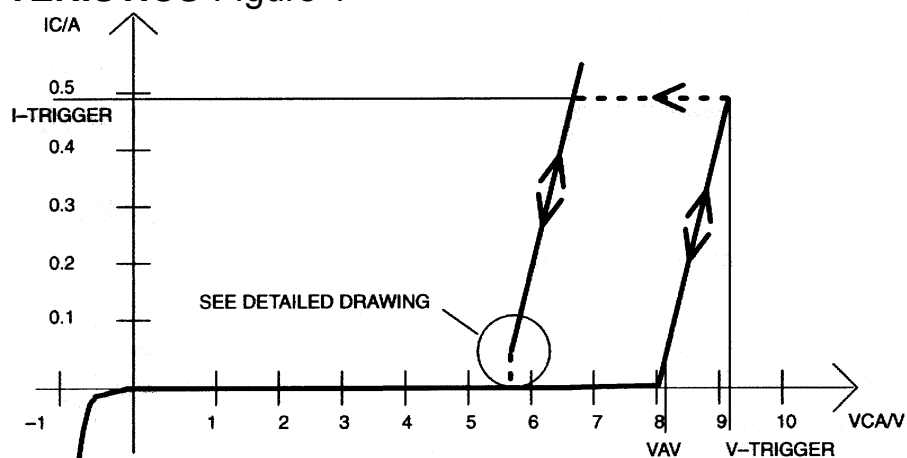
DS9502P 6-lead TSOC package

DESCRIPTION

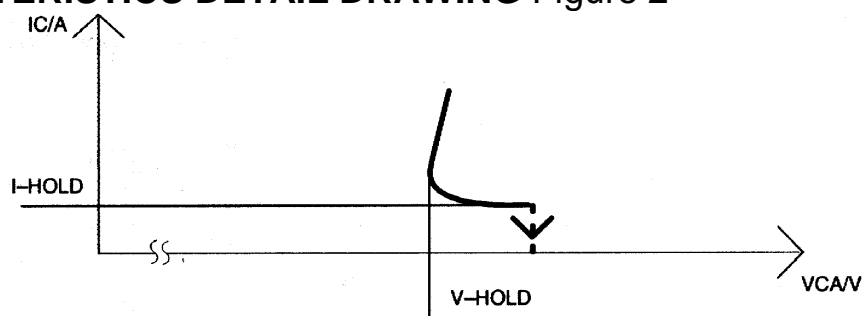
This DS9502 was designed as an additional ESD protection for SRAM-based battery-buffered portable memory modules. The memory chips used for these modules have already a strong ESD-protection structure on their I/O line. Together with the DS9502 the ESD protection level is raised to more than 27 kV (IEC 801-2 Reference model). In case of abnormal ESD hits beyond its maximum ratings the DS9502 will eventually fail "short" thus preventing further damage.

During normal operation the DS9502 behaves like a regular 7.5V Zener Diode. When the voltage exceeds the trigger voltage, the I/V characteristic of the device will "snapback" allowing the same or higher amount of current to flow, but at a significantly lower voltage. As long as a minimum current or voltage is maintained, the device will stay in the "snapback mode". If the voltage or the current falls below the holding voltage or holding current, the device will abruptly change to its normal mode and conduct only a small leakage current.

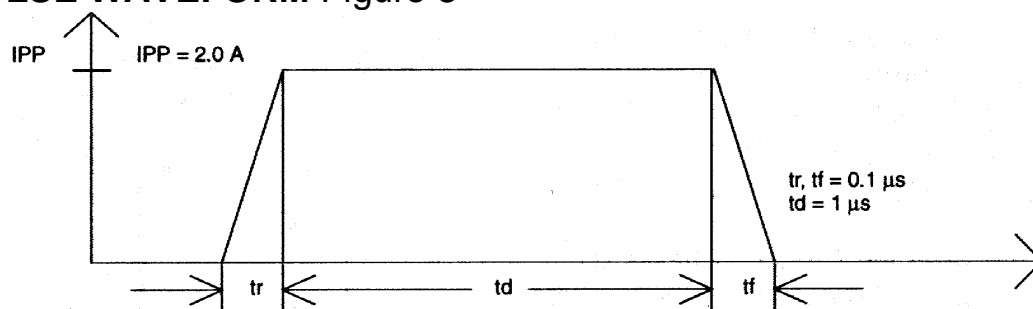
DC CHARACTERISTICS Figure 1



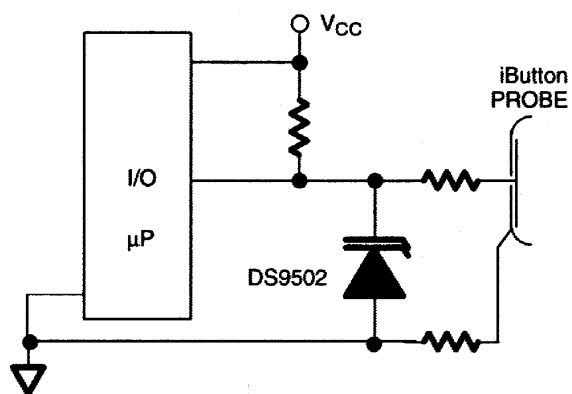
DC CHARACTERISTICS DETAIL DRAWING Figure 2



TEST PULSE WAVEFORM Figure 3



TYPICAL APPLICATION Figure 4



PHYSICAL SPECIFICATIONS

| | |
|--------|------------------------|
| Size | See mechanical drawing |
| Weight | 0.5 grams |

ABSOLUTE MAXIMUM RATINGS*

| | |
|---------------------------------------|----------------------|
| Operating Temperature | -40°C to +85°C |
| Storage Temperature | -55°C to +125°C |
| Soldering Temperature | 260°C for 10 seconds |
| Continuous DC Current Through Package | 80 mA |

* This is a stress rating only and functional operation of the device at these or any other conditions above those indicated in the operation sections of this specification is not implied. Exposure to absolute maximum rating conditions for extended periods of time may affect reliability.

ELECTRICAL CHARACTERISTICS

(-40°C to +85°C)

| PARAMETER | SYMBOL | MIN | TYP | MAX | UNITS | NOTES |
|----------------------------------|---------------|-----|------|------|-------|-------|
| Leakage Current | I_L | | 30 | 100 | nA | 2 |
| Avalanche Voltage | V_{AV} | 7.4 | | 7.8 | V | 1,3 |
| Trigger Voltage | $V_{TRIGGER}$ | | 9.0 | 9.5 | V | 1 |
| Trigger Current | $I_{TRIGGER}$ | | 600 | 1000 | mA | |
| Holding Voltage | V_{HOLD} | 5.5 | | | V | 1 |
| Holding Current | I_{HOLD} | 30 | | | mA | |
| Forward Voltage (-10 mA) | V_F | | -0.7 | -0.8 | V | 4 |
| Forward Current (-0.7V) | I_F | | -10 | -100 | mA | 4 |
| Maximum Peak Current | I_{PP} | | 2.0 | | A | 5 |
| Continuous Current Through Diode | I_{CC} | | | ±160 | mA | 6 |

CAPACITANCE

($t_A=25^\circ\text{C}$)

| PARAMETER | SYMBOL | MIN | TYP | MAX | UNITS | NOTES |
|---------------------------|----------|-----|-----|-----|-------|-------|
| Junction Capacitance (5V) | C_{J5} | | 55 | | pF | 1 |
| Junction Capacitance (0V) | C_{J0} | | 100 | | pF | 1 |

THERMAL RESISTANCE

| PARAMETER | SYMBOL | MIN | TYP | MAX | UNITS | NOTES |
|---------------------|-----------------|-----|-----|-----|-------|-------|
| Junction To Package | $R_{\Theta JC}$ | | | 75 | K/W | |
| Junction To Ambient | $R_{\Theta JA}$ | | | 200 | K/W | |

NOTES:

1. All voltages are referenced from Cathode to Anode.
2. At 7.0V.
3. At 0.3 μA .
4. Typical values at room temperature.
5. See pulse specification.
6. In either direction (forward or reverse) through the diode (pins 1 & 6 and 2 & 5 tied together, otherwise +80 mA max).

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