

Bidirectional Symmetrical (BiSy) Low Capacitance, Dual-Line ESD Protection Diode in SOT-323



FEATURES

- For CAN-bus applications
- Small SOT-323 package
- $T_J \text{ max.} = 175 \text{ }^\circ\text{C}$
- 2-line ESD protection
- Working range $\pm 33 \text{ V}$
- Low leakage current $I_R < 0.05 \mu\text{A}$
- Low load capacitance $C_D < 9.5 \text{ pF}$
- ESD immunity acc. IEC 61000-4-2 $\pm 30 \text{ kV}$ contact discharge $\pm 30 \text{ kV}$ air discharge
- ESD capability according to AEC-Q101: human body model: class H3B: $> 8 \text{ kV}$
- e3 - pins plated with tin (Sn)
- AEC-Q101 qualified available
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912


RoHS
COMPLIANT

MARKING (example only)



ABC = type code (see table below)
 WW = date code working week
 VY = date code year

LINKS TO ADDITIONAL RESOURCES



| ORDERING INFORMATION | | | | | | | |
|--------------------------|--------------------------------|---|-------|----------------|--|----------------------------|--|
| PART NUMBER (EXAMPLE) | ENVIRONMENTAL AND QUALITY CODE | | | PACKAGING CODE | | ORDERING CODE (EXAMPLE) | |
| | AEC-Q101 QUALIFIED | RoHS-COMPLIANT + LEAD (Pb)-FREE TERMINATIONS | | TIN PLATED | 3K PER 7" REEL (8 mm TAPE) 15K/BOX = MOQ | | 10K PER 13" REEL (8 mm TAPE) 10K/BOX = MOQ |
| | | STANDARD | GREEN | | | | |
| VCAN33A2-03G | - | E | | 3 | -08 | | VCAN33A2-03G-E3-08 |
| VCAN33A2-03G | H | E | | 3 | -08 | | VCAN33A2-03GHE3-08 |
| VCAN33A2-03G | - | E | | 3 | | -18 | VCAN33A2-03G-E3-18 |
| VCAN33A2-03G | H | E | | 3 | | -18 | VCAN33A2-03GHE3-18 |

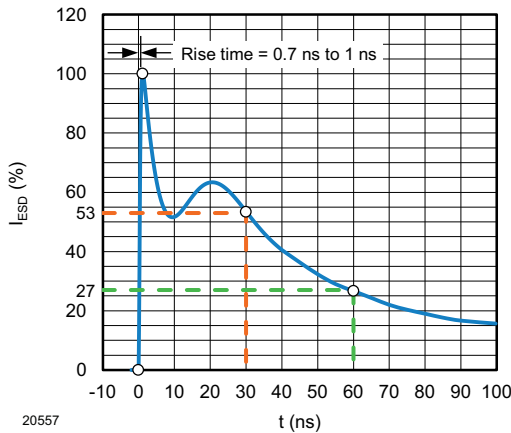
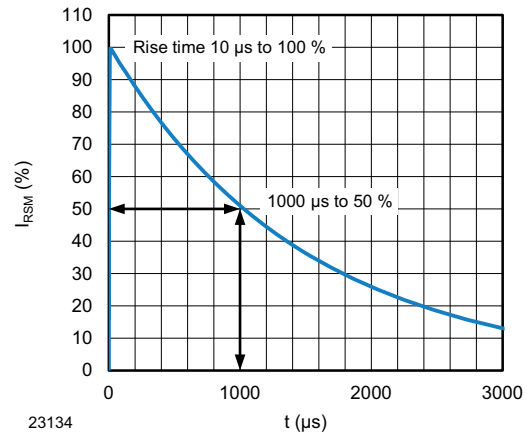
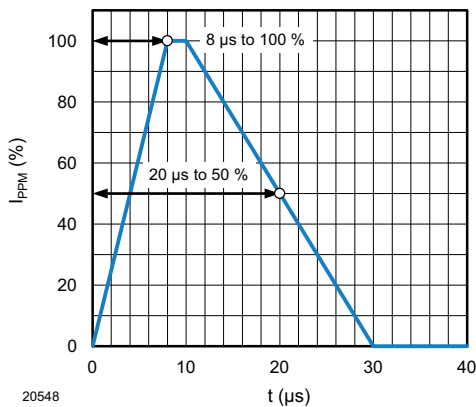
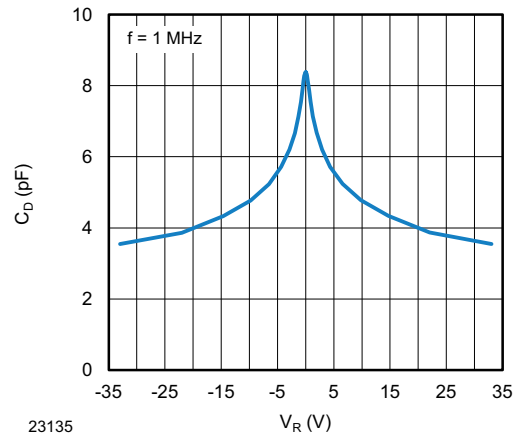
| PACKAGE DATA | | | | | | |
|--------------|--------------|-----------|--------|---|--------------------------------------|---------------------------------|
| DEVICE NAME | PACKAGE NAME | TYPE CODE | WEIGHT | MOLDING COMPOUND FLAMMABILITY RATING | MOISTURE SENSITIVITY LEVEL | SOLDERING CONDITIONS |
| VCAN33A2-03G | SOT-323 | 3A2 | 8.8 mg | UL 94 V-0 | MSL level 1 (according J-STD-020) | Peak temperature max. 260 °C |

| ABSOLUTE MAXIMUM RATINGS | | | | | |
|--------------------------|---|--|-----------|-------------|------|
| PARAMETER | TEST CONDITIONS | | SYMBOL | VALUE | UNIT |
| Peak pulse current | $T_A = 25 \text{ }^\circ\text{C}$, acc. IEC 61000-4-5; $t_p = 8/20 \mu\text{s}$; single shot | | I_{PPM} | 2.5 | A |
| Peak pulse power | $T_A = 25 \text{ }^\circ\text{C}$; pin 1 or 2 to pin 3; acc. IEC 61000-4-5; $t_p = 8/20 \mu\text{s}$; single shot | | P_{PP} | 140 | W |
| ESD immunity | Contact discharge acc. IEC 61000-4-2; 10 pulses, $T_A = 25 \text{ }^\circ\text{C}$ | | V_{ESD} | ± 30 | kV |
| | Air discharge acc. IEC 61000-4-2; 10 pulses, $T_A = 25 \text{ }^\circ\text{C}$ | | | ± 30 | kV |
| Operating temperature | Junction temperature | | T_J | -55 to +175 | °C |
| Storage temperature | | | T_{STG} | -55 to +175 | °C |

ELECTRICAL CHARACTERISTICS (pin 1 to 3, 3 to 1, 2 to 3, or 3 to 2)

 ($T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified)

| PARAMETER | TEST CONDITIONS/REMARKS | SYMBOL | MIN. | TYP. | MAX. | UNIT |
|---------------------------|--|---------------|------|------|------|---------------|
| Protection paths | Number of lines which can be protected | $N_{channel}$ | - | - | 2 | lines |
| Reverse stand-off voltage | Max. reverse working voltage | V_{RWM} | - | - | 33 | V |
| Reverse voltage | At $I_R = 0.05\text{ }\mu\text{A}$ | V_R | 33 | - | - | V |
| Reverse current | At $V_{RWM} = 33\text{ V}$ | I_R | - | - | 0.05 | μA |
| Reverse breakdown voltage | At $I_R = 1\text{ mA}$ | V_{BR} | 36 | 38 | 40 | V |
| Reverse clamping voltage | At $I_{PP} 1\text{ A}$; $t_p = 8/20\text{ }\mu\text{s}$ | V_C | - | 42 | 46 | V |
| | At $I_{PP} = I_{PPM} = 2.5\text{ A}$; $t_p = 8/20\text{ }\mu\text{s}$ | V_C | - | 50 | 56 | V |
| Capacitance | At $V_R = 0\text{ V}$, $f = 1\text{ MHz}$ | C_D | - | 8.4 | 9.5 | pF |
| | Diode capacitance matching at $V_R = 0\text{ V}$, C_{D13} vs. C_{D23} | C_D | - | - | 1 | pF |

TYPICAL CHARACTERISTICS ($T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified)

 Fig. 1 - ESD Discharge Current Wave Form acc. IEC 61000-4-2 (330 Ω / 150 pF)

 Fig. 3 - 10/1000 μs Peak Pulse Current Wave Form

 Fig. 2 - 8/20 μs Peak Pulse Current Wave Form acc. IEC 61000-4-5

 Fig. 4 - Typical Capacitance C_D vs. Reverse Voltage V_R

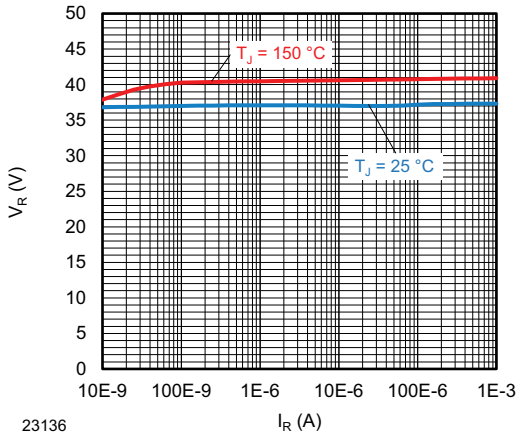


Fig. 5 - Typical Reverse Voltage V_R vs. Reverse Current I_R

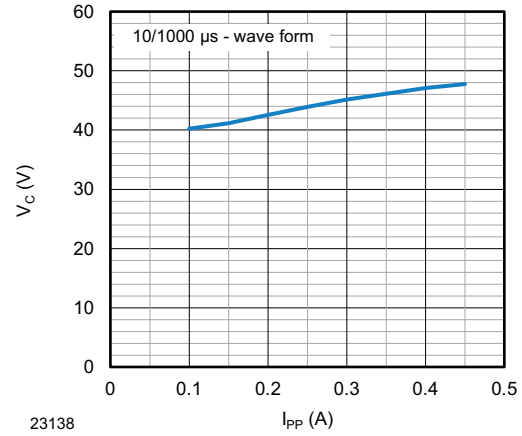


Fig. 7 - Typical Peak Clamping Voltage V_{C-TLP} vs. Peak Pulse Current I_{TLP}

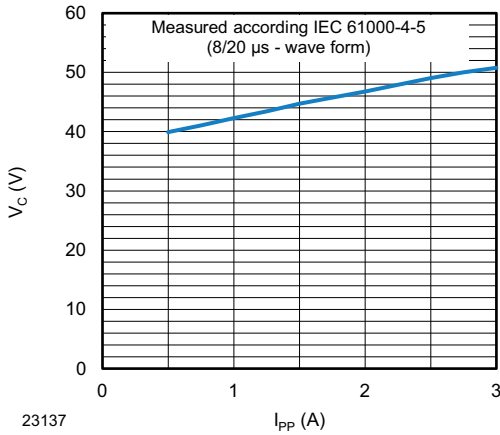


Fig. 6 - Typical Peak Clamping Voltage V_C vs. Peak Pulse Current I_{PP}

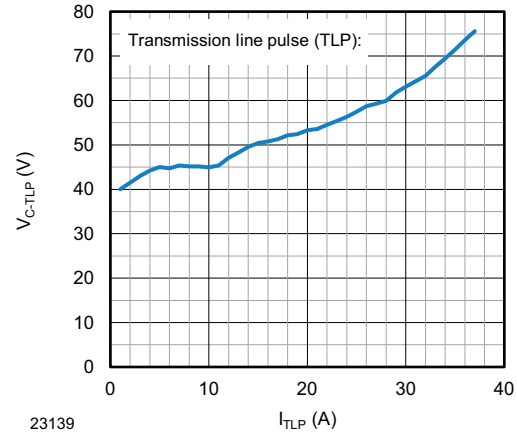
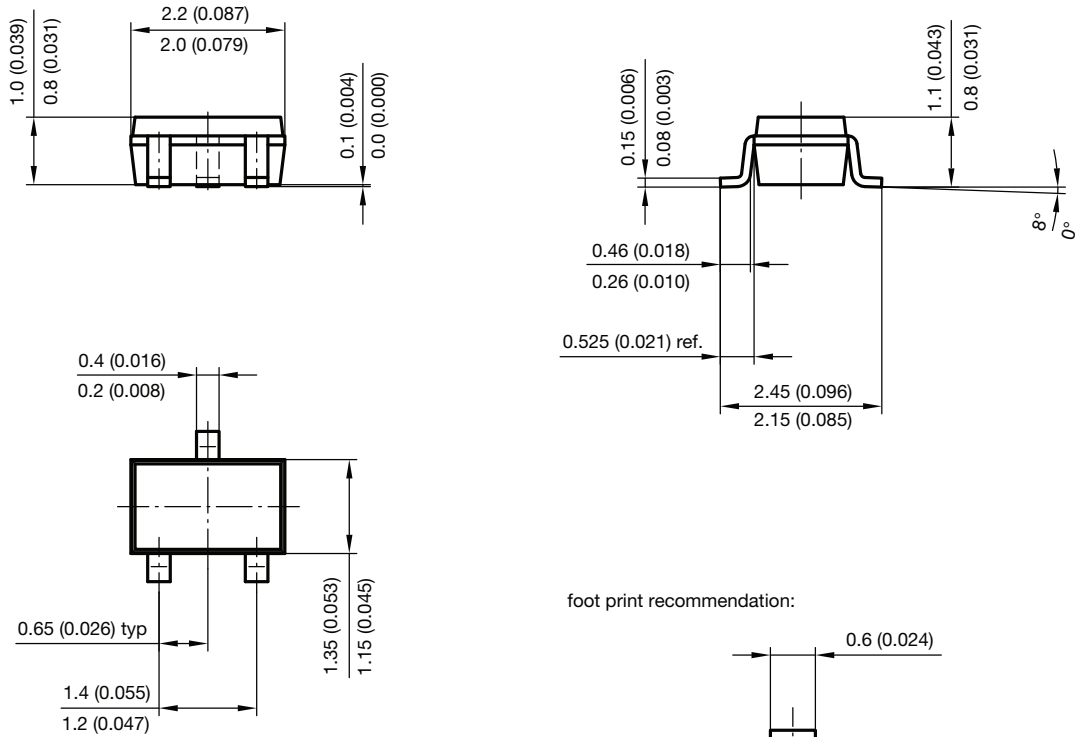


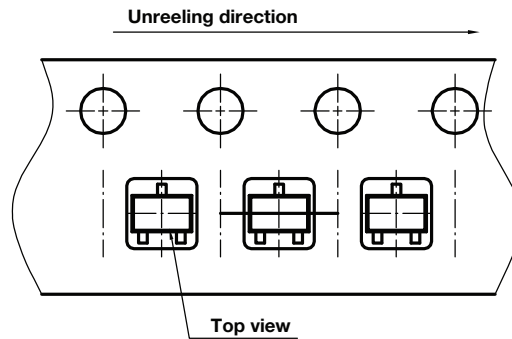
Fig. 8 - Typical Clamping Voltage V_{C-TLP} vs. Pulse Current I_{TLP}

PACKAGE DIMENSIONS in millimeters (inches) **SOT-323**



Document no.: 6.541-5040.02-4
 Rev. 1 - Date: 06. April 2010
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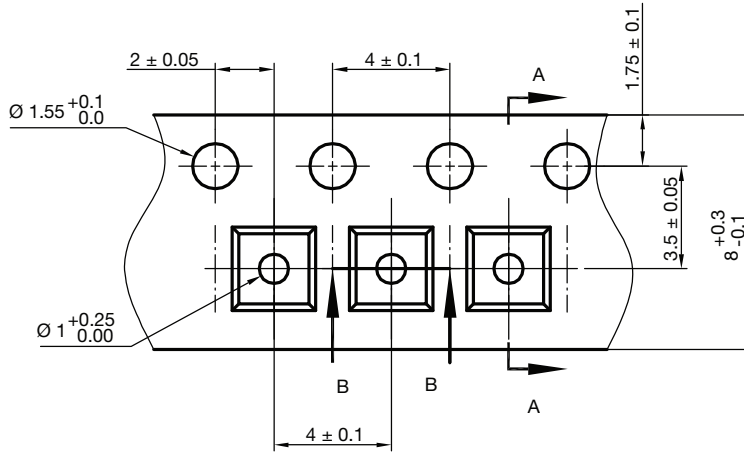
ORIENTATION IN CARRIER TAPE SOT-323



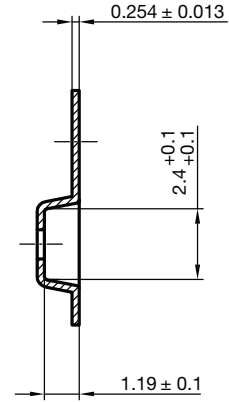
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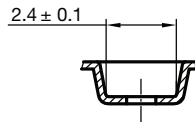
CARRIER TAPE SOT-323



A-A Section



B-B Section



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Created - Date: 09. Feb. 2010
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