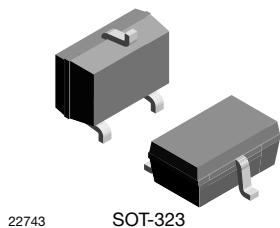
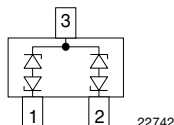


# Bidirectional Symmetrical (BiSy) Low Capacitance, Dual-Line ESD Protection Diode in SOT-323

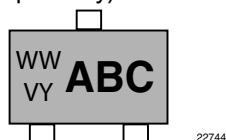


## FEATURES

- For CAN-bus applications
- Small SOT-323 package
- $T_J$  max. = 175 °C
- 2-line ESD protection
- Working range  $\pm 33$  V
- Low leakage current  $I_R < 0.05 \mu A$
- Low load capacitance  $C_D < 9.5$  pF
- ESD immunity acc. IEC 61000-4-2  
 $\pm 30$  kV contact discharge  
 $\pm 30$  kV air discharge
- ESD capability according to AEC-Q101: human body model: class H3B:  $> 8$  kV
- e3 - pins plated with tin (Sn)
- AEC-Q101 qualified available
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://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<br>(EXAMPLE) | ENVIRONMENTAL AND QUALITY CODE |                                                 |       |               | PACKAGING CODE                                 |                                                  | ORDERING CODE<br>(EXAMPLE) |
|--------------------------|--------------------------------|-------------------------------------------------|-------|---------------|------------------------------------------------|--------------------------------------------------|----------------------------|
|                          | AEC-Q101<br>QUALIFIED          | RoHS-COMPLIANT + LEAD<br>(Pb)-FREE TERMINATIONS |       | TIN<br>PLATED | 3K PER 7" REEL<br>(8 mm TAPE)<br>15K/BOX = MOQ | 10K PER 13" REEL<br>(8 mm TAPE)<br>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<br>FLAMMABILITY RATING | MOISTURE<br>SENSITIVITY LEVEL        | SOLDERING<br>CONDITIONS         |
|--------------|--------------|-----------|--------|-----------------------------------------|--------------------------------------|---------------------------------|
| VCAN33A2-03G | SOT-323      | 3A2       | 8.8 mg | UL 94 V-0                               | MSL level 1<br>(according J-STD-020) | Peak temperature<br>max. 260 °C |

## ABSOLUTE MAXIMUM RATINGS

| PARAMETER             | TEST CONDITIONS                                                                          | SYMBOL    | VALUE       | UNIT |
|-----------------------|------------------------------------------------------------------------------------------|-----------|-------------|------|
| Peak pulse current    | $T_A = 25$ °C, acc. IEC 61000-4-5; $t_p = 8/20 \mu s$ ; single shot                      | $I_{PPM}$ | 2.5         | A    |
| Peak pulse power      | $T_A = 25$ °C; pin 1 or 2 to pin 3; acc. IEC 61000-4-5; $t_p = 8/20 \mu s$ ; single shot | $P_{PP}$  | 140         | W    |
| ESD immunity          | Contact discharge acc. IEC 61000-4-2; 10 pulses, $T_A = 25$ °C                           | $V_{ESD}$ | $\pm 30$    | kV   |
|                       | Air discharge acc. IEC 61000-4-2; 10 pulses, $T_A = 25$ °C                               |           | $\pm 30$    | 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 | $\mu\text{A}$ |
| 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             |
|                           | At $V_R = 0\text{ V}$ , $f = 1\text{ MHz}$                                 | $C_D$         | -    | 8.4  | 9.5  | pF            |
| Capacitance               | Diode capacitance matching at $V_R = 0\text{ V}$ , $C_{D13}$ vs. $C_{D23}$ | $C_D$         | -    | -    | 1    | pF            |

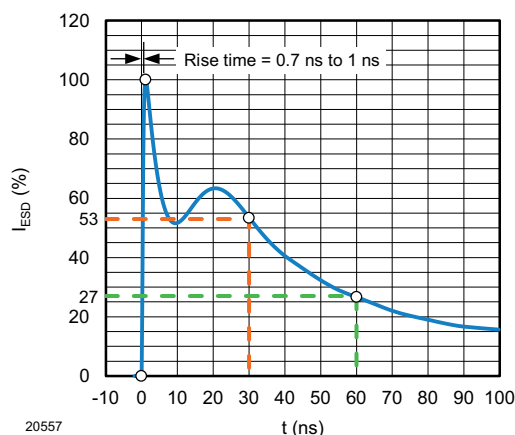
**TYPICAL CHARACTERISTICS** ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified)


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

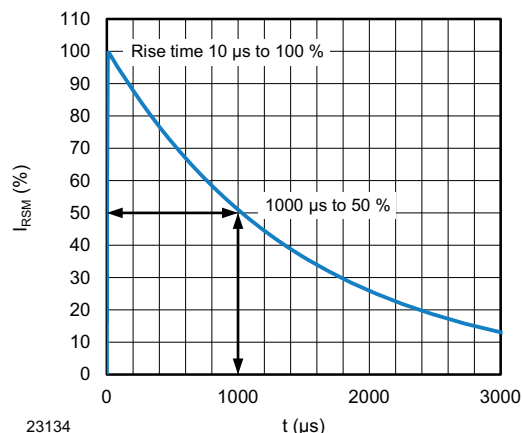


Fig. 3 - 10/1000  $\mu\text{s}$  Peak Pulse Current Wave Form

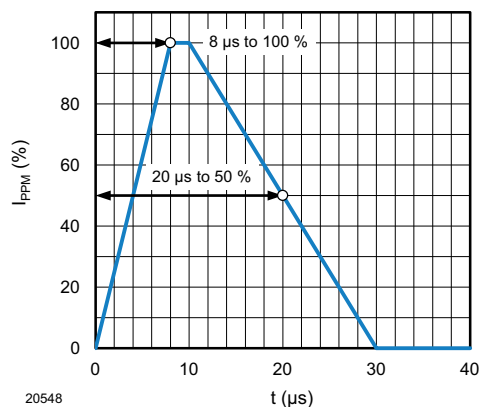


Fig. 2 - 8/20  $\mu\text{s}$  Peak Pulse Current Wave Form  
acc. IEC 61000-4-5

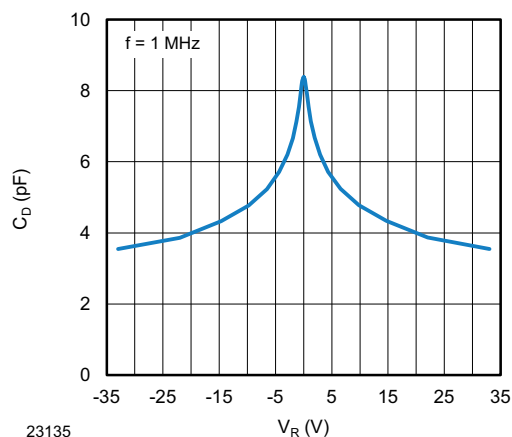


Fig. 4 - Typical Capacitance  $C_D$  vs. Reverse Voltage  $V_R$

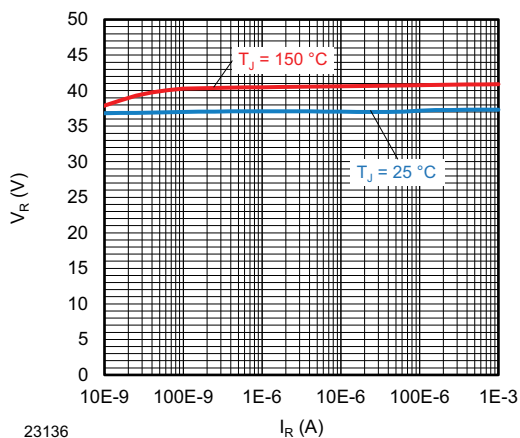


Fig. 5 - Typical Reverse Voltage  $V_R$  vs. Reverse Current  $I_R$

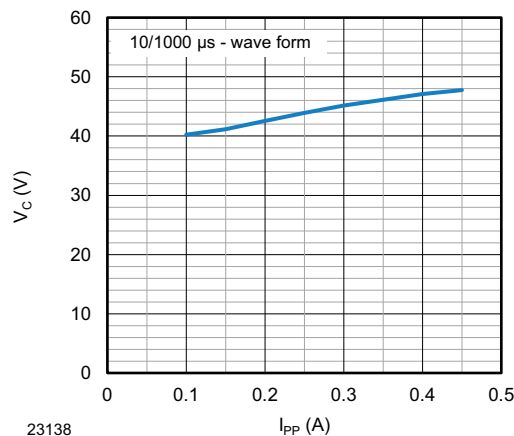


Fig. 7 - Typical Peak Clamping Voltage  $V_{C-TLP}$  vs. Peak Pulse Current  $I_{TLP}$

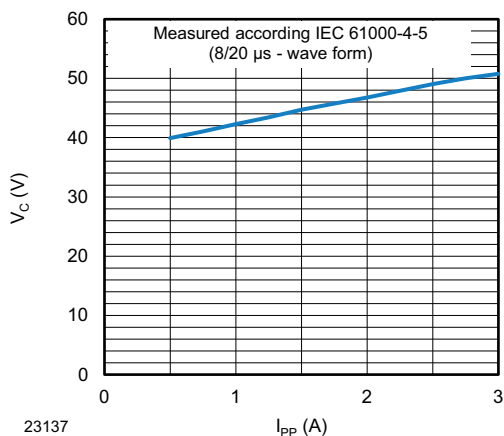


Fig. 6 - Typical Peak Clamping Voltage  $V_C$  vs. Peak Pulse Current  $I_{PP}$

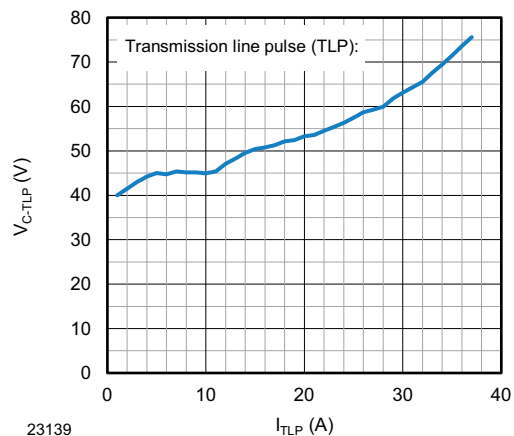
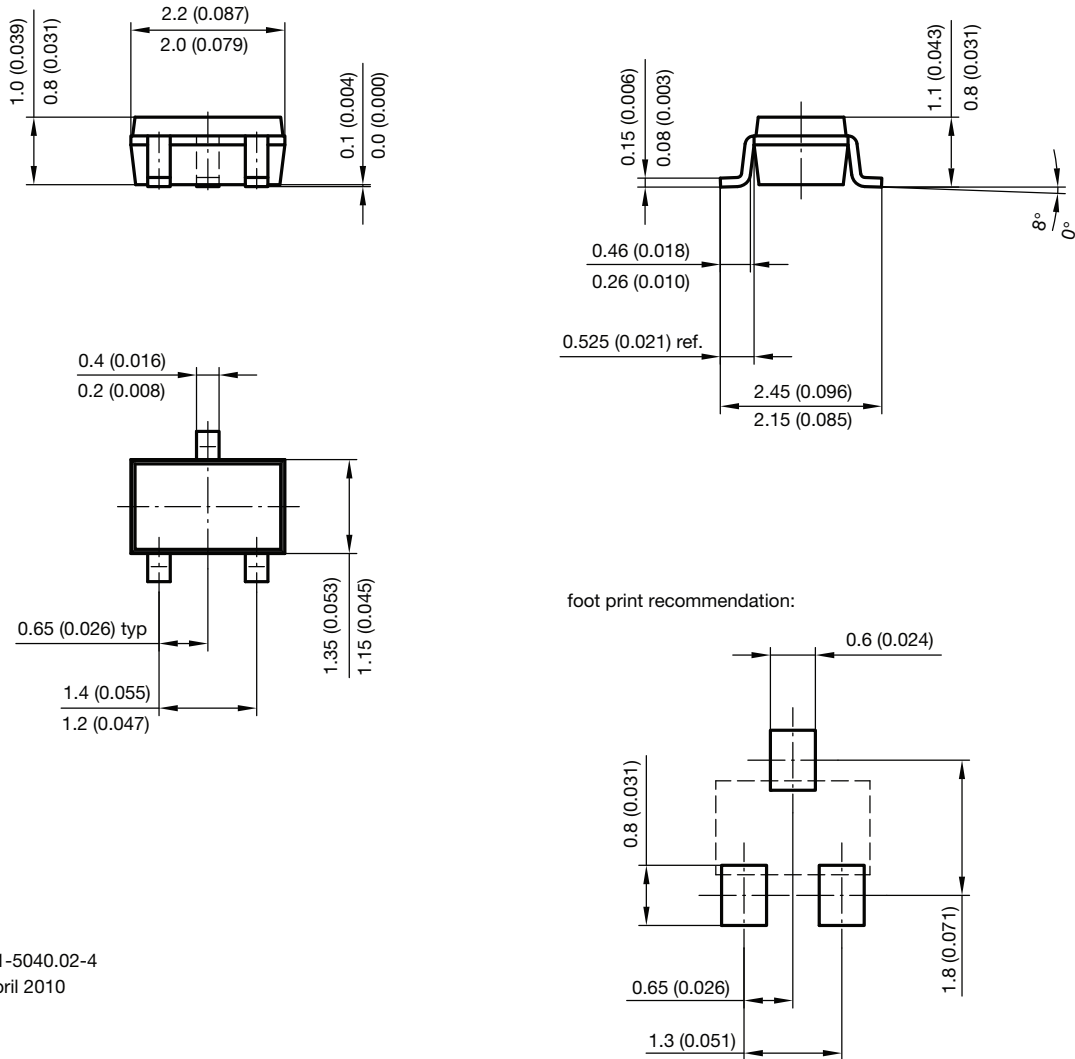
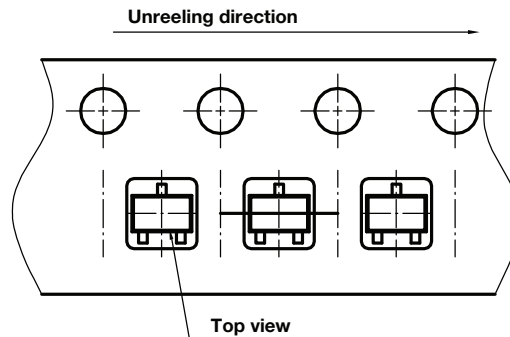


Fig. 8 - Typical Clamping Voltage  $V_{C-TLP}$  vs. Pulse Current  $I_{TLP}$

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


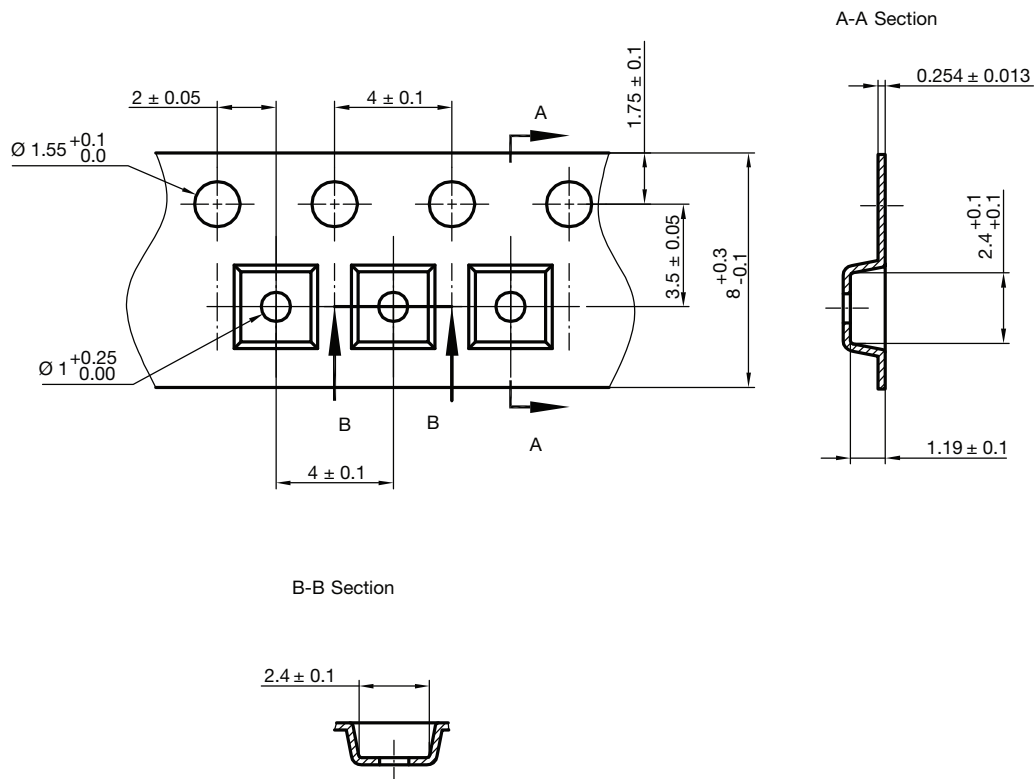
Document no.: 6.541-5040.02-4  
Rev. 1 - Date: 06. April 2010  
21113

**ORIENTATION IN CARRIER TAPE SOT-323**


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22761



CARRIER TAPE SOT-323



Document no.: S8-V-3717.08-002 (4)  
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22762



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