

## 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](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 (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

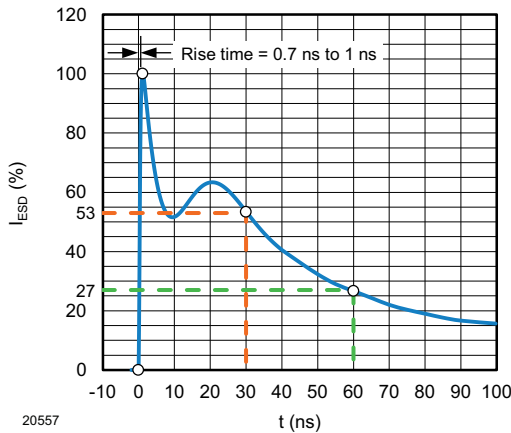
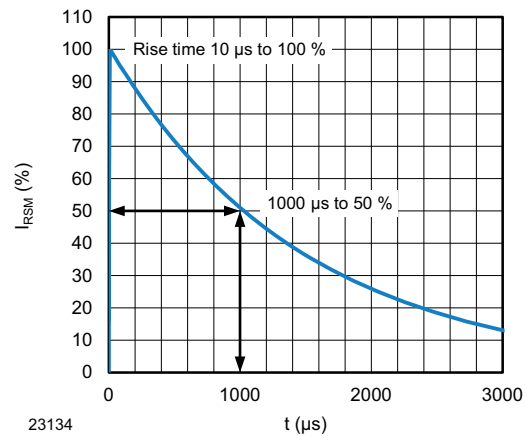
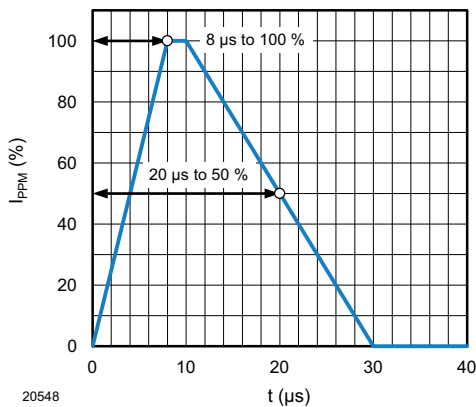
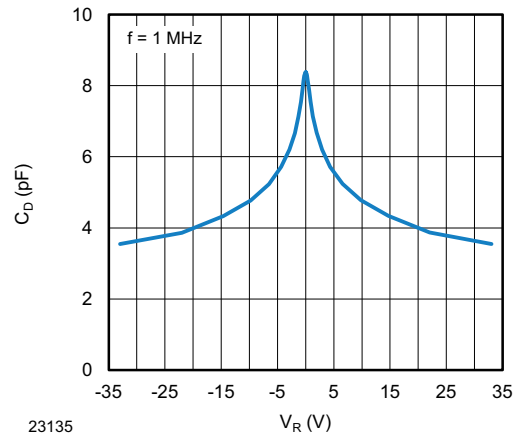
PACKAGE DATA						
DEVICE NAME	PACKAGE NAME	TYPE CODE	WEIGHT	MOLDING COMPOUND FLAMMABILITY RATING	MOISTURE SENSITIVITY LEVEL	SOLDERING CONDITIONS
VCAN33A2-03G	SOT-323	3A2	8.8 mg	UL 94 V-0	MSL level 1 (according J-STD-020)	Peak temperature max. 260 °C

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, $T_A = 25 \text{ }^\circ\text{C}$		$V_{ESD}$	$\pm 30$	kV
	Air discharge acc. IEC 61000-4-2; 10 pulses, $T_A = 25 \text{ }^\circ\text{C}$			$\pm 30$	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
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  $\Omega$  / 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  $V_R$

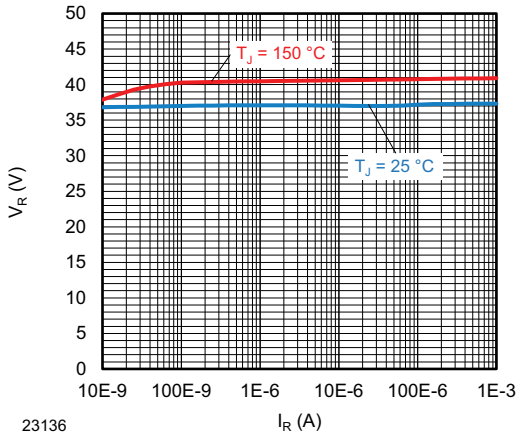


Fig. 5 - Typical Reverse Voltage  $V_R$  vs. Reverse Current  $I_R$

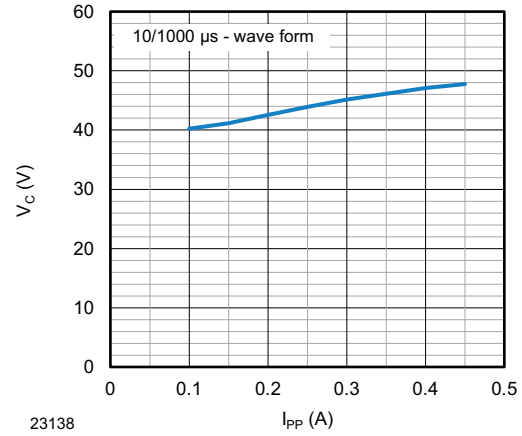


Fig. 7 - Typical Peak Clamping Voltage  $V_{C-TLP}$  vs. Peak Pulse Current  $I_{TLP}$

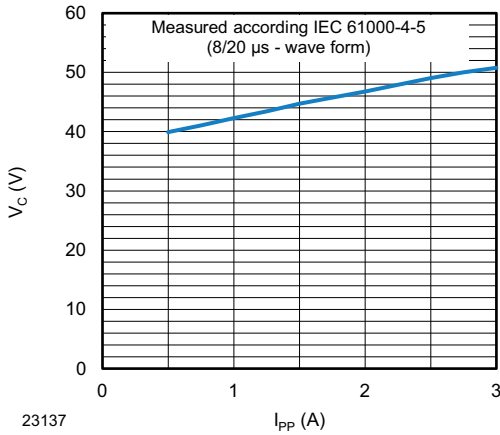


Fig. 6 - Typical Peak Clamping Voltage  $V_C$  vs. Peak Pulse Current  $I_{PP}$

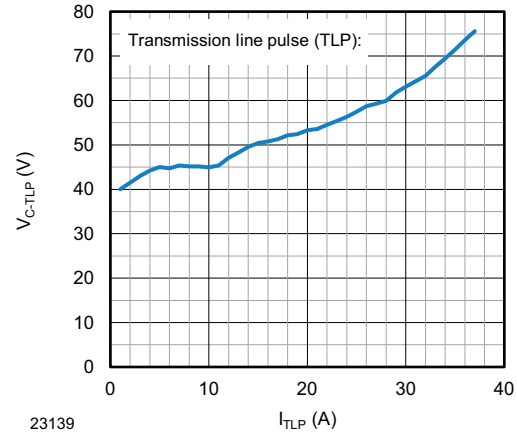
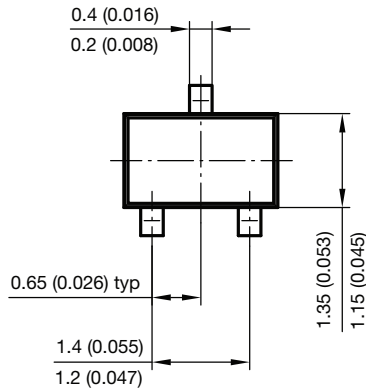
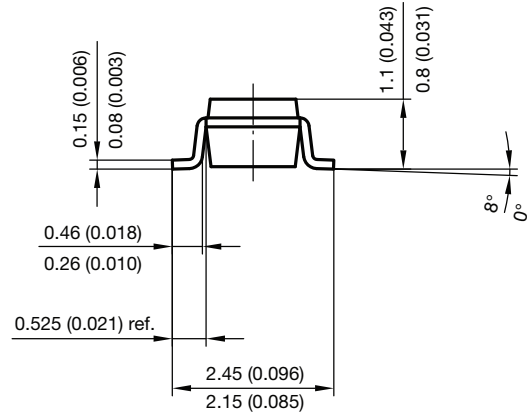
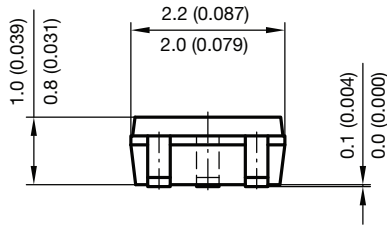


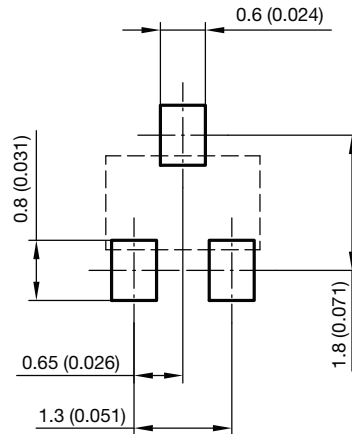
Fig. 8 - Typical Clamping Voltage  $V_{C-TLP}$  vs. Pulse Current  $I_{TLP}$



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

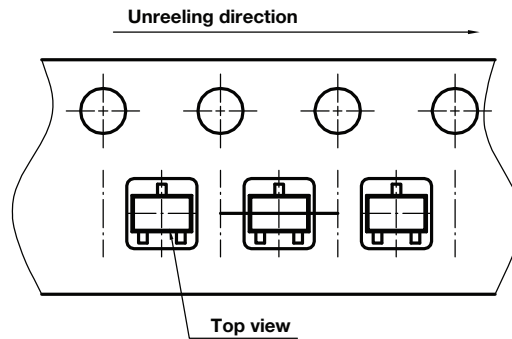


foot print recommendation:



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Rev. 1 - Date: 06. April 2010  
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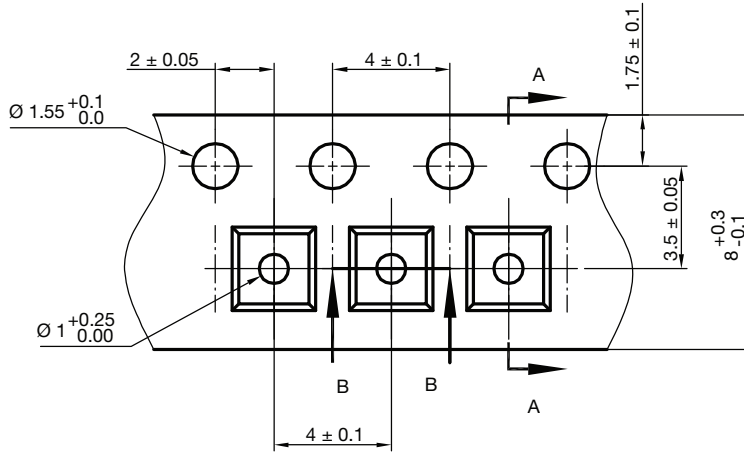
**ORIENTATION IN CARRIER TAPE SOT-323**



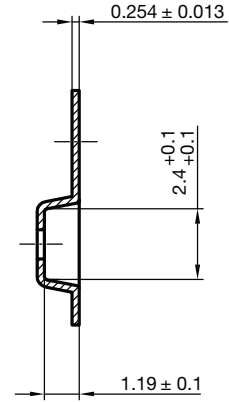
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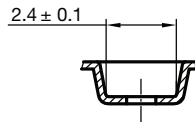
CARRIER TAPE SOT-323



A-A Section



B-B Section



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