RoHS

COMPLIANT

HALOGEN

FREE

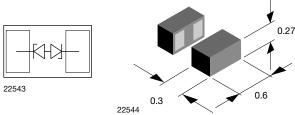
GREEN

(5-2008)



Vishay Semiconductors

Bidirectional Symmetrical (BiSy) Single Line ESD Protection Diode in Silicon Package



MARKING (example only)



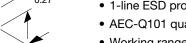
1 = year code Open circle = month code and pin 1 XY = type code

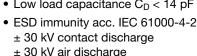
DESIGN SUPPORT TOOLS click logo to get started



FEATURES

- Ultra compact CLP0603 package
- Low package height < 0.3 mm
- 1-line ESD protection
- AEC-Q101 qualified available
- Working range ± 5.5 V
- Low leakage current < 0.1 μA
- Low load capacitance C_D < 14 pF
- ± 30 kV contact discharge ± 30 kV air discharge
- · Lead material: Ni
- · Topside coating





• Lead plating: Au (e4)

• e4 - precious metal (e.g. Ag, Au, NiPd, NiPdAu) (no Sn)

· Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

ORDERING INFORMATION							
	EN	NVIRONMENTAL AND QUALITY CODE PACKAGING CODE					
PART NUMBER (EXAMPLE)	AEC-Q101 QUALIFIED RoHS-COMPLIANT + LEAD (Pb)-FREE TERMINATIONS		GOLD PLATED	15K PER 7" REEL (8 mm TAPE)	ORDERING CODE (EXAMPLE)		
	QOALII ILD	GREEN	15K/BO				
VCUT05E1-SD0	-	G	4	-08	VCUT05E1-SD0-G4-08		
VCUT05E1-SD0	Н	G	4	-08	VCUT05E1-SD0HG4-08		

PACKAGE DATA							
DEVICE NAME	PACKAGE NAME	TYPE CODE	WEIGHT	SOLDERING CONDITIONS			
VCUT05E1-SD0	CLP0603-2L	5D	0.12 mg	260 °C/10 s at terminals Reflow soldering according JEDEC® STD-020			

ABSOLUTE MAXIMUM RATINGS							
PARAMETER	SYMBOL	VALUE	UNIT				
Peak pulse current	acc. IEC 61000-4-5, 8/20 µs/single shot	I _{PPM}	6	Α			
Peak pulse power	Pin 1 to pin 2 acc. IEC 61000-4-5; $t_p = 8/20 \mu s$; single shot	P _{PP}	78	W			
ESD immunity	Contact discharge acc. IEC 61000-4-2; 10 pulses	V	± 30	kV			
	Air discharge acc. IEC 61000-4-2; 10 pulses	- V _{ESD}	± 30				
Operating temperature	Junction temperature	TJ	-55 to +150	°C			
Storage temperature		T _{stg}	-55 to +150	°C			

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CUT THE SPIKES WITH VCUT05E1-SD0

The VCUT05E1-SD0 is a Bidirectional and Symmetrical (BiSy) ESD protection device which clamps positive and negative overvoltage transients to ground. Connected between the signal or data line and the ground the VCUT05E1-SD0 offers a high isolation (low leakage current, low capacitance) within the specified working range. Due to the short leads and small package size of the tiny CLP0603 package the line inductance is very low, so that fast transients like and ESD strike can be clamped with minimal over- or undershoots.

ELECTRICAL CHARACTERISTICS (T _{amb} = 25 °C, unless otherwise specified)						
PARAMETER	TEST CONDITIONS/REMARKS	SYMBOL	MIN.	TYP.	MAX.	UNIT
Protection paths	Number of lines which can be protected	N _{channel}	-	-	1	lines
Reverse stand-off voltage	Max. reverse working voltage	V_{RWM}	-	-	5.5	V
Reverse voltage	at I _R = 0.1 μA	V_R	5.5	-	-	V
Reverse current	at V _{RWM} = 5.5 V	I _R	-	-	0.1	μΑ
Reverse breakdown voltage	at I _R = 1 mA	V_{BR}	6.5	8	9	V
B	at I _{PP} = 1 A	V _C	-	8.8	10	V
Reverse clamping voltage	at I _{PP} = I _{PPM} = 6 A	V _C	-	11	13	V
Capacitance	at V _R = 0 V; f = 1 MHz	C _D	-	13	14	pF
	at V _R = 2.5 V; f = 1 MHz	C _D	-	11	-	pF
Clamping voltage	Transmission Line Pulse (TLP); $t_p = 100 \text{ ns}$ $I_{TLP} = 8 \text{ A}$	V _{C-TLP}	-	9.8	-	V
Clamping voltage	mping voltage Transmission Line Pulse (TLP); $t_p = 100 \text{ ns}$ $I_{TLP} = 16 \text{ A}$		-	11	-	V
Dynamic resistance	Transmission Line Pulse (TLP); t _p = 100 ns	R _{DYN}	-	0.15	-	Ω

TYPICAL CHARACTERISTICS (T_{amb} = 25 °C, unless otherwise specified)

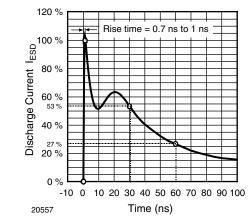


Fig. 1 - ESD Discharge Current Wave Form acc. IEC 61000-4-2 (330 Ω /150 pF)

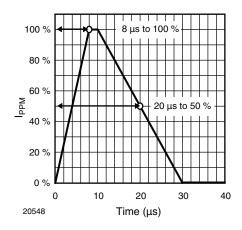


Fig. 2 - 8/20 µs Peak Pulse Current Wave Form acc. IEC 61000-4-5



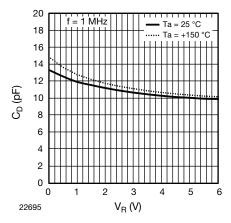


Fig. 3 - Typical Capacitance C_D vs. Reverse Voltage V_R

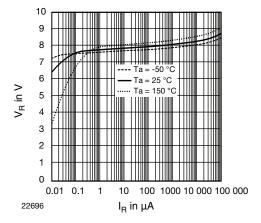


Fig. 4 - Typical Reverse Voltage V_R vs. Reverse Current I_R

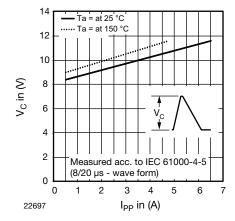


Fig. 5 - Typical Peak Clamping Voltage V_{C} vs. Peak Pulse Current I_{PP}

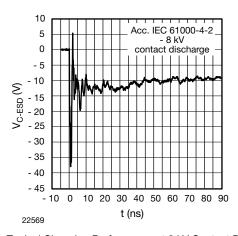


Fig. 6 - Typical Clamping Performance at 8 kV Contact Discharge acc. IEC 61000-4-2

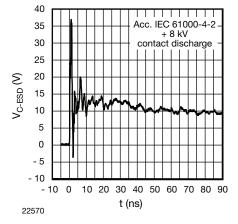


Fig. 7 - Typical Clamping Performance at 8 kV Contact Discharge acc. IEC 61000-4-2

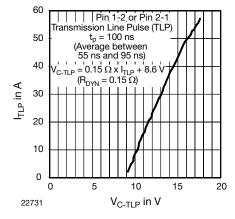
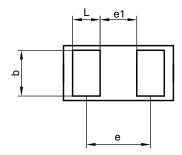


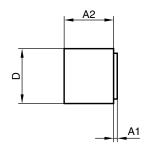
Fig. 8 - Typical Clamping Voltage at 100 ns Transmission Line Pulse



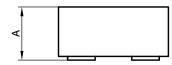
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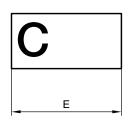
PACKAGE DIMENSIONS in millimeters (mils): CLP0603-2L





Package = chip dimensions in mm [mils]





	Millimeters			mils			
	min.	nom.	max.	min.	nom.	max.	
Α	0.25	0.28	0.30	9.84	11.02	11.81	
A1	0.01	0.01	0.02	0.39	0.39	0.79	
A2	0.24	0.27	0.28	9.45	10.63	11.02	
b	0.22	0.25	0.28	8.66	9.84	11.02	
D	0.27	0.30	0.33	10.62	11.81	12.99	
Е	0.57	0.60	0.63	22.44	23.62	24.80	
е		0.40			15.75		
e1		0.25			9.84		
L	0.12	0.15	0.18	4.72	5.91	7.09	

22941

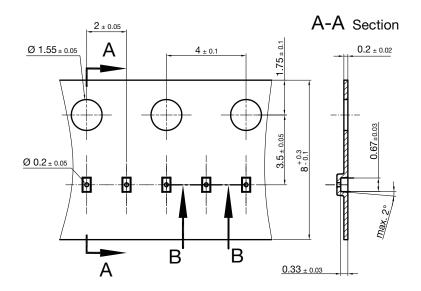
2 terminal leadless package (CLP) Document no.: S8-V-3906.04-023 (4) Created - Date: 22. Nov. 2010 Rev.8 - Date: 11. Nov. 2016

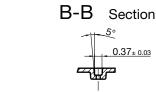
Footprint and soldering recommendation:

please see Application Note: www.vishay.com/doc?85917

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CARRIER TAPE in millimeters: **CLP0603-2L**

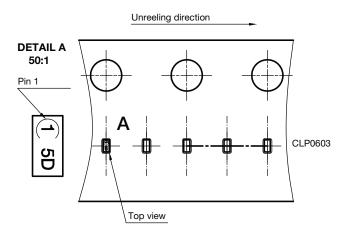




Cummulative tolerances of 10 sprocket holes is +/-0.2mm

22591 Document no. S8-V-3906.04-0025 (4) Created - Date: 22. Nov. 2010

ORIENTATION IN CARRIER CLP0603-2L



Orientation in Carrier Tape (CLP0603) S8-V-3906.04-026 (4) 22.10.2010 22936



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