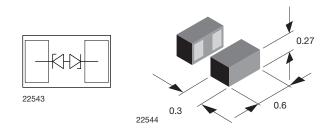
VCUT05E1-SD0

Vishay Semiconductors

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



www.vishay.com

MARKING (example only)

ISHA



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

DESIGN SUPPORT TOOLS AVAILABLE



FEATURES

- Ultra compact CLP0603 package
- Low package height < 0.3 mm
- 1-line ESD protection
- Working range ± 5.5 V
- Low leakage current < 0.1 μA
- Low load capacitance C_D < 14 pF
- ESD immunity acc. IEC 61000-4-2 ± 30 kV contact discharge ± 30 kV air discharge
- Lead plating: Au (e4)
- Lead material: Ni
- Topside coating
- e4 precious metal (e.g. Ag, Au, NiPd, NiPdAu) (no Sn)
- Material categorization: for definitions of compliance please see <u>www.vishay.com/doc?99912</u>

Pb-free
(e4)



ORDERING INFORMATION						
	ENVIRONMENTAL AND QUAL	PACKAGING CODE				
PART NUMBER (EXAMPLE)	RoHS-COMPLIANT + LEAD (Pb)-FREE TERMINATIONS	GOLD PLATED	15K PER 7" REEL (8 mm TAPE)	ORDERING CODE (EXAMPLE)		
	GREEN	15K/BOX = MOQ				
VCUT05E1-SD0-	G	4	-08	VCUT05E1-SD0-G4-08		

PACKAGE DATA							
DEVICE NAME	PACKAGE NAME	TYPE CODE	WEIGHT	SOLDERING CONDITIONS			
VCUT05E1-SD0	CLP0603-2L	5D	0.12 mg	Peak temperature max. 260 °C Reflow soldering according JEDEC [®] STD-020			

ABSOLUTE MAXIMUM RATINGS						
PARAMETER	TEST CONDITIONS	SYMBOL	VALUE	UNIT		
Peak pulse current	acc. IEC 61000-4-5, 8/20 µs/single shot	I _{PPM}	6	А		
Peak pulse power	Pin 1 to pin 2 acc. IEC 61000-4-5; t _p = 8/20 μs; single shot	P _{PP}	78	W		
	Contact discharge acc. IEC 61000-4-2; 10 pulses	N/	± 30	kV		
ESD immunity	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		

For technical questions, contact: ESDprotection@vishay.com

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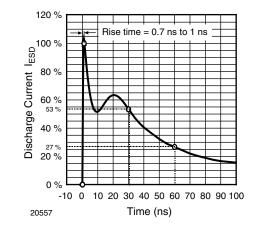
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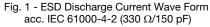
CUT THE SPIKES WITH VCUT05E1-SD0

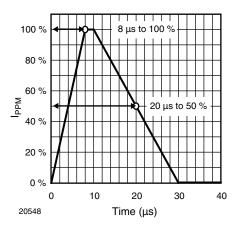
The VCUT05E1-SD0 is a Bidirectional and Symmetrical (BiSy) ESD protection device which clamps positive and negative overvoltage transients to ground. Connected between the signal or data line and the ground the VCUT05E1-SD0 offers a high isolation (low leakage current, low capacitance) within the specified 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.

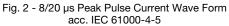
ELECTRICAL CHARACTERISTICS (T _{amb} = 25 °C, unless otherwise specified)							
PARAMETER	TEST CONDITIONS/REMARKS	SYMBOL	MIN.	TYP.	MAX.	UNIT	
Protection paths	Number of lines which can be protected	N _{channel}	-	-	1	lines	
Reverse stand-off voltage	Max. reverse working voltage	V _{RWM}	-	-	5.5	V	
Reverse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

TYPICAL CHARACTERISTICS (Tamb = 25 °C, unless otherwise specified)

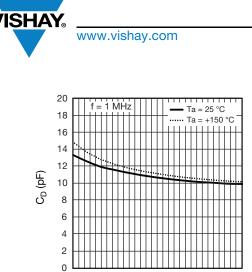








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Fig. 3 - Typical Capacitance C_D vs. Reverse Voltage V_R

3

V_R (V)

4

5

6

2

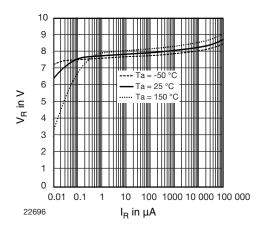


Fig. 4 - Typical Reverse Voltage V_R vs. Reverse Current I_R

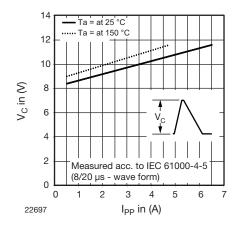


Fig. 5 - Typical Peak Clamping Voltage V_C vs. Peak Pulse Current I_{PP}

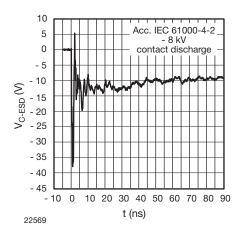


Fig. 6 - Typical Clamping Performance at 8 kV Contact Discharge acc. IEC 61000-4-2

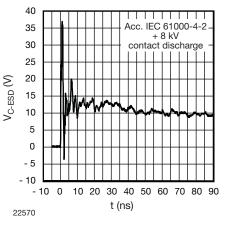


Fig. 7 - Typical Clamping Performance at 8 kV Contact Discharge acc. IEC 61000-4-2

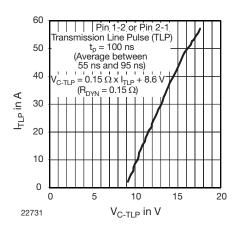


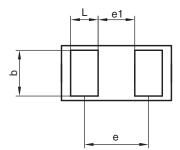
Fig. 8 - Typical Clamping Voltage at 100 ns Transmission Line Pulse (TLP)

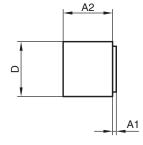
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PACKAGE DIMENSIONS in millimeters (mils): CLP0603-2L





Package = chip dimensions in mm [mils]

	Millimeters			mils			
	min.	nom.	max.	min.	nom.	max.	
A	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	
E	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:

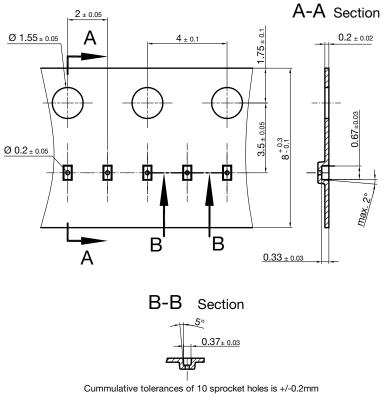
please see Application Note: www.vishay.com/doc?85917

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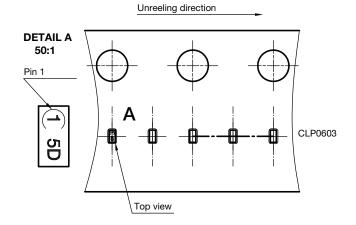
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CARRIER TAPE in millimeters: CLP0603-2L



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

5



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