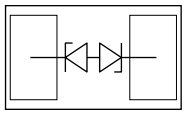
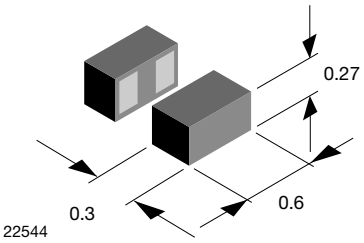
Bidirectional Symmetrical (BiSy) Single Line ESD-Protection Diode in Silicon Package



22543



22544

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 = 10 pF
- ESD-protection acc. IEC 61000-4-2
  ± 30 kV contact discharge
  ± 30 kV air discharge
- Lead plating: Au (e4)
- Lead material: TiNiAg
- Compliant to RoHS Directive 2002/95/EC and in accordance to WEEE 2002/96/EC

Pb-free

e4

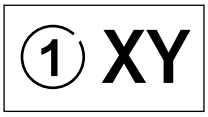
RoHS COMPLIANT

GREEN (5-2008)**

Note

** Please see document “Vishay Material Category Policy”: www.vishay.com/doc?99902

MARKING (example only)



22454

1 = Year code
Open circle = Month code and pin 1
XY = Type code

ORDERING INFORMATION			
DEVICE NAME	ORDERING CODE	TAPED UNITS PER REEL (8 mm TAPE ON 7" REEL)	MINIMUM ORDER QUANTITY
VCUT05D1-SD0	VCUT05D1-SD0-G4-08	15 000	15 000

PACKAGE DATA						
DEVICE NAME	PACKAGE NAME	TYPE CODE	WEIGHT	MOLDING COMPOUND FLAMMABILITY RATING	MOISTURE SENSITIVITY LEVEL	SOLDERING CONDITIONS
VCUT05D1-SD0	CLP0603	D1	0.12 mg	UL 94 V-0	MSL level 1 (according J-STD-020)	260 °C/10 s at terminals 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	A
Peak pulse power	Pin 1 to pin 2 acc. IEC 61000-4-5; t_p = 8/20 µs; single shot	P_{PP}	78	W
ESD immunity	Contact discharge acc. IEC61000-4-2; 10 pulses	V_{ESD}	± 30	kV
	Air discharge acc. IEC61000-4-2; 10 pulses		± 30	
Operating temperature	Junction temperature	T_J	- 55 to + 145	°C
Storage temperature		T_{stg}	- 55 to + 150	°C

CUT THE SPIKES WITH VCUT05D1-SD0

The VCUT05D1-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 VCUT05D1-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		V_{RWM}	-	-	5.5	V
Reverse voltage	at I = 0.1 µA	V_R	5.5	7.5	8.5	V
Reverse current	at V = 5.5 V	I_R	-	-	0.1	µA
Reverse breakdown voltage	at I = 1 mA	V_{BR}	6.5	8	9	V
Reverse clamping voltage	at I_{PP} = 1 A	V_C	-	8.8	10	V
	at I_{PP} = I_{PPM} = 6 A	V_C	-	11	13	V
Capacitance	at V = 0 V; f = 1 MHz	C_D	-	10	13	pF
	at V = 2.5 V; f = 1 MHz	C_D	-	8.5	-	pF

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

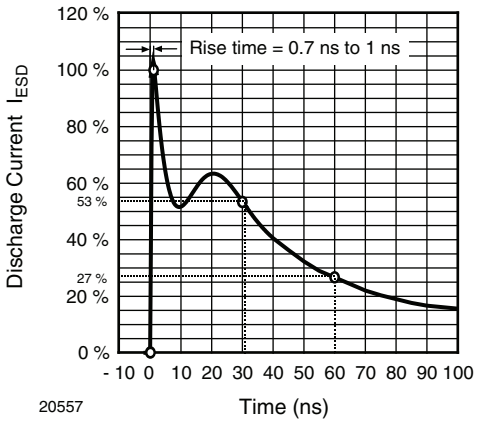


Fig. 1 - ESD Discharge Current Wave Form acc. IEC 61000-4-2 (330 Ω/150 pF)

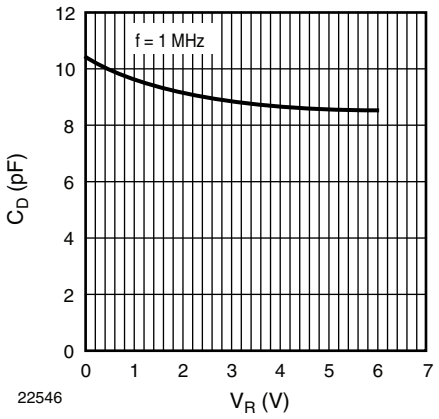


Fig. 3 - Typical Capacitance C_D vs. Reverse Voltage V_R

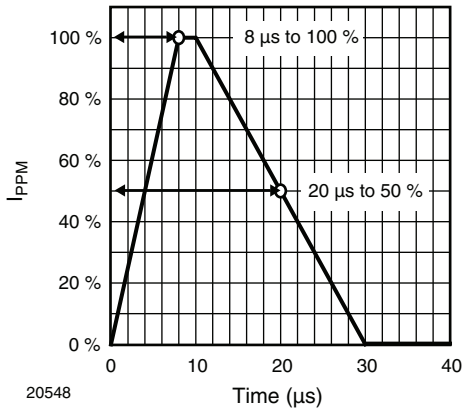


Fig. 2 - 8/20 µs Peak Pulse Current Wave Form acc. IEC 61000-4-5

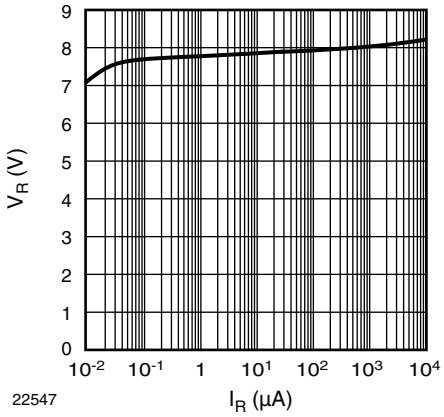


Fig. 4 - Typical Reverse Voltage V_R vs. Reverse Current I_R

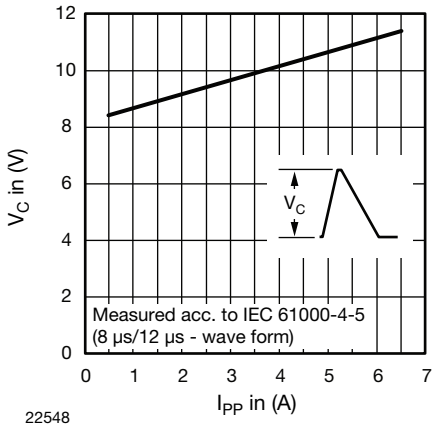


Fig. 5 - Typical Peak Clamping Voltage V_C vs. Peak Pulse Current I_{PP}

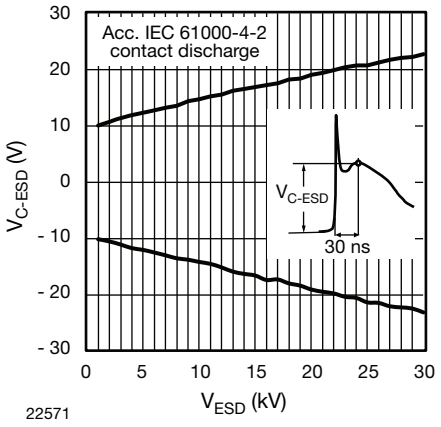


Fig. 8 - Typical Clamping Performance at 8 kV Contact Discharge acc. IEC 61000-4-2

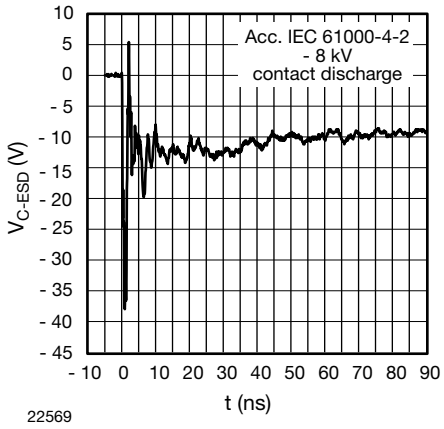


Fig. 6 - Typical Clamping Performance at 8 kV Contact Discharge acc. IEC 61000-4-2

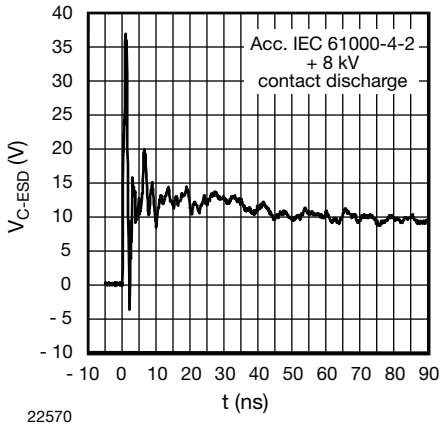
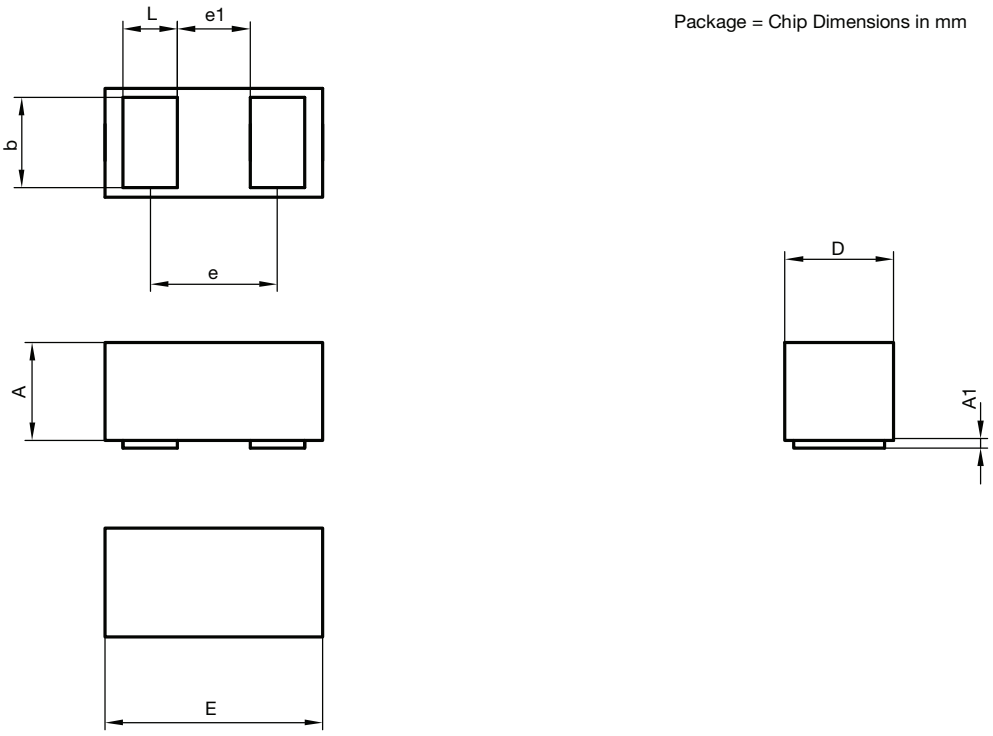


Fig. 7 - Typical Clamping Performance at 8 kV Contact Discharge acc. IEC 61000-4-2

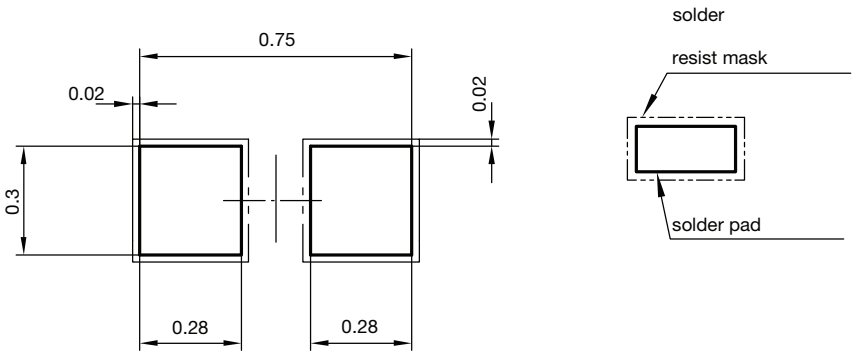
PACKAGE DIMENSIONS in millimeters (mils): **CLP0603-2L**



Package = Chip Dimensions in mm

	Millimeters			mils		
	min.	nom.	max.	min.	nom.	max.
A	0.24	0.27	0.30	9.44	10.63	11.81
A1			0.02			0.79
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
e		0.40			15.75	
e1		0.25			9.84	
L	0.12	0.15	0.18	4.72	5.91	7.09

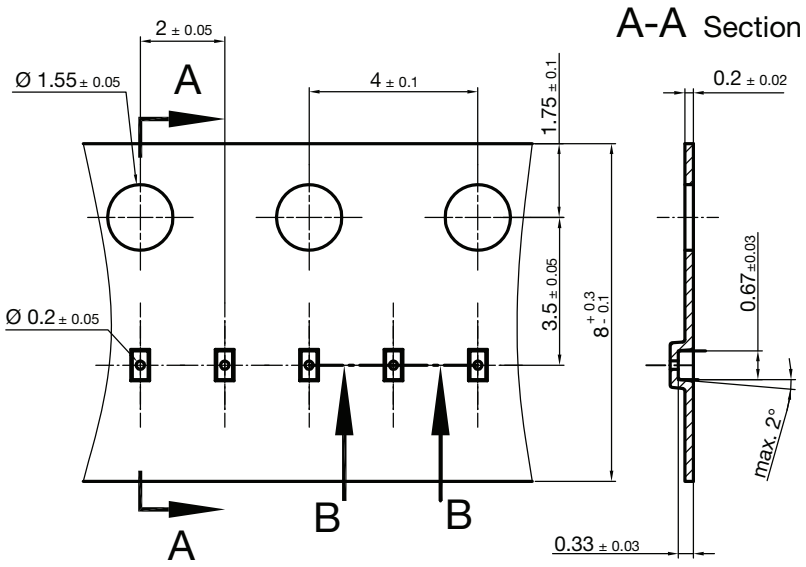
foot print recommendation:

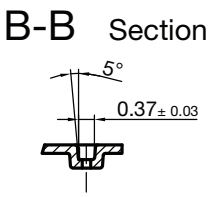


22590

2 terminal silicon package (Si0603)
Document no.: S8-V-3906.04-023 (4)
Created - Date: 22. Nov. 2010
Rev.2 - Date: 03. Aug. 2011

CARRIER TAPE in millimeters: **CLP0603**





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

22591

Carrier tape Si0603
Document no. S8-V-3906.04-0025 (4)
Created - Date: 22. Nov. 2010

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