Description

The DL5425E is a low capacitance TVS (Transient Voltage Suppressor) array designed to protect high speed data interfaces. It has been specifically designed to protect sensitive electronic components which are connected to data and transmission lines from over-stress caused by ESD (Electrostatic Discharge).

The DL5425E incorporates four pairs of low capacitance steering diodes plus a TVS diode.

The DL5425E may be used to provide ESD protection up to ±30kV (contact discharge) according to IEC61000-4-2, and withstand peak pulse current up to 80A (5/50ns) according to IEC61000-4-4, 25A (8/20μs) according to IEC61000-4-5.

The DL5425E is available in SOT-23-6L package. Standard products are Pb-free and Halogen-free.

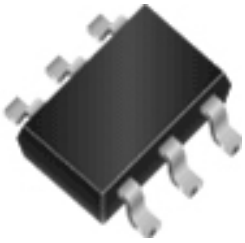
Features

- Reverse stand-off voltage: 5V max.
- Transient protection for each line according to IEC61000-4-2 (ESD): ±30kV (contact discharge) IEC61000-4-4 (EFT): 80A (5/50ns, Any I/O to GND) IEC61000-4-5 (surge): 25A (8/20 μ s, Any I/O to GND)
- Low capacitance: CI/O - GND = 3pF typ.
- Ultra-low leakage current: IR =20nA typ.
- Low clamping voltage: VCL = 11.8V @ IPP = 16A (TLP)
- Solid-state silicon technology

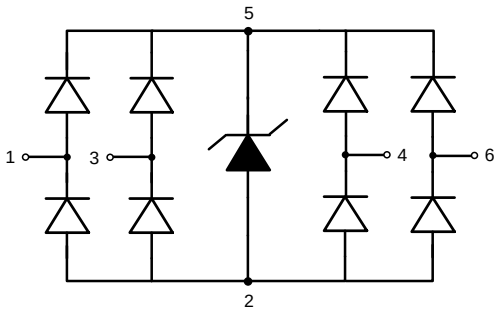
Applications

- USB 2.0
- Video Graphics Cards
- DVI
- IEEE 1394
- Monitors and Flat Panel Displays
- 10/100 Ethernet
- Notebooks

Dimensions and Pin Configuration

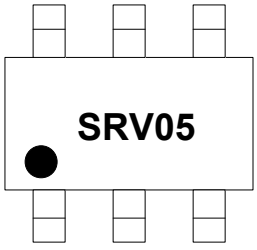


SOT-23-6L



Circuit and Pin Schematic

Marking Information



SRV05 = Device Marking Code

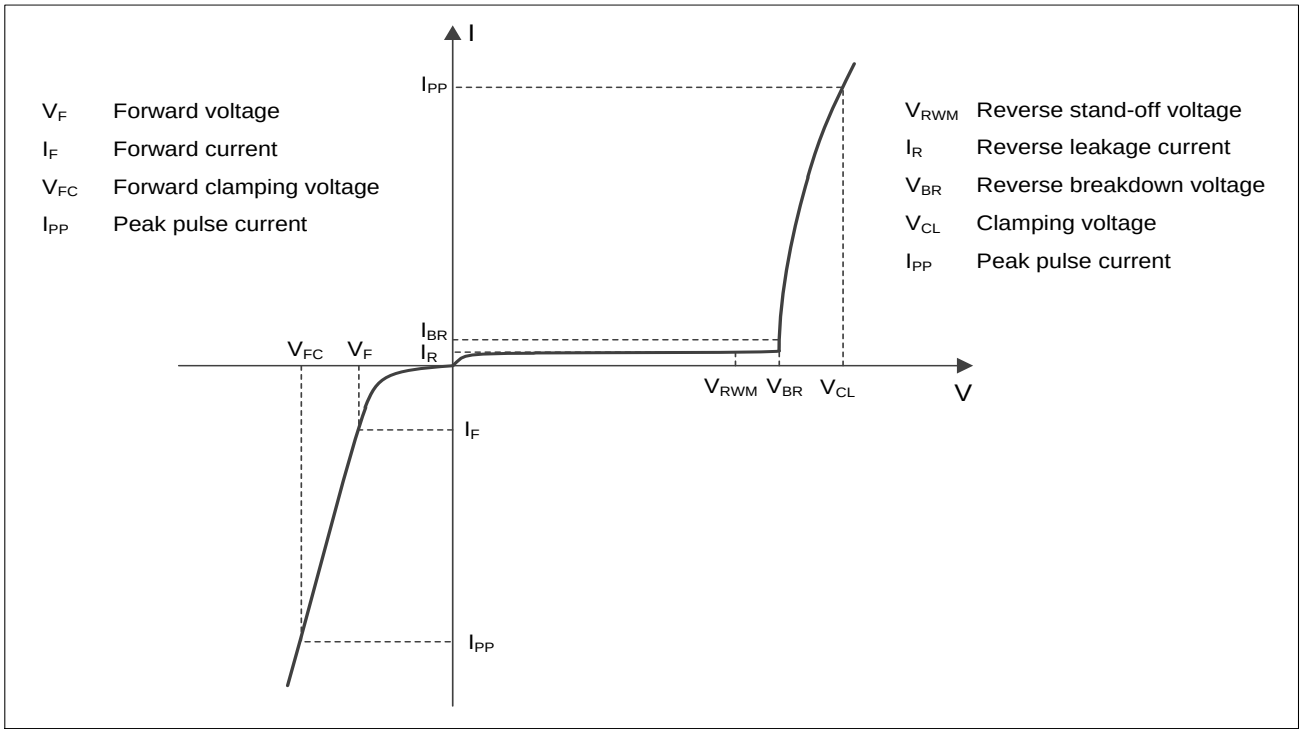
Ordering Information

Part Number	Marking	Packaging	Reel Size
DL5425E	SRV05	3000/Tape & Reel	7 inch

Absolute Maximum Ratings (T_A=25°C unless otherwise specified)

Parameter	Symbol	Rating	Unit
Peak pulse power (t_p = 8/20μs)	P_{pk}	350	W
Peak pulse current (t_p = 8/20μs)	I_{PP}	25	A
ESD according to IEC61000-4-2 air discharge	V_{ESD}	±30	kV
ESD according to IEC61000-4-2 contact discharge		±30	
Junction temperature	T_J	125	°C
Operation temperature	T_{OP}	-40 to 85	°C
Storage temperature	T_{STG}	-55 to 150	°C
Lead temperature	T_L	260	°C

Electrical Characteristics (T_A=25°C unless otherwise specified)



Definitions of electrical characteristics

Electrical Characteristics (T_A=25°C unless otherwise specified)

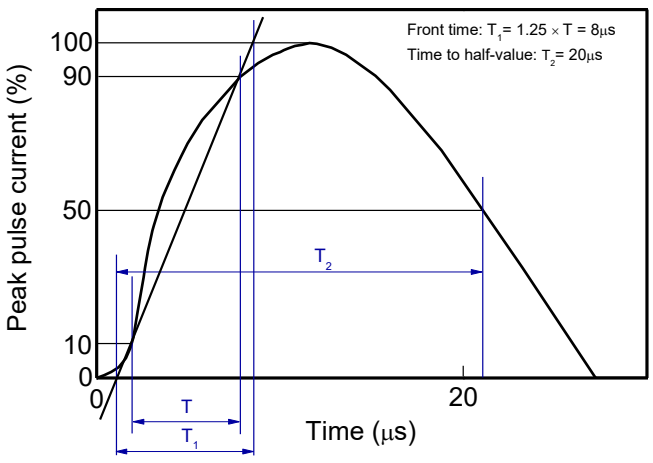
Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Reverse stand-off voltage	V_{RWM}				5.0	V
Reverse leakage current	I_R	V_{RWM} = 5V			1	uA
Reverse breakdown voltage	V_{BR}	I_{BR} = 1mA	7.0	8.5	9.5	V
Forward voltage	V_F	I_F = 10mA	0.6	0.9	1.2	V
Clamping voltage 1)	V_{CL}	I_{PP} = 16A, t_p = 100ns		11.8		V
Dynamic resistance 1)	R_{DYN}	t_p = 100ns		0.12		Ω
Clamping voltage 2)	V_{CL}	V_{ESD} = 8kV		12.0		V
Clamping voltage 3)	V_{CL}	I_{PP} = 1A, t_p = 8/20μs		9.5		V
		I_{PP} = 25A, t_p = 8/20μs		14.0		V
Dynamic resistance 3)	R_{DYN}	t_p = 8/20μs		0.19		Ω
Junction capacitance	$C_{I/O - GND}$	V_R = 0V, f = 1MHz, VDD = floated, any I/O to GND		3.0	5.0	pF
	$C_{I/O - I/O}$	V_R = 0V, f = 1MHz, any I/O to I/O		1.5	2.5	pF

Notes:

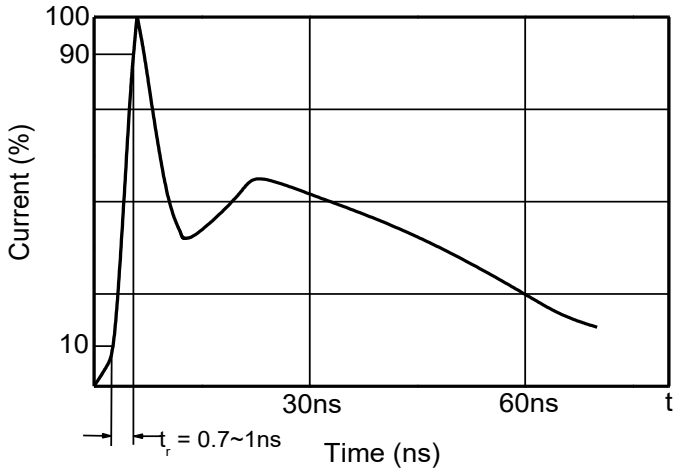
1) *TLP parameter: Z_0 = 50Ω , t_p = 100ns, t_r = 2ns, averaging window from 60ns to 80ns. R_{DYN} is calculated from 10A to 30A.*

2) *Contact discharge mode, according to IEC61000-4-2.*

3) *Non-repetitive current pulse, according to IEC61000-4-5. R_{DYN} is calculated from 5A to 20A.*

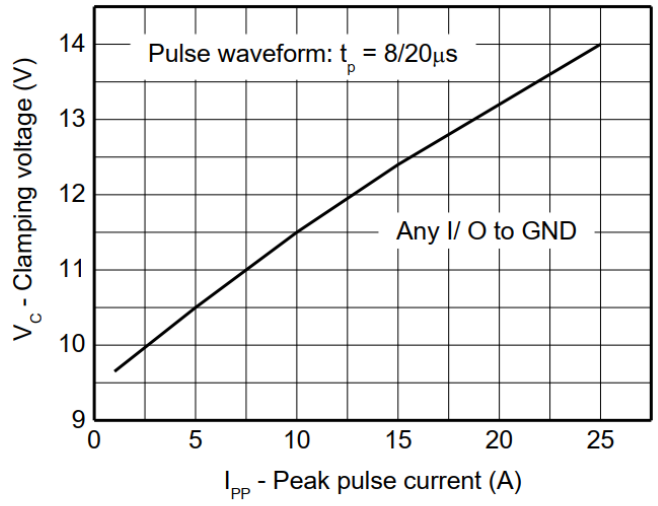


8/20μs waveform per IEC61000-4-5

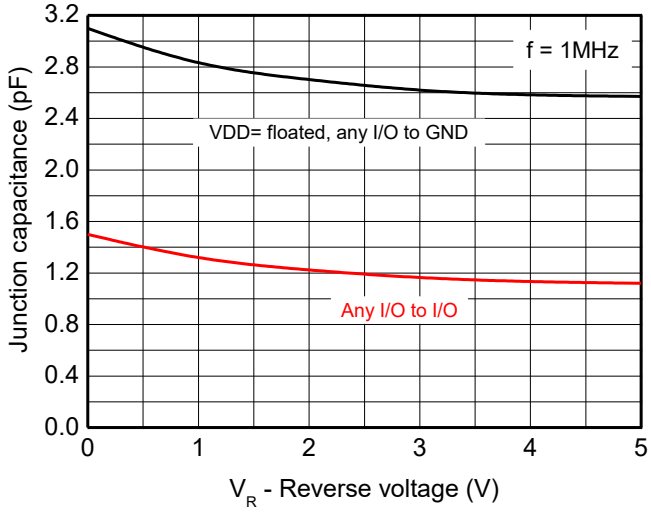


Contact discharge current waveform per IEC61000-4-2

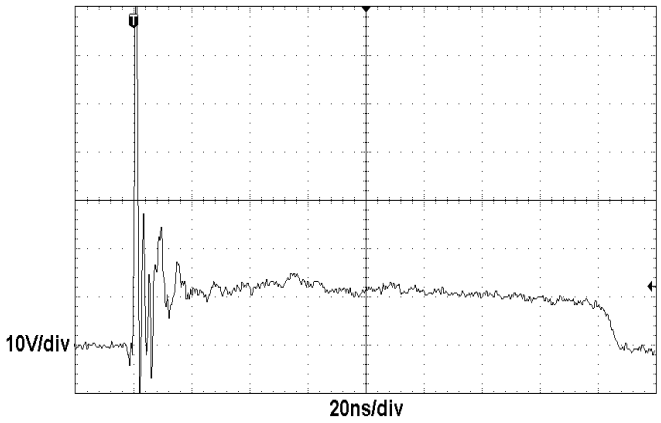
Typical Performance Characteristics (T_A=25℃ unless otherwise Specified)



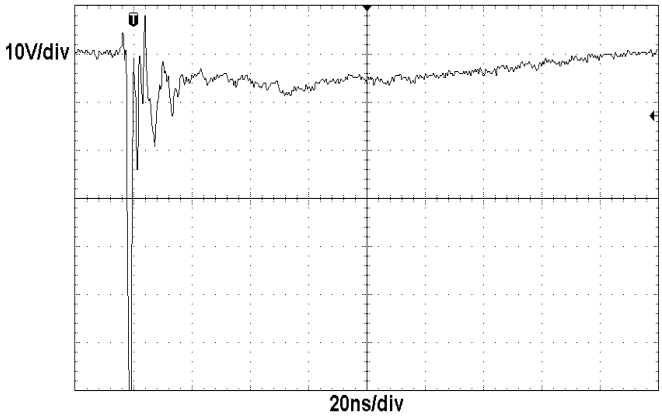
Clamping voltage vs. Peak pulse current



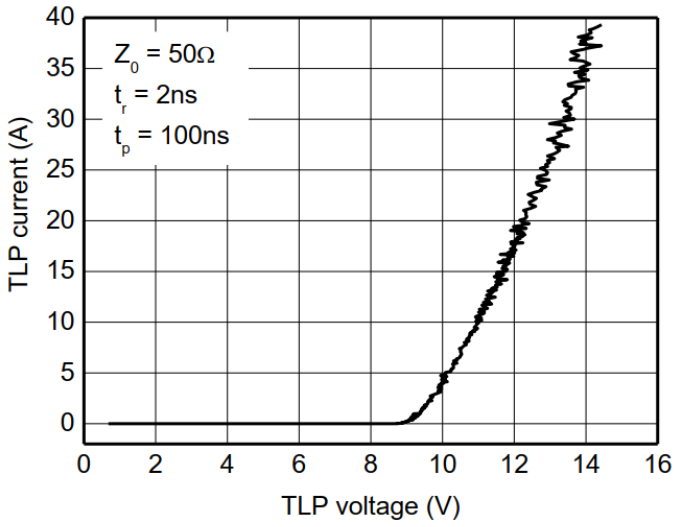
Capacitance vs. Reverse voltage



ESD clamping
(+8kV contact discharge per IEC61000-4-2)

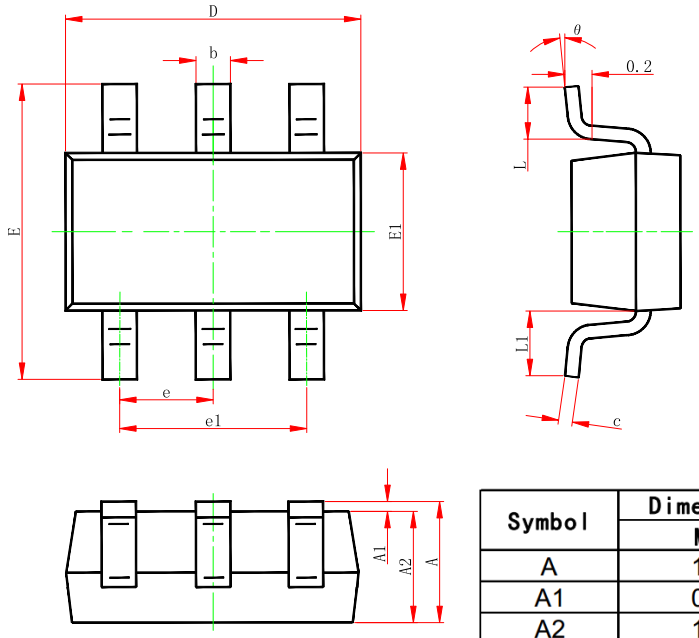


ESD clamping
(-8kV contact discharge per IEC61000-4-2)



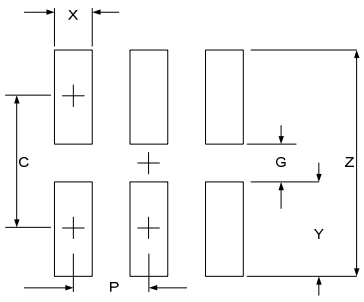
TLP Measurement

SOT23-6 Package Outline Drawing



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E1	1.500	1.700	0.059	0.067
E	2.650	2.950	0.104	0.116
e	0.950(BSC)		0.037(BSC)	
e1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
L1	0.600REF.		0.024REF.	
θ	0°	8°	0°	8°

Suggested Land Pattern



SYM	DIMENSIONS	
	MILLIMETERS	INCHES
C	2.50	0.098
G	1.40	0.055
P	0.95	0.037
X	0.60	0.024
Y	1.10	0.043
Z	3.60	0.141

Contact Information

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