ESD56201DXX

1-Line, Uni-directional, Transient Voltage Suppressor

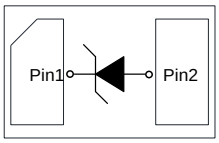
Descriptions

The ESD56201DXX is a transient voltage suppressor designed to protect power interfaces. It is suitable to replace multiple discrete components in portable electronics.

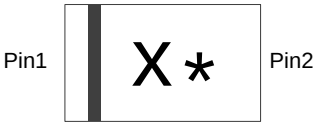
The ESD56201DXX is specifically designed to protect power lines.

The ESD56201DXX is available in DFN1610-2L package. Standard products are Pb-free and Halogen-free.

DFN1610-2L (Bottom View)



Circuit diagram



X= Device code (H I J K L S N M)

* = Month code

Marking (Top View)

Features

- Reverse stand-off voltage: 4.85V ~ 24V
- Surge protection according to IEC61000-4-5 see Table 4
- ESD protection according to IEC61000-4-2 ±30kV (contact and air discharge)
- Low clamping voltage
- Solid-state silicon technology

Applications

- Power supply protection
- Power management

Order information

Table 1.

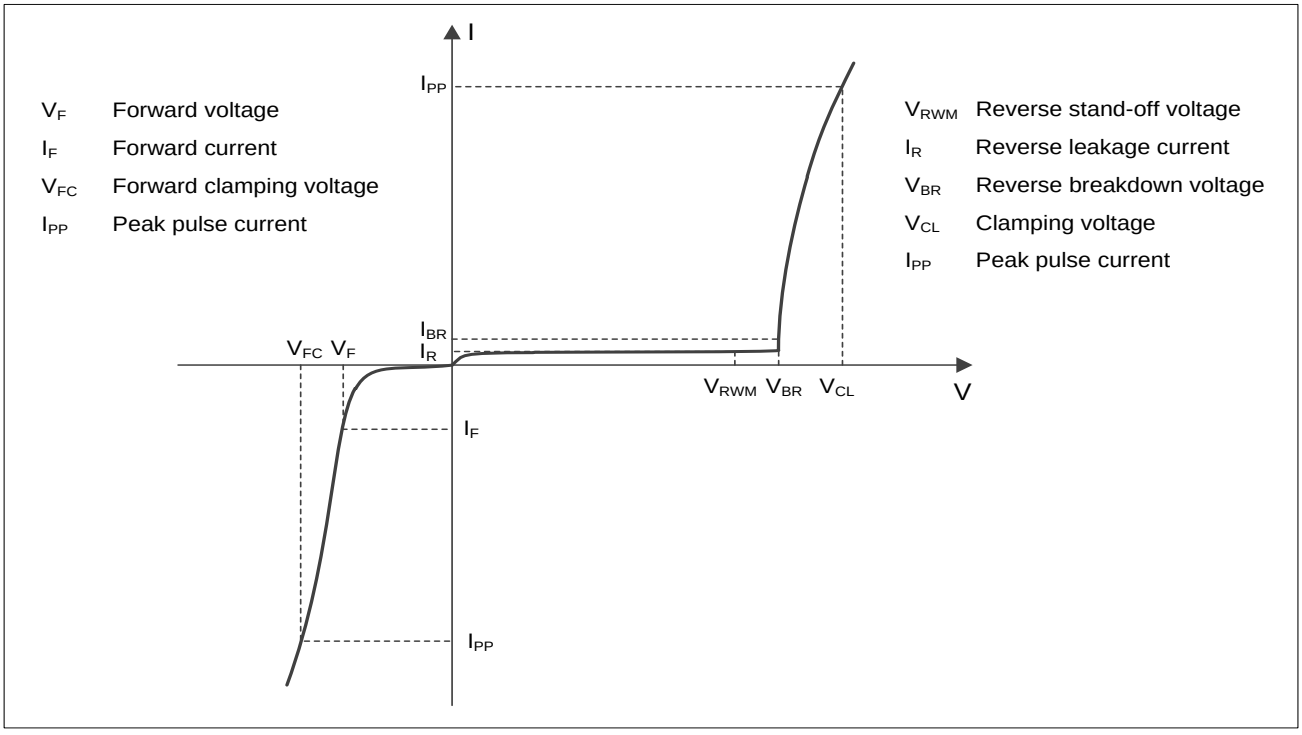
Device	Package	Shipping	Marking
ESD56201D04-2/TR	DFN1610-2L	10000/Tape&Reel	H*
ESD56201D05-2/TR	DFN1610-2L	10000/Tape&Reel	I*
ESD56201D10-2/TR	DFN1610-2L	10000/Tape&Reel	J*
ESD56201D12-2/TR	DFN1610-2L	10000/Tape&Reel	K*
ESD56201D15-2/TR	DFN1610-2L	10000/Tape&Reel	L*
ESD56201D18-2/TR	DFN1610-2L	10000/Tape&Reel	S*
ESD56201D20-2/TR	DFN1610-2L	10000/Tape&Reel	N*
ESD56201D24-2/TR	DFN1610-2L	10000/Tape&Reel	M*

Absolute maximum ratings

Table 2.

Parameter	Symbol	Rating	Unit
Peak pulse power (tp = 8/20μs)	P_{pk}	1600	W
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
Operating temperature	T_{OP}	-40~85	°C
Lead temperature	T_L	260	°C
Storage temperature	T_{STG}	-55~150	°C

Electrical characteristics (T_A = 25°C, unless otherwise noted)



Definitions of electrical characteristics

Electrical characteristics (T_A = 25°C, unless otherwise noted)

Table 3.

Type number	Reverse Stand-off Voltage V_{RWM} (V)	Breakdown voltage V_{BR}(V) I_{BR} = 1mA			Reverse leakage current I_{RM}(μA) at V_{RWM}		Forward voltage V_F(V) I_F = 20mA		Junction capacitance F = 1MHz, VR=0V (pF)	
	Max.	Min.	Typ.	Max.	Type.	Max.	Min.	Max.	Typ.	Max.
ESD56201D04	4.85	5.2	5.7	6.2	-	5.0	0.45	1.25	1100	1300
ESD56201D05	5.0	6.6	7.1	7.6	-	2.0	0.45	1.25	1050	1250
ESD56201D10	10.0	10.7	11.3	12.3	-	0.1	0.45	1.25	545	650
ESD56201D12	12.0	12.7	13.7	14.6	-	0.1	0.45	1.25	425	510
ESD56201D15	15.0	16.0	17.5	19.0	-	0.1	0.45	1.25	325	350
ESD56201D18	18.0	19.2	21.1	23.0	-	0.1	0.45	1.25	270	300
ESD56201D20	20.0	21.4	23.2	25.0	-	0.1	0.45	1.25	250	275
ESD56201D24	24.0	25.6	27.5	30.0	-	0.1	0.45	1.25	210	250

Table 4.

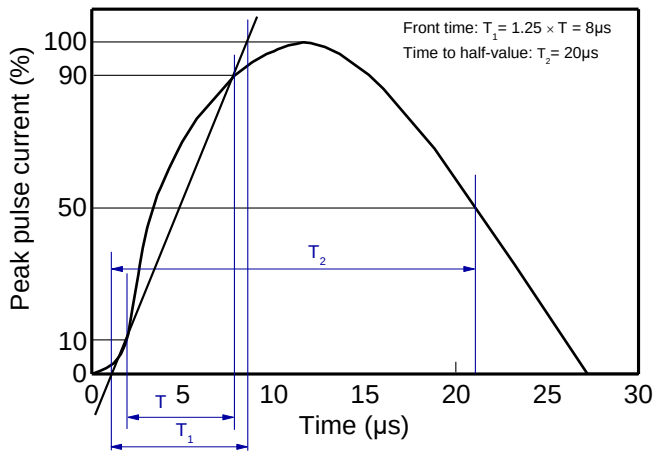
Type number	Rated peak pulse current I_{PP} （A） 1)2)	Clamping voltage V_{CL}(V) at I_{PP}（A） 1)2)	
	Max.	Typ.	Max.
ESD56201D04	120	10.5	12.0
ESD56201D05	100	11.0	13.0
ESD56201D10	86	17.5	20.0
ESD56201D12	75	19.5	22.0
ESD56201D15	60	27.0	30.0
ESD56201D18	50	32.0	35.0
ESD56201D20	45	35.0	38.0
ESD56201D24	40	39.0	42.0

Notes:

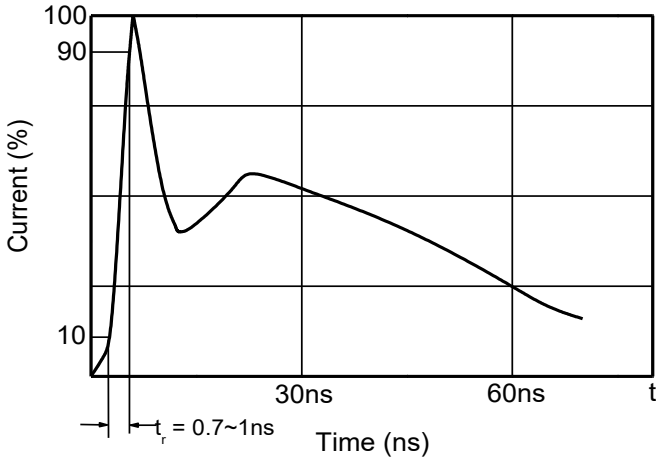
1) Non-repetitive current pulse, according to IEC61000-4-5. (8/20μs current waveform)

2) Measured from pin 1 to pin 2.

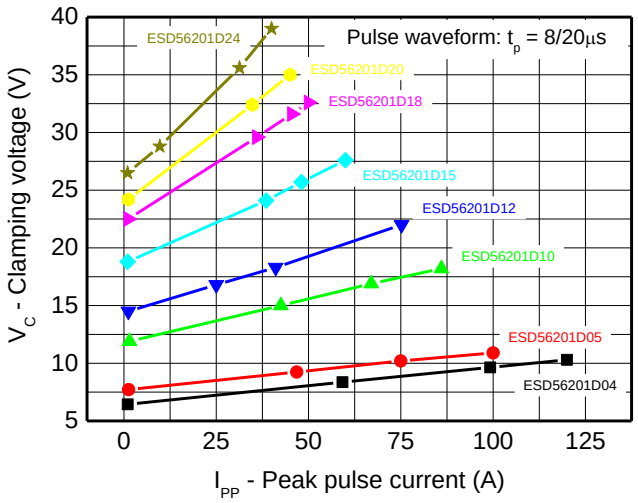
Electrical characteristics (T_A = 25°C, unless otherwise noted)



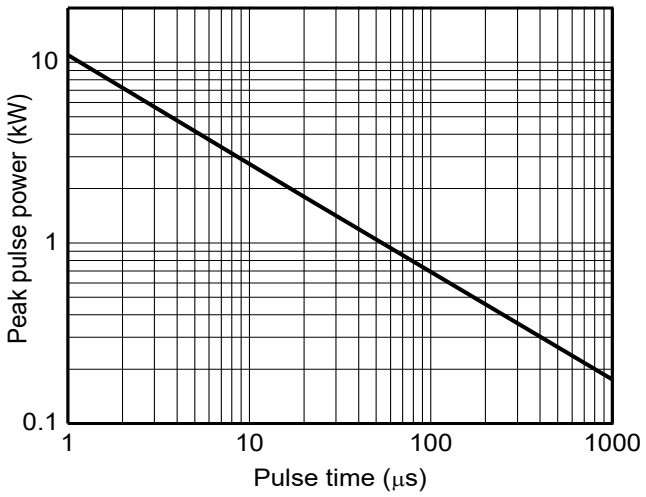
8/20μs waveform per IEC61000-4-5



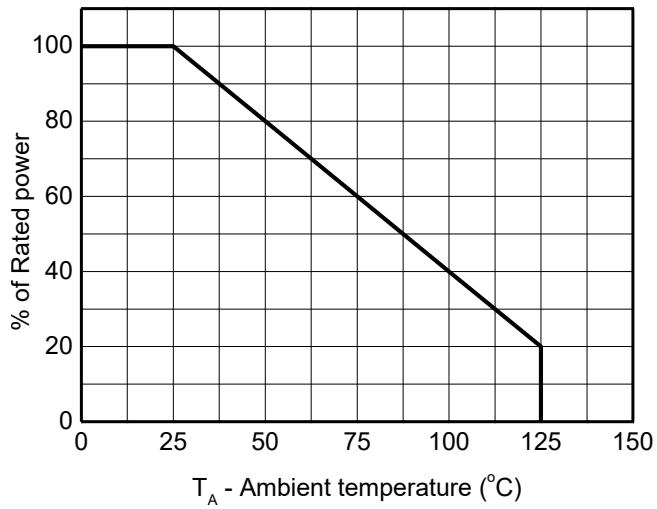
Contact discharge current waveform per IEC61000-4-2



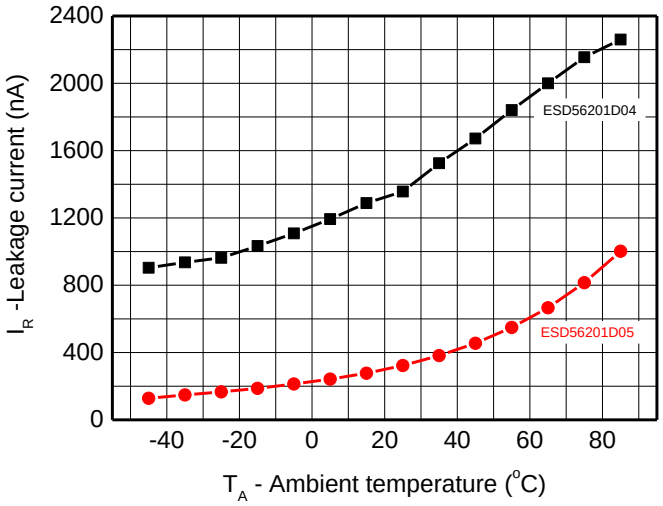
Clamping voltage vs. Peak pulse current



Non-repetitive peak pulse power vs. Pulse time



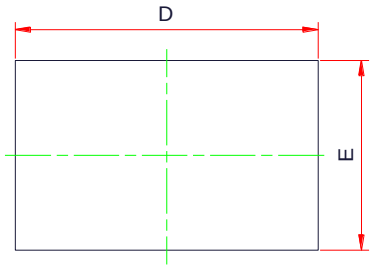
Power derating vs. Ambient temperature



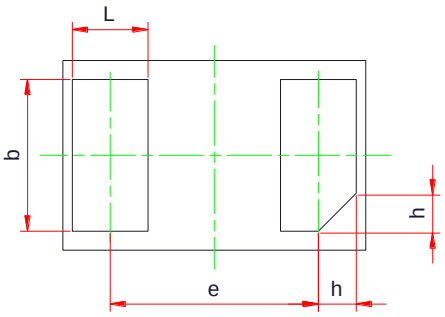
Leakage current vs. Ambient temperature

PACKAGE OUTLINE DIMENSIONS

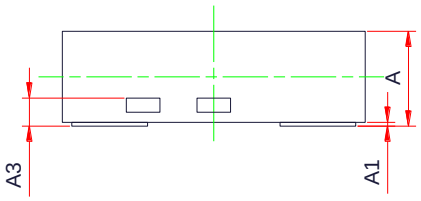
DFN1610-2L



TOP VIEW



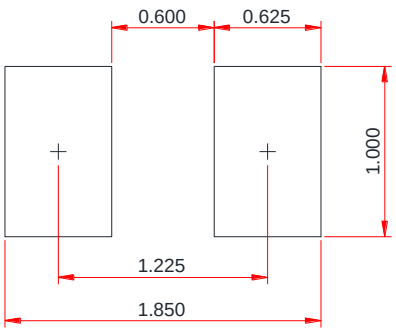
BOTTOM VIEW



SIDE VIEW

Symbol	Dimensions in Millimeters		
	Min.	Typ.	Max.
A	0.45	0.50	0.55
A1	0.00	0.02	0.05
c	0.15 Ref.		
b	0.75	0.80	0.85
L	0.35	0.40	0.45
D	1.55	1.60	1.65
E	0.95	1.00	1.05
e	1.10 BSC		
h	0.20 Ref.		

Recommended PCB Layout (Unit: mm)

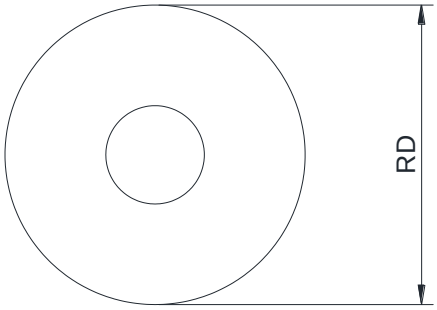


Notes:

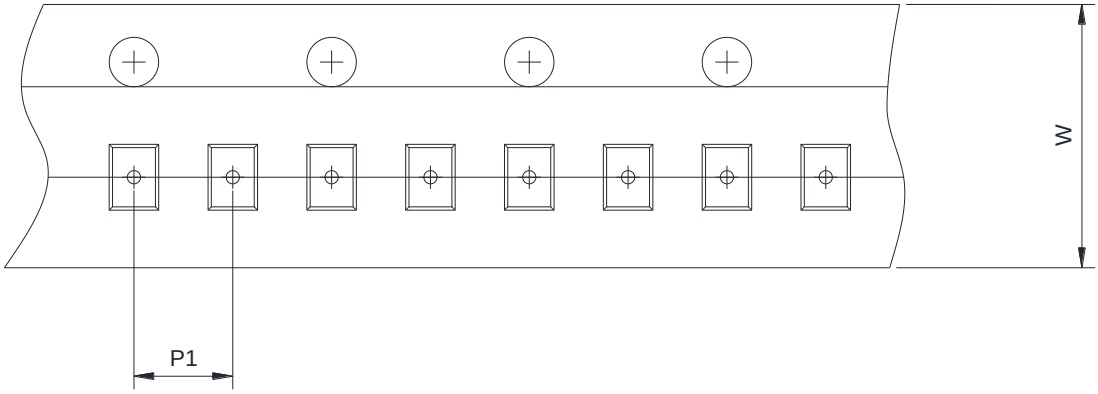
This recommended land pattern is for reference purposes only. Please consult your manufacturing group to ensure your PCB design guidelines are met.

TAPE AND REEL INFORMATION

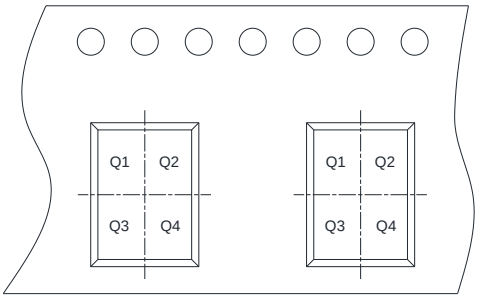
Reel Dimensions



Tape Dimensions



Quadrant Assignments For PIN1 Orientation In Tape



User Direction of Feed

RD	Reel Dimension	☑7inch	☐13inch		
W	Overall width of the carrier tape	☑8mm	☐12mm	☐16mm	
P1	Pitch between successive cavity centers	☑2mm	☐4mm	☐8mm	
Pin1	Pin1 Quadrant	☑Q1	☑Q2	☐Q3	☐Q4

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