

ESD56211DXX

1-Line, Bi-directional, Transient Voltage Suppressor

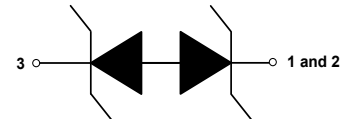
<http://www.sh-willsemi.com>

Descriptions

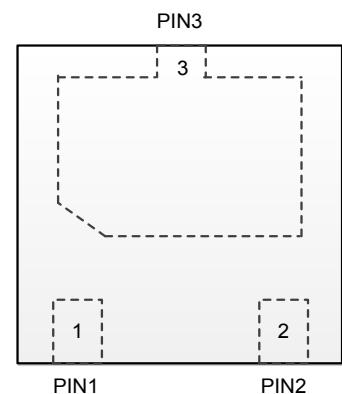
The ESD56211DXX is a transient voltage suppressor designed to protect power interfaces. It is suitable to replace multiple discrete components in portable electronics.

The ESD56211DXX is specifically designed to protect power lines.

The ESD56211DXX is available in DFN2×2-3L package. Standard products are Pb-free and Halogen-free.



Circuit diagram



Pin configuration (Top View)

Features

- Reverse stand-off voltage: 4.5V~5.0V
- 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

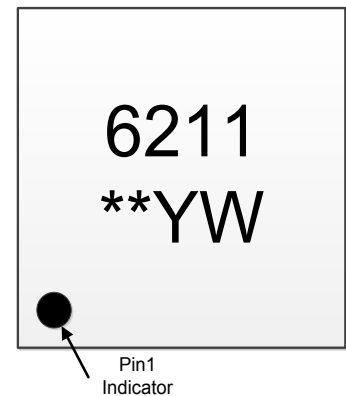
Applications

- Power supply protection
- Power management

Order information

Table 1.

Device	Package	Shipping	Device code
ESD56211D04-3/TR	DFN2×2-3L	3000/Tape&Reel	04
ESD56211D05-3/TR	DFN2×2-3L	3000/Tape&Reel	05



6211 = Series code
 ** = Device code
 YW = Date code

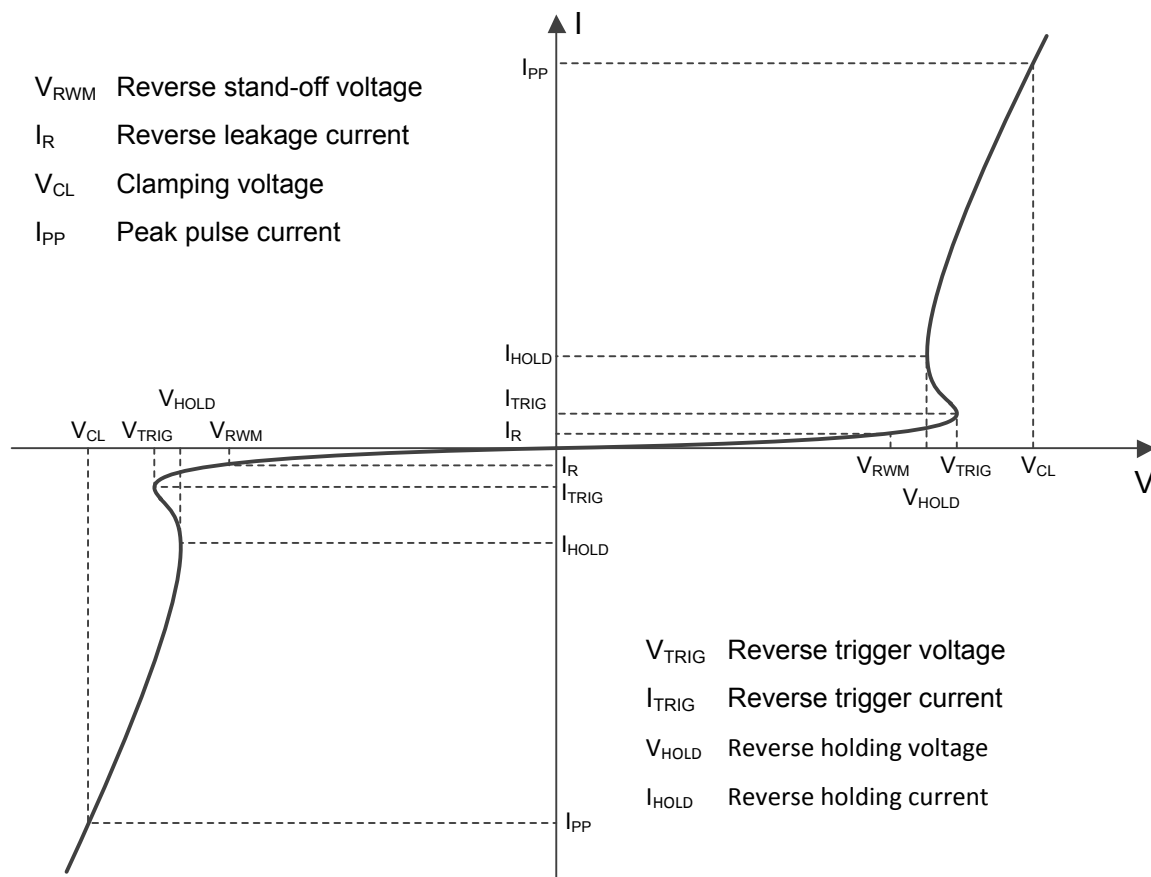
Marking

Absolute maximum ratings

Table 2.

Parameter	Symbol	Rating	Unit
Peak pulse power ($t_p = 8/20\mu s$)	P_{pk}	4500	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	$^{\circ}C$
Operating temperature	T_{OP}	-40~85	$^{\circ}C$
Lead temperature	T_L	260	$^{\circ}C$
Storage temperature	T_{STG}	-55~150	$^{\circ}C$

Electrical characteristics ($T_A = 25^{\circ}C$, unless otherwise noted)



Definitions of electrical characteristics

Electrical characteristics ($T_A = 25^\circ\text{C}$, 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 $I_{RM}(\mu A)$ at V_{RWM}		Junction capacitance $F = 1MHz$, $VR=0V$ (pF)	
	Max.	Min.	Typ.	Max.	Typ.	Max.	Typ.	Max.
ESD56211D04	4.5	4.8	5.4	6.0	-	0.1	1250	1400
ESD56211D05	5.0	5.4	6.2	7.0	-	0.1	1550	1700

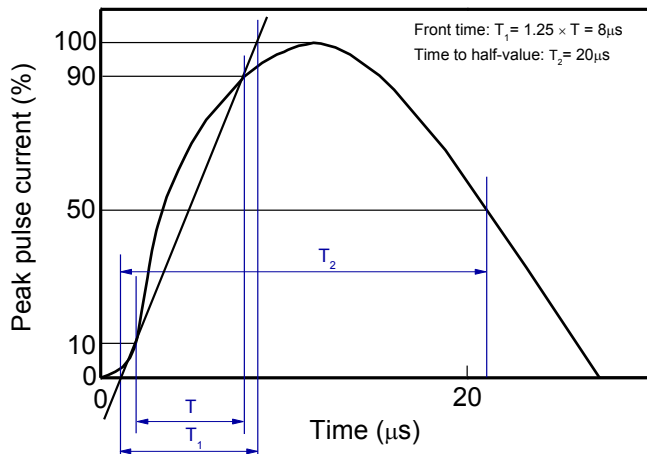
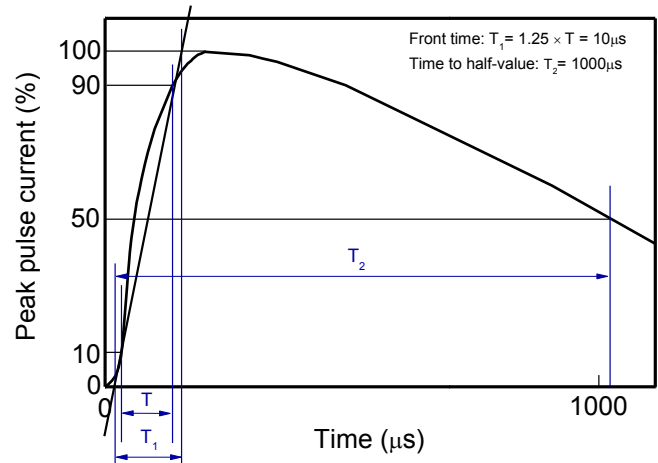
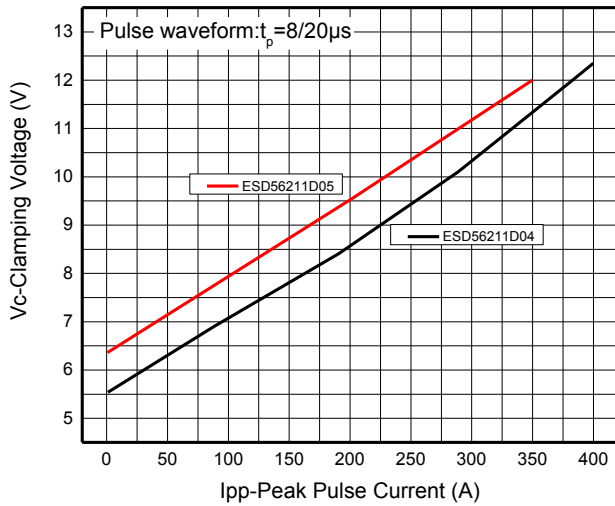
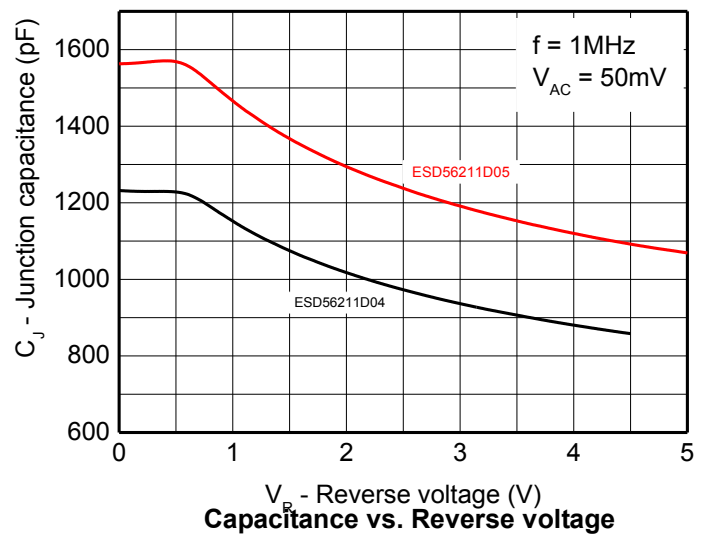
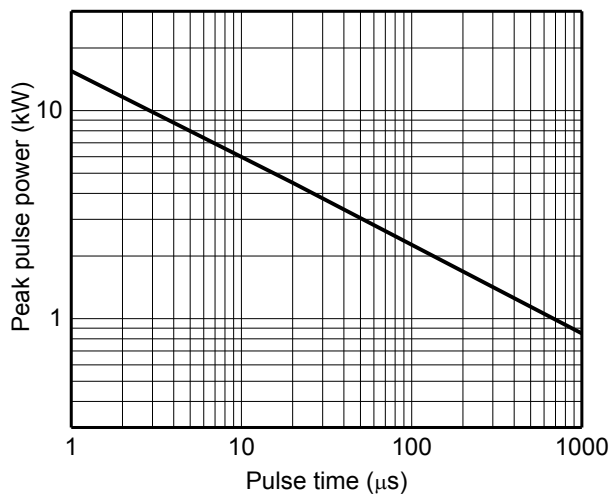
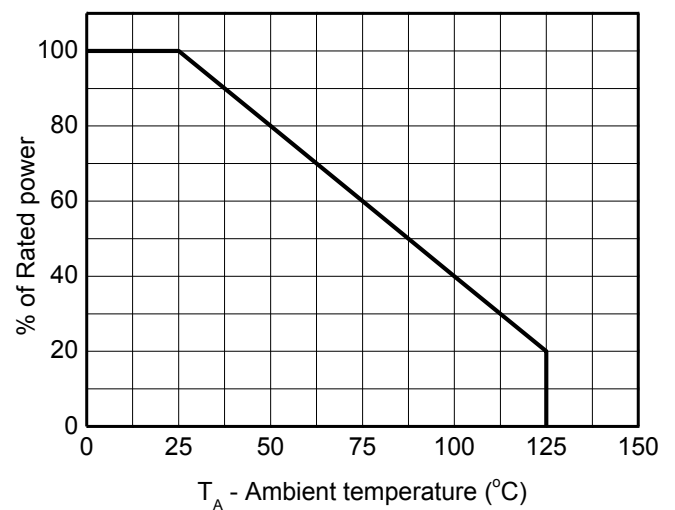
Table 4.

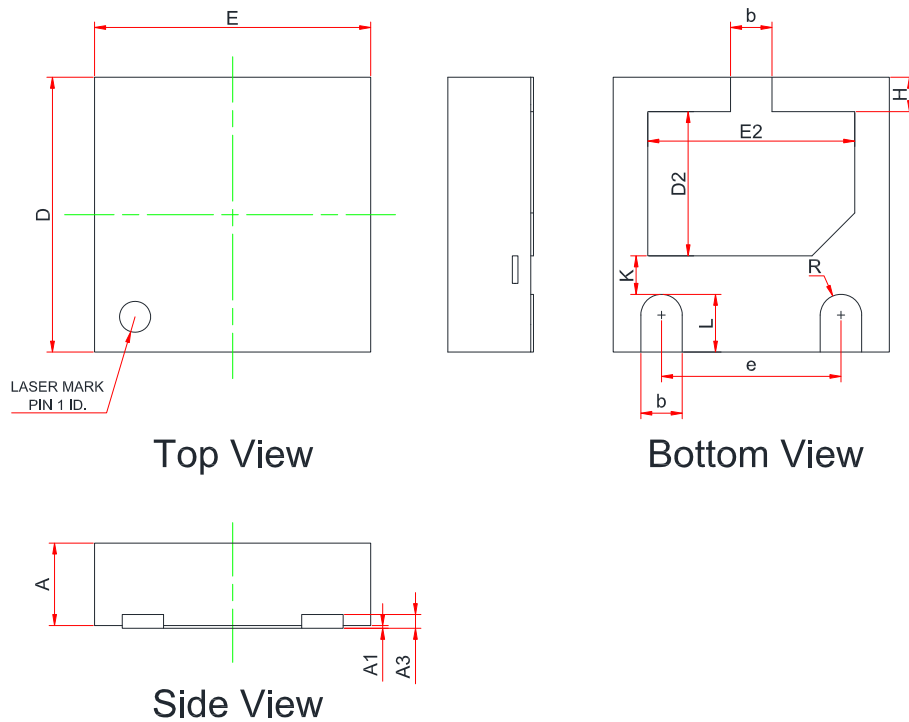
Type number	Rated peak pulse current I_{PP} (A) ¹⁾²⁾	$V_{CL}(V)$ at 150A ¹⁾²⁾		$V_{CL}(V)$ at $I_{PP} @ \text{Max}$ ¹⁾²⁾	
	Max.	Typ.	Max.	Typ.	Max.
ESD56211D04	400	8	10	13	15
ESD56211D05	350	9	11	12	14

Notes:

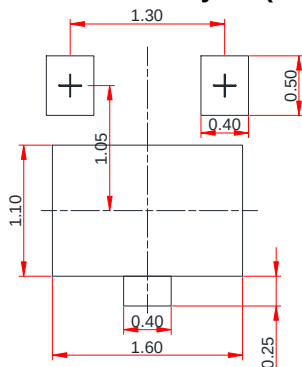
1) Non-repetitive current pulse, according to IEC61000-4-5. (8/20 μs current waveform).

2) Measured from pin 3 to pin 1 and pin 2.

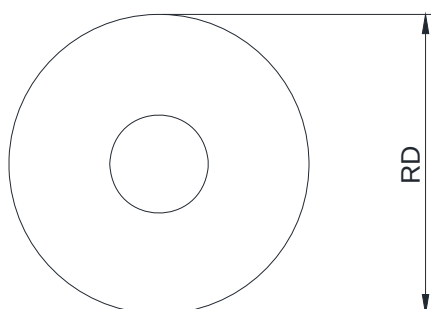
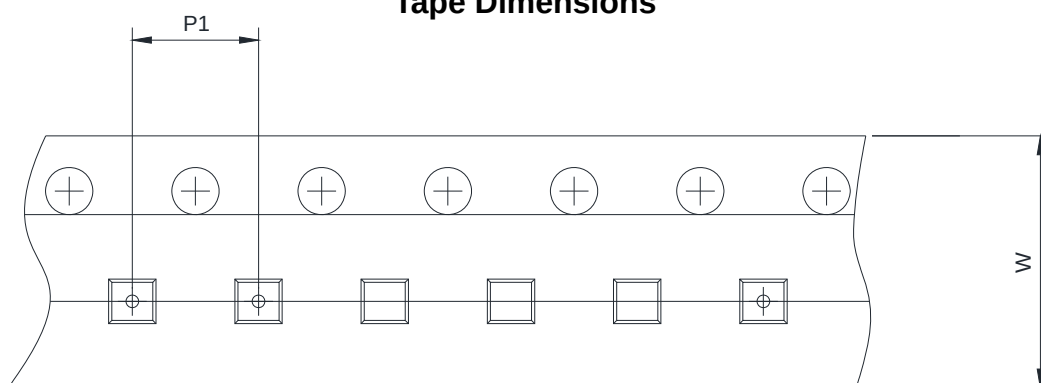
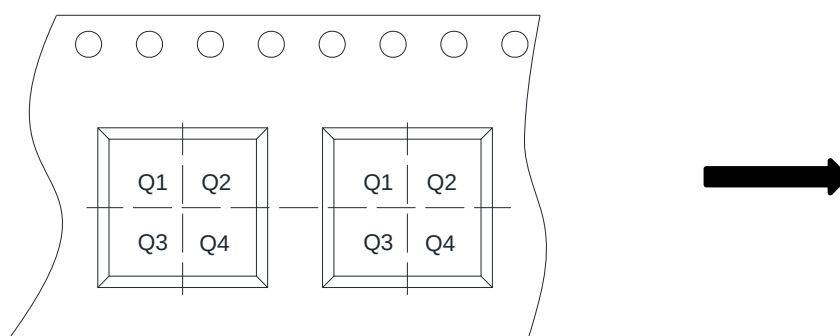
Electrical characteristics ($T_A = 25^\circ\text{C}$, unless otherwise noted)

8/20 μs waveform per IEC61000-4-5

Contact discharge current waveform per IEC61000-4-2

Clamping voltage vs. Peak pulse current

Capacitance vs. Reverse voltage

Non-repetitive peak pulse power vs. Pulse time

Power derating vs. Ambient temperature

PACKAGE OUTLINE DIMENSIONS
DFN2x2-3L


Symbol	Dimensions in Millimeters		
	Min.	Typ.	Max.
A	0.52	0.59	0.65
A1	0.00	0.02	0.05
A3	0.10 Ref.		
b	0.25	0.30	0.35
D	1.90	2.00	2.10
E	1.90	2.00	2.10
D2	0.95	1.05	1.15
E2	1.40	1.50	1.60
e	1.20	1.30	1.40
H	0.20	0.25	0.30
L	0.35	0.40	0.45
K	0.20	0.30	0.40
R	0.13	-	-

Recommend 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


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