

RoHS Compliant Product  
A suffix of "-C" specifies halogen & lead-free

## DESCRIPTION

Designed to protect voltage sensitive electronic components from ESD and other transients. Excellent clamping capability, low leakage, and fast response time provide best in class protection on designs that are exposed to ESD.

The combination of small size, high level ESD protection makes them a flexible solution for applications such as HDMI, Display Port TM, and MDDI interfaces. It is designed to replace multiplayer varistors (MLV) in consumer equipments applications such as mobile phone, notebook, PAD, STB, LCD TV etc.

## FEATURES

- Uni-directional ESD protection of one line
- Low reverse stand-off voltage: 4.5V
- Low reverse clamping voltage
- Low leakage current
- Fast response time
- Peak pulse power: 5600W (IEC61000-4-5 8/20 $\mu$ s)
- JESD22-A114-B ESD Rating of class 3B per human body model
- IEC 61000-4-2 Level 4 ESD protection

## MARKING



Front Side

## PACKAGE INFORMATION

Package	MPQ	Leader Size
DFN2x2-3L	3K	7 inch

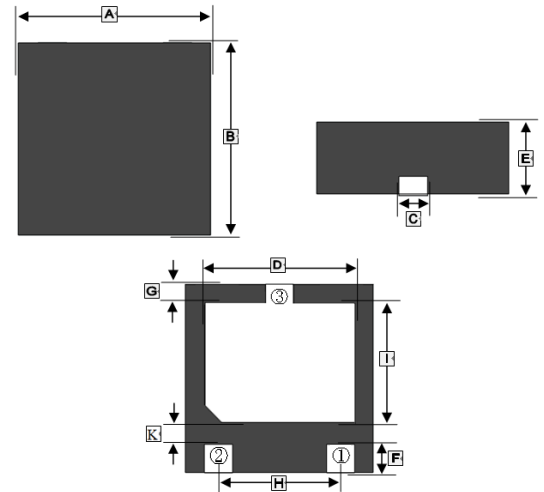
## ORDER INFORMATION

Part Number	Type
SQESD4V5-C	Lead (Pb)-free and Halogen-free

## MAXIMUM RATINGS (T<sub>A</sub>=25°C unless otherwise noted)

Parameter		Symbol	Rating	Unit
IEC 61000-4-2 ESD Voltage <sup>1</sup>	Air Model	V <sub>ESD</sub>	±30	kV
	Contact Model		±30	
	Per Human Body Model		±20	
	Machine Model		±0.4	
Peak Pulsed Power <sup>2</sup>		P <sub>PP</sub>	5600	W
Peak Pulsed Current <sup>2</sup>		I <sub>PP</sub>	275	A
Maximum Lead Solder Temperature @10Second Duration		T <sub>L</sub>	260	°C
Junction and Storage Temperature Range		T <sub>J</sub> , T <sub>STG</sub>	150, -55~150	°C

## DFN2x2-3L



REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	1.90	2.10	F	0.324	0.476
B	1.90	2.10	G	0.20	0.30
C	0.30 BSC.		H	1.30 BSC.	
D	1.40	1.60	I	0.90	1.15
E	0.50	0.65	K	0.20	0.45



**ELECTRICAL CHARACTERISTICS** ( $T_A=25^{\circ}\text{C}$  unless otherwise specified)

Parameter	Symbol	Min.	Typ.	Max.	Unit
Working Peak Reverse Voltage	$V_{RWM}$	-	-	4.5	V
Breakdown Voltage @ $I_T=1\text{mA}$	$V_{BR}$	4.6	-	-	V
Clamping Voltage <sup>2</sup> @ $I_{PP}=250\text{A}$	$V_C$	-	20	-	V
Reverse Leakage Current @ $V_{RWM}=4.5\text{V}$	$I_R$	-	-	1	$\mu\text{A}$
Junction Capacitance @ $V_R=0\text{V}$ , $f=1\text{MHz}$	$C_J$	-	1200	-	pF

Notes:

1. Device stressed with ten non-repetitive ESD pulses.
2. Non-repetitive current pulse 8/20 $\mu\text{s}$  exponential decay waveform according to IEC61000-4-5.

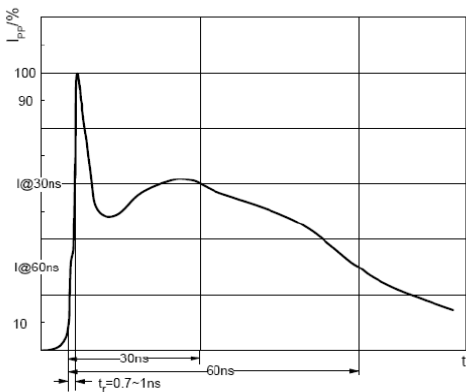
**ESD STANDARDS COMPLIANCE**

**IEC61000-4-2 Standard**

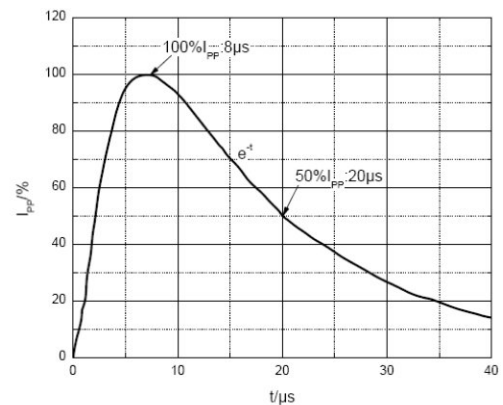
Contact Discharge		Air Discharge	
Level	Test Voltage kV	Level	Test Voltage kV
1	2	1	2
2	4	2	4
3	6	3	8
4	8	4	15

**JESD22-A114-B Standard**

ESD Class	Human Body Discharge V
0	0~249
1A	250~499
1B	500~999
1C	1000~1999
2	2000~3999
3A	4000~7999
3B	8000~15999



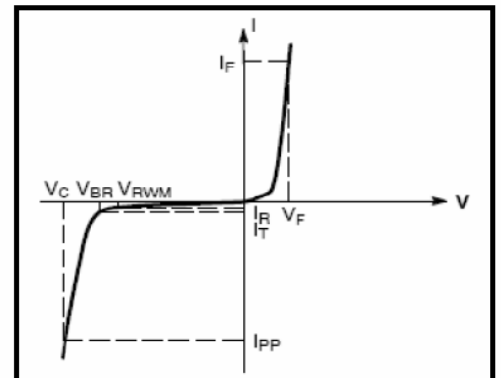
ESD pulse waveform according to IEC61000-4-2



8/20 $\mu\text{s}$  pulse waveform according to IEC 61000-4-5

**ELECTRICAL PARAMETER**

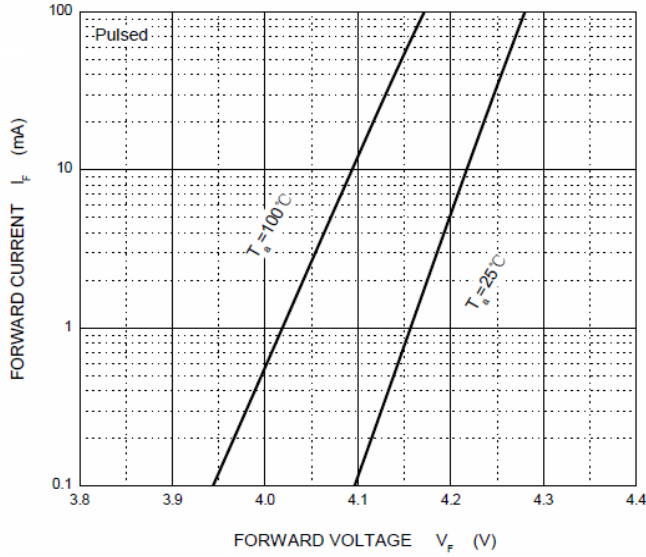
Symbol	Parameter
$V_C$	Clamping Voltage @ $I_{PP}$
$I_{PP}$	Peak Pulse Current
$V_{BR}$	Breakdown Voltage @ $I_T$
$I_T$	Test Current
$I_R$	Reverse Leakage Current @ $V_{RWM}$
$V_{RWM}$	Reverse Standoff Voltage
$V_F$	Forward Voltage @ $I_F$
$I_F$	Forward Current



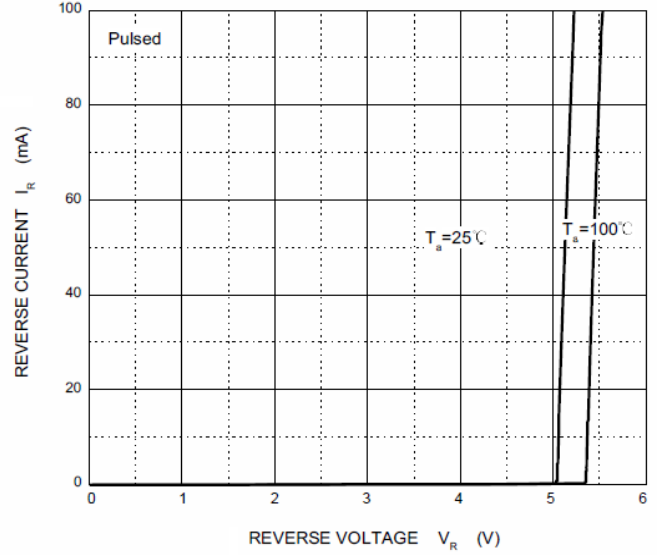
V-I characteristics for a uni-directional TVS

**CHARACTERISTICS CURVES**

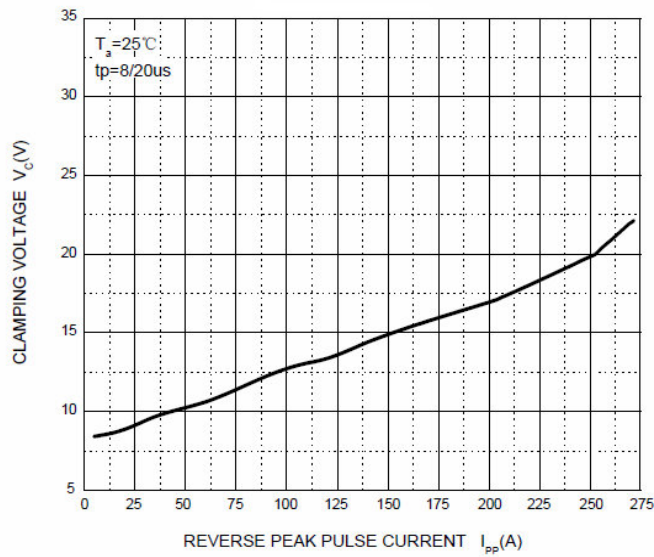
Forward Characteristics



Reverse Characteristics



$V_C$  —  $I_{PP}$



Capacitance Characteristics

