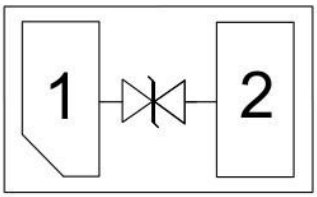
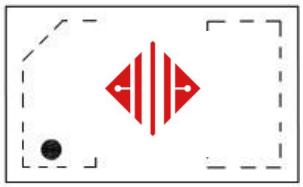
JCA0510D1
1-Line Bi-directional TVS Diode

DESCRIPTION

The JCA0510D1 is a bi-directional TVS diode, utilizing lea -ding monolithic silicon technology to provide fast response time and low ESD clamping voltage, making this device an ideal solution for protecting voltage sensitive high-speed da -ta lines. TheJCA0510D1 has an ultra-low capacitance with a typical value at 0.4pF, and complies with the IEC 61000-4 -2 (ESD) standard with ±20kV air and ±15kV contact dischar -ge. It is assembled into an ultra-small 0.6x0.3x0.3mm lead-free DFN package. The small size, ultra-low capacitance an -d high ESD surge protection make JCA0510D1 an ideal ch -oice to protect cell phone, digital video interfaces and other high speed ports.



DFN0603-2(0201)



APPLICATIONS

- ✧ Smart phones.
- ✧ Display Ports.
- ✧ MDDI Ports.
- ✧ USB Ports.
- ✧ Digital Video Interface (DVI).
- ✧ PCI Express and Serial SATA Ports.

FEATURES

- ✧ Ultra small package: 0.6x0.3x0.3mm.
- ✧ Ultra low capacitance: 0.35pF typical.
- ✧ Ultra low leakage: nA level.
- ✧ Low operating voltage: 5V.
- ✧ Low clamping voltage.
- ✧ 2-pin leadless package.
- ✧ Complies with following standards:
  - – IEC 61000-4-2 (ESD) immunity test Air discharge: ±20kV

  Contact discharge: ±15kV
  - – IEC61000-4-5 (Lightning) 4A (8/20μs).
- ✧ RoHS Compliant.
- ✧ Lead Finish: NiPdAu.

MECHANICAL CHARACTERISTICS

- ✧ DFN0603-2(0201) Package.
- ✧ Tape & Reel : 10,000pcs.
- ✧ Reel Size : 7 inch.

DEVICE CHARACTERISTICS

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

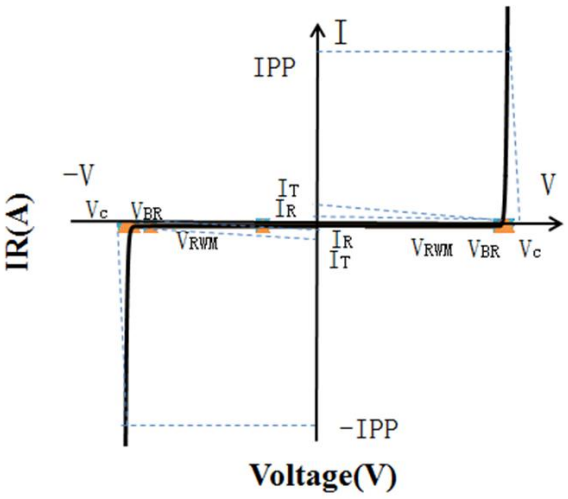
Parameter	Symbol	Value	Unit
Peak Pulse Power (8/20μs)	P_{PP}	80	W
Peak Pulse Current (8/20μs)	I_{PP}	4	A
ESD per IEC 61000−4−2 (Air) ESD per IEC 61000−4−2 (Contact)	VESD	±20 ±15	kV
Operating Temperature Range	T_J	−55 to +125	°C
Storage Temperature Range	Tstg	−55 to +150	°C

ELECTRICAL CHARACTERISTICS(TA=25°C unless otherwise specified)

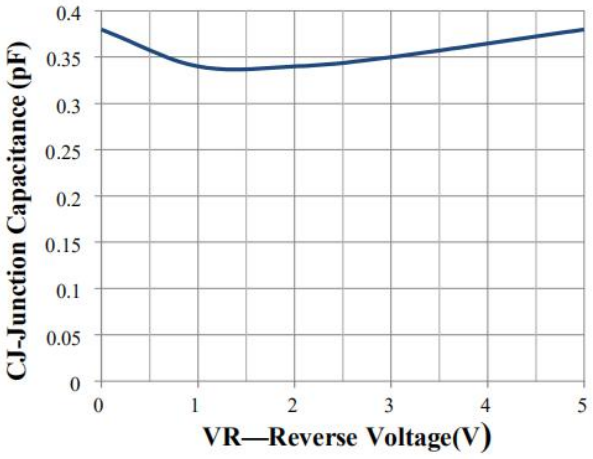
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Reverse Working Voltage	V_{RWM}				5.0	V
Breakdown Voltage	V_{BR}	I_T = 1mA	6.0	7.5	8.5	V
Reverse Leakage Current	I_R	V_{RWM} = 5.0V			0.5	μA
Clamping Voltage	V_C	I_{PP} = 1A (8 x 20μs pulse)			12	V
Clamping Voltage	V_C	I_{PP} = 4A (8 x 20μs pulse)			20	V
Junction Capacitance	C_J	VR = 0V, f = 1MHz		0.35	0.4	pF

ELECTRICAL PARAMETER

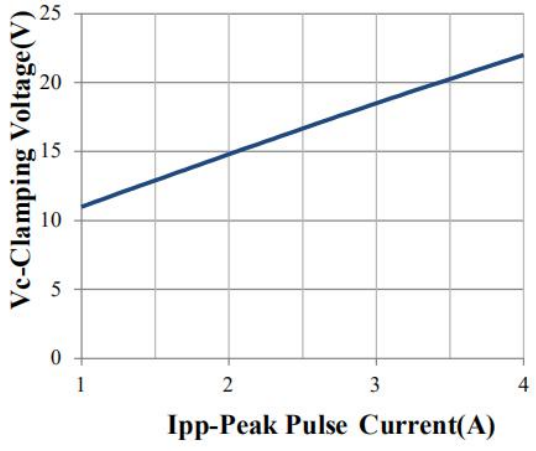
Symbol	Parameter
V_{RWM}	Peak Reverse Working Voltage
I_R	Reverse Leakage Current @ V_{RWM}
V_{BR}	Breakdown Voltage @I_T
I_T	Test Current
I_{PP}	Maximum Reverse Peak Pulse Current
V_C	Clamping Voltage @I_{PP}



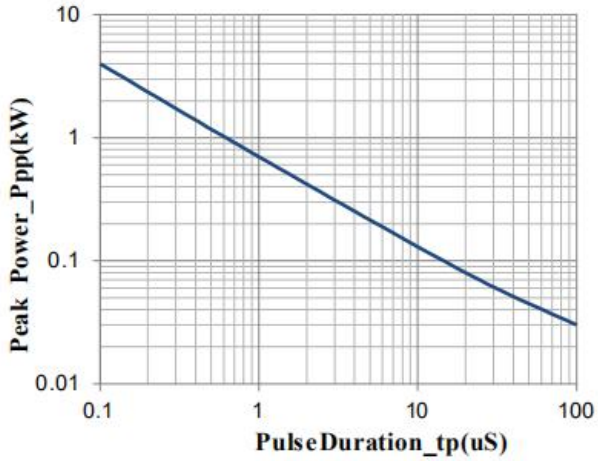
TYPICAL CHARACTERISTICS(T_A=25°C unless otherwise Specified)



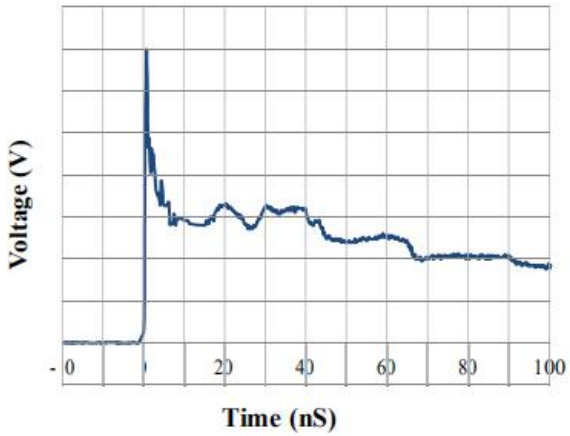
Junction Capacitance vs. Reverse Voltage



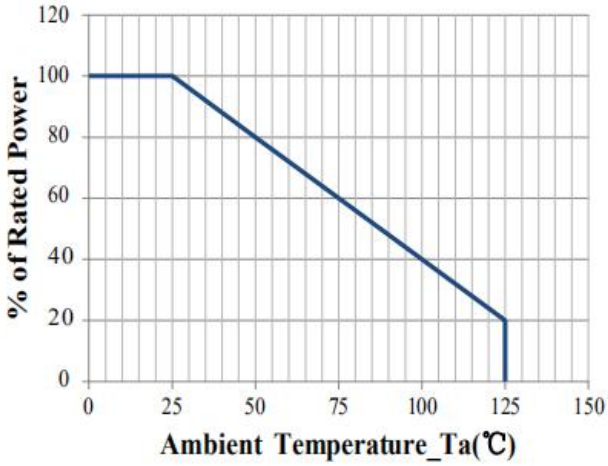
Clamping Voltage vs. Peak Pulse Current



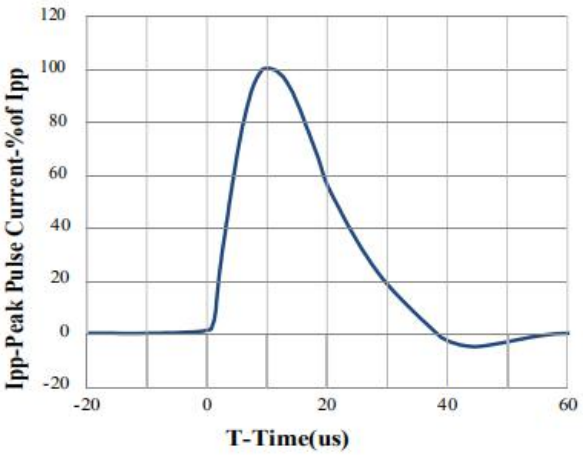
Peak Pulse Power vs. Pulse Time



IEC61000-4-2 Pulse Waveform

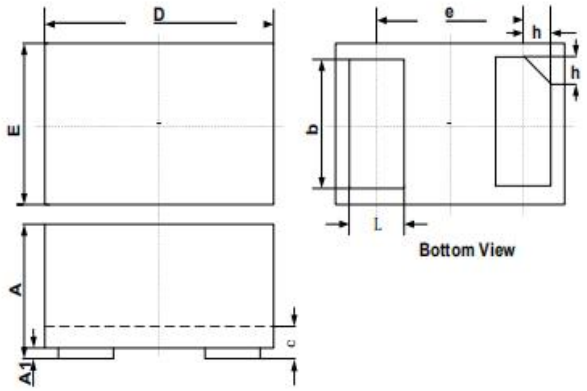


Power Derating Curve



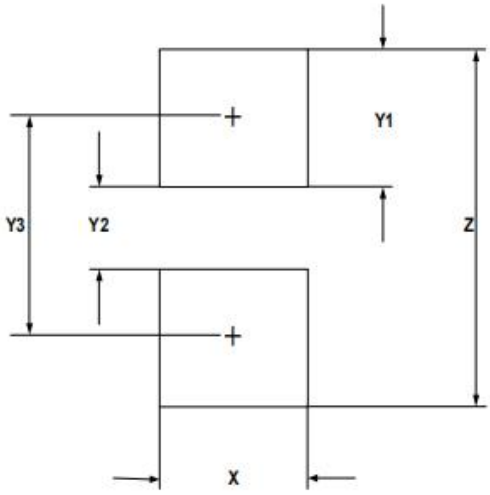
8 X 20us Pulse Waveform

DFN0603-2(0201) PACKAGE OUTLINE & DIMENSIONS



SYM	DIMENSIONS		
	MILLIMETERS		
	MIN	NOM	MAX
A	0.230		0.330
A1	0.000	0.020	0.050
b	0.215	0.245	0.275
c	0.120	0.150	0.180
D	0.550	0.600	0.650
e	0.355 BSC		
E	0.250	0.300	0.350
L	0.160	0.190	0.220
h	0.079 BSC		

SUGGESTED LAND PATTERN



SYM	DIMENSIONS	
	MILLIMETERS	INCHES
X	0.30	0.012
Y1	0.25	0.010
Y2	0.15	0.006
Y3	0.40	0.016
Z	0.65	0.026

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