

JE05U4RT20-6A

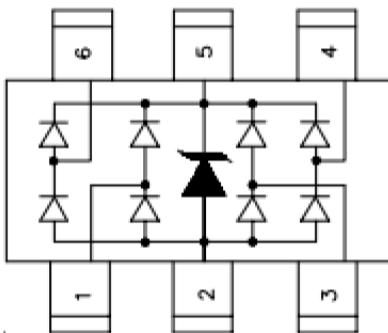
4-Line Low Capacitance TVS Diode Arrays



Description

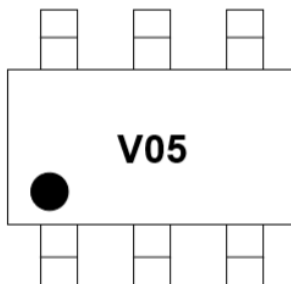
The JE05U4RT20-6A is a low capacitance TVS arrays, utilizing leading monolithic silicon technology to provide fast response time and low ESD clamping voltage, making this device an ideal solution for protecting voltage sensitive high-speed data lines. The JE05U4RT20-6A complies with the IEC 61000-4-2 (ESD) with $\pm 30\text{kV}$ air and $\pm 25\text{kV}$ contact discharge. It is assembled into a 6-lead SOT23-6L leadfree package. The leads are finished with lead-free matte tin. Each device will protect up to four high-speed lines. The combination of small size, low capacitance, and high surge capability makes them ideal for use in applications such as Ethernet, USB 2.0, and video interfaces.

Circuit Diagram



Circuit and Pin Schematic

Marking Diagram



V05 = Device Marking Code
Dot denotes Pin1

Features

- * Low capacitance: 0.8pF typical (I/O to I/O)
- * Low leakage: nA level
- * Operating voltage: 5V
- * Low clamping voltage
- * Up to four lines and one power line protects
- * Complies with following standards:
 - IEC 61000-4-2 (ESD) immunity test
 - Air discharge: $\pm 30\text{kV}$
 - Contact discharge: $\pm 25\text{kV}$
 - IEC 61000-4-5 (Lightning) 8A (8/20 μs)
- * RoHS Compliant
- * Package: SOT23-6L

Applications

- * USB 2.0 power and data line
- * Monitors and flat panel displays
- * Set-top box and digital TV
- * Digital visual interface (DVI)
- * Notebook Computers
- * SIM Ports
- * Gigabit Ethernet

Ordering Information

Part Number	Packaging	Reel Size
JE05U4RT20-6A	3000/Tape & Reel	7 inch

Absolute Maximum Ratings ($T_A=25^{\circ}\text{C}$ unless otherwise specified)

Parameter	Symbol	Value	Unit
Peak Pulse Power (8/20 μs)	Ppk	160	W
Peak Pulse Current (8/20 μs)	IPP	8	A
ESD per IEC 61000-4-2 (Air) ESD per IEC 61000-4-2 (Contact)	VESD	± 30 ± 25	kV
Operating Temperature Range	TJ	-55 to +125	$^{\circ}\text{C}$
Storage Temperature Range	Tstg	-55 to +150	$^{\circ}\text{C}$

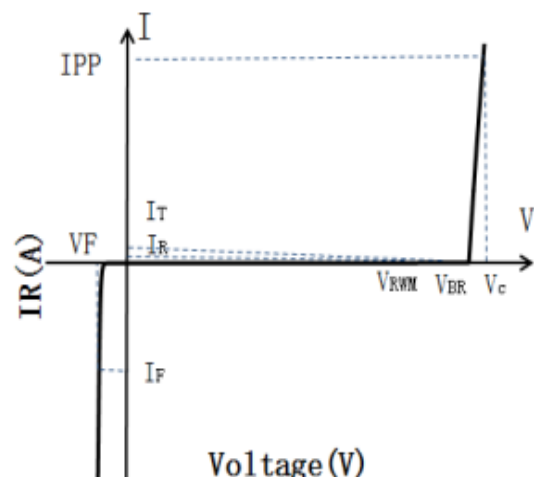
Electrical Characteristics ($T_A=25^{\circ}\text{C}$ unless otherwise specified)

Parameter	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Working Voltage	VRWM			5	V	Pin 5 to Pin 2
Breakdown Voltage	VBR	6			V	$I_T = 1\text{mA}$, Pin 5 to Pin 2
Reverse Leakage Current	I_R			0.2	μA	VRWM = 5V, Pin 5 to Pin 2
Forward Voltage	VF			1.2	V	$I_F = 15\text{mA}$
Clamping Voltage	VC			12	V	$I_{PP} = 1\text{A}$ (8 x 20 μs pulse), any I/O pin to ground
Clamping Voltage	VC			20	V	$I_{PP} = 8\text{A}$ (8 x 20 μs pulse), any I/O pin to ground
Junction Capacitance	CJ			0.8	pF	VR = 0V, f = 1MHz, between I/O pins
Junction Capacitance	CJ			1.5	pF	VR = 0V, f = 1MHz, any I/O pin to ground

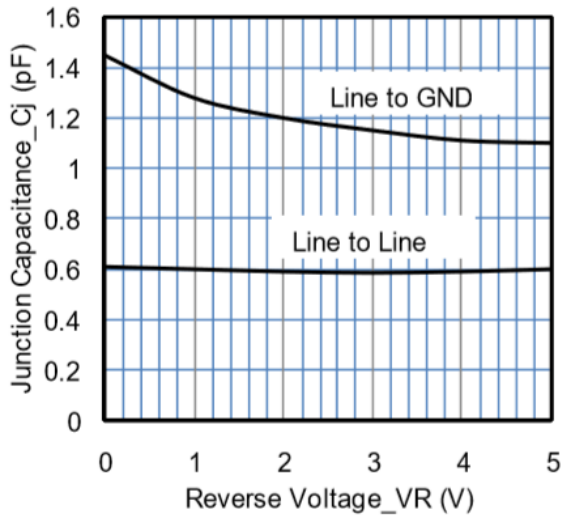
Note 1: I/O pins are Pin 1, 3, 4 and 6

Portion Electronics Parameter

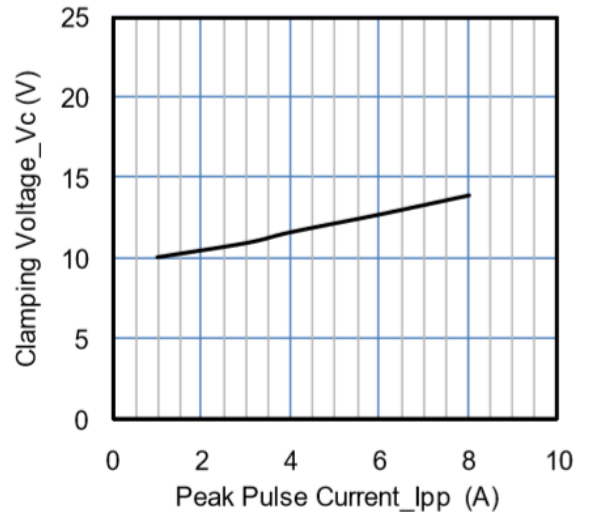
Symbol	Parameter
I_T	Test Current
I_{PP}	Maximum Reverse Peak Pulse Current
V_C	Clamping Voltage @ I_C



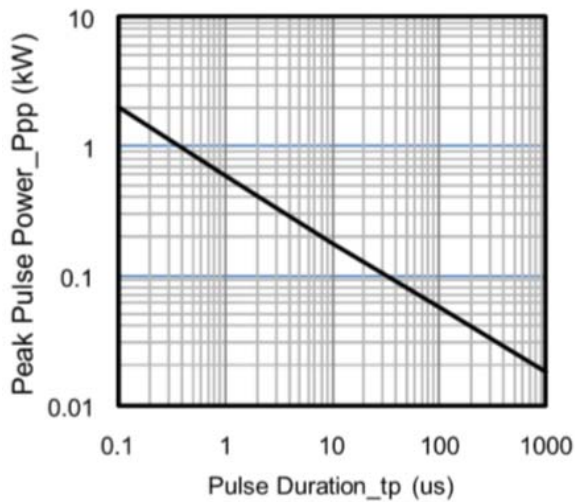
Typical Performance Characteristics ($T_A=25^{\circ}\text{C}$ unless otherwise Specified)



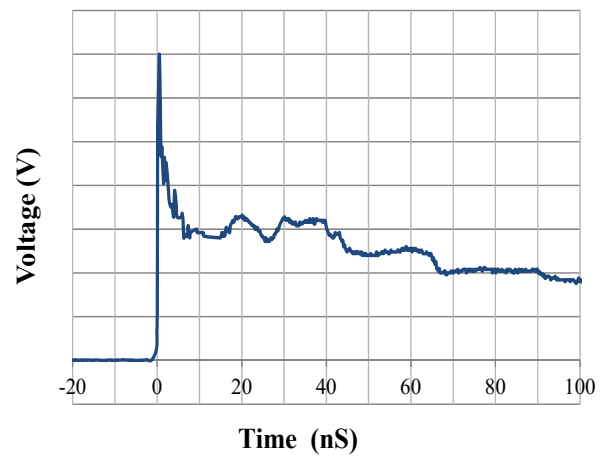
Junction Capacitance vs. Reverse Voltage



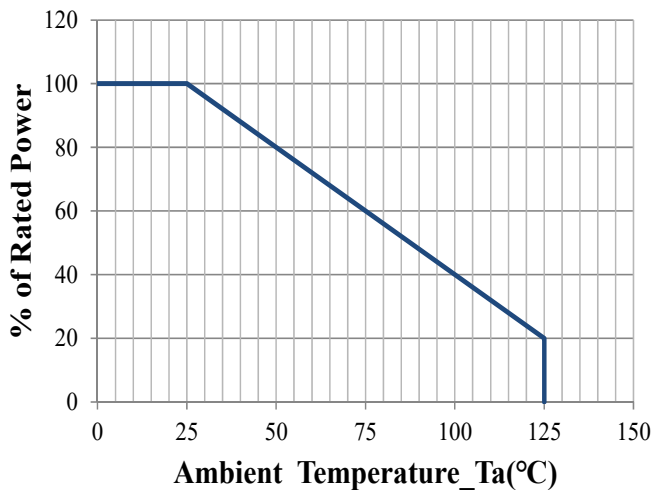
Clamping Voltage vs. Peak Pulse Current



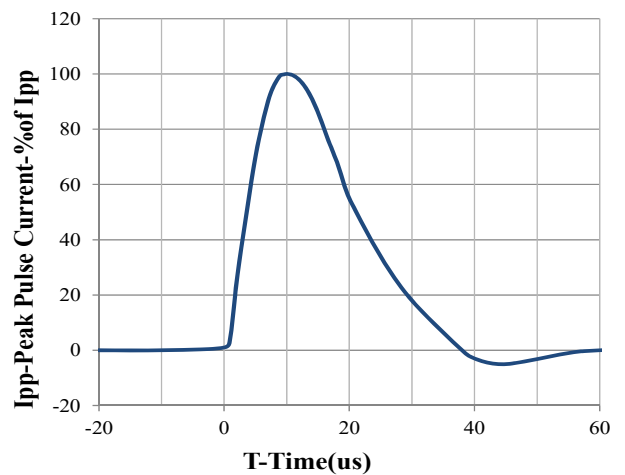
Peak Pulse Power vs. Pulse Time



IEC61000-4-2 Pulse Waveform

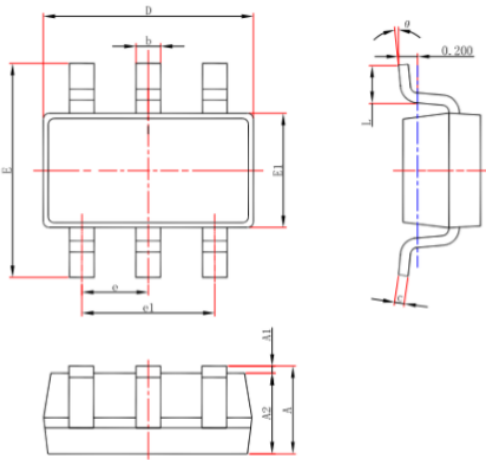


Power Derating Curve



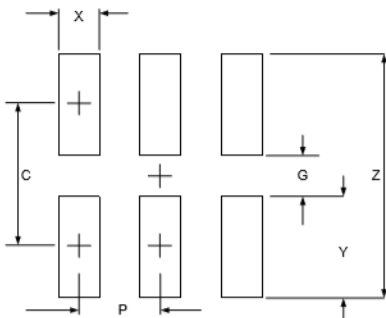
8 X 20us Pulse Waveform

SOT23-6L 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
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

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