

## QUAD TVS/ZENER ARRAY FOR ESD AND LATCH-UP PROTECTION

This Quad TVS/Zener Array family have been designed to Protect Sensitive Equipment against ESD and to prevent Latch-Up events in CMOS circuitry operating at 5V, 12V, 15V and 24V. This TVS array offers an integrated solution to protect up to 4 data lines where the board space is a premium.

### SPECIFICATION FEATURES

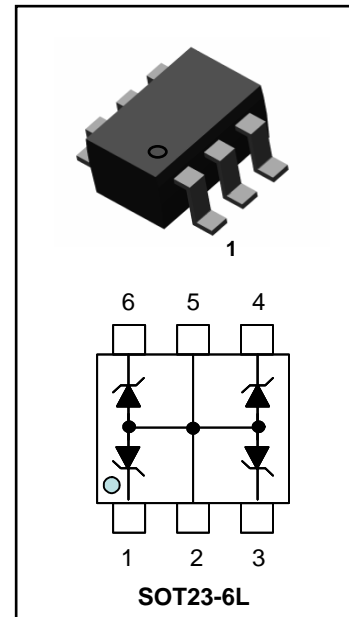
- 350W Power Dissipation (8/20 $\mu$ s Waveform)
- Low Leakage Current, Maximum of 5 $\mu$ A at rated voltage
- Very Low Clamping Voltage
- IEC61000-4-2 ESD 20kV air, 15kV Contact Compliance
- Industry Standard Surface Mount Package SOT23-6L
- 100% Tin Matte Finish (RoHS Compliance)

### APPLICATIONS

- Personal Digital Assistant (PDA)
- SIM Card Port Protection (Mobile Phone)
- Portable Instrumentation
- Mobile Phones and Accessories
- Memory Card Port Protection

### MAXIMUM RATINGS (Per Device)

Rating	Symbol	Value	Units
Peak Pulse Power (8/20 $\mu$ s Waveform)	$P_{pp}$	350	W
ESD Voltage (HBM)	$V_{ESD}$	>25	kV
Operating Temperature Range	$T_J$	-50 to +125	$^{\circ}$ C
Storage Temperature Range	$T_{stg}$	-50 to +150	$^{\circ}$ C



TVS	Marking Code
PJSMS05	M05
PJSMS12	M12
PJSMS15	M15
PJSMS24	M24

### ELECTRICAL CHARACTERISTICS (Per Device) $T_j = 25^{\circ}$ C

#### PJSMS05

Parameter	Symbol	Conditions	Min	Typical	Max	Units
Reverse Stand-Off Voltage	$V_{WRM}$				5	V
Reverse Breakdown Voltage	$V_{BR}$	$I_{BR} = 1\text{mA}$	6			V
Reverse Leakage Current	$I_R$	$V_R = 5\text{V}$			5	$\mu$ A
Clamping Voltage (8/20 $\mu$ s)	$V_C$	$I_{pp} = 5\text{A}$			9.8	V
Clamping Voltage (8/20 $\mu$ s)	$V_C$	$I_{pp} = 24\text{A}$			13	V
Off State Junction Capacitance	$C_j$	0 Vdc Bias $f = 1\text{MHz}$ Between I/O pins and pin 2, 5			225	pF
Off State Junction Capacitance	$C_j$	5 Vdc Bias $f = 1\text{MHz}$ Between I/O pins and pin 2, 5			125	pF

**ELECTRICAL CHARACTERISTICS (Per Device) T<sub>j</sub> = 25°C**
**PJSMS12**

Parameter	Symbol	Conditions	Min	Typical	Max	Units
Reverse Stand-Off Voltage	V <sub>WRM</sub>				12	V
Reverse Breakdown Voltage	V <sub>BR</sub>	I <sub>BR</sub> = 1mA	13.3			V
Reverse Leakage Current	I <sub>R</sub>	V <sub>R</sub> = 12V			1	μA
Clamping Voltage (8/20μs)	V <sub>c</sub>	I <sub>pp</sub> = 5A			20	V
Clamping Voltage (8/20μs)	V <sub>c</sub>	I <sub>pp</sub> = 15A			25	V
Off State Junction Capacitance	C <sub>j</sub>	0 Vdc Bias f = 1MHz Between I/O pins and pin 2, 5			100	pF

**PJSMS15**

Parameter	Symbol	Conditions	Min	Typical	Max	Units
Reverse Stand-Off Voltage	V <sub>WRM</sub>				15	V
Reverse Breakdown Voltage	V <sub>BR</sub>	I <sub>BR</sub> = 1mA	16.7			V
Reverse Leakage Current	I <sub>R</sub>	V <sub>R</sub> = 15V			1	μA
Clamping Voltage (8/20μs)	V <sub>c</sub>	I <sub>pp</sub> = 5A			24	V
Clamping Voltage (8/20μs)	V <sub>c</sub>	I <sub>pp</sub> = 12A			29	V
Off State Junction Capacitance	C <sub>j</sub>	0 Vdc Bias f = 1MHz Between I/O pins and pin 2, 5			80	pF

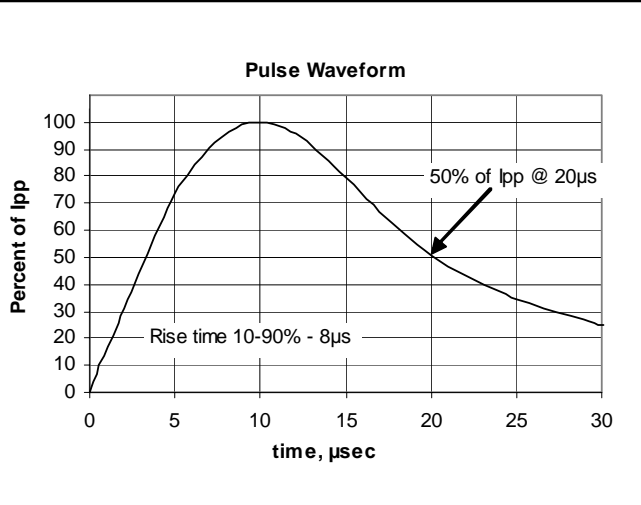
**PJSMS24**

Parameter	Symbol	Conditions	Min	Typical	Max	Units
Reverse Stand-Off Voltage	V <sub>WRM</sub>				24	V
Reverse Breakdown Voltage	V <sub>BR</sub>	I <sub>BR</sub> = 1mA	26.7			V
Reverse Leakage Current	I <sub>R</sub>	V <sub>R</sub> = 24V			1	μA
Clamping Voltage (8/20μs)	V <sub>c</sub>	I <sub>pp</sub> = 5A			40	V
Clamping Voltage (8/20μs)	V <sub>c</sub>	I <sub>pp</sub> = 8A			44	V
Off State Junction Capacitance	C <sub>j</sub>	0 Vdc Bias f = 1MHz Between I/O pins and pin 2, 5			60	pF

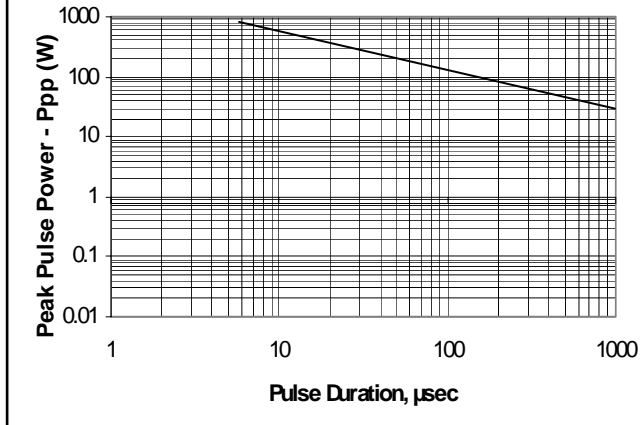


TYPICAL CHARACTERISTICS TJ = 25°C unless otherwise noted

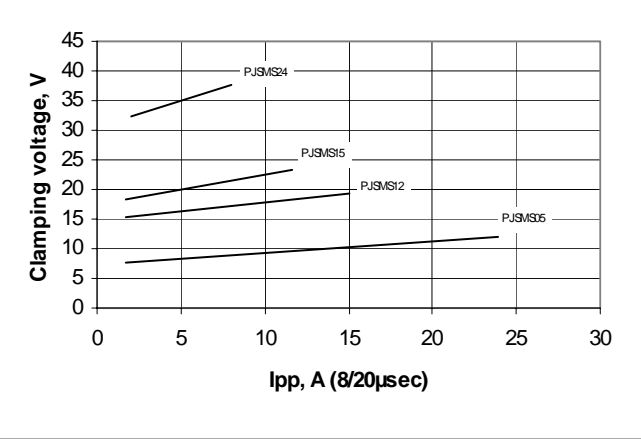
Surge Pulse Waveform Definition



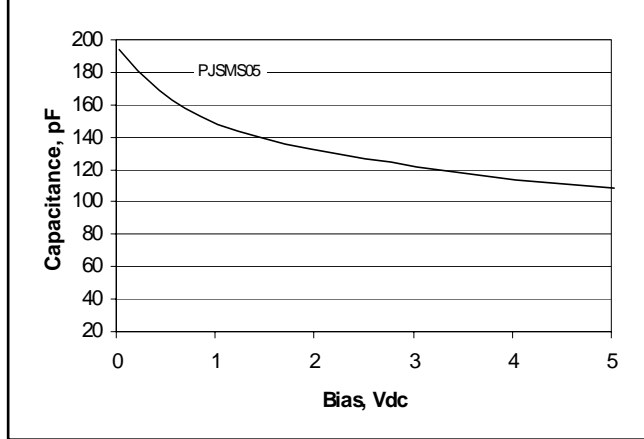
Non-Repetitive Peak Pulse Power vs Pulse Time



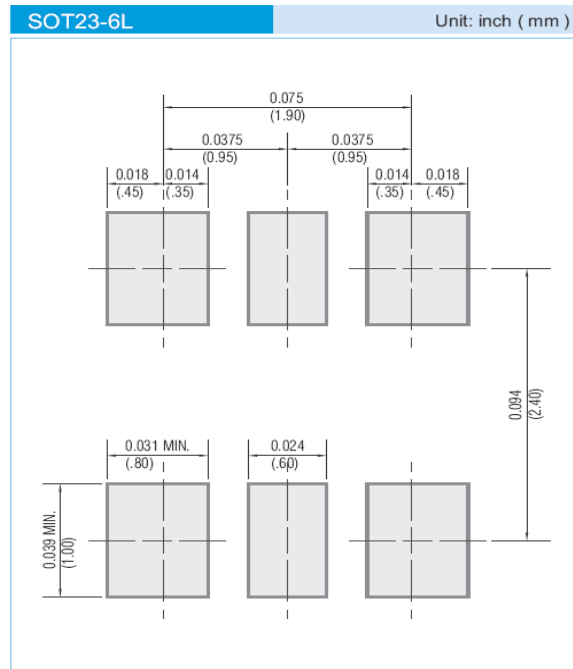
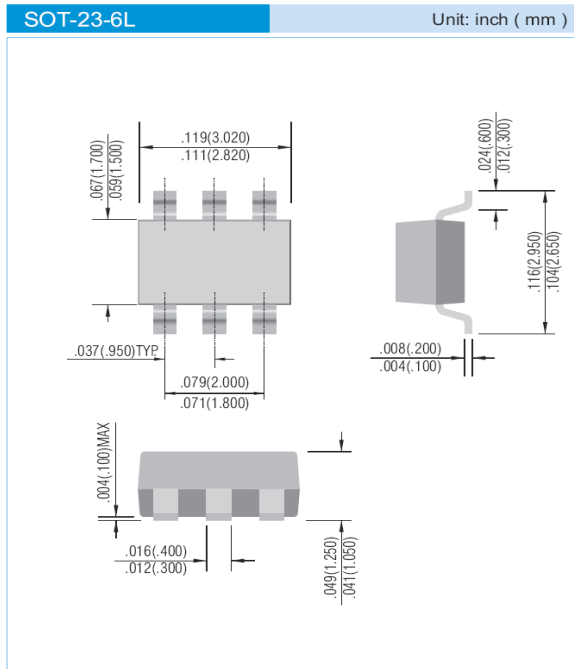
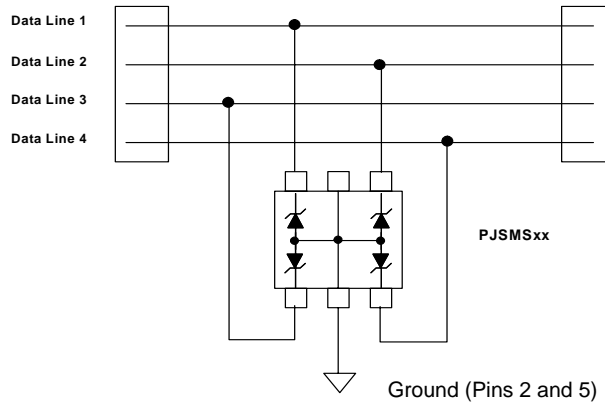
Clamping Voltage vs. Peak current



Off-State Capacitance per Device - 1MHz



**TYPICAL APPLICATION EXAMPLE AND PACKAGE DIMENSIONS**



© Copyright PanJit International, Inc 2009

The information presented in this document is believed to be accurate and reliable. The specifications and information herein are subject to change without notice. Pan Jit makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose. Pan Jit products are not authorized for use in life support devices or systems. Pan Jit does not convey any license under its patent rights or rights of others.