

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

This 5 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 5 data lines where the board space is a premium.

### SPECIFICATION FEATURES

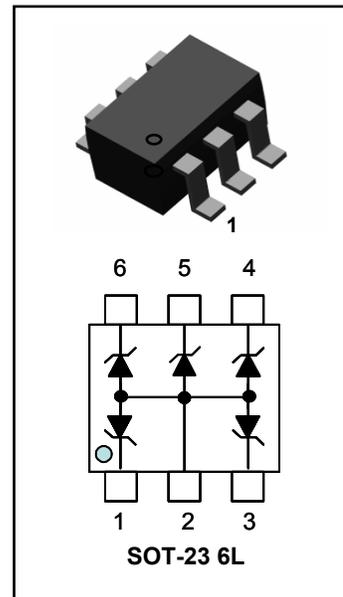
- 350W Power Dissipation (8/20µs Waveform)
- Low Leakage Current, Maximum of 5µA at rated voltage
- Very Low Clamping Voltage
- IEC61000-4-2 ESD 20kV air, 15kV Contact Compliance
- Industry Standard Surface Mount Package SOT-23 6L
- 100% Tin Matte Finish (RoHS Compliant)
- Lead free in compliance with EU RoHS 2011/65/EU directive
- Green molding compound as per IEC61249 Std. . (Halogen Free)

### 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 (8/20µs Waveform)	$P_{pp}$	350	W
ESD Voltage (HBM)	$V_{ESD}$	>25	kV
Operating Temperature Range	$T_J$	-50 to +125	°C
Storage Temperature Range	$T_{stg}$	-50 to +150	°C



Device	Marking Code
PJSMS05C	MD5
PJSMS12C	MA2
PJSMS15C	MA5
PJSMS24C	MB4

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

#### PJSMS05C

Parameter	Symbol	Conditions	Min	Typical	Max	Units
Reverse Stand-Off Voltage	$V_{RWM}$				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	µA
Clamping Voltage (8/20µs)	$V_c$	$I_{pp} = 5\text{A}$			9.5	V
Clamping Voltage (8/20µs)	$V_c$	$I_{pp} = 24\text{A}$			13	V
Off State Junction Capacitance	$C_j$	0 Vdc Bias f = 1MHz Between I/O pins and pin 2			200	pF
Off State Junction Capacitance	$C_j$	5 Vdc Bias f = 1MHz Between I/O pins and pin 2			110	pF



**ELECTRICAL CHARACTERISTICS (Per Device) Tj = 25°C**

**PJSMS12C**

Parameter	Symbol	Conditions	Min	Typical	Max	Units
Reverse Stand-Off Voltage	$V_{RWM}$				12	V
Reverse Breakdown Voltage	$V_{BR}$	$I_{BR} = 1mA$	13.3			V
Reverse Leakage Current	$I_R$	$V_R = 12V$			5	$\mu A$
Clamping Voltage (8/20 $\mu s$ )	$V_C$	$I_{pp} = 5A$			17	V
Clamping Voltage (8/20 $\mu s$ )	$V_C$	$I_{pp} = 15A$			21	V
Off State Junction Capacitance	$C_j$	0 Vdc Bias f = 1MHz Between I/O pins and pin 2			90	pF

**PJSMS15C**

Parameter	Symbol	Conditions	Min	Typical	Max	Units
Reverse Stand-Off Voltage	$V_{RWM}$				15	V
Reverse Breakdown Voltage	$V_{BR}$	$I_{BR} = 1mA$	16.7			V
Reverse Leakage Current	$I_R$	$V_R = 15V$			5	$\mu A$
Clamping Voltage (8/20 $\mu s$ )	$V_C$	$I_{pp} = 5A$			22	V
Clamping Voltage (8/20 $\mu s$ )	$V_C$	$I_{pp} = 12A$			27	V
Off State Junction Capacitance	$C_j$	0 Vdc Bias f = 1MHz Between I/O pins and pin 2			70	pF

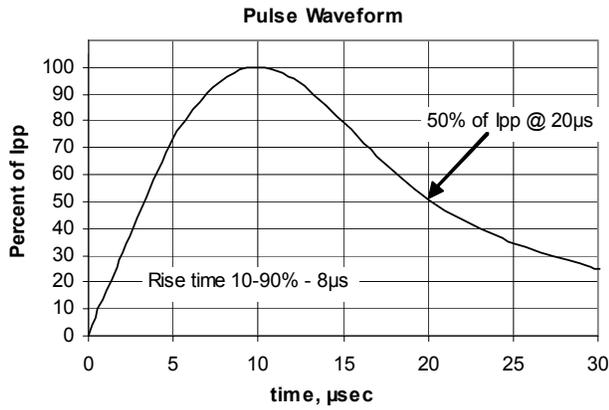
**PJSMS24C**

Parameter	Symbol	Conditions	Min	Typical	Max	Units
Reverse Stand-Off Voltage	$V_{RWM}$				24	V
Reverse Breakdown Voltage	$V_{BR}$	$I_{BR} = 1mA$	26.7			V
Reverse Leakage Current	$I_R$	$V_R = 24V$			5	$\mu A$
Clamping Voltage (8/20 $\mu s$ )	$V_C$	$I_{pp} = 5A$			35	V
Clamping Voltage (8/20 $\mu s$ )	$V_C$	$I_{pp} = 8A$			40	V
Off State Junction Capacitance	$C_j$	0 Vdc Bias f = 1MHz Between I/O pins and pin 2			50	pF

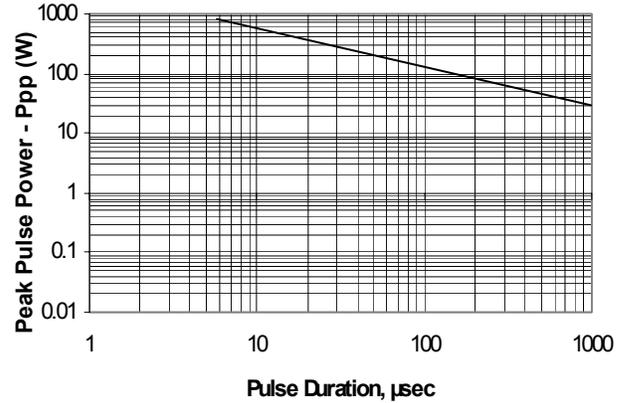


TYPICAL CHARACTERISTICS TJ = 25°C unless otherwise noted

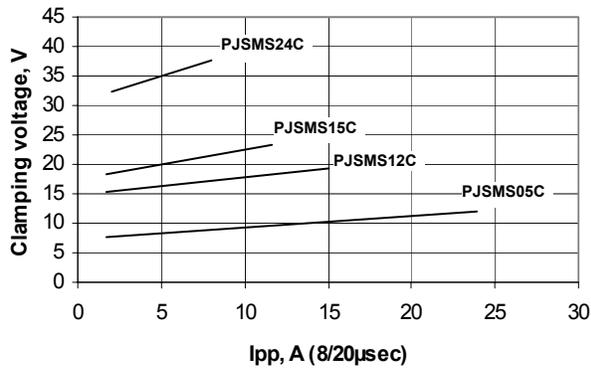
Surge Pulse Waveform Definition



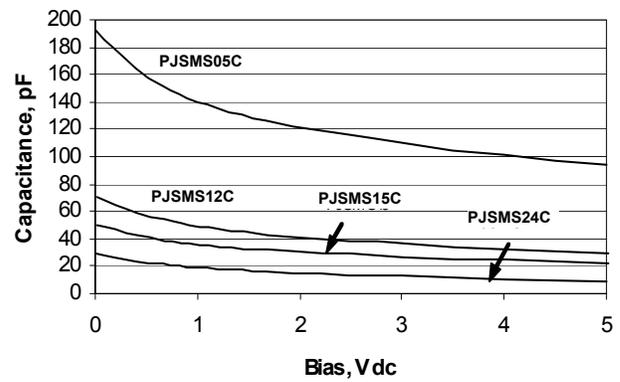
Non-Repetitive Peak Pulse Power vs Pulse Time



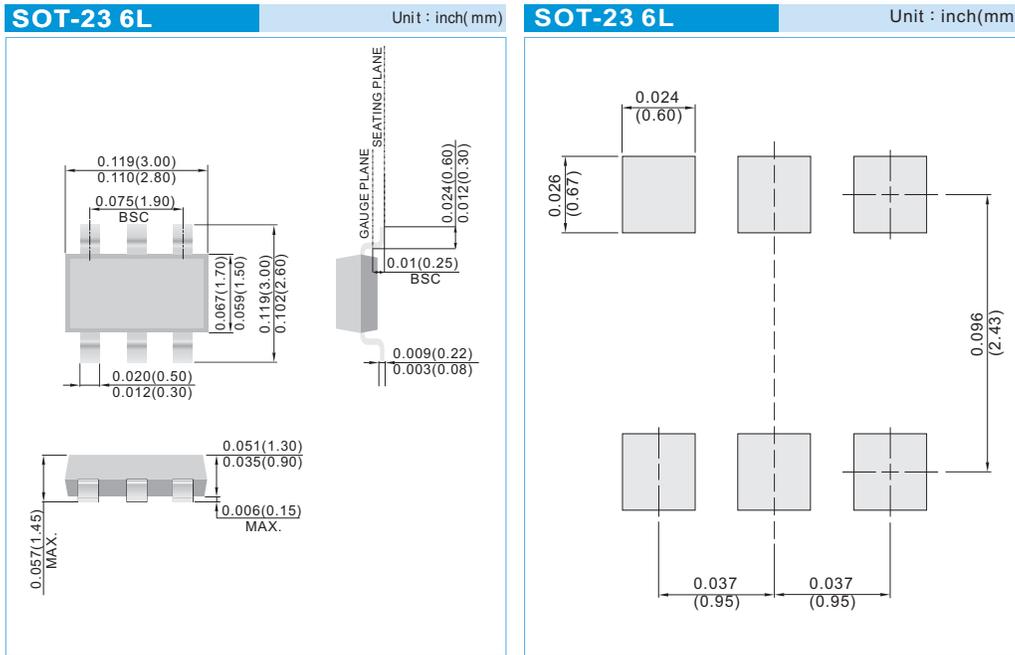
Clamping Voltage vs. Peak current



Off-State Capacitance per Device - 1MHz



**PACKAGE AND PAD LAYOUT DIMENSIONS**





# PJSMS05C SERIES

## Part No\_packing code\_Version

PJSMS05C\_R1\_00001

PJSMS05C\_R2\_00001

For example :

**RB500V-40\_R2\_00001**



Packing Code <b>XX</b>				Version Code <b>XXXXX</b>		
Packing type	1 <sup>st</sup> Code	Packing size code	2 <sup>nd</sup> Code	HF or RoHS	1 <sup>st</sup> Code	2 <sup>nd</sup> ~5 <sup>th</sup> Code
Tape and Ammunition Box (T/B)	<b>A</b>	N/A	<b>0</b>	<b>HF</b>	<b>0</b>	serial number
Tape and Reel (T/R)	<b>R</b>	7"	<b>1</b>	<b>RoHS</b>	<b>1</b>	serial number
Bulk Packing (B/P)	<b>B</b>	13"	<b>2</b>			
Tube Packing (T/P)	<b>T</b>	26mm	<b>X</b>			
Tape and Reel (Right Oriented) (TRR)	<b>S</b>	52mm	<b>Y</b>			
Tape and Reel (Left Oriented) (TRL)	<b>L</b>	PANASERT T/B CATHODE UP (PBCU)	<b>U</b>			
FORMING	<b>F</b>	PANASERT T/B CATHODE DOWN (PBCD)	<b>D</b>			



## PJSMS05C SERIES

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