

**Description**

The PDCSM12 is an uni-directional TVS diode array,utilizing leading monolithic silicon technology to provide fast response time and low ESD clamping voltage, making this device an ideal solution for protecting sensitive semiconductor components from damage. The PDCSM12 complies with the IEC 61000-4-2 (ESD) standard with  $\pm 30\text{kV}$  air and  $\pm 30\text{kV}$  contact discharge. It is assembled into a lead-free SOT-23 package. It is designed to protect components which are connected to data and transmission lines fron voltage surges.

**Features**

- 270W peak pulse power(8/20 $\mu\text{s}$ )
- Protects two uni-directional lines
- Ultra low leakage: nA level
- Operating voltage: 12V
- Low clamping voltage
- Complies with following standards:
  - IEC 61000-4-2 (ESD) immunity test Air discharge:  $\pm 30\text{kV}$   
Contact discharge:  $\pm 30\text{kV}$
  - IEC61000-4-5 (Lighting) 13A (8/20 $\mu\text{s}$ )
- RoHS Compliant

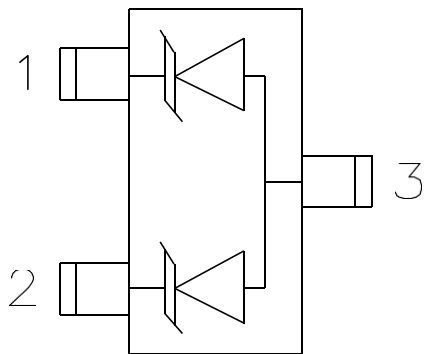
**Mechanical Characteristics**

- Package: SOT-23
- Lead Finish: Matte Tin
- Case Material: “Green” Molding Compound.
- Moisture Sensitivity: Level 3 per J-STD-020
- Terminal Connections: See Diagram Below
- Marking Information: See Below

**Applications**

- Cellular Handsets and Accessories
- Notebook and Handhelds
- Portable Instrumentation
- Set Top Box
- Industrial Controls
- Server and Desktop PC

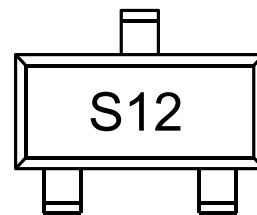
**Dimensions and Pin Configuration**



**SOT23**

Circuit and Pin Schematic

**Marking Information**



Marking Code

**Ordering Information**

Part Number	Marking	Packaging	Reel Size
PDCSM12	S12	3000/Tape & Reel	7 inch

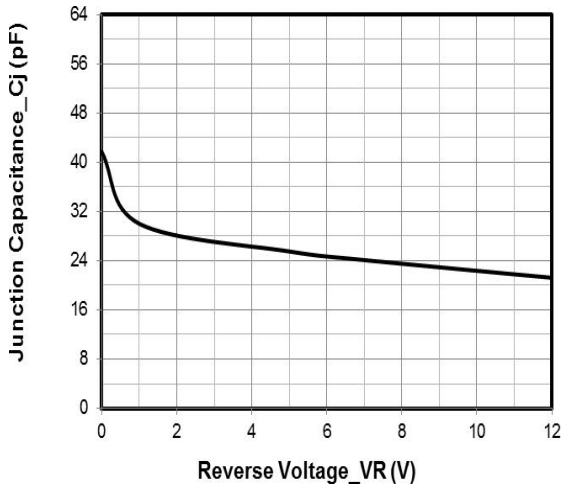
**Absolute Maximum Ratings (TA=25°C unless otherwise specified)**

Parameter	Symbol	Value	Unit
Peak Pulse Power (8/20µs)	Ppk	350	W
Peak Pulse Current (8/20µs)	I <sub>PP</sub>	13	A
ESD per IEC 61000-4-2 (Air) ESD per IEC 61000-4-2 (Contact)	V <sub>ESD</sub>	±30 ±30	kV
Operating Temperature Range	T <sub>J</sub>	-55 to +125	°C
Storage Temperature Range	T <sub>stg</sub>	-55 to +150	°C

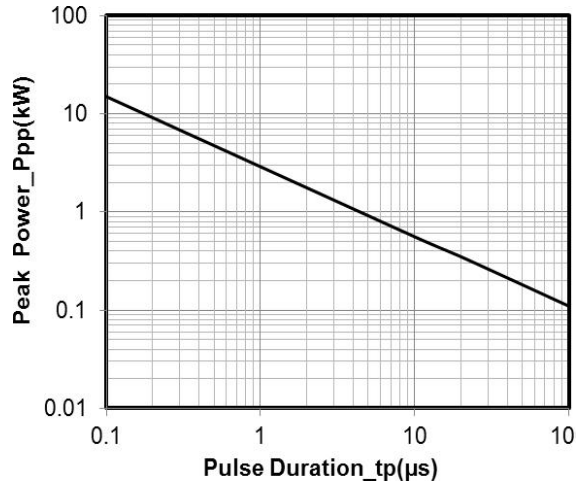
**Electrical Characteristics (TA=25°C unless otherwise specified)**

Parameter	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Working Voltage	V <sub>RWM</sub>			12	V	
Breakdown Voltage	V <sub>BR</sub>	13.3			V	I <sub>T</sub> = 1mA
Reverse Leakage Current	I <sub>R</sub>			0.2	µA	V <sub>RWM</sub> = 12V
Clamping Voltage	V <sub>C</sub>			16	V	I <sub>PP</sub> = 1A (8 x 20µs pulse)
Clamping Voltage	V <sub>C</sub>		23.5	27	V	I <sub>PP</sub> = 13A (8 x 20µs pulse)
Junction Capacitance	C <sub>J</sub>		40		pF	V <sub>R</sub> = 0V, f = 1MHz, Pin 1 to Pin 3 or Pin 2 to Pin 3

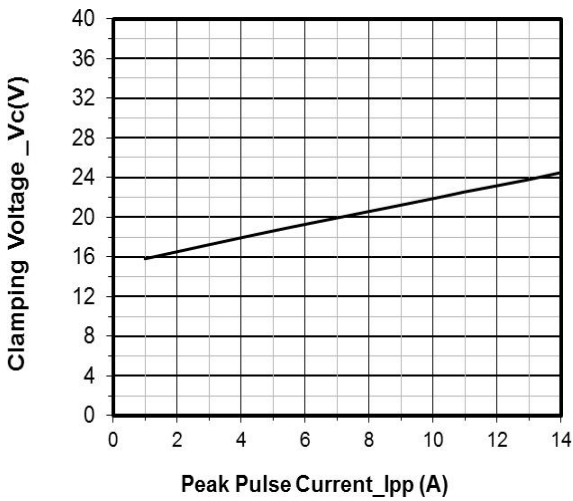
**Typical Performance Characteristics (TA=25°C unless otherwise Specified)**



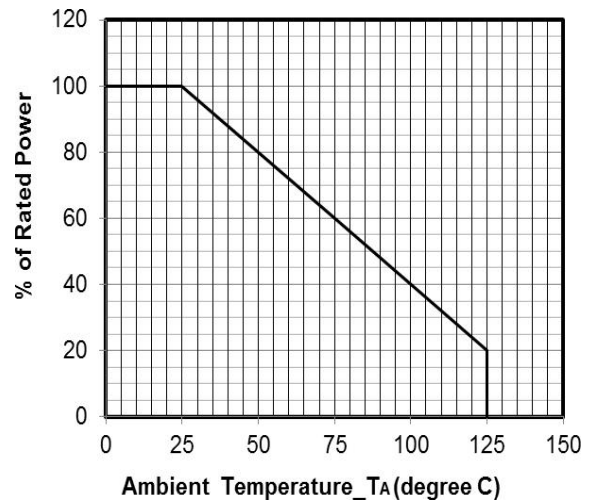
**Junction Capacitance vs. Reverse Voltage**



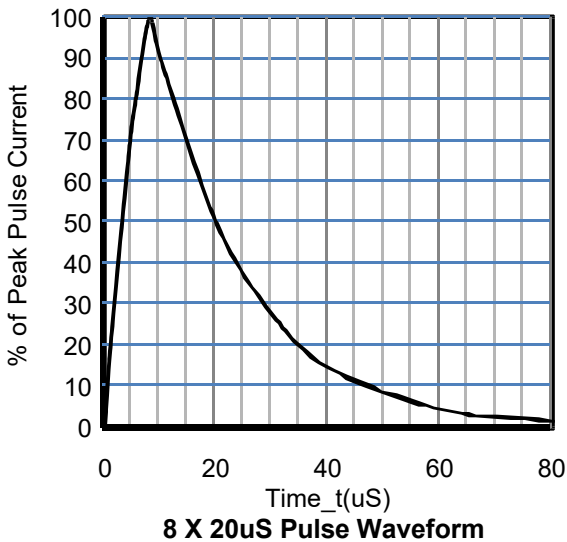
**Peak Pulse Power vs. Pulse Time**



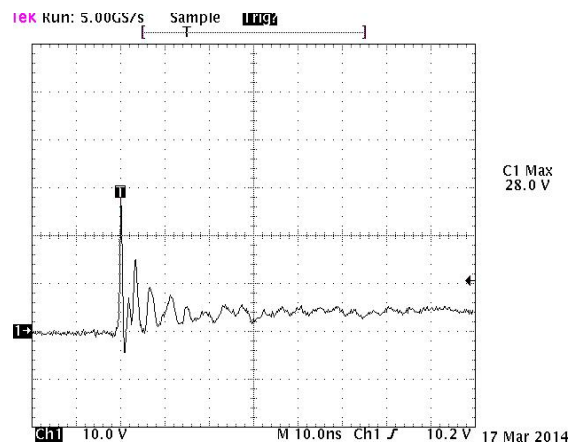
**Clamping Voltage vs. Peak Pulse Current**



**Power Derating Curve**



**8 X 20uS Pulse Waveform**

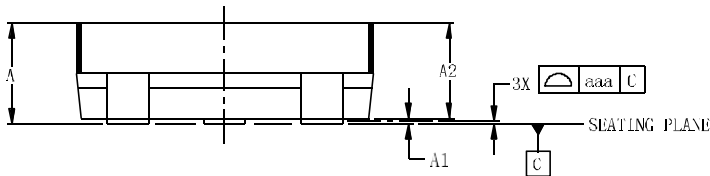
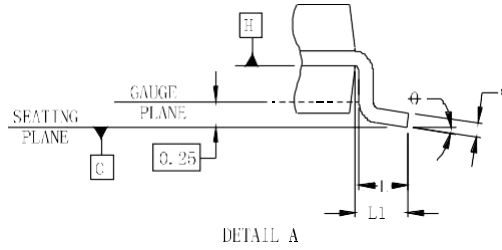
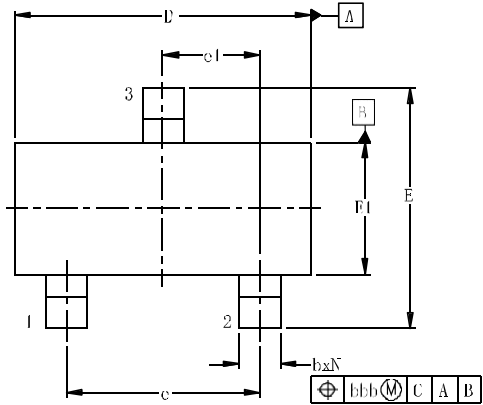


**Note: Data is taken with a 10x attenuator**

**ESD Clamping Voltage**

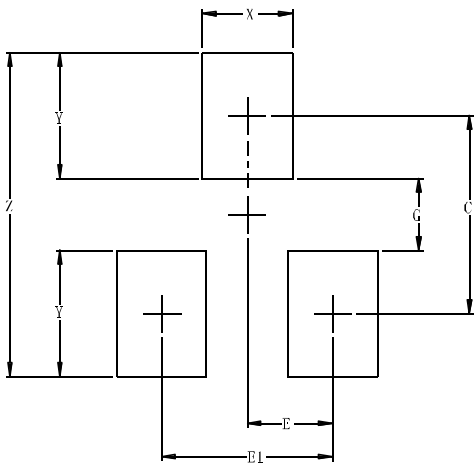
**8 kV Contact per IEC61000-4-2**

**SOT-23 Package Outline Drawing**



SYM	INCHES			MILLIMETERS		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.035	-	0.044	0.89	-	1.12
A1	0.000	-	0.004	0.01	-	0.10
A2	0.035	0.037	0.040	0.88	0.95	1.02
b	0.012	-	0.020	0.30	-	0.51
c	0.003	-	0.007	0.08	-	0.18
D	0.110	0.114	0.120	2.80	2.90	3.04
E	0.082	0.093	0.104	2.10	2.37	2.64
E1	0.047	0.051	0.055	1.20	1.30	1.40
e	0.075			1.90BSC		
e1	0.037			0.95BSC		
L	0.015	0.020	0.024	0.40	0.50	0.60
L1	0.022			0.55		
N	3			3		
e	0°	-	8°	0°	-	8°
aaa	0.004			0.10		
bbb	0.008			0.20		

**Suggested Land Pattern**



DIMENSIONS		
SYM	INCHES	MILLIMETERS
C	0.087	2.20
E	0.037	0.95
E1	0.075	1.90
G	0.031	0.80
X	0.039	1.00
Y	0.055	1.40
Z	0.141	3.60