

## ESD PROTECTION FOR IN-VEHICLE NETWORKS



### DESCRIPTION

The PAM1IVN27 is an ESD protection device in a small SOD-323 surface mount package that is designed to protect automotive in-vehicle bus lines from the damage caused by Electrostatic Discharge (ESD) and other transients.

### FEATURES

- **AEC-Q101 Qualified**
- Compatible with IEC 61000-4-2 (ESD): Air  $\pm 30\text{kV}$ , Contact  $\pm 30\text{kV}$
- Compatible with IEC 61000-4-4 (EFT)
- Compatible with IEC 61000-4-5 (Surge): 5A
- Bidirectional Configuration
- 135 Watts Peak Pulse Power per Line ( $t_p = 8/20\mu\text{s}$ )
- Low Clamping Voltage
- Ultra Low Leakage Current: 0.8nA @ 27°C (Typical)
- RoHS Compliant
- REACH Compliant

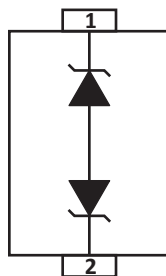
### APPLICATIONS

- CANBus
- LINBus
- FlexRay
- SENT

### MECHANICAL CHARACTERISTICS

- Molded JEDEC SOD-323 Package
- Approximate Weight: 5 milligrams
- Lead-Free Pure-Tin Plating (Annealed)
- Solder Reflow Temperature:  
Pure-Tin - Sn, 100: 260-270°C
- 8mm Tape and Reel Per EIA Standard 481
- Flammability Rating UL 94V-0

### PIN CONFIGURATION



**TYPICAL DEVICE CHARACTERISTICS**
**MAXIMUM RATINGS @ 25°C Unless Otherwise Specified**

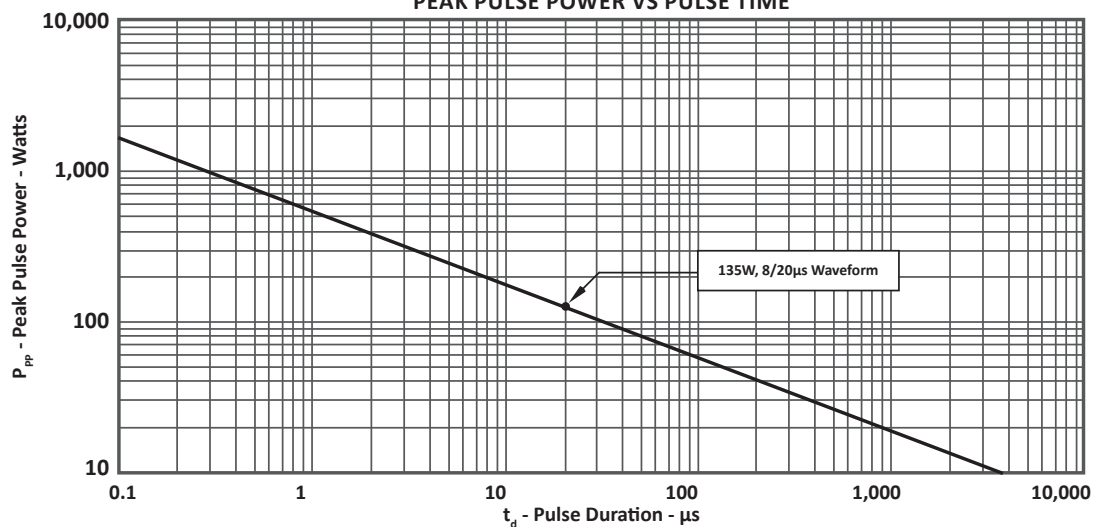
PARAMETER	SYMBOL	VALUE	UNITS
Peak Pulse Current, $t_p = 8/20\mu s$	$I_{PPM}$	5	Amps
Peak Pulse Power ( $t_p = 8/20\mu s$ ) - See Figure 1	$P_{PP}$	135	Watts
Junction Temperature	$T_J$	-55 to 150	°C
Storage Temperature	$T_{STG}$	-65 to 150	°C
Ambient Temperature	$T_A$	-55 to 150	°C
ESD Voltage Rating per IEC 61000-4-2 (Air and Contact)	$V_{ESD}$	±30	kV

**ELECTRICAL CHARACTERISTICS PER LINE @ 25°C Unless Otherwise Specified**

PART NUMBER	DEVICE MARKING	RATED STAND-OFF VOLTAGE  $V_{WM}$ VOLTS	BREAKDOWN VOLTAGE  @ 1mA $V_{(BR)}$ VOLTS			CLAMPING VOLTAGE (Fig. 2)  @ $I_P = 3A$ $V_C$ VOLTS		LEAKAGE CURRENT  @ $V_{WM}$ 27°C $I_D$ nA		MAXIMUM LEAKAGE CURRENT (See Note 1)  @ $V_{WM}$ 125°C $I_D$ nA	CAPACITANCE (See Note 1)  @ 5V, 250KHz/1MHz C pF	
			MIN	TYP	MAX	TYP	MAX	TYP	MAX		TYP	MAX
PAM11VN27	27V	27.0	28.0	32.0	38.0	37	45	0.8	5	10	15	20

**NOTES**

1. Guaranteed by design.

**FIGURE 1  
PEAK PULSE POWER VS PULSE TIME**


## TYPICAL DEVICE CHARACTERISTICS

FIGURE 2  
PULSE WAVE FORM

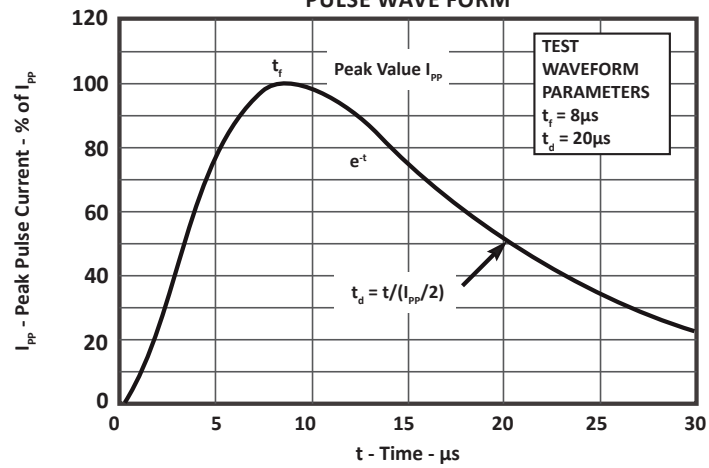
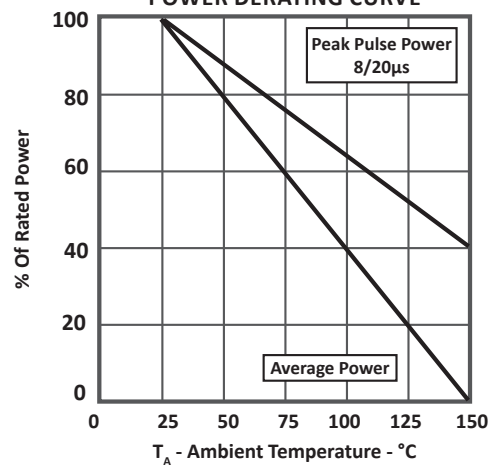
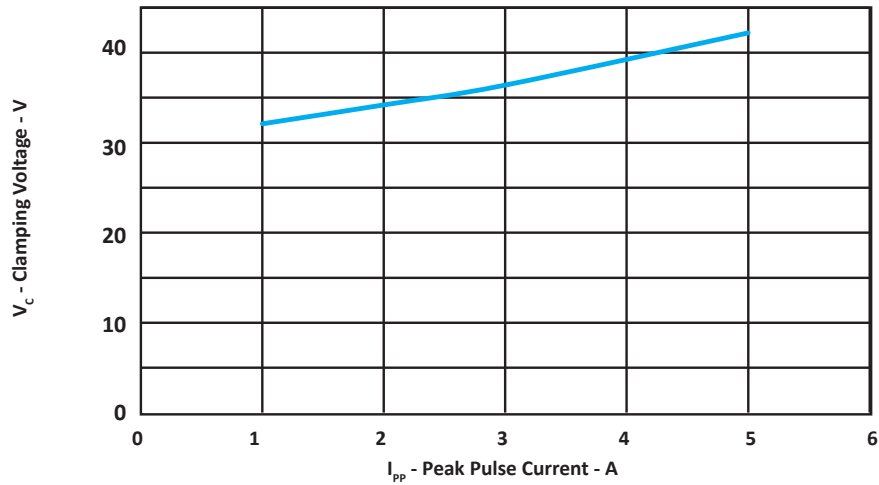
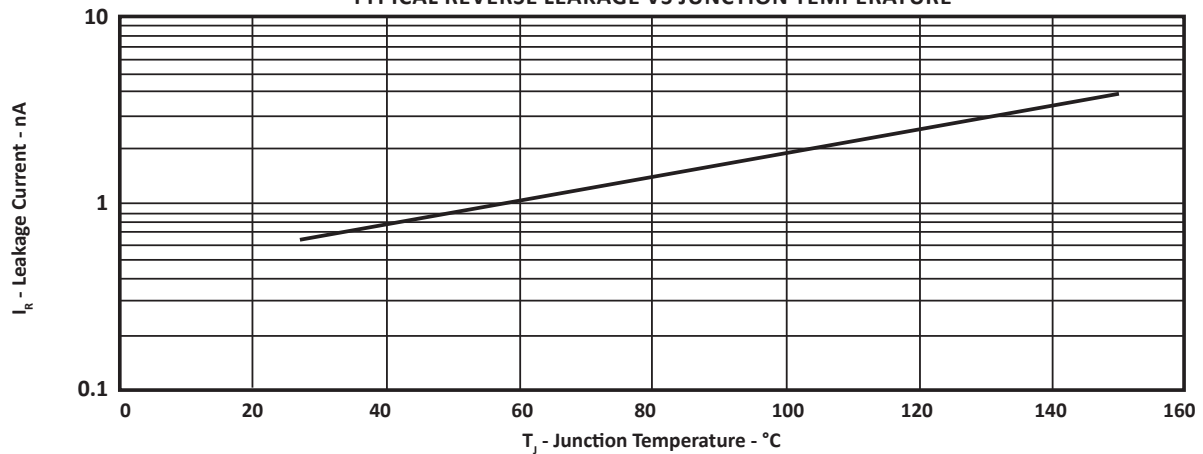


FIGURE 3  
POWER DERATING CURVE



## TYPICAL DEVICE CHARACTERISTICS

**FIGURE 4**  
**PEAK CURRENT VS CLAMPING VOLTAGE****FIGURE 5**  
**TYPICAL REVERSE LEAKAGE VS JUNCTION TEMPERATURE**

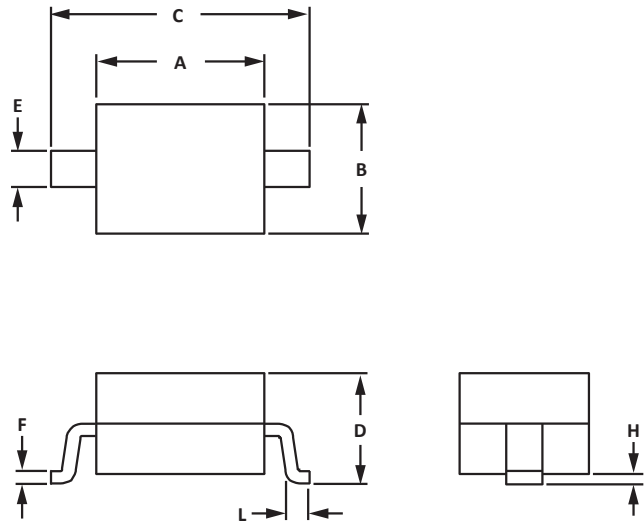
## SOD-323 PACKAGE INFORMATION

## OUTLINE DIMENSIONS

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	1.60	1.90	0.063	0.075
B	1.15	1.45	0.045	0.057
C	2.39	2.70	0.094	0.106
D	0.80	1.10	0.031	0.043
E	0.25	0.40	0.010	0.016
F	0.10	0.20	0.004	0.008
H	-	0.10	-	0.004
L	0.20	-	0.008	-

## NOTES

- Controlling dimension: millimeters.
- Dimensioning and tolerances per ANSI Y14.5M, 1985.
- Dimensions are exclusive of mold flash and metal burrs.

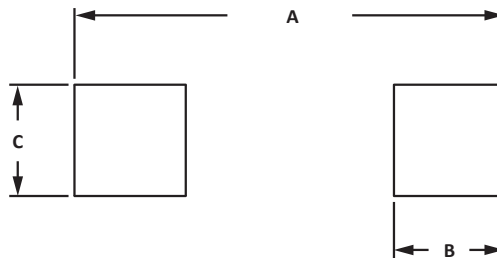


## PAD LAYOUT DIMENSIONS

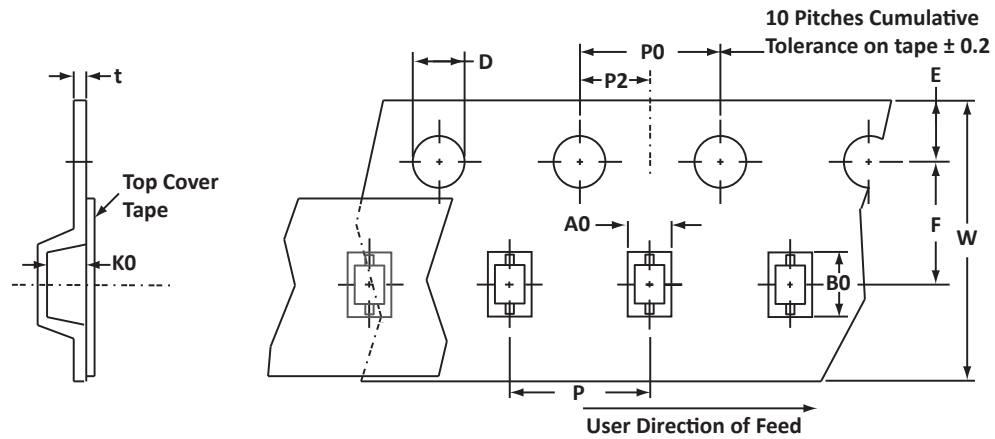
DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	2.87	3.12	0.113	0.123
B	0.66	0.91	0.026	0.036
C	0.66	0.91	0.026	0.036

## NOTES

- Controlling dimension: millimeters.



## TAPE AND REEL



## SPECIFICATIONS

REEL DIA.	TAPE WIDTH	A0	B0	K0	D	E	F	W	P0	P2	P	tmax
178mm (7")	8mm	1.55 ± 0.10	2.90 ± 0.10	1.35 ± 0.10	1.50 ± 0.10	1.75 ± 0.10	3.50 ± 0.05	8.00 ± 0.30	4.00 ± 0.10	2.00 ± 0.05	4.00 ± 0.10	0.25

## NOTES

1. Dimensions are in millimeters.
2. Surface mount product is taped and reeled in accordance with EIA-481.
3. Suffix - T73 = 7" Reel - 3,000 pieces per 8mm tape.
4. Marking on Part - marking code (see page 2).

## ORDERING INFORMATION

BASE PART NUMBER	LEADFREE SUFFIX	TAPE SUFFIX	QTY/REEL	REEL SIZE	TUBE QTY
PAM1VN27	N/A	-T73	3,000	7"	N/A

This device is only available in a Lead-Free configuration.

## COMPANY INFORMATION

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### COMPANY PROFILE

In business more than 25 years, ProTek Devices™ is a privately held semiconductor company. The company offers a product line of overvoltage protection and overcurrent protection components. These include transient voltage suppressor array (TVS arrays) avalanche breakdown diode, steering diode TVS array and electronics SMD chip fuses. These components deliver circuit protection in electronic systems from numerous overvoltage and overcurrent events. They include lightning; electrostatic discharge (ESD); nuclear electromagnetic pulses (NEMP); inductive switching; and electromagnetic interference (EMI) / radio frequency interference (RFI). ProTek Devices also offers LED wafer die for ESD protection and related high frequency products. ProTek Devices is ISO 9001:2015 certified.

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