

ESD PROTECTION FOR IN-VEHICLE NETWORKS



DESCRIPTION

The PAM2IVN24 is an ESD protection device in a small SOT-23 surface mount package that is designed to protect automotive in-vehicle bus lines from the damage caused by Electrostatic Discharge (ES) 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
- Low Clamping Voltage
- Ultra Low Leakage Current: 0.8nA @ 27°C (Typical)
- RoHS Compliant
- REACH Compliant

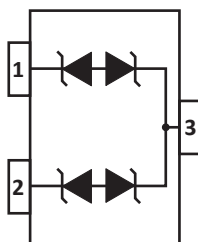
APPLICATIONS

- CANBus
- LINBus
- FlexRay
- SENT

MECHANICAL CHARACTERISTICS

- Molded JEDEC SOT-23 Package
- Approximate Weight: 8 milligrams
- Lead-Free Pure-Tin Plating (Annealed)
- Solder Reflow Temperature:
Pure-Tin - Sn, 100: $260\text{-}270^\circ\text{C}$
- Flammability Rating UL 94V-0
- 8mm Tape and Reel per EIA Standard 481

PIN CONFIGURATION



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

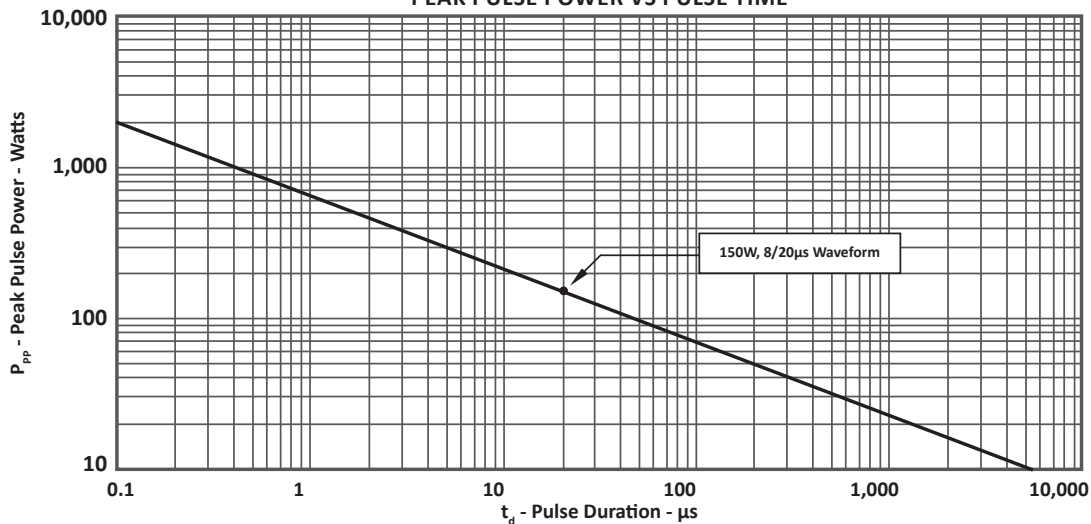
PARAMETER	SYMBOL	VALUE	UNITS
Peak Pulse Current, $t_p = 8/20\mu s$	I_{PPM}	5.0	Amps
Peak Pulse Power ($t_p = 8/20\mu s$) - See Figure 1	P_{PP}	150	Watts
Junction Temperature	T_J	-55 to 150	°C
Storage Temperature	T_{STG}	-65 to 150	°C
Ambient Temperature	T_A	-55 to 150	°C
ESD Voltage Rating per IEC 61000-4-2 (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) @ $I_p = 3.5A$ 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 1-2) @ 5V, 250KHz/1MHz C pF	
			MIN	TYP	MAX	TYP	MAX	TYP	MAX		TYP	MAX
PAM21VN24	24V	24.0	25.5	27.0	30.3	38	42	0.8	5	10	20	25

NOTES

- Guaranteed by design.
- Capacitance difference between two channels is < 5%.

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


TYPICAL DEVICE CHARACTERISTICS

FIGURE 2
PULSE WAVE FORM

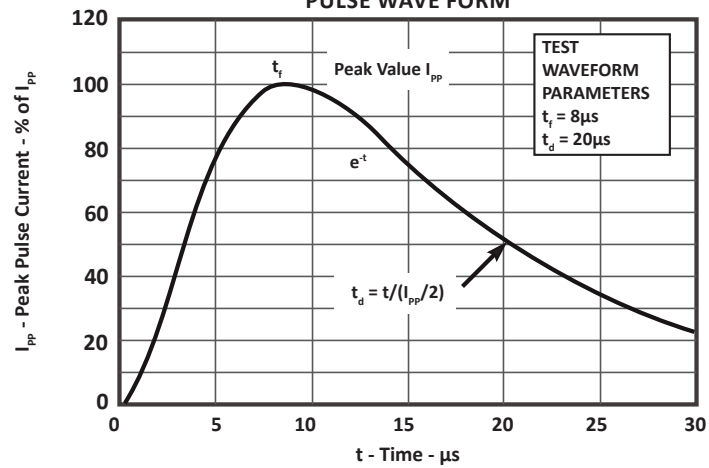
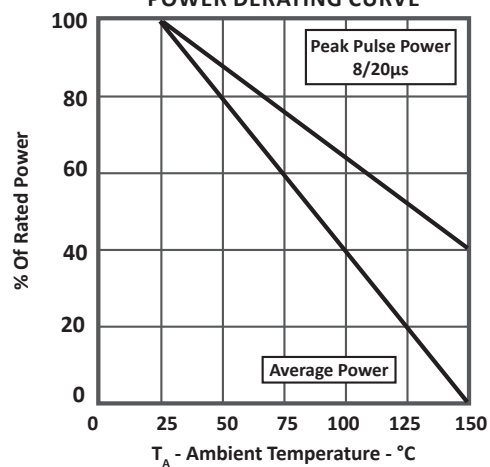


FIGURE 3
POWER DERATING CURVE



TYPICAL DEVICE CHARACTERISTICS

FIGURE 4
PEAK CURRENT VS CLAMPING VOLTAGE

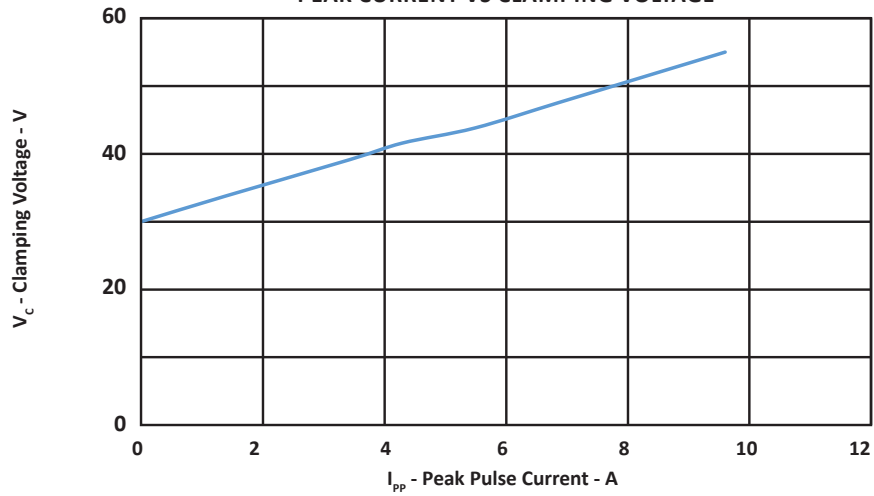
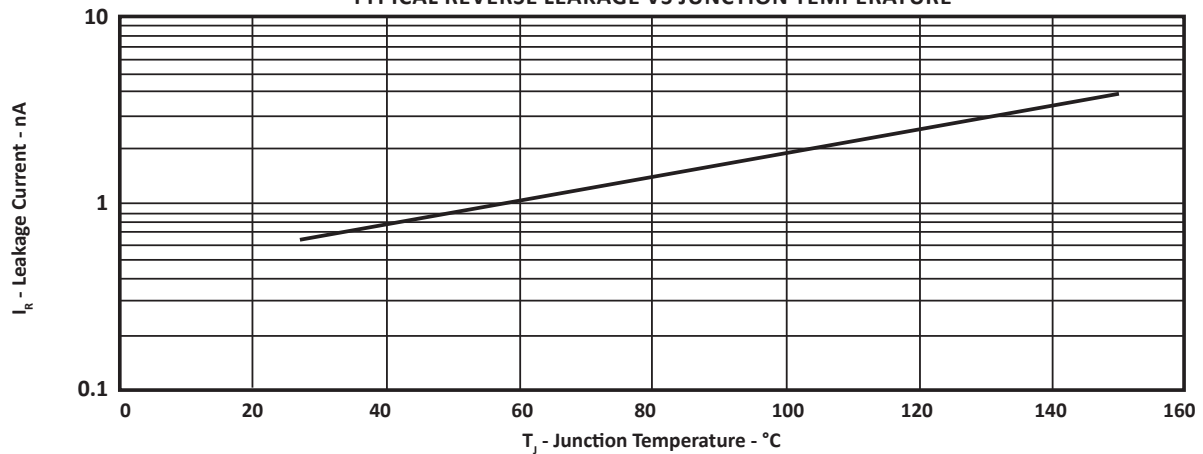


FIGURE 5
TYPICAL REVERSE LEAKAGE VS JUNCTION TEMPERATURE



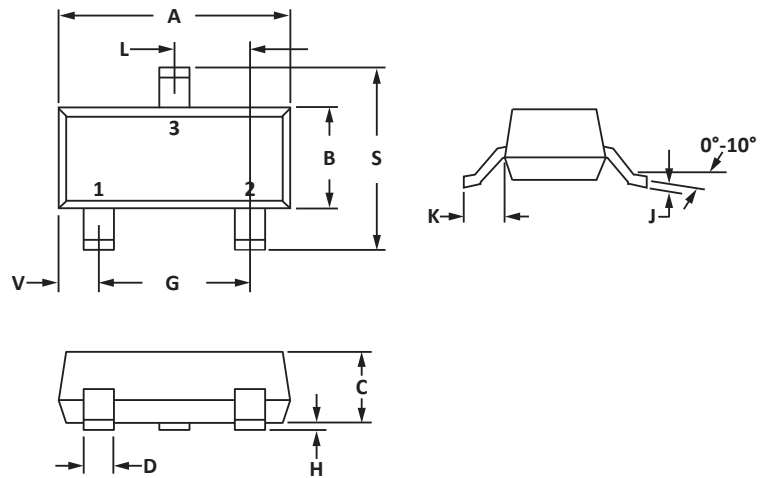
SOD-323 PACKAGE INFORMATION

OUTLINE DIMENSIONS

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	2.80	3.04	0.110	0.120
B	1.20	1.40	0.047	0.055
C	0.89	1.11	0.035	0.044
D	0.37	0.50	0.015	0.020
G	1.78	2.04	0.070	0.081
H	0.013	0.100	0.001	0.004
J	0.085	0.177	0.003	0.007
K	0.45	0.60	0.018	0.024
L	0.89	1.02	0.035	0.040
S	2.10	2.50	0.083	0.098
V	0.45	0.60	0.018	0.024

NOTES

1. Controlling dimension: inches.
2. Dimensioning and tolerances per ANSI Y14.5M, 1985.
3. Pin 3 is the cathode (Unidirectional Only)
4. Dimensions are exclusive of mold flash and metal burrs.

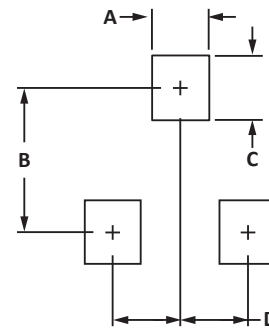


PAD LAYOUT DIMENSIONS

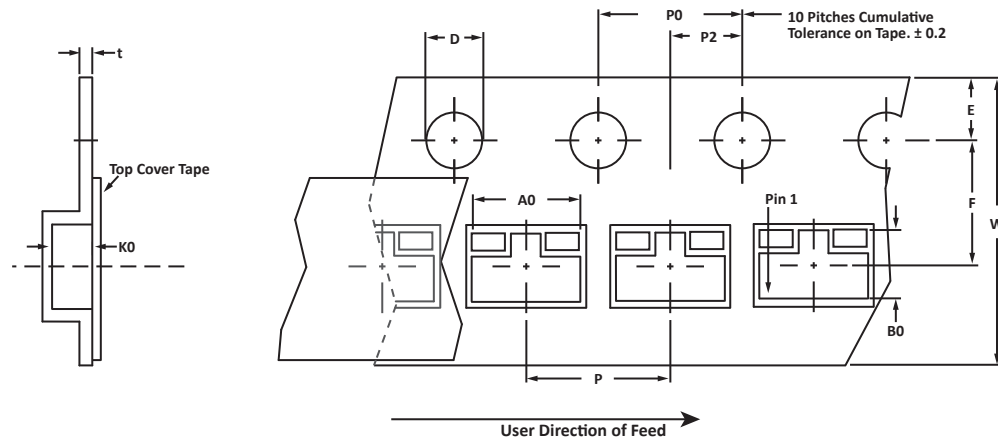
DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	0.71	0.97	0.028	0.038
B	1.88	2.13	0.074	0.084
C	0.71	0.97	0.028	0.038
D	0.81	1.07	0.032	0.042

NOTES

1. Controlling dimension: inches.



TAPE AND REEL



SPECIFICATIONS

REEL DIA.	TAPE WIDTH	A0	B0	K0	D	E	F	W	P0	P2	P	tmax
178mm (7")	8mm	3.15 ± 0.10	2.77 ± 0.10	1.30 ± 0.10	1.55 ± 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	0.228

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
PAM2IVN24	N/A	-T73	3000	7"	N/A

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

COMPANY INFORMATION

COMPANY PROFILE

In business more than 20 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.

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