

## ULTRA LOW CAPACITANCE TVS ARRAY



### DESCRIPTION

The PAM2LIN is an ultra low capacitance transient voltage suppressor array, designed to protect automotive applications. The device is available in a bidirectional configuration and is rated at 200 Watts for an 8/20 $\mu$ s waveshape.

The PAM2LIN meets IEC 61000-4-2 (ESD) and IEC 61000-4-4 (EFT) requirements. At higher operating frequencies or faster edge rates, insertion loss and signal integrity are a major concern. The device offers an ultra low capacitance and low leakage current in a miniature SOD-323 package.

### FEATURES

- **AEC-Q101 Qualified**
- Compatible with IEC 61000-4-2 (ESD): Air  $\pm$ 30kV, Contact  $\pm$ 30kV
- Compatible with IEC 61000-4-4 (EFT): 40A - 5/50ns
- Compatible with IEC 61000-4-5 (Surge)
- 200 Watts Peak Pulse Power per Line ( $t_p = 8/20\mu$ s)
- Replacement for MLV (0805)
- Bidirectional Configuration
- Protects One Power or I/O Port
- Available in 24V
- ESD Protection > 30kV
- Low Clamping Voltage
- Ultra Low Capacitance: 3pF (Typical)
- RoHS Compliant
- REACH Compliant

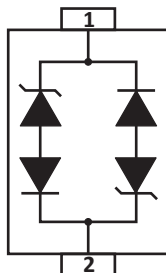
### APPLICATIONS

- Automotive Applications

### 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



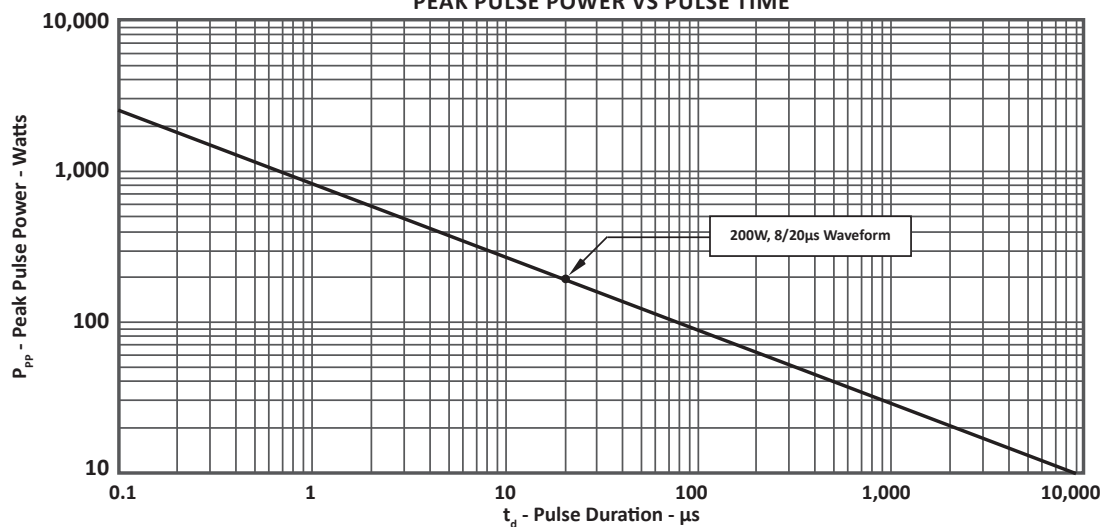
**TYPICAL DEVICE CHARACTERISTICS**
**MAXIMUM RATINGS @ 25°C Unless Otherwise Specified**

PARAMETER	SYMBOL	VALUE	UNITS
Peak Pulse Power ( $t_p = 8/20\mu s$ ) - See Figure 1	$P_{PP}$	200	Watts
Operating Temperature	$T_A$	-55 to 150	°C
Storage Temperature	$T_{STG}$	-55 to 150	°C
ESD Voltage Level per IEC 61000-4-2 (Air and Contact)	$V_{ESD}$	$\pm 30$	kV

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

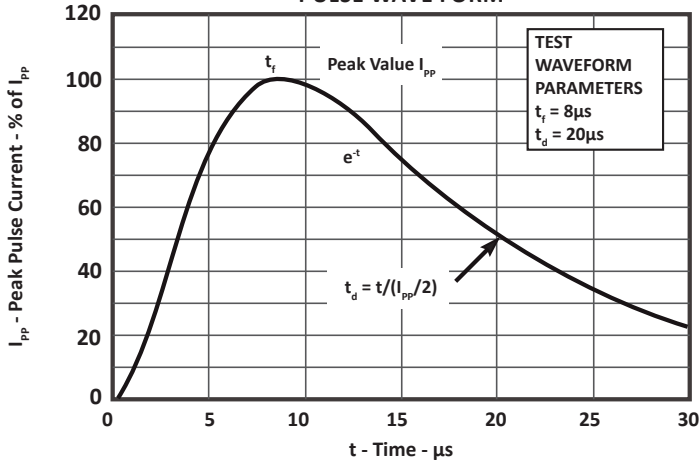
PART NUMBER	DEVICE MARKING	RATED STAND-OFF VOLTAGE  $V_{WM}$ VOLTS	MINIMUM BREAKDOWN VOLTAGE  @ 1mA $V_{(BR)}$ VOLTS	MAXIMUM CLAMPING VOLTAGE (FIG. 2)  $V_C$ Volts		MAXIMUM LEAKAGE CURRENT ( $T_j = 25^\circ C$ )  @ $V_{WM}$ $I_D$ $\mu A$		MAXIMUM DYNAMIC RESISTANCE  @ $I_R = 1A$ OHMS	CAPACITANCE  @ 12V, 100KHz C pF		CAPACITANCE  @ 0V, 1MHz C pF	
				@ $I_{PP} = 1A$	@ $I_{PP} = 3.5A$	TYP	MAX		TYP	MAX	TYP	MAX
				PAM2LIN	L2	24.0	26.7		43.0	57.0	0.001	0.050

FIGURE 1  
PEAK PULSE POWER VS PULSE TIME

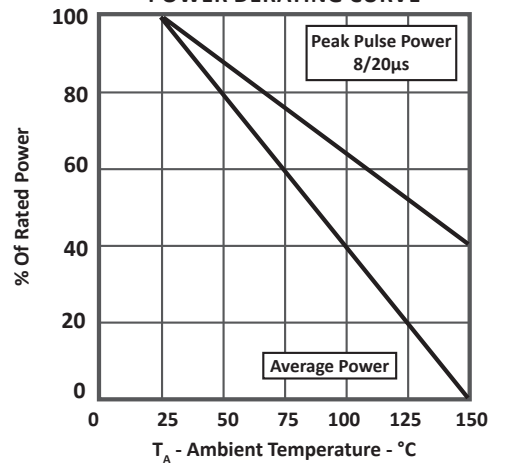


**TYPICAL DEVICE CHARACTERISTICS**

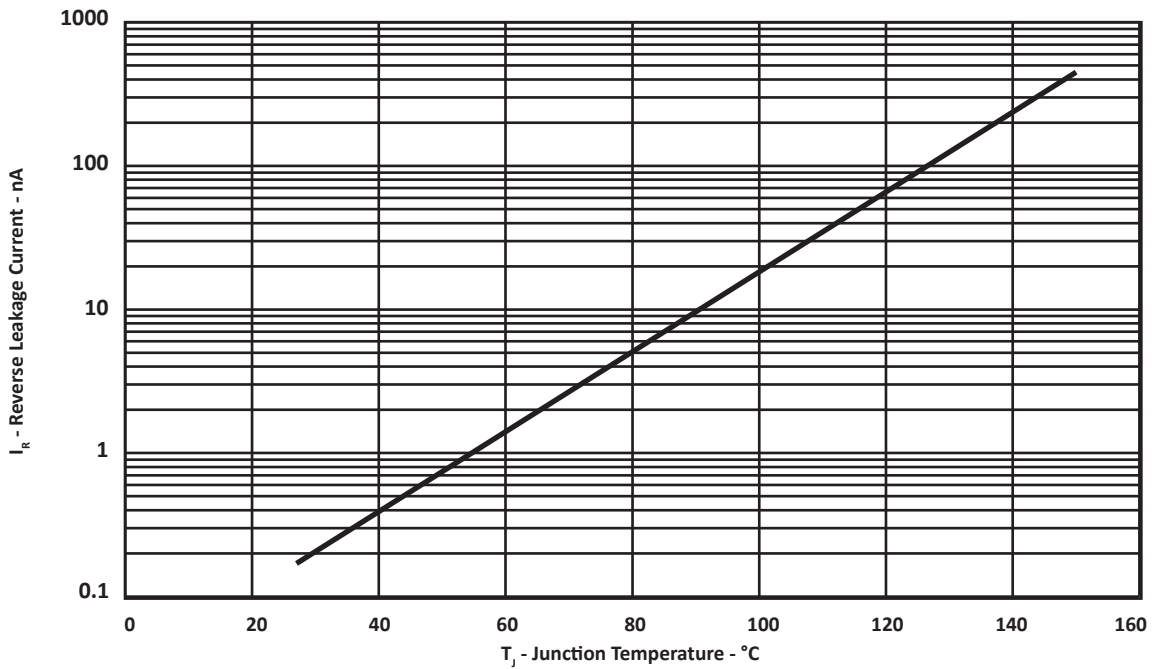
**FIGURE 2  
PULSE WAVE FORM**



**FIGURE 3  
POWER DERATING CURVE**

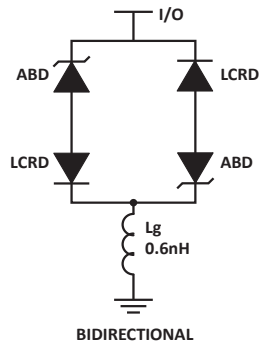


**FIGURE 5  
REVERSE LEAKAGE CURRENT VS JUNCTION TEMPERATURE**



## SPICE MODEL

**FIGURE 1**  
**SPICE MODEL**



ABD - Avalanche Breakdown Diode (TVS)  
 LCRD: Low Capacitance Rectifier Diode  
 Lg - Lead Inductance

**TABLE 1 - SPICE PARAMETERS**

PARAMETER	UNIT	ABD(TVS)	LCRD
BV	V	See Table 2	200
IBV	μA	1	0.01
C <sub>jo</sub>	pF	See Table 2	2
I <sub>s</sub>	A	See Table 2	1E-11
Vj	V	0.6	0.6
M	-	0.33	0.33
N	-	1	1
R <sub>s</sub>	Ohms	See Table 2	0.75
TT	s	1E-8	1E-9
EG	eV	1.11	1.11

**TABLE 2 - ABD SPECIFIC SPICE PARAMETERS**

PART NUMBER	B <sub>v</sub> (VOLTS)	C <sub>jo</sub> (pF)	I <sub>s</sub> (AMPS)	Rs(OHMS)
PAM2LIN	26.7	61	1E-13	1.54

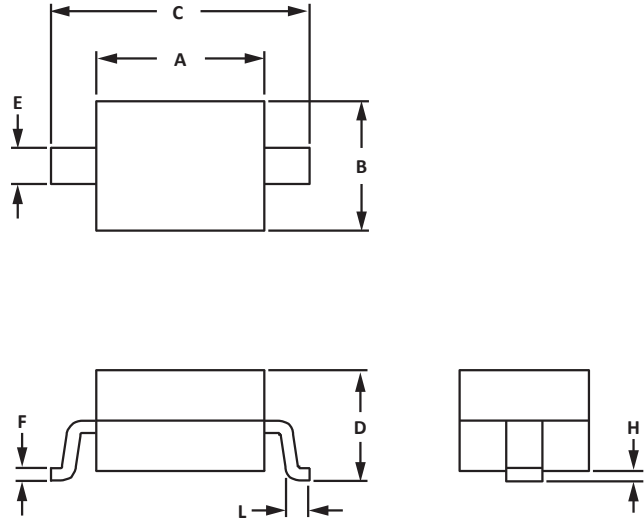
## SOD-323 PACKAGE INFORMATION

## 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.

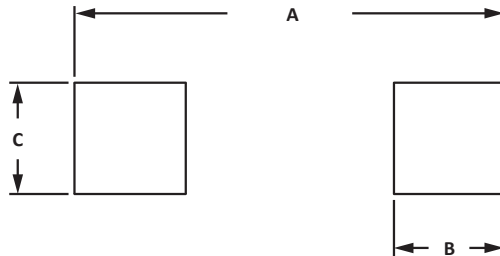


## PAD LAYOUT DIMENSIONS

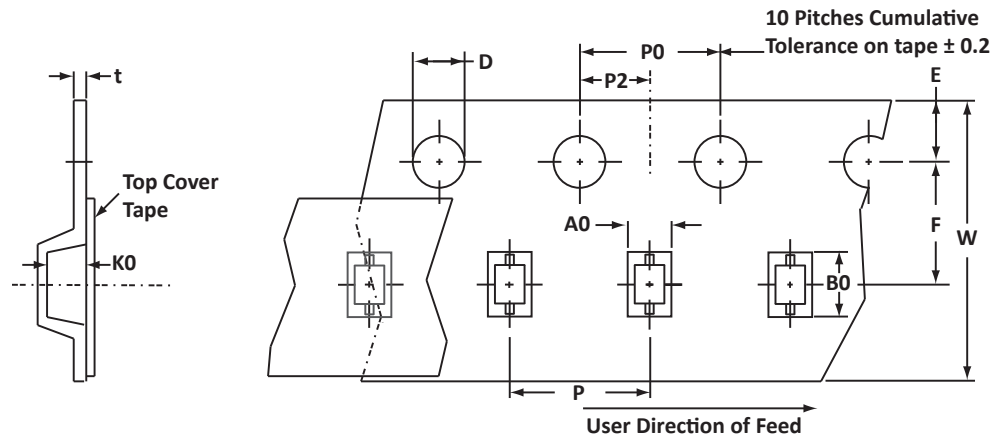
DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	2.87	3.12	0.113	0.123
B	0.66	0.91	0.026	0.036
C	0.66	0.91	0.026	0.036

## 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 - T7 = 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
PAM2LIN	n/a	-T7	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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