

## ULTRA LOW CAPACITANCE TVS ARRAY



### DESCRIPTION

The PAM18DF2L0521 is an ultra low capacitance transient voltage suppressor array, designed to protect automotive applications from the damaging effects of Electrostatic Discharge and Electrical Fast Transients.

The PAM18DF2L0521 meets IEC 61000-4-2 (ESD) Level 4 and IEC 61000-4-4 (EFT) requirements. At higher operating frequencies or faster edge rates, insertion loss and signal integrity are a major concern. This device offers an ultra low capacitance and low leakage current in a miniature DFN-2-0402 package.

### FEATURES

- **AEC-Q101 Qualified**
- Compatible with IEC 61000-4-2 (ESD): Level 4 Air  $\pm 15\text{kV}$ , Contact  $\pm 8\text{kV}$
- Compatible with IEC 61000-4-4 (EFT)
- Compatible with IEC 61000-4-5 (Surge)
- 80 Watts Peak Pulse Power per Line ( $t_p = 8/20\mu\text{s}$ )
- ESD Protection
- Low Clamping Voltage
- Protects One Bidirectional Line
- Ultra Low Capacitance: 0.4 pF (Typical)
- RoHS Compliant
- REACH Compliant

### APPLICATIONS

- Automotive Applications

### MECHANICAL CHARACTERISTICS

- Molded JEDEC DFN-2-0402 Package
- Approximate Weight: 2 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 (tp = 8/20μs) - See Figure 1 | $P_{PP}$  | 80         | Watts |
| Operating Temperature                         | $T_A$     | -55 to 150 | °C    |
| Storage Temperature                           | $T_{STG}$ | -55 to 150 | °C    |

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

| PART NUMBER   | DEVICE MARKING | RATED STAND-OFF VOLTAGE<br><br>$V_{WM}$<br>VOLTS | MINIMUM BREAKDOWN VOLTAGE<br><br>@ 1mA<br>$V_{(BR)}$<br>VOLTS | MAXIMUM CLAMPING VOLTAGE (Fig. 2)<br><br>@ $I_p = 1A$<br>$V_c$<br>VOLTS | MAXIMUM CLAMPING VOLTAGE (Fig. 2)<br><br>@ 8/20μs<br>$V_c @ I_{PP}$ | MAXIMUM LEAKAGE CURRENT<br><br>@ $V_{WM}$<br>$I_D$<br>μA | TYPICAL CAPACITANCE<br><br>@ 0V, 1MHz<br>$C_j$<br>pF |
|---------------|----------------|--------------------------------------------------|---------------------------------------------------------------|-------------------------------------------------------------------------|---------------------------------------------------------------------|----------------------------------------------------------|------------------------------------------------------|
| PAM18DF2L0521 | H              | 5.0                                              | 6.0                                                           | 14.0                                                                    | 20.0V @ 3.0A                                                        | 1                                                        | 0.4                                                  |

## TYPICAL DEVICE CHARACTERISTICS

FIGURE 1  
PEAK PULSE POWER VS PULSE TIME

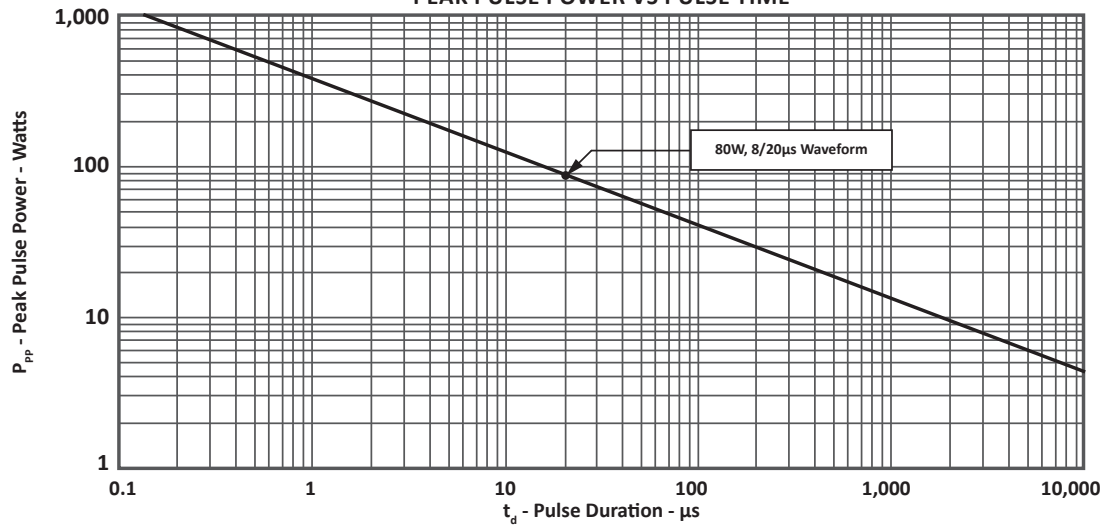
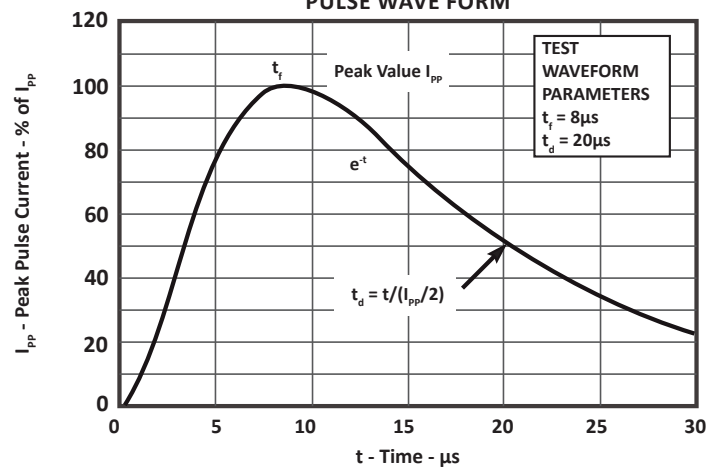


FIGURE 2  
PULSE WAVE FORM



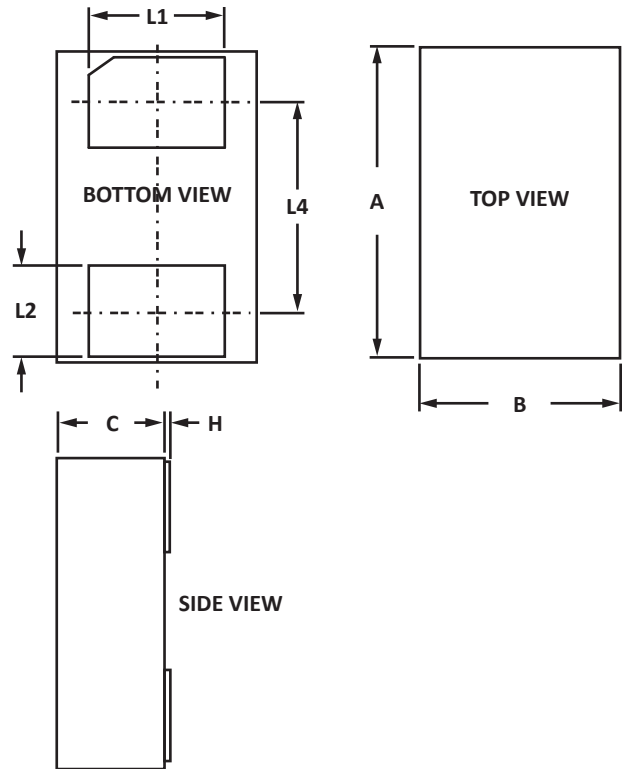
## DFN-2-0402 PACKAGE INFORMATION

## OUTLINE DIMENSIONS

| DIM | MILLIMETERS |        | INCHES    |         |
|-----|-------------|--------|-----------|---------|
|     | MIN         | MAX    | MIN       | MAX     |
| A   | 0.914       | 1.06   | 0.036     | 0.042   |
| B   | 0.533       | 0.660  | 0.021     | 0.026   |
| C   | 0.553       | 0.635  | 0.021     | 0.025   |
| H   | 0~0.10      | 0~0.10 | 0~0.004   | 0~0.004 |
| L1  | 0.254       | 0.355  | 0.010     | 0.014   |
| L2  | 0.279       | 0.406  | 0.011     | 0.016   |
| L4  | 0.660 BSC   |        | 0.026 BSC |         |

## NOTES

1. Dimensioning and tolerances per ANSI Y14.M, 1985.
2. Controlling dimension: inches.
3. Dimensions are exclusive of mold flash and metal burrs.

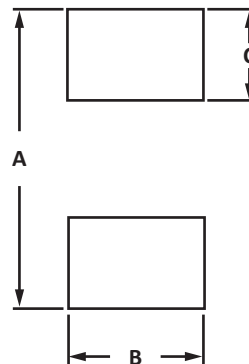


## PAD LAYOUT DIMENSIONS

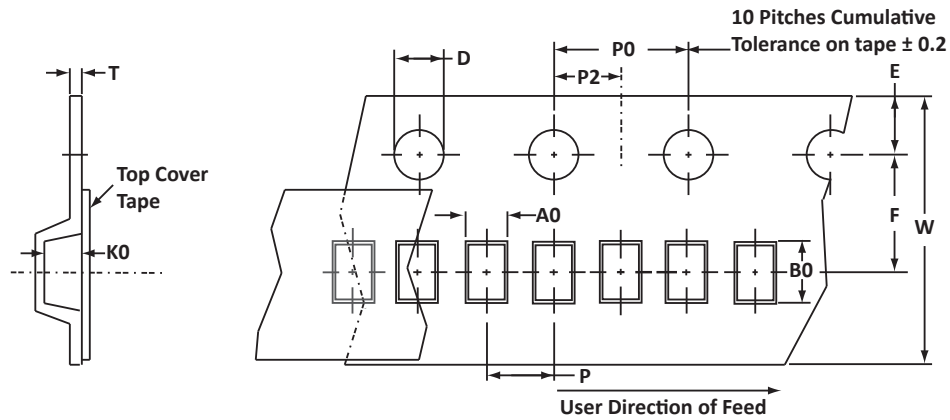
| DIM | MILLIMETERS |       | INCHES |       |
|-----|-------------|-------|--------|-------|
|     | MIN         | MAX   | MIN    | MAX   |
| A   | 1.39        | 1.60  | 0.055  | 0.063 |
| B   | 0.457       | 0.558 | 0.018  | 0.022 |
| C   | 0.558       | 0.660 | 0.022  | 0.026 |

## 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        | 0.70 ± 0.05 | 1.15 ± 0.10 | 0.56 ± 0.05 | 1.55 ± 0.10 | 1.75 ± 0.10 | 3.50 ± 0.05 | 8.00 ± 0.30 | 4.00 ± 0.10 | 2.00 ± 0.05 | 2.00 ± 0.05 | 0.25 |

## NOTES

1. Dimensions are in millimeters.
2. Surface mount product is taped and reeled in accordance with EIA-481.
3. Suffix - T710 = 7" Reel - 10,000 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 |
|------------------|-----------------|-------------|----------|-----------|----------|
| PAM18DF2L0521    | n/a             | -T710       | 10,000   | 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 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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