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6 Lake Street, Lawrence, MA 01841
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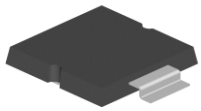
TECHNICAL DATA SHEET

SURFACE MOUNT 130 kW
Transient Voltage Suppressor

- **High Reliability controlled devices**
- **Bidirectional (CA) construction**
- **275 V standoff voltages (V_{WM})**
- **Fast response**

DEVICES **MPLAD130KP275CA and MPLAD130KP275CV, e3**

LEVELS
M, MA, MX, MXL



FEATURES

- High reliability controlled devices with wafer fabrication and assembly lot traceability
- 100 % surge tested devices
- Low profile surface mount
- Low package inductance
- Available as either low clamp with “CV” suffix or normal clamping features with “CA” suffix
- Optional up screening available by replacing the M prefix with MA, MX or MXL. These prefixes specify various screening and conformance inspection options based on MIL-PRF-19500. Refer to MicroNote 129 for more details on the screening options.
- Suppresses transients up to 130 kW1 @ 6.4/69 µs
- Moisture classification is Level 1 with no dry pack required per IPC/JEDEC J-STD-020B
- RoHS compliant devices available by adding an “e3” suffix
- 3σ lot norm screening performed on Standby Current I_D

MAXIMUM RATINGS

- Peak Pulse Power dissipation at 25 °C: 130,0001 watts @ 6.4/69 µs (also see Figure 1) with impulse repetition rate (duty factor) of 0.05% or less
- tclamping (0 volts to VBR min.): < 5 ns (theoretical)
- Operating and Storage temperature: -55 °C to +150 °C
- Thermal resistance: 0.5 °C/W junction to case or 50 °C/W junction to ambient when mounted on FR4 PC board with recommended mounting pad (see page 2) and 1oz Cu
- Steady-State Power dissipation: 250 watts at T_C = 25 °C with good heat sink, or 2.5 watts at T_A = 25 °C if mounted on FR4 PC board as described for thermal resistance
- Temperature Coefficient of voltage: 0.1 %/°C
- Solder temperatures: 260 °C for 10 s (maximum)

MECHANICAL AND PACKAGING

- Void-free transfer molded thermosetting epoxy body meeting UL94V-0
- Tin-Lead (90 % Sn, 10 % Pb) or RoHS (100 % Sn) compliant annealed matte-tin plating readily solderable per MIL-STD-750, method 2026
- Body marked with part number
- No Cathode band for Bi-directional devices
- Available in custom tape-and-reel or bulk packaging
- TAPE-AND-REEL Standard per EIA-481-B (add “TR” suffix to part number)
- Weight: 2.2 grams (approximately)

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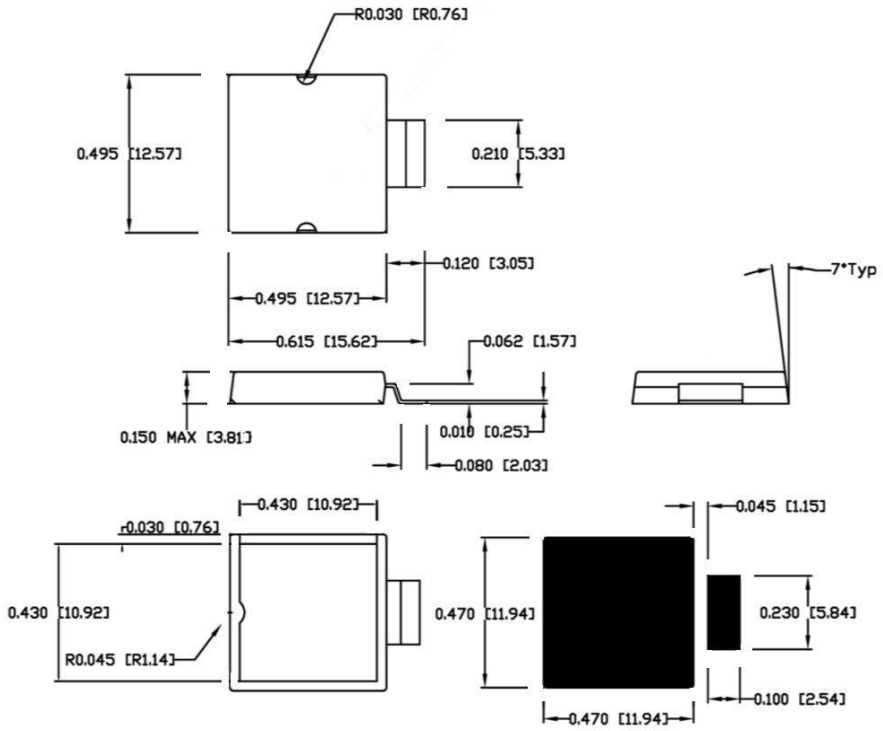
PACKAGE AND MOUNTING PAD DIMENSIONS Inches [mm]



SYMBOLS & DEFINITIONS

Symbol	Definition	Symbol	Definition
V_{WM}	Working Peak (Standoff) Voltage	I_{PP}	Peak Pulse Current
P_{PP}	Peak Pulse Power	V_C	Clamping Voltage
V_{BR}	Breakdown Voltage	I_{BR}	Breakdown Current for V_{BR}
I_D	Standby Current		

ELECTRICAL CHARACTERISTICS @ 25°C

Description	Symbol	Conditions	Min	Typ	Max	Unit
Breakdown Voltage	V_{BR}	I_{BR} = 5mA	300			V
Working Standoff Voltage	V_{WM}				275	V
Standby Current	I_D	$V_R = V_{WM}$			5	µA
Peak Pulse Current 1	I_{PP}	tr=6.4us, tp=69us			292	A
Clamping Voltage PLAD130KP275CV PLAD130KP275CA	V_C	Ic = I_{PP}			 400 445	 V V

Note:
1) Also equivalent to 40 kW at a longer pulse of 10/1000 us with clamping voltages shown and Ipp = 90A

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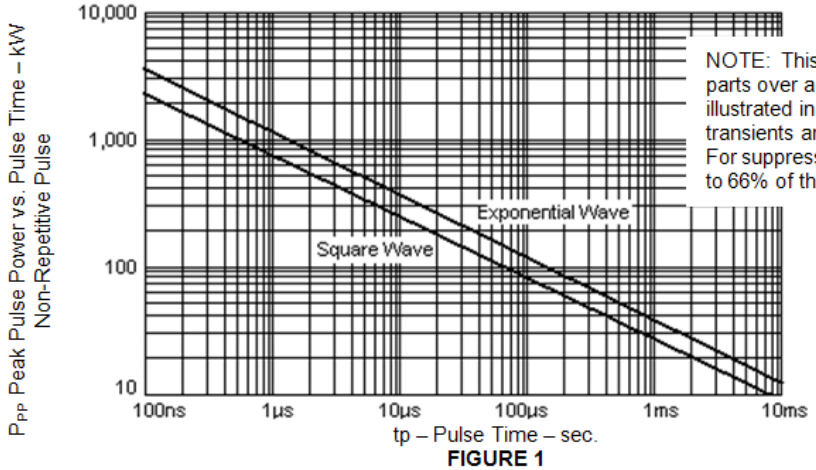
GRAPHS



NOTE: This P_{PP} vs. Time graph allows the designer to use these parts over a broad power spectrum using the guidelines illustrated in App Note 104 on Microsemi's website. Aircraft transients are described with exponential decaying waveforms. For suppression of square waveforms, derate power and current to 66% of that for exponential decay.

FIGURE 1
Peak Pulse Power vs. Pulse Time
To 50% of Exponentially Decaying Pulse

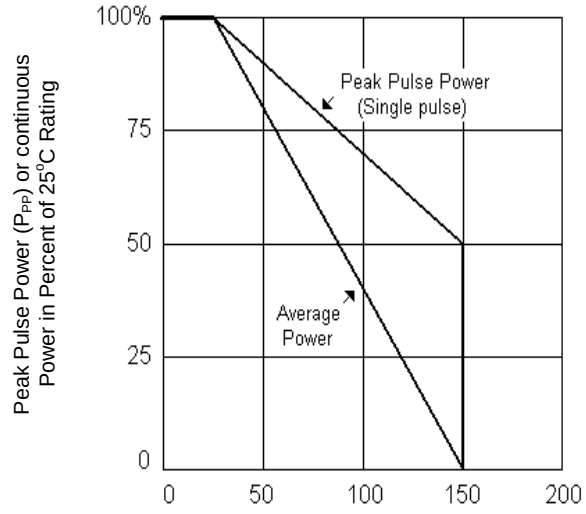


FIGURE 2
Derating Curve