

SURFACE MOUNT 30,000 W Transient Voltage Suppressor

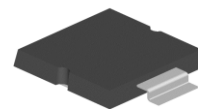
- High Reliability controlled devices
- Unidirectional (A) and Bidirectional (CA) construction
- Selections for 14 to 400 V standoff voltages (V_{WM})
- Fast response

DEVICES **MPLAD30KP14A thru MPLAD30KP400CA, e3**

LEVELS
M, MA, MX, MXL

FEATURES

- High reliability controlled devices with fabrication and assembly lot traceability
- 100 % surge tested devices
- Low profile surface mount
- Optional upscreening 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 30 kW @ 10/1000 μ s and 200 kW @ 8/20 μ s (see Figure 1)
- 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
- 3 σ lot norm screening performed on Standby Current I_D



APPLICATIONS / BENEFITS

- Protection from switching transients and induced RF
- Protection from ESD, and EFT per IEC 61000-4-2 and IEC 61000-4-4
- Secondary lightning protection per IEC 61000-4-5 with 42 Ohms source impedance:
 - Class 1,2,3,4,5: MPLAD30KP14A to 400CA
 - Class 5: MPLAD30KP14A to 400CA (short distance)
 - Class 5: MPLAD30KP14A to 220CA (long distance)
- Secondary lightning protection per IEC 61000-4-5 with 12 Ohms source impedance:
 - Class 1,2,3: MPLAD30KP14A to 400CA
 - Class 4: MPLAD30KP14A to 220CA
- Secondary lightning protection per IEC 61000-4-5 with 2 Ohms source impedance:
 - Class 2: MPLAD30KP10A to 400CA
 - Class 3: MPLAD30KP14A to 220CA
 - Class 4: MPLAD30KP14A to 110CA

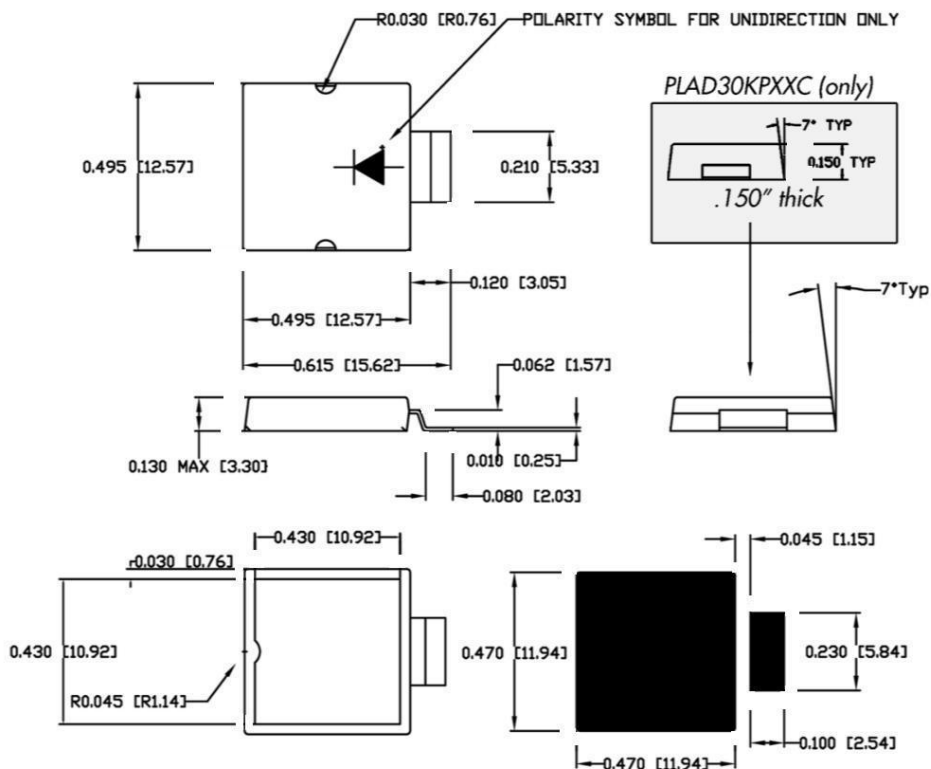
MAXIMUM RATINGS

- Peak Pulse Power dissipation at 25 °C: 30,000 watts at 10/1000 μ s (also see Figures 1 and 2) with impulse repetition rate (duty factor) of 0.05 % or less
- $t_{clamping}$ (0 volts to V_{BR} min.): < 100 ps theoretical for unidirectional and < 5 ns for bidirectional
- Operating and Storage temperature: -65 °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)
- Steady-State Power dissipation: 250 watts at $T_C = 25$ °C or 2.5 watts at $T_A = 25$ °C when mounted on FR4 PC board as described for thermal resistance
- Forward Surge Voltage: 1500 Amps (theoretical) at 8.3mS half-sine wave (unidirectional devices only)
- Solder temperatures: 260 °C for 10 s (maximum)

MECHANICAL AND PACKAGING

- CASE: Void-free transfer molded thermosetting epoxy body meeting UL94V-0.
- TERMINALS: Tin-Lead (90 % Sn, 10 % Pb) or RoHS (100% Sn) Compliant annealed matte-Tin plating readily solderable per MIL-STD-750, method 2026.
- MARKING: Body marked with part number
- POLARITY: For unidirectional devices, the cathode is on the metal backside (package bottom)
- Available in bulk or custom tape-and-reel packaging
- TAPE-AND-REEL: Standard per EIA-481-B (add "TR" suffix to part number)
- WEIGHT: 1.7-2.0 grams (approximately)

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

MICROSEMI PART NUMBER (Note 2)		REVERSE STAND-OFF VOLTAGE V_{WM} (Note 1)	BREAKDOWN VOLTAGE V_{BR} @ I_{BR}		MAXIMUM CLAMPING VOLTAGE V_C @ I_{PP}	MAXIMUM STANDBY CURRENT I_D @ V_{WM}	MAXIMUM PEAK PULSE CURRENT I_{PP} (FIG. 3)	MAXIMUM TEMPERATUR E COEFFICIENT OF V_{BR} ($\alpha_{V(BR)}$)
		VOLTS	VOLTS	mA	VOLTS	μA	A	mV/ °C
MPLAD30KP14A	MPLAD30KP14CA	14	15.6 – 17.2	150	24.0	3000	1251	10
MPLAD30KP15A	MPLAD30KP15CA	15	16.7 – 18.5	5	25.8	750	1164	12
MPLAD30KP16A	MPLAD30KP16CA	16	17.8 – 19.7	5	27.2	450	1101	12
MPLAD30KP17A	MPLAD30KP17CA	17	18.9 – 20.9	5	28.8	150	1041	14
MPLAD30KP18A	MPLAD30KP18CA	18	20.0 – 22.1	5	30.8	60	975	16
MPLAD30KP20A	MPLAD30KP20CA	20	22.2 – 24.5	5	34.0	45	882	18
MPLAD30KP22A	MPLAD30KP22CA	22	24.4 – 26.9	5	36.4	10	822	20
MPLAD30KP24A	MPLAD30KP24CA	24	26.7 – 29.5	5	39.8	10	753	22
MPLAD30KP26A	MPLAD30KP26CA	26	28.9 – 31.9	5	43.0	10	696	24
MPLAD30KP28A	MPLAD30KP28CA	28	31.1 – 34.4	5	46.4	10	645	26
MPLAD30KP30A	MPLAD30KP30CA	30	33.3 – 36.8	5	48.8	10	618	30
MPLAD30KP33A	MPLAD30KP33CA	33	36.7 – 40.6	5	53.3	10	564	35
MPLAD30KP36A	MPLAD30KP36CA	36	40.0 – 44.2	5	58.1	10	516	38
MPLAD30KP40A	MPLAD30KP40CA	40	44.4 – 49.1	5	64.5	10	468	44
MPLAD30KP43A	MPLAD30KP43CA	43	47.8 – 52.8	5	69.4	10	432	50
MPLAD30KP45A	MPLAD30KP45CA	45	50.0 – 55.3	5	72.7	10	414	51
MPLAD30KP48A	MPLAD30KP48CA	48	53.3 – 58.9	5	77.4	10	390	54
MPLAD30KP51A	MPLAD30KP51CA	51	56.7 – 62.7	5	82.4	10	366	58
MPLAD30KP54A	MPLAD30KP54CA	54	60.0 – 66.3	5	87.1	10	342	64
MPLAD30KP58A	MPLAD30KP58CA	58	64.4 – 71.2	5	93.6	10	318	70
MPLAD30KP60A	MPLAD30KP60CA	60	66.7 – 73.7	5	96.8	10	312	72
MPLAD30KP64A	MPLAD30KP64CA	64	71.1 – 78.6	5	103.0	10	294	75
MPLAD30KP70A	MPLAD30KP70CA	70	77.8 – 86.0	5	113	10	264	84
MPLAD30KP75A	MPLAD30KP75CA	75	83.3 – 92.1	5	121	10	246	90
MPLAD30KP78A	MPLAD30KP78CA	78	86.7 – 95.8	5	126	10	240	95
MPLAD30KP85A	MPLAD30KP85CA	85	94.4 – 104.0	5	137	10	216	104
MPLAD30KP90A	MPLAD30KP90CA	90	100 – 111	5	146	10	204	109
MPLAD30KP100A	MPLAD30KP100CA	100	111 – 123	5	162	10	186	122
MPLAD30KP110A	MPLAD30KP110CA	110	122 – 135	5	177	10	168	132
MPLAD30KP120A	MPLAD30KP120CA	120	133 – 147	5	193	10	156	145
MPLAD30KP130A	MPLAD30KP130CA	130	144 – 159	5	209	10	142	157
MPLAD30KP150A	MPLAD30KP150CA	150	167 – 185	5	243	10	124	183
MPLAD30KP160A	MPLAD30KP160CA	160	178 – 197	5	259	10	116	195
MPLAD30KP170A	MPLAD30KP170CA	170	189 – 209	5	275	10	110	207
MPLAD30KP180A	MPLAD30KP180CA	180	200 – 221	5	291	10	104	219
MPLAD30KP200A	MPLAD30KP200CA	200	222 – 245	5	322	10	94	243
MPLAD30KP220A	MPLAD30KP220CA	220	245 – 271	5	356	10	84	269
MPLAD30KP260A	MPLAD30KP260CA	260	289 – 320	5	419	10	71	318
MPLAD30KP280A	MPLAD30KP280CA	280	311 – 345	5	451	10	66	344
MPLAD30KP300A	MPLAD30KP300CA	300	333 – 369	5	483	10	62	368
MPLAD30KP350A	MPLAD30KP350CA	350	389 – 431	5	564	10	53	430
MPLAD30KP400A	MPLAD30KP400CA	400	444 – 492	5	644	10	46	490

NOTE 1: Transient Voltage Suppressors are normally selected with reverse "Stand Off Voltage" V_{WM} , which should be equal to or greater than the dc or continuous peak operating voltage level

NOTE 2: For bidirectional construction, indicate a CA suffix after the part number

NOTE 3: Items listed in **Bold** above are available ex-stock or with a short lead-time

GRAPHS

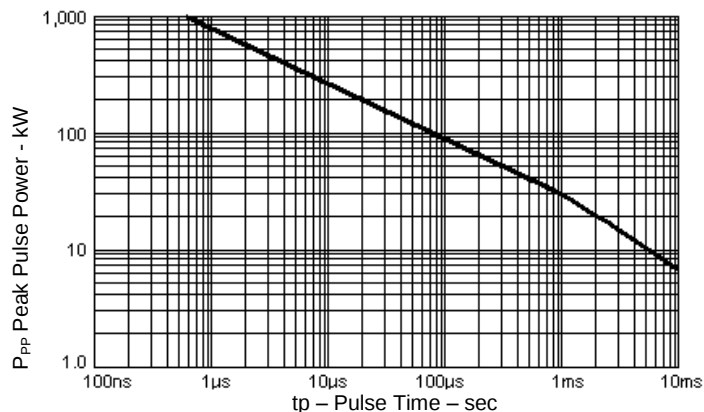
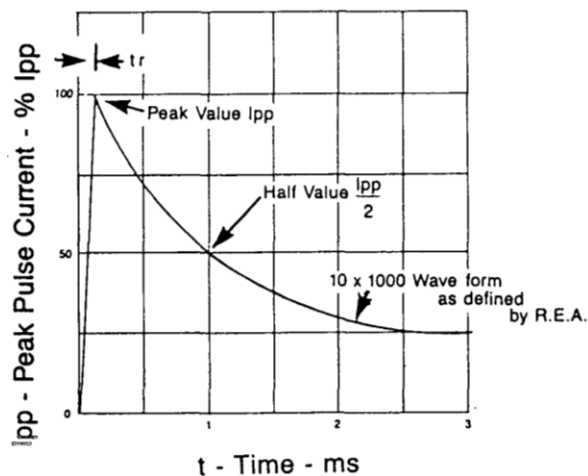


FIGURE 1 Peak Pulse Power vs. Pulse Time



Test waveform parameters: $t_r = 10 \mu s$, $t_p = 1000 \mu s$

FIGURE 2 : Pulse Waveform

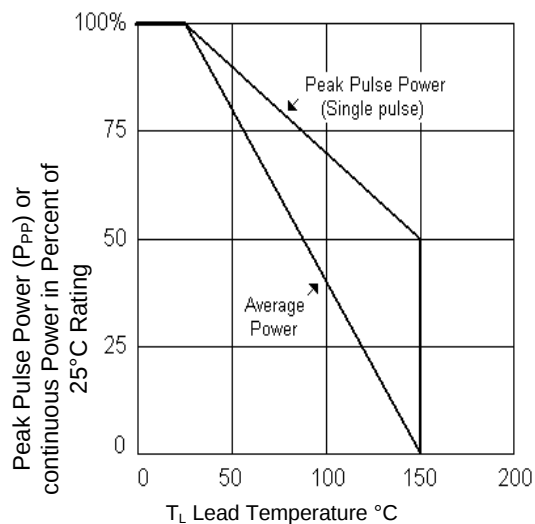


FIGURE 3: Derating Curve

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