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Tel: 1-800-446-1158 / (978) 794-1666, Fax: (978) 6890803

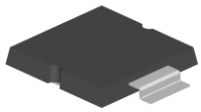
TECHNICAL DATA SHEET

SURFACE MOUNT 15,000 W
Transient Voltage Suppressor

- **High Reliability controlled devices**
- **Unidirectional (A) and Bidirectional (CA) construction**
- **Selections for 7.0 to 200 V standoff voltages (V_{WM})**
- **Fast response**

DEVICES **MPLAD15KP7.0A thru MPLAD15KP200CA, 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
- 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 15,000 W @ 10/1000 µs (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
- 3σ 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: MPLAD15KP7.0A to 200CA
- Secondary lightning protection per IEC 61000-4-5 with 12 Ohms source impedance:
  - Class 1,2,3,4: MPLAD15KP7.0A to 200CA
- Secondary lightning protection per IEC 61000-4-5 with 2 Ohms source impedance:
  - Class 2,3: MPLAD15KP7.0A to 200CA
  - Class 4: MPLAD15KP5.0 to 54CA
- Pin injection protection per RTCA/DO-160D for Waveform 4 (6.4/69 µs):
  - Level 4: MPLAD15KP7.0A to 200CA
  - Level 5: MPLAD15KP7.0A to 100CA
- Pin injection protection per RTCA/DO-160D for Waveform 5A (40/120 µs):
  - Level 4: MPLAD15KP7.0A to 28CA

MAXIMUM RATINGS

- Peak Pulse Power dissipation at 25 °C: 15,000 watts at 10/1000 µs (also see Figures 1 and 2) with impulse repetition rate (duty factor) of 0.05% or less
- $t_{clamping}$ (0 volts to VBR min.): < 100 ps theoretical for unidirectional and < 5 ns for bidirectional
- Operating and Storage temperature: -55 °C to +150 °C
- Thermal resistance: 0.2 °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: 50 watts at TC = 100 °C with good heat sink, or 2.5 watts at TA = 25 °C if mounted on FR4 PC board as described for thermal resistance
- Forward Surge Voltage: 3.5 V maximum @ 500 Amps 8.3 ms half-sine wave (unidirectional devices only)
- Solder temperatures: 260 °C for 10 s (maximum)

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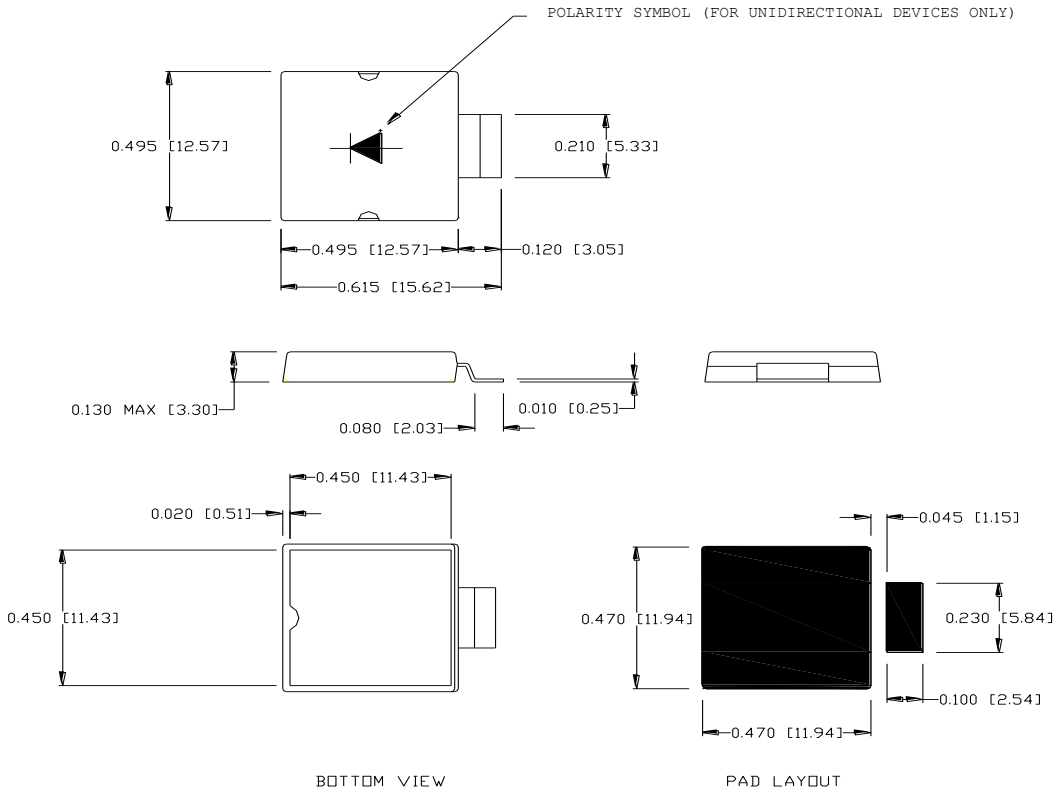
MECHANICAL AND PACKAGING

- 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 gram (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		

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TECHNICAL DATA SHEET

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 TEMPERATURE COEFFICIENT OF V_{BR} ($\alpha_{V(BR)}$)
		VOLTS	VOLTS	mA	VOLTS	µA	A	mV/ °C
MPLAD15KP7.0A	MPLAD15KP7.0CA	7.0	7.78 – 8.60	150	12.0	3000	1251	5.0
MPLAD15KP7.5A	MPLAD15KP7.5CA	7.5	8.33 – 9.21	5	12.9	750	1164	6.0
MPLAD15KP8.0A	MPLAD15KP8.0CA	8.0	8.89 – 9.83	5	13.6	450	1101	6.0
MPLAD15KP8.5A	MPLAD15KP8.5CA	8.5	9.44 – 10.4	5	14.4	150	1041	7.0
MPLAD15KP9.0A	MPLAD15KP9.0CA	9.0	10.0 – 11.1	5	15.4	60	975	8.0
MPLAD15KP10A	**MPLAD15KP10CA**	10	11.1 – 12.3	5	17.0	45	882	9.0
MPLAD15KP11A	MPLAD15KP11CA	11	12.2 – 13.5	5	18.2	10	822	10
MPLAD15KP12A	MPLAD15KP12CA	12	13.3 – 14.7	5	19.9	10	753	11
MPLAD15KP13A	MPLAD15KP13CA	13	14.4 – 15.9	5	21.5	10	696	12
MPLAD15KP14A	MPLAD15KP14CA	14	15.6 – 17.2	5	23.2	10	645	13
MPLAD15KP15A	**MPLAD15KP15CA**	15	16.7 – 18.5	5	24.4	10	318	15
MPLAD15KP16A	MPLAD15KP16CA	16	17.8 – 19.7	5	26.0	10	576	16
MPLAD15KP17A	MPLAD15KP17CA	17	18.9 – 20.9	5	27.6	10	543	18
MPLAD15KP18A	MPLAD15KP18CA	18	20.0 – 22.1	5	29.2	10	516	19
MPLAD15KP20A	MPLAD15KP20CA	20	22.2 – 24.5	5	32.4	10	462	22
MPLAD15KP22A	MPLAD15KP22CA	22	24.4 – 26.9	5	35.5	10	423	24
MPLAD15KP24A	MPLAD15KP24CA	24	26.7 – 29.5	5	38.9	10	384	27
MPLAD15KP26A	MPLAD15KP26CA	26	28.9 – 31.9	5	42.1	10	357	29
MPLAD15KP28A	MPLAD15KP28CA	28	31.1 – 34.4	5	45.5	10	330	30
MPLAD15KP30A	**MPLAD15KP30CA**	30	33.3 – 36.8	5	48.4	10	309	35
MPLAD15KP33A	MPLAD15KP33CA	33	36.7 – 40.6	5	53.3	10	282	38
MPLAD15KP36A	MPLAD15KP36CA	36	40.0 – 44.2	5	58.1	10	258	40
MPLAD15KP40A	MPLAD15KP40CA	40	44.4 – 49.1	5	64.5	10	234	45
MPLAD15KP43A	**MPLAD15KP43CA**	43	47.8 – 52.8	5	69.4	10	216	49
MPLAD15KP45A	**MPLAD15KP45CA**	45	50.0 – 55.3	5	72.7	10	207	51
MPLAD15KP48A	MPLAD15KP48CA	48	53.3 – 58.9	5	77.4	10	195	55
MPLAD15KP51A	MPLAD15KP51CA	51	56.7 – 62.7	5	82.4	10	183	60
MPLAD15KP54A	MPLAD15KP54CA	54	60.0 – 66.3	5	87.1	10	171	64
MPLAD15KP58A	MPLAD15KP58CA	58	64.4 – 71.2	5	93.6	10	159	69
MPLAD15KP60A	**MPLAD15KP60CA**	60	66.7 – 73.7	5	96.8	10	156	70
MPLAD15KP64A	MPLAD15KP64CA	64	71.1 – 78.6	5	103.0	10	147	75
MPLAD15KP70A	MPLAD15KP70CA	70	77.8 – 86.0	5	113	10	132	84
MPLAD15KP75A	**MPLAD15KP75CA**	75	83.3 – 92.1	5	121	10	123	90
MPLAD15KP78A	MPLAD15KP78CA	78	86.7 – 95.8	5	126	10	120	94
MPLAD15KP85A	MPLAD15KP85CA	85	94.4 – 104.0	5	137	10	108	102
MPLAD15KP90A	MPLAD15KP90CA	90	100 – 111	5	146	10	102	109
MPLAD15KP100A	MPLAD15KP100CA	100	111 – 123	5	162	10	93	122
MPLAD15KP110A	MPLAD15KP110CA	110	122 – 135	5	177	10	84	132
MPLAD15KP120A	MPLAD15KP120CA	120	133 – 147	5	193	10	78	145
MPLAD15KP130A	MPLAD15KP130CA	130	144 – 159	5	209	10	71	157
MPLAD15KP150A	MPLAD15KP150CA	150	167 – 185	5	243	10	62	183
MPLAD15KP160A	**MPLAD15KP160CA**	160	178 – 197	5	259	10	58	195
MPLAD15KP170A	MPLAD15KP170CA	170	189 – 209	5	275	10	55	207
MPLAD15KP180A	MPLAD15KP180CA	180	200 – 221	5	291	10	52	219
MPLAD15KP200A	MPLAD15KP200CA	200	222 – 245	5	322	10	47	243

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

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GRAPHS

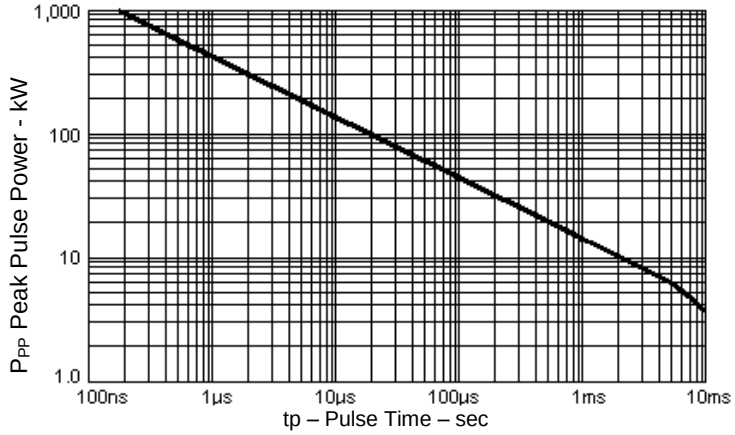
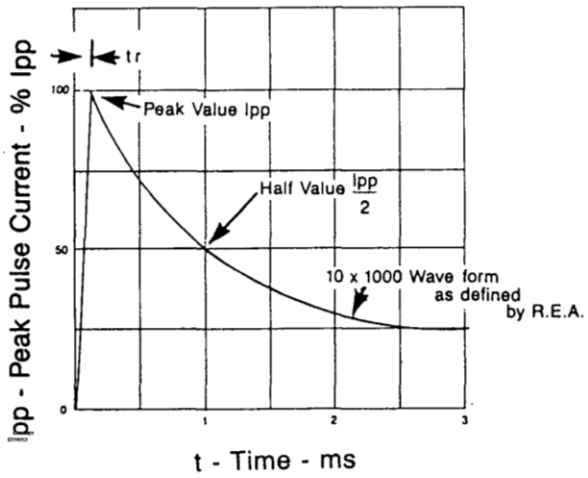


FIGURE 1 Peak Pulse Power vs. Pulse Time to 50 % of Exponentially Decaying Pulse



Test waveform parameters: tr = 10 µs, tp = 1000 µs

FIGURE 2 : Pulse Waveform

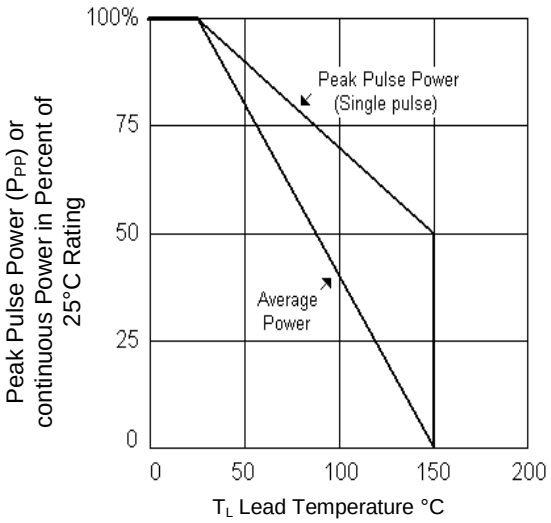


FIGURE 3: Derating Curve

Mouser Electronics

Authorized Distributor

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Microchip:

MXLPLAD15KP100Ae3 MXLPLAD15KP85CAe3 MXLPLAD15KP11Ae3 MXLPLAD15KP16CAe3
MXLPLAD15KP45CAe3 MXLPLAD15KP20Ae3 MXLPLAD15KP78Ae3 MXLPLAD15KP15CAe3
MXLPLAD15KP200Ae3 MXLPLAD15KP110Ae3 MXLPLAD15KP64Ae3 MXLPLAD15KP7.0CAe3
MXLPLAD15KP170CAe3 MXLPLAD15KP64CAe3 MXLPLAD15KP170Ae3 MXLPLAD15KP10CAe3
MXLPLAD15KP78CAe3 MXLPLAD15KP33CAe3 MXLPLAD15KP16Ae3 MXLPLAD15KP8.5Ae3
MXLPLAD15KP160Ae3 MXLPLAD15KP17Ae3 MXLPLAD15KP40CAe3 MXLPLAD15KP26Ae3
MXLPLAD15KP9.0Ae3 MXLPLAD15KP54CAe3 MXLPLAD15KP120CAe3 MXLPLAD15KP12CAe3
MXLPLAD15KP200CAe3 MXLPLAD15KP43CAe3 MXLPLAD15KP22CAe3 MXLPLAD15KP13CAe3
MXLPLAD15KP36CAe3 MXLPLAD15KP7.5Ae3 MXLPLAD15KP60CAe3 MXLPLAD15KP130Ae3
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MXLPLAD15KP100CAe3 MXLPLAD15KP12Ae3 MXLPLAD15KP7.0Ae3 MXLPLAD15KP17CAe3
MXLPLAD15KP8.0CAe3 MXLPLAD15KP36Ae3 MXLPLAD15KP120Ae3 MXLPLAD15KP130CAe3
MPLAD15KP160CA/TR MXLPLAD15KP12AE3/TR MXLPLAD15KP15CAE3/TR MXLPLAD15KP17AE3/TR
MXLPLAD15KP17CAE3/TR