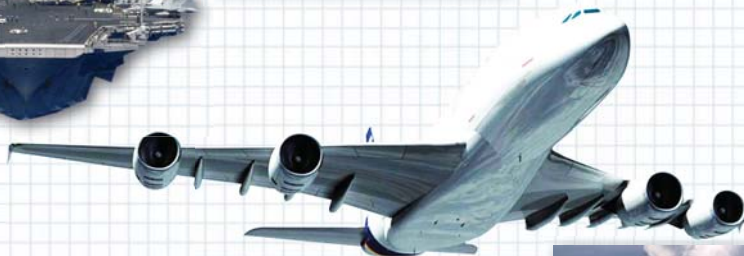
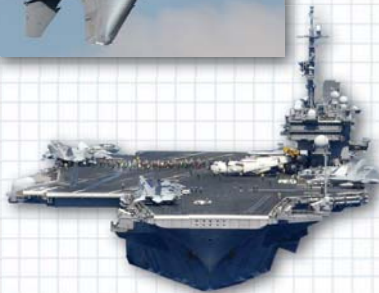


High Reliability Plastic Transient Voltage Suppressors (TVS)

Military



Defense



Commercial Avionics



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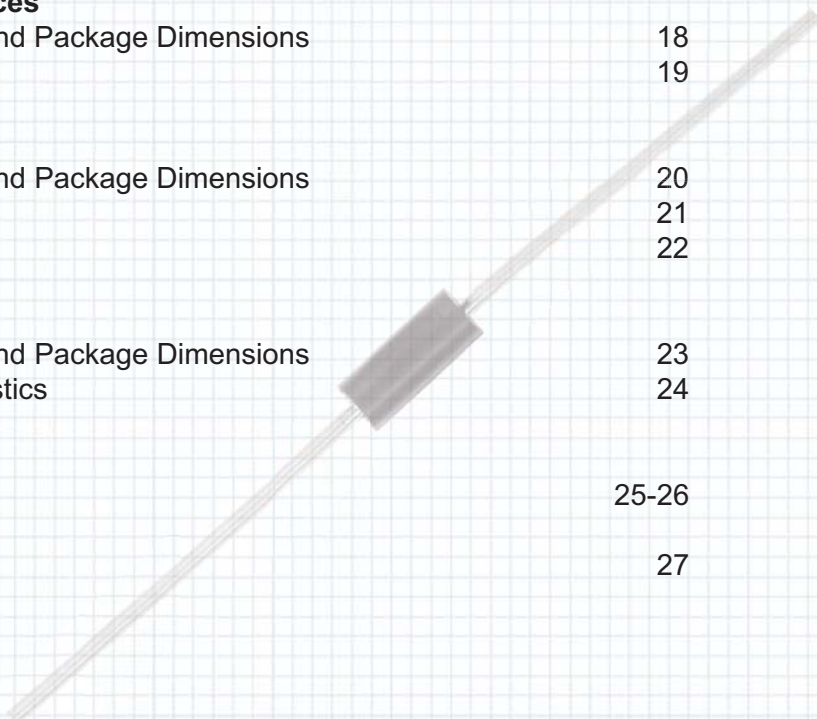
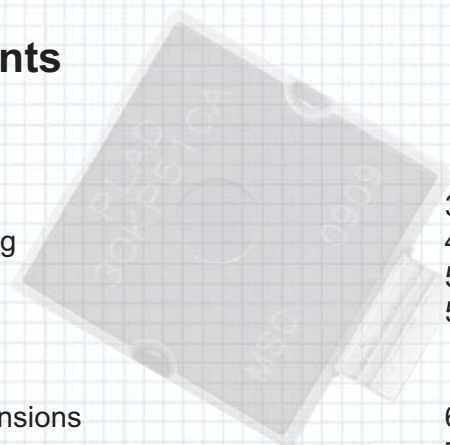
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TVS DIODES FOR TRANSIENT VOLTAGE PROTECTION FOR AVIONICS AND ROBUST ENVIRONMENTS OR APPLICATIONS

Microsemi Corporation [MSCC] is a leading supplier of Transient Voltage (TVS) to the world of computers, their peripherals, telecommunications equipment, medical and military applications. Microsemi also provides protection to the computer interfaces of the engine control systems in the sophisticated avionics and aerospace industries. The company offers a broad portfolio of discreet plastic TVS devices with power levels in the 600 watt to 100 kW. Qualification test plans and reliability monitoring provided for all these products are in line with the best industry standard practices.

The features and benefits of silicon TVS diodes are well understood by a broad user community of such devices. MSCC is a world leader in the design, fabrication, and supply of these silicon-based transient protection devices to be used in both unidirectional and bidirectional applications.

The following is a quick tutorial to component selection

1. What is the continuous or repetitive peak voltage at the circuit location where the TVS will be placed to protect a sensitive load?

NOTE: this will determine the “working Standoff Voltage” or V_{WM} found on the TVS Data Sheets. Any of these TVS devices serve as a clamp and are placed in parallel to the sensitive load to divert high surge currents to ground or around the sensitive load.

2. What is the worst case transient waveform in peak impulse current and pulse width duration the TVS needs to divert around the sensitive load?

NOTE: This will determine Peak Impulse Current or I_{PP} as well as pulse width to help further select the correct Part Number (s) on the associated TVS electricals as defined in this document.

3. What is the worst case peak voltage the sensitive load can withstand for the pulse duration in item #2 above?

NOTE: This will determine the clamping voltage or V_C required from the TVS on the associated TVS electricals as defined in this document.

4. What is the repetitive peak pulse power dissipation required to further select the correct part?

NOTE: this will be determined by the important P_{PP} rating provided on TVS data sheets. It is the product of the peak impulse current and the clamping voltage or $P_{PP} = I_{PP} \times V_C$ at the pulse width in item #2.

5. Is the pulse width different than described for the rating in P_{PP} ?

NOTE: The P_{PP} is often at 10/1000 μs or 8/20 μs . If different, use the P_{PP} versus pulse width performance curve given in the Data Sheet.

Example: If the pulse width is shorter than a rating given at 10/1000 μs both the P_{PP} and I_{PP} will be higher in capability for shorter pulse widths. The clamping voltage V_C does not significantly change for TVS devices when operated along this performance curve.

6. Is the required V_C lower in value than available on the data sheet for the V_{WM} described in item #1?

NOTE: If the answer is yes, over sizing the P_{PP} selection for a given pulse condition will reduce the V_C where it is closer to V_{BR} and V_{WM} . Also see MicroNote 108.

7. What package style is needed – Axial or Surface Mount?

8. Is the surge waveform difficult to define for answering item #2 due to the allusive nature of some transients?

NOTE: if the transient waveform is unknown, review Micronote 125 for general recommendation regarding the three basic levels of protection recognized throughout the industry.

MICROSEMI HIGH-RELIABILITY PLASTIC TVS DEVICES

Microsemi high-reliability plastic TVS devices are denoted with an 'M' prefix and are manufactured in MSCC controlled wafer fab, assembly and test houses and all have wafer lot traceability. Also, the customer base will be notified of any changes to the qualified materials and processes.

The product availability is as follows:

- 'M' prefix – controlled plastic without screening
- 'MA' prefix – controlled plastic with MA screening
- 'MXL' prefix – controlled plastic with MXL screening and conformance inspection
- 'MX' prefix – controlled plastic with MX screening and conformance inspection

See below for further details on the MA/MXL/MX screening options.

MICROSEMI HIGH-RELIABILITY SCREENING

Microsemi knows from its extensive experience in the Hi Rel discrete semiconductor inductor that infant mortality does exist and offers 3 levels of cost effective screening for more robust applications, such as avionics flight hardware, where very low level of device mortality is unacceptable. The available screening processes are described below in this document and are defined as MA, MXL and MX screening processes. These screening processes are recommended for all robust or harsh environmental applications, and for all power levels. Microsemi customers do not need to create Source Control Drawings nor define screening flows to specify these up-screening options.

Examples: **MA1.5KE48CA** or **MXSMLJ43CA**

Custom flows are always available from Microsemi to support application specific requirements.

LEVELS OF OPTIONAL SCREENING (use MA, MXL or MX as the Prefix to the Part Number)

The following describes those levels of testing, for further information refer to Micronote 129 on www.microsemi.com. These up screening flows offer a cost effective solution to infant mortality for more robust or harsh environmental applications.

MA Up-Screening flow offers:

- 100% Wafer Probe
- Temperature Cycling: 10 cycles, -55°C to +150°C
- 100% surge testing: 3 times (each direction for bidirectional)
- High Temperature Reverse Bias (HTRB): 24 hours (each direction for bidirectional)
- Final Electrical Test Read and Record
- 3 σ lot norm screening performed on Standby Current I_D.

MXL Up-Screening flow offers:

- Per MA up-screening plus
- Temperature Cycling: 20 cycles, -55°C to +150°C
- 100% surge testing: 10 times (each direction for bidirectional)
- High Temperature Reverse Bias (HTRB): 48 hours (each direction for bidirectional)
- Interim Electrical Test Read and Record
- Delta Calculations
- PDA Evaluation
- Final Electrical Test
- Conformance Inspection based on MIL-PRF-19500 Group A

MX Up-Screening flow offers:

- Per MXL up-screening plus
- Conformance Inspection based on MIL-PRF-19500 Group A, B and C.

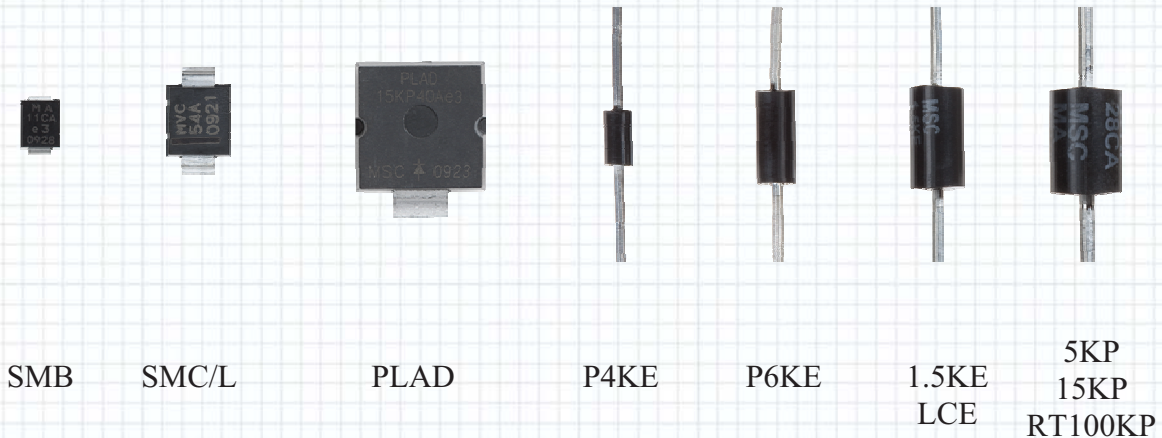
SYMBOLS AND DEFINITIONS

Symbol	Definition
V_{BR}	Breakdown Voltage: The minimum voltage the device will exhibit at a specified current (I_{BR}).
V_{WM}	Working Peak Standoff Voltage: The maximum peak voltage that can be applied over the operating temperature range.
P_{PP}	Peak Pulse Power: The peak power that can be applied for a specified pulse width and waveform.
I_D	Standby current: The maximum current that will flow at the specified pulse width and temperature.
I_{PP}	Peak Pulse Current: The peak current that can be applied for a specified pulse width and waveform.
C	Capacitance: The capacitance in picofarads of the TVS as defined at 0V at a frequency of 1MHz.

HIGH RELIABILITY TVS COMPONENT SUMMARY

The table below summarizes the Microsemi range of high-reliability TVS devices, while the images illustrate the package sizes. New families and packages will shortly be added to the product range.

Product Family	Rated Standoff Voltage VWM	Minimum Breakdown Voltage VBR	Peak Pulse Power Rating	SMD/Axial	Package
SMB	5.0V - 170V	6.4V - 189V	600W	SMD	DO-214AA, DO-215AA
SMC	5.0V - 170V	6.4V - 189V	1.5kW	SMD	DO-214AB, DO-215AB
SMCxLCE	6.5V - 170V	7.22V - 189V	1.5kW	SMD	DO-214AB, DO-215AB
SML	5.0V - 170V	6.4V - 189V	3kW	SMD	DO-214AB, DO-215AB
PLAD15KP	7.0V - 200V	7.78V - 222V	15kW	SMD	PLAD
PLAD30KP	14V - 400V	15.6V - 444V	30kW	SMD	PLAD
P4KE	5.8V - 342V	6.45V - 380V	400W	Axial	DO-41 [DO-204AL]
P6KE	5.8V - 171V	6.45V - 190V	600W	Axial	T-18
1.5KE	5.8V - 324V	6.45V - 380V	1.5kW	Axial	Case 1
LCE	6.5V - 170V	7.22V - 189V	1.5kW	Axial	Case 1
5KP	5V - 110V	6.4V - 122V	5kW	Axial	Case 5A [DO-204AR]
15KP	22V - 280V	24.4V - 311V	15kW	Axial	Case 5A [DO-204AR]
RT100KP	40V - 400V	44.4V - 444V	100kW	Axial	Case 5A [DO-204AR]



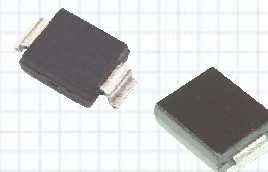
The following pages detail the range of High-Reliability Plastic TVS devices available. The applicable datasheet should be referred to for more comprehensive information. All Microsemi technical documents are located on the www.microsemi.com website.

SMB/SMC/SML Surface Mount Devices

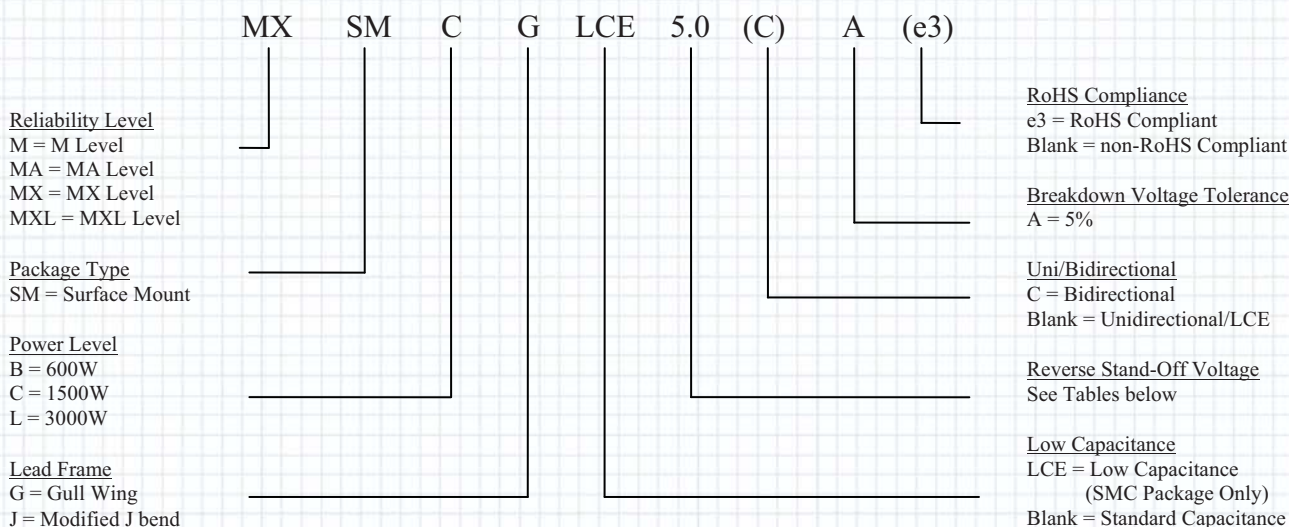
FEATURES

- Peak Pulse Power at 10/1000µS
 - SMB series – 600W
 - SMC series – 1500W
 - SML series – 3000W
- Standoff voltages of 5V to 170V
- Operational and Storage Temperature of -65°C to +150°C
- Unidirectional and Bidirectional construction available
- Available in Gull-Wing and modified J-lead designs
- Unidirectional low capacitance option using a rectifier diode in series and opposite direction available in SMC package

APPEARANCE



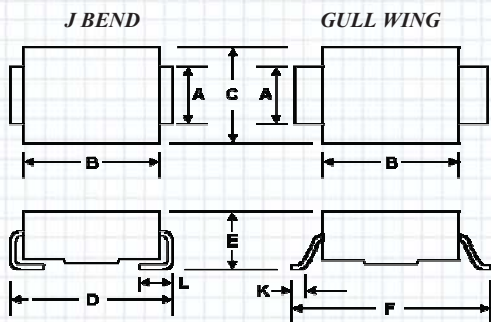
PART NOMENCLATURE



Sample Part Numbers

MXSMCJLCE6.5Ae3 – MX screened surface mount 1.5kW device, J bend, 6.5V stand-off, uni-directional low capacitance, 5% tolerance and RoHS compliant.
 MXLSMLG36CA – MXL screened surface mount 3kW device, Gull Wing, 36V stand-off, bi-directional, 5% tolerance and non-RoHS compliant.

PACKAGE DIMENSIONS



SMB PACKAGE DIMENSIONS IN INCHES (DO-214AA/DO-215AA)								
	A	B	C	D	E	F	K	L
MIN	.077	.160	.130	.205	.077	.235	.015	.030
MAX	.083	.180	.155	.220	.104	.255	.030	.060
DIMENSIONS IN MILLIMETERS								
MIN	1.96	4.06	3.30	5.21	1.95	5.97	.381	.760
MAX	2.10	4.57	3.94	5.59	2.65	6.48	.762	1.520

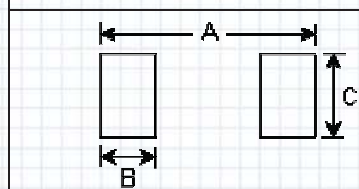
SMC/SML PACKAGE DIMENSIONS IN INCHES (DO-214AB/(DO-215AB))								
	A	B	C	D	E	F	K	L
MIN	.115	.260	.220	.305	.077	.380	.025	.030
MAX	.121	.280	.245	.320	.104	.400	.040	.060
DIMENSIONS IN MILLIMETERS								
MIN	2.92	6.60	5.59	7.75	1.95	9.65	0.635	.760
MAX	3.07	7.11	6.22	8.13	2.65	10.16	1.016	1.520

SMB/SMC/SML

SMB 600 WATT, ALL ELECTRICAL CHARACTERISTICS @25°C

TYPE NUMBER	REVERSE STAND-OFF VOLTAGE V_{WM} Volts	MINIMUM BREAKDOWN VOLTAGE V_{BR} MIN @ I_{BR} Volts	BREAKDOWN CURRENT I_{BR} mA	MAXIMUM CLAMPING VOLTAGE @ I_{PP} V_C Volts	PEAK PULSE CURRENT I_{PP} Amps	MAXIMUM STANDBY CURRENT @ V_{WM} I_D μA
SMBx5.0A	5.0	6.40	10	9.2	65.2	800
SMBx6.0A	6.0	6.67	10	10.3	58.3	800
SMBx6.5A	6.5	7.22	10	11.2	53.6	500
SMBx7.0A	7.0	7.78	10	12.0	50.0	200
SMBx7.5A	7.5	8.33	1	12.9	46.5	100
SMBx8.0A	8.0	8.89	1	13.6	44.1	50
SMBx8.5A	8.5	9.44	1	14.4	41.7	10
SMBx9.0A	9.0	10.0	1	15.4	39.0	5
SMBx10A	10	11.1	1	17.0	35.3	5
SMBx11A	11	12.2	1	18.2	33.0	5
SMBx12A	12	13.3	1	19.9	30.2	5
SMBx13A	13	14.4	1	21.5	27.9	1
SMBx14A	14	15.6	1	23.2	25.8	1
SMBx15A	15	16.7	1	24.4	24.0	1
SMBx16A	16	17.8	1	26.0	23.1	1
SMBx17A	17	18.9	1	27.6	21.7	1
SMBx18A	18	20.0	1	29.2	20.5	1
SMBx20A	20	22.2	1	32.4	18.5	1
SMBx22A	22	24.4	1	35.5	16.9	1
SMBx24A	24	26.7	1	38.9	15.4	1
SMBx26A	26	28.9	1	42.1	14.2	1
SMBx28A	28	31.1	1	45.4	13.2	1
SMBx30A	30	33.3	1	48.4	12.4	1
SMBx33A	33	36.7	1	53.3	11.3	1
SMBx36A	36	40.0	1	58.1	10.3	1
SMBx40A	40	44.4	1	64.5	9.3	1
SMBx43A	43	47.8	1	69.4	8.6	1
SMBx45A	45	50.0	1	72.7	8.3	1
SMBx48A	48	53.3	1	77.4	7.7	1
SMBx51A	51	56.7	1	82.4	7.3	1
SMBx54A	54	60.0	1	87.1	6.9	1
SMBx58A	58	64.4	1	93.6	6.4	1
SMBx60A	60	66.7	1	96.8	6.2	1
SMBx64A	64	71.1	1	103	5.8	1
SMBx70A	70	77.8	1	113	5.3	1
SMBx75A	75	83.3	1	121	4.9	1
SMBx78A	78	94.4	1	151	.9	1
SMBx85A	85	94.4	1	137	4.4	1
SMBx90A	90	100	1	146	4.1	1
SMBx100A	100	111	1	162	3.7	1
SMBx110A	110	122	1	177	3.4	1
SMBx120A	120	133	1	193	3.1	1
SMBx130A	130	144	1	209	2.9	1
SMBx150A	150	167	1	243	2.5	1
SMBx160A	160	178	1	259	2.3	1
SMBx170A	170	189	1	275	2.2	1

PAD LAYOUT



SMBJ (DO-214AA)

	INCHES	mm
A	.260	6.60
B	.085	2.16
C	.110	2.79

SMBG (DO-215AA)

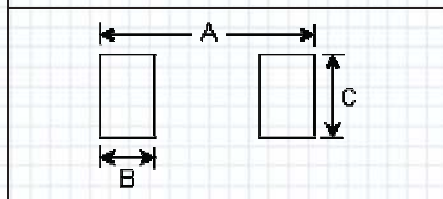
	INCHES	mm
A	.320	8.13
B	.085	2.16
C	.110	2.79

SMB/SMC/SML

SMC 1.5kW, ALL ELECTRICAL CHARACTERISTICS @25°C

TYPE NUMBER	REVERSE STAND-OFF VOLTAGE V_{WM} Volts	MINIMUM BREAKDOWN VOLTAGE V_{BR} MIN @ I_{BR} Volts	BREAKDOWN CURRENT I_{BR} mA	MAXIMUM CLAMPING VOLTAGE @ I_{PP} V_C Volts	PEAK PULSE CURRENT I_{PP} Amps	MAXIMUM STANDBY CURRENT @ V_{WM} I_D μA
SMCx5.0A	5.0	6.40	10	9.2	163.0	1000
SMCx6.0A	6.0	6.67	10	10.3	145.6	1000
SMCx6.5A	6.5	7.22	10	11.2	133.9	500
SMCx7.0A	7.0	7.78	10	12.0	125.0	200
SMCx7.5A	7.5	8.33	1	12.9	116.3	100
SMCx8.0A	8.0	8.89	1	13.6	110.3	50
SMCx8.5A	8.5	9.44	1	14.4	104.2	20
SMCx9.0A	9.0	10.0	1	15.4	97.4	10
SMCx10A	10	11.1	1	17.0	88.2	5
SMCx11A	11	12.2	1	18.2	82.4	5
SMCx12A	12	13.3	1	19.9	75.3	5
SMCx13A	13	14.4	1	21.5	69.7	1
SMCx14A	14	15.6	1	23.2	64.7	1
SMCx15A	15	16.7	1	24.4	61.5	1
SMCx16A	16	17.8	1	26.0	57.7	1
SMCx17A	17	18.9	1	27.6	53.3	1
SMCx18A	18	20.0	1	29.2	51.4	1
SMCx20A	20	22.2	1	32.4	46.3	1
SMCx22A	22	24.4	1	35.5	42.2	1
SMCx24A	24	26.7	1	38.9	38.6	1
SMCx26A	26	28.9	1	42.1	35.6	1
SMCx28A	28	31.1	1	45.4	33.0	1
SMCx30A	30	33.3	1	48.4	31.0	1
SMCx33A	33	36.7	1	53.3	28.1	1
SMCx36A	36	40.0	1	58.1	25.8	1
SMCx40A	40	44.4	1	64.5	23.2	1
SMCx43A	43	47.8	1	69.4	21.6	1
SMCx45A	45	50.0	1	72.7	20.6	1
SMCx48A	48	53.3	1	77.4	19.4	1
SMCx51A	51	56.7	1	82.4	18.2	1
SMCx54A	54	60.0	1	87.1	17.2	1
SMCx58A	58	64.4	1	93.6	16.0	1
SMCx60A	60	66.7	1	96.8	15.5	1
SMCx64A	64	71.1	1	103.0	14.6	1
SMCx70A	70	77.8	1	113	13.3	1
SMCx75A	75	83.3	1	121	12.4	1
SMCx78A	78	86.7	1	126	11.4	1
SMCx85A	85	94.4	1	137	10.4	1
SMCx90A	90	100	1	179	10.3	1
SMCx100A	100	111	1	162	9.3	1
SMCx110A	110	122	1	177	8.4	1
SMCx120A	120	133	1	193	7.8	1
SMCx130A	130	144	1	209	7.2	1
SMCx150A	150	167	1	243	6.2	1
SMCx160A	160	178	1	259	5.8	1
SMCx170A	170	189	1	275	5.5	1

PAD LAYOUT



SMCJ (DO-214AB)		
	INCHES	mm
A	.390	9.90
B	.110	2.79
C	.150	3.81

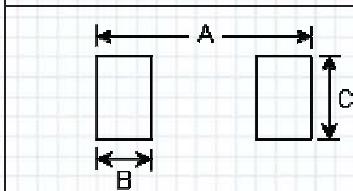
SMCG (DO-215AB)		
	INCHES	mm
A	.510	12.95
B	.110	2.79
C	.150	3.81

SMB/SMC/SML

SMCxLCE 1.5kW, ALL ELECTRICAL CHARACTERISTICS @25°C

TYPE NUMBER	REVERSE STAND-OFF VOLTAGE V_{WM} Volts	MINIMUM BREAKDOWN VOLTAGE V_{BR} MIN @ I_{BR} Volts	BREAKDOWN CURRENT I_{BR} mA	MAXIMUM REVERSE LEAKAGE @ V_{WM} I_D μA	MAXIMUM CLAMPING VOLTAGE @ I_{PP} V_C Volts	PEAK PULSE CURRENT I_{PP} @10/1000 Amps	MAX CAP @ 0 Volts $f=1$ MHZ pF	V_{WIB} Working Inverse Blocking Voltage Volts	I_{IB} Inverse Blocking Leakage Current μA	V_{PIB} Peak Inverse Blocking Voltage Volts
SMCxLCE6.5A	6.5	7.22	10	1000	11.2	100	100	75	10	100
SMCxLCE7.0A	7.0	7.78	10	500	12.0	100	100	75	10	100
SMCxLCE7.5A	7.5	8.33	10	250	12.9	100	100	75	10	100
SMCxLCE8.0A	8.0	8.89	1	100	13.6	100	100	75	10	100
SMCxLCE8.5A	8.5	9.44	1	50	14.4	100	100	75	10	100
SMCxLCE9.0A	9.0	10.0	1	10	15.4	97	100	75	10	100
SMCxLCE10A	10	11.1	1	5	17.0	88	100	75	10	100
SMCxLCE11A	11	12.2	1	5	18.2	82	100	75	10	100
SMCxLCE12A	12	13.3	1	5	19.9	75	100	75	10	100
SMCxLCE13A	13	14.4	1	5	21.5	70	100	75	10	100
SMCxLCE14A	14	15.6	1	5	23.2	65	100	75	10	100
SMCxLCE15A	15	16.7	1	5	24.4	61	100	75	10	100
SMCxLCE16A	16	17.8	1	5	26.0	57	100	75	10	100
SMCxLCE17A	17	18.9	1	5	27.6	49	100	75	10	100
SMCxLCE18A	18	20.0	1	5	29.2	51	100	75	10	100
SMCxLCE20A	20	22.2	1	5	32.4	46	100	75	10	100
SMCxLCE22A	22	24.4	1	5	35.5	42	100	75	10	100
SMCxLCE24A	24	26.7	1	5	38.9	39	100	75	10	100
SMCxLCE26A	26	28.9	1	5	42.1	36	100	75	10	100
SMCxLCE28A	28	31.1	1	5	45.5	33	100	75	10	100
SMCxLCE30A	30	33.3	1	5	48.4	31	100	75	10	100
SMCxLCE33A	33	36.7	1	5	53.3	28.1	100	75	10	100
SMCxLCE36A	36	40.0	1	5	58.1	25.8	100	75	10	100
SMCxLCE40A	40	44.4	1	5	64.5	23.3	100	75	10	100
SMCxLCE43A	43	47.8	1	5	69.4	21.6	100	150	10	200
SMCxLCE45A	45	50.0	1	5	72.7	20.6	100	150	10	200
SMCxLCE48A	48	53.3	1	5	77.4	19.4	100	150	10	200
SMCxLCE51A	51	56.7	1	5	82.4	18.2	100	150	10	200
SMCxLCE54A	54	60.0	1	5	87.1	17.2	100	150	10	200
SMCxLCE58A	58	64.4	1	5	93.6	16.0	100	150	10	200
SMCxLCE60A	60	66.7	1	5	96.8	15.5	90	150	10	200
SMCxLCE64A	64	71.1	1	5	103	14.6	90	150	10	200
SMCxLCE70A	70	77.8	1	5	113	13.3	90	150	10	200
SMCxLCE75A	75	83.3	1	5	121	12.4	90	150	10	200
SMCxLCE80A	80	88.7	1	5	129	11.6	90	150	10	200
SMCxLCE90A	90	100	1	5	146	10.3	90	300	10	200
SMCxLCE100A	100	111	1	5	162	9.3	90	300	10	200
SMCxLCE110A	110	122	1	5	178	8.4	90	300	10	400
SMCxLCE120A	120	133	1	5	193	7.8	90	300	10	400
SMCxLCE130A	130	144	1	5	209	7.2	90	300	10	400
SMCxLCE150A	150	167	1	5	243	6.2	90	300	10	400
SMCxLCE160A	160	178	1	5	259	5.8	90	300	10	400
SMCxLCE170A	170	189	1	5	275	5.4	90	300	10	400

PAD LAYOUT



SMCJ (DO-214AB)

	INCHES	mm
A	.390	9.90
B	.110	2.79
C	.150	3.81

SMCG (DO-215AB)

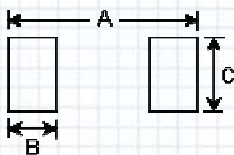
	INCHES	mm
A	.510	12.95
B	.110	2.79
C	.150	3.81

SMB/SMC/SML

SML 3kW, ALL ELECTRICAL CHARACTERISTICS @25°C

TYPE NUMBER	REVERSE STAND-OFF VOLTAGE V_{WM} Volts	MINIMUM BREAKDOWN VOLTAGE V_{BR} MIN @ I_{BR} Volts	BREAKDOWN CURRENT I_{BR} mA	MAXIMUM CLAMPING VOLTAGE @ I_{PP} V_C Volts	PEAK PULSE CURRENT I_{PP} Amps	MAXIMUM STANDBY CURRENT @ V_{WM} I_D μA
SMLx5.0A	5.0	6.40	10	9.2	326.0	1000
SMLx6.0A	6.0	6.67	10	10.3	291.3	1000
SMLx6.5A	6.5	7.22	10	11.2	267.9	500
SMLx7.0A	7.0	7.78	10	12.0	250.0	200
SMLx7.5A	7.5	8.33	1	12.9	232.6	100
SMLx8.0A	8.0	8.89	1	13.6	220.6	50
SMLx8.5A	8.5	9.44	1	14.4	208.4	25
SMLx9.0A	9.0	10.0	1	15.4	194.8	10
SMLx10A	10	11.1	1	17.0	176.4	5
SMLx11A	11	12.2	1	18.2	164.8	5
SMLx12A	12	13.3	1	19.9	150.6	5
SMLx13A	13	14.4	1	21.5	139.4	5
SMLx14A	14	15.6	1	23.2	129.4	2
SMLx15A	15	16.7	1	24.4	123.0	2
SMLx16A	16	17.8	1	26.0	115.4	2
SMLx17A	17	18.9	1	27.6	106.6	2
SMLx18A	18	20.0	1	29.2	102.8	2
SMLx20A	20	22.2	1	32.4	92.6	2
SMLx22A	22	24.4	1	35.5	84.4	2
SMLx24A	24	26.7	1	38.9	77.2	2
SMLx26A	26	28.9	1	42.1	71.2	2
SMLx28A	28	31.1	1	45.4	66.0	2
SMLx30A	30	33.3	1	48.4	62.0	2
SMLx33A	33	36.7	1	53.3	56.2	2
SMLx36A	36	40.0	1	58.1	51.6	2
SMLx40A	40	44.4	1	64.5	46.4	2
SMLx43A	43	47.8	1	69.4	43.2	2
SMLx45A	45	50.0	1	72.7	41.2	2
SMLx48A	48	53.3	1	77.4	38.8	2
SMLx51A	51	56.7	1	82.4	36.4	2
SMLx54A	54	60.0	1	87.1	34.4	2
SMLx58A	58	64.4	1	93.6	32.0	2
SMLx60A	60	66.7	1	96.8	31.0	2
SMLx64A	64	71.1	1	103.0	29.2	2
SMLx70A	70	77.8	1	113	26.6	2
SMLx75A	75	83.3	1	121	24.8	2
SMLx78A	78	86.7	1	126	22.8	2
SMLx85A	85	94.4	1	137	20.8	2
SMLx90A	90	100	1	146	20.6	2
SMLx100A	100	111	1	162	18.6	2
SMLx110A	110	122	1	177	16.8	2
SMLx120A	120	133	1	193	15.6	2
SMLx130A	130	144	1	209	14.4	2
SMLx150A	150	167	1	243	12.4	2
SMLx160A	160	178	1	259	11.6	2
SMLx170A	170	189	1	275	11.0	2

PAD LAYOUT



SMLJ (DO-214AB)

	INCHES	mm
A	.390	9.90
B	.110	2.79
C	.150	3.81

SMLG (DO-215AB)

	INCHES	mm
A	.510	12.95
B	.110	2.79
C	.150	3.81

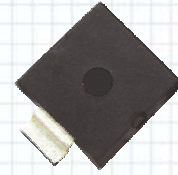
SMB/SMC/SML

PLAD Surface Mount Devices

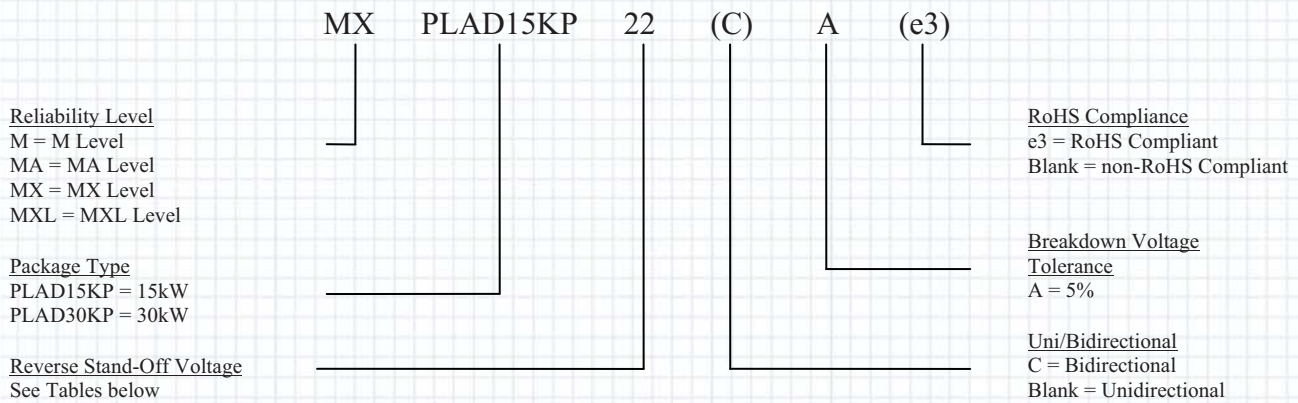
FEATURES

- Peak Pulse Power at 10/1000µS
 - PLAD15KP series – 15kW
 - PLAD30KP series – 30kW
- Standoff voltage
 - PLAD15KP – 7V to 200V
 - PLAD30KP – 14V to 400V
- Operational and Storage Temperature of -65°C to +150°C
- Unidirectional and Bidirectional construction available
- Replaces high power through-hole 15KP and 30KP devices for surface mount applications

APPEARANCE



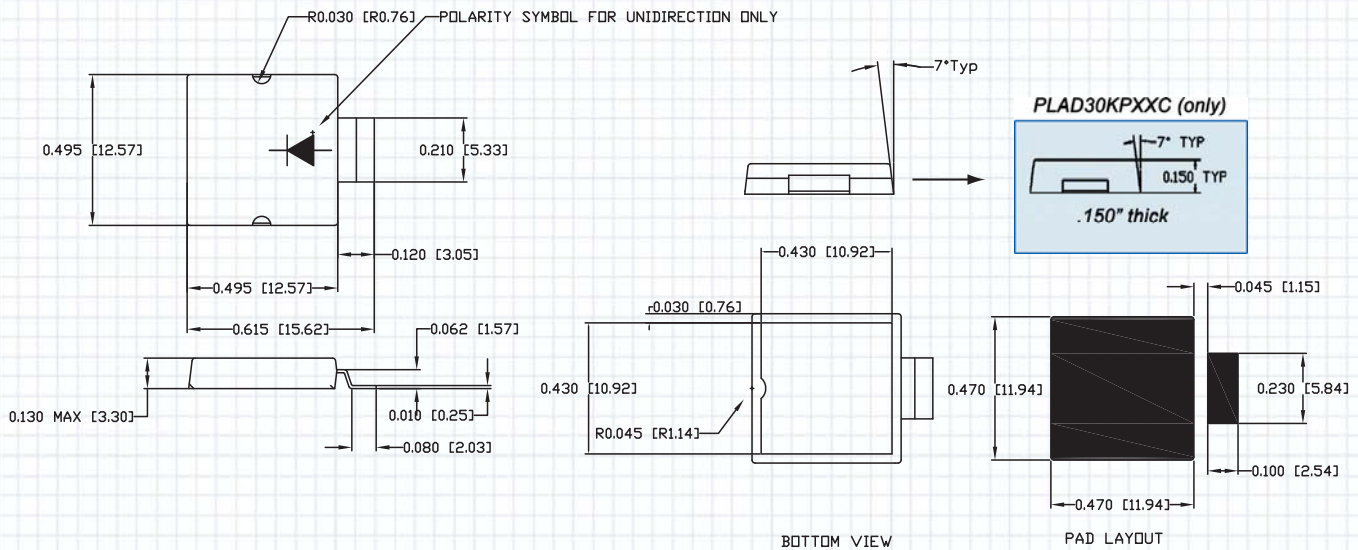
PART NOMENCLATURE



Sample Part Number

MXPLAD15KP9.0Ae3 – MX screened PLAD 15kW device, 9V reverse stand-off, uni-directional, 5% tolerance and RoHS compliant

PACKAGE DIMENSIONS and PAD LAYOUT INCHES [mm]



PLAD

PLAD15KP 15KW, ALL ELECTRICAL CHARACTERISTICS @25°C

TYPE NUMBER	REVERSE STAND-OFF VOLTAGE V_{WM} Volts	MINIMUM BREAKDOWN VOLTAGE V_{BR} MIN @ I_{BR} Volts	BREAKDOWN CURRENT I_{BR} mA	MAXIMUM CLAMPING VOLTAGE @ I_{PP} V_C Volts	PEAK PULSE CURRENT I_{PP} Amps	MAXIMUM STANDBY CURRENT @ V_{WM} I_D μA
PLAD15KP7.0A	7.0	7.78	150	12.0	1251	3000
PLAD15KP7.5A	7.5	8.33	5	12.9	1164	750
PLAD15KP8.0A	8.0	8.89	5	13.6	1101	450
PLAD15KP8.5A	8.5	9.44	5	14.4	1041	150
PLAD15KP9.0A	9.0	10.0	5	15.4	975	60
PLAD15KP10A	10	11.1	5	17.0	882	45
PLAD15KP11A	11	12.2	5	18.2	822	10
PLAD15KP12A	12	13.3	5	19.9	753	10
PLAD15KP13A	13	14.4	5	21.5	696	10
PLAD15KP14A	14	15.6	5	23.2	645	10
PLAD15KP15A	15	16.7	5	24.4	318	10
PLAD15KP16A	16	17.8	5	26.0	576	10
PLAD15KP17A	17	18.9	5	27.6	543	10
PLAD15KP18A	18	20.0	5	29.2	516	10
PLAD15KP20A	20	22.2	5	32.4	462	10
PLAD15KP22A	22	24.4	5	35.5	423	10
PLAD15KP24A	24	26.7	5	38.9	384	10
PLAD15KP26A	26	28.9	5	42.1	357	10
PLAD15KP28A	28	31.1	5	45.5	330	10
PLAD15KP30A	30	33.3	5	48.4	309	10
PLAD15KP33A	33	36.7	5	53.3	282	10
PLAD15KP36A	36	40.0	5	58.1	258	10
PLAD15KP40A	40	44.4	5	64.5	234	10
PLAD15KP43A	43	47.8	5	69.4	216	10
PLAD15KP45A	45	50.0	5	72.7	207	10
PLAD15KP48A	48	53.3	5	77.4	195	10
PLAD15KP51A	51	56.7	5	82.4	183	10
PLAD15KP54A	54	60.0	5	87.1	171	10
PLAD15KP58A	58	64.4	5	93.6	159	10
PLAD15KP60A	60	66.7	5	96.8	156	10
PLAD15KP64A	64	71.1	5	103.0	147	10
PLAD15KP70A	70	77.8	5	113	132	10
PLAD15KP75A	75	83.3	5	121	123	10
PLAD15KP78A	78	86.7	5	126	120	10
PLAD15KP85A	85	94.4	5	137	108	10
PLAD15KP90A	90	100	5	146	102	10
PLAD15KP100A	100	111	5	162	93	10
PLAD15KP110A	110	122	5	177	84	10
PLAD15KP120A	120	133	5	193	78	10
PLAD15KP130A	130	144	5	209	71	10
PLAD15KP150A	150	167	5	243	62	10
PLAD15KP160A	160	178	5	259	58	10
PLAD15KP170A	170	189	5	275	55	10
PLAD15KP180A	180	200	5	291	52	10
PLAD15KP200A	200	222	5	322	47	10

PLAD

PLAD30KP 30KW, ALL ELECTRICAL CHARACTERISTICS @25°C

TYPE NUMBER	REVERSE STAND-OFF VOLTAGE V_{WM} Volts	MINIMUM BREAKDOWN VOLTAGE V_{BR} MIN @ I_{BR} Volts	BREAKDOWN CURRENT I_{BR} mA	MAXIMUM CLAMPING VOLTAGE @ I_{PP} V_C Volts	PEAK PULSE CURRENT I_{PP} Amps	MAXIMUM STANDBY CURRENT @ V_{WM} I_D μA
PLAD30KP14A	14	15.6	150	24.0	1251	3000
PLAD30KP15A	15	16.7	5	25.8	1164	750
PLAD30KP16A	16	17.8	5	27.2	1101	450
PLAD30KP17A	17	18.9	5	28.8	1041	150
PLAD30KP18A	18	20.0	5	30.8	975	60
PLAD30KP20A	20	22.2	5	34.0	882	45
PLAD30KP22A	22	24.4	5	36.4	822	10
PLAD30KP24A	24	26.7	5	39.8	753	10
PLAD30KP26A	26	28.9	5	43.0	696	10
PLAD30KP28A	28	31.1	5	46.4	645	10
PLAD30KP30A	30	33.3	5	48.8	618	10
PLAD30KP33A	33	36.7	5	53.3	564	10
PLAD30KP36A	36	40.0	5	58.1	516	10
PLAD30KP40A	40	44.4	5	64.5	468	10
PLAD30KP43A	43	47.8	5	69.4	432	10
PLAD30KP45A	45	50.0	5	72.7	414	10
PLAD30KP48A	48	53.3	5	77.4	390	10
PLAD30KP51A	51	56.7	5	82.4	366	10
PLAD30KP54A	54	60.0	5	87.1	342	10
PLAD30KP58A	58	64.4	5	93.6	318	10
PLAD30KP60A	60	66.7	5	96.8	312	10
PLAD30KP64A	64	71.1	5	103.0	294	10
PLAD30KP70A	70	77.8	5	113	264	10
PLAD30KP75A	75	83.3	5	121	246	10
PLAD30KP78A	78	86.7	5	126	240	10
PLAD30KP85A	85	94.4	5	137	216	10
PLAD30KP90A	90	100	5	146	204	10
PLAD30KP100A	100	111	5	162	186	10
PLAD30KP110A	110	122	5	177	168	10
PLAD30KP120A	120	133	5	193	156	10
PLAD30KP130A	130	144	5	209	142	10
PLAD30KP150A	150	167	5	243	124	10
PLAD30KP160A	160	178	5	259	116	10
PLAD30KP170A	170	189	5	275	110	10
PLAD30KP180A	180	200	5	291	104	10
PLAD30KP200A	200	222	5	322	94	10
PLAD30KP220A	220	245	5	356	84	10
PLAD30KP260A	260	289	5	419	71	10
PLAD30KP280A	280	311	5	451	66	10
PLAD30KP300A	300	333	5	483	62	10
PLAD30KP350A	350	389	5	564	53	10
PLAD30KP400A	400	444	5	644	46	10

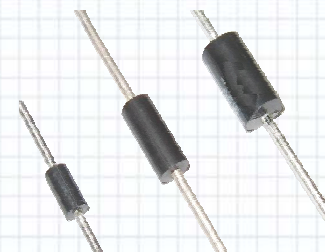
PLAD

P4KE/P6KE/1.5KE Axial Devices

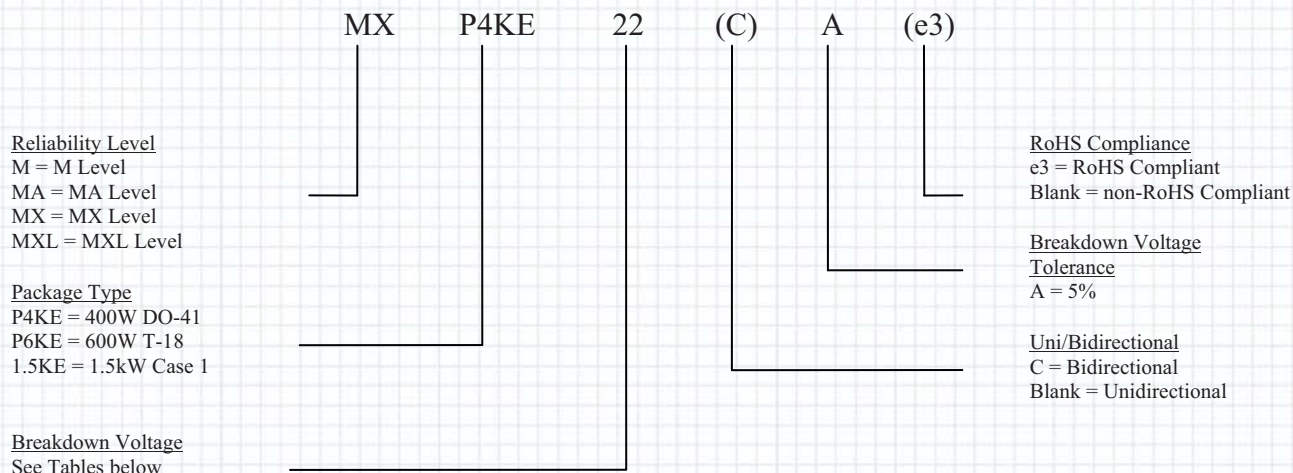
FEATURES

- Peak Pulse Power at 10/1000 μ S
 - P4KE series – 400W
 - P6KE series – 600W
 - 1.5KE series – 1.5kW
- Standoff voltage
 - P4KE series – 5.8V to 342V
 - P6KE series – 5.8V to 171V
 - 1.5KE series – 5.8V to 324V
- Operational and Storage Temperature of -65°C to +150°C
- Unidirectional and Bidirectional construction available

APPEARANCE



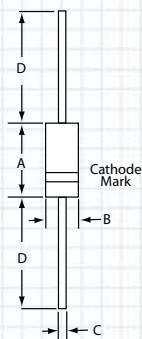
PART NOMENCLATURE



Sample Part Number

MA1.5KE27Ae3 – MA screened 1.5KE 15kW device, 27V breakdown, uni-directional, 5% tolerance and RoHS compliant

PACKAGE DIMENSIONS



DIM	P4KE (DO-41)				P6KE (T-18)				1.5KE (Case 1)			
	INCHES		MM		INCHES		MM		INCHES		MM	
	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX
A	-	.205	-	5.207	.330	.350	8.39	8.89	.360	.375	9.144	9.525
B	-	.107	-	2.72	.130	.145	3.31	3.68	.190	.205	4.826	5.207
C	.03	.034	.76	.86	.038	.042	0.97	1.06	.038	.042	.965	1.067
D	1.00	-	25.4	-	1.00	-	25.4	-	1.10	-	27.9	-

P4KE/P6KE/1.5KE

P4KE 400 WATT, ALL ELECTRICAL CHARACTERISTICS @25°C

TYPE NUMBER	REVERSE STAND-OFF VOLTAGE V_{WM} Volts	MINIMUM BREAKDOWN VOLTAGE V_{BR} MIN @ I_{BR} Volts	BREAKDOWN CURRENT I_{BR} mA	MAXIMUM CLAMPING VOLTAGE @ I_{PP} V_C Volts	PEAK PULSE CURRENT I_{PP} Amps	MAXIMUM STANDBY CURRENT @ V_{WM} I_D μA
P4KE6.8A	5.80	6.45	10	10.5	38	500
P4KE7.5A	6.40	7.13	10	11.3	35	200
P4KE8.2A	7.02	7.79	10	12.1	33	100
P4KE9.1A	7.78	8.65	1	13.4	30	20
P4KE10A	8.55	9.50	1	14.5	28	5
P4KE11A	9.40	10.5	1	15.6	26	2
P4KE12A	10.2	11.4	1	16.7	24	1
P4KE13A	11.1	12.4	1	18.2	22	1
P4KE15A	12.8	14.3	1	21.2	19	1
P4KE16A	13.6	15.2	1	22.5	18	1
P4KE18A	15.3	17.1	1	25.2	16	1
P4KE20A	17.1	19.0	1	27.7	14.5	1
P4KE22A	18.8	20.9	1	30.6	13	1
P4KE24A	20.5	22.8	1	33.2	12	1
P4KE27A	23.1	25.7	1	37.5	11	1
P4KE30A	25.6	28.5	1	41.4	9.5	1
P4KE33A	28.2	31.4	1	45.7	9.0	1
P4KE36A	30.8	34.2	1	49.9	8.0	1
P4KE39A	33.3	37.1	1	53.9	7.5	1
P4KE43A	36.8	40.9	1	59.3	7.0	1
P4KE47A	40.2	44.7	1	64.8	6.2	1
P4KE51A	43.6	48.5	1	70.1	5.7	1
P4KE56A	47.8	53.2	1	77.0	5.2	1
P4KE62A	53.0	58.9	1	85.0	4.7	1
P4KE68A	58.1	64.6	1	92.0	4.4	1
P4KE75A	64.1	71.3	1	103.0	3.9	1
P4KE82A	70.1	77.9	1	113.0	3.5	1
P4KE91A	77.8	86.5	1	125.0	3.2	1
P4KE100A	85.5	95.0	1	137.0	2.9	1
P4KE110A	94.0	105.0	1	152.0	2.6	1
P4KE120A	102.0	114.0	1	165.0	2.4	1
P4KE130A	111.0	124.0	1	179.0	2.2	1
P4KE150A	128.0	143.0	1	207.0	1.95	1
P4KE160A	136.0	152.0	1	219.0	1.8	1
P4KE170A	145.0	162.0	1	234.0	1.7	1
P4KE180A	154.0	171.0	1	246.0	1.6	1
P4KE200A	171.0	190.0	1	274.0	1.5	1
P4KE220A	185.0	209.0	1	328.0	1.0	1
P4KE250A	214.0	237.0	1	344.0	1.0	1
P4KE300A	256.0	285.0	1	414.0	1.0	1
P4KE350A	300.0	333.0	1	482.0	1.0	1
P4KE400A	342.0	380.0	1	548.0	1.0	1

P6KE 600 WATT, ALL ELECTRICAL CHARACTERISTICS @25°C

TYPE NUMBER	REVERSE STAND-OFF VOLTAGE V_{WM} Volts	MINIMUM BREAKDOWN VOLTAGE V_{BR} MIN @ I_{BR} Volts	BREAKDOWN CURRENT I_{BR} mA	MAXIMUM CLAMPING VOLTAGE @ I_{PP} V_C Volts	PEAK PULSE CURRENT I_{PP} Amps	MAXIMUM STANDBY CURRENT @ V_{WM} I_D μA
P6KE6.8A	5.8	6.45	10	10.5	57	1000
P6KE7.5A	6.4	7.13	10	11.3	53	500
P6KE8.2A	7.02	7.79	10	12.1	50	200
P6KE9.1A	7.78	8.65	1	13.4	45	50
P6KE10A	8.55	9.5	1	14.5	41	10
P6KE11A	9.4	10.5	1	15.6	38	5
P6KE12A	10.2	11.4	1	16.7	36	5
P6KE13A	11.1	12.4	1	18.2	33	5
P6KE15A	12.8	14.3	1	21.2	28	1
P6KE16A	13.6	15.2	1	22.5	27	1
P6KE18A	15.3	17.1	1	25.2	24	1
P6KE20A	17.1	19	1	27.7	22	1
P6KE22A	18.8	20.9	1	30.6	20	1
P6KE24A	20.5	22.8	1	33.2	18	1
P6KE27A	23.1	25.7	1	37.5	16	1
P6KE30A	25.6	28.5	1	41.4	14.4	1
P6KE33A	28.2	31.4	1	45.7	13.2	1
P6KE36A	30.8	34.2	1	49.9	12	1
P6KE39A	33.3	37.1	1	53.9	11.2	1
P6KE43A	36.8	40.9	1	59.3	10.1	1
P6KE47A	40.2	44.7	1	64.8	9.3	1
P6KE51A	43.6	48.5	1	70.1	8.6	1
P6KE56A	47.8	53.2	1	77	7.8	1
P6KE62A	53	58.9	1	85	7.1	1
P6KE68A	58.1	64.6	1	92	6.5	1
P6KE75A	64.1	71.3	1	103	5.8	1
P6KE82A	70.1	77.9	1	113	5.3	1
P6KE91A	77.8	86.5	1	125	4.8	1
P6KE100A	85.5	95	1	137	4.4	1
P6KE110A	94	105	1	152	3.4	1
P6KE120A	102	114	1	165	3.6	1
P6KE130A	111	124	1	179	3.3	1
P6KE150A	128	143	1	207	2.9	1
P6KE160A	136	152	1	219	2.7	1
P6KE170A	145	161	1	234	2.6	1
P6KE180A	154	171	1	246	2.4	1
P6KE200A	171	190	1	274	2.2	1

P4KE/P6KE/1.5KE

1.5KE 1.5kW, ALL ELECTRICAL CHARACTERISTICS @25°C

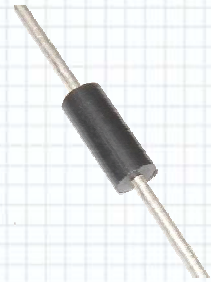
TYPE NUMBER	REVERSE STAND-OFF VOLTAGE V_{WM} Volts	MINIMUM BREAKDOWN VOLTAGE V_{BR} MIN @ I_{BR} Volts	BREAKDOWN CURRENT I_{BR} mA	MAXIMUM CLAMPING VOLTAGE @ I_{PP} V_C Volts	PEAK PULSE CURRENT I_{PP} Amps	MAXIMUM STANDBY CURRENT @ V_{WM} I_D μA
1.5KE6.8A	5.80	6.45	10	10.5	143.0	1000
1.5KE7.5A	6.40	7.13	10	11.3	132.0	500
1.5KE8.2A	7.02	7.79	10	12.1	124.0	200
1.5KE9.1A	7.78	8.65	1	13.4	112.0	50
1.5KE10A	8.55	9.50	1	14.5	103.0	10
1.5KE11A	9.40	10.50	1	15.6	96.0	5
1.5KE12A	10.220	11.40	1	16.7	90.0	5
1.5KE13A	11.10	12.40	1	18.2	82.0	5
1.5KE15A	12.80	14.30	1	21.2	71.0	1
1.5KE16A	13.60	15.20	1	22.5	67.0	1
1.5KE18A	15.30	17.10	1	25.2	59.5	1
1.5KE20A	17.10	19.00	1	27.7	54.0	1
1.5KE22A	18.80	20.90	1	30.6	49.0	1
1.5KE24A	20.50	22.80	1	33.2	45.0	1
1.5KE27A	23.10	25.70	1	37.5	40.0	1
1.5KE30A	25.60	28.50	1	41.4	36.0	1
1.5KE33A	28.20	31.40	1	45.7	33.0	1
1.5KE36A	30.80	34.20	1	49.9	30.0	1
1.5KE39A	33.30	37.10	1	53.9	28.0	1
1.5KE43A	36.80	40.90	1	59.3	25.3	1
1.5KE47A	40.20	44.70	1	64.8	23.2	1
1.5KE51A	43.60	48.50	1	70.1	21.4	1
1.5KE56A	47.80	53.20	1	77.0	19.5	1
1.5KE62A	53.00	58.90	1	85.0	17.7	1
1.5KE68A	58.10	64.60	1	92.0	16.3	1
1.5KE75A	64.10	71.30	1	103.0	14.6	1
1.5KE82A	70.10	77.90	1	113.0	13.3	1
1.5KE91A	77.80	86.50	1	125.0	12.0	1
1.5KE100A	85.50	95.00	1	137.0	11.0	1
1.5KE110A	94.00	105.00	1	152.0	9.9	1
1.5KE120A	102.00	114.00	1	165.0	9.1	1
1.5KE130A	111.00	124.00	1	179.0	8.4	1
1.5KE150A	128.00	143.00	1	207.0	7.2	1
1.5KE160A	136.00	152.00	1	219.0	6.8	1
1.5KE170A	145.00	162.00	1	234.0	6.4	1
1.5KE180A	154.00	171.00	1	246.0	6.1	1
1.5KE200A	171.00	190.00	1	274.0	5.5	1
1.5KE220A	185.00	209.00	1	328.0	4.6	1
1.5KE250A	214.00	237.00	1	344.0	5.0	1
1.5KE300A	256.00	285.00	1	414.0	5.0	1
1.5KE350A	300.00	332.00	1	482.0	4.0	1
1.5KE400A	324.00	380.00	1	548.0	4.0	1

LCE Low Capacitance Axial Devices

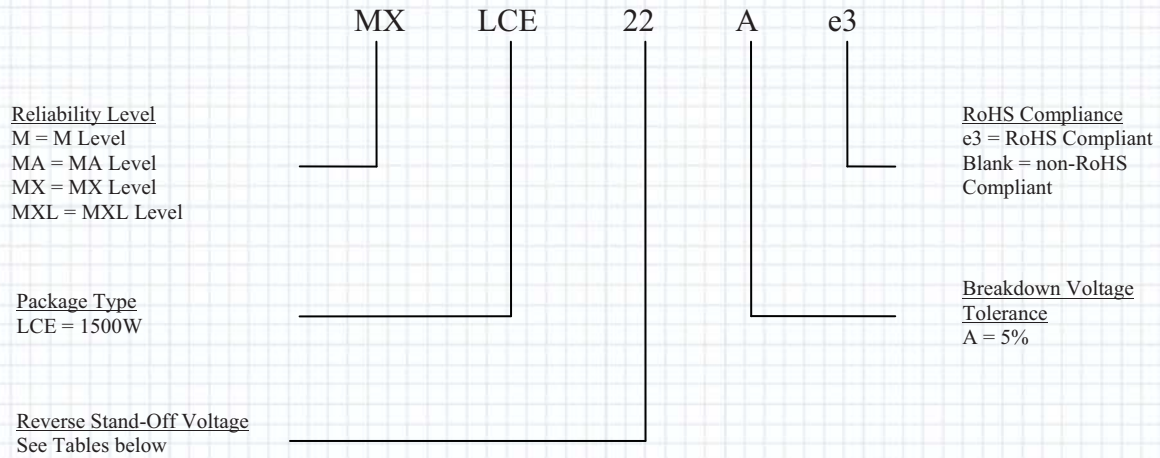
FEATURES

- 1.5kW Peak Pulse Power at 10/1000µS
- Standoff voltage of 6.5V to 170V
- Operational and Storage Temperature of -65°C to +150°C
- Includes a rectifier diode element in series and opposite direction to achieve low capacitance performance $\leq 100\text{pF}$
- Two devices may be used in anti-parallel for complete AC protection if bipolar transient capability is required

APPEARANCE



PART NOMENCLATURE



Sample Part Number

MALCE48A – MA screened axial Low Capacitance 1.5kW device, 48V stand-off, unidirectional with 5% tolerance

PACKAGE DIMENSIONS

DIM	LCE (Case 1)			
	INCHES		MM	
	MIN	MAX	MIN	MAX
A	.360	.375	9.146	9.527
B	.190	.205	4.826	5.207
C	.038	.042	.958	1.074
D	1.100	-	27.9	-

LCE

LCE 1.5KW, ALL ELECTRICAL CHARACTERISTICS @25°C

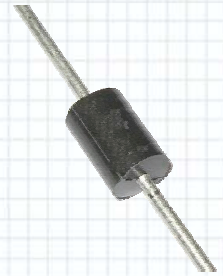
TYPE NUMBER	REVERSE STAND-OFF VOLTAGE V _{WM} Volts	MINIMUM BREAKDOWN VOLTAGE V _{BR} MIN @ I _{BR} Volts	BREAKDOWN CURRENT I _{BR} mA	MAXIMUM REVERSE LEAKAGE I _D @ V _{WM} µA	MAXIMUM CLAMPING VOLTAGE @I _{PP} V _C Volts	PEAK PULSE CURRENT I _{PP} Amps	MAX CAP @ 0 Volts f=1 MHZ pF	Working Inverse Blocking Voltage V _{WIB} @ V _{WIB} Volts	Inverse Blocking Leakage Current I _{IB} @ V _{WIB} µA	Peak Inverse Blocking Voltage V _{PIB} Volts
LCE6.5A	6.5	7.22	10	1000	11.2	100	100	75	10	100
LCE7.0A	7.0	7.78	10	500	12.0	100	100	75	10	100
LCE7.5A	7.5	8.33	10	250	12.9	100	100	75	10	100
LCE8.0A	8.0	8.89	1	100	13.6	100	100	75	10	100
LCE8.5A	8.5	9.44	1	50	14.4	100	100	75	10	100
LCE9.0A	9.0	10.0	1	10	15.4	97	100	75	10	100
LCE10A	10	11.1	1	5	17.0	88	100	75	10	100
LCE11A	11	12.2	1	5	18.2	82	100	75	10	100
LCE12A	12	13.3	1	5	19.9	75	100	75	10	100
LCE13A	13	14.4	1	5	21.5	70	100	75	10	100
LCE14A	14	15.6	1	5	23.2	65	100	75	10	100
LCE15A	15	16.7	1	5	24.4	61	100	75	10	100
LCE16A	16	17.8	1	5	26.0	57	100	75	10	100
LCE17A	17	18.9	1	5	27.6	54	100	75	10	100
LCE18A	18	20.0	1	5	29.2	51	100	75	10	100
LCE20A	20	22.2	1	5	32.4	46	100	75	10	100
LCE22A	22	24.4	1	5	35.5	42	100	75	10	100
LCE24A	24	26.7	1	5	38.9	39	100	75	10	100
LCE26A	26	28.9	1	5	42.1	36	100	75	10	100
LCE28A	28	31.1	1	5	45.4	33	100	75	10	100
LCE30A	30	33.3	1	5	48.4	31	100	75	10	100
LCE33A	33	36.7	1	5	53.3	28.1	100	75	10	100
LCE36A	36	40.0	1	5	58.1	25.8	100	75	10	100
LCE40A	40	44.4	1	5	64.5	23.3	100	75	10	100
LCE43A	43	47.8	1	5	69.4	21.6	100	150	10	200
LCE45A	45	50.0	1	5	72.7	20.6	100	150	10	200
LCE48A	48	53.3	1	5	77.4	19.4	100	150	10	200
LCE51A	51	56.7	1	5	82.4	18.2	100	150	10	200
LCE54A	54	60.0	1	5	87.1	17.2	100	150	10	200
LCE58A	58	64.4	1	5	93.6	16.0	100	150	10	200
LCE60A	60	66.7	1	5	96.8	15.5	90	150	10	200
LCE64A	64	71.1	1	5	103	14.6	90	150	10	200
LCE70A	70	77.8	1	5	113	13.3	90	150	10	200
LCE75A	75	83.3	1	5	121	12.4	90	150	10	200
LCE80A	80	88.7	1	5	129	11.6	90	150	10	200
LCE90A	90	100	1	5	146	10.3	90	300	10	200
LCE100A	100	111	1	5	162	9.3	90	300	10	200
LCE110A	110	122	1	5	178	8.4	90	300	10	400
LCE120A	120	133	1	5	193	7.8	90	300	10	400
LCE130A	130	144	1	5	209	7.2	90	300	10	400
LCE150A	150	167	1	5	243	6.2	90	300	10	400
LCE160A	160	178	1	5	259	5.8	90	300	10	400
LCE170A	170	189	1	5	275	5.4	90	300	10	400

5KP/15KP Axial Devices

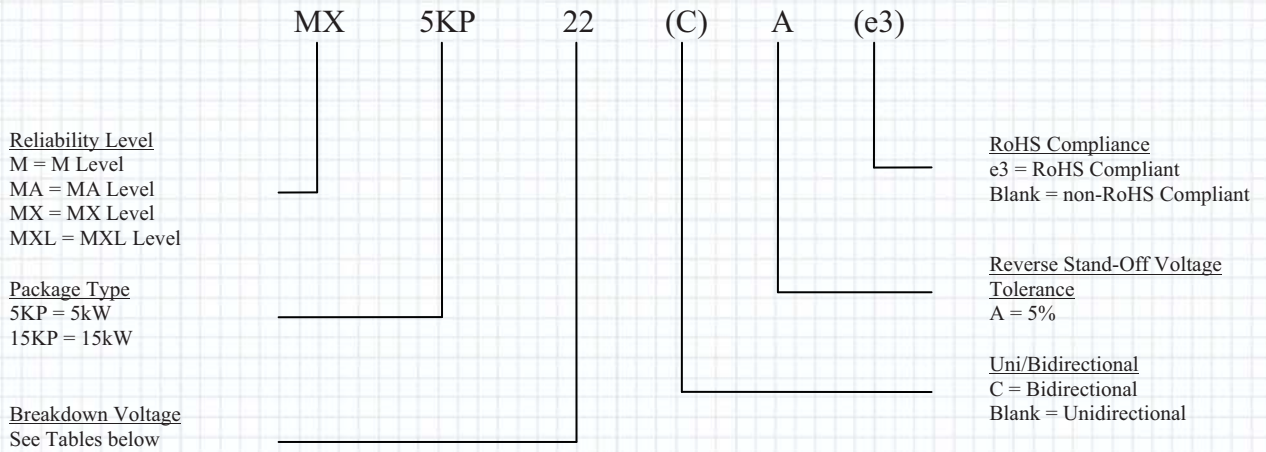
FEATURES

- Peak Pulse Power at 10/1000µS
 - 5KP series – 5kW
 - 15KP series – 15kW
- Standoff voltage
 - 5KP series – 5V to 110V
 - 15KP series – 22V to 280V
- Operational and Storage Temperature of -65°C to +150°C
- Unidirectional and Bidirectional construction available

APPEARANCE



PART NOMENCLATURE

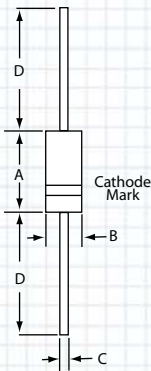


Sample Part Numbers

MA5KP36Ae3 – MA screened axial 5kW device, 36V reverse stand-off, uni-directional, 5% tolerance and RoHS compliant

MXL15KPA40CA – MXL screened axial 15kW device, 40V breakdown, bi-directional, 5% tolerance and non-RoHS compliant

PACKAGE DIMENSIONS



DIM	5KP/15KP (Case 5A)			
	INCHES		MM	
	MIN	MAX	MIN	MAX
A	.365	.385	9.271	9.779
B	.235	.255	5.969	6.477
C	.047	.053	1.194	1.346
D	.75	-	19.05	-

5KP/15KP

5KP 5KW, ALL ELECTRICAL CHARACTERISTICS @25°C

TYPE NUMBER	REVERSE STAND-OFF VOLTAGE V_{WM} Volts	MINIMUM BREAKDOWN VOLTAGE V_{BR} MIN @ I_{BR} Volts	BREAKDOWN CURRENT I_{BR} mA	MAXIMUM CLAMPING VOLTAGE @ I_{PP} V_C Volts	PEAK PULSE CURRENT I_{PP} Amps	MAXIMUM STANDBY CURRENT @ V_{WM} I_D μA
5KP5.0A	5.0	6.40	50	9.2	543	2000*
5KP6.0A	6.0	6.67	50	10.3	485	5000
5KP6.5A	6.5	7.22	50	11.2	447	2000
5KP7.0A	7.0	7.78	50	12.0	417	1000
5KP7.5A	7.5	8.33	5	12.9	388	250
5KP8.0A	8.0	8.89	5	13.6	367	150
5KP8.5A	8.5	9.44	5	14.4	347	50
5KP9.0A	9.0	10.0	5	15.4	325	20
5KP10A	10	11.1	5	17.0	294	15
5KP11A	11	12.2	5	18.2	274	10
5KP12A	12	13.3	5	19.9	251	10
5KP13A	13	14.4	5	21.5	232	10
5KP14A	14	15.6	5	23.2	215	10
5KP15A	15	16.7	5	24.4	206	10
5KP16A	16	17.8	5	26.0	192	10
5KP17A	17	18.9	5	27.6	181	10
5KP18A	18	20.0	5	29.2	172	10
5KP20A	20	22.2	5	32.4	154	10
5KP22A	22	24.4	5	35.5	141	10
5KP24A	24	26.7	5	38.9	128	10
5KP26A	26	28.9	5	42.1	119	10
5KP28A	28	31.1	5	45.5	110	10
5KP30A	30	33.3	5	48.4	103	10
5KP33A	33	36.7	5	53.3	94	10
5KP36A	36	40.0	5	58.1	86	10
5KP40A	40	44.4	5	64.5	78	10
5KP43A	43	47.8	5	69.4	72	10
5KP45A	45	50.0	5	72.7	69	10
5KP48A	48	53.3	5	77.4	65	10
5KP51A	51	56.7	5	82.4	61	10
5KP54A	54	60.0	5	87.1	57	10
5KP58A	58	64.4	5	93.6	53	10
5KP60A	60	66.7	5	96.8	52	10
5KP64A	64	71.1	5	103.0	49	10
5KP70A	70	77.8	5	113	44	10
5KP75A	75	83.3	5	121	41	10
5KP78A	78	86.7	5	126	40	10
5KP85A	85	94.4	5	137	36	10
5KP90A	90	100	5	146	34	10
5KP100A	100	111	5	162	31	10
5KP110A	110	122	5	177	28	10

15KP 15KW, ALL ELECTRICAL CHARACTERISTICS @25°C

TYPE NUMBER	REVERSE STAND-OFF VOLTAGE V_{WM} Volts	MINIMUM BREAKDOWN VOLTAGE V_{BR} MIN @ I_{BR} Volts	BREAKDOWN CURRENT I_{BR} mA	MAXIMUM CLAMPING VOLTAGE @ I_{PP} V_C Volts	PEAK PULSE CURRENT I_{PP} Amps	MAXIMUM STANDBY CURRENT @ V_{WM} I_D μA
15KP22A	22	24.4	10	37.1	404	500
15KP24A	24	26.7	5	40.7	369	150
15KP26A	26	28.9	5	44.0	341	50
15KP28A	28	31.1	5	47.5	316	25
15KP30A	30	33.3	5	50.7	296	15
15KP33A	33	36.7	5	54.8	274	10
15KP36A	36	40.0	5	59.7	251	10
15KP40A	40	44.4	5	65.8	228	10
15KP43A	43	47.8	5	69.7	215	10
15KP45A	45	50.0	5	73.0	205	10
15KP48A	48	53.3	5	77.7	193	10
15KP51A	51	56.7	5	82.8	181	10
15KP54A	54	60.0	5	87.5	171	10
15KP58A	58	64.4	5	94.0	160	10
15KP60A	60	66.7	5	97.3	154	10
15KP64A	64	71.7	5	104	144	10
15KP70A	70	77.8	5	114	132	10
15KP75A	75	83.3	5	122	123	10
15KP78A	78	86.7	5	126	119	10
15KP85A	85	94.4	5	137	109	10
15KP90A	90	100	5	146	103	10
15KP100A	100	111	5	162	93	10
15KP110A	110	122	5	178	84	10
15KP120A	120	133	5	193	78	10
15KP130A	130	144	5	209	72	10
15KP150A	150	167	5	243	62	10
15KP160A	160	178	5	259	58	10
15KP170A	170	189	5	275	55	10
15KP180A	180	200	5	291	52	10
15KP200A	200	222	5	322	47	10
15KP220A	220	245	5	356	42	10
15KP240A	240	267	5	388	39	10
15KP260A	260	289	5	419	36	10
15KP280A	280	311	5	452	33	10

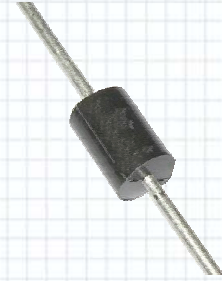
5KP/1.5KP

RT100KP Axial Devices

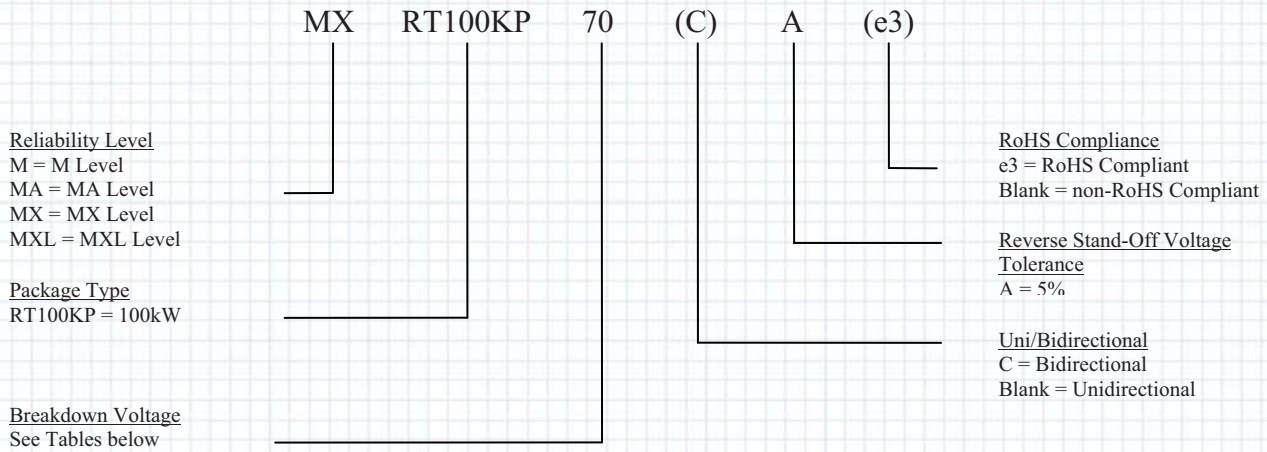
FEATURES

- 100kW Peak Pulse Power at 6.4/69μS
- Standoff voltage of 40V to 400V
- Operational and Storage Temperature of -65°C to +150°C
- Unidirectional and Bidirectional construction available
- Designed for aircraft applications requiring high power transient protection with a comparatively small axial-package size

APPEARANCE



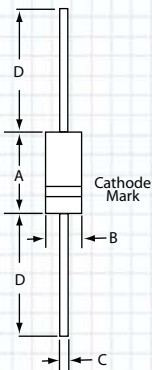
PART NOMENCLATURE



Sample Part Number

MXRT100KP70CAe3 – MX screened axial 100kW device, 70V stand-off, bi-directional, 5% tolerance and RoHS compliant.

PACKAGE DIMENSIONS



DIM	RT100KP (Case 5A)			
	INCHES		MM	
	MIN	MAX	MIN	MAX
A	.365	.385	9.271	9.779
B	.235	.255	5.969	6.477
C	.047	.053	1.194	1.346
D	.75	-	19.05	-

RT100KP

RT100KP 100kW, ALL ELECTRICAL CHARACTERISTICS @25°C

TYPE NUMBER	REVERSE STAND-OFF VOLTAGE V_{WM} Volts	MINIMUM BREAKDOWN VOLTAGE V_{BR} MIN @ I_{BR} Volts	BREAKDOWN CURRENT I_{BR} mA	MAXIMUM CLAMPING VOLTAGE @ I_{PP} V_C Volts	PEAK PULSE CURRENT I_{PP} Amps	MAXIMUM STANDBY CURRENT @ V_{WM} I_D μA
RT100KP40A	40	44.4	20	78.6	1273 *	1500
RT100KP43A	43	47.8	10	84.5	1184 *	500
RT100KP45A	45	50.0	5	88.5	1130 *	150
RT100KP48A	48	53.3	5	94.3	1061 *	150
RT100KP51A	51	56.7	5	101	990 *	50
RT100KP54A	54	60.0	5	106	943 *	25
RT100KP58A	58	64.4	5	114	878	15
RT100KP60A	60	66.7	5	118	848	15
RT100KP64A	64	71.1	5	126	795	10
RT100KP70A	70	77.8	5	138	725	10
RT100KP75A	75	83.3	5	147	680	10
RT100KP78A	78	86.7	5	153	655	10
RT100KP85A	85	94.4	5	166	602	10
RT100KP90A	90	100	5	178	563	10
RT100KP100A	100	111	5	197	508	10
RT100KP110A	110	122	5	216	463	10
RT100KP120A	120	133	5	235	426	10
RT100KP130A	130	144	5	254	394	10
RT100KP150A	150	167	5	296	338	10
RT100KP160A	160	178	5	315	318	10
RT100KP170A	170	189	5	334	300	10
RT100KP180A	180	200	5	354	283	10
RT100KP200A	200	222	5	392	256	10
RT100KP220A	220	245	5	434	231	10
RT100KP250A	250	278	5	493	203	10
RT100KP260A	260	289	5	512	196	10
RT100KP280A	280	311	5	552	181	10
RT100KP300A	300	333	5	590	170	10
RT100KP350A	350	389	5	690	145	10
RT100KP400A	400	444	5	787	127	10

RT100KP

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NOTES

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