

Transient Voltage Suppression Diodes

Surface Mount - 600W >P6KE series

DESCRIPTION

The P6KE series is designed specifically to protect sensitive electronic equipment from voltage transients induced by lightning and other transient voltage events.



FEATURES

- ◆ 600W peak pulsepower capability at 10 x 1000 μ s waveform, repetition rate (duty cycle): 0.01%
- ◆ Glass Passivated chip junction
- ◆ For surface mounted applications to optimize board space
- ◆ Low profile package
- ◆ Built-in strain relief
- ◆ Low incremental surge resistance
- ◆ Excellent clamping capability
- ◆ Plastic package has UL flammability classification 94V-0
- ◆ Fast response time: typically less than 1.0ps from 0 Volts to BV min
- ◆ Typical IR less than 1uA above 13V
- ◆ High temperature soldering: 260°C/40 seconds at terminals
- ◆ IEC-61000-4-2 ESD 15KV(Air),8KV(Contact)
- ◆ ESD protection of data lines in accordance with IEC 61000-4-2(IEC801-2)
- ◆ EFT protection of data lines in accordance with IEC61000-4-4(IEC801-4)

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APPLICATIONS

TVS devices are ideal for the protection of I/O Interfaces, VCC bus and other vulnerable circuits used in Telecom, Computer, Industrial and Consumer electronic applications.

Maximum Ratings and Electrical Characteristics

(TA=25°C unless otherwise noted)

Parameter	Symbol	Value	Unit
Peak Pulse Power Dissipation at TA=25°C by 10x1000µs waveform (Fig.2)(Note 1) (Note 2)	P _{PPM}	600	W
Power Dissipation on infinite heat sink at TA=50°C	P _D	5.0	W
Peak Forward Surge Current, 8.3ms Single Half Sine Wave Unidirectional only(Note 3)	I _{FSM}	100	A
Maximum Instantaneous Forward Voltage at 100A for Unidirectional only	V _F	3.5V/5.0	V
Operating Junction and Storage Temperature Range	T _J , T _{STG}	-55 to +150	°C
Typical Thermal Resistance Junction to Lead	R _{uJL}	20	°C/W
Typical Thermal Resistance Junction to Ambient	R _{uJA}	75	°C/W

Notes:

1. Non-repetitive current pulse, per Fig.3 and derated above TA=25°C per Fig. 2.
2. V_F<3.5V for V_{BR}≤200V and V_F<6.5V for V_{BR}≥201V.
3. Measured on 8.3ms single half sine wave or equivalent square wave for unidirectional device only, duty cycle=4 per minute maximum.

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Electrical Characteristics

PART NUMBER		REVERSE STAND-OFF VOLTAGE	BREAKDOWN VOLTAGE VBR(V)MAX. @IT		TEST CURRENT	REVERSE LEAKAGE @VRWM	PEAK PULSE CURRENT	MAXIMUM CLAMPING VOLTAGE @Ipp
BI- POLAR	UNI-POLAR	VRWM (V)	VBR MIN(V)	VBR MAX(V)	IT (mA)	IR (μA)	Ipp (A)	Vc (v)
P6KE6.8CA	P6KE6.8A	5.80	6.45	7.14	10	1000	57.14	10.5
P6KE7.5CA	P6KE7.5A	6.40	7.13	7.88	10	500	53.10	11.3
P6KE8.2CA	P6KE8.2A	7.02	7.79	8.61	10	200	49.59	12.1
P6KE9.1CA	P6KE9.1A	7.78	8.65	9.50	1	50	44.78	13.4
P6KE10CA	P6KE10A	8.55	9.50	10.50	1	10	41.38	14.5
P6KE11CA	P6KE11A	9.40	10.50	11.60	1	1	38.46	15.6
P6KE12CA	P6KE12A	10.20	11.40	12.60	1	1	35.93	16.7
P6KE13CA	P6KE13A	11.10	12.40	13.70	1	1	32.97	18.2
P6KE15CA	P6KE15A	12.80	14.30	15.80	1	1	28.30	21.2
P6KE16CA	P6KE16A	13.60	15.20	16.80	1	1	26.67	22.5
P6KE18CA	P6KE18A	15.30	17.10	18.90	1	1	23.81	25.2
P6KE20CA	P6KE20A	17.10	19.00	21.00	1	1	21.66	27.7
P6KE22CA	P6KE22A	18.80	20.90	23.10	1	1	19.61	30.6
P6KE24CA	P6KE24A	20.50	22.80	25.20	1	1	18.07	33.2
P6KE27CA	P6KE27A	23.10	25.70	28.40	1	1	16.00	37.5
P6KE30CA	P6KE30A	25.60	28.50	31.50	1	1	14.49	41.4
P6KE33CA	P6KE33A	28.20	31.40	34.70	1	1	13.13	45.7
P6KE36CA	P6KE36A	30.80	34.20	37.80	1	1	12.02	49.9
P6KE39CA	P6KE39A	33.30	37.10	41.00	1	1	11.13	53.9
P6KE43CA	P6KE43A	36.80	40.90	45.20	1	1	10.12	59.3
P6KE47CA	P6KE47A	40.20	44.70	49.40	1	1	9.26	64.8
P6KE51CA	P6KE51A	43.60	48.5	53.60	1	1	8.56	70.1
P6KE56CA	P6KE56A	47.80	53.20	58.80	1	1	7.79	77.0
P6KE62CA	P6KE62A	53.00	58.90	65.10	1	1	7.06	85.0
P6KE68CA	P6KE68A	58.10	64.60	71.40	1	1	6.52	92.0
P6KE75CA	P6KE75A	64.10	71.30	78.80	1	1	5.83	103.0
P6KE82CA	P6KE82A	70.10	77.90	86.10	1	1	5.31	113.0
P6KE91CA	P6KE91A	77.80	86.50	95.50	1	1	4.80	125.0
P6KE100CA	P6KE100A	84.00	95.00	105.00	1	1	4.38	137.0
P6KE110CA	P6KE110A	94.00	105.00	116.00	1	1	3.95	152.0
P6KE120CA	P6KE120A	102.00	114.00	126.00	1	1	3.95	152.0

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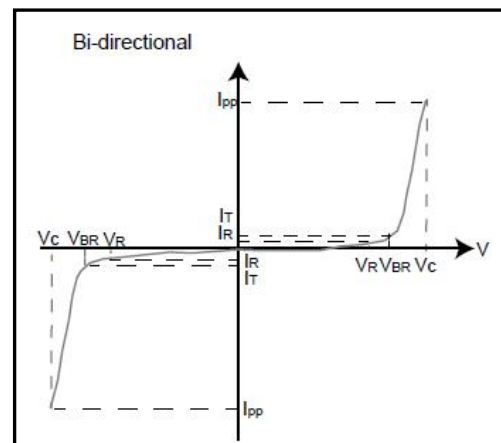
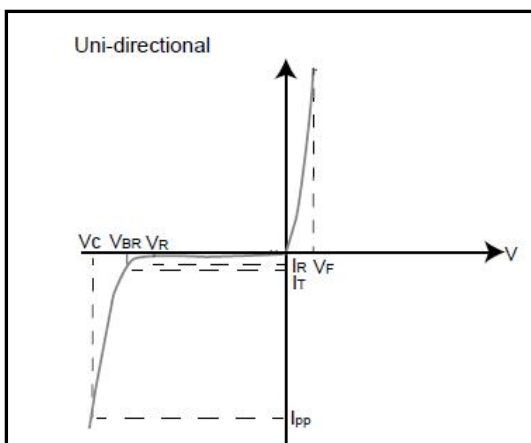
PART NUMBER		REVERSE STAND-OFF VOLTAGE	BREAKDOWN VOLTAGE VBR(V)MAX. @IT		TEST CURRENT	REVERSE LEAKAGE @VRWM	PEAK PULSE CURRENT	MAXIMUM CLAMPING VOLTAGE @Ipp
BI- POLAR	UNI-POLAR	VRWM (V)	VBR MIN(V)	VBR MAX(V)	IT (mA)	IR (μA)	Ipp (A)	Vc (v)
P6KE130CA	P6KE130A	111.00	124.00	137.00	1	1	3.35	179.0
P6KE150CA	P6KE150A	128.00	143.00	158.00	1	1	2.90	207.0
P6KE160CA	P6KE160A	136.00	152.00	168.00	1	1	2.74	219.0
P6KE170CA	P6KE170A	145.00	162.00	179.00	1	1	2.56	234.0
P6KE180CA	P6KE180A	154.00	171.00	189.00	1	1	2.44	246.0
P6KE200CA	P6KE200A	171.00	190.00	210.00	1	1	2.19	274.0
P6KE220CA	P6KE220A	185.00	209.00	231.00	1	1	1.83	328.0
P6KE300CA	P6KE300A	256.00	285.00	315.00	1	1	1.45	414.0
P6KE350CA	P6KE350A	300.00	332.00	368.00	1	1	1.24	482.0
P6KE400CA	P6KE400A	342.00	380.00	420.00	1	1	1.09	548.0
P6KE440CA	P6KE440A	376.00	418.00	462.00	1	1	1.00	602.0
P6KE480CA	P6KE480A	408.00	456.00	504.00	1	1	0.91	658.0
P6KE520CA	P6KE520A	442.00	494.00	546.00	1	1	0.86	710.0
P6KE530CA	P6KE530A	450.00	503.50	556.5	1	1	0.83	725.0
P6KE540CA	P6KE540A	459.00	513.00	567.00	1	1	0.81	740.0
P6KE550CA	P6KE550A	467.00	522.5	577.50	1	1	0.79	760.0

Notes:

For bidirectional type having VRWM of 20 volts and less, the IR limit is double.

For parts without A (VBR is $\pm 10\%$ and VC is 5% higher than A parts

I-V Curve Characteristics



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RATINGS AND CHARACTERISTIC CURVES (T_A=25°C unless otherwise noted)

Figure 1 - Peak Pulse Power Rating Curve

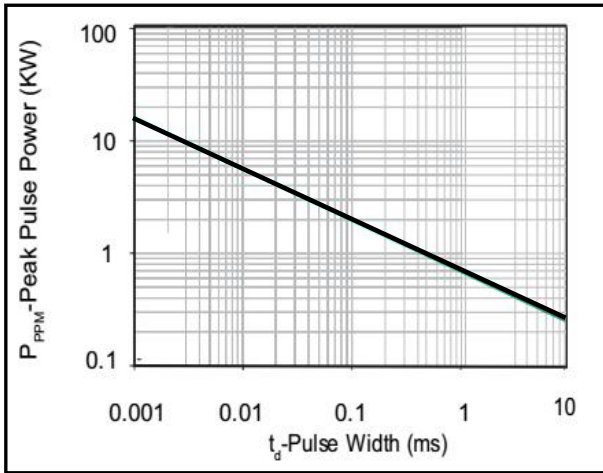


Figure 2 - Pulse Derating Curve

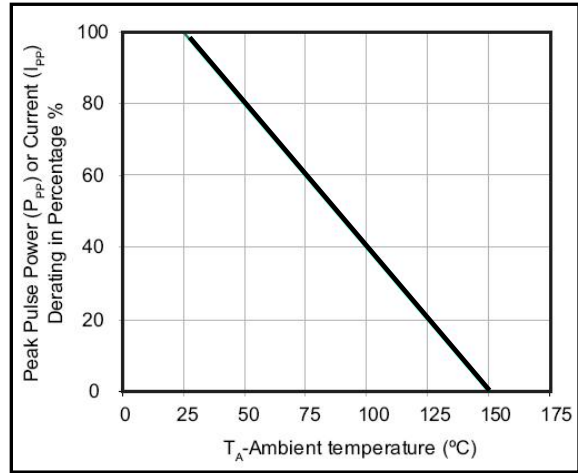


Figure 3 - Pulse Waveform

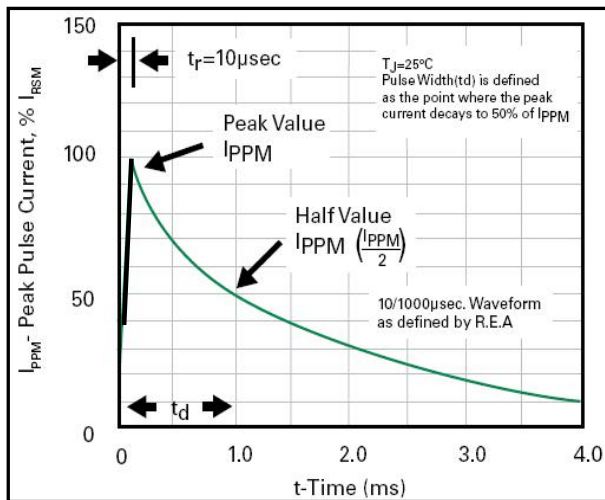


Figure 4 - Typical Junction Capacitance

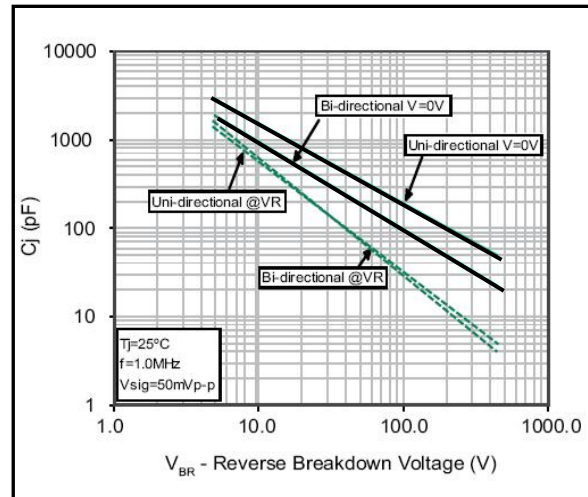


Figure 5 - Steady State Power Dissipation Derating Curve

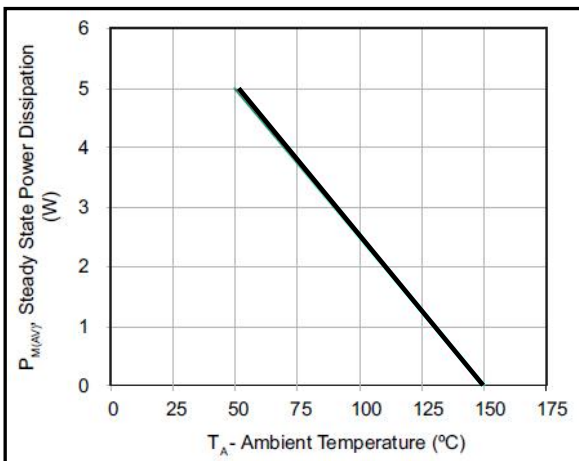
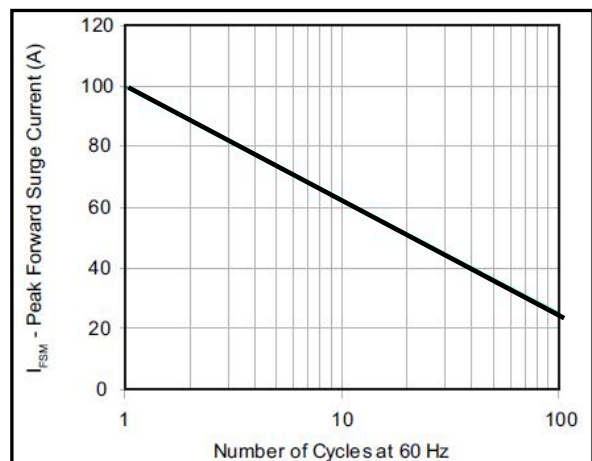


Figure 6 - Maximum Non-Repetitive Forward Surge Current Uni-Directional Only



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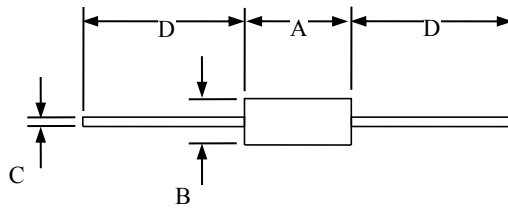
PART NUMBERING SYSTEM

P6KE **XXX** **C** **A**

(1) (2) (3) (4)

- (1) SERIES.
 (2) VR VOLTAGE.
 (3) BI-DIRECTIONAL AND UNI-DIRECTIONAL.
 (4) 5% VOLTAGE TOLERANCE.

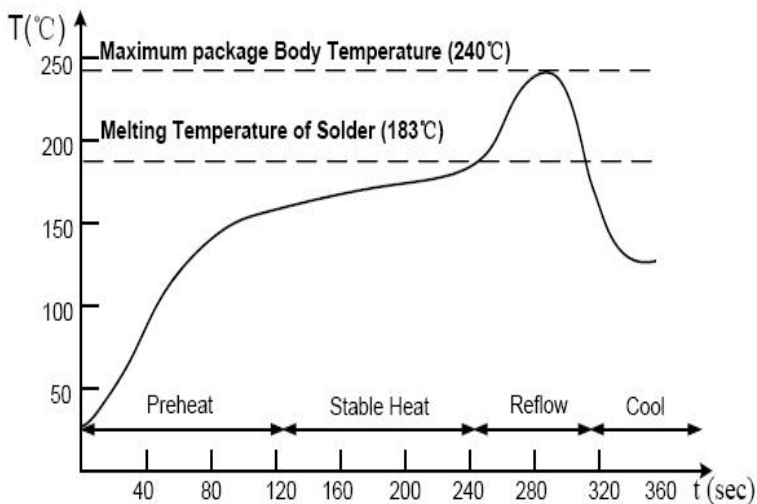
PRODUCT DIMENSIONS



DO-15

Dimensio n	Inches		Millimeters		NOTE
	MIN	MAX	MIN	MAX	
A	0.230	0.300	5.80	7.60	
B	0.104	0.140	2.60	3.60	ϕ
C	0.026	0.034	0.70	0.90	ϕ
D	1.000		25.40		

SOLDER REFLOW RECOMMENDATIONS



- Recommended reflow methods: IR, vapor phase oven, hot air oven, wave solder.
- The device can be exposed to a maximum temperature of 265°C for 10 seconds.
- Devices can be cleaned using standard industry methods and solvents.

Notes: If reflow temperatures exceed the recommended profile, devices may not meet the performance requirements.

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SUMMARY OF PACKING OPTIONS

Package Type	Packaging Option	Packing Quantity	Packaging Specification
D0-15 	BOX -PACKED	2000PCS	MCMT Concord Packing Spec. DM-0016