

## Transient Voltage Suppressors (TVS) Data Sheet

### Features

- Glass passivated junction
- Low zener impedance
- Excellent clamping capability
- 600W peak pulse power capability at 10/1000 $\mu$ s waveform, repetition rate (duty cycle): 0.01%
- Fast response time
- Typical  $I_R$  less than 1 $\mu$ A above 12V.
- High Temperature soldering guaranteed: 265 $^{\circ}$ C/10 seconds/.375", (9.5mm) lead length, 5lbs (2.3kg) tension
- Plastic package has underwriters laboratory flammability 94V-0
- Meets MSL level 1, per J-STD-020.
- Safety certification: UL: E244458



### Mechanical Data

- Case: JEDEC DO-15 Moulded plastic
- Terminal: Axial leads, solderable per MIL-STD-750, Method 2026
- Polarity: Color band denotes cathode except bi-directional models
- Mounting Position: Any
- Weight: 0.42g

### Applications

- I/O interface
- AC/DC power supply
- Low frequency signal transmission line (RS232, RS485, etc.)

### Maximum Ratings and Characteristics

Ratings at 25 $^{\circ}$ C ambient temperature unless otherwise specified.

Rating	Symbol	Value	Units
Peak pulse power dissipation at 10/1000 $\mu$ s waveform (Note1, Fig.1)	$P_{PPM}$	Minimum 600	Watts
Peak pulse current of at 10/1000 $\mu$ s waveform (Note 1, Fig.3)	$I_{PPM}$	See Table	Amps
Steady state power dissipation at $T_L=75^{\circ}$ C (Fig.5)	$P_{M(AV)}$	5.0	Watts
Peak forward surge current, 8.3ms single half sine-wave superimposed on rated load, (JEDEC Method) (Note2, Fig.6)	$I_{FSM}$	100	Amps
Operating junction and Storage Temperature Range.	$T_J, T_{STG}$	-55 to +175	$^{\circ}$ C
Typical thermal resistance junction to lead	$R_{\theta JL}$	20	$^{\circ}$ C/W
Typical thermal resistance junction to ambient	$R_{\theta JA}$	75	$^{\circ}$ C/W

Notes: 1. Non-repetitive current pulse, per Fig.3 and derated above  $T_A=25^{\circ}$ C per Fig.2.

2. 8.3ms single half sine-wave, or equivalent square wave, duty cycle=4 pulses per minutes maximum.

**Dimensions (DO-204AC/DO-15)**

	Symbol	Millimeters		Inches	
		Min.	Max.	Min.	Max.
	L	25.40	-	1.000	-
	T	5.80	7.60	0.230	0.300
	d	2.60	3.60	0.104	0.140
s	0.71	0.86	0.028	0.034	

**Electrical Characteristics ( $T_A=25^{\circ}\text{C}$ )**

Part Number		Reverse Stand-Off Voltage	Breakdown Voltage @ $I_T$	Test Current	Maximum Clamping Voltage @ $I_{PP}$	Peak Pulse Current	Reverse Leakage @ $V_{RWM}$
Unidirectional	Bidirectional	$V_{RWM}(V)$	$V_{BR}(V)$	$I_T(mA)$	$V_C(V)$	$I_{PP}(A)$	$I_R(\mu A)$
P6KE6.8A	P6KE6.8CA	5.80	6.45~7.14	10	10.5	58.1	1000
P6KE7.5A	P6KE7.5CA	6.40	7.13~7.88	10	11.3	54.0	500
P6KE8.2A	P6KE8.2CA	7.02	7.79~8.61	10	12.1	50.4	200
P6KE9.1A	P6KE9.1CA	7.78	8.65~9.55	1	13.4	45.5	50
P6KE10A	P6KE10CA	8.55	9.50~10.50	1	14.5	42.1	10
P6KE11A	P6KE11CA	9.40	10.50~11.60	1	15.6	39.1	5
P6KE12A	P6KE12CA	10.20	11.40~12.60	1	16.7	36.5	5
P6KE13A	P6KE13CA	11.10	12.40~13.70	1	18.2	33.5	1
P6KE15A	P6KE15CA	12.80	14.30~15.80	1	21.2	28.8	1
P6KE16A	P6KE16CA	13.60	15.20~16.80	1	22.5	27.1	1
P6KE18A	P6KE18CA	15.30	17.10~18.90	1	25.2	24.2	1
P6KE20A	P6KE20CA	17.10	19.00~21.00	1	27.7	22.0	1
P6KE22A	P6KE22CA	18.80	20.90~23.10	1	30.6	19.9	1
P6KE24A	P6KE24CA	20.50	22.80~25.20	1	33.2	18.4	1
P6KE27A	P6KE27CA	23.10	25.70~28.40	1	37.5	16.3	1
P6KE30A	P6KE30CA	25.60	28.50~31.50	1	41.4	14.7	1
P6KE33A	P6KE33CA	28.20	31.40~34.70	1	45.7	13.3	1
P6KE36A	P6KE36CA	30.80	34.20~37.80	1	49.9	12.2	1
P6KE39A	P6KE39CA	33.30	37.10~41.00	1	53.9	11.3	1
P6KE43A	P6KE43CA	36.80	40.90~45.20	1	59.3	10.3	1

**Electrical Characteristics ( $T_A=25^{\circ}\text{C}$ )**

Part Number		Reverse Stand-Off Voltage	Breakdown Voltage @ $I_T$	Test Current	Maximum Clamping Voltage @ $I_{PP}$	Peak Pulse Current	Reverse Leakage @ $V_{RWM}$
Unidirectional	Bidirectional	$V_{RWM}(V)$	$V_{BR}(V)$	$I_T(mA)$	$V_C(V)$	$I_{PP}(A)$	$I_R(\mu A)$
P6KE47A	P6KE47CA	40.20	44.70~49.40	1	64.8	9.4	1
P6KE51A	P6KE51CA	43.60	48.50~53.60	1	70.1	8.7	1
P6KE56A	P6KE56CA	47.80	53.20~58.80	1	77.0	7.9	1
P6KE62A	P6KE62CA	53.00	58.90~65.10	1	85.0	7.2	1
P6KE68A	P6KE68CA	58.10	64.60~71.40	1	92.0	6.6	1
P6KE75A	P6KE75CA	64.10	71.30~78.80	1	103.0	5.9	1
P6KE82A	P6KE82CA	70.10	77.90~86.10	1	113.0	5.4	1
P6KE91A	P6KE91CA	77.80	86.50~95.50	1	125.0	4.9	1
P6KE100A	P6KE100CA	85.50	95.00~105.00	1	137.0	4.5	1
P6KE110A	P6KE110CA	94.00	105.00~116.00	1	152.0	4.0	1
P6KE120A	P6KE120CA	102.00	114.00~126.00	1	165.0	3.7	1
P6KE130A	P6KE130CA	111.00	124.00~137.00	1	179.0	3.4	1
P6KE150A	P6KE150CA	128.00	143.00~158.00	1	207.0	2.9	1
P6KE160A	P6KE160CA	136.00	152.00~168.00	1	219.0	2.8	1
P6KE170A	P6KE170CA	145.00	162.00~179.00	1	234.0	2.6	1
P6KE180A	P6KE180CA	154.00	171.00~189.00	1	246.0	2.5	1
P6KE200A	P6KE200CA	171.00	190.00~210.00	1	274.0	2.2	1
P6KE220A	P6KE220CA	185.00	209.00~231.00	1	328.0	1.9	1
P6KE250A	P6KE250CA	214.00	237.00~263.00	1	344.0	1.8	1
P6KE300A	P6KE300CA	256.00	285.00~315.00	1	414.0	1.5	1
P6KE350A	P6KE350CA	300.00	332.00~368.00	1	482.0	1.3	1
P6KE400A	P6KE400CA	342.00	380.00~420.00	1	548.0	1.1	1
P6KE440A	P6KE440CA	376.00	418.00~462.00	1	602.0	1.04	1
P6KE480A	P6KE480CA	408.00	456.00~504.00	1	658.0	0.9	1
P6KE510A	P6KE510CA	434.00	485.00~535.00	1	698.0	0.9	1
P6KE530A	P6KE530CA	450.00	503.50~556.50	1	725.0	0.8	1
P6KE540A	P6KE540CA	459.00	513.00~567.00	1	740.0	0.8	1
P6KE550A	P6KE550CA	467.00	522.50~577.50	1	760.0	0.8	1
P6KE600A	P6KE600CA	512.00	570.00~630.00	1	828.0	0.75	1

Notes: For bidirectional type having  $V_{RWM}$  of 10V and less, the  $I_R$  limit is double.

**Ratings and Characteristic Curves ( $T_A=25^\circ\text{C}$  unless otherwise noted)**

**Figure 1. Peak Pulse Power Rating Curve**



**Figure 2. Pulse Derating Curve**



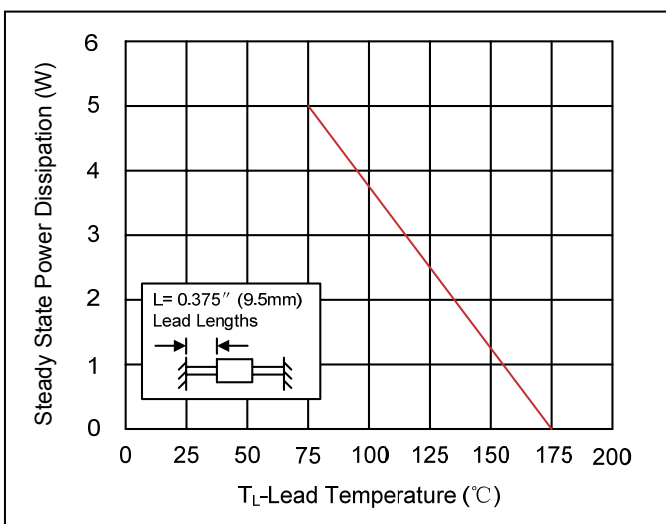
**Figure 3. Pulse Waveform**



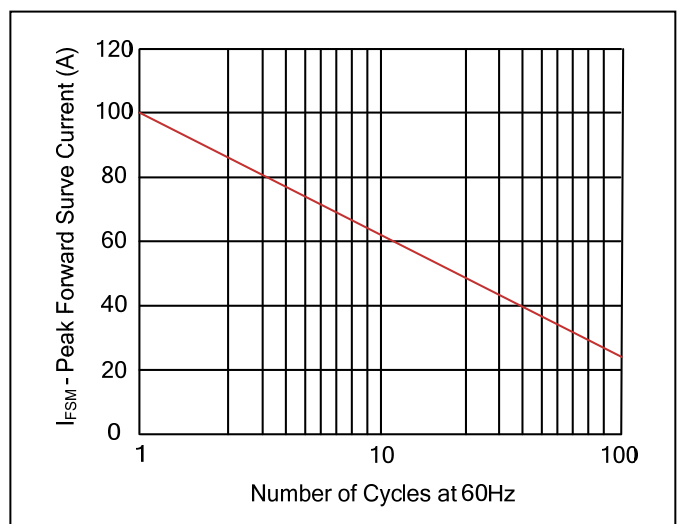
**Figure 4. Typical Junction Capacitance**



**Figure 5. Steady State Power Dissipation Derating Curve**



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



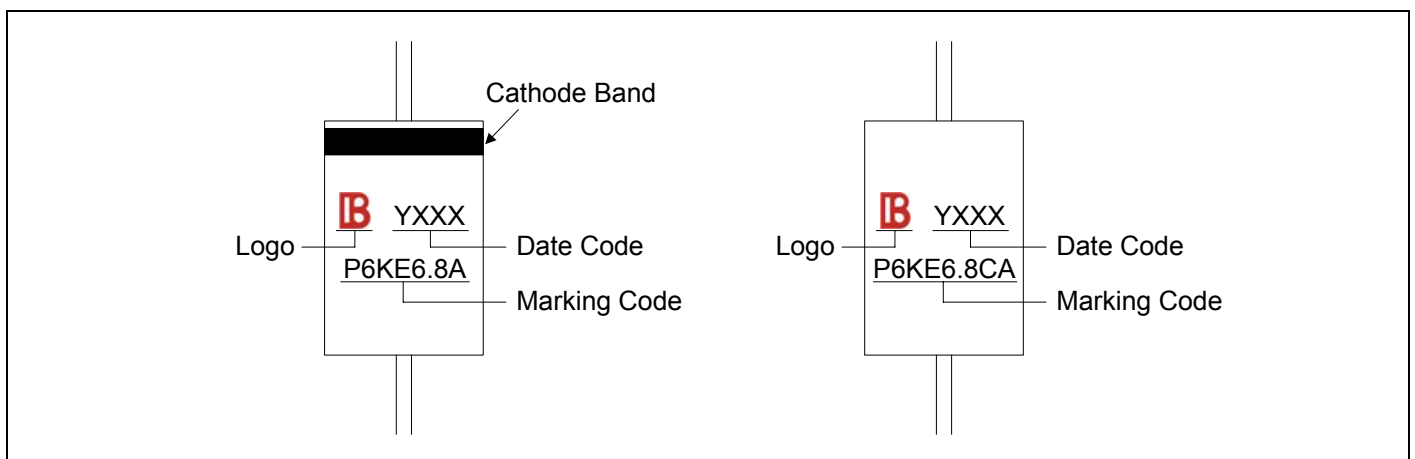
**Recommended Soldering Conditions**

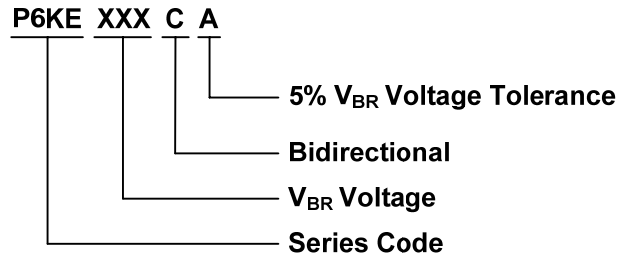
Wave Soldering



Item	Conditions
Peak Temperature	265°C
Dipping Time	10 seconds
Soldering	1 time

**Marking Code**





**Packaging**

Tape	Symbol	Dimension (mm)
	A	5.0±0.5
	B	53.0±1.0
	Z	1.2Max.
	T	6.0±0.4
	E	0.8Max.
	L1-L2	1.0Max.
<p>Box</p>	L	250.0±5.0
	W	75.0±5.0
	H	114.0±5.0
	Quantity: 2000PCS	
<p>Reel</p>	D	330.0±3.0
	D0	16.4±2.0
	D1	86.0±2.0
	W1	76.0±3.0
	Quantity: 4000PCS	

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