

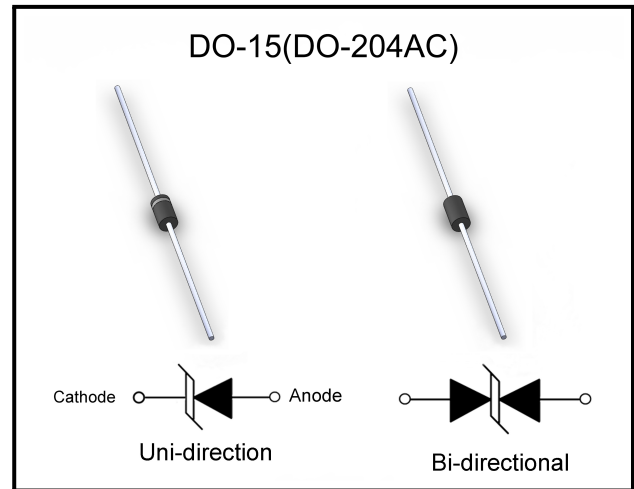
# P6KE Series

Transient Voltage Suppressor

## Features

- Excellent clamping capability
- Low leakage current
- Low capacitance
- High surge capability
- Glass passivated chip
- Epoxy resin package
- Built-in strain relief
- Will not fatigue
- RoHS Compliant
- Fast response time: typically less than 1.0ps from 0 Volts to VBR min

## Package



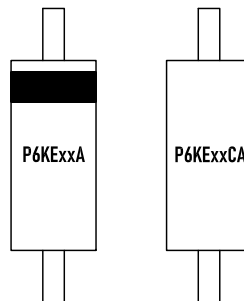
## Mechanical Characteristics

- Package: DO-15 plastic package.
- Lead Finish: Matte Tin
- Case Material: Epoxy Molding Compound.
- UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020

## Applications

- Telecom
- Computer
- Industrial electronic
- Consumer electronic

## Making Code



## Summary of Packing Options

Package	Packing Description	Packing Quantity	Industry Standard
DO-15	Tape/Box,Box	2000	BORN SPEC
	Tape/Reel,13" reel	4000	EIA STD RS-296

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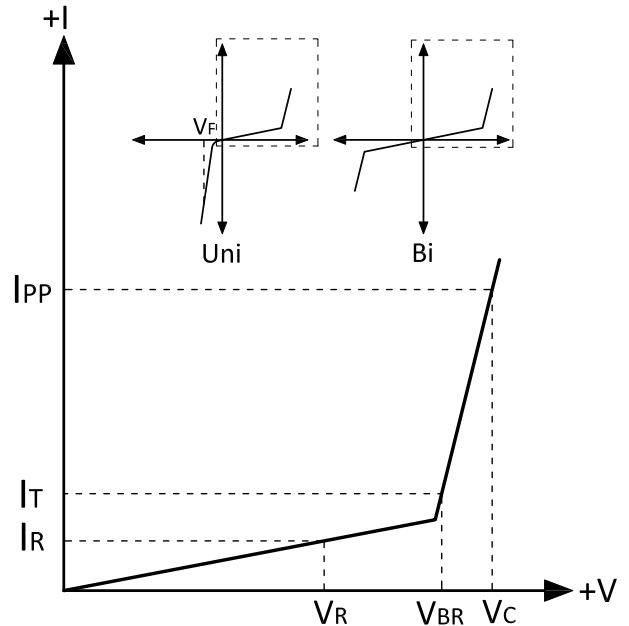


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## Electrical Parameters

Parameter	Definition
$C_J$	Junction Capacitance - typical capacitance measured with 0V or $V_R$ bias
$I_{PP}$	Peak Pulse Current - maximum rated peak impulse current
$V_C$	Clamping Voltage - Peak voltage measured across the suppressor at a specified $I_{ppm}$
$V_{BR}$	Breakdown Voltage - Maximum voltage that flows though the TVS at a specified test current ( $I_T$ )
$I_R$	Leakage Current - maximum peak off-state current measured at $V_R$
$V_R$	Peak Off-state Voltage - maximum voltage that can be applied while maintaining off state



## Absolute Maximum Ratings ( $T_A=+25^\circ\text{C}$ , unless otherwise noted)

Parameter	Symbol	Value	Units
Peak Pulse Power Dissipation(Note1)	$P_{PPM}$	600	W
Steady State Power Dissipation (Note2)	$P_D$	5	W
Peak Forward Surge Current (Note3)	$I_{FSM}$	100	A
Maximum Instantaneous Forward Voltage at 50A (Note4)	$V_{FM}$	3.5/5	V
Typical Thermal Resistance Junction to Lead	$R_{\theta JL}$	20	$^\circ\text{C/W}$
Typical Thermal Resistance Junction to Ambient	$R_{\theta JA}$	75	$^\circ\text{C/W}$
Operating Junction Temperature Range	$T_J$	-55 to 150	$^\circ\text{C}$
Storage Temperature Range	$T_{SJG}$	-55 to 150	$^\circ\text{C}$

Notes:

- (1) Non-repetitive current pulse , 10/1000us Waveform.
- (2) Infinite Heat Sink at  $T_L=75^\circ\text{C}$ , at 0.375"(9.5mm) lead length, P.C.B. mounted.
- (3) Measured on 8.3ms single half sine wave or equivalent square wave, duty cycle=4 per minute maximum.
- (4) For Unidirectional Only,  $V_{FW}<3.5\text{V}$  for  $V_{BR} \leq 200\text{V}$  and  $V_{FM}<5.0\text{V}$  for  $V_{BR} \geq 201\text{V}$ .



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Absolute Maximum Ratings ( $T_A=+25^{\circ}\text{C}$ , unless otherwise noted)

Part Number		Reverse Stand-Off Voltage $V_R$	Breakdown Voltage $V_{BR}@ I_T$		Test Current $I_T$	Maximum Clamping Voltage $V_C@ I_{PP}$	Maximum Peak Pulse Current $I_{PP}$	Maximum Reverse Leakage $I_R@ V_R$
(Uni)	(Bi)	(V)	Min.(V)	Max.(V)	(mA)	(V)	(A)	( $\mu\text{A}$ )
P6KE6.8A	P6KE6.8CA	5.8	6.45	7.14	10	10.5	58.1	1000
P6KE7.5A	P6KE7.5CA	6.4	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	9.5	10.5	1	14.5	42.1	10
P6KE11A	P6KE11CA	9.4	10.5	11.6	1	15.6	39.1	5
P6KE12A	P6KE12CA	10.2	11.4	12.6	1	16.7	36.5	5
P6KE13A	P6KE13CA	11.1	12.4	13.7	1	18.2	33.5	1
P6KE15A	P6KE15CA	12.8	14.3	15.8	1	21.2	28.8	1
P6KE16A	P6KE16CA	13.6	15.2	16.8	1	22.5	27.1	1
P6KE18A	P6KE18CA	15.3	17.1	18.9	1	25.2	24.2	1
P6KE20A	P6KE20CA	17.1	19	21	1	27.7	22.0	1
P6KE22A	P6KE22CA	18.8	20.9	23.1	1	30.6	19.9	1
P6KE24A	P6KE24CA	20.5	22.8	25.2	1	33.2	18.40	1
P6KE27A	P6KE27CA	23.1	25.7	28.4	1	37.5	16.30	1
P6KE30A	P6KE30CA	25.6	28.5	31.5	1	41.4	14.70	1
P6KE33A	P6KE33CA	28.2	31.4	34.7	1	45.7	13.30	1
P6KE36A	P6KE36CA	30.8	34.2	37.8	1	49.9	12.20	1
P6KE39A	P6KE39CA	33.3	37.1	41	1	53.9	11.30	1
P6KE43A	P6KE43CA	36.8	40.9	45.2	1	59.3	10.30	1
P6KE47A	P6KE47CA	40.2	44.7	49.4	1	64.8	9.40	1
P6KE51A	P6KE51CA	43.6	48.5	53.6	1	70.1	8.70	1
P6KE56A	P6KE56CA	47.8	53.2	58.8	1	77	7.90	1
P6KE62A	P6KE62CA	53	58.9	65.1	1	85	7.20	1
P6KE68A	P6KE68CA	58.1	64.6	71.4	1	92	6.60	1
P6KE75A	P6KE75CA	64.1	71.3	78.8	1	103	5.90	1
P6KE82A	P6KE82CA	70.1	77.9	86.1	1	113	5.40	1
P6KE91A	P6KE91CA	77.8	86.5	95.5	1	125	4.90	1
P6KE100A	P6KE100CA	85.5	95	105	1	137	4.50	1
P6KE110A	P6KE110CA	94	105	116	1	152	4.00	1



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Part Number		Reverse Stand-Off Voltage $V_R$	Breakdown Voltage $V_{BR}@ I_T$		Test Current $I_T$	Maximum Clamping Voltage $V_C@ I_{PP}$	Maximum Peak Pulse Current $I_{PP}$	Maximum Reverse Leakage $I_R@ V_R$
(Uni)	(Bi)	(V)	Min.(V)	Max.(V)	(mA)	(V)	(A)	(uA)
P6KE120A	P6KE120CA	102	114	126	1	165	3.70	1
P6KE130A	P6KE130CA	111	124	137	1	179	3.40	1
P6KE150A	P6KE150CA	128	143	158	1	207	2.90	1
P6KE160A	P6KE160CA	136	152	168	1	219	2.80	1
P6KE170A	P6KE170CA	145	162	179	1	234	2.60	1
P6KE180A	P6KE180CA	154	171	189	1	246	2.50	1
P6KE200A	P6KE200CA	171	190	210	1	274	2.20	1
P6KE220A	P6KE220CA	185	209	231	1	328	1.90	1
P6KE250A	P6KE250CA	214	237	263	1	344	1.80	1
P6KE300A	P6KE300CA	256	285	315	1	414	1.50	1
P6KE350A	P6KE350CA	300	332	368	1	482	1.30	1
P6KE400A	P6KE400CA	342	380	420	1	548	1.10	1
P6KE440A	P6KE440CA	376	418	462	1	602	1.00	1
P6KE480A	P6KE480CA	408	456	504	1	658	0.90	1
P6KE510A	P6KE510CA	434	485	535	1	698	0.90	1
P6KE530A	P6KE530CA	477	503.5	556.5	1	725	0.80	1
P6KE540A	P6KE540CA	486	513	567	1	740	0.80	1
P6KE550A	P6KE550CA	495	522.5	577.5	1	760	0.80	1
P6KE600A	P6KE600CA	512	570	630	1	828	0.75	1



# P6KE Series

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

Figure 1: Peak Pulse Power Rating



Figure 2: Pulse Derating Curve

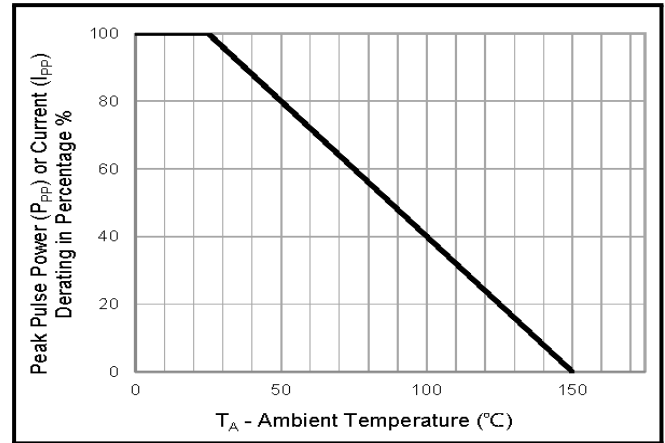


Figure 3: Pulse Waveform

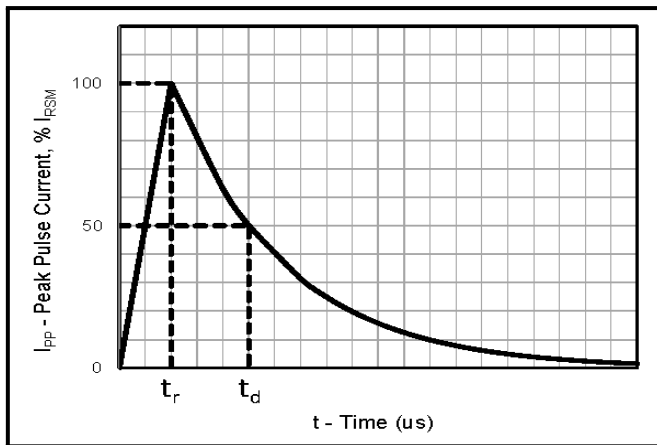


Figure 4: Typical Junction Capacitance

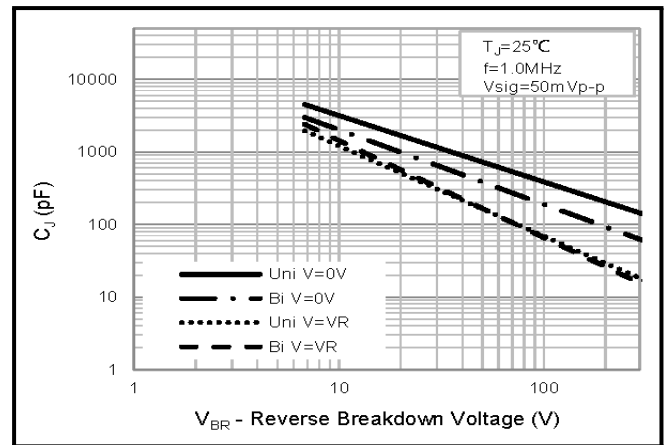


Figure 5: Steady State Power Dissipation Derating

Curve

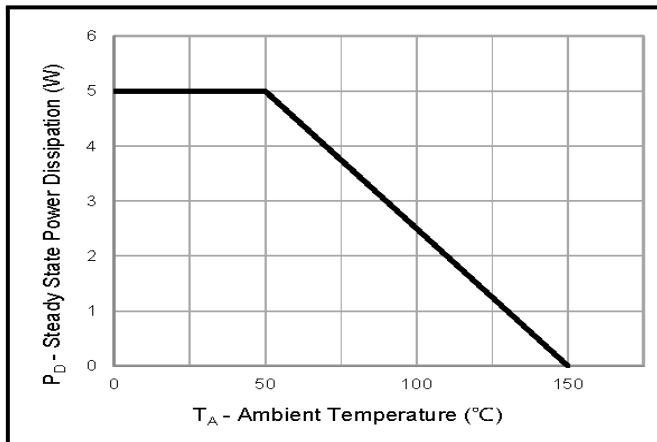
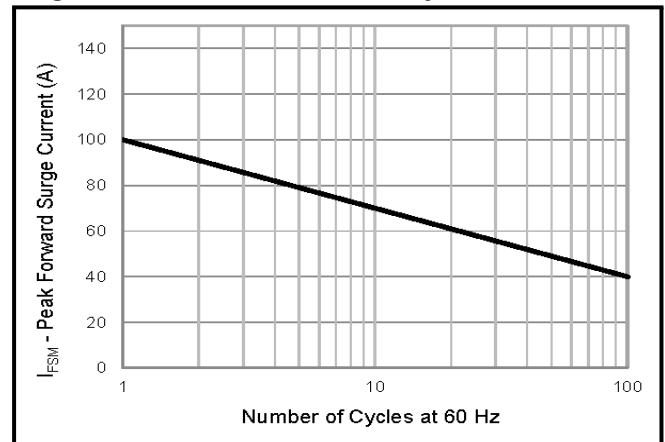


Figure 6: Maximum Non-Repetitive Peak Forward

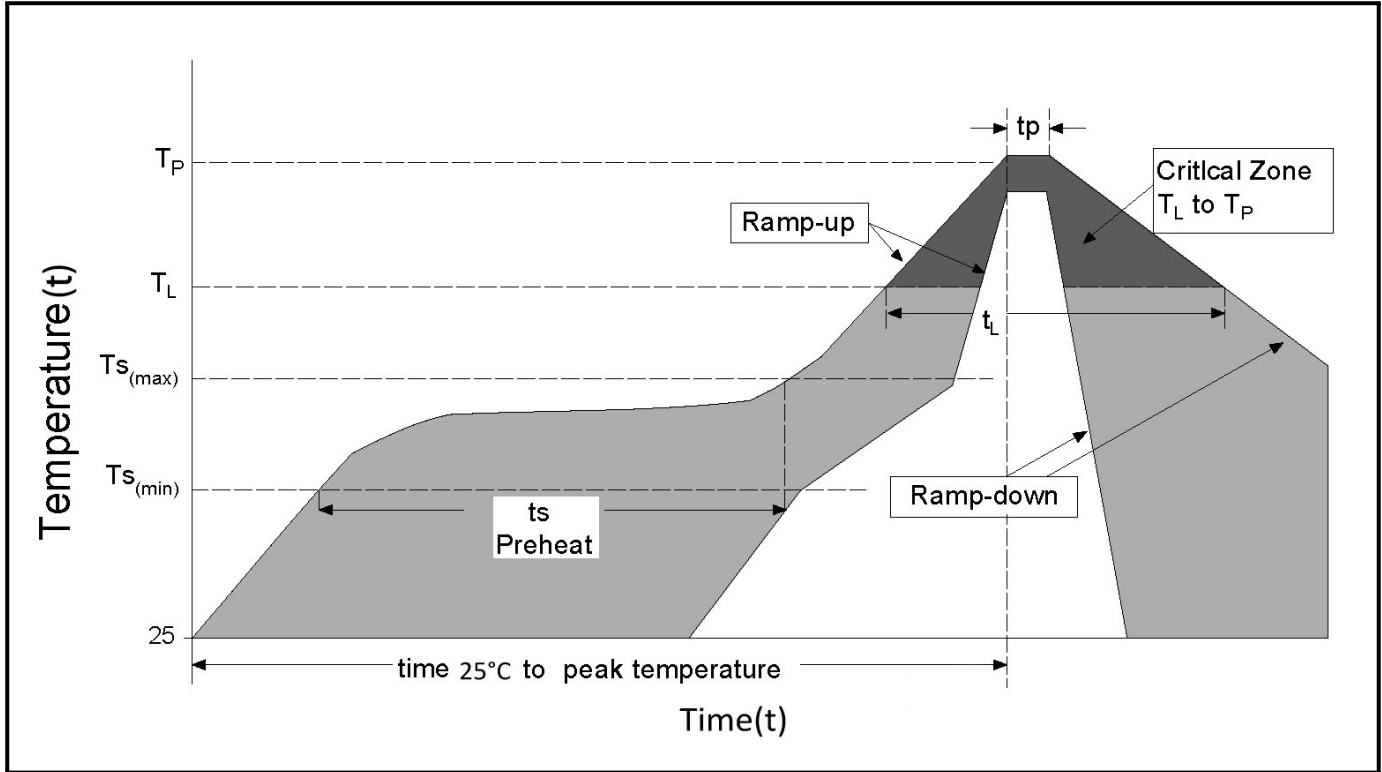
Surge Current Uni-Directional Only



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## Soldering Parameters



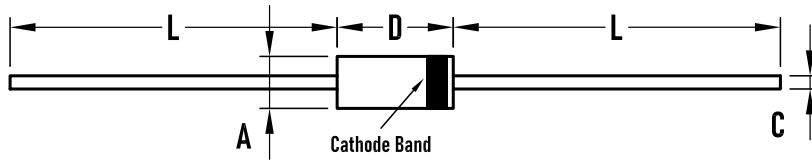
Reflow Condition		Lead-free assembly
Pre Heat	- Temperature Min ( $T_{S(min)}$ )	150°C
	- Temperature Max ( $T_{S(max)}$ )	200°C
	- Time (min to max) ( $t_s$ )	60 - 180 secs
Average ramp up rate (Liquidus Temp ( $T_L$ ) to peak)		3°C/second max
$T_{S(max)}$ to $T_L$ - Ramp-up Rate		3°C/second max
Reflow	- Temperature ( $T_L$ ) (Liquidus)	217°C
	- Time ( $t_L$ )	60 - 150 secs
Peak Temperature ( $T_P$ )		260 <sup>+0/-5</sup> °C
Time within 5°C of actual peak Temperature ( $t_p$ )		20 - 40 secs
Ramp-down Rate		6°C/second max
Time 25°C to peak Temperature (t)		8 minutes Max.
Do not exceed		260°C



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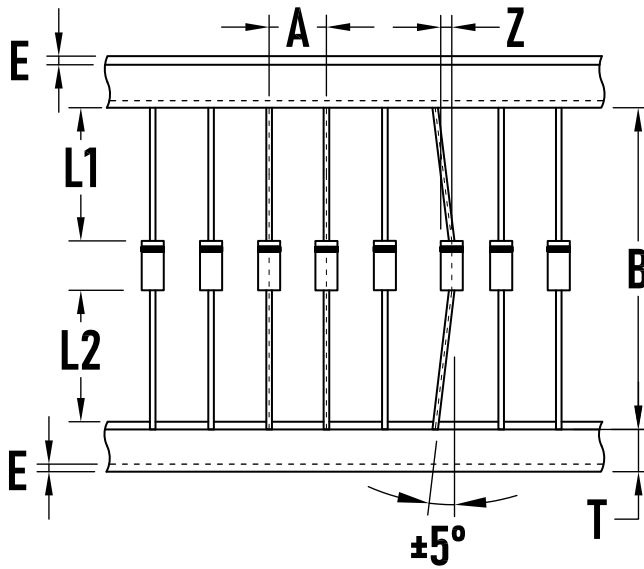
Transient Voltage Suppressor

## Package Mechanical Data - DO-15



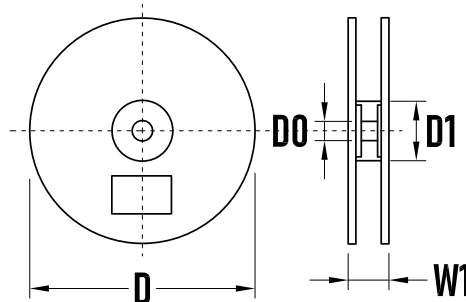
SYMBOL	Inches		MILLIMETER	
	MIN	MAX	MIN	MAX
A	0.102	0.142	2.6	3.6
C	0.028	0.034	0.7	0.86
D	0.228	0.299	5.8	7.6
L	1	-	25.4	-

## Packaging Tape-DO-15



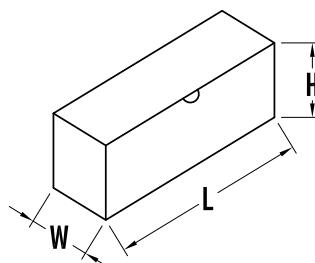
SYMBOL	Dimension(mm)
A	5.0±0.5
B	53.0±1.0
Z	1.2Max.
T	6.0±0.4
E	0.8Max.
L1-L2	1.0Max.

## Packaging Reel



SYMBOL	Dimension(mm)
D	330.0±3.0
D0	16.4±2.0
D1	86.0±2.0
W1	76.0±3.0
Quantity	4000PCS

## Packaging BOX



SYMBOL	Dimension(mm)
L	250.0±5.0
W	75.0±5.0
H	114.0±5.0
Quantity	2000PCS

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Revision: 2022-Jan-1-A



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