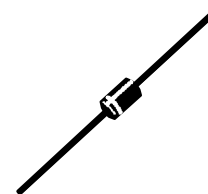


Transient Voltage Suppression Diodes Axial Leaded – 600W

Descriptions

Transient Voltage Suppressors (TVS) are semiconductor devices designed to provide protection against over voltage transients. When over voltage events occur, the silicon TVS activates from an very high impedance status to a very low impedance status by operating in the avalanche mode and uses a large junction area to absorb large transient currents in a fast response time, protecting voltage sensitive electronics equipment from damaging.

Boarden supplies unipolar and bipolar TVS devices with axial and SMD packages, with maximum working voltage 5V to 550V, maximum power dissipation from 200W-5000W.



DO-15

Features

- Glass passivated chip junction in DO-15 Package
- 600W peak pulse power @10/1000 μ s
- Typical I_R less than 1 μ A above 13V
- Low incremental surge resistance
- Excellent clamping capability
- Typical failure mode is short from over-specified voltage/current
- Fast response time: typically less than 1.0ps from 0V to BV min
- EFT protection of data lines in accordance with IEC 61000-4-4
- UL94V-0 Flammability Rating
- Halogen free and RoHS compliant

Applications

- Telecom and Network
- Industrial Products
- Business Machines
- Vehicles Electronics
- Power Adapter
- Consumer Products
- Security Protection

Maximum Ratings and Thermal Characteristics (TA=25°C unless otherwise noted)

Parameter	Symbol	Value	Unit
Peak Pulse Power Dissipation by 10/1000 μ s Test Waveform	P _{PPM}	600	W
Steady State Power Dissipation on Infinite Heat Sink at T _L =75°C	P _D	5.0	W
Peak Forward Surge Current, 8.3ms Single Half Sine Wave Unidirectional Only ⁽¹⁾	I _{FSM}	100	A
Maximum Instantaneous Forward Voltage at 100A for Unidirectional Only ⁽²⁾	V _F	3.5/5.0	V
Operating Junction and Storage Temperature Range	T _J , T _{STG}	-55 to 175	°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) Measured on 8.3ms single half sine wave or equivalent square wave, duty cycle=4 per minute maximum.

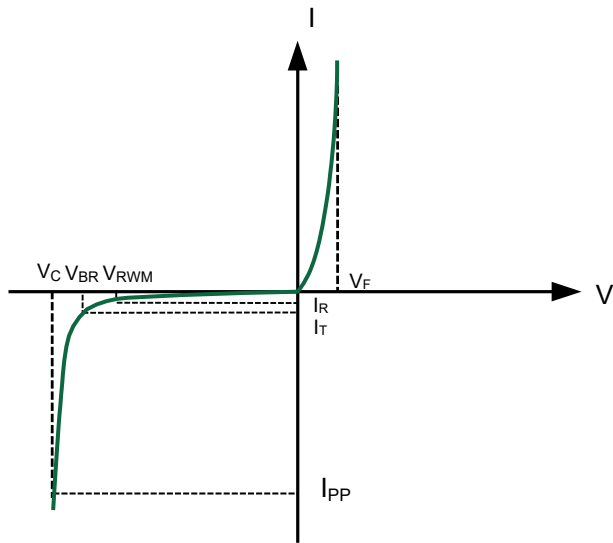
2) V_F<3.5V for devices of V_{BR}≤200V and V_F<5.0V for devices of V_{BR}≥201V.

Electrical Characteristics (TA=25°C unless otherwise noted)

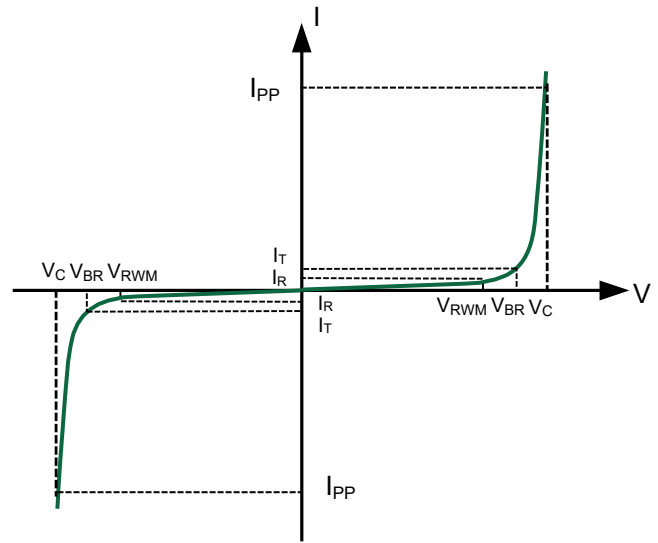
Type Number		V _{RMW}	I _R @V _{RMW}	V _{BR} @I _T (V)			I _T	V _C @I _{PP}	I _{PP} MAX
Uni	Bi	(V)	(μA)	Min	Nom	Max	(mA)	(V)	(A)
P6KE6.8A	P6KE6.8CA	5.80	1000	6.45	6.8	7.14	10	10.5	58.1
P6KE7.5A	P6KE7.5CA	6.40	500	7.13	7.5	7.88	10	11.3	54.0
P6KE8.2A	P6KE8.2CA	7.02	200	7.79	8.2	8.61	10	12.1	50.4
P6KE9.1A	P6KE9.1CA	7.78	50	8.65	9.1	9.55	1	13.4	45.5
P6KE10A	P6KE10CA	8.55	10	9.5	10	10.5	1	14.5	42.1
P6KE11A	P6KE11CA	9.4	5	10.5	11	11.6	1	15.6	39.1
P6KE12A	P6KE12CA	10.2	5	11.4	12	12.6	1	16.7	36.5
P6KE13A	P6KE13CA	11.1	1	12.4	13	13.7	1	18.2	33.5
P6KE15A	P6KE15CA	12.8	1	14.3	15	15.8	1	21.2	28.8
P6KE16A	P6KE16CA	13.6	1	15.2	16	16.8	1	22.5	27.1
P6KE18A	P6KE18CA	15.3	1	17.1	18	18.9	1	25.5	24.2
P6KE20A	P6KE20CA	17.1	1	19.0	20	21.0	1	27.7	22.0
P6KE22A	P6KE22CA	18.8	1	20.9	22	23.1	1	30.6	19.9
P6KE24A	P6KE24CA	20.5	1	22.8	24	25.2	1	33.2	18.4
P6KE27A	P6KE27CA	23.1	1	25.7	27	28.4	1	37.5	16.3
P6KE30A	P6KE30CA	25.6	1	28.5	30	31.5	1	41.4	14.7
P6KE33A	P6KE33CA	28.2	1	31.4	33	34.7	1	45.7	13.3
P6KE36A	P6KE36CA	30.8	1	34.2	36	37.8	1	49.9	12.2
P6KE39A	P6KE39CA	33.3	1	37.1	39	41.0	1	53.9	11.3
P6KE43A	P6KE43CA	36.8	1	40.9	43	45.2	1	59.3	10.3
P6KE47A	P6KE47CA	40.2	1	44.7	47	49.4	1	64.8	9.4
P6KE51A	P6KE51CA	43.6	1	48.5	51	53.6	1	70.1	8.7
P6KE56A	P6KE56CA	47.8	1	53.2	56	58.8	1	77	7.9
P6KE62A	P6KE62CA	53	1	58.9	62	65.1	1	85	7.2
P6KE68A	P6KE68CA	58.1	1	64.6	68	71.4	1	92	6.6
P6KE75A	P6KE75CA	64.1	1	71.3	75	78.8	1	103	5.9
P6KE82A	P6KE82CA	70.1	1	77.9	82	86.1	1	113	5.4
P6KE91A	P6KE91CA	77.8	1	86.5	91	95.5	1	125	4.9
P6KE100A	P6KE100CA	85.5	1	95	100	105	1	137	4.5
P6KE110A	P6KE110CA	94	1	105	110	116	1	152	4.0
P6KE120A	P6KE120CA	102	1	114	120	126	1	165	3.7
P6KE130A	P6KE130CA	111	1	124	130	137	1	179	3.4
P6KE150A	P6KE150CA	128	1	143	150	158	1	207	2.9
P6KE160A	P6KE160CA	136	1	152	160	168	1	219	2.8
P6KE170A	P6KE170CA	145	1	162	170	179	1	234	2.6
P6KE180A	P6KE180CA	154	1	171	180	189	1	246	2.5
P6KE200A	P6KE200CA	171	1	190	200	210	1	274	2.2
P6KE220A	P6KE220CA	185	1	209	220	231	1	328	1.9
P6KE250A	P6KE250CA	214	1	237	250	263	1	344	1.8
P6KE300A	P6KE300CA	256	1	285	300	315	1	414	1.5
P6KE350A	P6KE350CA	300	1	332	350	368	1	482	1.3
P6KE400A	P6KE400CA	342	1	380	400	420	1	548	1.1
P6KE440A	P6KE440CA	376	1	418	440	462	1	602	1.0
P6KE480A	P6KE480CA	408	1	456	480	504	1	658	0.9
P6KE510A	P6KE510CA	434	1	485	510	535	1	698	0.9
P6KE530A	P6KE530CA	477	1	503.5	530	556.5	1	725	0.8
P6KE540A	P6KE540CA	486	1	513.0	540	567.0	1	740	0.8
P6KE550A	P6KE550CA	495	1	522.5	550	577.5	1	760	0.8

For bidirectional type having V_{RMW} of 10 volts and less, the I_R limit is double.

I-V Curve Characteristics



Uni-Directional TVS



Bi-Directional TVS

V_{RWM} - Reverse Stand-Off Voltage - Working Peak Reverse Voltage

V_{BR} - Breakdown Voltage - Maximum current that flows through the TVS at a specified test current (I_T)

I_T - Test Current - Test Current

V_C - Clamping Voltage - Peak voltage measured across the suppressor at a specified I_{ppm} (peak impulse current)

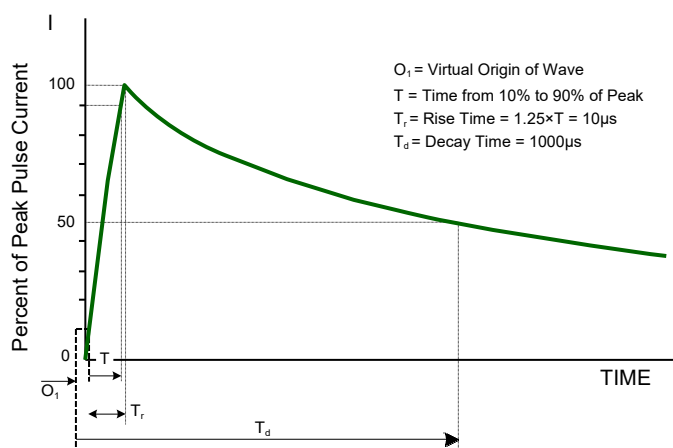
I_{PP} - Peak Pulse Current - Maximum Reverse Peak Pulse Current

P_{PPM} - Peak Pulse Power Dissipation - Max power dissipation

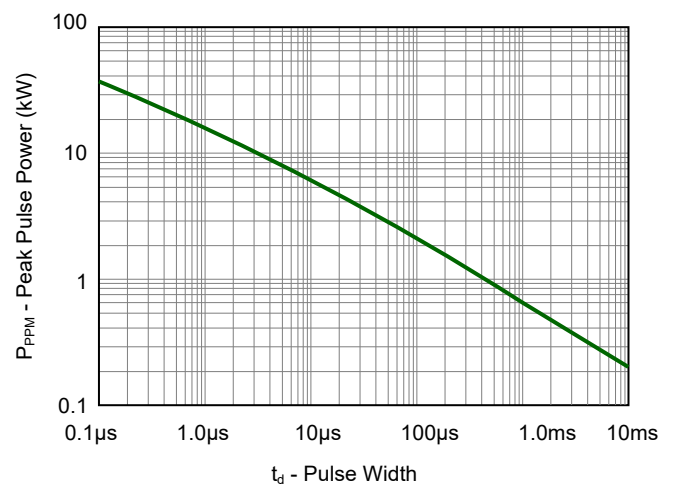
I_R - Reverse Leakage Current - Current measured at V_{RWM}

V_F - Forward Voltage - Drop for Uni-directional

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

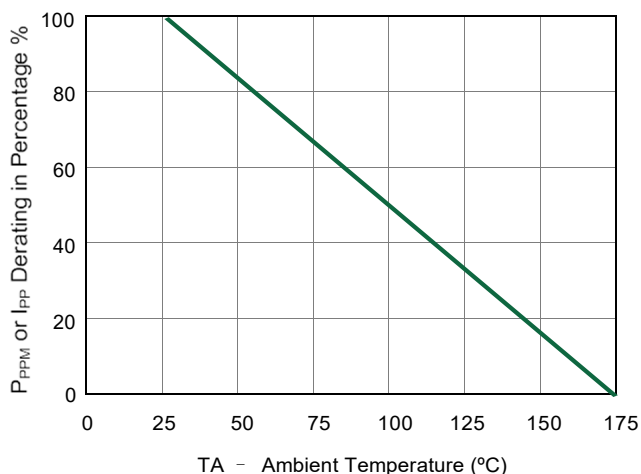


Pulse Waveform- 10/1000 μs

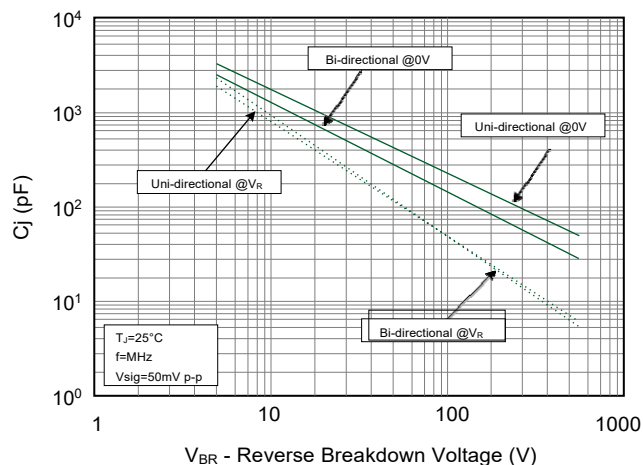


Peak Pulse Power Rating Curve

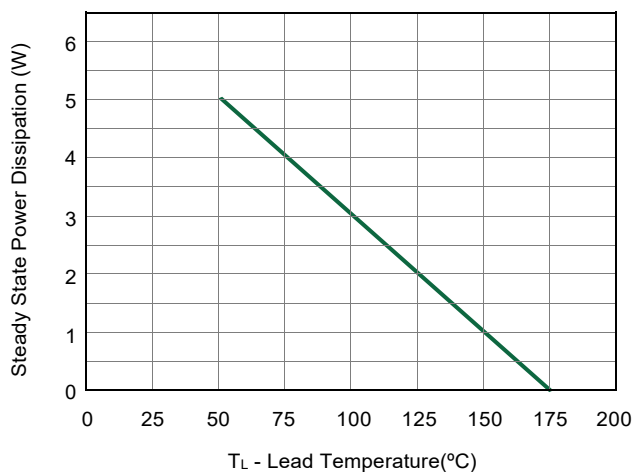
Ratings and Characteristic Curves (TA=25°C unless otherwise noted)



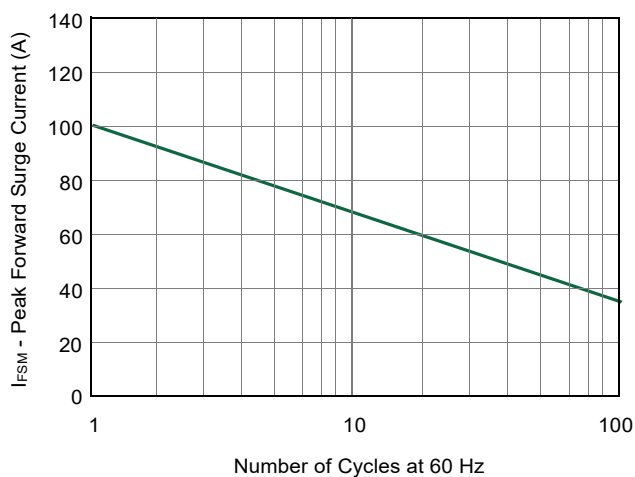
Pulse Derating Curve



Typical Junction Capacitance



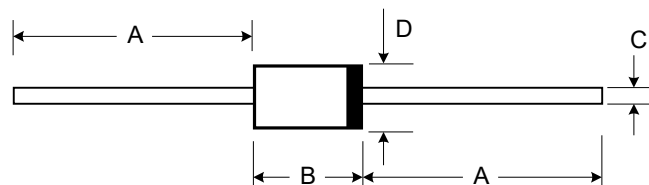
Steady State Power Derating Curve



Maximum Non-Repetitive Peak Forward Surge Current Uni-Directional Only

Product Dimensions

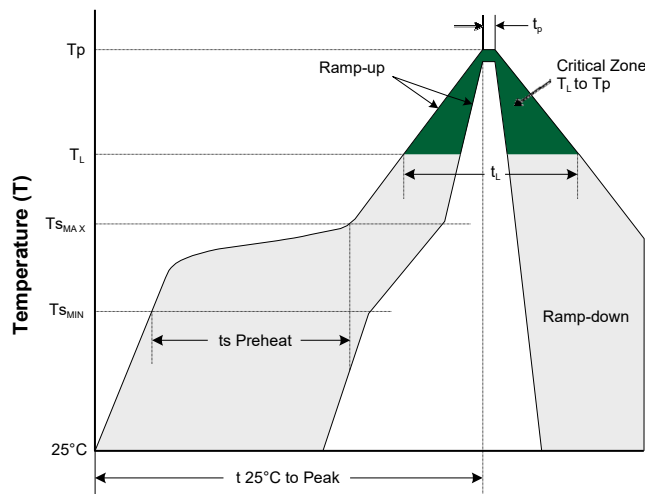
Dimensions	Inches		Millimeters	
	Min	Max	Min	Max
A	1.000	-	25.40	-
B	0.230	0.300	5.80	7.60
C	0.028	0.034	0.71	0.86
D	0.104	0.140	2.60	3.60



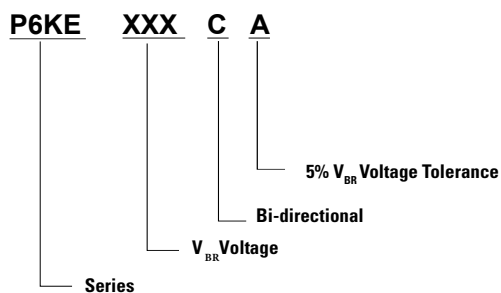
DO-15 (DO-204AC)

Soldering Parameters

Profile Feature	Lead-Free Assembly
Average Ramp-up Rate ($T_{S_{MAX}}$ to T_p) Average Ramp-down Rate (T_p to T_L)	3°C/second max. 6°C/second max.
Preheat • Temperature Min ($T_{S_{MIN}}$) • Temperature Max ($T_{S_{MAX}}$) • Time (t_s Preheat)	150°C 200°C 60-180 seconds
Time maintained above: • Temperature (T_L) • Time (t_L)	217°C 60-150 seconds
Peak/Classification Temperature • Temperature (T_p)	260 ^{+0/-5} °C
Time within 5°C of actual Peak Time (t_p)	20-40 seconds
Time 25°C to peak Temperature	8 minutes max
Do not exceed	260 °C



Part Numbering System



Order Information

Device	Package	Qty per Box	Packaging
P6KEseries	DO-15	2000	Box