

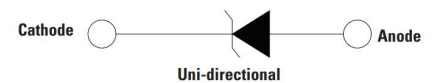


TVS Diodes P6KE Series

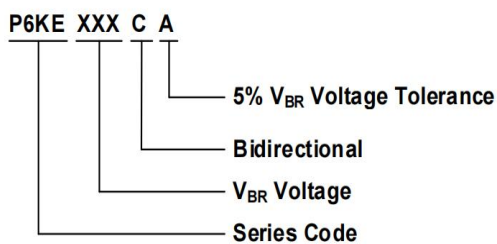
Transient Voltage Suppressors

Features

- ◆ 600W peak pulse power capability at 10/1000 μ s waveform, repetition rate (duty cycle): 0.01%
- ◆ Low incremental surge impedance
- ◆ Excellent clamping capability
- ◆ Typical I_R less than 1 μ A when V_{BR} min>12V.
- ◆ High Temperature soldering guaranteed: 260 $^{\circ}$ C/30 seconds
- ◆ Plastic package has underwriters laboratory flammability 94V-0
- ◆ Meets MSL level 1, per J-STD-020
- ◆ Meet HF and RoHS compliant
- ◆ Marking code: printed according to model
- ◆ IEC-61000-4-2 ESD 30kV(Air), 30kV (Contact)
- ◆ ESD protection of data lines in accordance with IEC 61000-4-2
- ◆ EFT protection of data lines in accordance with IEC 61000-4-4



Part Number Coding System



Applications

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

Mechanical Data

- ◆ Case: JEDEC DO-15 Moulded plastic, Axial lead
- ◆ Polarity: Color band denotes positive end(cathode) except bi-directional models
- ◆ Weight: About 0.4g

Maximum Rating and Characteristics

Parameters at 25°C ambient temperature unless otherwise Noted.

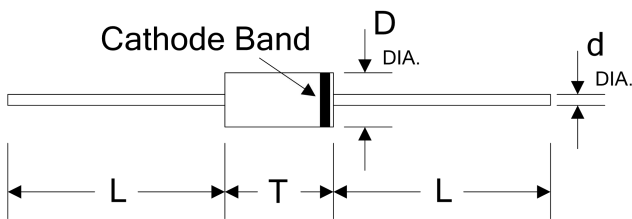
Rating	Symbol	Value	Unit
Peak Pulse Power Dissipation by 10/1000us Test Waveform(Fig.2)(Note 1) -Single Die Parts	P_{PPM}	Minimum 600	Watts
Peak Pulse Power Dissipation by 10/1000us Test Waveform(Fig.2)(Note 1) -Stacked Die Parts(Note 4)	P_{PPM}	800	Watts
Steady State Power Dissipation on Infinite Heat Sink at $T_L = 75^\circ\text{C}$	P_D	5.0	Watts
Maximum Instantaneous Forward Voltage at 50A for Unidirectional Only (Note 3)	V_F	3.5/5.0	V
Peak Forward Surge Current, 8.3ms Single Half Sine Wave Unidirectional Only (Note 2)	I_{FSM}	100	Amps
Operating junction and Storage Temperature Range.	T_J, T_{STG}	-55 to +175	$^\circ\text{C}$

Notes:

- 1.Non-repetitive current pulse , per Fig. 2 and derated above T_J (initial) = 25°C per Fig. 1.
2. Measured on 8.3ms single half sine wave or equivalent square wave, duty cycle=4 per minute maximum.
3. $V_F < 3.5\text{V}$ for single die parts and $V_F < 5.0\text{V}$ for stacked-die parts.
- 4.For stacked die component details, please refer to part numbers labeled by * in Electrical Characteristics.

Dimensions (DO-204AC/DO-15)

Ref.	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
d	0.71	0.86	0.028	0.034



Electrical Characteristics ($T_A=25^{\circ}\text{C}$ unless otherwise noted)

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
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

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	$V_{RWM}(V)$	$V_{BR}(V)$	$I_T(mA)$	$V_C(V)$	$I_{PP}(A)$	$I_R(\mu A)$
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	1.7	1
P6KE400A*	P6KE400CA*	342.00	380.00~420.00	1	548.0	1.5	1
P6KE440A*	P6KE440CA*	376.00	418.00~462.00	1	602.0	1.4	1
P6KE480A*	P6KE480CA*	408.00	456.00~504.00	1	658.0	1.3	1
P6KE510A*	P6KE510CA*	434.00	485.00~535.00	1	698.0	1.2	1
P6KE530A*	P6KE530CA*	451.00	503.50~556.50	1	725.0	1.2	1
P6KE540A*	P6KE540CA*	460.00	513.00~567.00	1	740.0	1.1	1
P6KE550A*	P6KE550CA*	468.00	522.50~577.50	1	760.0	1.1	1
P6KE600A*	P6KE600CA*	512.00	570.00~630.00	1	828.0	1.0	1

Notes: 1. For bidirectional type having V_{RWM} of 10V and less, the I_R limit is double.

2. For parts without A, the V_{BR} is $\pm 10\%$ and V_C is 5% higher than with A parts, the parts without A are currently available, but not recommended for new designs. The parts with A are preferred.

3. For stack-die parts, use * to label the part number.

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

Figure 1. Peak Pulse Power Derating Curve

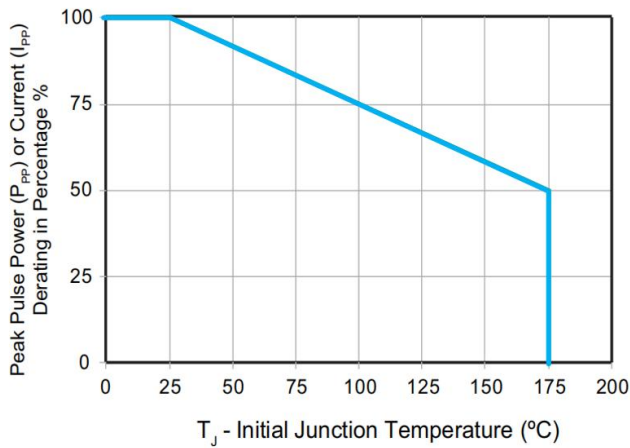


Figure 2. Pulse Waveform

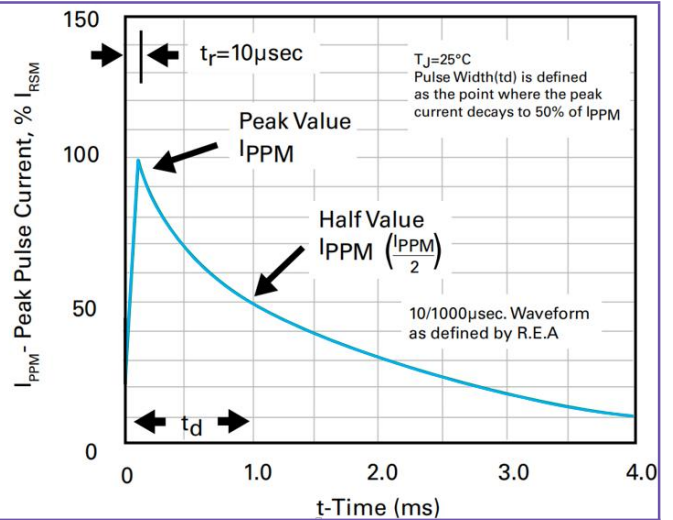


Figure 3. Typical Junction Capacitance

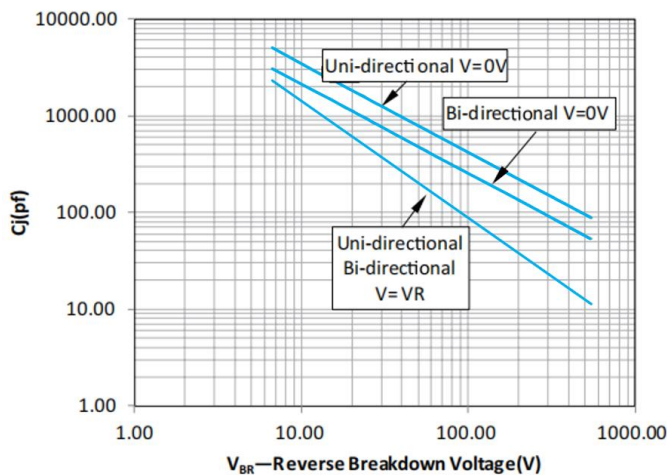


Figure 4. Typical Transient Thermal Impedance

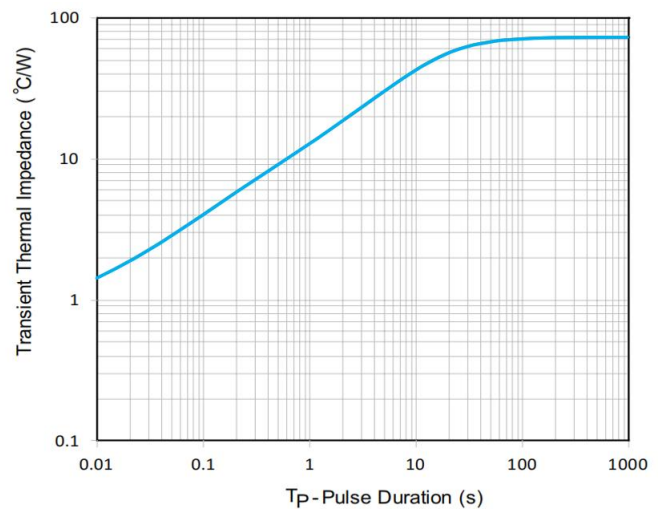


Figure 5. Maximum Non-Repetitive Forward Surge Current Uni-Directional Only

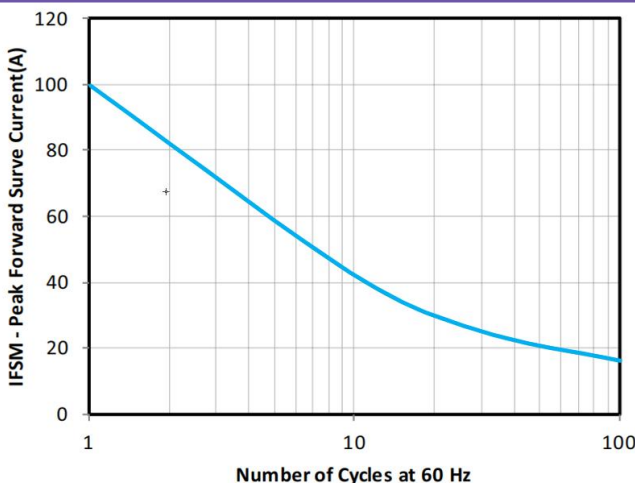
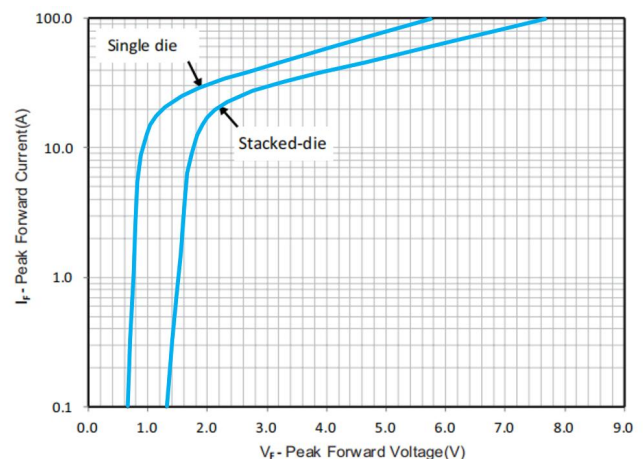
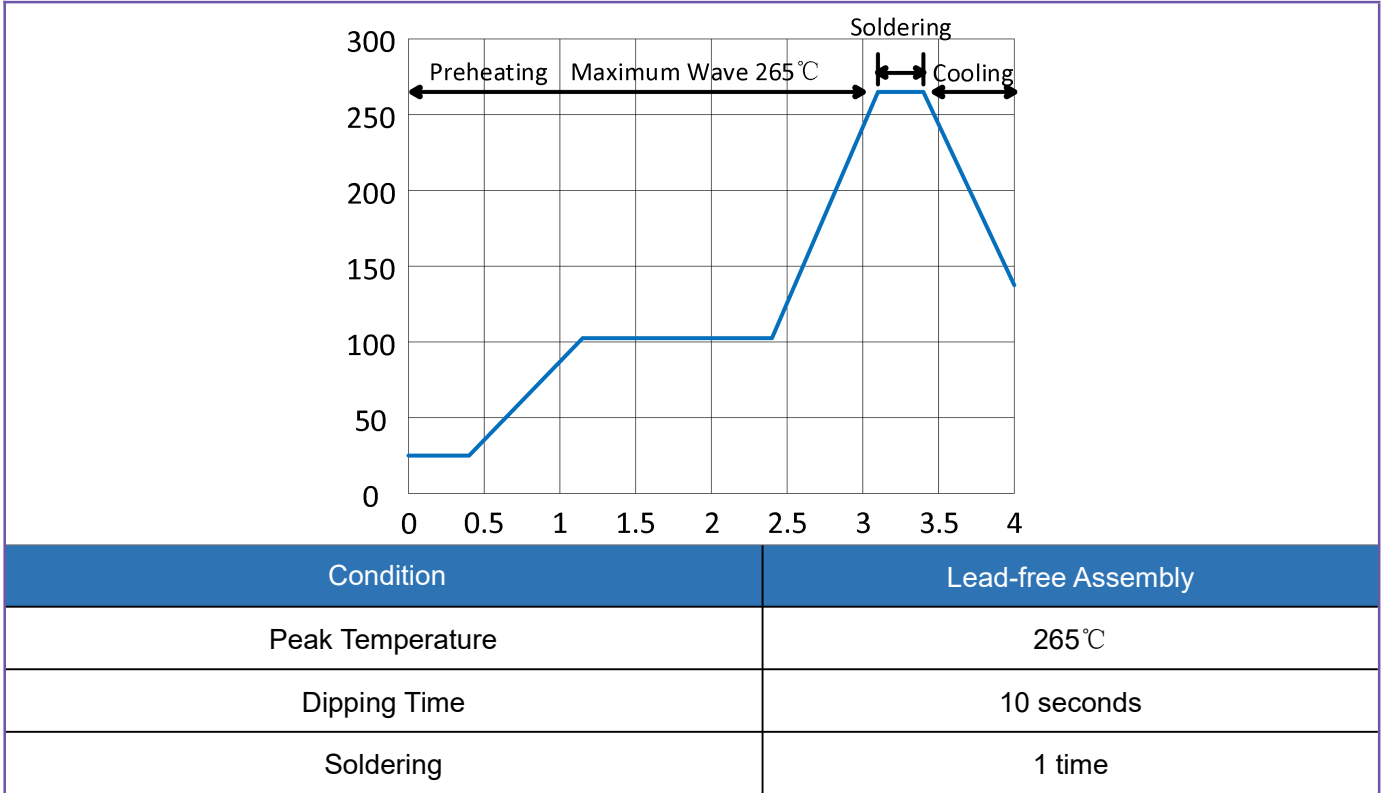


Figure 6. Peak Forward Voltage Drop vs Peak Forward Current (Typical Values)



Wave Soldering Parameters



Reliability

Items	Standards
Terminal strength	MIL-STD-750 Method 2036
Mechanical shock	JESD22-B104
Vibration	JESD22-B103
High Temp. Storage	JESD22-A103
High Temp Reverse Bias	JESD22-A108
Temperature Cycling	JESD22-A104
High Temp High Humidity Reverse Bias	JESD22-A101
Resistance to solder heat	JESD22-B106