Transient Voltage Suppressors (TVS) Data Sheet

Features

- Glass passivated junction
- Low inductance
- Excellent clamping capability
- 400W peak pulse power capability at 10/1000μs waveform, repetition rate (duty cycle): 0.01%
- Fast response time
- Typical IR less than 1μA above 12V
- High Temperature soldering guaranteed: 265℃/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
- IEC61000-4-2 ESD 30KV Air, 30KV contact compliance

Mechanical Data

- Case: JEDEC DO-41 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: 0.33g

Applications

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

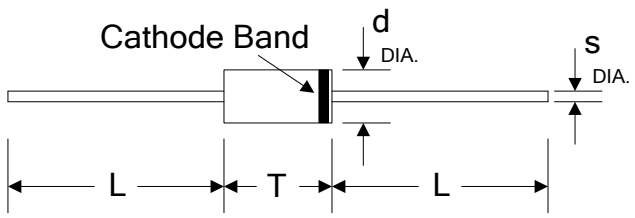
Maximum Ratings and Characteristics

Ratings at 25℃ ambient temperature unless otherwise specified.

Rating	Symbol	Value	Units
Peak pulse power dissipation at 10/1000μs waveform (Note1, Fig.1)	P_{PPM}	Minimum 400	Watts
Peak pulse current of at 10/1000μs waveform (Note 1, Fig.3)	I_{PPM}	See Table	Amps
Steady state power dissipation at T_L=75℃ (Fig.5)	$P_{M(AV)}$	1.5	Watts
Peak forward surge current, 8.3ms single half sine-wave superimposed on rated load, (JEDEC Method) (Note2, Fig.6)	I_{FSM}	40	Amps
Operating junction and Storage Temperature Range.	T_J,T_{STG}	-55 to +150	℃
Typical thermal resistance junction to lead	$R_{\theta JL}$	60	℃/W
Typical thermal resistance junction to ambient	$R_{\theta JA}$	100	℃/W

Notes: 1. Non-repetitive current pulse, per Fig.3 and derated above T_A=25℃ per Fig.2.
2. 8.3ms single half sine-wave, or equivalent square wave, duty cycle=4 pulses per minutes maximum.

Dimensions (DO-204AL/DO-41)



Symbol	Millimeters		Inches	
	Min.	Max.	Min.	Max.
L	25.40	-	1.000	-
T	4.10	5.20	0.160	0.205
d	2.00	2.70	0.080	0.107
s	0.71	0.86	0.028	0.034

Electrical Characteristics (T_A=25℃)

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(μA)
P4KE6.8A	P4KE6.8CA	5.80	6.45~7.14	10	10.5	39.0	1000
P4KE7.5A	P4KE7.5CA	6.40	7.13~7.88	10	11.3	36.3	500
P4KE8.2A	P4KE8.2CA	7.02	7.79~8.61	10	12.1	33.9	200
P4KE9.1A	P4KE9.1CA	7.78	8.65~9.55	1	13.4	30.6	50
P4KE10A	P4KE10CA	8.55	9.50~10.50	1	14.5	28.3	10
P4KE11A	P4KE11CA	9.40	10.50~11.60	1	15.6	26.3	5
P4KE12A	P4KE12CA	10.20	11.40~12.60	1	16.7	24.6	5
P4KE13A	P4KE13CA	11.10	12.40~13.70	1	18.2	22.5	1
P4KE15A	P4KE15CA	12.80	14.30~15.80	1	21.2	19.3	1
P4KE16A	P4KE16CA	13.60	15.20~16.80	1	22.5	18.2	1
P4KE18A	P4KE18CA	15.30	17.10~18.90	1	25.2	16.1	1
P4KE20A	P4KE20CA	17.10	19.00~21.00	1	27.7	14.8	1
P4KE22A	P4KE22CA	18.80	20.90~23.10	1	30.6	13.4	1
P4KE24A	P4KE24CA	20.50	22.80~25.20	1	33.2	12.3	1
P4KE27A	P4KE27CA	23.10	25.70~28.40	1	37.5	10.9	1
P4KE30A	P4KE30CA	25.60	28.50~31.50	1	41.4	9.9	1
P4KE33A	P4KE33CA	28.20	31.40~34.70	1	45.7	9.0	1
P4KE36A	P4KE36CA	30.80	34.20~37.80	1	49.9	8.2	1
P4KE39A	P4KE39CA	33.30	37.10~41.00	1	53.9	7.6	1
P4KE43A	P4KE43CA	36.80	40.90~45.20	1	59.3	6.9	1
P4KE47A	P4KE47CA	40.20	44.70~49.40	1	64.8	6.3	1
P4KE51A	P4KE51CA	43.60	48.50~53.60	1	70.1	5.8	1
P4KE56A	P4KE56CA	47.80	53.20~58.80	1	77.0	5.3	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(μA)
P4KE62A	P4KE62CA	53.00	58.90~65.10	1	85.0	4.8	1
P4KE68A	P4KE68CA	58.10	64.60~71.40	1	92.0	4.5	1
P4KE75A	P4KE75CA	64.10	71.30~78.80	1	103.0	4.0	1
P4KE82A	P4KE82CA	70.10	77.90~86.10	1	113.0	3.6	1
P4KE91A	P4KE91CA	77.80	86.50~95.50	1	125.0	3.3	1
P4KE100A	P4KE100CA	85.50	95.00~105.00	1	137.0	3.0	1
P4KE110A	P4KE110CA	94.00	105.00~116.00	1	152.0	2.7	1
P4KE120A	P4KE120CA	102.00	114.00~126.00	1	165.0	2.5	1
P4KE130A	P4KE130CA	111.00	124.00~137.00	1	179.0	2.3	1
P4KE150A	P4KE150CA	128.00	143.00~158.00	1	207.0	2.0	1
P4KE160A	P4KE160CA	136.00	152.00~168.00	1	219.0	1.9	1
P4KE170A	P4KE170CA	145.00	162.00~179.00	1	234.0	1.8	1
P4KE180A	P4KE180CA	154.00	171.00~189.00	1	246.0	1.7	1
P4KE200A	P4KE200CA	171.00	190.00~210.00	1	274.0	1.5	1
P4KE220A	P4KE220CA	185.00	209.00~231.00	1	328.0	1.3	1
P4KE250A	P4KE250CA	214.00	237.00~263.00	1	344.0	1.2	1
P4KE300A	P4KE300CA	256.00	285.00~315.00	1	414.0	1.0	1
P4KE350A	P4KE350CA	300.00	332.00~368.00	1	482.0	0.85	1
P4KE400A	P4KE400CA	342.00	380.00~420.00	1	548.0	0.75	1
P4KE440A	P4KE440CA	376.00	418.00~462.00	1	602.0	0.68	1
P4KE480A	P4KE480CA	408.00	456.00~504.00	1	658.0	0.61	1
P4KE510A	P4KE510CA	434.00	485.00~535.00	1	698.0	0.57	1
P4KE530A	P4KE530CA	450.00	503.50~556.50	1	725.0	0.55	1
P4KE540A	P4KE540CA	459.00	513.00~567.00	1	740.0	0.54	1
P4KE550A	P4KE550CA	467.00	522.50~577.50	1	760.0	0.52	1
P4KE600A	P4KE600CA	510.00	570.00~630.00	1	828.0	0.48	1

Ratings and Characteristic Curves (T_A=25℃ unless otherwise noted)

Figure 1. Peak Pulse Power Rating Curve

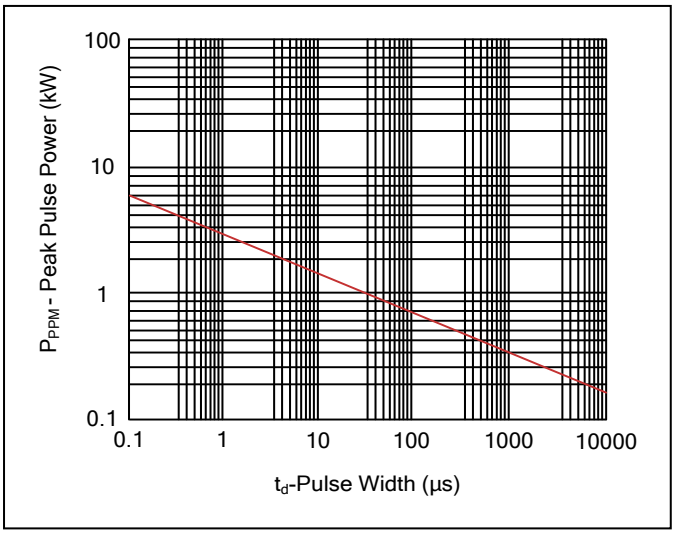


Figure 2. Pulse Derating Curve

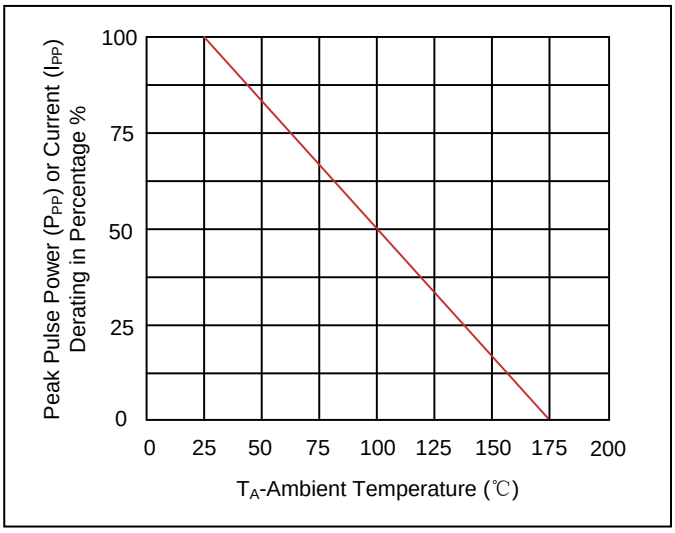


Figure 3. Pulse Waveform

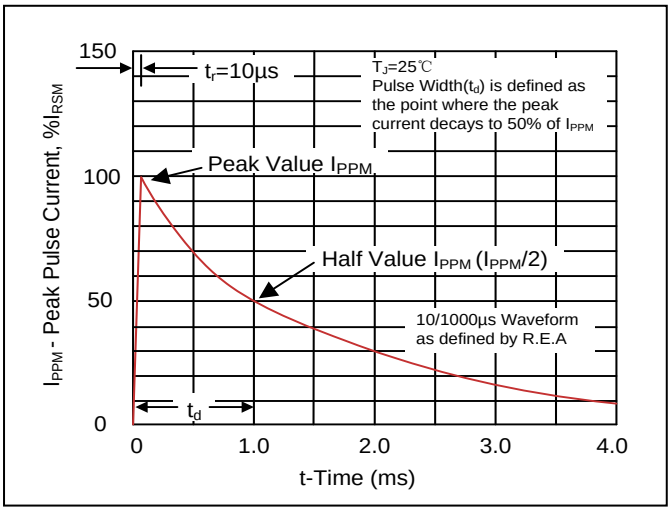


Figure 4. Typical Junction Capacitance

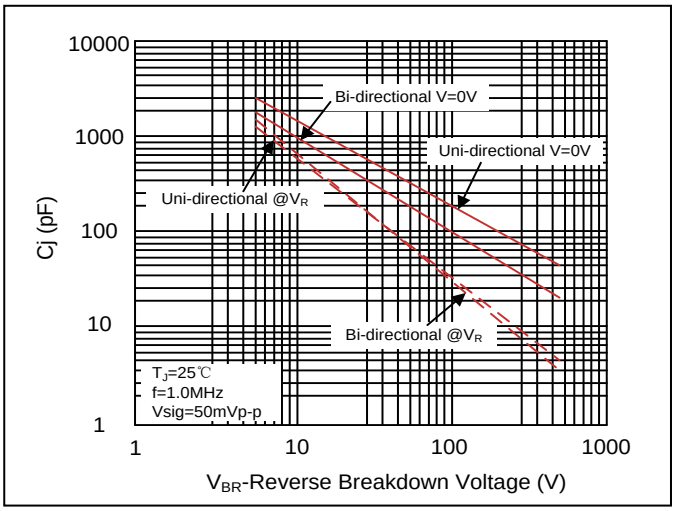


Figure 5. Steady State Power Dissipation Derating Curve

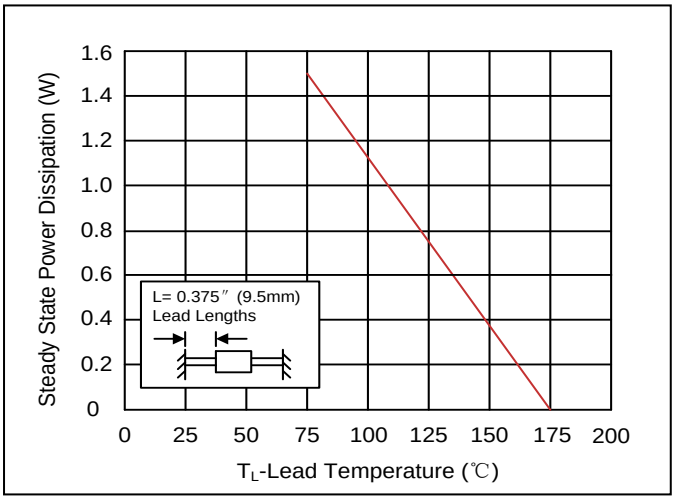
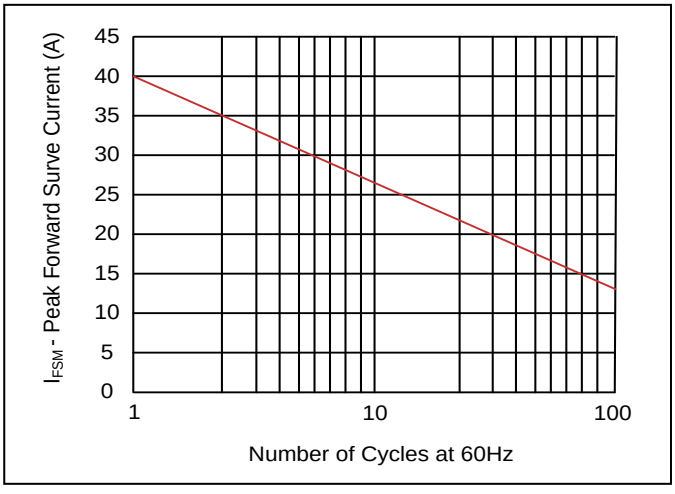
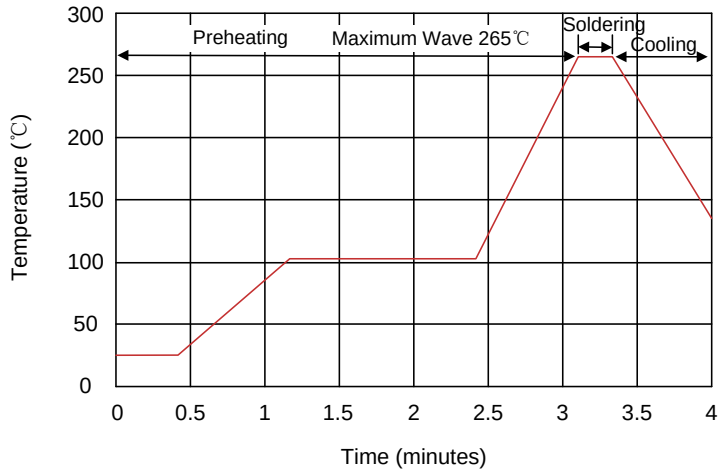


Figure 6. Maximum Non-Repetitive Forward Surge Current Uni-Directional Only



Recommended Soldering Conditions

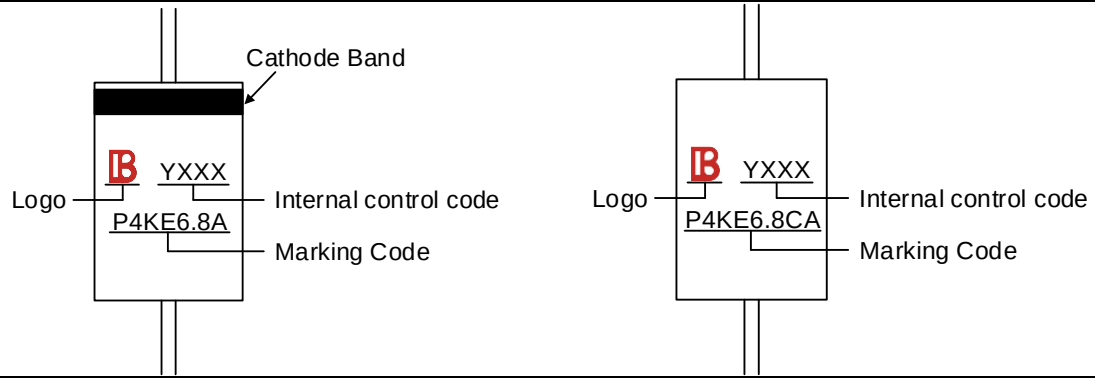
Wave Soldering



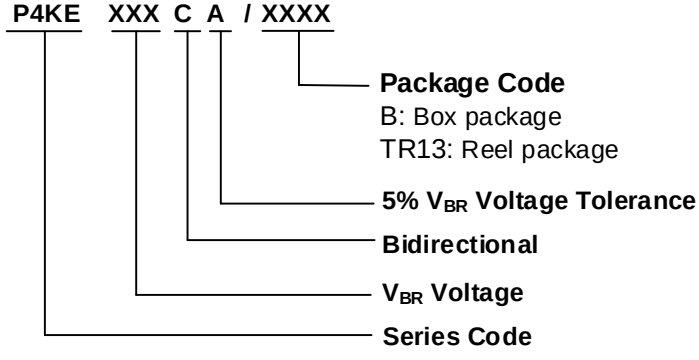
Recommended Conditions

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

Marking Code



Part Number Code

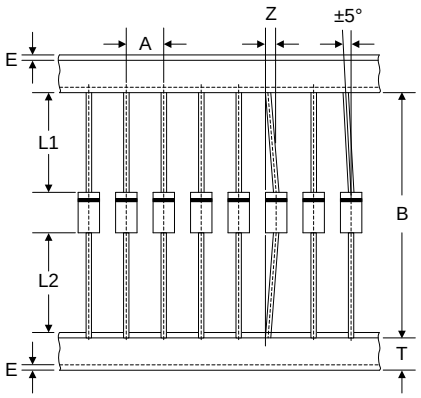


Ordering Code for Different Package

Box package: Add suffix “/B” at the end of the part number, such as P4KEXXXCA/B
Reel package: Add suffix “/TR13” at the end of the part number, such as P4KEXXXCA/TR13

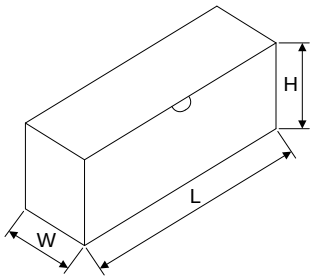
Packaging

Tape



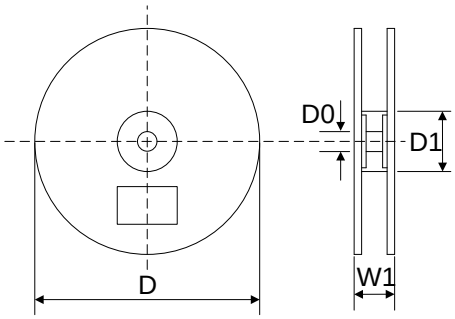
Symbol	Dimension (mm)
A	5.0±0.5
B	53.0±1.0
Z	1.2Max.
T	6.0±0.4
E	0.8Max.
L1-L2	1.0Max.

Box



L	250.0±5.0
W	75.0±5.0
H	114.0±5.0
Quantity: 3000PCS	

Reel



D	330.0±3.0
D0	16.4±2.0
D1	86.0±2.0
W1	76.0±3.0
Quantity: 5000PCS	

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