

DATA SHEET

TRANSIENT VOLTAGE SUPPRESSORS

AC/DC POWER SUPPLY

P4KE series

RoHS compliant & Halogen free



Product specification— June 30, 2023 V.3



Transient Voltage Suppressors (TVS) Data Sheet

Features

- Glass passivated junction
- Low inductance
- Excellent clamping capability
- 400W peak pulse power capability at 10/1000 μ s waveform, repetition rate (duty cycle): 0.01%
- Fast response time
- Typical IR less than 1 μ 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
- 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 $^{\circ}$ C ambient temperature unless otherwise specified.

Rating	Symbol	Value	Units
Peak pulse power dissipation at 10/1000 μ s waveform (Note1, Fig.1)	P _{PPM}	Minimum 400	Watts
Peak pulse current of at 10/1000 μ 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)}	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	$^{\circ}$ C
Typical thermal resistance junction to lead	R _{θJL}	60	$^{\circ}$ C/W
Typical thermal resistance junction to ambient	R _{θJA}	100	$^{\circ}$ 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-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°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 (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
P4KE62A	P4KE62CA	53.00	58.90~65.10	1	85.0	4.8	1

Transient Voltage Suppressors

P4KE

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	$V_{RWM}(V)$	$V_{BR}(V)$	$I_T(mA)$	$V_C(V)$	$I_{PP}(A)$	$I_R(\mu A)$
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 ($T_A=25^\circ\text{C}$ unless otherwise noted)

Figure 1. Peak Pulse Power Rating Curve

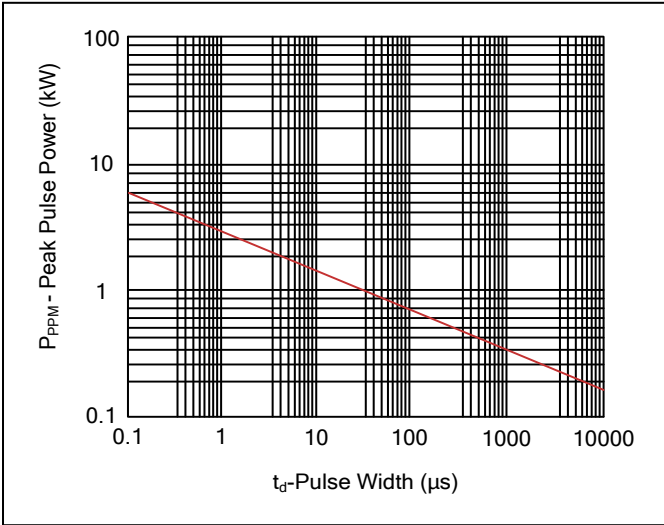


Figure 2. Pulse Derating Curve

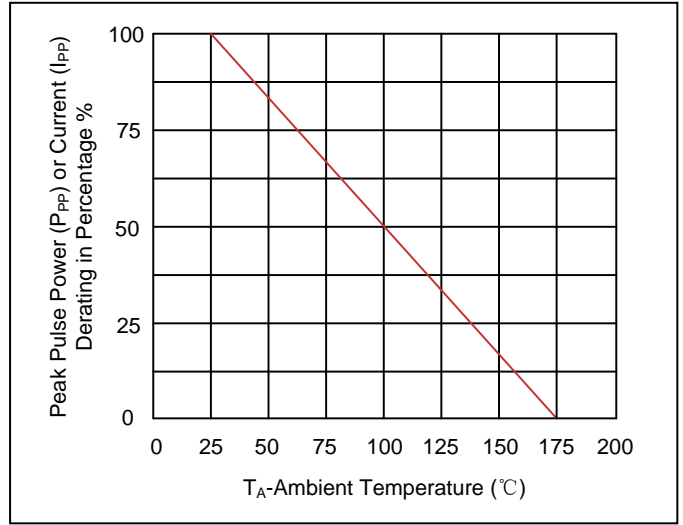


Figure 3. Pulse Waveform

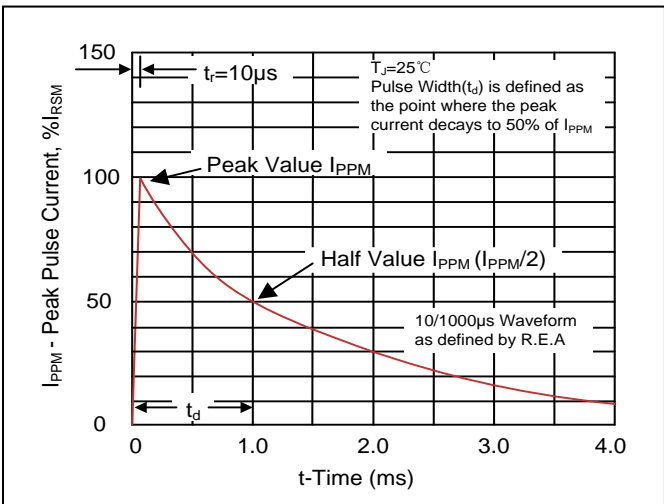


Figure 4. Typical Junction Capacitance

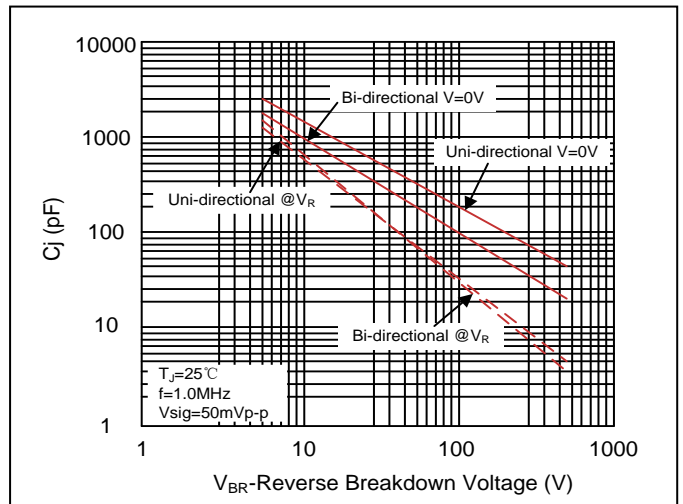


Figure 5. Steady State Power Dissipation Derating Curve

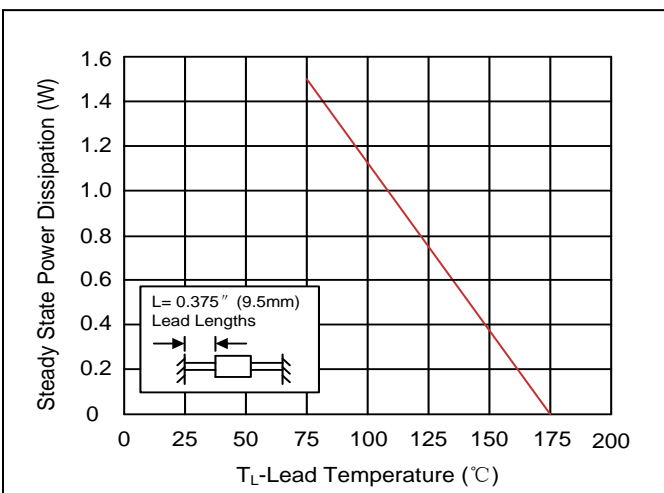
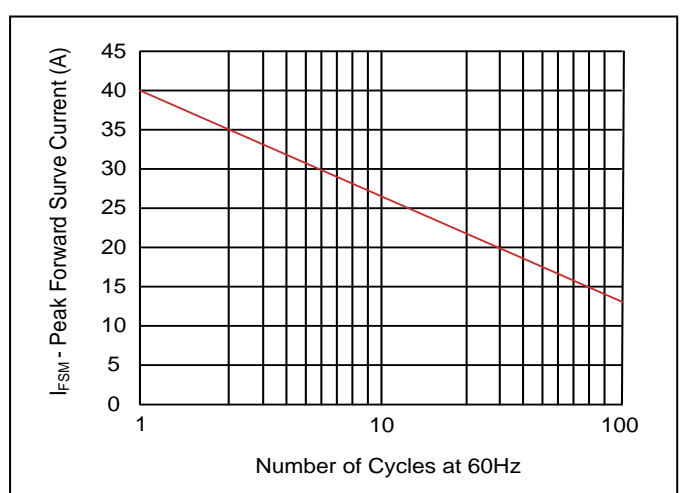
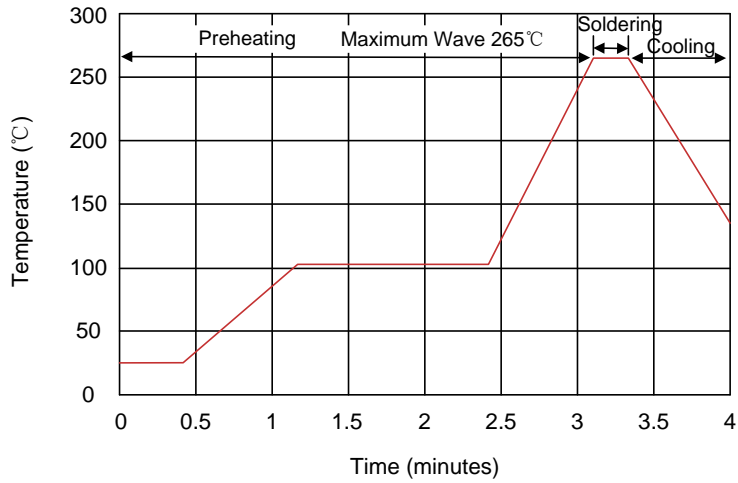


Figure 6. Maximum Non-Repetitive Forward Surge Current Uni-Directional Only



Recommended Soldering Conditions

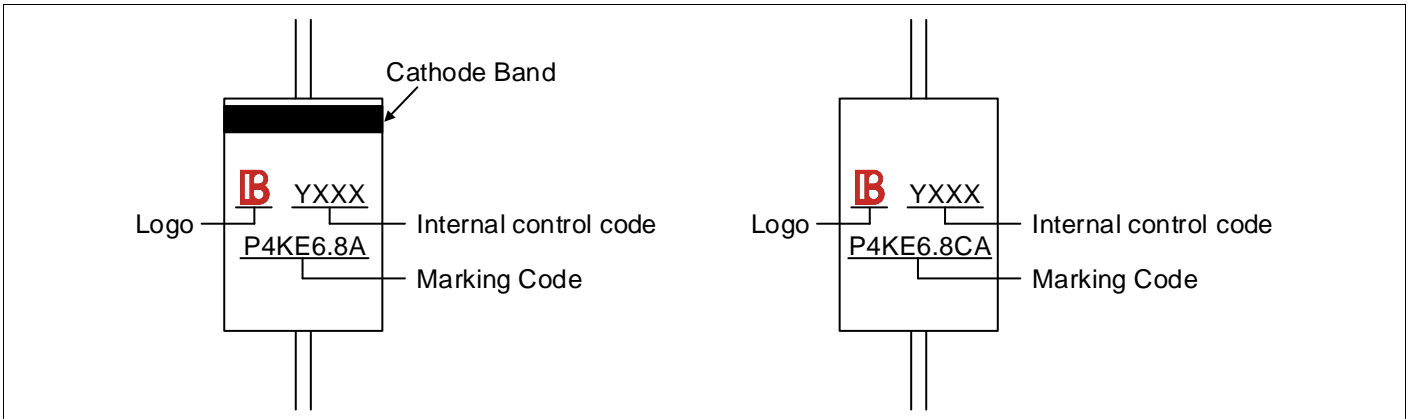
Wave Soldering



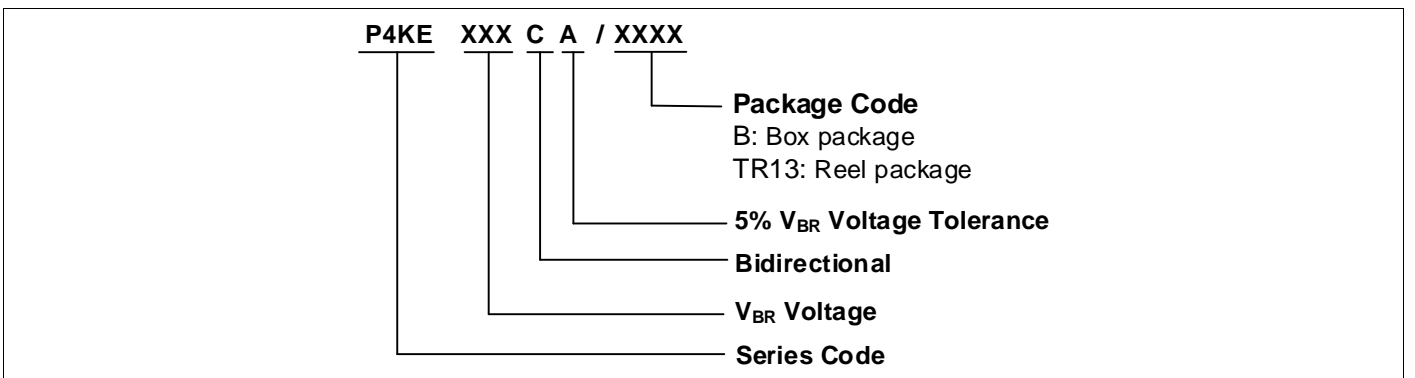
Recommended Conditions

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

Marking Code



Part Number Code

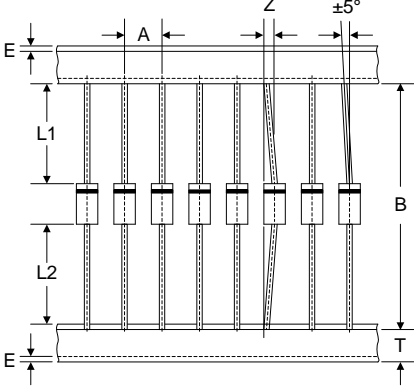
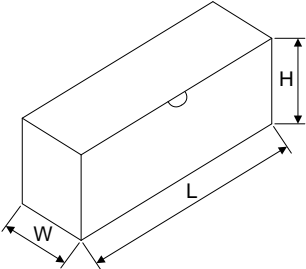
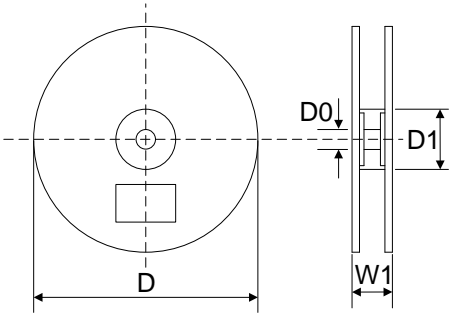


Ordering Code for Different Package

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.
		L
W		75.0±5.0
H		114.0±5.0
Quantity: 3000PCS		
	D	330.0±3.0
	D0	16.4±2.0
	D1	86.0±2.0
	W1	76.0±3.0
	Quantity: 5000PCS	

LEGAL DISCLAIMER

YAGEO, its distributors and agents (collectively, "YAGEO"), hereby disclaims any and all liabilities for any errors, inaccuracies or incompleteness contained in any product related information, including but not limited to product specifications, datasheets, pictures and/or graphics. YAGEO may make changes, modifications and/or improvements to product related information at any time and without notice.

YAGEO makes no representation, warranty, and/or guarantee about the fitness of its products for any particular purpose or the continuing production of any of its products. To the maximum extent permitted by law, YAGEO disclaims (i) any and all liability arising out of the application or use of any YAGEO product, (ii) any and all liability, including without limitation special, consequential or incidental damages, and (iii) any and all implied warranties, including warranties of fitness for a particular purpose, non-infringement and merchantability.

YAGEO products are designed for general purpose applications under normal operation and usage conditions. Please contact YAGEO for the applications listed below which require especially high reliability for the prevention of defects which might directly cause damage to the third party's life, body or property: Aerospace equipment (artificial satellite, rocket, etc.), Atomic energy-related equipment, Aviation equipment, Disaster prevention equipment, crime prevention equipment, Electric heating apparatus, burning equipment, Highly public information network equipment, data-processing equipment, Medical devices, Military equipment, Power generation control equipment, Safety equipment, Traffic signal equipment, Transportation equipment and Undersea equipment, or for any other application or use in which the failure of YAGEO products could result in personal injury or death, or serious property damage. Particularly **YAGEO Corporation and its affiliates do not recommend the use of commercial or automotive grade products for high reliability applications or manned space flight.**

Information provided here is intended to indicate product specifications only. YAGEO reserves all the rights for revising this content without further notification, as long as products are unchanged. Any product change will be announced by PCN.