

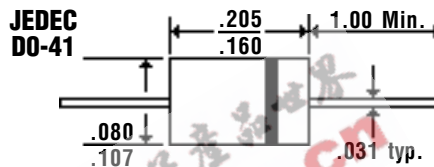
# 6.8V to 400V GPP TRANSIENT VOLTAGE SUPPRESSORS

**P4KE Series**

## Description



## Mechanical Dimensions



## Features

- 400 WATT PEAK POWER PROTECTION
- EXCELLENT CLAMPING CAPABILITY
- FAST RESPONSE TIME
- TYPICAL  $I_r < 1\mu A$  ABOVE 10V
- GLASS PASSIVATED CHIP CONSTRUCTION
- MEETS UL SPECIFICATION 94V-0

<b>P4KE Series</b>		<i>(For Bi-Polar Applications, See Note 1)</i>	<b>Units</b>
<b>Maximum Ratings</b>			
Peak Power Dissipation... $P_{PK}$ $T_p = 1ms$ (Note 5)	400 Min.		Watts
Steady State Power Dissipation... $P_D$ @ $T_L = 75^\circ C$	1		Watts
Non-Repetitive Peak Forward Surge Current... $I_{FSM}$ @ Rated Load Conditions, 8.3 ms, 1/2 Sine Wave, Single Phase (Note 3)	40		Amps
Weight... $G_{RM}$	0.30		Grams
Soldering Requirements (Time & Temp)... $S_T$ @ 250°C	10 Sec.		Min. to Solder
Operating & Storage Temperature Range... $T_J, T_{STRG}$	-65 to 175		°C

- NOTES:**
1. For Bi-Directional Applications, Use C or CA. Electrical Characteristics Apply in Both Directions.
  2. Mounted on 40mm<sup>2</sup> Copper Pads.
  3. 8.3 ms, 1/2 Sine Wave, Single Phase Duty Cycle, @ 4 Pulses Per Minute Maximum.
  4.  $V_{BR}$  Measured After  $I_r$ , Applies for 300  $\mu s$ .  $I_T$  = Square Wave Pulse or Equivalent.
  5. Non-Repetitive Current Pulse. Per Fig. 3 and Derated Above  $T_A = 25^\circ C$  Per Fig. 2.

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**Fig. 1 Pulse Rating Curve**



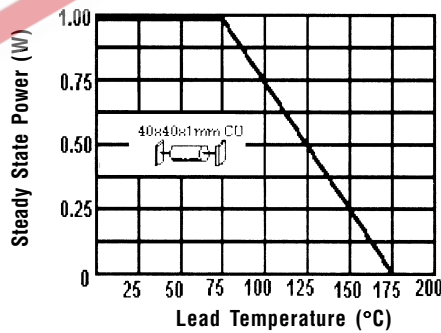
**Fig. 4 Typical Junction Capacitance**



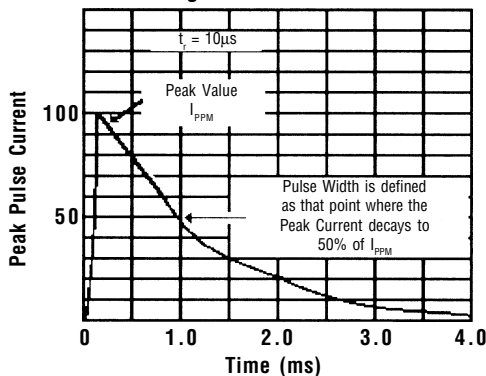
**Fig. 2 Pulse Derating Curve**



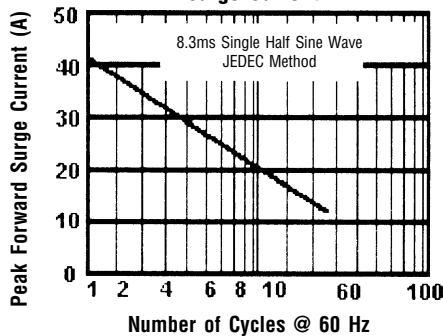
**Fig. 5 Steady State Power Derating**



**Fig. 3 Pulse Waveform**



**Fig. 6 Maximum Non-Repetitive Surge Current**



Ratings at 25 Deg. C ambient temperature unless otherwise specified.

Single Phase Half Wave, 60 Hz Resistive or Inductive Load.

For Capacitive Load, Derate Current by 20%.

## 6.8V to 400V GPP TRANSIENT VOLTAGE SUPPRESSORS

### P4KE Series

DEVICE	Breakdown Voltage			Working Peak Reverse Voltage $V_{RWM}$ (V)	Maximum Reverse Leakage @ $V_{RWM}$ $I_R$ ( $\mu$ A)	Peak Pulse Current $I_{PPM}$ (A) (Note 2)	Maximum Clamping Voltage @ $I_{PPM}$ $V_C$ (V)	Maximum Temperature Coefficient of $V_{BR}$ % / $^{\circ}$ C
	$V_{BR}$ Volts (Note 1)		@ $I_T$ (mA)					
	Min.	Max.						
P4KE-6.8	6.12	7.48	10.00	5.50	1000	38.00	10.80	0.057
P4KE-6.8A	6.45	7.14	10.00	5.80	1000	40.00	10.50	0.057
P4KE-7.5	6.75	8.25	10.00	6.05	500	36.00	11.70	0.061
P4KE-7.5A	7.13	7.88	10.00	6.40	500	37.00	11.30	0.061
P4KE-8.2	7.38	9.02	10.00	6.63	200	33.00	12.50	0.065
P4KE-8.2A	7.79	8.61	10.00	7.02	200	35.00	12.10	0.065
P4KE-9.1	8.19	10.00	1.00	7.37	50.00	30.00	13.80	0.068
P4KE-9.1A	8.65	9.55	1.00	7.78	50.00	31.00	13.40	0.068
P4KE-10	9.00	11.00	1.00	8.10	10.00	28.00	15.00	0.073
P4KE-10A	9.50	10.50	1.00	8.55	10.00	29.00	14.50	0.073
P4KE-11	9.90	12.10	1.00	8.92	5.00	26.00	16.20	0.075
P4KE-11A	10.50	11.60	1.00	9.40	5.00	27.00	15.60	0.075
P4KE-12	10.80	13.20	1.00	9.72	5.00	24.00	17.30	0.078
P4KE-12A	11.40	12.60	1.00	10.20	5.00	25.00	16.70	0.078
P4KE-13	11.70	14.30	1.00	10.50	5.00	22.00	19.00	0.081
P4KE-13A	12.40	13.70	1.00	11.10	5.00	23.00	18.20	0.081
P4KE-15	13.50	16.50	1.00	12.10	5.00	19.00	22.00	0.084
P4KE-15A	14.30	15.80	1.00	12.80	5.00	20.00	21.20	0.084
P4KE-16	14.40	17.60	1.00	12.90	5.00	18.00	23.50	0.086
P4KE-16A	15.20	16.80	1.00	13.60	5.00	19.00	22.50	0.086
P4KE-18	16.20	19.80	1.00	14.50	5.00	16.00	26.50	0.088
P4KE-18A	17.10	18.90	1.00	15.30	5.00	17.00	25.20	0.088
P4KE-20	18.00	22.00	1.00	16.20	5.00	14.00	29.10	0.090
P4KE-20A	19.00	21.00	1.00	17.10	5.00	15.00	27.70	0.090
P4KE-22	19.80	24.20	1.00	17.80	5.00	13.00	31.90	0.092
P4KE-22A	20.90	23.10	1.00	18.80	5.00	14.00	30.60	0.092
P4KE-24	21.60	26.40	1.00	19.40	5.00	12.00	34.70	0.094
P4KE-24A	22.80	25.20	1.00	20.50	5.00	13.00	33.20	0.094
P4KE-27	24.30	29.70	1.00	21.80	5.00	11.00	39.10	0.096
P4KE-27A	25.70	28.40	1.00	23.10	5.00	11.20	37.50	0.096
P4KE-30	27.00	33.00	1.00	24.30	5.00	10.00	43.50	0.097
P4KE-30A	28.50	31.50	1.00	25.60	5.00	10.00	41.40	0.097
P4KE-33	29.70	36.30	1.00	26.80	5.00	9.00	47.70	0.098
P4KE-33A	31.40	34.70	1.00	28.20	5.00	9.00	45.70	0.098
P4KE-36	32.40	39.60	1.00	29.10	5.00	8.00	52.00	0.099
P4KE-36A	34.20	37.80	1.00	30.80	5.00	8.40	49.90	0.099
P4KE-39	35.10	42.90	1.00	31.60	5.00	7.40	56.40	0.100
P4KE-39A	37.10	41.00	1.00	33.30	5.00	7.80	53.90	0.100
P4KE-43	38.70	47.30	1.00	34.80	5.00	6.80	61.90	0.100
P4KE-43A	40.90	45.20	1.00	36.80	5.00	7.10	59.30	0.100
P4KE-47	42.30	51.70	1.00	38.10	5.00	6.20	67.80	0.100
P4KE-47A	44.70	49.40	1.00	40.20	5.00	5.00	64.80	0.100



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DEVICE	Breakdown Voltage			Working Peak Reverse Voltage $V_{RWM}$ (V)	Maximum Reverse Leakage @ $V_{RWM}$ $I_R$ (μA)	Peak Pulse Current $I_{PPM}$ (A) (Note 2)	Maximum Clamping Voltage @ $I_{PPM}$ $V_C$ (V)	Maximum Temperature Coefficient of $V_{BR}$ % / °C
	$V_{BR}$ Volts (Note 1)		@ $I_T$ (mA)					
	Min.	Max.						
P4KE-51	45.90	56.10	1.00	41.30	5.00	5.70	73.50	0.102
P4KE-51A	48.50	53.60	1.00	43.60	5.00	6.00	70.10	0.102
P4KE-56	50.40	61.60	1.00	45.40	5.00	5.20	80.50	0.103
P4KE-56A	53.20	58.80	1.00	47.80	5.00	5.50	77.00	0.103
P4KE-62	55.80	68.20	1.00	50.20	5.00	4.70	89.00	0.104
P4KE-62A	58.90	65.10	1.00	53.00	5.00	5.00	85.00	0.104
P4KE-68	61.20	74.80	1.00	55.10	5.00	4.30	98.00	0.104
P4KE-68A	64.60	71.40	1.00	58.10	5.00	4.60	92.00	0.105
P4KE-75	67.50	82.50	1.00	60.70	5.00	3.90	108.00	0.105
P4KE-75A	71.30	78.80	1.00	64.10	5.00	4.10	103.00	0.105
P4KE-82	73.80	90.20	1.00	66.40	5.00	3.60	118.00	0.105
P4KE-82A	77.90	86.10	1.00	70.10	5.00	3.70	113.00	0.105
P4KE-91	81.90	100.00	1.00	73.70	5.00	3.20	131.80	0.106
P4KE-91A	86.50	95.50	1.00	77.80	5.00	3.40	125.00	0.106
P4KE-100	90.00	110.00	1.00	81.00	5.00	2.90	144.00	0.106
P4KE-100A	95.00	105.00	1.00	85.50	5.00	3.10	137.00	0.106
P4KE-110	99.00	121.00	1.00	89.20	5.00	2.70	158.00	0.107
P4KE-110A	105.00	116.00	1.00	94.00	5.00	2.80	152.00	0.107
P4KE-120	108.00	132.00	1.00	97.20	5.00	2.40	173.00	0.107
P4KE-120A	114.00	126.00	1.00	102.00	5.00	2.50	165.00	0.107
P4KE-130	117.00	143.00	1.00	105.00	5.00	2.20	187.00	0.107
P4KE-130A	124.00	137.00	1.00	111.00	5.00	2.30	179.00	0.107
P4KE-150	135.00	165.00	1.00	121.00	5.00	2.00	215.00	0.108
P4KE-150A	143.00	158.00	1.00	128.00	5.00	2.00	207.00	0.108
P4KE-160	144.00	176.00	1.00	130.00	5.00	1.80	230.00	0.108
P4KE-160A	152.00	168.00	1.00	136.00	5.00	1.90	219.00	0.108
P4KE-170	153.00	187.00	1.00	138.00	5.00	1.70	244.00	0.108
P4KE-170A	162.00	179.00	1.00	145.00	5.00	1.80	234.00	0.108
P4KE-180	162.00	198.00	1.00	146.00	5.00	1.60	258.00	0.108
P4KE-180A	171.00	189.00	1.00	154.00	5.00	1.70	246.00	0.108
P4KE-200	180.00	220.00	1.00	162.00	5.00	1.50	287.00	0.108
P4KE-200A	190.00	210.00	1.00	171.10	5.00	1.53	274.00	0.108
P4KE-220	198.00	242.00	1.00	175.00	5.00	1.16	344.00	0.108
P4KE-220A	209.00	231.00	1.00	185.00	5.00	1.22	328.00	0.108
P4KE-250	225.00	275.00	1.00	202.00	5.00	1.11	360.00	0.110
P4KE-250A	237.00	267.00	1.00	214.00	5.00	1.16	344.00	0.110
P4KE-300	270.00	330.00	1.00	243.00	5.00	0.93	430.00	0.110
P4KE-300A	285.00	315.00	1.00	256.00	5.00	0.97	414.00	0.110
P4KE-350	315.00	385.00	1.00	284.00	5.00	0.79	504.00	0.110
P4KE-350A	332.00	368.00	1.00	300.00	5.00	0.83	482.00	0.110
P4KE-400	360.00	440.00	1.00	324.00	5.00	0.70	574.00	0.110
P4KE-400A	380.00	420.00	1.00	342.00	5.00	0.73	548.00	0.110

P4KE Series