



# P4KE SERIES

## GLASS PASSIVATED JUNCTION TRANSIENT VOLTAGE SUPPRESSOR POWER 400 Watt

**BREAK DOWN VOLTAGE**

**6.8 to 440 Volt**

**DO-41**

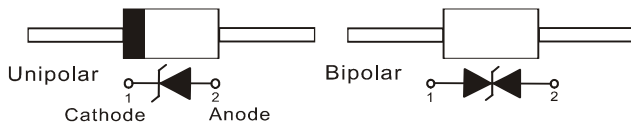
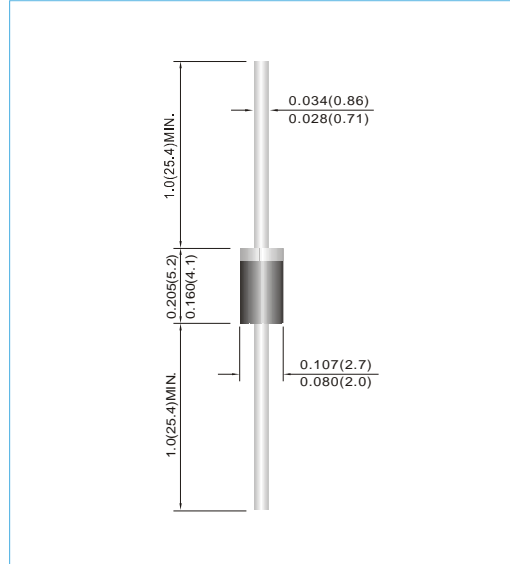
Unit : inch(mm)

### FEATURES

- Plastic package has Underwriters Laboratory Flammability Classification 94V-O
- Excellent clamping capability
- Low zener impedance
- Fast response time: typically less than 1 ps from 0 volts to BV min
- ESD IEC-61000-4-2 Air  $\pm 30$ kV, Contact  $\pm 30$ kV
- Lead free in compliance with EU RoHS 2011/65/EU directive

### MECHANICAL DATA

- Case: JEDEC DO-41 Molded plastic
- Terminals: Axial leads, solderable per MIL-STD-750, Method 2026
- Polarity: Color band denotes cathode end
- Weight: 0.012 ounce, 0.336 gram



### MAXIMUM RATINGS AND CHARACTERISTICS

Rating at 25°C ambient temperature unless otherwise specified.

### DEVICES FOR BIPOLAR APPLICATIONS

For Bidirectional use C or CA Suffix for types  
Electrical characteristics apply in both directions.

Rating	Symbol	Value	Units
Peak Power Dissipation at $T_A=25^\circ\text{C}$ , $t_p=1\text{ms}$ (Notes 1)	$P_{PP}$	400	Watts
ESD IEC-61000-4-2 (Air) ESD IEC-61000-4-2 (Contact)	$V_{ESD}$	$\pm 30$ $\pm 30$	kV
Typical Thermal Resistance Junction to Air Lead Lengths 0.375", (9.5mm) (Notes 2)	$R_{\theta JA}$	60	$^\circ\text{C} / \text{W}$
Peak Pulse Current on $t_p=10/1000\mu\text{s}$ waveform (Notes 1)	$I_{PPM}$	see Table	Amps
Peak Forward Surge Current, 8.3ms Single Half Sine-Wave Superimposed on Rated Load (Notes 3)	$I_{FSM}$	40	Amps
Operating Junction and Storage Temperature Range	$T_J, T_{STG}$	-65 to +175	$^\circ\text{C}$

#### NOTES :

1. Non-repetitive current pulse, per Fig. 3 and derated above  $T_A=25^\circ\text{C}$  per Fig. 2.
2. Mounted on Copper Leaf area of  $1.57\text{ in}^2$  ( $40\text{mm}^2$ ).
3. 8.3ms single half sine-wave, duty cycle= 4 pulses per minutes maximum.
4. A transient suppressor is selected according to the working peak reverse voltage ( $V_{RWM}$ ), which should be equal to or greater than the DC or continuous peak operating voltage level.



## P4KE SERIES

Part Number		Reverse Stand-off Voltage	Breakdown Voltage		Test Current	Reverse Leakage		Max. Clamp Voltage 10/1000µs	Peak Pulse Current 10/1000µs	Marking Code	
		V <sub>RWM</sub> (Notes 4)	V <sub>BR</sub> @ I <sub>T</sub>		I <sub>T</sub>	I <sub>r</sub> @ V <sub>RWM</sub>		V <sub>C</sub> @ I <sub>PP</sub>	I <sub>PP</sub>		
			Min.	Max.		UNI	BI				
UNI	BI	V	V	V	mA	µA	µA	V	A	UNI	BI
400W Transient Voltage Suppressor											
P4KE6.8	P4KE6.8C	5.5	6.12	7.48	10	1000	2000	10.8	38	P4KE6.8	P4KE6.8C
P4KE6.8A	P4KE6.8CA	5.8	6.45	7.14	10	1000	2000	10.5	40	P4KE6.8A	P4KE6.8CA
P4KE7.5	P4KE7.5C	6.05	6.75	8.25	10	500	1000	11.7	36	P4KE7.5	P4KE7.5C
P4KE7.5A	P4KE7.5CA	6.4	7.13	7.88	10	500	1000	11.3	37	P4KE7.5A	P4KE7.5CA
P4KE8.2	P4KE8.2C	6.63	7.38	9.02	10	200	400	12.5	33	P4KE8.2	P4KE8.2C
P4KE8.2A	P4KE8.2CA	7.02	7.79	8.61	10	200	400	12.1	35	P4KE8.2A	P4KE8.2CA
P4KE9.1	P4KE9.1C	7.37	8.19	10	1	50	100	13.8	30	P4KE9.1	P4KE9.1C
P4KE9.1A	P4KE9.1CA	7.78	8.65	9.5	1	50	100	13.4	31	P4KE9.1A	P4KE9.1CA
P4KE10	P4KE10C	8.1	9	11	1	10	20	15	28	P4KE10	P4KE10C
P4KE10A	P4KE10CA	8.55	9.5	10.5	1	10	20	14.5	29	P4KE10A	P4KE10CA
P4KE11	P4KE11C	8.9	9.9	12.1	1	5	10	16.2	26	P4KE11	P4KE11C
P4KE11A	P4KE11CA	9.4	10.5	11.6	1	5	10	15.6	27	P4KE11A	P4KE11CA
P4KE12	P4KE12C	9.72	10.8	13.2	1	1	1	17.3	24	P4KE12	P4KE12C
P4KE12A	P4KE12CA	10.2	11.4	12.6	1	1	1	16.7	25	P4KE12A	P4KE12CA
P4KE13	P4KE13C	10.5	11.7	14.3	1	1	1	19	22	P4KE13	P4KE13C
P4KE13A	P4KE13CA	11.1	12.4	13.7	1	1	1	18.2	23	P4KE13A	P4KE13CA
P4KE15	P4KE15C	12.1	13.5	16.5	1	1	1	22	19	P4KE15	P4KE15C
P4KE15A	P4KE15CA	12.8	14.3	15.8	1	1	1	21.2	20	P4KE15A	P4KE15CA
P4KE16	P4KE16C	12.9	14.4	17.6	1	1	1	23.5	18	P4KE16	P4KE16C
P4KE16A	P4KE16CA	13.6	15.2	16.8	1	1	1	22.5	19	P4KE16A	P4KE16CA
P4KE18	P4KE18C	14.5	16.2	19.8	1	1	1	26.5	16	P4KE18	P4KE18C
P4KE18A	P4KE18CA	15.3	17.1	18.9	1	1	1	25.2	17	P4KE18A	P4KE18CA
P4KE20	P4KE20C	16.2	18	22	1	1	1	29.1	14	P4KE20	P4KE20C
P4KE20A	P4KE20CA	17.1	19	21	1	1	1	27.7	15	P4KE20A	P4KE20CA
P4KE22	P4KE22C	17.8	19.8	24.2	1	1	1	31.9	13	P4KE22	P4KE22C
P4KE22A	P4KE22CA	18.8	20.9	23.1	1	1	1	30.6	14	P4KE22A	P4KE22CA
P4KE24	P4KE24C	19.4	21.6	26.4	1	1	1	34.7	12	P4KE24	P4KE24C
P4KE24A	P4KE24CA	20.5	22.8	25.2	1	1	1	33.2	13	P4KE24A	P4KE24CA
P4KE27	P4KE27C	21.8	24.3	29.7	1	1	1	39.1	11	P4KE27	P4KE27C
P4KE27A	P4KE27CA	23.1	25.7	28.4	1	1	1	37.5	11.2	P4KE27A	P4KE27CA
P4KE30	P4KE30C	24.3	27	33	1	1	1	43.5	10	P4KE30	P4KE30C
P4KE30A	P4KE30CA	25.6	28.5	31.5	1	1	1	41.4	10	P4KE30A	P4KE30CA
P4KE33	P4KE33C	26.8	29.7	36.3	1	1	1	47.7	9	P4KE33	P4KE33C
P4KE33A	P4KE33CA	28.2	31.4	34.7	1	1	1	45.7	9	P4KE33A	P4KE33CA
P4KE36	P4KE36C	29.1	32.4	39.6	1	1	1	52	8	P4KE36	P4KE36C
P4KE36A	P4KE36CA	30.8	34.2	37.8	1	1	1	49.9	8.4	P4KE36A	P4KE36CA
P4KE39	P4KE39C	31.6	35.1	42.9	1	1	1	56.4	7.4	P4KE39	P4KE39C
P4KE39A	P4KE39CA	33.3	37.1	41	1	1	1	53.9	7.8	P4KE39A	P4KE39CA
P4KE43	P4KE43C	34.8	38.7	47.3	1	1	1	61.9	6.8	P4KE43	P4KE43C
P4KE43A	P4KE43CA	36.8	40.9	45.2	1	1	1	59.3	7.1	P4KE43A	P4KE43CA
P4KE47	P4KE47C	38.1	42.3	51.7	1	1	1	67.8	6.2	P4KE47	P4KE47C
P4KE47A	P4KE47CA	40.2	44.7	49.4	1	1	1	64.8	5	P4KE47A	P4KE47CA
P4KE51	P4KE51C	41.3	45.9	56.1	1	1	1	73.5	5.7	P4KE51	P4KE51C

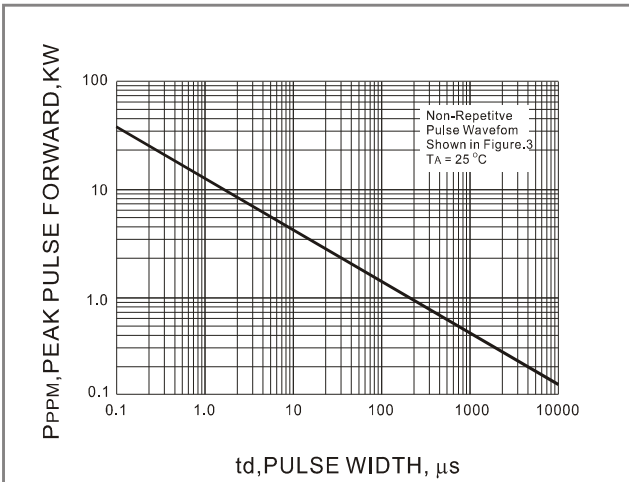


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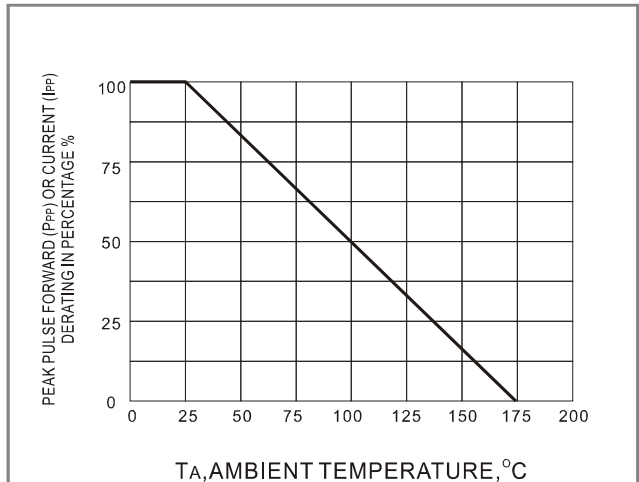
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		V <sub>RWM</sub> (Notes 4)	V <sub>BR</sub> @ I <sub>T</sub>		I <sub>T</sub>	I <sub>R</sub> @ V <sub>RWM</sub>		V <sub>C</sub> @ I <sub>PP</sub>	I <sub>PP</sub>		
			Min.	Max.		UNI	BI				
UNI	BI	V	V	V	mA	µA	µA	V	A	UNI	BI
400W Transient Voltage Suppressor											
P4KE51A	P4KE51CA	43.6	48.5	53.6	1	1	1	70.1	6	P4KE51A	P4KE51CA
P4KE56	P4KE56C	45.6	50.4	61.6	1	1	1	80.5	5.2	P4KE56	P4KE56C
P4KE56A	P4KE56CA	47.8	53.2	58.8	1	1	1	77	5.5	P4KE56A	P4KE56CA
P4KE62	P4KE62C	50.2	55.8	68.2	1	1	1	89	4.7	P4KE62	P4KE62C
P4KE62A	P4KE62CA	53	58.9	65.1	1	1	1	85	5	P4KE62A	P4KE62CA
P4KE68	P4KE68C	55.1	61.2	74.8	1	1	1	98	4.3	P4KE68	P4KE68C
P4KE68A	P4KE68CA	58.1	64.6	71.4	1	1	1	92	4.6	P4KE68A	P4KE68CA
P4KE75	P4KE75C	60.7	67.5	82.5	1	1	1	108	3.9	P4KE75	P4KE75C
P4KE75A	P4KE75CA	64.1	71.3	78.8	1	1	1	103	4.1	P4KE75A	P4KE75CA
P4KE82	P4KE82C	66.4	73.8	90.2	1	1	1	118	3.6	P4KE82	P4KE82C
P4KE82A	P4KE82CA	70.1	77.9	86.1	1	1	1	113	3.7	P4KE82A	P4KE82CA
P4KE91	P4KE91C	73.7	81.9	100	1	1	1	131	3.2	P4KE91	P4KE91C
P4KE91A	P4KE91CA	77.8	86.5	95.5	1	1	1	125	3.4	P4KE91A	P4KE91CA
P4KE100	P4KE100C	81	90	110	1	1	1	144	2.9	P4KE100	P4KE100C
P4KE100A	P4KE100CA	85.5	95	105	1	1	1	137	3.1	P4KE100A	P4KE100CA
P4KE110	P4KE110C	89.2	99	121	1	1	1	158	2.7	P4KE110	P4KE110C
P4KE110A	P4KE110CA	94	105	116	1	1	1	152	2.8	P4KE110A	P4KE110CA
P4KE120	P4KE120C	97.2	108	132	1	1	1	173	2.4	P4KE120	P4KE120C
P4KE120A	P4KE120CA	102	114	126	1	1	1	165	2.5	P4KE120A	P4KE120CA
P4KE130	P4KE130C	105	117	143	1	1	1	187	2.2	P4KE130	P4KE130C
P4KE130A	P4KE130CA	111	124	137	1	1	1	179	2.3	P4KE130A	P4KE130CA
P4KE150	P4KE150C	121	135	165	1	1	1	215	2	P4KE150	P4KE150C
P4KE150A	P4KE150CA	128	143	158	1	1	1	207	2	P4KE150A	P4KE150CA
P4KE160	P4KE160C	130	144	176	1	1	1	230	1.8	P4KE160	P4KE160C
P4KE160A	P4KE160CA	136	152	168	1	1	1	219	1.9	P4KE160A	P4KE160CA
P4KE170	P4KE170C	138	153	187	1	1	1	244	1.7	P4KE170	P4KE170C
P4KE170A	P4KE170CA	145	162	179	1	1	1	234	1.8	P4KE170A	P4KE170CA
P4KE180	P4KE180C	146	162	198	1	1	1	258	1.6	P4KE180	P4KE180C
P4KE180A	P4KE180CA	154	171	189	1	1	1	246	1.7	P4KE180A	P4KE180CA
P4KE200	P4KE200C	162	180	220	1	1	1	287	1.5	P4KE200	P4KE200C
P4KE200A	P4KE200CA	171	190	210	1	1	1	274	1.5	P4KE200A	P4KE200CA
P4KE220	P4KE220C	175	198	242	1	1	1	344	1.2	P4KE220	P4KE220C
P4KE220A	P4KE220CA	185	209	231	1	1	1	328	1.2	P4KE220A	P4KE220CA
P4KE250	P4KE250C	202	225	275	1	1	1	360	1.1	P4KE250	P4KE250C
P4KE250A	P4KE250CA	214	237	263	1	1	1	344	1.2	P4KE250A	P4KE250CA
P4KE300	P4KE300C	243	270	330	1	1	1	430	0.9	P4KE300	P4KE300C
P4KE300A	P4KE300CA	256	285	315	1	1	1	414	1	P4KE300A	P4KE300CA
P4KE350	P4KE350C	284	315	385	1	1	1	504	0.8	P4KE350	P4KE350C
P4KE350A	P4KE350CA	300	332	368	1	1	1	482	0.8	P4KE350A	P4KE350CA
P4KE400	P4KE400C	324	360	440	1	1	1	574	0.7	P4KE400	P4KE400C
P4KE400A	P4KE400CA	342	380	420	1	1	1	548	0.7	P4KE400A	P4KE400CA
P4KE440	P4KE440C	356	396	484	1	1	1	631	0.7	P4KE440	P4KE440C
P4KE440A	P4KE440CA	376	418	462	1	1	1	600	0.7	P4KE440A	P4KE440CA



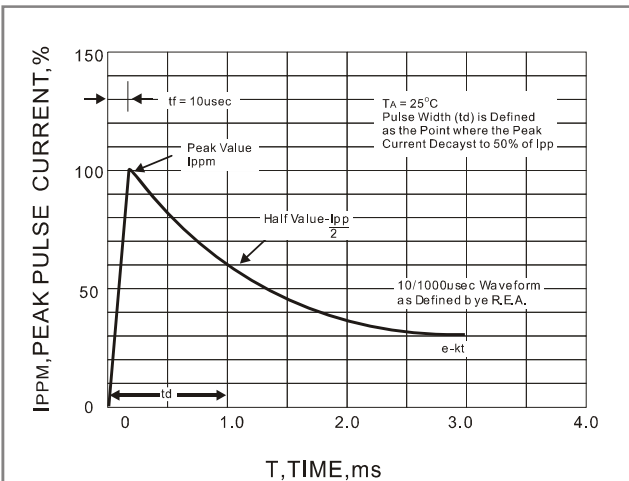
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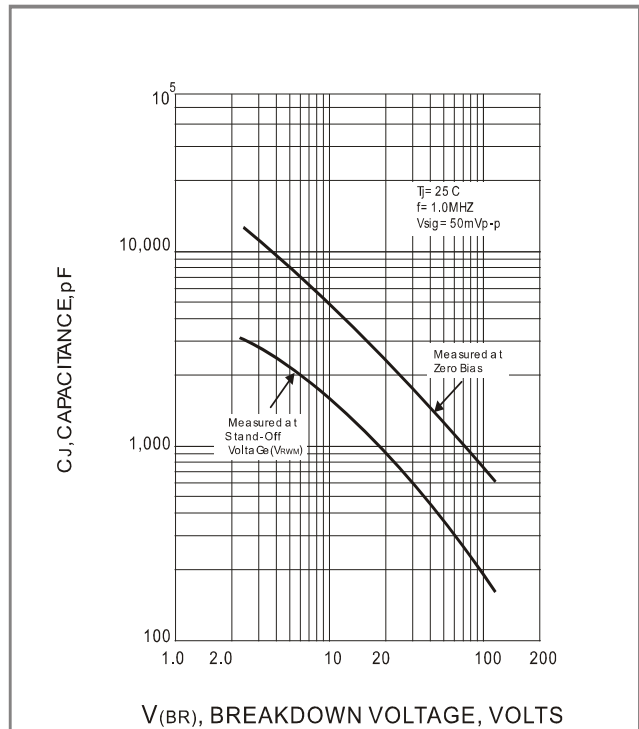
**Fig.1 PEAK PULSE POWER RATING PULSE TIME CURVE**



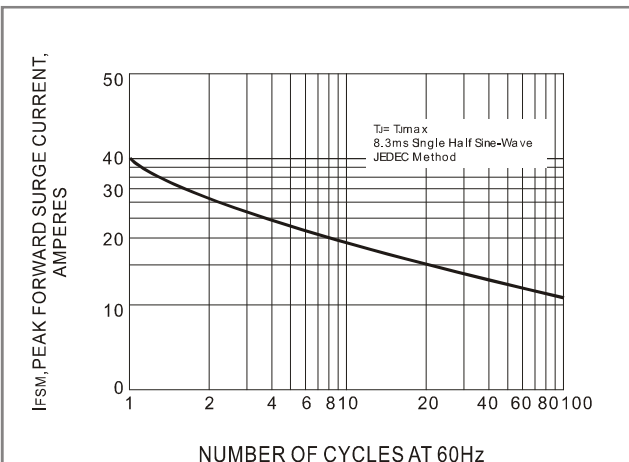
**Fig.2 PULSE DERATING CURVE**



**Fig.3 PULSE WAVEFORM**



**Fig.4 TYPICAL JUNCTION CAPACITANCE UNIDIRECTIONAL**



**Fig.5 MAXIMUM NON-REPETITIVE PEAK FORWARD SURGE CURRENT**



## P4KE SERIES

### Part No\_packing code\_Version

P4KE6.8\_AY\_00001  
P4KE6.8\_AY\_10001  
P4KE6.8\_B0\_00001  
P4KE6.8\_B0\_10001  
P4KE6.8\_R2\_00001  
P4KE6.8\_R2\_10001

For example :

**RB500V-40** **R2** **00001**



Packing Code <b>XX</b>				Version Code <b>XXXXX</b>		
Packing type	1 <sup>st</sup> Code	Packing size code	2 <sup>nd</sup> Code	HF or RoHS	1 <sup>st</sup> Code	2 <sup>nd</sup> ~5 <sup>th</sup> Code
Tape and Ammunition Box (T/B)	<b>A</b>	N/A	<b>0</b>	<b>HF</b>	<b>0</b>	serial number
Tape and Reel (T/R)	<b>R</b>	7"	<b>1</b>	<b>RoHS</b>	<b>1</b>	serial number
Bulk Packing (B/P)	<b>B</b>	13"	<b>2</b>			
Tube Packing (T/P)	<b>T</b>	26mm	<b>X</b>			
Tape and Reel (Right Oriented) (TRR)	<b>S</b>	52mm	<b>Y</b>			
Tape and Reel (Left Oriented) (TRL)	<b>L</b>	PANASERT T/B CATHODE UP (PBCU)	<b>U</b>			
FORMING	<b>F</b>	PANASERT T/B CATHODE DOWN (PBCD)	<b>D</b>			



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[P4KE82A\\_B0\\_00001](#)