

# EDAL INDUSTRIES, INC.

51 COMMERCE STREET\* EAST HAVEN, CONNECTICUT 06512\* TELEPHONE (203)-467-2591\* FAX (203)-469-5928

## P4KE6.8-P4KE400 TRANSIENT VOLTAGE SUPPRESSOR

VBR: 6.8-400 V  
400 Watt Peak Power  
1.0 Watt Steady State

### FEATURES:

- \* 400W surge capability at 1 ms
- \* Excellent clamping capability
- \* Low zener impedance
- \* Fast response time: typically less than 1.0 ps. from 0 volts to BV min.
- \* Typical Ir less than 1 uA above 10V

### MECHANICAL DATA

- \* Case: Molded Plastic
- \* Epoxy: UL94V-O rate flame retardant
- \* Lead: Axial lead solderable per MIL-STD-202, method 208 guaranteed
- \* Polarity: Color band denotes cathode end except Bipolar
- \* Mounting position: Any
- \* Weight: 0.34 grams

### DEVICES FOR BIPOLAR APPLICATIONS

For Bi-directional use C or CA Suffix for types P4KE7.5 through types P4KE400.

Electrical characteristics apply in both directions

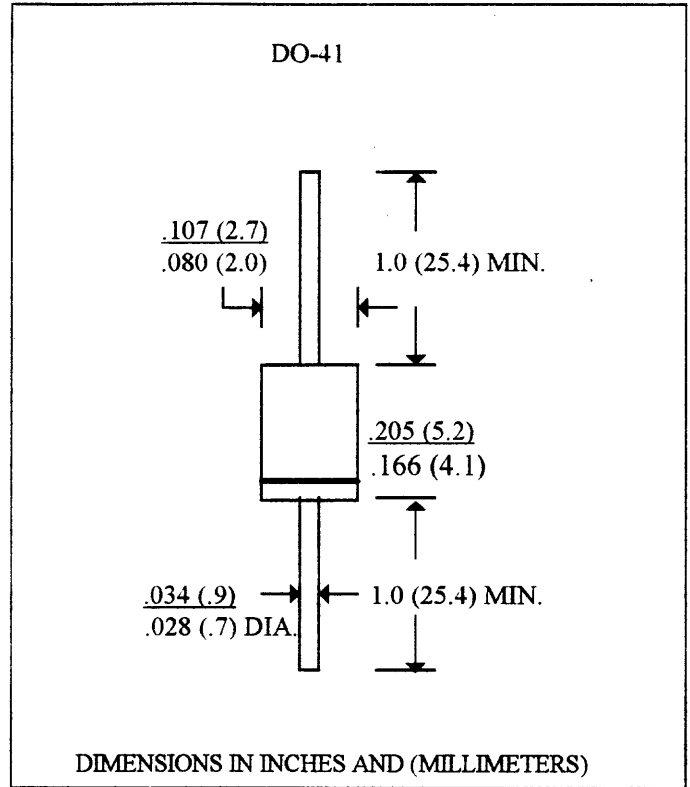
### MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Rating at 25°C ambient temperature unless otherwise specified.

RATING	SYMBOL	VALUE	UNITS
Peak Power Dissipation at TA=25°C, TP=1ms (Note 1)	Ppk	Minimum 400	Watts
Steady State Power Dissipation at TL=75°C Lead Lengths .375", (9.5 mm) (Note 2)	PD	1.0	Watts
Peak Forward Surge Current, 8.3 ms Single Half Sine-Wave Superimposed on Rated Load (JEDEC Method) (Note 3)	IFSM	40.0	Amps
Operating and Storage Temperature Range	Tj, Tstg	-65 to +175	°C

Notes:

1. Non-repetitive current pulse, per Fig. 3 and derated above TA=25°C per Fig. 2.
2. Mounted on Copper Leaf area of 1.57 in (40 mm).
3. 8.3 ms single half sine-wave, duty cycle=4 pulses per Minutes maximum.



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ELECTRICAL CHARACTERISTICS (Ta=25°C unless otherwise specified)

TYPE	BREAKDOWN VOLTAGE			WORKING PEAK REVERSE VOLTAGE VRWM (V)	MAXIMUM REVERSE LEAKAGE @ VRWM (uA)	MAXIMUM REVERSE CURRENT IRSM (A)	MAXIMUM CLAMPING VOLT @ IRSM (V)	MAXIMUM TEMP CO-EFFICIENT OF VBR (%°C)
	VBR (V)		@ It (mA)					
Unidirectional	MIN	MAX	(mA)	(V)	IR (uA)	(A)	(V)	(%°C)
P4KE 6.8	6.12	7.48	10	5.50	1000	38	10.8	0.057
P4KE 6.8A	6.45	7.14	10	5.80	1000	40	10.5	0.057
P4KE 7.5	6.75	8.25	10	6.05	500	36	11.7	0.061
P4KE 7.5A	7.13	7.88	10	6.40	500	37	11.3	0.061
P4KE 8.2	7.38	9.02	10	6.63	200	33	12.5	0.065
P4KE 8.2A	7.79	8.61	10	7.02	200	35	12.1	0.065
P4KE 9.1	8.19	10.0	1.0	7.37	50	30	13.8	0.068
P4KE 9.1A	8.65	9.55	1.0	7.8	50	31	13.4	0.068
P4KE 10	9.00	11.0	1.0	8.10	10	28	15.0	0.073
P4KE 10A	9.50	10.5	1.0	8.55	10	29	14.5	0.073
P4KE 11	9.90	12.1	1.0	8.92	5.0	26	16.2	0.075
P4KE 11A	10.5	11.6	1.0	9.40	5.0	27	15.6	0.075
P4KE 12	10.8	13.2	1.0	9.72	5.0	24	17.3	0.078
P4KE 12A	11.4	12.6	1.0	10.2	5.0	25	16.7	0.078
P4KE 13	11.7	14.3	1.0	10.5	5.0	22	19.0	0.081
P4KE 13A	12.4	13.7	1.0	11.1	5.0	23	18.2	0.081
P4KE 15	13.5	16.3	1.0	12.1	5.0	19	22.0	0.084
P4KE 15A	14.3	15.8	1.0	12.8	5.0	20	21.2	0.084
P4KE 16	14.4	17.6	1.0	12.9	5.0	18	23.5	0.086
P4KE 16A	15.2	16.8	1.0	13.6	5.0	19	22.5	0.086
P4KE 18	16.2	19.8	1.0	14.5	5.0	16	26.5	0.088
P4KE 18A	17.1	18.9	1.0	15.3	5.0	17	25.5	0.088
P4KE 20	18.0	22.0	1.0	16.2	5.0	14	29.1	0.090
P4KE 20A	19.0	21.0	1.0	17.1	5.0	15	27.7	0.090
P4KE 22	19.8	24.2	1.0	17.8	5.0	13	31.9	0.092
P4KE 22A	20.9	23.1	1.0	18.8	5.0	14	30.6	0.092
P4KE 24	21.6	26.4	1.0	19.4	5.0	12	34.7	0.094
P4KE 24A	22.8	25.2	1.0	20.5	5.0	13	33.2	0.094
P4KE 27	24.3	29.7	1.0	21.8	5.0	11	39.1	0.096
P4KE 27A	25.7	28.4	1.0	23.1	5.0	11.2	37.5	0.096
P4KE 30	27.0	33.0	1.0	24.3	5.0	10	43.5	0.097
P4KE 30A	28.5	31.5	1.0	25.6	5.0	10	41.4	0.097
P4KE 33	29.7	36.3	1.0	26.8	5.0	9	47.7	0.098
P4KE 33A	31.4	34.7	1.0	28.2	5.0	9	45.7	0.098
P4KE 36	32.4	39.6	1.0	29.1	5.0	8	52.0	0.099
P4KE 36A	34.2	37.8	1.0	30.8	5.0	8.4	49.9	0.099
P4KE 39	35.1	42.9	1.0	31.6	5.0	7.4	56.4	0.100
P4KE 39A	37.1	41.0	1.0	33.3	5.0	7.8	53.9	0.100
P4KE 43	38.7	47.3	1.0	34.8	5.0	6.8	61.9	0.101
P4KE 43A	40.9	45.2	1.0	36.8	5.0	7.1	59.3	0.101
P4KE 47	42.3	51.7	1.0	38.1	5.0	6.2	67.8	0.101
P4KE 47A	44.7	49.4	1.0	40.2	5.0	6.5	64.8	0.101
P4KE 51	45.9	56.1	1.0	41.3	5.0	5.7	73.5	0.102
P4KE 51A	48.5	53.6	1.0	43.6	5.0	6.0	70.1	0.102
P4KE 56	50.4	61.6	1.0	45.4	5.0	5.2	80.5	0.103
P4KE 56A	53.2	58.8	1.0	47.8	5.0	5.5	77.0	0.103
P4KE 62	55.8	68.2	1.0	50.2	5.0	4.7	89.0	0.104
P4KE 62A	58.9	65.1	1.0	53.0	5.0	5.0	85.0	0.104
P4KE 68	61.2	74.8	1.0	55.1	5.0	4.3	98.0	0.104
P4KE 68A	64.6	71.4	1.0	58.1	5.0	4.6	92.0	0.104

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	VBR (V) (I)		@ It (mA)					
Unidirectional	MIN	MAX						
P4KE 75	67.5	82.5	1.0	60.7	5.0	3.9	108.0	0.105
P4KE 75A	71.3	78.8	1.0	64.1	5.0	4.1	103.0	0.105
P4KE 82	73.8	90.2	1.0	66.4	5.0	3.6	118.0	0.105
P4KE 82A	77.9	86.1	1.0	70.1	5.0	3.7	113.0	0.105
P4KE 91	81.9	100.0	1.0	73.7	5.0	3.2	131.8	0.106
P4KE 91A	86.5	95.5	1.0	77.8	5.0	3.4	125.0	0.106
P4KE 100	90.0	110.0	1.0	81.0	5.0	2.9	144.0	0.106
P4KE 100A	95.0	105.0	1.0	85.0	5.0	3.1	137.0	0.106
P4KE 110	99.0	121.0	1.0	89.2	5.0	2.7	158.0	0.107
P4KE 110A	105.0	116.0	1.0	94.0	5.0	2.8	152.0	0.107
P4KE 120	108.0	132.0	1.0	97.2	5.0	2.4	173.0	0.107
P4KE 120A	114.0	126.0	1.0	102.0	5.0	2.5	165.0	0.107
P4KE 130	117.0	143.0	1.0	105.0	5.0	2.2	187.0	0.107
P4KE 130A	124.0	137.0	1.0	111.0	5.0	2.3	179.0	0.107
P4KE 150	135.0	165.0	1.0	121.0	5.0	2.0	215.0	0.108
P4KE 150A	143.0	158.0	1.0	128.0	5.0	2.0	207.0	0.108
P4KE 160	144.0	176.0	1.0	130.0	5.0	1.8	230.0	0.108
P4KE 160A	152.0	168.0	1.0	136.0	5.0	1.9	219.0	0.108
P4KE 170	153.0	187.0	1.0	138.0	5.0	1.7	244.0	0.108
P4KE 170A	162.0	179.0	1.0	145.0	5.0	1.8	234.0	0.108
P4KE 180	162.0	198.0	1.0	146.0	5.0	1.6	258.0	0.108
P4KE 180A	171.0	189.0	1.0	154.0	5.0	1.7	246.0	0.108
P4KE 200	180.0	220.0	1.0	162.0	5.0	1.5	287.0	0.108
P4KE 200A	190.0	210.0	1.0	171.0	5.0	1.53	274.0	0.108
P4KE 220	198.0	242.0	1.0	175.0	5.0	1.16	344.0	0.108
P4KE 220A	209.0	231.0	1.0	185.0	5.0	1.22	328.0	0.108
P4KE 250	225.0	275.0	1.0	202.0	5.0	1.11	360.0	0.110
P4KE 250A	237.0	263.0	1.0	214.0	5.0	1.16	344.0	0.110
P4KE 300	270.0	330.0	1.0	243.0	5.0	0.93	430.0	0.110
P4KE 300A	285.0	315.0	1.0	256.0	5.0	0.97	424.0	0.110
P4KE 350	315.0	385.0	1.0	284.0	5.0	0.79	504.0	0.110
P4KE 350A	332.0	368.0	1.0	300.0	5.0	0.83	482.0	0.110
P4KE 400	360.0	440.0	1.0	324.0	5.0	0.70	574.0	0.110
P4KE 400A	380.0	420.0	1.0	342.0	5.0	0.73	548.0	0.110

### NOTES:

- VBR measured after IT applied for 300 uS, IT=Square Wave Pulse or equivalent.
- Surge Current Waveform per Figure 3 and Derated per Figure 2.
- VF=3.5 V at IF=25 A (P4KE 6.8 thru P4KE 91A).  
VF=5.0 V at IF=25 A (P4KE 100 thru P4KE 400A) on 1/2 Square or Equivalent Sine Wave.  
PW=8.3 ms, Duty Cycle=4 Pulses per Minute Maximum.
- For Bipolar types moving VR of 10 volts and under, the IR limit is doubled.

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