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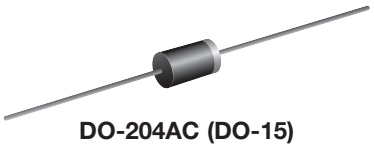
PAR® Transient Voltage Suppressors

High Temperature Stability and High Reliability Conditions



DO-204AC (DO-15)

PRIMARY CHARACTERISTICS	
V_{WM}	5.5 V to 36.8 V
V_{BR}	6.8 V to 43 V
P_{PPM}	600 W
P_D	5.0 W
I_{FSM}	75 A
T_J max.	185 °C
Polarity	Uni-directional
Package	DO-204AC (DO-15)

TYPICAL APPLICATIONS

Use in sensitive electronics protection against voltage transients induced by inductive load switching and lighting on ICs, MOSFET, signal lines of sensor units for consumer, computer, industrial, automotive, and telecommunication.

FEATURES

- Junction passivation optimized design passivated anisotropic rectifier technology
- T_J = 185 °C capability suitable for high reliability and automotive requirement
- Available in uni-directional polarity only
- 600 W peak pulse power capability with a 10/1000 µs waveform, repetitive rate (duty cycle): 0.01 %
- Excellent clamping capability
- Very fast response time
- Low incremental surge resistance
- Solder dip 275 °C max. 10 s, per JESD 22-B106
- AEC-Q101 qualified
- Material categorization: For definitions of compliance please see www.vishay.com/doc?99912

RoHS COMPLIANT

MECHANICAL DATA

Case: DO-204AC, molded epoxy over passivated junction
Molding compound meets UL 94 V-0 flammability rating
Base P/NHE3 - RoHS-compliant, AEC-Q101 qualified

Terminals: Matte tin plated leads, solderable per J-STD-002 and JESD 22-B102
HE3 suffix meets JESD 201 class 2 whisker test

Polarity: Color band denotes cathode end

MAXIMUM RATINGS (T_A = 25 °C unless otherwise noted)			
PARAMETER	**SYMBOL**	**VALUE**	**UNIT**
Peak pulse power dissipation with a 10/1000 µs waveform (1) (fig. 1)	P_{PPM}	600	W
Pulse current with a 10/1000 µs waveform (1) (fig. 3)	I_{PPM}	See next table	A
Power dissipation on infinite heatsink at T_L = 75 °C (fig. 5)	P_D	5.0	W
Peak forward surge current 8.3 ms single half sine-wave (2)	I_{FSM}	75	A
Maximum instantaneous forward voltage at 50 A (2)	V_F	3.5	V
Operating junction and storage temperature range	T_J, T_{STG}	-65 to +185	°C

Notes

(1) Non-repetitive current pulse, per fig. 3 and derated above T_A = 25 °C per fig. 2

(2) Measured on 8.3 ms single half sine-wave or equivalent square wave, duty cycle = 4 per minute maximum

ELECTRICAL CHARACTERISTICS (T_A = 25 °C unless otherwise noted)

DEVICE TYPE	BREAKDOWN VOLTAGE V_{BR} [1] AT I_T (V)		TEST CURRENT I_T (mA)	STAND-OFF VOLTAGE V_{WM} (V)	MAXIMUM REVERSE LEAKAGE AT V_{WM} I_D (µA)	T_J = 150 °C MAXIMUM REVERSE LEAKAGE AT V_{WM} I_D (µA)	PEAK PULSE CURRENT I_{PPM} [2] (A)	MAXIMUM CLAMPING VOLTAGE AT I_{PPM} V_C (V)	MAXIMUM TEMP. COEFFICIENT OF V_{BR} (%/°C)
	MIN.	MAX.							
P6KA6.8	6.12	7.48	10	5.50	500	1000	55.6	10.8	0.057
P6KA6.8A	6.45	7.14	10	5.80	500	1000	57.1	10.5	0.057
P6KA7.5	6.75	8.25	10	6.05	250	500	51.3	11.7	0.061
P6KA7.5A	7.13	7.88	10	6.40	250	500	53.1	11.3	0.061
P6KA8.2	7.38	9.02	10	6.63	100	200	48.0	12.5	0.065
P6KA8.2A	7.79	8.61	10	7.02	100	200	49.6	12.1	0.065
P6KA9.1	8.19	10.0	1.0	7.37	25	50	43.5	13.8	0.068
P6KA9.1A	8.65	9.55	1.0	7.78	25	50	44.8	13.4	0.068
P6KA10	9.00	11.0	1.0	8.10	10	20	40.0	15.0	0.073
P6KA10A	9.50	10.5	1.0	8.55	10	20	41.4	14.5	0.073
P6KA11	9.90	12.1	1.0	8.92	5.0	5.0	37.0	16.2	0.075
P6KA11A	10.5	11.6	1.0	9.40	5.0	5.0	38.5	15.6	0.076
P6KA12	10.8	13.2	1.0	9.72	2.0	5.0	34.7	17.3	0.076
P6KA12A	11.4	12.6	1.0	10.2	2.0	5.0	35.9	16.7	0.078
P6KA13	11.7	14.3	1.0	10.5	2.0	5.0	31.6	19.0	0.081
P6KA13A	12.4	13.7	1.0	11.1	2.0	5.0	33.0	18.2	0.081
P6KA15	13.5	16.3	1.0	12.1	1.0	5.0	27.3	22.0	0.084
P6KA15A	14.3	15.8	1.0	12.8	1.0	5.0	28.3	21.2	0.084
P6KA16	14.4	17.6	1.0	12.9	1.0	5.0	25.5	23.5	0.086
P6KA16A	15.2	16.8	1.0	13.6	1.0	5.0	26.7	22.5	0.080
P6KA18	16.2	19.8	1.0	14.5	1.0	5.0	22.6	26.5	0.088
P6KA18A	17.1	18.9	1.0	15.3	1.0	5.0	23.8	25.2	0.088
P6KA20	18.0	22.0	1.0	16.2	1.0	5.0	20.6	29.1	0.090
P6KA20A	19.0	21.0	1.0	17.1	1.0	5.0	21.7	27.7	0.090
P6KA22	19.8	24.2	1.0	17.8	1.0	5.0	18.8	31.9	0.092
P6KA22A	20.9	23.1	1.0	18.8	1.0	5.0	19.6	30.6	0.092
P6KA24	21.6	26.4	1.0	19.4	1.0	5.0	17.3	34.7	0.094
P6KA24A	22.8	25.2	1.0	20.5	1.0	5.0	18.1	33.6	0.094
P6KA27	24.3	29.7	1.0	21.8	1.0	5.0	15.3	39.1	0.096
P6KA27A	25.7	28.4	1.0	23.1	1.0	5.0	16.0	37.5	0.096
P6KA30	27.0	33.0	1.0	24.3	1.0	5.0	13.8	43.5	0.097
P6KA30A	28.5	31.5	1.0	25.6	1.0	5.0	14.5	41.4	0.097
P6KA33	29.7	36.3	1.0	26.8	1.0	5.0	12.6	47.7	0.098
P6KA33A	31.4	34.7	1.0	28.2	1.0	5.0	13.1	45.7	0.098
P6KA36	32.4	39.6	1.0	29.1	1.0	5.0	11.5	52.0	0.099
P6KA36A	34.2	37.8	1.0	30.8	1.0	5.0	12.0	49.9	0.099
P6KA39	35.1	42.9	1.0	31.6	1.0	5.0	10.6	56.4	0.100
P6KA39A	37.1	41.0	1.0	33.3	1.0	5.0	11.1	53.9	0.100
P6KA43	38.7	47.3	1.0	34.8	1.0	5.0	9.7	61.9	0.101
P6KA43A	40.9	45.2	1.0	36.8	1.0	5.0	10.1	59.3	0.101

Notes

(1) Pulse test: $t_p \leq 50$ ms

(2) Surge current waveform per fig. 3 and derate per fig. 2

(3) All terms and symbols are consistent with ANSI/IEEE C62.35

ORDERING INFORMATION (Example)				
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
P6KA6.8AHE3/54 (1)	0.415	54	4000	13" diameter paper tape and reel

Note

(1) AEC-Q101 qualified

RATINGS AND CHARACTERISTICS CURVES (T_A = 25 °C unless otherwise noted)

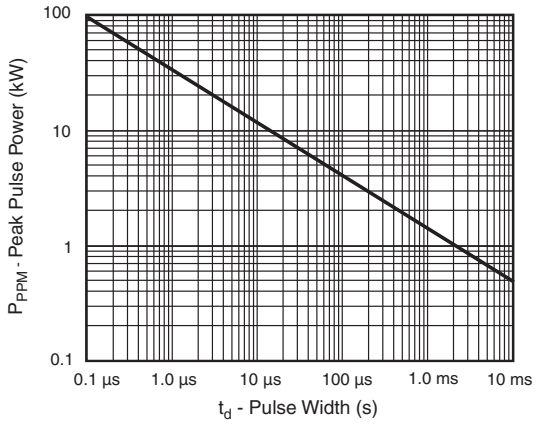


Fig. 1 - Peak Pulse Power Rating Curve

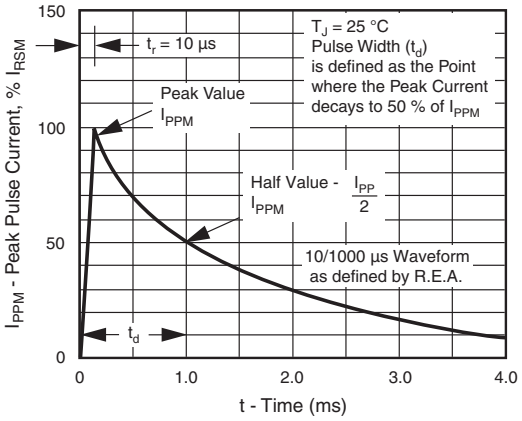


Fig. 3 - Pulse Waveform

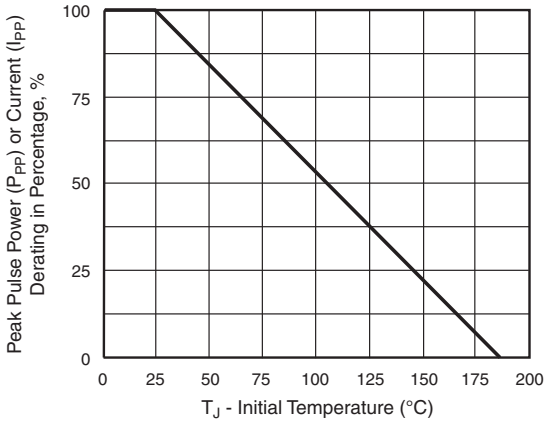


Fig. 2 - Pulse Power or Current vs. Initial Junction Temperature

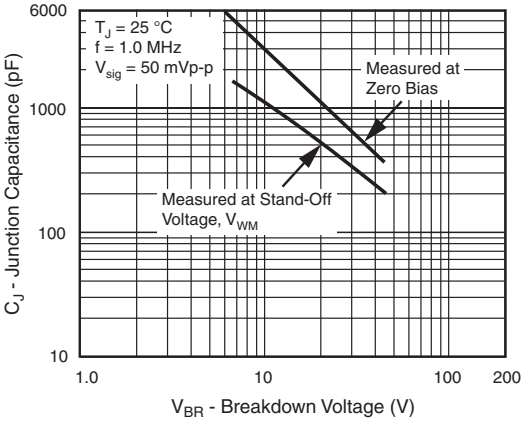


Fig. 4 - Typical Junction Capacitance

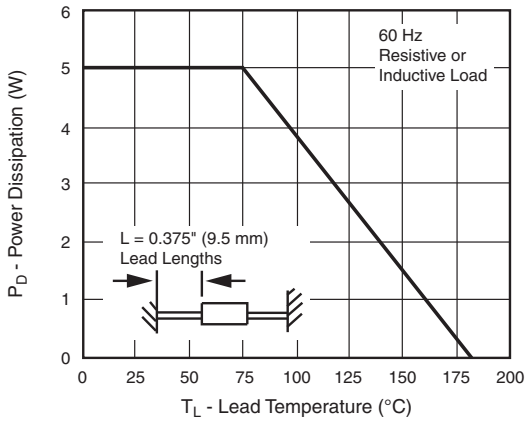


Fig. 5 - Power Derating Curve

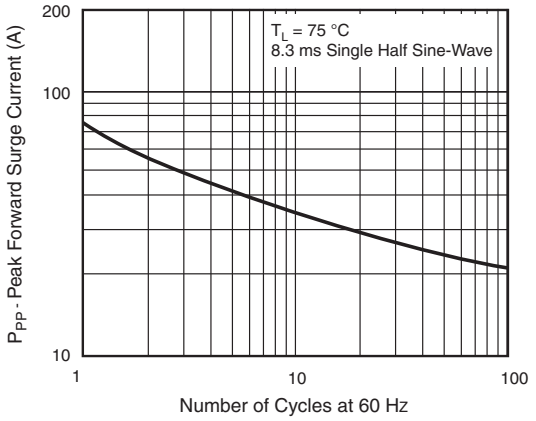
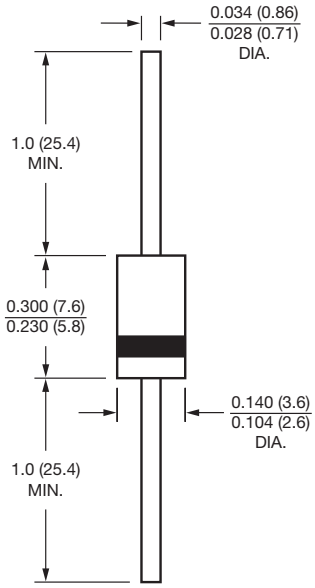


Fig. 6 - Maximum Non-Repetitive Forward Surge Current

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

DO-204AC (DO-15)



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