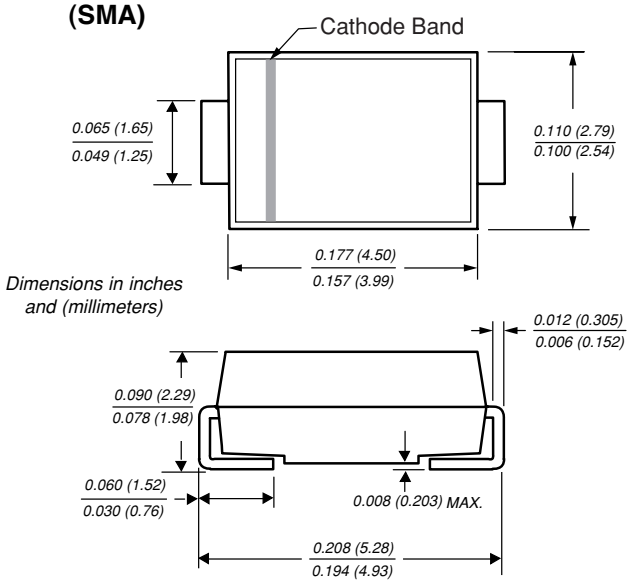
New Product

Vishay Semiconductors
formerly General Semiconductor

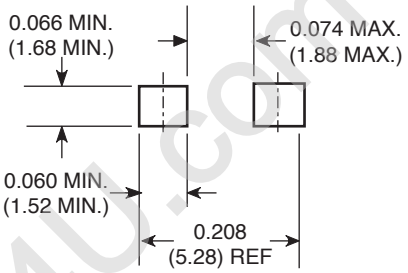
High Power Density Surface Mount TRANSZORB® Transient Voltage Suppressors

Stand-off Voltage 5.0 to 40 V
Peak Pulse Power 500 W

DO-214AC (SMA)



Mounting Pad Layout



Mechanical Data

Case: JEDEC DO-214AC molded plastic over passivated chip
Terminals: Solder plated, solderable per MIL-STD-750, Method 2026
High temperature soldering guaranteed: 250°C/10 seconds at terminals
Polarity: For uni-directional types the band denotes the cathode, which is positive with respect to the anode under normal TVS operation
Mounting Position: Any **Weight:** 0.002oz., 0.064g

Features

- Plastic package has Underwriters Laboratory Flammability Classification 94V-0
- Ideal for ESD protection of data lines in accordance with IEC 1000-4-2 (IEC801-2)
- Ideal for EFT protection of data lines in accordance with IEC 1000-4-4 (IEC801-4)
- Low profile package with built-in strain relief for surface mounted applications
- Glass passivated junction
- Low incremental surge resistance, excellent clamping capability
- 500W peak pulse power capability with a 10/1000μs waveform, repetition rate (duty cycle): 0.01%
- Very fast response time

Devices for Bidirectional Applications

For bi-directional devices, use suffix C or CA (e.g. SMA5J10CA). Electrical characteristics apply in both directions.

Maximum Ratings & Thermal Characteristics

Ratings at 25°C ambient temperature unless otherwise specified.

Parameter	Symbol	Value	Unit
Peak pulse power dissipation with a 10/1000μs waveform(1,2) (see fig. 1)	P_{PPM}	500	W
Peak pulse current with a 10/1000μs waveform(1)	I_{PPM}	See Next Table	A
Peak forward surge current 8.3ms single half sine-wave uni-directional only(2)	I_{FSM}	40	A
Typical thermal resistance, junction to ambient(3)	$R_{\theta JA}$	80	°C/W
Typical thermal resistance, junction to lead	$R_{\theta JL}$	25	°C/W
Operating junction and storage temperature range	T_J, T_{STG}	–55 to +150	°C

Notes: (1) Non-repetitive current pulse, per Fig. 3 and derated above T_A = 25°C per Fig. 2
(2) Mounted on 0.2 x 0.2" (5.0 x 5.0mm) copper pads to each terminal
(3) Mounted on minimum recommended pad layout

Electrical Characteristics

Ratings at 25°C ambient temperature unless otherwise specified. V_F = 3.5V at I_F = 25A (uni-directional only)

Device Type	Device Marking Code		Breakdown Voltage $V_{(BR)}$ (V)[1]		Test Current at I_T (mA)	Stand-off Voltage V_{WM} (V)	Maximum Reverse Leakage at V_{WM} I_D (μA) [3]	Maximum Peak Pulse Surge Current I_{PPM} (A)[2]	Maximum Clamping Voltage at I_{PPM} V_C (V)
	UNI	BI	Min	Max					
SMA5J5.0	5AD	5AD	6.40	7.82	10	5.0	800	52.1	9.6
SMA5J5.0A[5]	5AE	5AE	6.40	7.07	10	5.0	800	54.3	9.2
SMA5J6.0	5AF	5AF	6.67	8.15	10	6.0	800	43.9	11.4
SMA5J6.0A	5AG	5AG	6.67	7.37	10	6.0	800	48.5	10.3
SMA5J6.5	5AH	5AH	7.22	8.82	10	6.5	500	40.7	12.3
SMA5J6.5A	5AK	5AK	7.22	7.98	10	6.5	500	44.6	11.2
SMA5J7.0	5AL	5AL	7.78	9.51	10	7.0	200	37.6	13.3
SMA5J7.0A	5AM	5AM	7.78	8.60	10	7.0	200	41.7	12.0
SMA5J7.5	5AN	5AN	8.33	10.2	1.0	7.5	100	35.0	14.3
SMA5J7.5A	5AP	5AP	8.33	9.21	1.0	7.5	100	38.8	12.9
SMA5J8.0	5AQ	5AQ	8.89	10.9	1.0	8.0	50	33.3	15.0
SMA5J8.0A	5AR	5AR	8.89	9.83	1.0	8.0	50	36.8	13.6
SMA5J8.5	5AS	5AS	9.44	11.5	1.0	8.5	10	31.4	15.9
SMA5J8.5A	5AT	5AT	9.44	10.4	1.0	8.5	10	34.7	14.4
SMA5J9.0	5AU	5AU	10.0	12.2	1.0	9.0	5.0	29.6	16.9
SMA5J9.0A	5AV	5AV	10.0	11.1	1.0	9.0	5.0	32.5	15.4
SMA5J10	5AW	5AW	11.1	13.6	1.0	10	1.0	26.6	18.8
SMA5J10A	5AX	5AX	11.1	12.3	1.0	10	1.0	29.4	17.0
SMA5J11	5AY	5AY	12.2	14.9	1.0	11	1.0	24.9	20.1
SMA5J11A	5AZ	5AZ	12.2	13.5	1.0	11	1.0	27.5	18.2
SMA5J12	5BD	5BD	13.3	16.3	1.0	12	1.0	22.7	22.0
SMA5J12A	5BE	5BE	13.3	14.7	1.0	12	1.0	25.1	19.9
SMA5J13	5BF	5BF	14.4	17.6	1.0	13	1.0	21.0	23.8
SMA5J13A	5BG	5BG	14.4	15.9	1.0	13	1.0	23.3	21.5
SMA5J14	5BH	5BH	15.6	19.1	1.0	14	1.0	19.4	25.8
SMA5J14A	5BK	5BK	15.6	17.2	1.0	14	1.0	21.6	23.2
SMA5J15	5BL	5BL	16.7	20.4	1.0	15	1.0	18.6	26.9
SMA5J15A	5BM	5BM	16.7	18.5	1.0	15	1.0	20.5	24.4
SMA5J16	6BN	5BN	17.8	21.8	1.0	16	1.0	17.4	28.8
SMA5J16A	5BP	5BP	17.8	19.7	1.0	16	1.0	19.2	26.0
SMA5J17	5BQ	5BQ	18.9	23.1	1.0	17	1.0	16.4	30.5
SMA5J17A	5BR	5BR	18.9	20.9	1.0	17	1.0	18.1	27.6
SMA5J18	5BS	5BS	20.0	24.4	1.0	18	1.0	15.5	32.2
SMA5J18A	5BT	5BT	20.0	22.1	1.0	18	1.0	17.1	29.2
SMA5J20	5BU	5BU	22.2	27.1	1.0	20	1.0	14.0	35.8
SMA5J20A	5BV	5BV	22.2	24.5	1.0	20	1.0	15.4	32.4
SMA5J22	5BW	5BW	24.4	29.8	1.0	22	1.0	12.7	39.4
SMA5J22A	5BX	5BX	24.4	26.9	1.0	22	1.0	14.1	35.5
SMA5J24	5BY	5BY	26.7	32.6	1.0	24	1.0	11.6	43.0
SMA5J24A	5BZ	5BZ	26.7	29.5	1.0	24	1.0	12.9	38.9
SMA5J26	5CD	5CD	28.9	35.3	1.0	26	1.0	10.7	46.6
SMA5J26A	5CE	5CE	28.9	31.9	1.0	26	1.0	11.9	42.1
SMA5J28	5CF	5CF	31.1	38.0	1.0	28	1.0	10.0	50.0
SMA5J28A	5CG	5CG	31.1	34.4	1.0	28	1.0	11.0	45.4
SMA5J30	5CH	5CH	33.3	40.7	1.0	30	1.0	9.3	53.5
SMA5J30A	5CK	5CK	33.3	36.8	1.0	30	1.0	10.3	48.4

Notes: (1) $V_{(BR)}$ measured after I_T applied for 300μs square wave pulse or equivalent
(2) Surge current waveform per Fig. 3 and derate per Fig. 2
(3) For bi-directional types having V_{WM} of 10 Volts and less, the I_D limit is doubled
(4) All terms and symbols are consistent with ANSI/IEEE C62.35
(5) For the bidirectional SMA5J5.0CA, the maximum $V_{(BR)}$ is 7.25V.

Electrical Characteristics

Ratings at 25°C ambient temperature unless otherwise specified. V_F = 3.5V at I_F = 25A (uni-directional only)

Device Type	Device Marking Code		Breakdown Voltage $V_{(BR)}$ (V)[1]		Test Current at I_T (mA)	Stand-off Voltage V_{WM} (V)	Maximum Reverse Leakage at V_{WM} I_D (μA)[3]	Maximum Peak Pulse Surge Current I_{PPM} (A)[2]	Maximum Clamping Voltage at I_{PPM} V_C (V)
	UNI	BI	Min	Max					
SMA5J33	5CL	5CL	36.7	44.9	1.0	33	1.0	8.5	59.0
SMA5J33A	5CM	5CM	36.7	40.6	1.0	33	1.0	9.4	53.3
SMA5J36	5CN	5CN	40.0	48.9	1.0	36	1.0	7.8	64.3
SMA5J36A	5CP	5CP	40.0	44.2	1.0	36	1.0	8.6	58.1
SMA5J40	5CQ	5CQ	44.4	54.3	1.0	40	1.0	7.0	71.4
SMA5J40A	5CR	5CR	44.4	49.1	1.0	40	1.0	7.8	64.5

Notes: (1) $V_{(BR)}$ measured after I_T applied for 300μs square wave pulse or equivalent
(2) Surge current waveform per Fig. 3 and derate per Fig. 2
(3) For bi-directional types having V_{WM} of 10 Volts and less, the I_D limit is doubled
(4) All terms and symbols are consistent with ANSI/IEEE C62.35

Ratings and Characteristic Curves (T_A = 25°C unless otherwise noted)

Fig. 1 – Peak Pulse Power Rating Curve

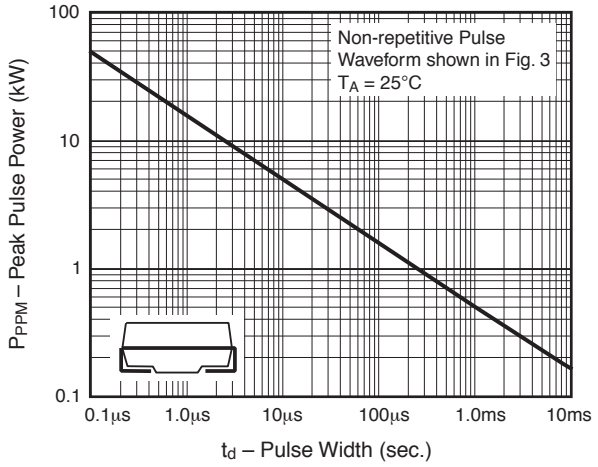


Fig. 2 – Pulse Derating Curve

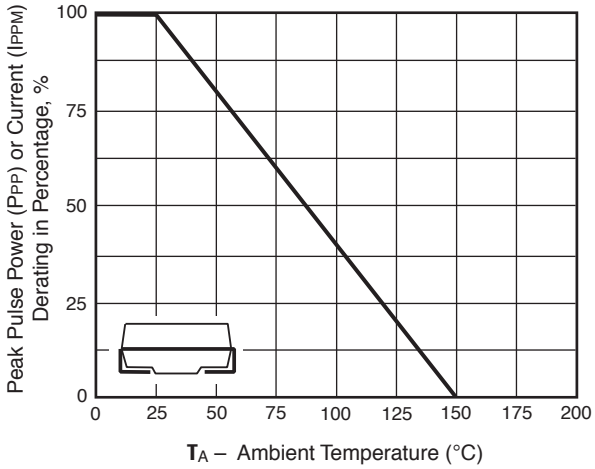


Fig. 3 – Pulse Waveform

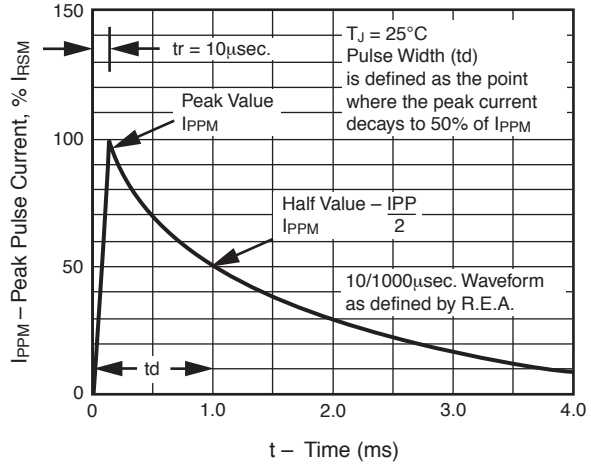


Fig. 4 – Typical Junction Capacitance

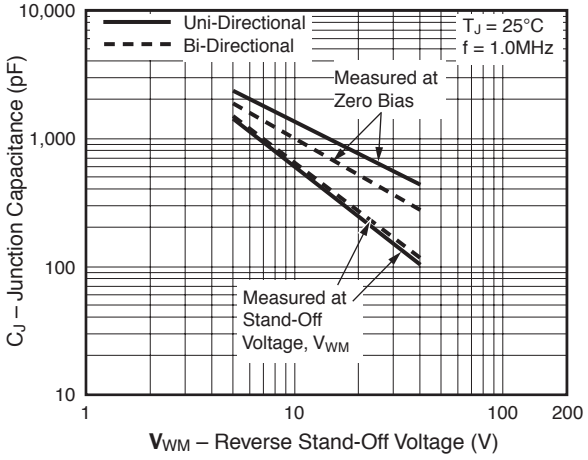


Fig. 5 – Typical Transient Thermal Impedance

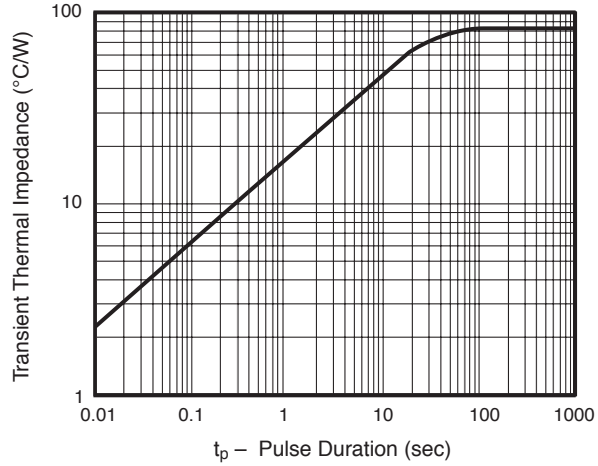
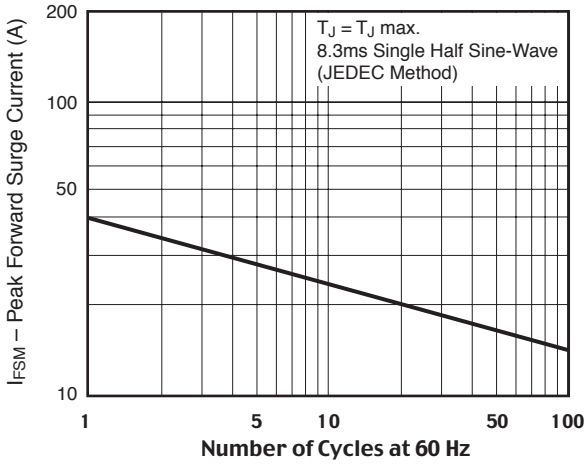


Fig. 6 - Maximum Non-Repetitive Forward Surge Current Uni-Directional Only



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