Surface Mount Transient Voltage Suppressors

FEATURES

- Chip produced by chemical method
- Junction passivated by high temperature resistant insulating adhesive
- T_J = 175 °C capability suitable for high reliability and automotive requirement
- Low leakage current
- Low forward voltage drop for uni-directional production
- High surge capability
- Meets ISO16750-2 surge specification (varied by test condition)
- LF maximum peak of 245 °C
- AEC-Q101 qualified

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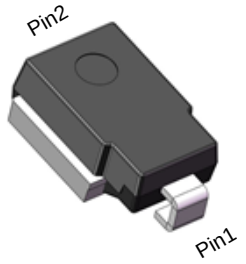

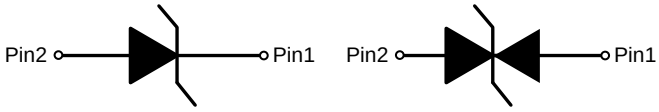

Unidirectional **Bidirectional**

Circuit diagram

TYPICAL APPLICATIONS

Use in sensitive electronics protection against voltage transients induced by inductive load switching and lighting, especially for automotive load dump protection application.

MAXIMUM RATINGS (T_C = 25 °C unless otherwise noted)				
PARAMETER		**SYMBOL**	**VALUE**	**UNIT**
Peak pulse power dissipation	with 10/1000 µs waveform	P_{PPM}	6600	W
	with 10/10 000 µs waveform		5200	
Power dissipation on infinite heatsink at T_C = 25 °C (fig. 1)		P_D	8.0	W
Peak pulse current with 10/1000 µs waveform		I_{PPM} (1)	See next table	A
Peak forward surge current 8.3 ms single half sine-wave		I_{FSM} (2)	700	A
Operating junction and storage temperature range		T_J, T_{STG}	-55 to +155	°C

Note

(1) Non-repetitive current pulse derated above T_A = 25 °C

(2) I_{FSM} only for uni-directional production

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

Part Number (Uni)	Part Number (Bi)	BREAKDOWN VOLTAGE V_{BR} (V)			TEST CURRENT I_T (mA)	STAND-OFF VOLTAGE V_{WM} (V)	MAXIMUM REVERSE LEAKAGE AT V_{WM} I_D (µA)	MAXIMUM REVERSE LEAKAGE AT V_{WM} T_J = 175 °C I_D (µA)	MAX. PEAK PULSE CURRENT AT 10/1000 µs WAVEFORM (A)	MAXIMUM CLAMPING VOLTAGE AT I_{PPM} V_C (V)	TYPICAL TEMP. COEFFICIENT OF V_{BR} αT (%/°C)
		MIN.	NOM.	MAX.							
SM8S66J10UC	SM8S66J10BC	11.1	11.7	12.3	5.0	10.0	10	150	388	17.0	0.069
SM8S66J11UC	SM8S66J11BC	12.2	12.9	13.5	5.0	11.0	10	150	363	18.2	0.072
SM8S66J12UC	SM8S66J12BC	13.3	14.0	14.7	5.0	12.0	10	150	332	19.9	0.074
SM8S66J13UC	SM8S66J13BC	14.4	15.2	15.9	5.0	13.0	10	150	307	21.5	0.076
SM8S66J14UC	SM8S66J14BC	15.6	16.4	17.2	5.0	14.0	10	150	284	23.2	0.078
SM8S66J15UC	SM8S66J15BC	16.7	17.6	18.5	5.0	15.0	10	150	270	24.4	0.080
SM8S66J16UC	SM8S66J16BC	17.8	18.8	19.7	5.0	16.0	10	150	254	26.0	0.081
SM8S66J17UC	SM8S66J17BC	18.9	19.9	20.9	5.0	17.0	10	150	239	27.6	0.082
SM8S66J18UC	SM8S66J18BC	20.0	21.1	22.1	5.0	18.0	10	150	226	29.2	0.083
SM8S66J20UC	SM8S66J20BC	22.2	23.4	24.5	5.0	20.0	10	150	204	32.4	0.085
SM8S66J22UC	SM8S66J22BC	24.4	25.7	26.9	5.0	22.0	10	150	186	35.5	0.086
SM8S66J24UC	SM8S66J24BC	26.7	28.1	29.5	5.0	24.0	10	150	170	38.9	0.087
SM8S66J26UC	SM8S66J26BC	28.9	30.4	31.9	5.0	26.0	10	150	157	42.1	0.088
SM8S66J28UC	SM8S66J28BC	31.1	32.8	34.4	5.0	28.0	10	150	145	45.4	0.089
SM8S66J30UC	SM8S66J30BC	33.3	35.1	36.8	5.0	30.0	10	150	136	48.4	0.090
SM8S66J33UC	SM8S66J33BC	36.7	38.7	40.6	5.0	33.0	10	150	124	53.3	0.091
SM8S66J36UC	SM8S66J36BC	40.0	42.1	44.2	5.0	36.0	10	150	114	58.1	0.091
SM8S66J40UC	SM8S66J40BC	44.4	46.8	49.1	5.0	40.0	10	150	102	64.5	0.092
SM8S66J43UC	SM8S66J43BC	47.8	50.3	52.8	5.0	43.0	10	150	95.1	69.4	0.093
SM8S66J45UC	SM8S66J45BC	50.0	52.7	55.3	5.0	45.0	10	150	90.8	72.7	0.094
SM8S66J48UC	SM8S66J48BC	53.3	56.1	58.9	5.0	48.0	10	150	85.3	77.4	0.095
SM8S66J51UC	SM8S66J51BC	56.7	59.7	62.7	5.0	51.0	10	150	80.1	82.4	0.096
SM8S66J54UC	SM8S66J54BC	60.0	63.1	66.3	5.0	54.0	10	150	75.8	87.1	0.097
SM8S66J58UC	SM8S66J58BC	64.4	67.8	71.2	5.0	58.0	10	150	70.5	93.6	0.098
SM8S66J60UC	SM8S66J60BC	66.7	70.2	73.7	5.0	60.0	10	150	68.2	96.8	0.099
SM8S66J64UC	SM8S66J64BC	71.1	74.9	78.6	5.0	64.0	10	150	64.1	103	0.100
SM8S66J70UC	SM8S66J70BC	77.8	81.9	86.0	5.0	70.0	10	150	58.4	113	0.101
SM8S66J75UC	SM8S66J75BC	83.3	87.7	92.1	5.0	75.0	10	150	54.5	121	0.102
SM8S66J78UC	SM8S66J78BC	86.7	91.3	95.8	5.0	78.0	10	150	52.4	126	0.103
SM8S66J85UC	SM8S66J85BC	94.4	99.2	104.0	5.0	85.0	10	150	48.2	137	0.104

Notes

- For all uni-directional types maximum V_F = 1.8 V at I_F = 100 A measured on 8.3 ms single half sine-wave or equivalent square wave, duty cycle = 4 pulses per minute maximum

(1) To calculate V_{BR} vs. junction temperature, use the following formula: V_{BR} at T_J = V_{BR} at 25 °C x (1 + αT x (T_J - 25))

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

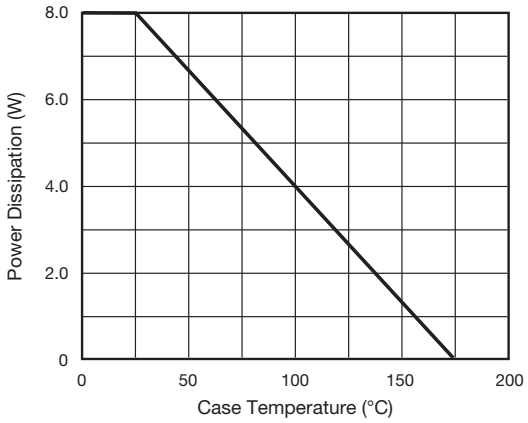

Fig. 1 - Power Derating Curve

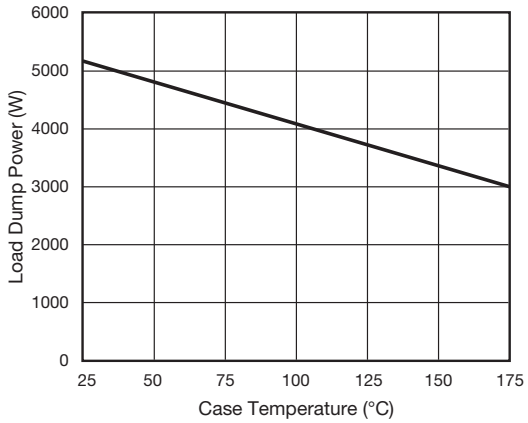

Fig. 2 - Load Dump Power Characteristics
(10 ms Exponential Waveform)

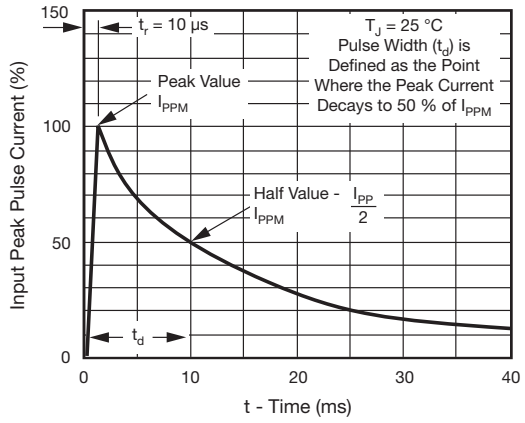

Fig. 3 - Pulse Waveform

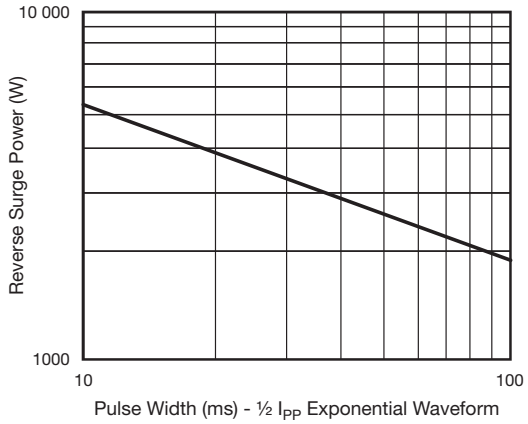

Fig. 4 - Reverse Power Capability

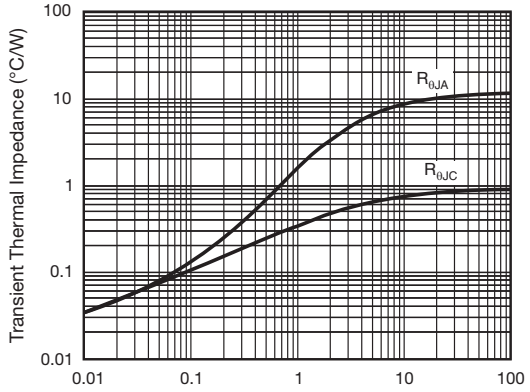

Fig. 5 - Typical Transient Thermal Impedance

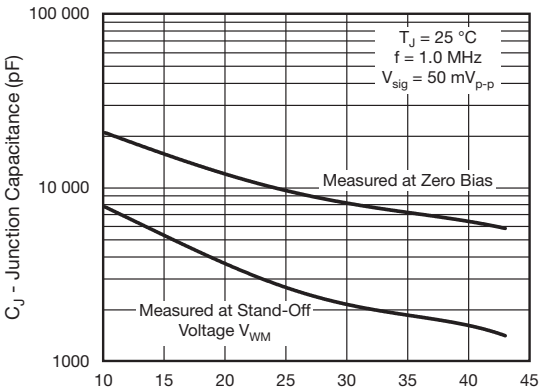

Fig. 6 - Typical Junction Capacitance

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PACKAGE OUTLINE DIMENSIONS (millimeters)

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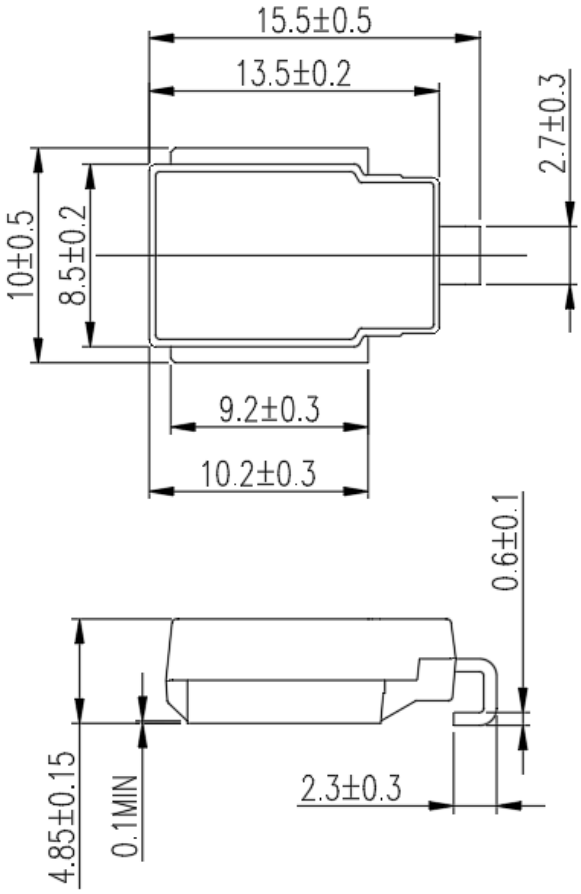

■ **Suggested pad layout**