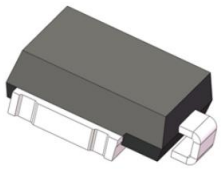
SM6KXXA Series

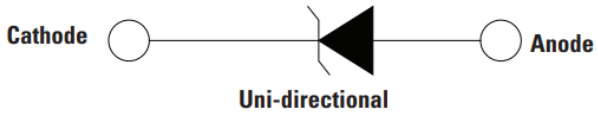
Features

- Chip produced by chemical method
- Junction passivated by high temperature resistant insulating adhesive
- TJ = 175 °C capability suitable for high reliability and automotive requirement
- Available in uni-directional polarity only
- Low leakage current
- Low forward voltage drop
- High surge capability
- Meets ISO16750-2 surge specification (varied by test condition)
- LF maximum peak of 245 °C
- AEC-Q101 qualified
- Case: DO-218AB
- Polarity: heatsink is anode



DO-218AB

Functional Diagram



Applications

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

Parameter	Symbol	Value	Unit
Peak Pulse Power Dissipation by 10/1000μs Waveform (note1)	P_{PK}	6600	Watts
Peak forward surge current 8.3 ms single half sine-wave	I_{FSM}	600	Amps
Power dissipation on infinite heatsink at @ T_L = 25 °C	$P_{M(AV)}$	6.0	Watts
Operating Temperature Range	T_J	-55 to +175	°C
Storage Temperature Range	T_{STG}	-55 to +175	°C
Typical thermal resistance, junction to case	$R_{\theta JC}$	0.95	°C /W

NOTES:

1. Non-repetitive current pulse derating above T_A = 25 °C

Electrical Characteristics (TA = 25 °C unless otherwise noted)

DEVICE TYPE	BREAKDOWN VOLTAGE VBR (V)			TEST CURRENT IT (mA)	STAND-OFF VOLTAGE VWM	MAXIMUM REVERSE LEAKAGE AT VWM ID (μA)	MAXIMUM REVERSE LEAKAGE AT VWM TJ = 175 °C ID (μA)	MAX. PEAK PULSE CURRENT AT 10/1000 μs WAVEFORM (A)	MAXIMUM CLAMPING VOLTAGE AT IPPM V_C(V)	TYPICAL TEMP. COEFFICIENT OF VBR (1) αT (%/°C)
	MIN.	NOM.	MAX.							
SM6K10A	11.1	11.7	12.3	5	10	10	150	388.2	17.0	0.069
SM6K11A	12.2	12.9	13.5	5	11	10	150	362.6	18.2	0.072
SM6K12A	13.3	14	14.7	5	12	10	150	331.7	19.9	0.074
SM6K13A	14.4	15.2	15.9	5	13	10	150	307.0	21.5	0.076
SM6K14A	15.6	16.4	17.2	5	14	10	150	284.5	23.2	0.078
SM6K15A	16.7	17.6	18.5	5	15	10	150	270.5	24.4	0.080

SM6K16A	17.8	18.8	19.7	5	16	10	150	253.8	26.0	0.081
SM6K17A	18.9	19.9	20.9	5	17	10	150	239.1	27.6	0.082
SM6K18A	20	21.1	22.1	5	18	10	150	226.0	29.2	0.083
SM6K20A	22.2	23.4	24.5	5	20	10	150	203.7	32.4	0.085
SM6K22A	24.4	25.7	26.9	5	22	10	150	185.9	35.5	0.086
SM6K24A	26.7	28.1	29.5	5	24	10	150	169.7	38.9	0.087
SM6K26A	28.9	30.4	31.9	5	26	10	150	156.8	42.1	0.088
SM6K28A	31.1	32.8	34.4	5	28	10	150	145.4	45.4	0.089
SM6K30A	33.3	35.1	36.8	5	30	10	150	136.4	48.4	0.090
SM6K33A	36.7	38.7	40.6	5	33	10	150	123.8	53.3	0.091
SM6K36A	40	42.1	44.2	5	36	10	150	113.6	58.1	0.091
SM6K40A	44.4	46.8	49.1	5	40	10	150	102.3	64.5	0.092
SM6K43A	47.8	50.3	52.8	5	43	10	150	95.1	69.4	0.093

Notes

• For all types maximum VF = 1.9 V at IF = 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 VBR vs. junction temperature, use the following formula: VBR at TJ = VBR at 25 °C x (1 + αT x (TJ - 25))

Rating & Characteristic Curves (TA = 25 °C unless otherwise noted)

Figure 1- Power Derating Curve

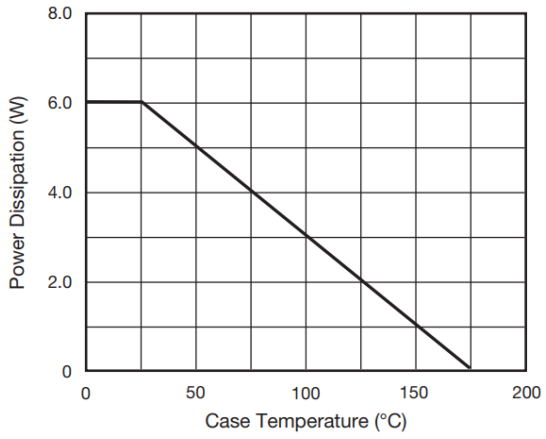


Figure 2- Reverse Power Capability

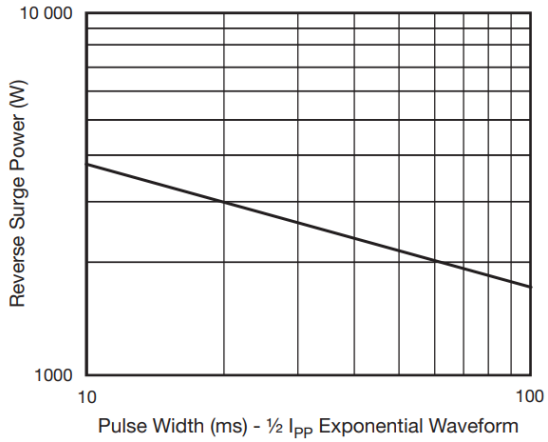


Figure 3- Pulse Waveform

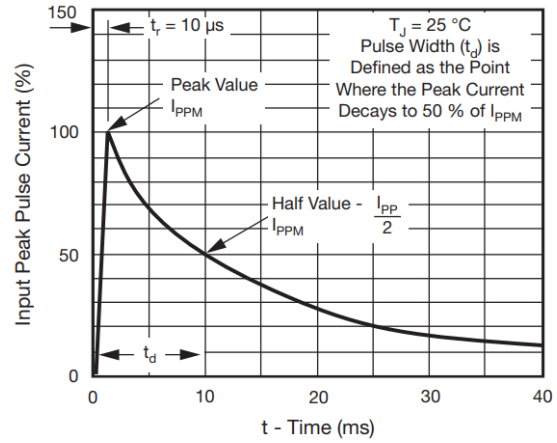
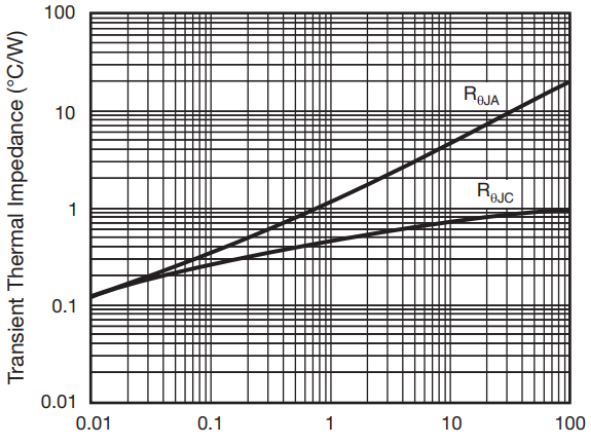
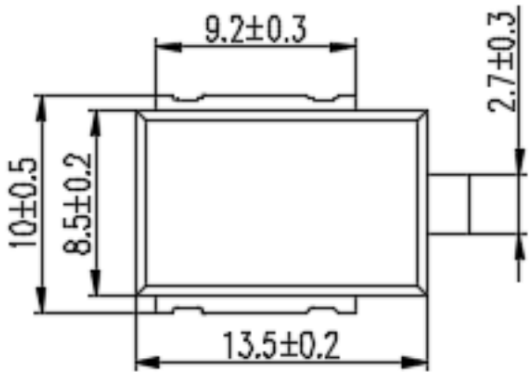
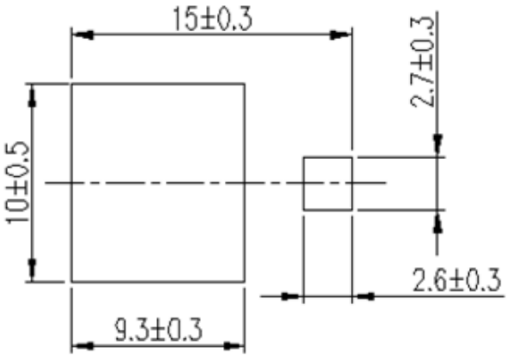


Figure 4- Typical Transient Thermal Impedance

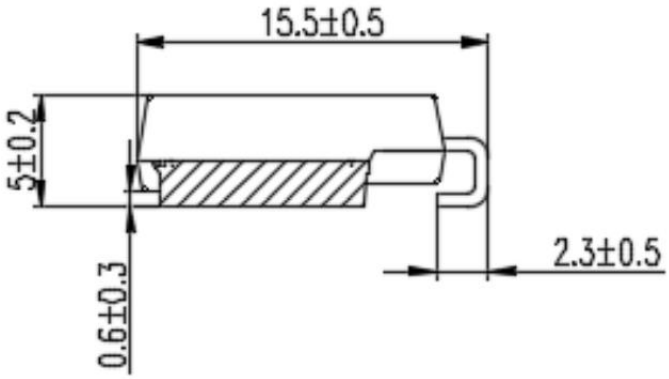


PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





Mounting Pad Layout



Disclaimer

Specifications are subject to change without notice.

The device characteristics and parameters in this data sheet can and do vary in different applications and actual device performance may vary over time.

Users should verify actual device performance in their specific applications.