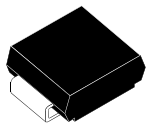
SM6HTxxA

HIGH TEMPERATURE TRANSIL™ FOR AUTOMOTIVE APPLICATIONS

FEATURES

- HIGH PERFORMANCE TRANSIL DESIGNED TO FIT HIGH TEMPERATURE ENVIRONMENT LIKE AUTOMOTIVE APPLICATIONS...
- HIGH RELIABILITY PLANAR TECHNOLOGY
- HIGH PERFORMANCE IN VOLTAGE REGULATION MODE
- VERY LOW LEAKAGE CURRENT (I_R max = 5µA @ Tamb = 150°C)
- PEAK PULSE POWER : 600 W (10/1000µs)
- FAST RESPONSE TIME
- UNIDIRECTIONAL TYPE
- LOW CLAMPING FACTOR



SMB
(JEDEC D0-214AA)

DESCRIPTION

This high performance Transil series has been designed to fit high temperature environment such as automotive applications, using surface mount technology. These devices are using high reliability planar technology resulting in high performances in voltage regulation mode and low leakage current at high temperature.

ABSOLUTE MAXIMUM RATINGS (T_{amb} = 25°C)

Symbol	Parameter		Value	Unit
P_{PP}	Peak pulse power dissipation (see note 1)	Tj initial = T_{amb}	600	W
P	Power dissipation on infinite heatsink	T_{amb} = 50°C	5	W
I_{FSM}	Non repetitive surge peak forward current for unidirectional types	tp = 10ms Tj initial = T_{amb}	75	A
T_{stg}, T_J	Storage and operating junction temperature range		- 65 to 175	°C
T_L	Maximum lead temperature for soldering during 10 s.		260	°C

Note 1 : For a surge greater than the maximum values, the diode will fail in short-circuit.

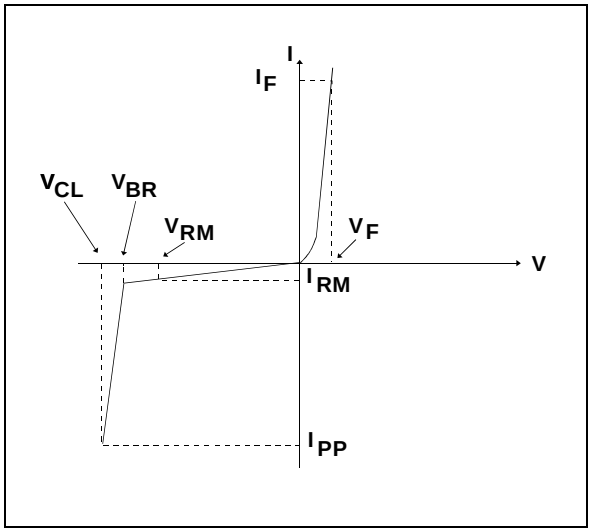
THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
$R_{th\ (j-l)}$	Junction to leads	20	°C/W
$R_{th\ (j-a)}$	Junction to ambient on printed circuit. On recommended pad layout	100	°C/W

ELECTRICAL CHARACTERISTICS

(T_{amb} = 25°C unless otherwise specified)

Symbol	Parameter
V_{RM}	Stand-off voltage
V_{BR}	Breakdown voltage
V_{CL}	Clamping voltage
I_{RM}	Leakage current @ V_{RM}
I_{PP}	Peak pulse current
V_F	Forward voltage drop V_F < 3.5V @ I_F = 50A (pulse test: tp ≤ 500µs)



Types	Marking	I_{RM} @ V_{RM}			V_{BR} @ I_R				V_{CL} @ I_{PP}		α T
		Tamb=25°C	Tamb=150°C		note2				10/1000µs		max
		max	max		min	nom	max		max		note 3
		µA	µA	V	V	V	V	mA	V	A	10^{-4}/°C
SM6HT24A	EMB	2	5	20.5	22.8	24	25.2	1	33.2	18.0	9.4
SM6HT27A	EPB	2	5	23.1	25.7	27	28.4	1	37.5	16.0	9.6
SM6HT30A	ERB	2	5	25.6	28.5	30	31.5	1	41.5	14.5	9.7
SM6HT36A	EVB	2	5	30.8	34.2	36	37.8	1	49.9	12.0	9.9
SM6HT39A	EXB	2	5	33.3	37.1	39	41.0	1	53.9	11.1	10.0
SM6HT43A	EYB	2	5	36.8	40.9	43	45.2	1	59.3	10.1	10.1

Note 2 : Pulse test : tp < 50 ms

Note 3 : $\Delta V_{BR} = \alpha T \times (Tamb - 25) \times V_{BR}$ (25°C)

Fig. 1-1: Peak power dissipation versus initial junction temperature.

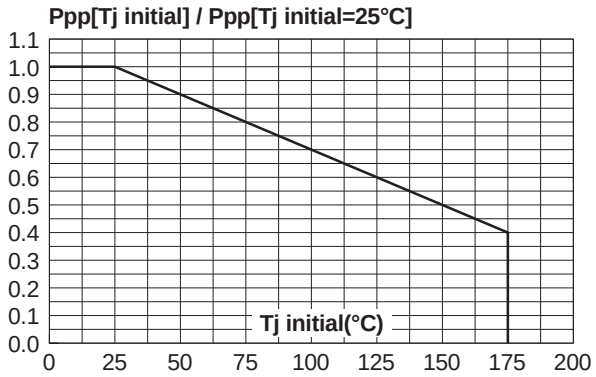


Fig. 1-2: Continous power dissipation versus ambient temperature.

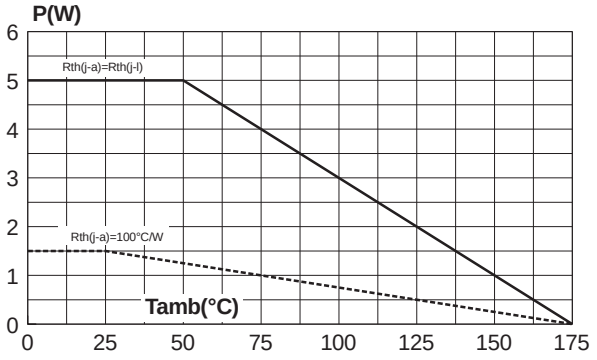


Fig. 2: Peak pulse power versus exponential pulse duration (Tj initial=25°C).

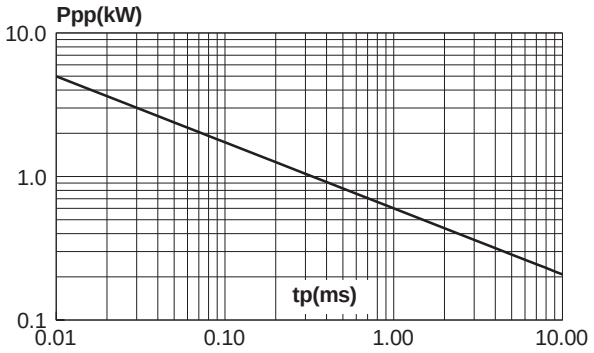


Fig. 3: Clamping voltage versus peak pulse current (Tj initial=25°C).

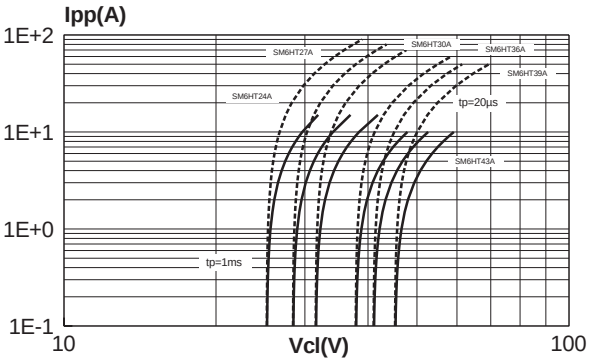


Fig. 4: Junction capacitance versus reverse applied voltage (typical values).

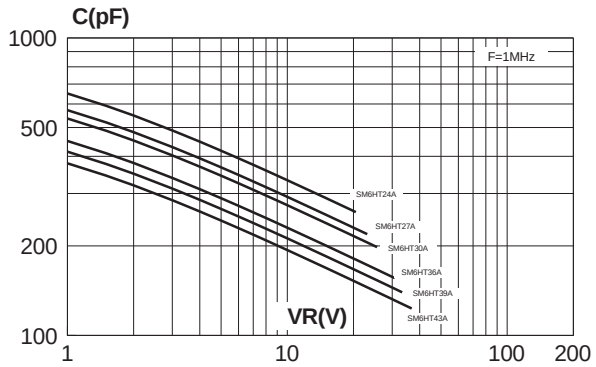


Fig. 5: Peak forward voltage drop versus peak forward current (typical values).

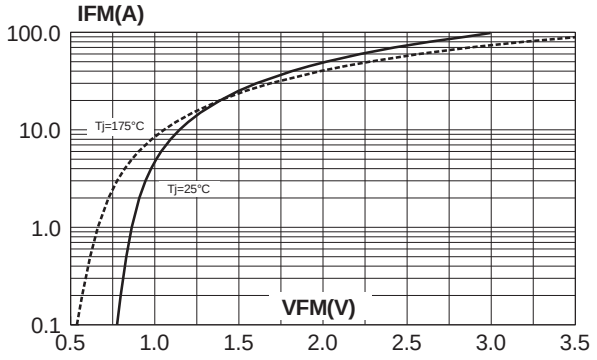


Fig. 6: Variation of thermal impedance junction to ambient versus pulse duration (Printed circuit board FR4 with recommended pad layout).

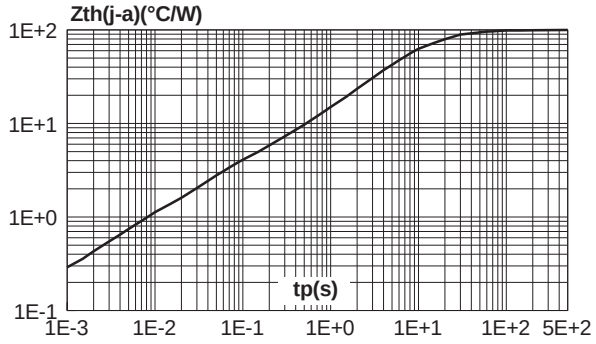


Fig. 7: Thermal resistance junction to ambient versus copper surface under each lead (printed circuit board FR4, e(Cu)=35µm).

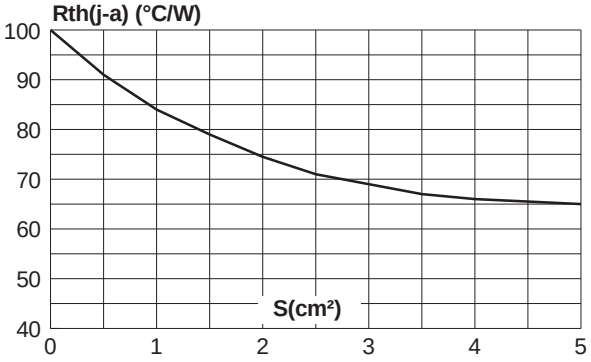
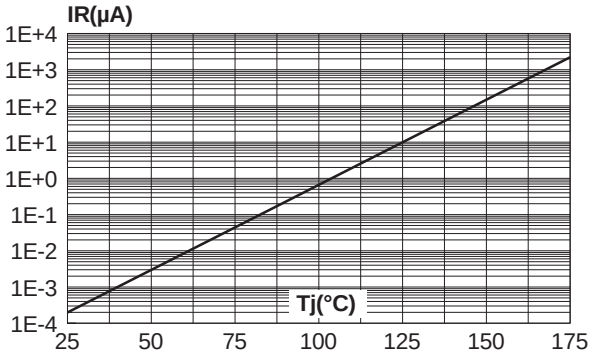
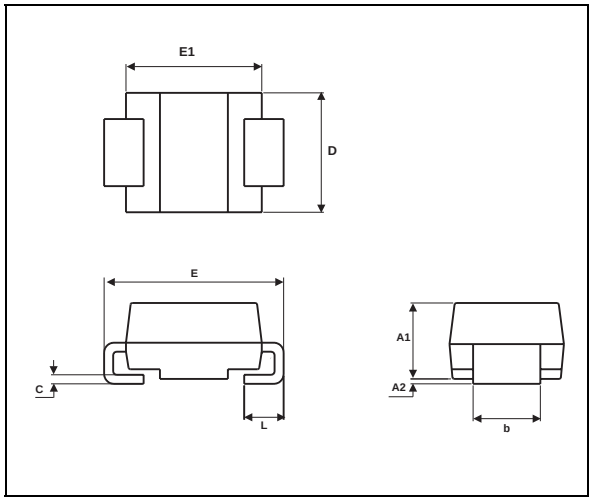


Fig .8: Variation of leakage current versus junction temperature (typical values).



MARKING : Logo, Date Code, Type Code, Cathode Band.

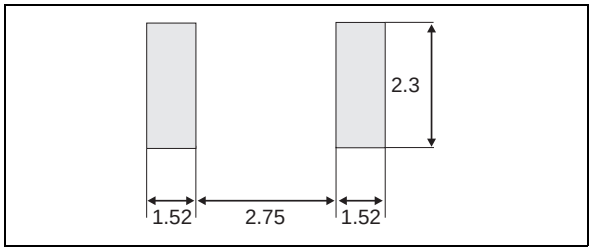
PACKAGE MECHANICAL DATA
SMB (Plastic)



REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A1	1.90	2.45	0.075	0.096
A2	0.05	0.20	0.002	0.008
b	1.95	2.20	0.077	0.087
c	0.15	0.41	0.006	0.016
E	5.10	5.60	0.201	0.220
E1	4.05	4.60	0.159	0.181
D	3.30	3.95	0.130	0.156
L	0.75	1.60	0.030	0.063

Weight = 0.107 g

FOOTPRINT DIMENSIONS (Millimeter)
SMB Plastic.



Packaging : standard packaging is tape and reel.