

M1 THRU M7

SURFACE MOUNT GENERAL PURPOSE RECTIFIERS



VOLTAGE: 50~1000 Volts	CURRENT: 1.0 Amperes	SMAF	Marking and Polarity
FEATURES <ul style="list-style-type: none"> ■ Glass passivated chip junction ■ Low Forward Voltage Drop for high efficiency ■ Low leakage current for high reliability ■ High forward surge capability for high reliability 			
MECHANICAL DATA <ul style="list-style-type: none"> ■ Terminals: Plated Leads Solderable per MIL-STD-202, Method 208 ■ Mounting Position: Any ■ Lead Free: Lead Free Finish, RoHS Compliant ■ Weight: App. 0.026 grams (0.0022 ounce) 		Remark: <ul style="list-style-type: none"> ①. NH=niuhang trademark ②. FF=Product line,According to actual changes; YWW=Periodic code,According to actual changes; ③. Mx=Modle,x=1,2,3,4,5,6,7 ④. White band denotes cathode 	
TYPICAL APPLICATIONS <ul style="list-style-type: none"> ■ For use in high frequency inverters ,AC/DC converters, DC/DC converters,LED driver etc. applications 			

Maximum Ratings (Ratings at 25°C ambient temperature unless otherwise specified.)

Parameter	Symbol	M1	M2	M3	M4	M5	M6	M7	Unit
Maximum repetitive peak reverse voltage	V_{RRM}	50	100	200	400	600	800	1000	V
Maximum RMS voltage	V_{RMS}	35	70	140	280	420	560	700	V
Maximum DC blocking voltage	V_{DC}	50	100	200	400	600	800	1000	V
Maximum average forward rectified current(see fig.1)	$I_{F(AV)}$	1.0							A
Peak forward surge current 8.3ms single half sine-wave superimposed on rated load (JEDEC method at rated TL)(see fig.5)	I_{FSM}	30							A
Current Squared Time Per Diode($t < 8.3ms$)	I^2t	3.74							A ² sec

Electrical Characteristics (Ratings at 25°C ambient temperature unless otherwise specified.)

Parameter	Test Conditions	Symbol	M1	M2	M3	M4	M5	M6	M7	Unit
Maximum instantaneous forward voltage (see fig.2) (Note 1)	$T_A=25^\circ C$ $I_F= 1.0 A$	V_F	1.10							V
	$T_A=125^\circ C$ $I_F= 1.0 A$		1.05							
Maximum instantaneous reverse current at rated DC blocking voltage (see fig.3)(Note 1)	$T_A=25^\circ C$ $V_R= V_{RRM}$	I_R	5							uA
	$T_A=125^\circ C$ $V_R= 80\%*V_{RRM}$		100							
Typical junction capacitance(see fig.4)	4V,1MHz	C_J	15							pF

Thermal Characteristics (Ratings at 25°C ambient temperature unless otherwise specified)

Parameter	Symbol	M1	M2	M3	M4	M5	M6	M7	Unit	
Operating junction	T_J	-55 to 150								°C
Storage temperature range	T_{STG}	-55 to 150								
Typical thermal resistance (Note 2)	$R_{\theta JA}$	50							°C/W	
	$R_{\theta JC}$	8								

Note: 1.Pulse width < 300 uS, Duty cycle < 2%
2.P. C. B mounted with 0.3*0.3"(7.62 x 7.62 mm) copper Pad Areas

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RATING AND CHARACTERISTIC CURVES

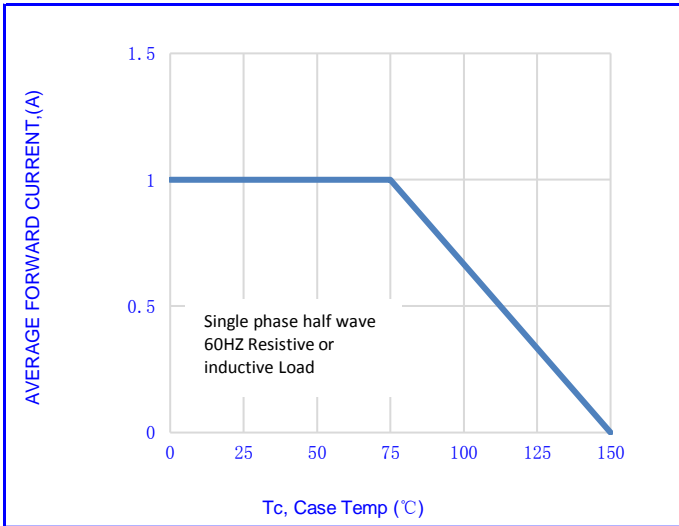


Fig.1- FORWARD CURRENT DERATING CURVE

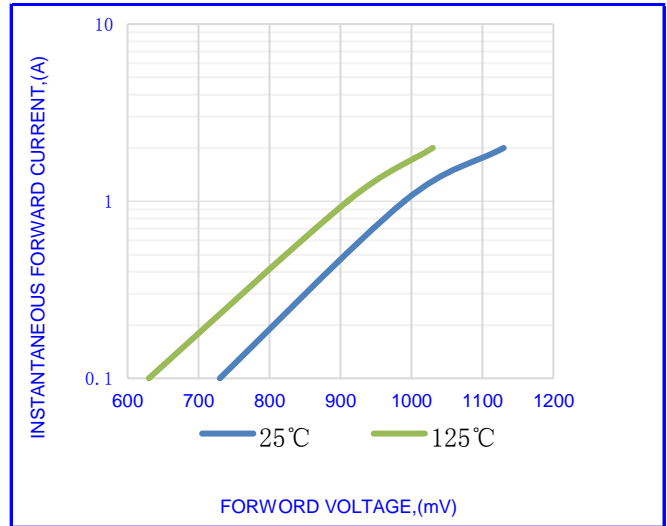


Fig.2-TYPICAL INSTANTANEOUS FORWARD

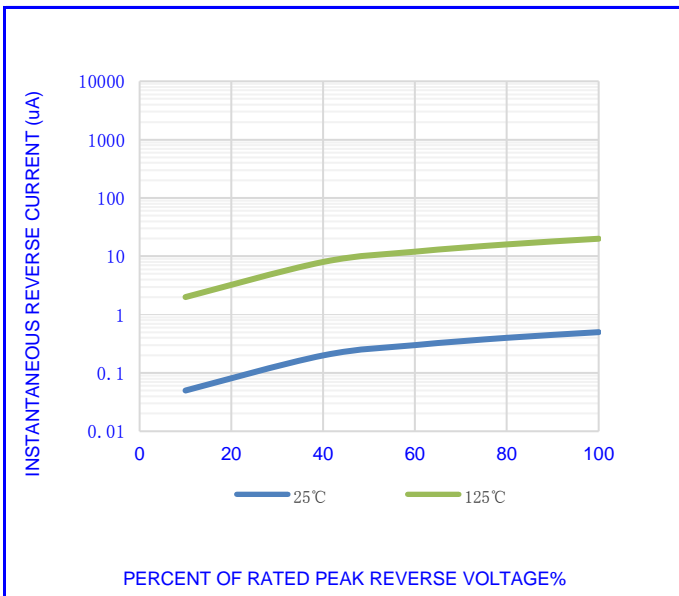


Fig.3-TYPICAL REVERSE CHARACTERISTICS

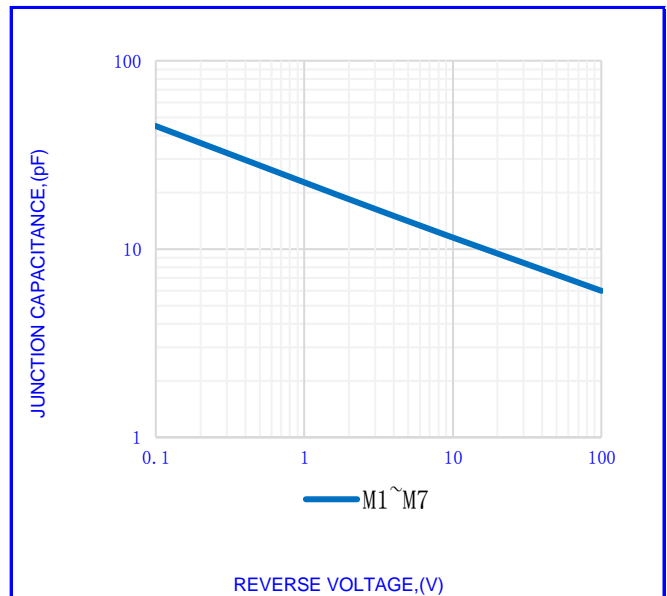


Fig.4- TYPICAL JUNCTION CAPACITANCE

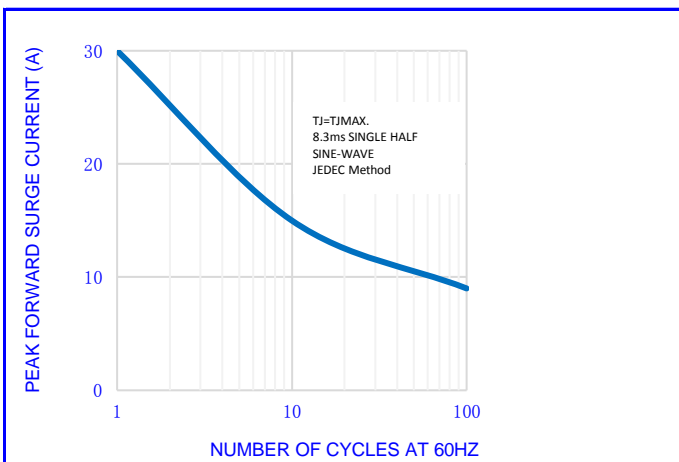


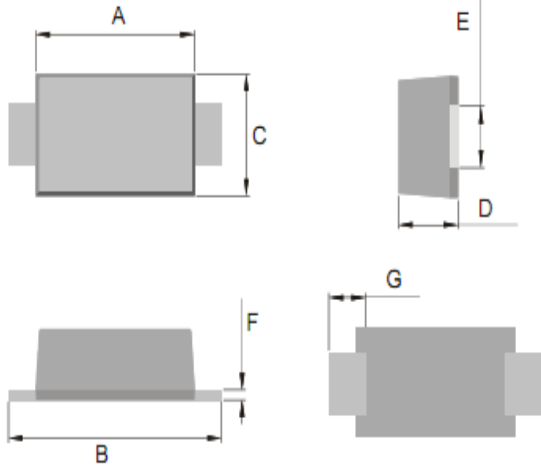
Fig.5-MAX. NON-REPETITIVE SURGE CURRENT

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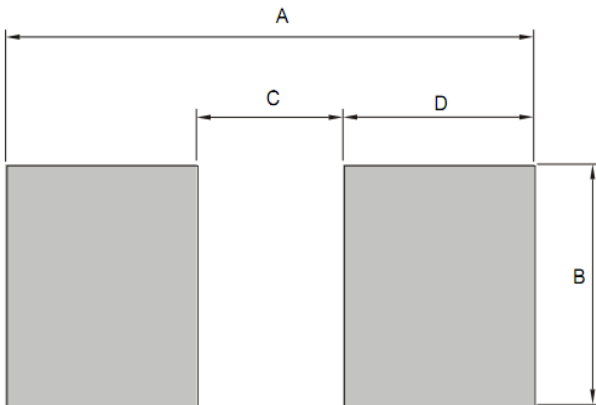
OUTLINE DRAWINGS



SMAF

OUTLINE DIMENSIONS						
Dim.	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	3.200	-	3.800	0.126	-	0.150
B	4.400	-	5.300	0.173	-	0.209
C	2.300	-	2.700	0.091	-	0.106
D	0.950	-	1.200	0.037	-	0.047
E	1.300	-	1.600	0.051	-	0.063
F	0.080	-	0.170	0.003	-	0.007
G	0.500	-	1.200	0.020	-	0.047

MOUNTING PAD LAYOUT



SMAF

OUTLINE DIMENSIONS						
Dim.	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	-	5.300	-	-	0.20866	-
B	-	2.060	-	-	0.081	-
C	-	1.660	-	-	0.065	-
D	-	2.070	-	-	0.082	-

PACKING INFORMATION

SMAF

Package Method	Reel Size (mm)	Quantity (pcs/reel)	Inner Box Size LxWxH(mm)	Quantity (pcs/Inner Box)	Carton Size LxWxH(mm)	Quantity (pcs/carton)
Tape Reel	Φ330	5000	340x340x45	10000	360x360x470	100000

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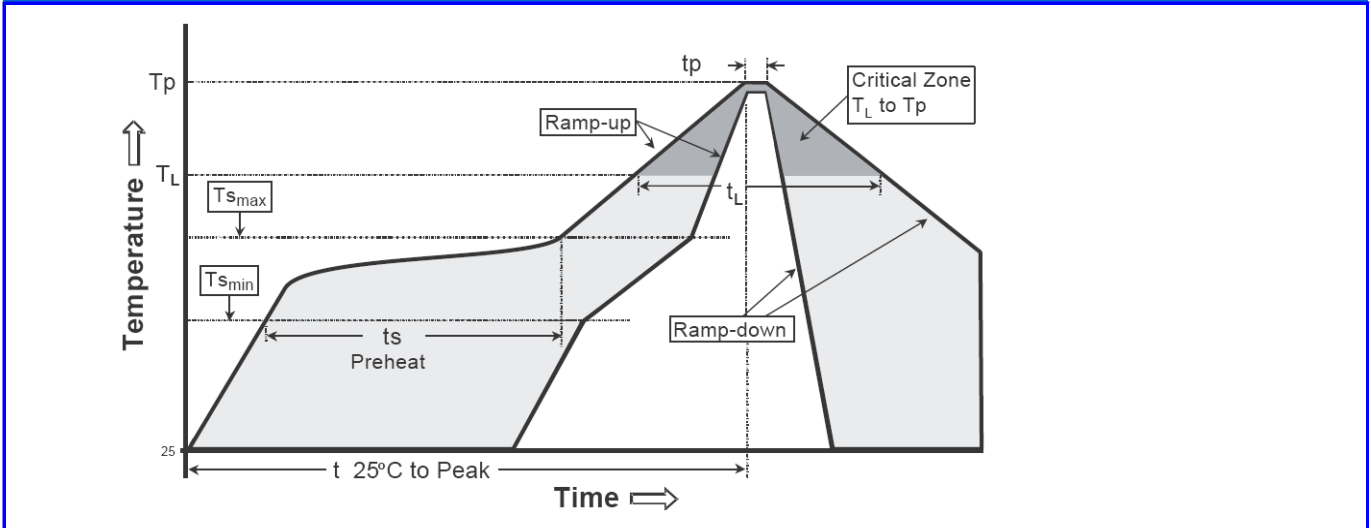
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Recommended wave soldering condition

Product	Peak Temperature	Soldering Time
Pb-free devices	260 +0/-5 °C	5 +1/-1 seconds

Recommended temperature profile for IR reflow



Profile feature	Sn-Pb eutectic Assembly	Pb-free Assembly
Average ramp-up rate (Tsmmax to Tp)	3°C/second max.	3°C/second max.
Preheat -Temperature Min(TS min) -Temperature Max(TS max) -Time(ts min to ts max)	100°C 150°C 60-120 seconds	150°C 200°C 60-180 seconds
Time maintained above: -Temperature (TL) - Time (tL)	183°C 60-150 seconds	217°C 60-150 seconds
Peak Temperature(TP)	240 +0/-5 °C	260 +0/-5 °C
Time within 5°C of actual peak temperature(tp)	10-30 seconds	20-40 seconds
Ramp down rate	6°C/second max.	6°C/second max.
Time 25 °C to peak temperature	6 minutes max.	8 minutes max.

Note : All temperatures refer to topside of the package, measured on the package body surface.

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