US3AC THRU US3MC

High Efficiency Rectifier

HF halogen-free Pb Pb-Free RoHS COMPLIANT

Voltage:	50~1000 Volts	Current:	3 Ampers	Package:	SMC

Features

- NH'S High Efficiency Rectifier Chip Technology
- Low Switching Loss For High Efficiency
- Low Leakage Current For High Reliability
- Ultra Fast Switching Speed

Mechanical Data

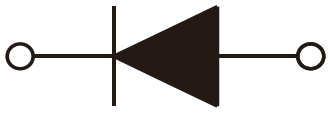
- **Case:** Molded With UL-94 ClassV-0 Recognized, RoHS-Compliant
- **Polarity:** Look At The Diagram And Polarity On The Right
- **Terminals:** Tin Plated Leads,Solderable Per J-STD-002 And JESD22-B102

Typical Applications

- Switch Mode Power Supplies (SMPS)
- Fast Chargers
- LED Driver And Monitor Lighting
- Automotive Electronics And Charging Posts

Diagram:

Polarity:



Single Phase,Half Wave,60Hz,Resistive Or Inductive Load.For Capacitive Load,Derate Current By 20%

Maximum Ratings (Ta=25℃ Unless Otherwise Specified)

Parameter	Test Conditions	Symbol	US 3AC	US 3BC	US 3DC	US 3GC	US 3JC	US 3KC	US 3MC	Unit
Maximum Repetitive Peak Reverse Voltage		V_{RRM}	50	100	200	400	600	800	1000	V
Maximum RMS Voltag		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		$I_{F(AV)}$	3							A
Peak Forward Surge Current	8.3ms Single Half Sine-wave Superimposed On Rate Load	I_{FSM}	125							A
Current Squared Time	t< 8.3ms	I^2t	64.8							A^2sec

Electrical Characteristcs (Ta=25℃ Unless Otherwise Specified)

Parameter	Test Conditions	Symbol	US 3AC	US 3BC	US 3DC	US 3GC	US 3JC	US 3KC	US 3MC	Unit
Maximum Instaneous Forward Voltage	I_F= 3.0 A	V_F	1.00			1.30	1.70			V
Maximum DC Reverse Current at Rated DC Blocking Voltage	Ta=25℃ ,V_R=VRRM Ta=125℃ ,V_R=VRRM*80%	I_{RRM}	5 200							uA uA
Typical Junction Capacitance	4 V,1MHz	C_J	30			18	12			pF
Maximum Reverse Recovery Time	IF=0.5A, IR=1.0A, IRR=0.25A	Trr	50				75			nS

Thermal Characteristcs (Ta=25℃ Unless Otherwise Specified)

Parameter	Test Conditions	Symbol	US 3AC	US 3BC	US 3DC	US 3GC	US 3JC	US 3KC	US 3MC	Unit
Operating Junction Temperature Range		T_J	-55~150							℃
Storage Temperature Range		T_{STD}	-55~150							
Thermal Resistance Junction To Ambient With Steady-State	Still Air Environment With Ta=25℃	$R_{\theta JA}$	55.0							℃/W
Thermal Resistance Junction-Case With Steady-State	Device Mounted On 1 in2 FR-4 Board With 2oz. Copper	$R_{\theta JC}$	15.0							

Notes: 1.Pulse Test: 300 Us Pulse Width,1% Duty Cycle

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Typical Characteristics Curves

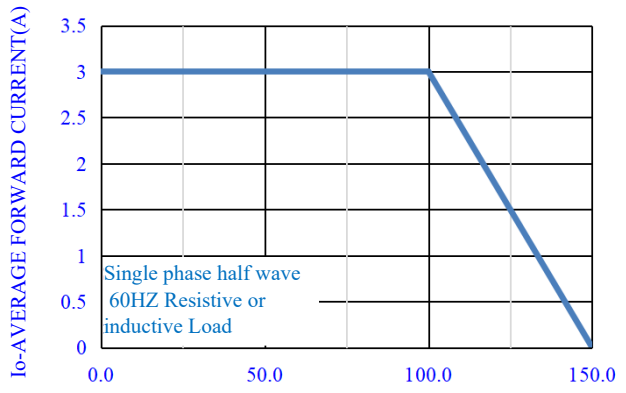

Fig.1-FORWARD CURRENT DERATING CURVE

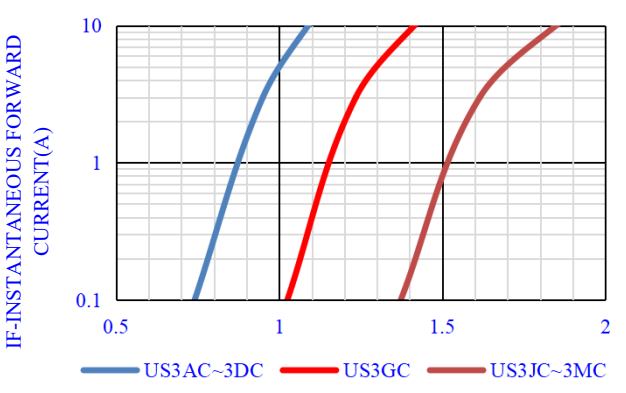

Fig.2- TYPICAL INSTANTANEOUS FORWARD

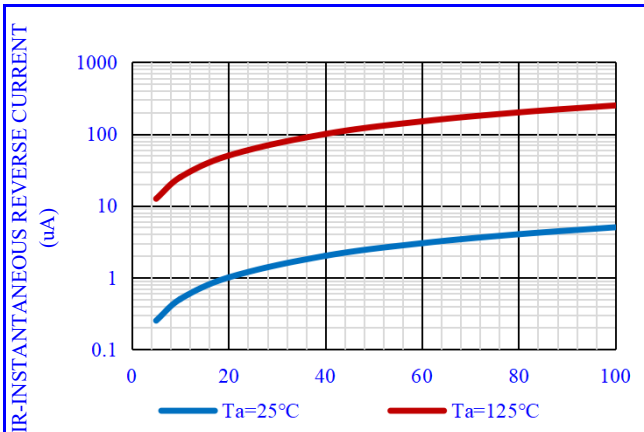

Fig.3- TYPICAL REVERSE CHARACTERISTICS

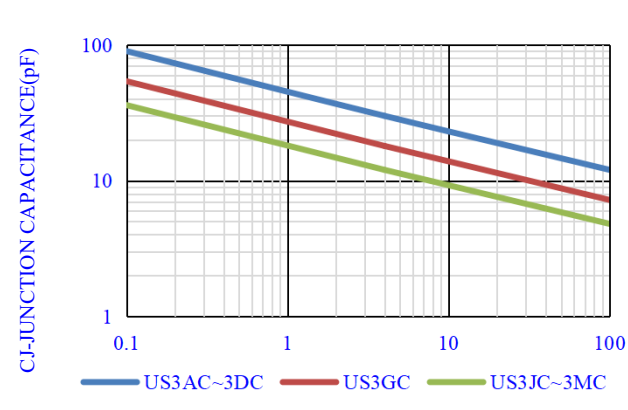

Fig.4- TYPICAL JUNCTION CAPACITANCE

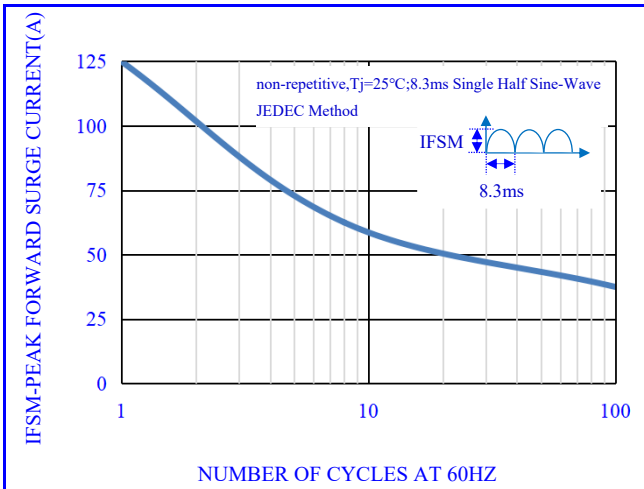

Fig.5-MAX. NON-REPETITIVE SURGE CURRENT

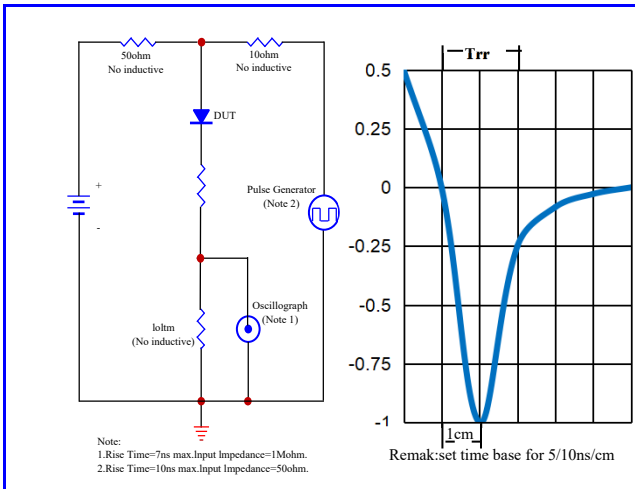

Fig.6-REVERSE RECOVERY TIME CHARACTERISTIC AND TEST CIRCUIT

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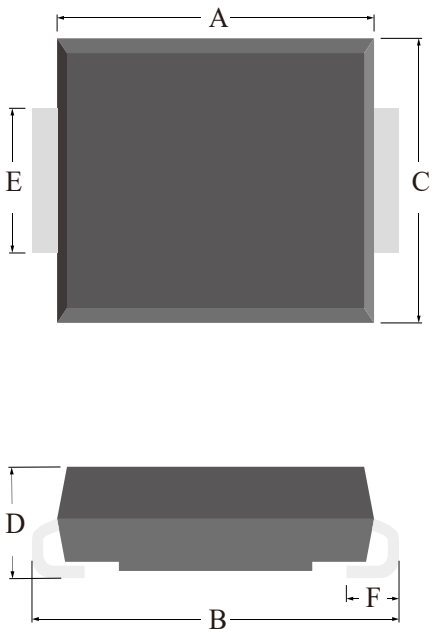
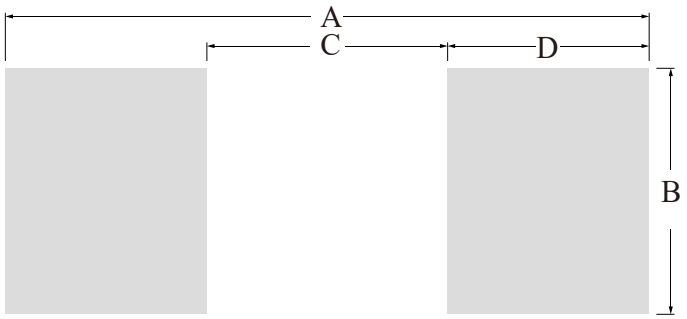
OUTLINE DRAWINGS



SMC

OUTLINE DIMENSIONS						
Dim.	Milimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	6.60	-	7.11	0.2598	-	0.2799
B	7.75		8.13	0.3051	-	0.3201
C	5.59	-	6.22	0.2201	-	0.2449
D	2.00	-	2.62	0.0787	-	0.1031
E	2.75	-	3.25	0.1083	-	0.1280
F	0.76	-	1.52	0.0299	-	0.0598

RECOMMEDNED LAYOUT DRAWINGS



SMC

OUTLINE DIMENSIONS						
Dim.	Milimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	-	9.90	-	-	0.3898	-
B	-	3.82	-	-	0.1504	-
C	-	3.84	-	-	0.1512	-
D	-	3.03	-	-	0.1193	-

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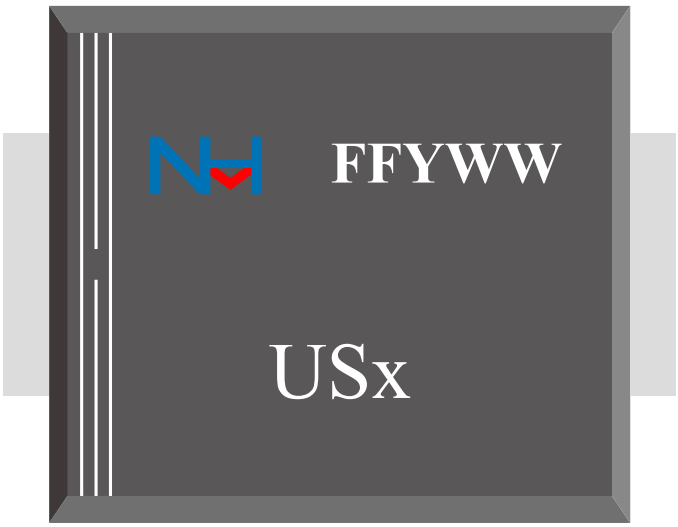
MARKING	MARKING INSTRUCTION
	**NH=Niuhang Trademark** **FF=Product Line Code,According To Actual Changes** **YWW=Date Code,According To Actual Changes** **USx=Model,x=A,B,D,G,J,K,M** **White band denotes cathode**

PACKING INFORMATION

Package Type	Package Code	Productor Weight Approx(g/Pcs)	Package Method	Quantity (Pcs/Min. Pack.)	Quantity (Pcs/Inner Box)	Quantity (Pcs/Carton)
SMC	P1	0.254	13" Reel	3000	6000	48000
SMC	P2	0.254	13" Reel	3000	6000	60000

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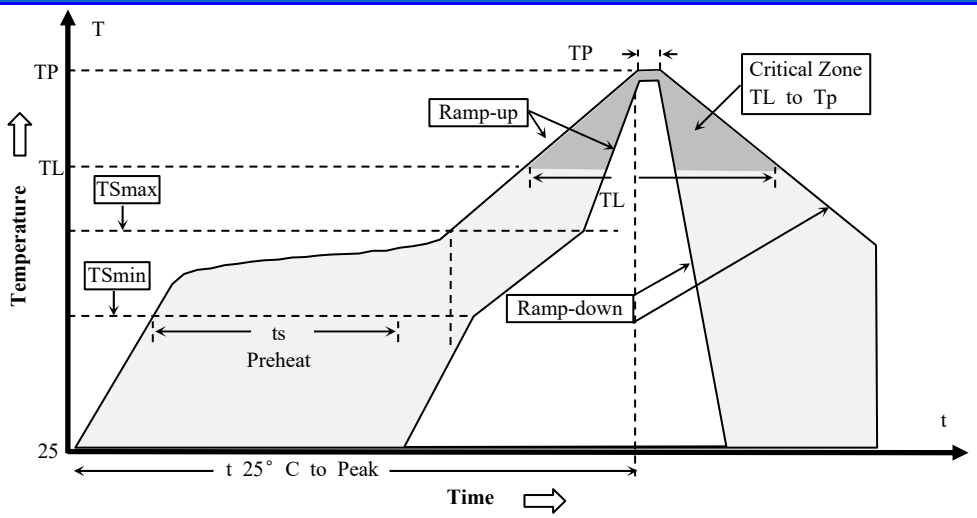
Recommended wave soldering condition

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 (Tsmax 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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