

MBR20A100S

LOW VF SCHOTTKY RECTIFIERS



VOLTAGE: 100 Volts

CURRENT: 20 Amperes

Package: TO-252

Marking And Polarity

FEATURES

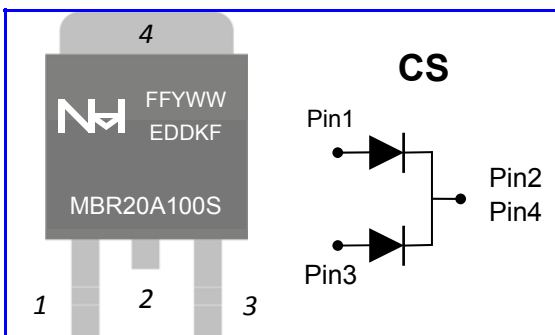
- Plane Schottky Potential Barrier Chip
- Low Forward Voltage Drop For High Efficiency
- Low Leakage Current For High Reliability
- High Forward Surge Capability For High Reliability
- High Frequency Operation

MECHANICAL DATA

- Package:** Molding Compound Meets UL 94 V-0 Flammability Rating, RoHS-Compliant
- Polarity:** As Marked On Case
- Mounting Position:** Any
- Weight:** App. 0.321 Grams (0.01132 Ounce)

TYPICAL APPLICATIONS

- For Use In High Frequency Inverters, Switching Mode Power Supply
AC/DC Converters, LED Driver Etc. Applications



Remark:

- NH=niuhang trademark
- FF=Product line code, According to actual changes
YWW=Date code, According to actual changes
EDDKF=Internal code, According to actual changes
- MBR20A100S=Model

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

Maximum Ratings (Ta=25°C Unless otherwise specified)

Parameter	Test Conditions	Symbol	MBR20A100S	Unit
Maximum Repetitive Peak Reverse Voltage		V_{RRM}	100	V
Maximum RMS Voltage		V_{RMS}	70	V
Maximum DC Blocking Voltage		V_{DC}	100	V
Maximum Average Forward Rectified Current	@TC= 100 °C	$I_{F(AV)}$	20	A
Peak Forward Surge Current	8.3ms Single Half Sine-wave Superimposed On Rate Load	I_{FSM}	120	A
Current Squared Time Per Diode	t<8.3ms	I^2t	59.8	A ² sec

Electrical Characteristics (Ta=25°C Unless otherwise specified)

Parameter	Test Conditions		Symbol	MBR20A100S			Unit
				Min.	Typ.	Max.	
Instantaneous forward voltage per diode (note1)	Ta=25°C	$I_F = 10.0 A$	V_F	--	0.70	0.80	V
	Ta=125°C			--	0.62	0.73	
Maximum DC Reverse Current at Rated DC Blocking Voltage (Note 1)	Ta=25°C	$V_R = V_{RRM}$	I_{RRM}	--	10	50	uA
	Ta=125°C	$V_R = 80\% \cdot V_{RRM}$		--	2	10	
Typical Junction Capacitance Per Diode	4.0 V, 1MHz		C_J	--	210	--	pF

Thermal Characteristics (Ta=25°C Unless otherwise specified)

Parameter	Symbol	MBR20A100S	Unit
Operating Junction Temperature Range	T_J	-55 to 150	°C
Storage Temperature Range	T_{STD}	-55 to 150	
Typical thermal resistance (Note 2)	$R_{\theta JA}$	100	°C/W
	$R_{\theta JC}$	2.5	

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

2. Device Mounted On Device Mounted On 10cm*10cm*1mm copper pad areas.

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Typical Characteristics Curves

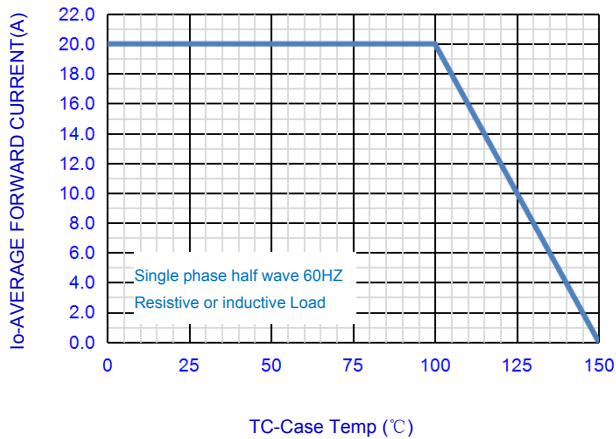


Fig.1-FORWARD CURRENT DERATING CURVE

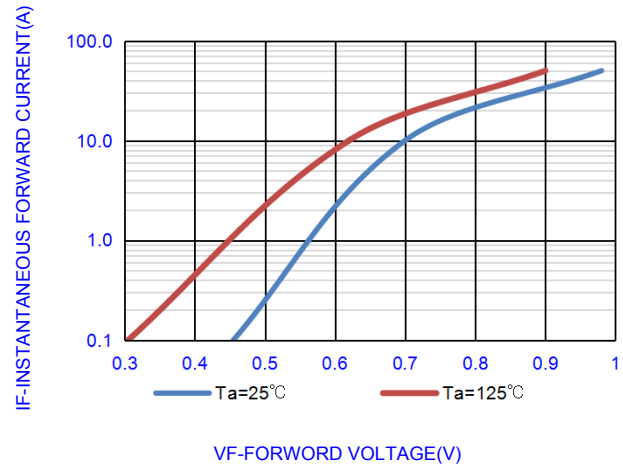


Fig.2- TYPICAL INSTANTANEOUS FORWARD

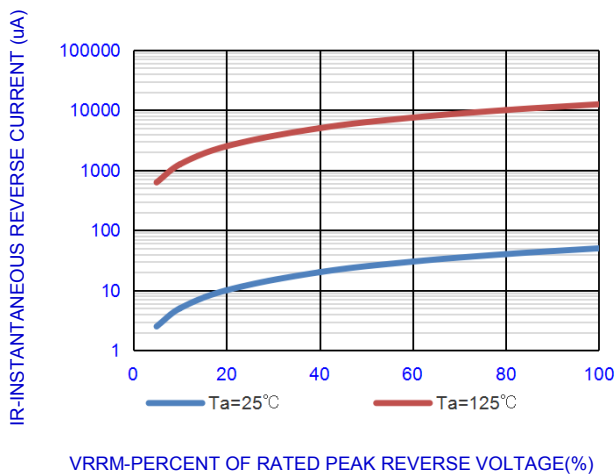


Fig.3- TYPICAL REVERSE CHARACTERISTICS

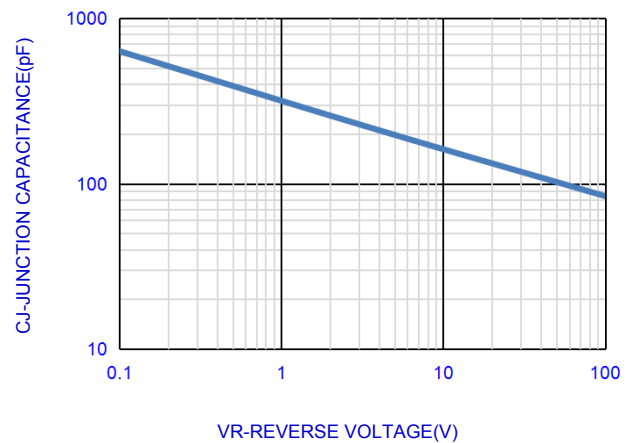


Fig.4- TYPICAL JUNCTION CAPACITANCE

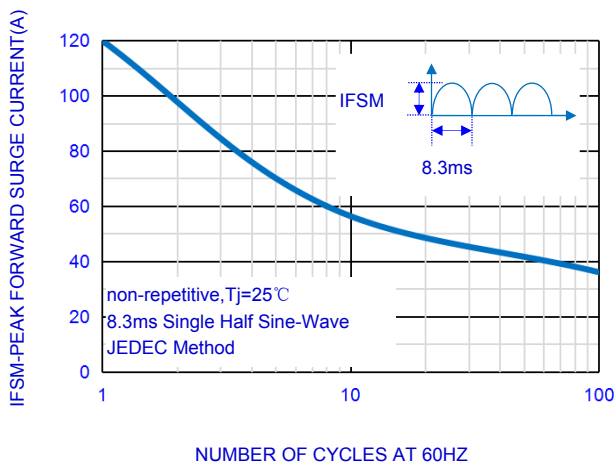


Fig.5-MAX. NON-REPETITIVE SURGE CURRENT

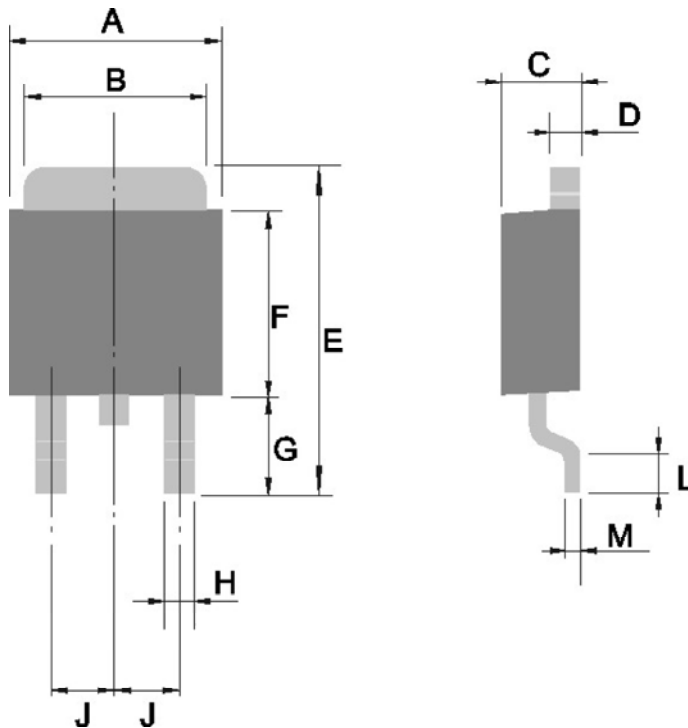
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OUTLINE DRAWINGS

TO-252

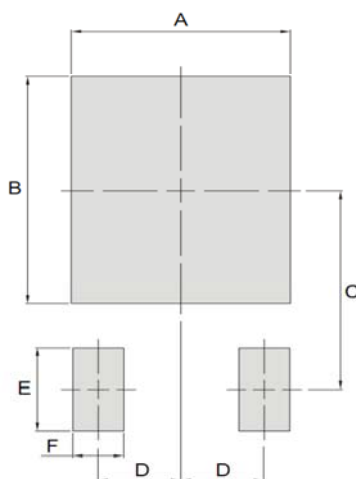


OUTLINE DIMENSIONS

Dim.	Milimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	6.100	-	7.100	0.240	-	0.280
B	4.800	-	5.800	0.189	-	0.228
C	1.950	-	2.550	0.077	-	0.100
D	0.350	-	0.750	0.014	-	0.030
E	9.250	-	10.750	0.364	-	0.423
F	5.600	-	6.600	0.220	-	0.260
G	2.500	-	3.100	0.098	-	0.122
H	0.650	-	1.050	0.026	-	0.041
J	2.100	-	2.500	0.083	-	0.098
L	1.000	-	1.400	0.039	-	0.055
M	0.350	-	0.750	0.014	-	0.030

OUTLINE DRAWINGS

TO-252



OUTLINE DIMENSIONS

Dim.	Milimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	-	6.09	-	-	0.24	-
B	-	7.57	-	-	0.298	-
C	-	6.64	-	-	0.261	-
D	-	2.3	-	-	0.091	-
E	-	2.76	-	-	0.109	-
F	-	1.42	-	-	0.056	-

PACKING INFORMATION

Package Code	Package Method	Inner Box Size L×W×H(mm)	Quantity (Pcs/Inner Box)	Outer Carton Size L×W×H(mm)	Quantity (Pcs/Carton)
TO-252	Tape Reel	340×340×50	5000	360x360x260	25000

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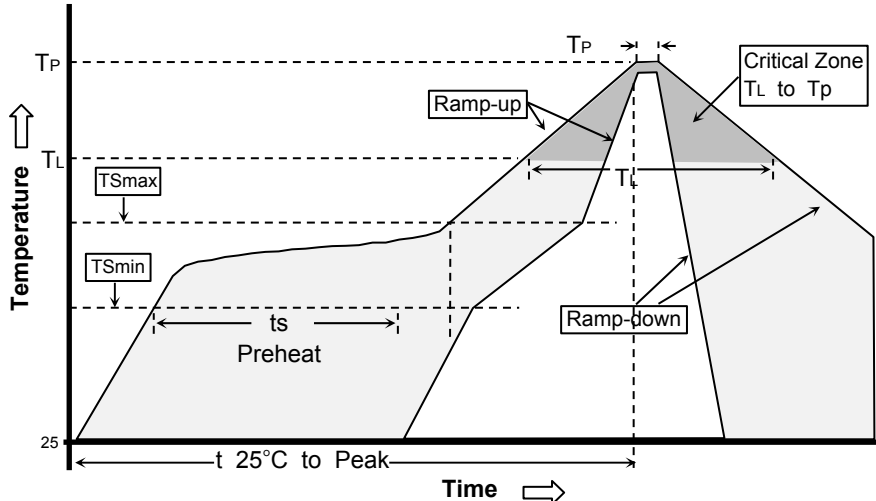
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Recommended wave soldering condition

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 (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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