

### RYBS3010

#### FAST RECOVERY BRIDGE RECTIFIERS



VOLTAGE: 1000 Volts

CURRENT: 3.0 Amperes

TMBF Marking & Schematic diagram

#### FEATURES

- Glass passivated die construction
- low forward voltage drop
- High surge current capability(IFSM)
- Good soft recovery features are good for EMC
- Small high-temperature leakage current(IR)
- Good consistency in electrical performance

#### MECHANICAL DATA

- **Case TMBF**  
Molding compound meets UL 94 V-0 flammability rating, RoHS-compliant
- **Mounting Position:** Any
- **Weight:** App. 0.229 grams(0.0008ounce)

#### TYPICAL APPLICATIONS

- Applied to high-frequency power converters such as PD chargers and adapters

PIN	DISCRIPTION
1	Output Cathode(-)
2	Output Anode(+)
3	Input Pin(-)
4	Input Pin(-)

Remark:

- ①. NH=niuhang trademark
- ②. FF=Product line code,According to actual changes  
YWW=Data code,According to actual changes  
EDD=Inernal code,According to actual changes
- ③. RYBS3010=Mode
- ④. "- ~ ~ +"=Polarity mark

Single phase, half wave, 60Hz, resistive or inductive load. For capacitive load, derate current by 20%

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

Parameter	Symbol	RYBS3010	Unit
Maximum Repetitive Peak Reverse Voltage	$V_{RRM}$	1000	V
Maximum RMS Voltag	$V_{RMS}$	700	V
Maximum DC Blocking Voltage	$V_{DC}$	1000	V
Maximum Average Forward Rectified Current @ TC=100°C (see fig.1)	$I_{F(AV)}$	3.0	A
Peak Forward Surge Current 8.3ms Single Half Sine-wave Superimposed On Rate Load (JEDEC Method)	$I_{FSM}$	150	A
Current Squared Time Per Diode( $t < 8.3ms$ )	$I^2 t$	93.38	A <sup>2</sup> sec

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

Parameter	Test Conditions	Symbol	RYBS3010			Unit
			Min.	Typ.	Max.	
Maximum Forward Voltage Per Diode (Note 1)	Ta=25°C IF= 3.0 A	$V_{FM}$	--	--	1.3	V
Maximum DC Reverse Current at Rated DC Blocking Voltage (Note 1)	Ta=25°C VR= 1000 V	$I_{RRM}$	--	--	10	uA
	Ta=125°C VR= 1000 V		--	--	500	
Typical Junction Capacitance Per Diode	IF=0.5A, IR=1.0A, IRR=0.25A	$C_J$	35			pF
Maximum Reverse Recovery Time	4V, 1MHz	$T_{RR}$	500			nS

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

Parameter	Symbol	RYBS3010	Unit
Operating Junction Temperature Range	$T_J$	-55 to 150	°C
Storage Temperature Range	$T_{STD}$	-55 to 150	
Typical thermal resistance (Note 2)	$R_{\theta JA}$	55.0	°C/W
	$R_{\theta JC}$	15.0	

- Notes: 1. Pulse test: 300  $\mu$ s pulse width, 1% duty cycle  
 2. Device mounted on Device mounted on 75mm x 45mm x 5.5mm Aluminum Plate Heatsink.

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**RATING AND CHARACTERISTIC CURVES**

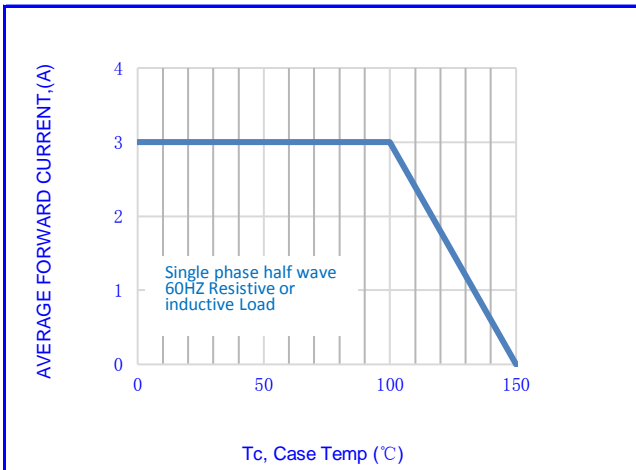


Fig.1-FORWARD CURRENT DERATING CURVE

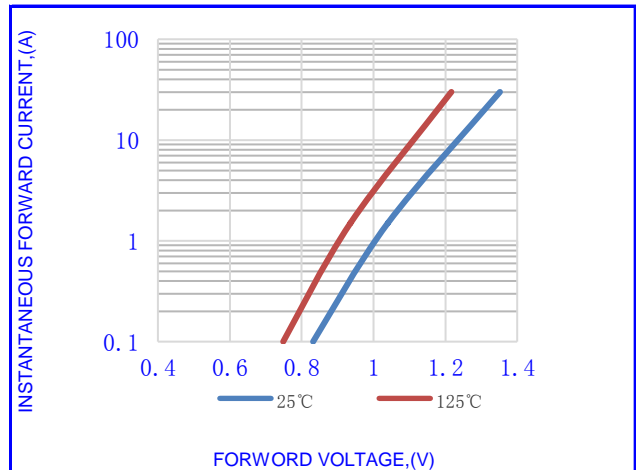


Fig.2- TYPICAL INSTANTANEOUS FORWARD

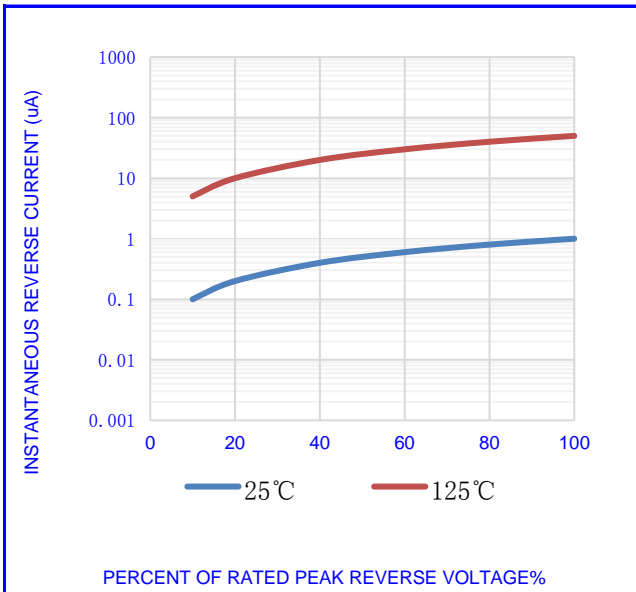


Fig.3- TYPICAL REVERSE CHARACTERISTICS

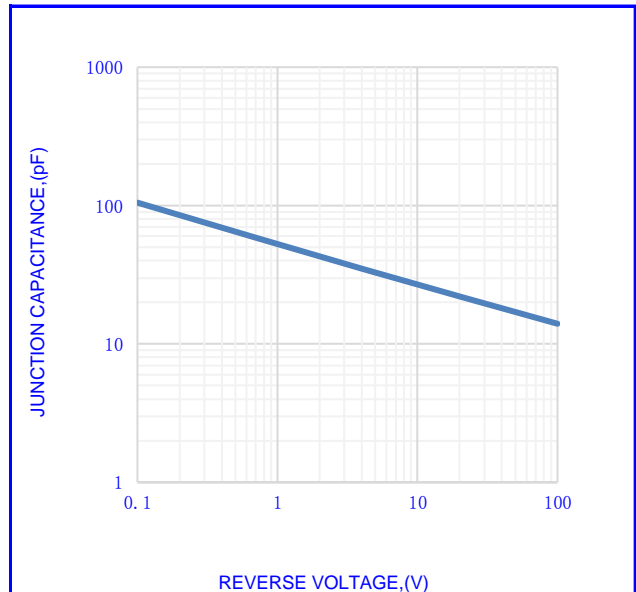


Fig.4- TYPICAL JUNCTION CAPACITANCE

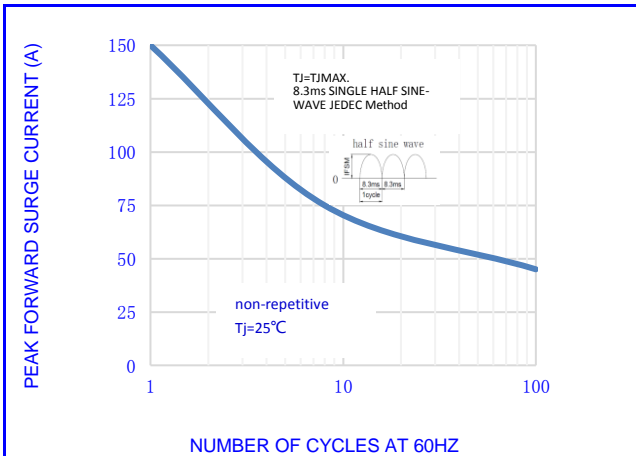


Fig.5-MAX. NON-REPETITIVE SURGE CURRENT

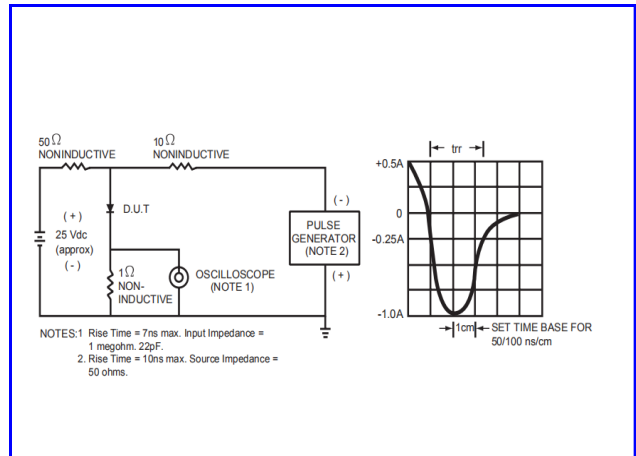


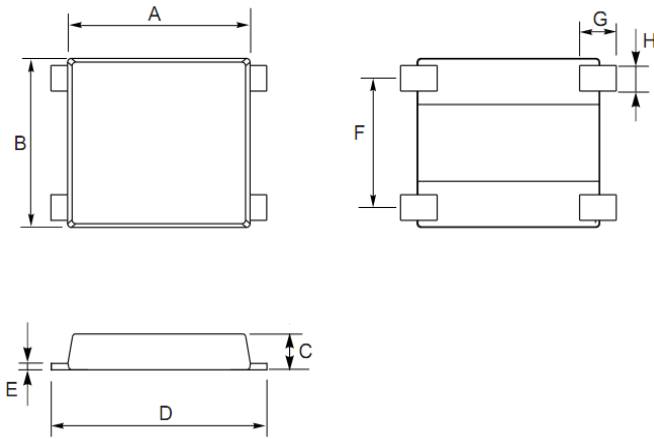
Fig.6- TEST CIRCUIT DIAGRAM AND REVERSE RECOVERY TIME CHARACTERISTIC

**RYBS3010**

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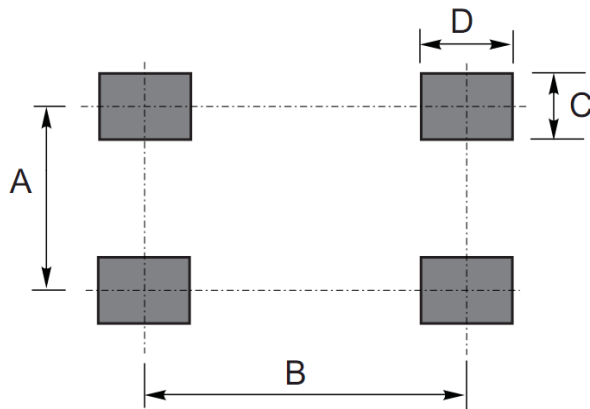
**OUTLINE DRAWINGS**



**TMBF**

OUTLINE DIMENSIONS						
Dim.	Milimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	7.10	-	7.70	0.280	-	0.303
B	6.10	-	7.10	0.240	-	0.280
C	1.30	-	1.50	0.051	-	0.059
D	8.30	-	9.00	0.327	-	0.354
E	0.16	-	0.30	0.006	-	0.012
F	4.90	-	5.30	0.193	-	0.209
G	1.00	-	1.60	0.039	-	0.063
H	0.90	-	1.20	0.035	-	0.047

**RECOMMENDED LAYOUT DRAWINGS**



**TMBF**

OUTLINE DIMENSIONS						
Dim.	Milimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	-	5.100	-	-	0.201	
B	-	7.350	-	-	0.289	
C	-	1.800	-	-	0.071	
D	-	2.000	-	-	0.079	

**PACKING INFORMATION**

**TMBF**

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	3000	340x340x45	6000	360x360x240	30000

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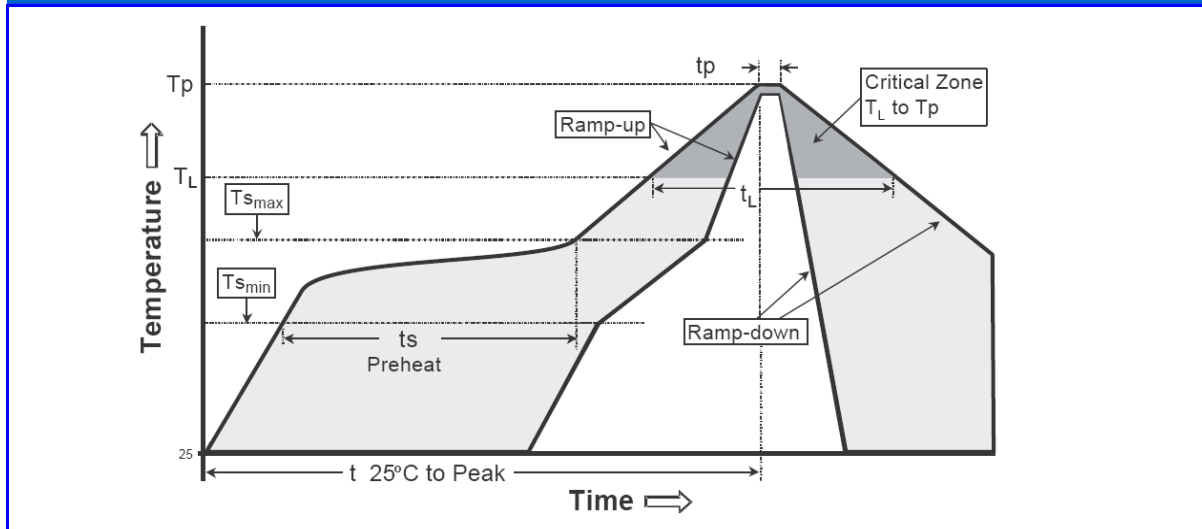
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**Recommended wave soldering condition**

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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