

RYBS4010

FAST RECOVERY BRIDGE RECTIFIERS



VOLTAGE: 1000 Volts

CURRENT: 4 Amperes

Package: TMBF

Marking And Polarity

FEATURES

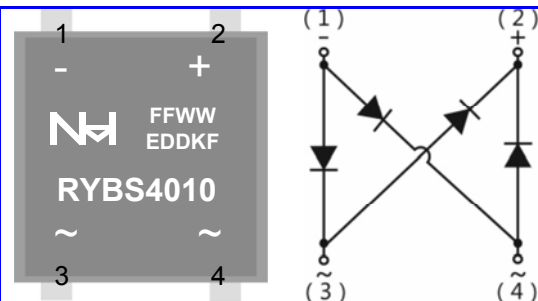
- Glass Passivated Chip Junction
- Low Forward Voltage Drop For High Efficiency
- Low Leakage Current For High Reliability
- High Forward Surge Capability For High Reliability

MECHANICAL DATA

- **Package:** Molding Compound Meets UL 94 V-0 Flammability Rating, RoHS-Compliant
- **Polarity:** As Marked On Case
- **Mounting Position:** Any
- **Weight:** App. 0.225 grams (0.0079 ounce)

TYPICAL APPLICATIONS

- General Purpose Use In AC/DC Bridge Full Waverectification For PD, Adapter, Power Supply, Monitor, LED Driver, Printer, Audio Equipment, TV And Home appliances Etc. Applications.



Remark:

- ①. NH=Niuhan Trademark
- ②. FF=Product Line Code, According To Actual Changes
WW=Date Code, According To Actual Changes
EDDKF=Internal Code, According To Actual Changes
RYBS4010=Model
- ③. - +~ ~~=Polarity Mark

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	RYBS4010	Unit
Maximum Repetitive Peak Reverse Voltage		V_{RRM}	1000	V
Maximum RMS Voltage		V_{RMS}	700	V
Maximum DC Blocking Voltage		V_{DC}	1000	V
Maximum Average Forward Rectified Current	@TC= 100 °C	$I_{F(AV)}$	4	A
Peak Forward Surge Current	8.3ms Single Half Sine-wave Superimposed On Rate Load	I_{FSM}	160	A
Current Squared Time Per Diode	t<8.3ms	I^2t	106.2	A ² sec

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

Parameter	Test Conditions		Symbol	RYBS4010			Unit
				Min.	Typ.	Max.	
Instantaneous forward voltage per diode (note1)	Ta=25°C	$I_F = 4.0 \text{ A}$	V_F	--	1.00	1.30	V
	Ta=125°C			--	0.91	1.22	
Maximum DC Reverse Current at Rated DC Blocking Voltage (Note 1)	Ta=25°C	$V_R = V_{RRM}$	I_{RRM}	--	1.0	5	uA
	Ta=125°C	$V_R = 80\% \cdot V_{RRM}$		--	50.00	500	
Typical Junction Capacitance Per Diode	4.0V, 1MHz		C_J	--	60	--	pF
Maximum Reverse Recovery Time	$I_F = 0.5A, I_R = 1.0A, I_{RR} = 0.25A$		T_{RR}	--	--	350	nS

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

Parameter	Symbol	RYBS4010	Unit
Operating Junction Temperature Range	T_J	-55 to 150	°C
Storage Temperature Range	T_{STD}	-55 to 150	
Typical thermal resistance (Note 2)	$R_{\theta JA}$	35.0	°C/W
	$R_{\theta JC}$	8	

Notes: 1. Pulse Test: 300 Us 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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Typical Characteristics Curves

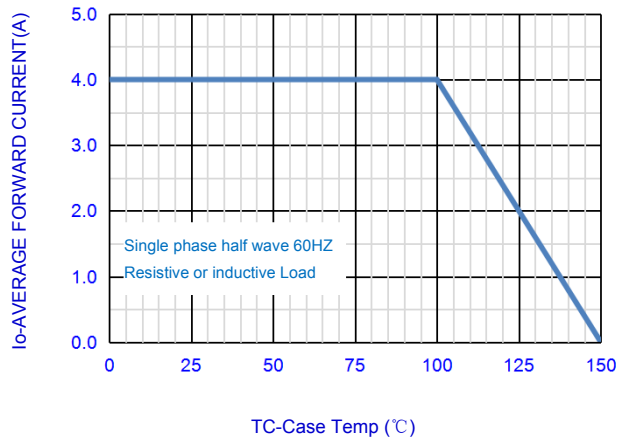


Fig.1-FORWARD CURRENT DERATING CURVE

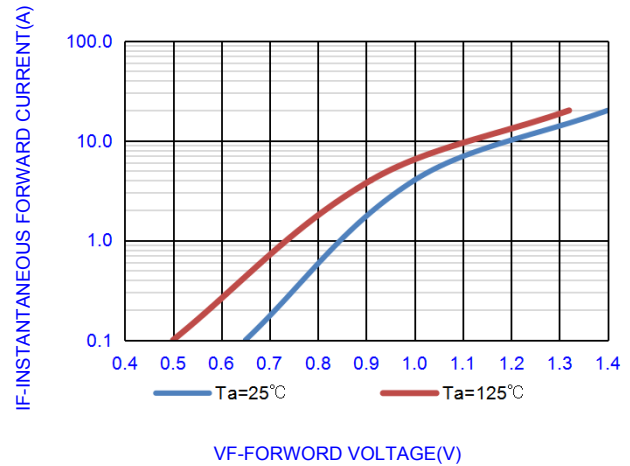


Fig.2- TYPICAL INSTANTANEOUS FORWARD

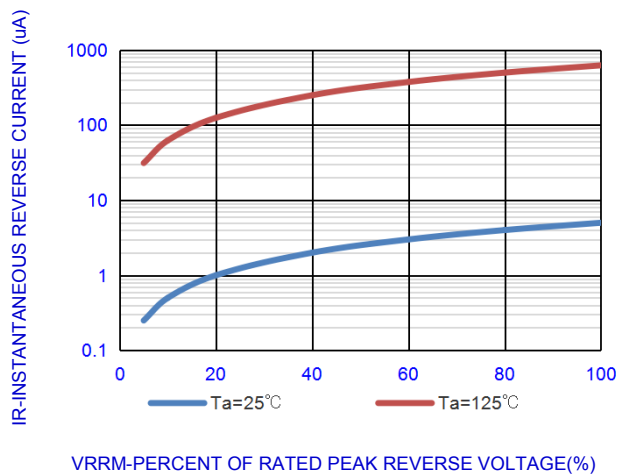


Fig.3- TYPICAL REVERSE CHARACTERISTICS

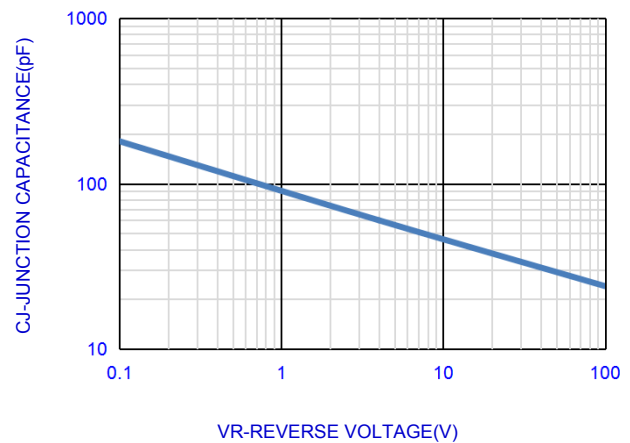


Fig.4- TYPICAL JUNCTION CAPACITANCE

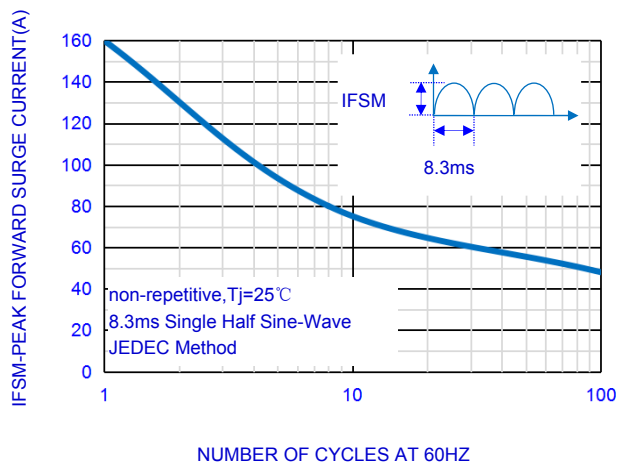


Fig.5-MAX. NON-REPETITIVE SURGE CURRENT

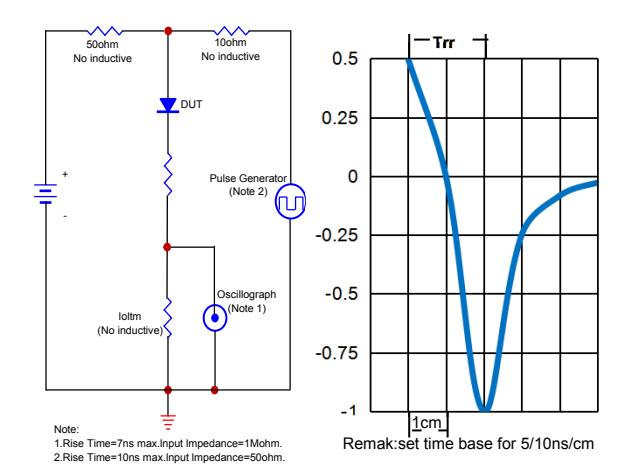


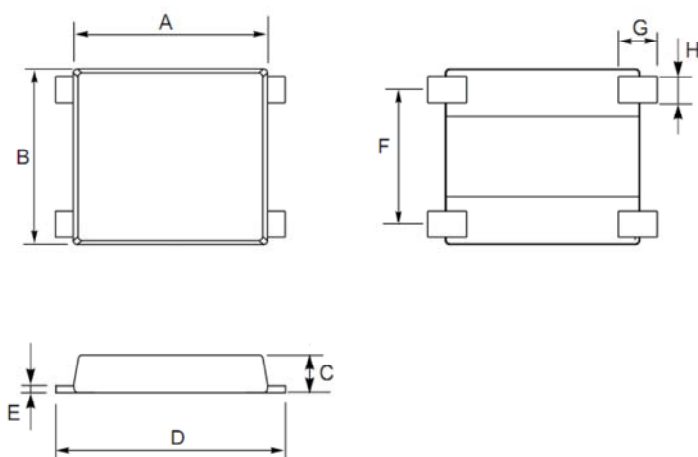
Fig.6-REVERSE RECOVERY TIME CHARACTERISTIC AND TEST CIRCUIT

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OUTLINE DRAWINGS

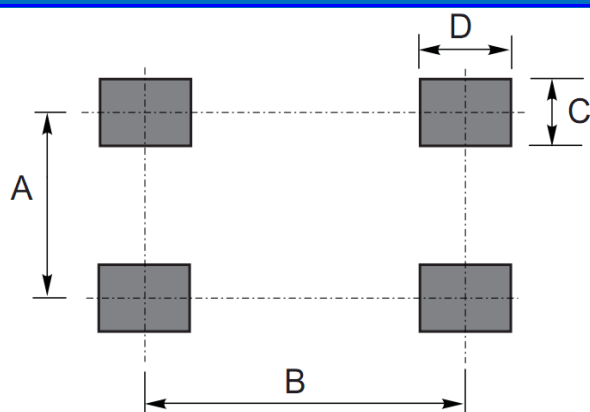


TMBF

OUTLINE DIMENSIONS

Dim.	Millimeters			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	4.70	-	5.30	0.185	-	0.209
G	1.00	-	1.60	0.039	-	0.063
H	0.90	-	1.20	0.035	-	0.047

RECOMMENDED LAYOUT DRAWINGS



TMBF

RECOMMENDED LAYOUT DIMENSIONS

Dim.	Millimeters			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

Package	Pack	Inner Box Size L×W×H(mm)	Quantity (pcs/Inner Box)	Outer Carton Size L×W×H(mm)	Quantity (pcs/carton)
TMBF	Tape Reel	340×340×45	6000	360×360×240	30000

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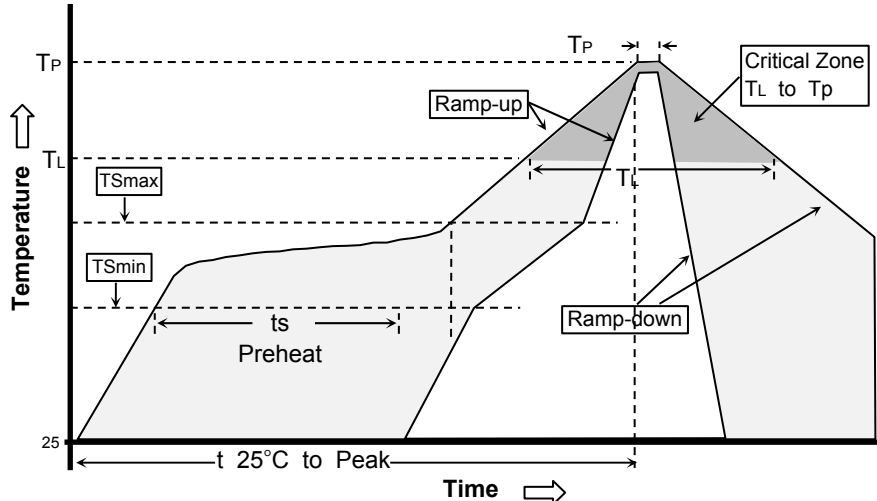
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Recommended wave soldering condition

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 (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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