

HBS4010

General Bridge Rectifiers



Voltage: 1000 Volts

Current: 4 Amperes

Package: HBS

Features

- NH'S Standard Rectifier Chip Technology
- Low Forward Voltage Drop For High Efficiency
- Low Leakage Current For High Reliability
- High Surge Capability For High Reliability

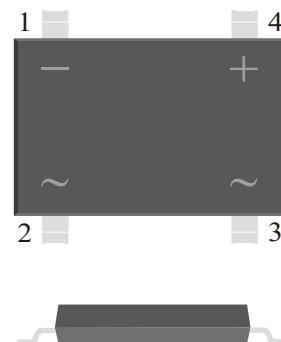
Mechanical Data

- **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

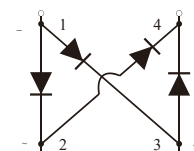
Typical Applications

- 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°C Unless Otherwise Specified)

Parameter	Test Conditions	Symbol	Ratings	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		$I_{F(AV)}$	4	A
Peak Forward Surge Current Per Diode	8.3ms Single Half Sine-wave Superimposed On Rate Load	I_{FSM}	130	A
Current Squared Time Per Diode	$t < 8.3ms$	I^2t	70.1	A ² sec

Electrical Characteristics (Ta=25°C Unless Otherwise Specified)

Parameter	Test Conditions	Symbol	Ratings			Unit
			Min.	Typ.	Max.	
Instantaneous Forward Voltage Per Diode	$I_F = 4.0 A$	V_F	--	0.9	1.05	V
Maximum DC Reverse Current at Rated DC Blocking Voltage	Ta=25°C, $V_R = V_{RRM}$	I_{RRM}	--	1	5	uA
	Ta=125°C, $V_R = V_{RRM} * 80\%$		--	50	500	uA
Typical Junction Capacitance Per Diode	4 V,1MHz	C_J	--	40	--	pF

Thermal Characteristics (Ta=25°C Unless Otherwise Specified)

Parameter	Test Conditions	Symbol	Ratings	Unit
Operating Junction Temperature Range		T_J	-55 to 150	°C
Storage Temperature Range		T_{STD}	-55 to 150	
Thermal Resistance Junction To Ambient With Steady-State	Still Air Environment With Ta=25°C	$R_{\theta JA}$	50.0	°C/W
Thermal Resistance Junction-Case With Steady-State	Device Mounted On 1 in2 FR-4 Board With 2oz. Copper	$R_{\theta JC}$	11.0	

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

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Typical Characteristics Curves

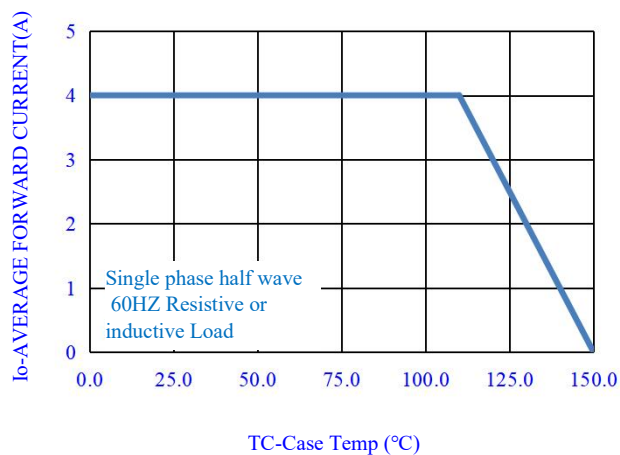


Fig.1-FORWARD CURRENT DERATING CURVE

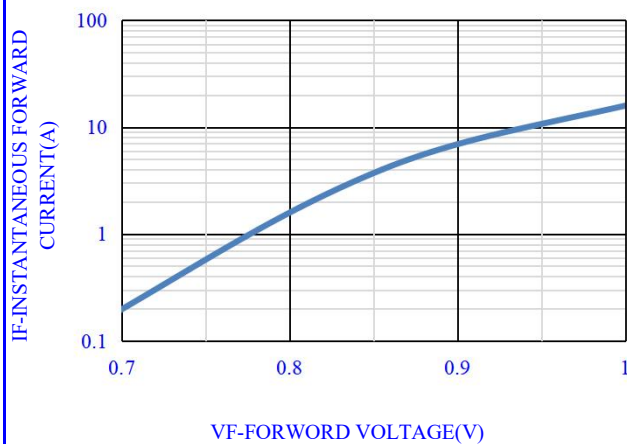


Fig.2- TYPICAL INSTANTANEOUS FORWARD

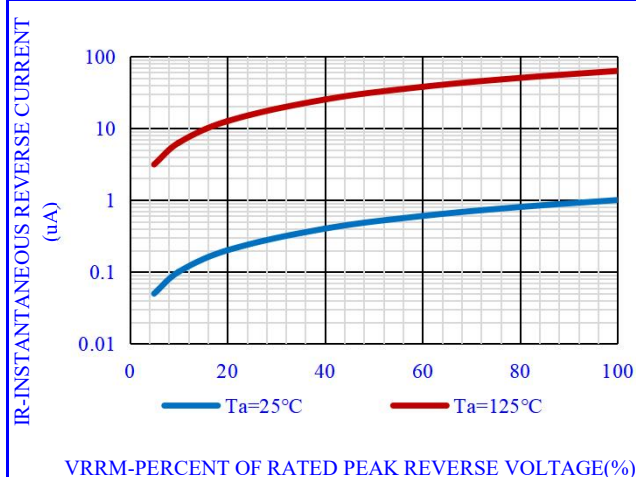


Fig.3- TYPICAL REVERSE CHARACTERISTICS

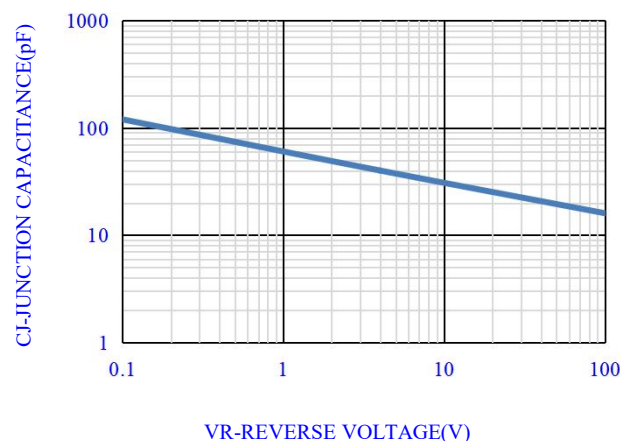


Fig.4- TYPICAL JUNCTION CAPACITANCE

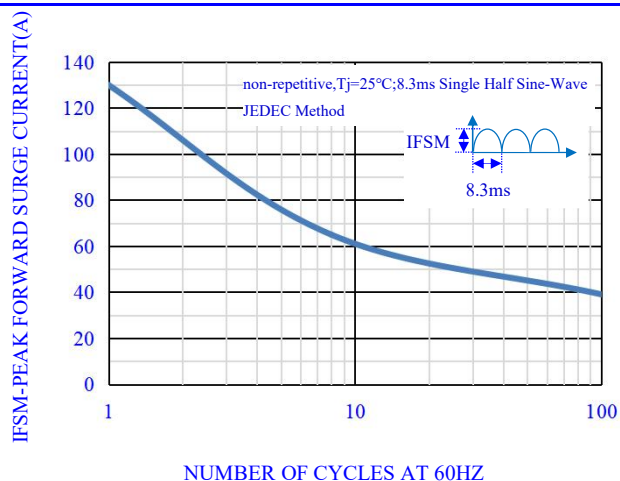


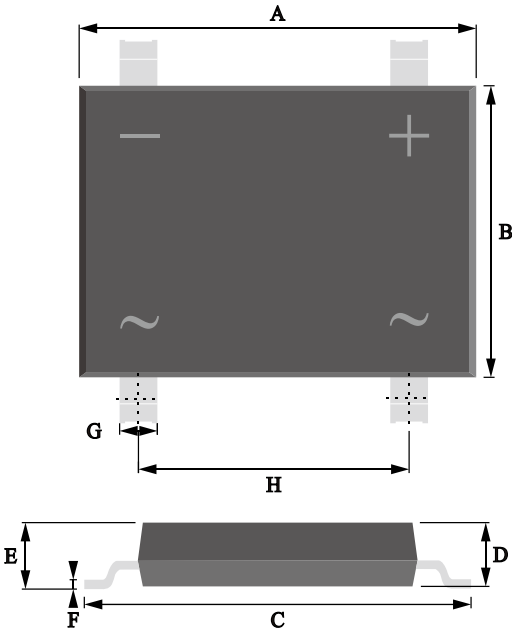
Fig.5-MAX. NON-REPETITIVE SURGE CURRENT

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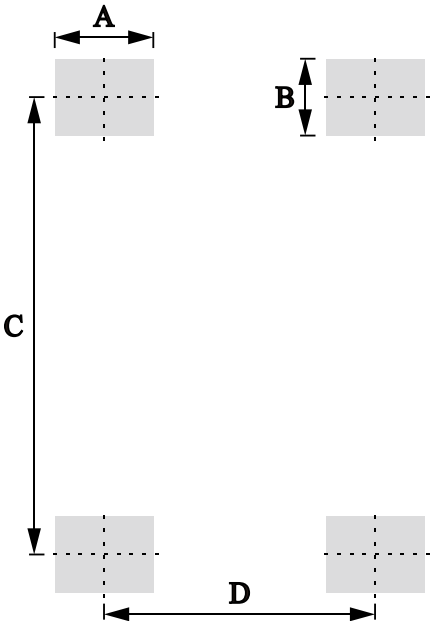
OUTLINE DRAWINGS



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OUTLINE DIMENSIONS						
Dim.	Milimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	9.55	-	11.05	0.3760	-	0.4350
B	6.90	-	7.90	0.2717	-	0.3110
C	9.35	-	10.65	0.3681	-	0.4193
D	1.40	-	1.90	0.0551	-	0.0748
E	1.40	-	2.00	0.0551	-	0.0787
F	0.15	-	0.35	0.0059	-	0.0138
G	1.60	-	2.00	0.0630		0.0787
H	4.50	-	5.50	0.1772	-	0.2165

RECOMMEDND LAYOUT DRAWINGS



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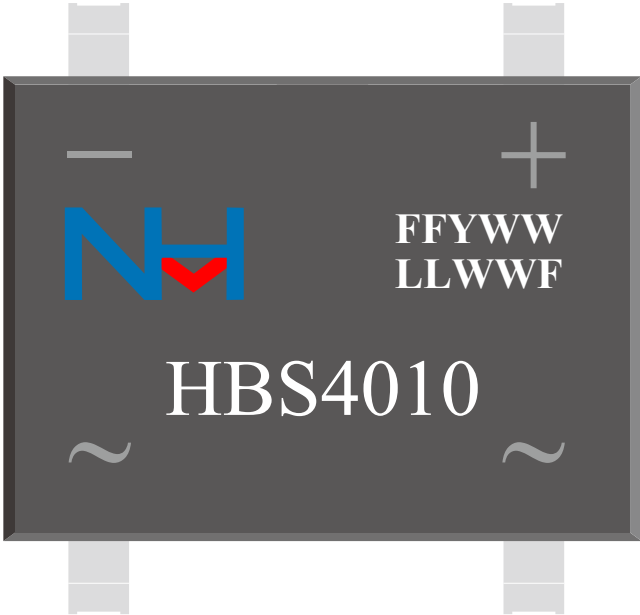
OUTLINE DIMENSIONS						
Dim.	Milimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	-	2.00	-	-	0.0787	-
B	-	1.50	-	-	0.0591	-
C	-	8.90	-	-	0.3504	-
D	-	4.50	-	-	0.1772	-

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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
LLWWF=Inernal Code,According To Actual Changes
HBS4010=Model

PACKING INFORMATION

Package Type	Package Code	Product Weight Approx(g/Pcs)	Package Method	Quantity (Pcs/Min. Pack.)	Quantity (Pcs/Inner Box)	Quantity (Pcs/Carton)
HBS	P1	0.107	13" Reel	2500	2500	20000

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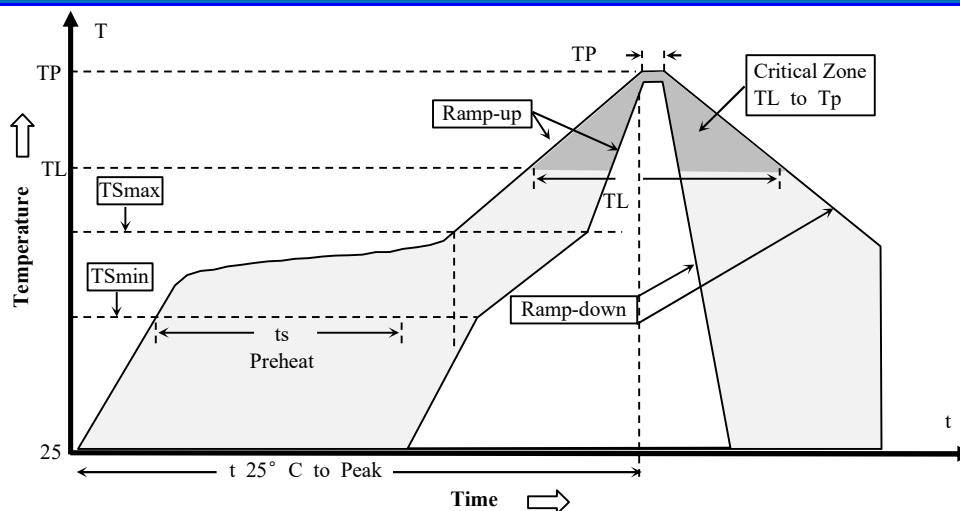
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Recommended wave soldering condition

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 (T _{smax} to T _p)	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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