

HBR20200P5

Schottky Barrier Rectifiers



Voltage: 200 Volts

Current: 20 A

Package: PDFN5*6

Features

- NH'S Plane Schottky Barrier Chip Technology
- Low Forward Voltage Drop For High Efficiency
- Low Power Loss For High Reliability
- High Frequency Switching Speed

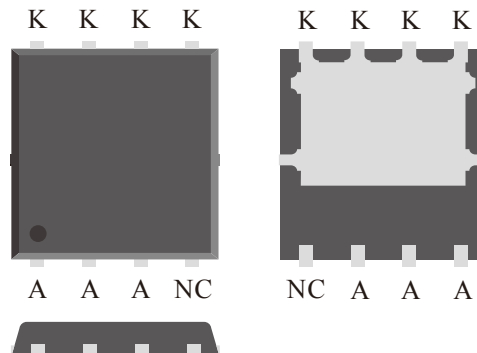
Mechanical Data

- **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°C Unless Otherwise Specified)

Parameter	Test Conditions	Symbol	Ratings	Unit
Maximum Repetitive Peak Reverse Voltage		V_{RRM}	200	V
Maximum RMS Voltage		V_{RMS}	140	V
Maximum DC Blocking Voltage		V_{DC}	200	V
Maximum Average Forward Rectified Current		$I_{F(AV)}$	20	A
Peak Forward Surge Current	8.3ms Single Half Sine-wave Superimposed On Rate Load	I_{FSM}	250	A
Current Squared Time	$t < 8.3ms$	I^2t	259.4	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	Ta=25°C IF=20A	V_F	--	0.9	0.95	V
	Ta=110°C		--	0.86	0.91	
Maximum DC Reverse Current at Rated DC Blocking Voltage	Ta=25°C , $V_R=V_{RRM}$	I_{RRM}	--	1	5	uA
	Ta=125°C , $V_R=V_{RRM}*80\%$		--	1	2	
Typical Junction Capacitance	4 V,1MHz	C_J	--	290	--	pF

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

Parameter	Test Conditions	Symbol	Ratings			Unit
Operating Junction Temperature Range		T _J	-55	to	175	℃
Storage Temperature Range		T _{STD}	-55	to	175	
Thermal Resistance Junction To Ambient With Steady-State	Still Air Environment With Ta=25℃	R _{θJA}	55			℃/W
Thermal Resistance Junction-Case With Steady-State	Device Mounted On 1 in2 FR-4 Board With 2oz. Copper	R _{θJC}	2			

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

Typical Characteristics Curves

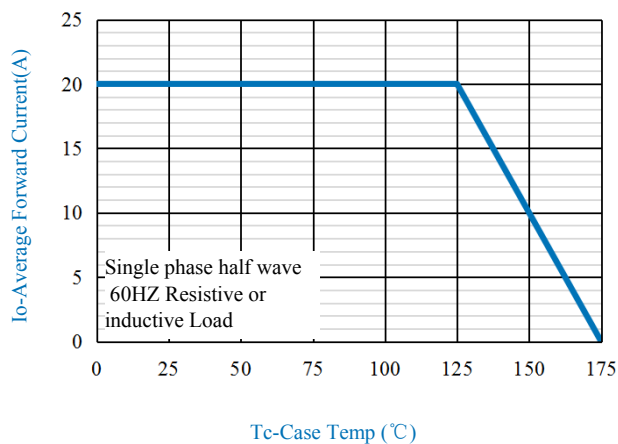


Fig.1-Forward Current Derating Curve

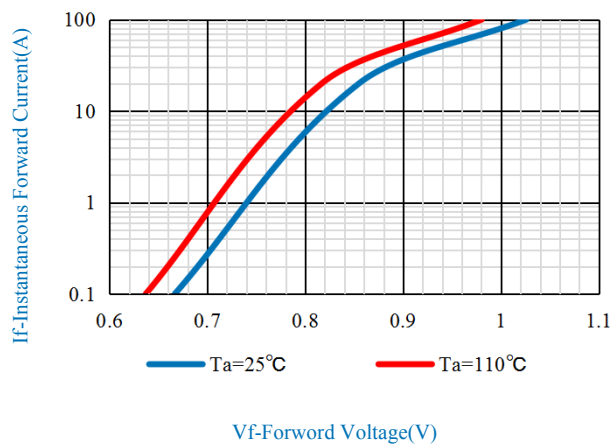


Fig.2-Typical Instantaneous Forward

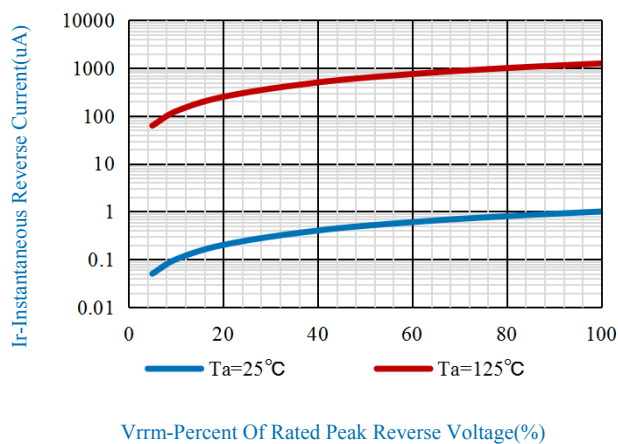


Fig.3-Typical Reverse Characteristics

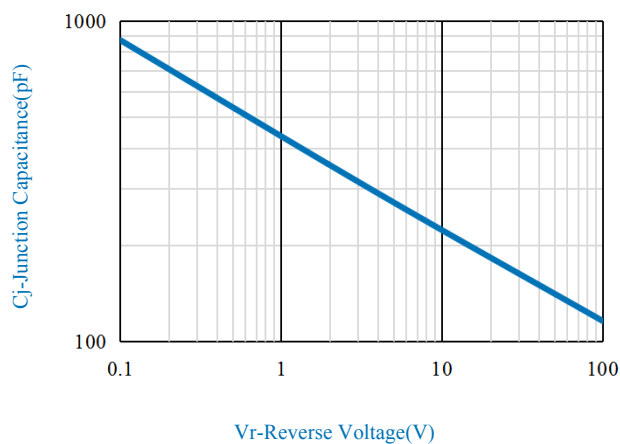


Fig.4-Typical Junction Capacitance

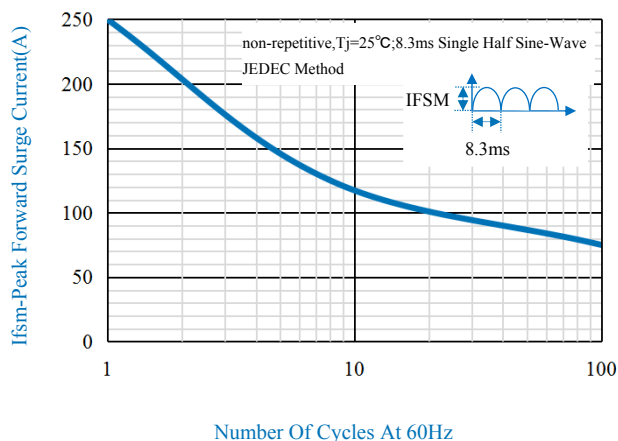


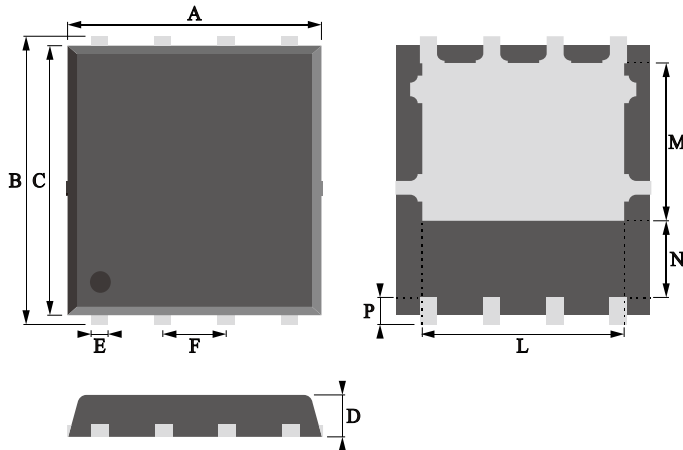
Fig.5-Max. Non-Repetitive Surge Current

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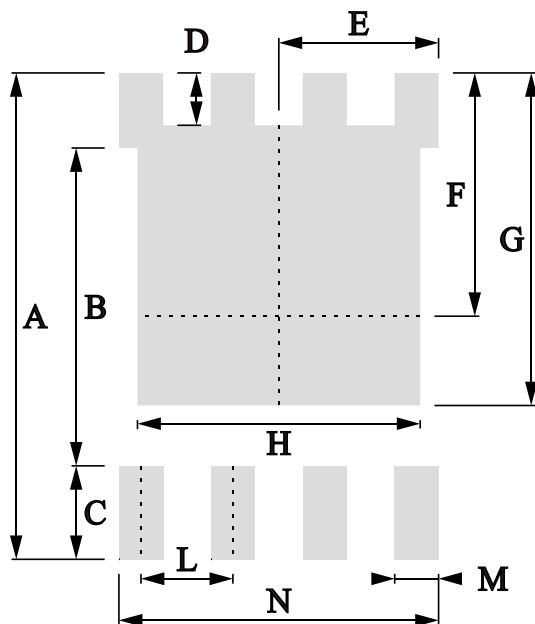
OUTLINE DRAWINGS



PDFN5*6

OUTLINE DIMENSIONS						
Dim.	Milimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.70	-	5.70	0.1850	-	0.2244
B	5.60	-	6.60	0.2205	-	0.2598
C	5.10	-	6.10	0.2008	-	0.2402
D	0.70	-	1.20	0.0276	-	0.0472
E	0.15	-	0.45	0.0059	-	0.0177
F	1.30	-	1.90	0.0512	-	0.0748
M	3.10	-	3.90	0.1220	-	0.1535
L	3.45	-	4.05	0.1358	-	0.1594
N	1.00	-	1.60	0.0394	-	0.0630
P	0.25	-	0.75	0.0098	-	0.0295

RECOMMEDNED LAYOUT DRAWINGS



PDFN5*6

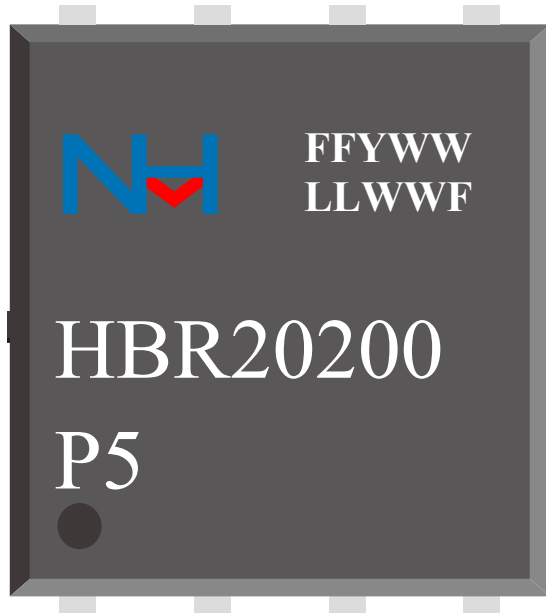
OUTLINE DIMENSIONS						
Dim.	Milimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	-	6.61	-	-	0.2602	-
B	-	4.32	-	-	0.1701	-
C	-	1.27	-	-	0.0500	-
D	-	0.71	-	-	0.0280	-
E	-	2.21	-	-	0.0870	-
F	-	3.31	-	-	0.1301	-
G	-	4.52	-	-	0.1780	-
H	-	3.91	-	-	0.1539	-
L	-	1.27	-	-	0.0500	-
M	-	0.61	-	-	0.0240	-
N	-	4.42	-	-	0.1740	-

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MARKING



MARKING INSTRUCTION

NH=Niuhan Trademark

FF=Product Line Code,According To Actual Changes

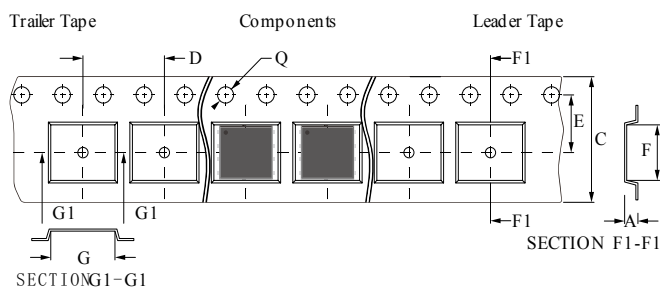
YWW=Date Code,According To Actual Changes

LLWWF=Internal Code,According To Actual Changes

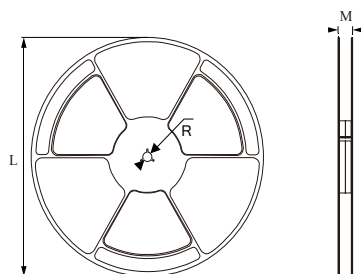
HBR20200P5=Model

PACKAGING

TAPE



REEL



PDFN5*6

OUTLINE DIMENSIONS

Dim.	Milimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
TAPE						
A	1.00	-	1.20	0.0394	-	0.0472
C	11.70	-	12.30	0.4606	-	0.4843
D	7.70	-	8.30	0.3031	-	0.3268
E	5.30	-	5.70	0.2087	-	0.2244
F	5.10	-	5.50	0.2008	-	0.2165
G	6.10	-	6.50	0.2402	-	0.2559
Q Φ	1.40	-	1.60	0.0551	-	0.0630
REEL						
L	328.00	-	332.00	12.913	-	13.071
R	12.00	-	14.00	0.4724	-	0.5512
M	16.50	-	18.50	0.6496	-	0.7283

PACKING INFORMATION

Package Type	Package Code	Product Weight Approx(g/Pcs)	Package Method	Quantity (Pcs/Min. Pack.)	Quantity (Pcs/Inner Box)	Quantity (Pcs/Carton)
PDFN5*6	P1	0.087	13" Reel	5000	10000	50000

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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 _S max to T _P)	3°C/second max.	3°C/second max.
	Preheat-Temperature Min (T _S min) -Temperature Max (T _S 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 (T _L) - Time (t _L)	183°C 60-150 seconds	217°C 60-150 seconds
	Peak Temperature(T _P)	240 +0/-5 °C	260 +0/-5 °C
	Time within 5°C of actual peak temperature (t _p)	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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Specification Revision History

Rev.	Date	Changed Items	Pre-Changed Content	Changed Content
A/1	2014-10-20	First Issue		
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