

# HER301G THRU HER308G

## High Efficiency Rectifier



**Voltage:** 50~1000 Volts

**Current:** 3 Amperes

**Package:** DO-27

### Features

- NH'S High Efficiency Rectifier Chip Technology
- Low Switching Loss For High Efficiency
- Low Leakage Current For High Reliability
- Ultra Fast 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	HER 301G	HER 302G	HER 303G	HER 305G	HER 306G	HER 307G	HER 308G	Unit
Maximum Repetitive Peak Reverse Voltage		$V_{RRM}$	50	100	200	400	600	800	1000	V
Maximum RMS Voltag		$V_{RMS}$	35	70	140	280	420	560	700	V
Maximum DC Blocking Voltage		$V_{DC}$	50	100	200	400	600	800	1000	V
Maximum Average Forward Rectified Current		$I_{F(AV)}$	3							A
Peak Forward Surge Current	8.3ms Single Half Sine-wave Superimposed On Rate Load	$I_{FSM}$	125							A
Current Squared Time	$t < 8.3ms$	$I^2t$	64.8							A <sup>2</sup> sec

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

Parameter	Test Conditions	Symbol	HER 301G	HER 302G	HER 303G	HER 305G	HER 306G	HER 307G	HER 308G	Unit
Maximum Instantaneous Forward Voltage	I <sub>F</sub> = 3.0 A	V <sub>F</sub>	1.00				1.30	1.70		V
Maximum DC Reverse Current at Rated DC Blocking Voltage	Ta=25℃ ,V <sub>R</sub> =VRRM Ta=125℃ ,V <sub>R</sub> =VRRM*80%	I <sub>RRM</sub>	5 200							uA uA
Typical Junction Capacitance	4 V,1MHz	C <sub>J</sub>	30				18	12		pF
Maximum Reverse Recovery Time	IF=0.5A, IR=1.0A, IRR=0.25A	Trr	50				75			nS

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

Parameter	Test Conditions	Symbol	HER 301G	HER 302G	HER 303G	HER 305G	HER 306G	HER 307G	HER 308G	Unit
Operating Junction Temperature Range		T <sub>J</sub>	-55~150							℃
Storage Temperature Range		T <sub>STD</sub>	-55~150							
Thermal Resistance Junction To Ambient With Steady-State	Still Air Environment With Ta=25℃	R <sub>θJA</sub>	65.0							℃/W
Thermal Resistance Junction-Case With Steady-State	At 0.375"(9.5mm) lead length Mounted On vertical P.C. Board	R <sub>θJC</sub>	20.0							

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

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Typical Characteristics Curves

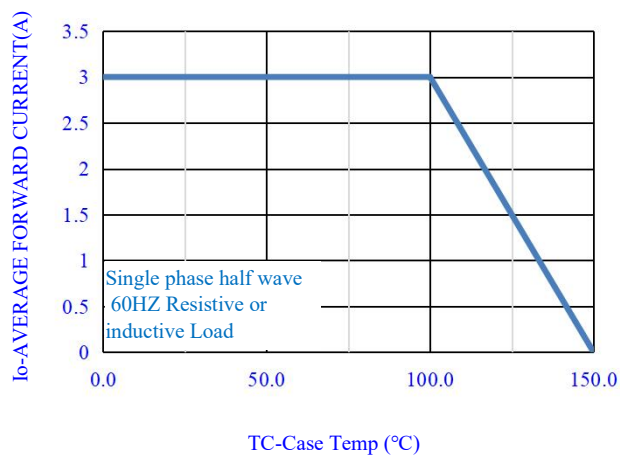


Fig.1-FORWARD CURRENT DERATING CURVE

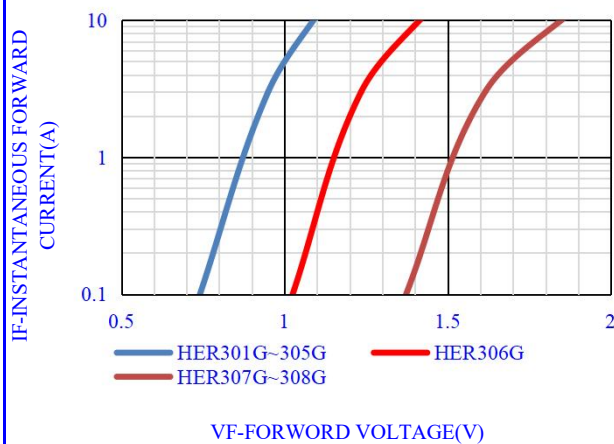


Fig.2- TYPICAL INSTANTANEOUS FORWARD

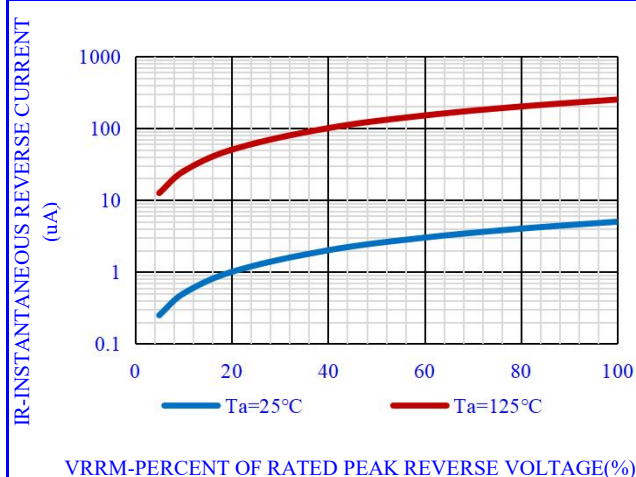


Fig.3- TYPICAL REVERSE CHARACTERISTICS

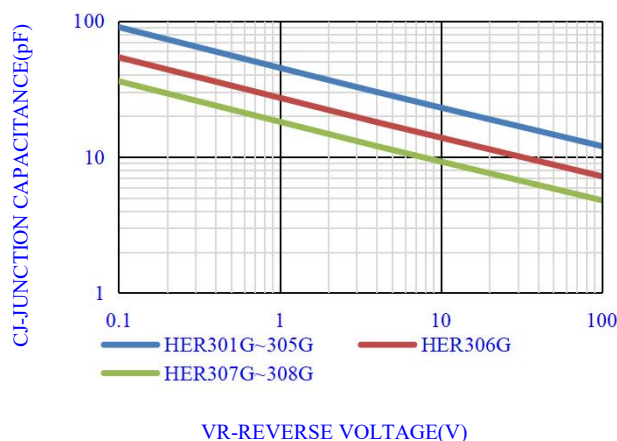


Fig.4- TYPICAL JUNCTION CAPACITANCE

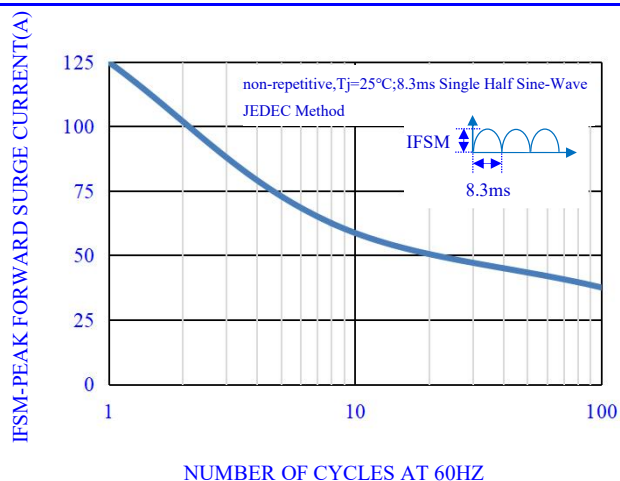


Fig.5-MAX. NON-REPETITIVE SURGE CURRENT

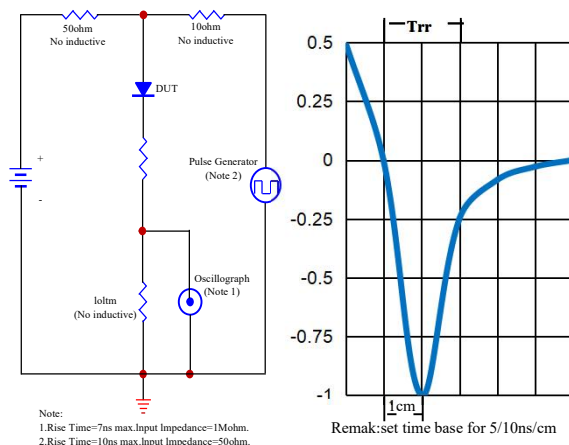


Fig.6-REVERSE RECOVERY TIME CHARACTERISTIC AND TEST CIRCUIT

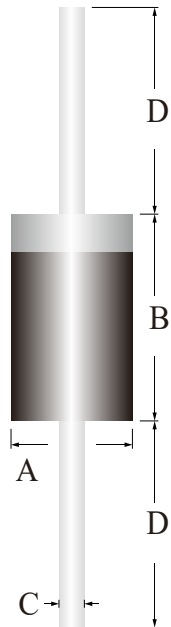
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**OUTLINE DRAWINGS**

**DO-27**

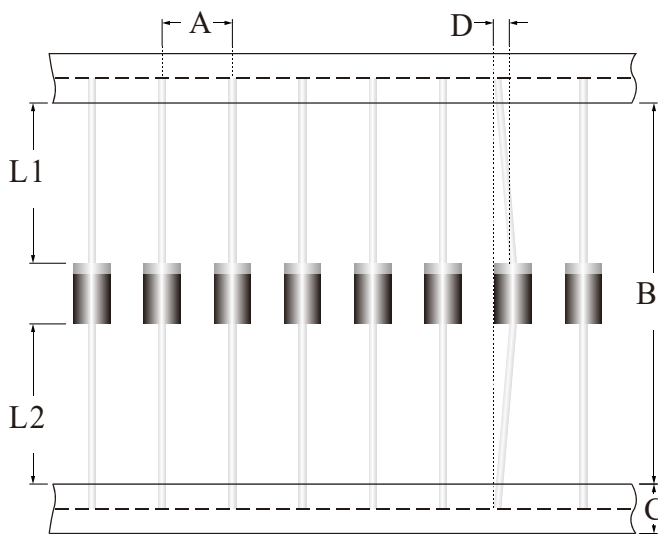


**OUTLINE DIMENSIONS**

Dim.	Milimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.90	-	5.60	0.1929	-	0.2205
B	8.00	-	10.00	0.3150	-	0.3937
C	1.00	-	1.40	0.0394	-	0.0551
D	24.50	-	26.50	0.9646	-	1.0433

**COMPONENT PITCH DIMENSION DIAGRAM**

**DO-27**



**OUTLINE DIMENSIONS**

Dim.	Milimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	9.50	-	10.50	0.3740	-	0.4134
B	51.00	-	53.00	2.0079	-	2.0866
C	5.50	-	6.50	0.2165	-	0.2559
D	-	-	1.20	-	-	0.0472
[L2-L1]	-	-	1.00	-	-	0.0394

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MARKING



MARKING INSTRUCTION

NH=Niuhan Trademark  
FF=Product Line Code,According To Actual Changes  
DDK=Internal Code,According To Actual Changes  
HER3xxG=Model,x=01,02,03,05,06,07,08  
White band denotes cathode

PACKING INFORMATION

Package Type	Package Code	Product Weight Approx(g/Pcs)	Package Method	Quantity (Pcs/Min. Pack.)	Quantity (Pcs/Inner Box)	Quantity (Pcs/Carton)
DO-27	P1	1	Tube	1000	1000	20000
DO-27	P2	1	Tape	1250	1250	12500

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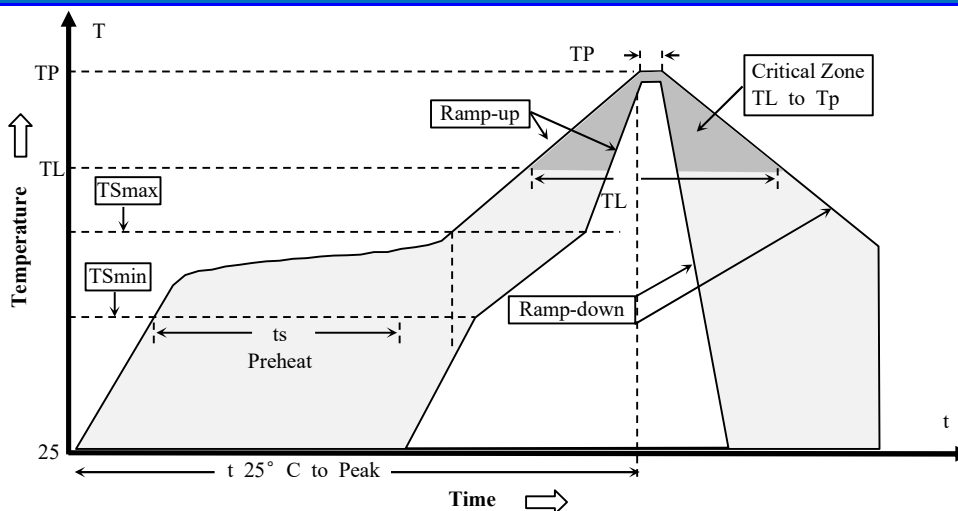
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**Recommended wave soldering condition**

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 <sub>smax</sub> to T <sub>p</sub> )	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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