

# HER101 THRU HER108

### HIGH EFFICIENCY RECTIFIER

## VOLTAGE RANGE 50 to 1000 Volts CURRENT 1.0 Ampere

#### **FEATURES**

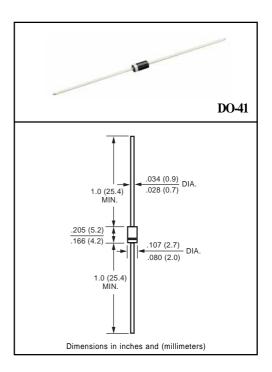
- \* Low power loss, high efficiency
- \* Low leakage
- \* Low forward voltage
- \* High current capability
- \* High speed switching
- \* High surge capability
- \* High reliability

#### **MECHANICAL DATA**

- \* Case: Molded plastic
- \* Epoxy: Device has UL flammability classification 94V-O
- \* Lead: MIL-STD-202E method 208C guaranteed
- \* Mounting position: Any
- \* Weight: 0.35 gram

#### MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Ratings at 25 °C ambient temperature unless otherwise specified. Single phase, half wave, 60 Hz, resistive or inductive load. For capacitive load, derate current by 20%.



#### MAXIMUM RATINGS (At TA = 25°C unless otherwise noted)

RATINGS	SYMBOL	HER101	HER102	HER103	HER104	HER105	HER106	HER107	HER108	UNITS
Maximum Recurrent Peak Reverse Voltage	VRRM	50	100	200	300	400	600	800	1000	Volts
Maximum RMS Voltage	VRMS	35	70	140	210	280	420	560	700	Volts
Maximum DC Blocking Voltage	VDC	50	100	200	300	400	600	800	1000	Volts
Maximum Average Forward Rectified Current at TA= 50°C	lo	1.0							Amps	
Peak Forward Surge Current 8.3 ms single half sine-wave superimposed on rated load (JEDEC method)	IFSM	30							Amps	
Typical Junction Capacitance (Note 2)	Cı	15 12						pF		
Typical Thermal Resistance	RθJA	60							°C/W	
Typical Thermal Resistance	RθJC	18						°C/W		
Operating and Storage Temperature Range	TJ, TSTG	-55 to + 150								٥C

#### ELECTRICAL CHARACTERISTICS (At TA = 25°C unless otherwise noted)

CHARACTERISTICS	SYMBOL	HER101   HER102   HER103	HER104 HER105	HER106 HER107 HER1	08 UNITS		
Maximum Instantaneous Forward Voltage at 1.0A DC	VF	1.0	1.3	1.7	Volts		
Maximum DC Reverse Current at Rated DC Blocking Voltage TA = 25°C	lr.	5.0					
Maximum Full Load Reverse Current Average, Full Cycle .375" (9.5mm) lead length at TL = 55°C	IR IR	100					
Maximum Reverse Recovery Time (Note 1)	trr	50		75	nSec		

NOTES: 1. Test Conditions: IF = 0.5A, IR = -1.0A, IRR = -0.25A

- 2. Measured at 1 MHz and applied reverse voltage of 4.0 volts
- 3. "Fully ROHS compliant", "100% Sn plating (Pb-free)".

2005-1

## RATING AND CHARACTERISTIC CURVES (HER101 THRU HER108)

FIG. 1 - TEST CIRCUIT DIAGRAM AND REVERSE RECOVERY TIME CHARACTERISTIC FIG. 2 - TYPICAL FORWARD CURRENT DERATING CURVE  $\mathbf{50}\,\Omega$ 10  $\Omega$ NONINDUCTIVE NONINDUCTIVE AVERAGE FORWARD CURENT, (A) +0.5A 2.0 Single Phase Half Wave 60Hz D.U.T Λ (+) PULSE Resistive or 25 Vdc -0.25A **GENERATOR** Inductive Load 1.0 (approx) (NOTE 2) (-) 1 $\Omega$ OSCILLOSCOPE NON-(NOTE 1) INDUCTIVE -1 0A 0 0 25 50 75 100 125 150 175 NOTES: 1 Rise Time = 7ns max. Input Impedance = SET TIME BASE FOR 1 megohm. 22pF 10/20 ns/cm AMBIENT TEMPERATURE ( °C ) 2. Rise Time = 10ns max. Source Impedance = FIG. 3 - TYPICAL REVERSE CHARACTERISTICS FIG. 4 - TYPICAL INSTANTANEOUS FORWARD **CHARACTERISTICS** 100 10 INSTANTANEOUS FORWARD CURRENT, (A) TJ = 150 ℃ 10 1.0 T<sub>J</sub> = 100 °C 50 1.0 .1 TJ = 25 °C TJ = 25 ℃ .1 .01 Pulse Width = 300uS 1% Duty Cycle .001 .01 140 .2 0 0 .4 .6 .8 1.0 1.2 1.4 1.6 20 40 60 80 100 120 PERCENT OF RATED PEAK INSTANTANEOUS FORWARD VOLTAGE. (V) REVERSE VOLTAGE, (%) FIG. 5 - MAXIMUM NON-REPETITIVE FORWARD SURGE CURRENT FIG. 6 - TYPICAL JUNCTION CAPACITANCE 200 50 8.3ms Single Half Sine-Wave JUNCTION CAPACITANCE, (pF) 100 (JEDEC Method) 40 60 40 30 20 10 20 6

4

2

.1 .2 .4

INSTANTANEOUS REVERSE CURRENT, (uA)

8

PEAK FORWARD SURGE CURRENT.

10

0

2

4 6 8 10 20 40

NUMBER OF CYCLES AT 60Hz

100



REVERSE VOLTAGE, (V)

1.0 2 4 10 20 40 100