

### Switchmode Power Rectifiers

... Designed for use in switching power supplies, inverters and as free wheeling diodes. These state-of-the-art devices have the following features:

- \* High Surge Capacity
- \* Low Power Loss, High efficiency
- \* Glass Passivated chip junctions
- \* 150 °C Operating Junction Temperature
- \* Low Stored Charge Majority Carrier Conduction
- \* Low Forward Voltage , High Current Capability
- \* High-Switching Speed 50 & 75 Nanosecond Recovery Time
- \* Plastic Material used Carries Underwriters Laboratory Flammability Classification 94V-O

**HIGH EFFICIENCY  
RECTIFIERS**

**3.0 AMPERES  
50 -- 400 VOLTS**

**DO-201AD**

### MAXIMUM RATINGS

| Characteristic                                                                                                 | Symbol                          | HER           |     |     |     |     | Unit |
|----------------------------------------------------------------------------------------------------------------|---------------------------------|---------------|-----|-----|-----|-----|------|
|                                                                                                                |                                 | 301           | 302 | 303 | 304 | 305 |      |
| Peak Repetitive Reverse Voltage<br>Working Peak Reverse Voltage<br>DC Blocking Voltage                         | $V_{RRM}$<br>$V_{RWM}$<br>$V_R$ | 50            | 100 | 200 | 300 | 400 | V    |
| RMS Reverse Voltage                                                                                            | $V_{R(RMS)}$                    | 35            | 70  | 140 | 210 | 280 | V    |
| Average Rectifier Forward Current                                                                              | $I_O$                           | 3.0           |     |     |     |     | A    |
| Non-Repetitive Peak Surge Current<br>( Surge applied at rate load conditions<br>halfwave, single phase, 60Hz ) | $I_{FSM}$                       | 50            |     |     |     |     | A    |
| Operating and Storage Junction<br>Temperature Range                                                            | $T_J, T_{stg}$                  | - 65 to + 150 |     |     |     |     | °C   |

### ELECTRICAL CHARACTERISTICS

| Characteristic                                                                                                                                             | Symbol   | HER       |     |     |      |     | Unit |
|------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|-----------|-----|-----|------|-----|------|
|                                                                                                                                                            |          | 301       | 302 | 303 | 304  | 305 |      |
| Maximum Instantaneous Forward Voltage<br>( $I_F=3.0$ Amp, $T_C=25\text{ }^{\circ}\text{C}$ )                                                               | $V_F$    | 1.00      |     |     | 1.30 |     | V    |
| Maximum Instantaneous Reverse Current<br>( Rated DC Voltage, $T_C=25\text{ }^{\circ}\text{C}$ )<br>( Rated DC Voltage, $T_C=125\text{ }^{\circ}\text{C}$ ) | $I_R$    | 5.0<br>70 |     |     |      |     | uA   |
| Reverse Recovery Time<br>( $I_F=0.5$ A, $I_R=1.0$ , $I_{rr}=0.25$ A )                                                                                      | $T_{rr}$ | 50        |     |     | 75   |     | ns   |
| Typical Junction Capacitance<br>( Reverse Voltage of 4 volts & f=1 MHz)                                                                                    | $C_P$    | 55        |     |     | 45   |     | pF   |

| DIM | MILLIMETERS |      |
|-----|-------------|------|
|     | MIN         | MAX  |
| A   | 5.00        | 5.60 |
| B   | 25.40       | ---  |
| C   | 8.50        | 9.50 |
| D   | 1.20        | 1.30 |

CASE---  
Transfer molded  
plastic

POLARITY---  
Cathode indicated  
polarity band

# HER301 Thru HER305

FIG-1 TYPICAL FORWARD CHARACTERISTICS

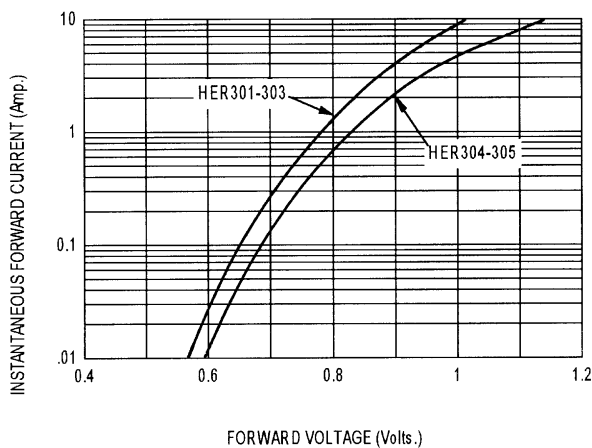


FIG-2 TYPICAL REVERSE CHARACTERISTICS

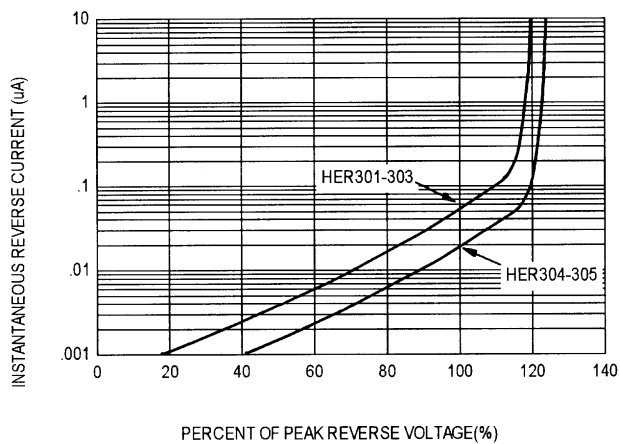


FIG-3 FORWARD CURRENT DERATING CURVE

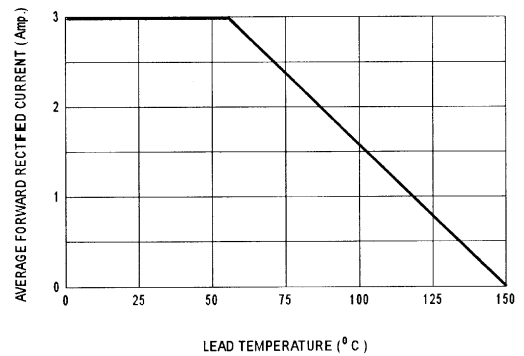


FIG-4 TYPICAL JUNCTION CAPACITANCE

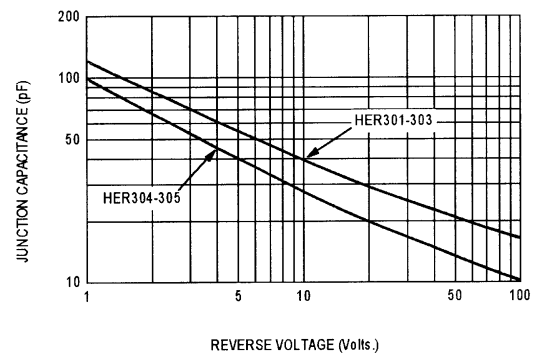
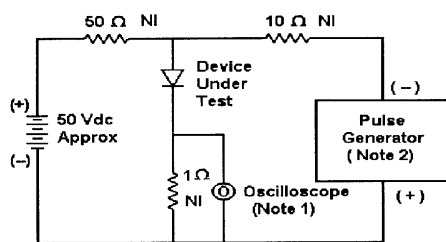
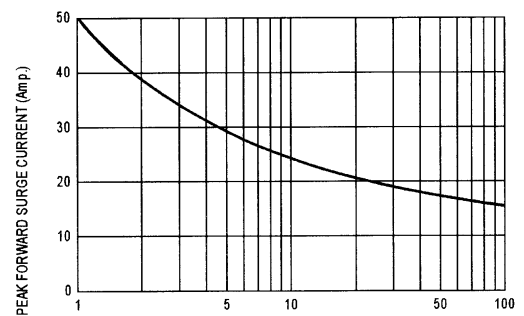
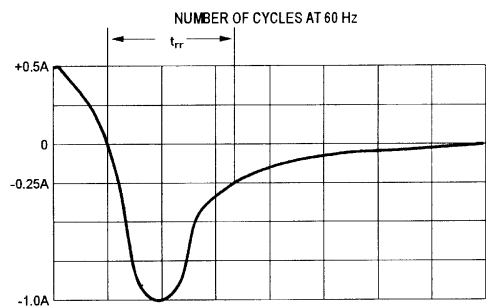


FIG-5 PEAK FORWARD SURGE CURRENT



Notes:  
 1. Rise Time = 7 ns max. Input Impedance = 1 M  $\Omega$ , 22 pF  
 2. Rise Time = 10 ns max. Input Impedance = 50  $\Omega$



Set time base for 20 ns/div

Fig-6 Reverse Recovery Time Characteristic and Test Circuit Diagram