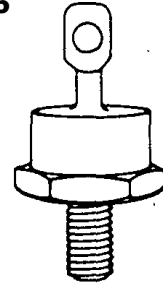


### DESCRIPTION

The UES804 series of ultrafast high-efficiency rectifiers is specifically designed for operation in power switching circuits operating at frequencies of 20 kHz or higher. These devices have demonstrated capability in passing power-stress testing to 25 thousand cycles with full-rated forward current turned on and off without a heat sink. This forces case temperature increases of 75 °C at which time the current is removed to simulate worst case applications. The switching times increase relatively little with temperature or at different currents.

### APPEARANCE

**DO-5**



**IMPORTANT:** For the most current data, consult MICROSEMI's website: <http://www.microsemi.com>

### FEATURES

- Very Low Forward Voltage
- Very Fast Recovery Times
- High Reliability Screening Options with HR2 Suffix (ie. UES804HR2)
- Low Thermal Resistance
- Mechanically rugged
- Standard Polarity is Cathode to Case. For Reverse Polarity, Add Suffix R (ie. UES804R)

### APPLICATIONS / BENEFITS

- Power Switching Circuits 20 kHz and above with minimal parasitic switching losses
- Catch Diodes for Switching Regulators
- Output Rectifiers for High Frequency Square-Wave Inverters
- Extremely Robust in Power Cycling
- High Surge Capability
- Hermetically Sealed

### ABSOLUTE MAXIMUM RATINGS

- Peak Inverse Voltage, UES804, UES804HR2.....200 V
- Peak Inverse Voltage, UES805, UES805HR2.....300 V
- Peak Inverse Voltage, UES806, UES806HR2.....400 V
- Average DC Output Current,  $I_O$  @  $T_C = 100^\circ\text{C}$ .....50 A
- Surge Current, 8.3 ms .....600 A
- Thermal Resistance, Junction to Case.....0.8 °C/W
- Operating and Storage Temp. Range.....-55°C to +150°C

### MECHANICAL AND PACKAGING

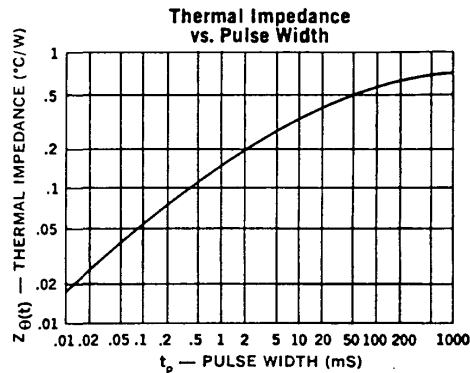
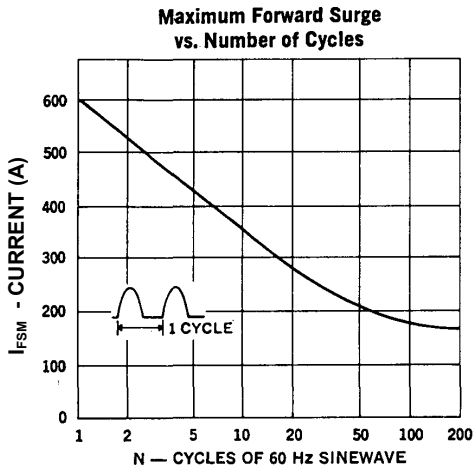
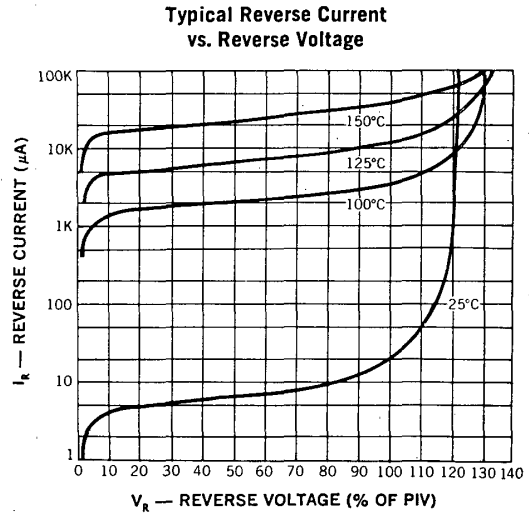
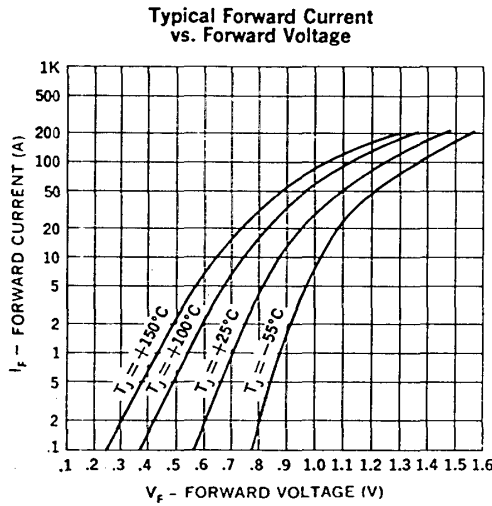
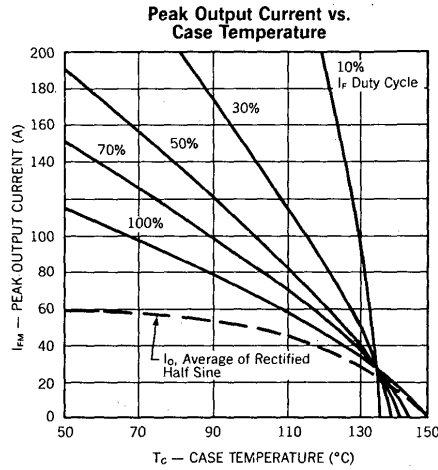
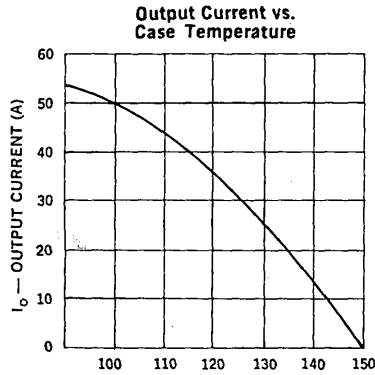
- Industry Standard DO-5 (DO-203AB) Package with 11/16 inch Hex and 1/4-28 Threaded Stud
- Hermetically Sealed Metal and Glass Case Body
- Metal Surface Finish: Tin-Lead Plated
- Weight: 15.5 grams (approximate)
- Maximum Stud Torque: 30 inch pounds
- Marking: Part Number and Logo

### ELECTRICAL CHARACTERISTICS

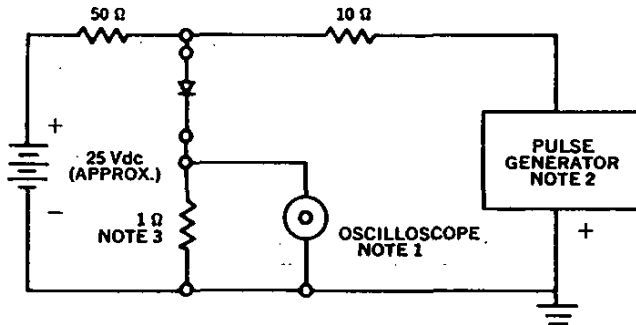
Microsemi Part Number		Working Peak Reverse Voltage $V_{RWM}$	Maximum Forward Voltage $V_F$ @ 50 A $t_p = 300 \mu\text{s}$		Maximum Reverse Current $I_R$ @ $V_{RWM}$		Maximum Reverse Recovery Time* $t_{rr}$
			$T_C = 25^\circ\text{C}$	$T_C = 125^\circ\text{C}$	$T_C = 25^\circ\text{C}$	$T_C = 125^\circ\text{C}$	
UES804	UES804HR2	200 V	1.25 V	1.15 V	70 $\mu\text{A}$	30 mA	50 ns
UES805	UES805HR2	300 V					
UES806	UES806HR2	400 V					

\* Measured in circuit  $I_F = 0.5 \text{ A}$ ,  $I_R = 1 \text{ A}$ ,  $I_{REC} = 0.25 \text{ A}$

**GRAPHS and CIRCUIT**



**Reverse-Recovery Circuit**



**NOTES:**

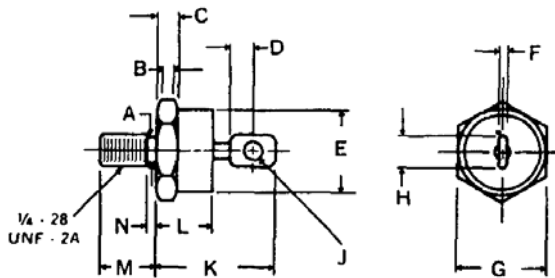
1. Oscilloscope: Rise time  $\leq 3\text{ns}$ ; input impedance =  $50\Omega$ .
2. Pulse Generator: Rise time  $\leq 8\text{ns}$ ; source impedance  $10\Omega$ .
3. Current viewing resistor, non-inductive, coaxial recommended.

**OPTIONAL HIGH RELIABILITY (HR2) SCREENING**

The following tests are performed on 100% of the devices.

SCREEN	MIL-STD-750 METHOD	CONDITIONS
1. High Temperature	1032	24 Hours @ $T_A = 150^\circ\text{C}$
2. Temperature Cycle	1051	F, 20 Cycles, $-55$ to $+150^\circ\text{C}$ . No dwell required @ $25^\circ\text{C}$ , $T \geq 10$ min. @ extremes
3. Hermetic Seal a. Fine Leak b. Gross Leak	1071	H, Helium C, Liquid
4. Thermal Impedance	3101	
5. Interim Electrical Parameters	GO/NO GO	As applicable
6. High Temperature Reverse Bias (HTRB)	As Applicable	$t = 48$ hours, $T_c = 125^\circ\text{C}$ with applicable bias conditions
7. Final Electrical Parameters	GO/NO GO	As applicable

**MECHANICAL SPECIFICATIONS**



**Notes:**

1. Maximum stud torque: 30 inch pounds.
2. Maximum tension ( $90^\circ$ ) anode terminal 15 pounds for 30 seconds

	INCHES	MILLIMETERS
<b>A</b>	.225 +/- .005	5.72 +/- 0.13
<b>B</b>	.060 MIN.	1.52 MIN.
<b>C</b>	.156 +/- .020	3.96 +/- 0.51
<b>D</b>	.156 MIN. FLAT	3.96 MIN. FLAT
<b>E</b>	.667 DIA. MAX	16.94 DIA. MAX
<b>F</b>	.090 MAX	2.29 MAX.
<b>G</b>	.677 +/- .010	17.20 +/- 0.25
<b>H</b>	.375 MAX.	9.53 MAX.
<b>J</b>	.140 MIN. DIA.	3.56 MIN. DIA.
<b>K</b>	1.000 MAX.	25.40 MAX.
<b>L</b>	.450 MAX.	11.43 MAX.
<b>M</b>	.438 +/- .015	11.13 +/- 0.38
<b>N</b>	.078 MAX.	1.98 MAX.