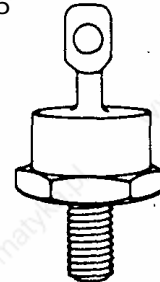


**DESCRIPTION**

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**

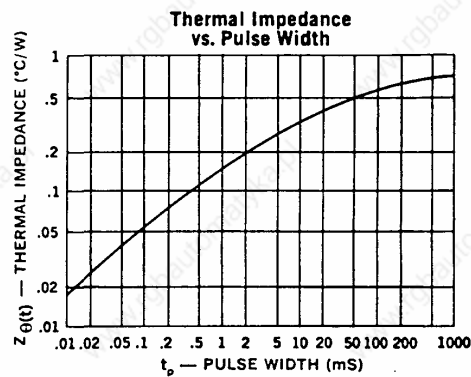
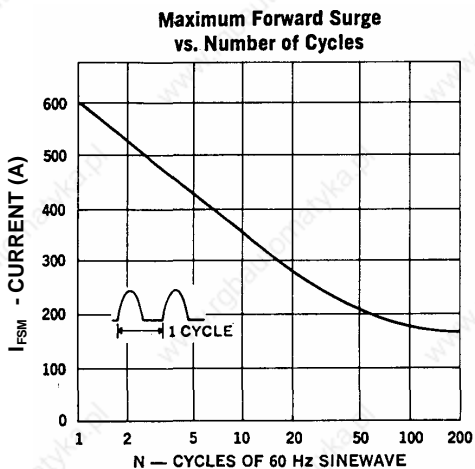
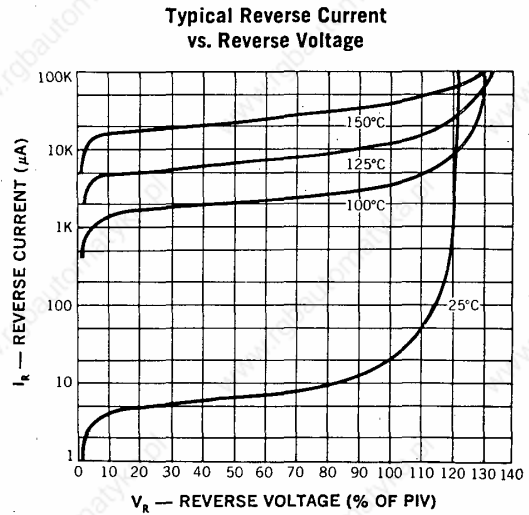
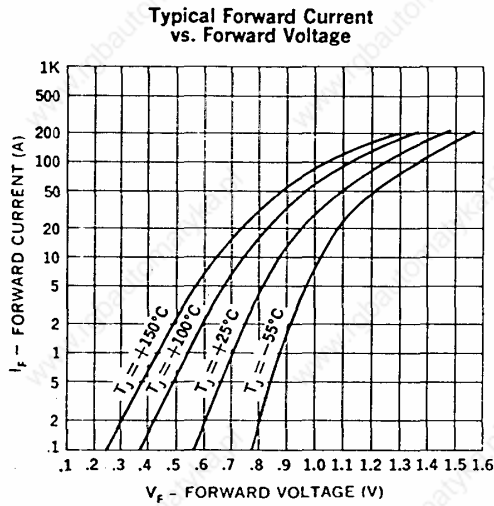
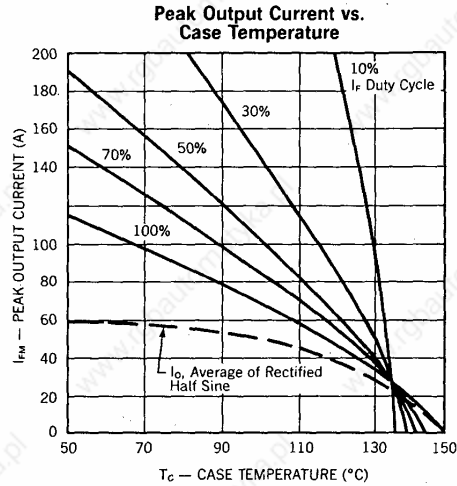
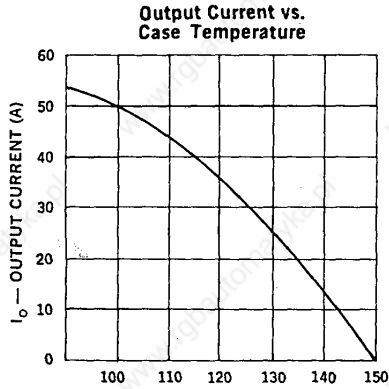
- Industry Standard DO-5 (DO-203AB) Package with 11/16 inch Hex and 1/4-28 Threaded Stud
- Hermetically Sealed Metal and Glass Case Body
- Metal Surface Finish: Tin Plated
- Weight: 15.5 grams (approximate)
- Maximum unlubricated stud Torque: 15 inch pounds
- Angular Orientation of Terminal is Undefined
- 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





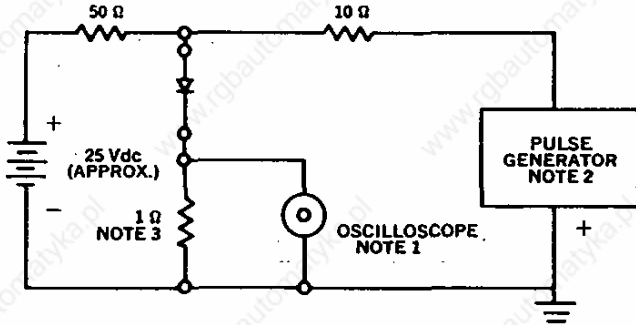
SCOTTSDALE DIVISION

UES804 UES804HR2  
UES805 UES805HR2  
UES806 UES806HR2

ULTRAFAST RECTIFIERS,  
High Efficiency, 50A™

www.Microsemi.COM

**Reverse-Recovery Circuit**



**NOTES:**

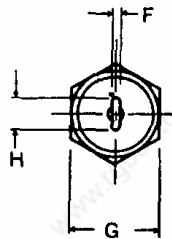
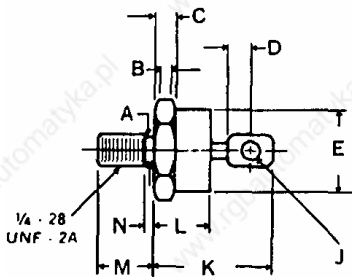
1. Oscilloscope: Rise time  $\leq 3\text{ns}$ ; input impedance =  $50\Omega$ .
2. Pulse Generator: Rise time  $\leq 8\text{ns}$ ; source impedance  $10\Omega$ .
3. Current viewing resistor, non-inductive, coaxial recommended.

**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 Blocking	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**



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

**Notes:**

1. Cathode is stud
2. Maximum unlubricated stud torque: 30 inch pounds.
3. Angular Orientation of terminal is undefined.
4. Maximum tension ( $90^\circ$ ) anode terminal 15 pounds for 30 seconds