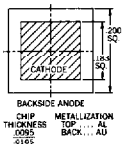
RECTIFIERS
High Efficiency, 50A

UES804
UES805
UES806
UES804HR2
UES805HR2
UES806HR2

FEATURES
- Very Low Forward Voltage (1.15V)
- Very Fast Recovery Times (50nSec)
- High Surge Capability
- Low Thermal Resistance
- Mechanically Rugged
- Both Polarities Available



DESCRIPTION
The UES804 is specifically designed for operation in power switching circuits operating at frequencies of at least 20 KHz.

ABSOLUTE MAXIMUM RATINGS
Peak Inverse Voltage, UES804, UES804HR2 ..... 200V
Peak Inverse Voltage, UES805, UES805HR2 ..... 300V
Peak Inverse Voltage, UES806, UES806HR2 ..... 400V
Maximum Average D.C. Output Current @ T_C = 100°C 50A
Surge Current, 8.3mS 600A
Thermal Resistance, Junction to Case ..... .8°C/W
Operating and Storage Temperature Range ..... −55°C to +150°C

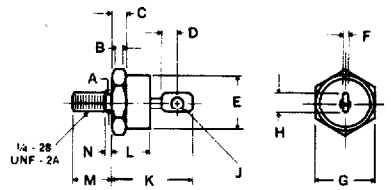
POWER CYCLING
These devices possess the unique ability to pass many thousands of cycles of a stress test designed to evaluate the integrity of the bonding systems used in the construction of power rectifiers.

In this stress test, the case of the device is not heat sunk. Full rated forward current is supplied to force a case temperature increase at least 75°C, at which time, the current is removed and the case allowed to cool. The cycle is repeated a minimum of 5,000 times to simulate equipment being turned on and off. Extended power cycling tests demonstrate a product capability in excess of 25,000 cycles.

SWITCHING CHARACTERISTICS
The switching times of these ultra-fast rectifiers increase relatively little, with temperature or at different currents. Even in severe applications, such as catch diodes for switching regulators and output rectifiers for high frequency square wave inverters, these devices switch many times faster than the fastest associated transistors. Thus, the stresses on and powers dissipated in the switching transistors are substantially less than when using other rectifiers.

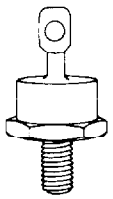
MECHANICAL SPECIFICATIONS

UES804 UES804HR2 UES805 UES805HR2 UES806 UES806HR2



	ins.	mm
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.

DO-5



Notes:
1. Standard polarity is cathode-to-stud.
   For reverse polarity (anode-to-stud) add suffix "R", ie. UES804R.
2. All metal surfaces tin plated.
3. Maximum unlubricated stud torque: 30 inch pounds.
4. Angular orientation of terminal is undefined.

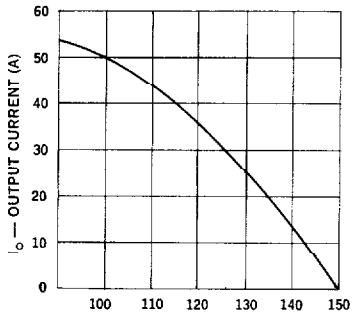
Microsemi Corp.
Watertown
The diode experts

ELECTRICAL SPECIFICATIONS

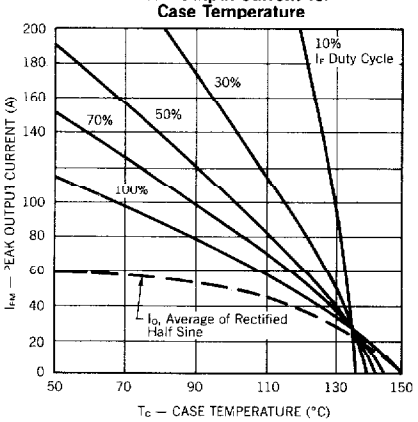
Type	PIV	Maximum Forward Voltage		Maximum Reverse Curent		Maximum Reverse Recovery Time*
		$T_C = 25°C$	$T_C = 125°C$	$T_C = 25°C$	$T_C = 125°C$	
UES804/804HR2 UES805/805HR2 UES806/806HR2	200V 300V 400V	1.25V @ $I_F = 50A$ $t_p = 300\mu S$	1.15V @ $I_F = 50A$ $t_p = 300\mu S$	70μA	30mA	50nS

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

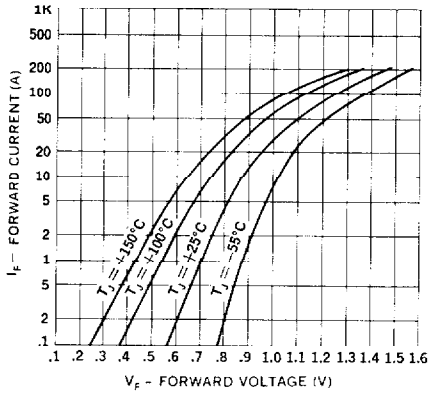
Output Current vs. Case Temperature



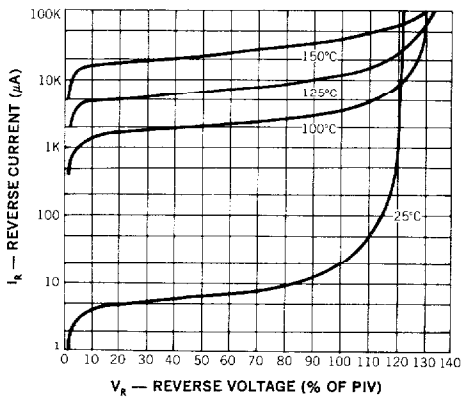
Peak Output Current vs. Case Temperature



Typical Forward Current vs. Forward Voltage



Typical Reverse Current vs. Reverse Voltage



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TEL. (617) 926-0404 • FAX (617) 924-1235

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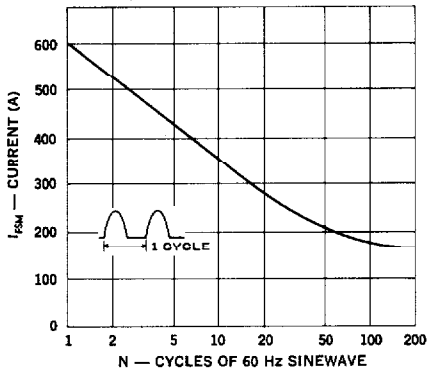
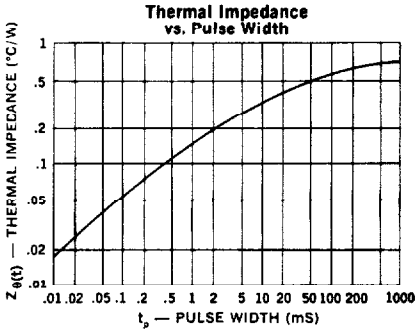
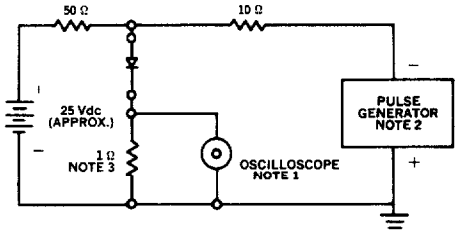
Maximum Forward Surge vs. Number of Cycles



Thermal Impedance vs. Pulse Width



Reverse-Recovery Circuit



NOTES:
1. Oscilloscope: Rise time ⩽ 3ns; input impedance = 50Ω.
2. Pulse Generator: Rise time ⩽ 8ns; source impedance 10Ω.
3. Current viewing resistor, non-inductive, coaxial recommended.

OPTIONAL HIGH RELIABILITY (HR2) SCREENING

The following tests are performed on 100% of the devices specified UES804HR2, 5HR2, 6HR2.

SCREEN	MIL-STD-750 METHOD	CONDITIONS
1. High Temperature	1032	24 Hours @ T_A = 150°C
2. Temperature Cycle	1051	F, 20 Cycles, −55 to +150°C. No dwell required @ 25°C, t ⩾ 10 min. @ extremes
3. Hermetic Seal a. Fine Leak b. Gross Leak	1071	 H, Helium C, Liquid
4. Thermal Impedance		Sage Test
5. Interim Electrical Parameters	GO/NO GO	V_F and I_R @ 25°C
6. High Temperature Reverse Blocking	Similar to Method 1040	½ Sine Reverse, t = 48 Hours, T_C = 125°C, VRW_M = rating, F = 50-60 Hz, I_O = OA
7. Final Electrical Parameters	GO/NO GO	V_F + I_R @ 25°C PDA = 10% (Final Electricals)