RECTIFIERS
High Efficiency, 30A

UES601-UES603

FEATURES
- Very Low Forward Voltage
- Very Fast Switching Speeds
- High Surge Capability
- Low Thermal Resistance
- Mechanically Rugged
- Both Polarities Available

DESCRIPTION
This series consists of a power switching rectifier in a convenient TO-3 package. Although designed as a component for switching type power supplies, these devices can be used in any circuit in which fast switching and/or high efficiency is required.

ABSOLUTE MAXIMUM RATINGS

Peak Inverse Voltage, UES601	50V
Peak Inverse Voltage, UES602	100V
Peak Inverse Voltage, UES603	150V
Maximum Average D.C. Output Current at $T_C = 100°C$	30A
Non-Repetitive Sinusoidal Surge Current 8.3 ms	800A
Thermal Resistance, Junction to Case	1°C/W
Operating and Storage Temperature Range	−55°C to +175°C

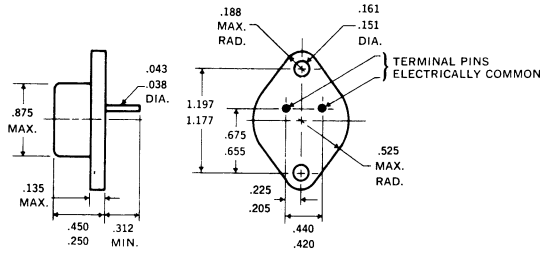
POWER CYCLING
These devices possess the unique ability to pass many thousands of cycles of a stress test designed to evaluate the integrity of the bonding systems used in the construction of power rectifiers.

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.

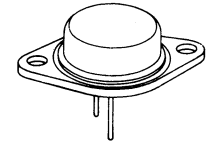
MECHANICAL SPECIFICATIONS

UES601-UES603



Dimensions in inches.

TO-3



Note:
Standard polarity is cathode-to-case.
For reverse polarity (anode-to-case) add suffix "R", ie. UES601R.

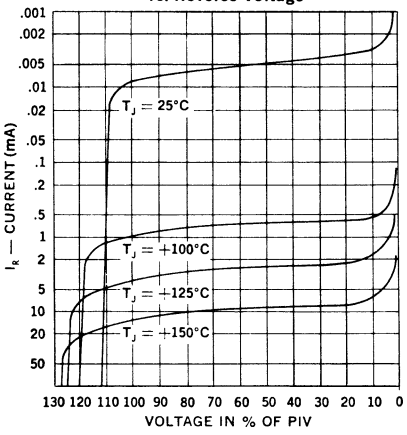
UNITRODE

ELECTRICAL SPECIFICATIONS

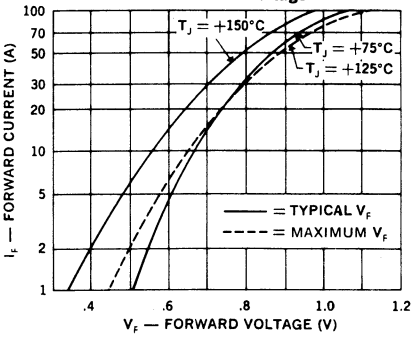
Type	PIV	Maximum Forward Voltage @		Maximum Reverse Current @		Maximum Reverse Recovery Time*
		$T_C = 25°C$	$T_C = 125°C$	$T_C = 25°C$	$T_C = 125°C$	
UES601 UES602 UES603	50V 100V 150V	.915V @ 30A $t_p = 300\mu S$	.800V @ 30A $t_p = 300\mu S$	25μA	10mA	50nS

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

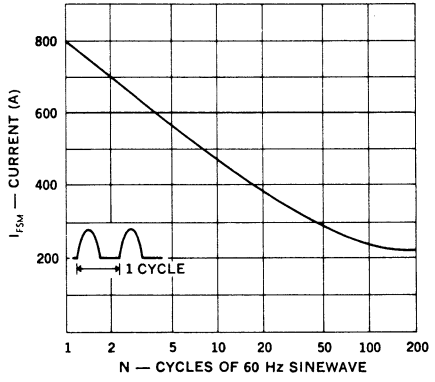
Typical Reverse Current vs. Reverse Voltage



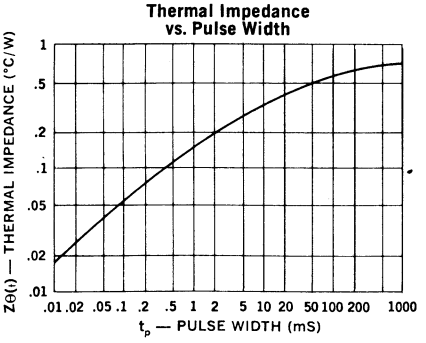
Forward Current vs. Forward Voltage



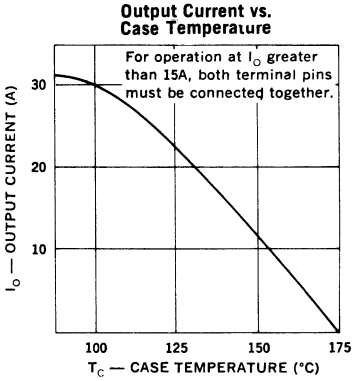
Maximum Forward Surge vs. Number of Cycles



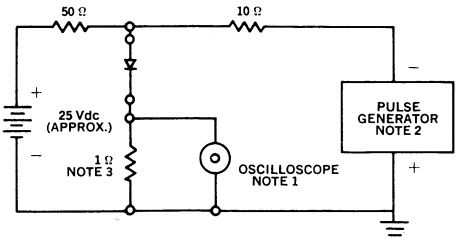
Thermal Impedance vs. Pulse Width



Output Current vs. Case Temperature



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.

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