

# RECTIFIERS

## High Efficiency, 25 A

UES701 BYW31-50 BYW77-50  
 UES702 BYW31-100 BYW77-100  
 UES703 BYW31-150 BYW77-150

### FEATURES

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

### DESCRIPTION

Designed to meet the efficiency demand of switching type power supplies, these devices are useful in many switching applications. The low thermal resistance and forward voltage drop of this series allows the user to replace DO-5 size devices in many applications.

### ABSOLUTE MAXIMUM RATINGS

	UES701	UES702	UES703
Peak Inverse Voltage, $V_R$	50V	100V	150V
Repetitive Peak Inverse Voltage, $V_{RRM}$	50V	100V	150V
Non-Repetitive Peak Inverse Voltage, $V_{RSM}$	50V	100V	150V
Maximum Average D.C. Output Current $I_o$ @ $T_c$	25A @ 100°C		
RMS Forward Current, $I_F$ (RMS)	40A		
Non-Repetitive Sinusoidal Surge Current (8.3ms), $I_{FSM}$	400A		
Thermal Resistance, Junction to Case, $R_{\theta JC}$	1.5°C/W		
Storage Temperature Range, $T_{STG}$	-55°C to +175°C		
Maximum Operating Junction Temperature, $T_{J MAX}$	+175°C		

### ABSOLUTE MAXIMUM RATINGS

	BYW31-50	BYW31-100	BYW31-150	BYW77-50	BYW77-100	BYW77-150
Peak Inverse Voltage, $V_R$	50V	100V	150V	50V	100V	150V
Repetitive Peak Inverse Voltage, $V_{RRM}$	50V	100V	150V	50V	100V	150V
Non-Repetitive Peak Inverse Voltage, $V_{RSM}$	50V	100V	150V	50V	100V	150V
Maximum Average D.C. Output Current, $I_o$ @ $T_c = 100^\circ C$	25A @ 100°C			30A @ 107°C		
RMS Forward Current, $I_F$ (RMS)	40A			50A		
Non-Repetitive Sinusoidal Surge Current (8.3ms), $I_{FSM}$	320A			500A		
Thermal Resistance, Junction to Case, $R_{\theta JC}$	1.5°C/W			1.5°C/W		
Storage Temperature Range, $T_{STG}$	-55°C to +150°C			-55°C to +150°C		
Maximum Operating Junction Temperature, $T_{J MAX}$	+150°C			+150°C		

### ELECTRICAL SPECIFICATIONS

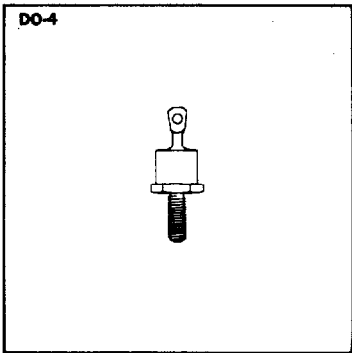
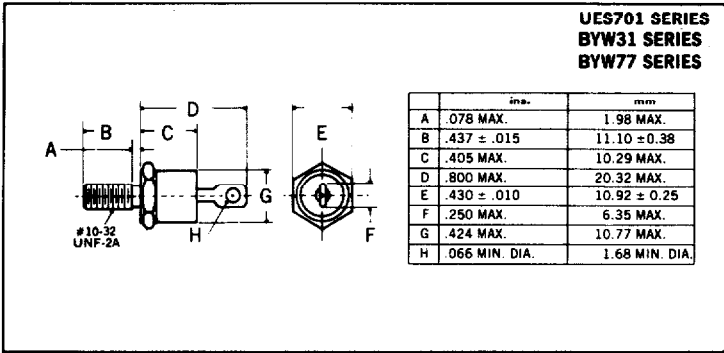
Type	Maximum Reverse Voltage $V_R$	Maximum Forward Voltage $V_F$		Maximum Reverse Current $I_R$		Maximum Reverse Recovery Time $t_{RR}$
		$T_c = 25^\circ C$	$T_c = 125^\circ C$	$T_c = 25^\circ C$	$T_c = 125^\circ C$	
UES701 UES702 UES703	50V 100V 150V	0.95V @ $I_F = 25A$	0.825V @ $I_F = 25A$	20µA @ Rated $V_R$	4mA @ Rated $V_R$	35ns <sup>(1)</sup>
BYW31-50 BYW31-100 BYW31-150	50V 100V 150V	1.3V @ $I_F = 100A$	0.85V @ $I_F = 20A$	20µA @ Rated $V_R$	2.5mA @ Rated $V_R$	50ns <sup>(2)</sup>
BYW77-50 BYW77-100 BYW77-150	50V 100V 150V	1.1V @ $I_F = 63A$	$V_F$ 0.75V @ 10A 0.85V @ 20A 1.2V @ 100A	25µA @ Rated $V_R$	2.5mA @ Rated $V_R$	50ns <sup>(2)</sup>

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

(2) Measured in circuit  $I_F = 1A$  to  $V_R > 30V$   $dI_F/dt = 20A/\mu s$

**Microsemi Corp.**  
**Watertown**  
 the diode experts

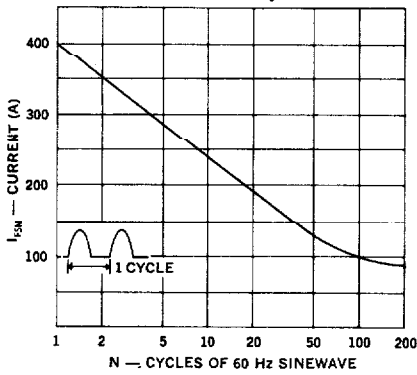
**MECHANICAL SPECIFICATIONS**



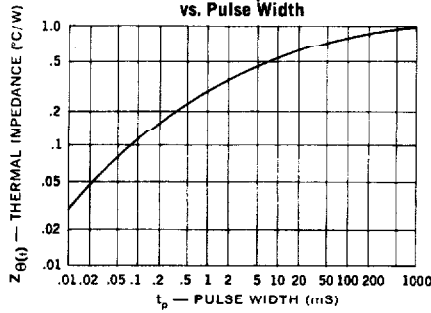
**Notes:**

1. Cathode is stud.
2. All metal surfaces tin plated.
3. Maximum unlubricated stud torque: 10 inch pounds.
4. Angular Orientation of terminal is undefined.

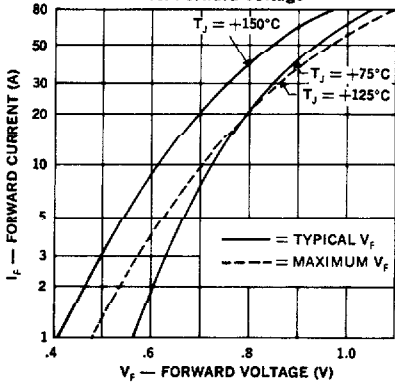
**Maximum Forward Surge vs. Number of Cycles**



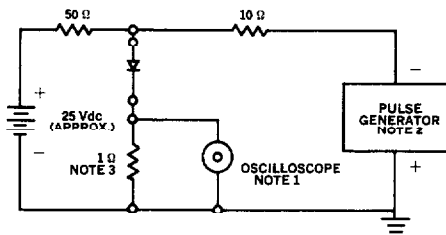
**Thermal Impedance vs. Pulse Width**



**Forward Current vs. Forward Voltage**



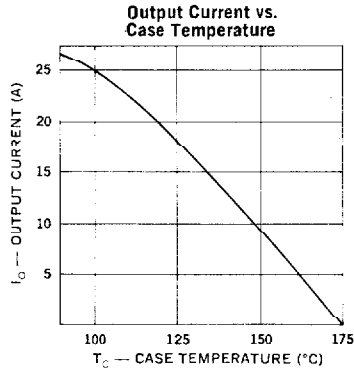
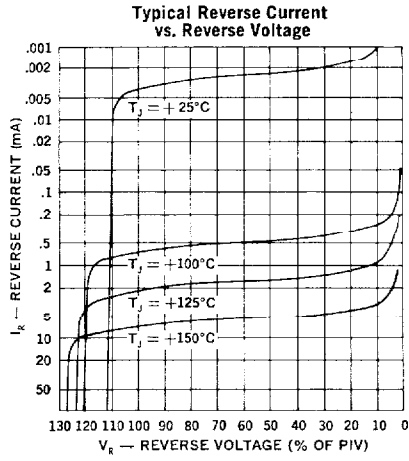
**Reverse-Recovery Circuit**



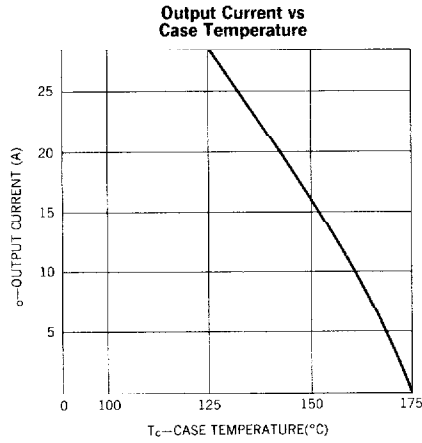
**NOTES:**

1. Oscilloscope: Rise time ≤ 3ns; input impedance = 50Ω.
2. Pulse Generator: Rise time < 8ns; source impedance 100.
3. Current viewing resistor, non-inductive, coaxial recommended.

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**UES701 SERIES  
 BYW31 SERIES**



**BYW77 SERIES**