

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 @ $T_C = 100^\circ\text{C}$	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}
		$T_C = 25^\circ\text{C}$	$T_C = 125^\circ\text{C}$	$T_C = 25^\circ\text{C}$	$T_C = 125^\circ\text{C}$	
UES701 UES702 UES703	50V 100V 150V	0.95V @ $I_F = 25\text{A}$	0.825V @ $I_F = 25\text{A}$	20 μA @ Rated V_R	4mA @ Rated V_R	35ns ⁽¹⁾
BYW31-50 BYW31-100 BYW31-150	50V 100V 150V	1.3V @ $I_F = 100\text{A}$	0.85V @ $I_F = 20\text{A}$	20 μA @ Rated V_R	2.5mA @ Rated V_R	50ns ⁽²⁾
BYW77-50 BYW77-100 BYW77-150	50V 100V 150V	1.1V @ $I_F = 63\text{A}$	V_F I_F 0.75V 10A 0.85V 20A 1.2V 100A	25 μA @ Rated V_R	2.5mA @ Rated V_R	50ns ⁽²⁾

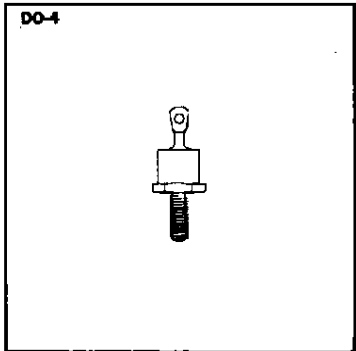
(1) Measured in circuit $I_F = 0.5\text{A}$, $I_R = 1\text{A}$, $I_{RSC} = 0.25\text{A}$
 (2) Measured in circuit $I_F = 1\text{A}$ to $V_R > 30\text{V}$ $dI_F/dt = 20\text{A}/\mu\text{s}$

Microsemi Corp.
Watertown
 The diode experts

MECHANICAL SPECIFICATIONS

**UES701 SERIES
 BYW31 SERIES
 BYW77 SERIES**

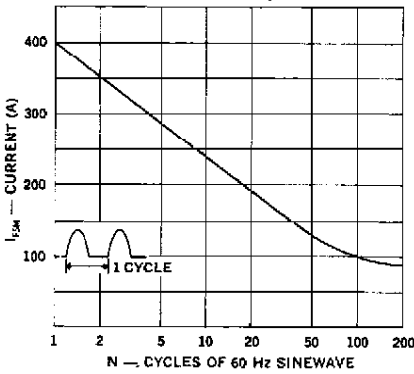
	ins.	mm
A	.078 MAX.	1.98 MAX.
B	.437 ± .015	11.10 ± 0.38
C	.405 MAX.	10.29 MAX.
D	.800 MAX.	20.32 MAX.
E	.430 ± .010	10.92 ± 0.25
F	.250 MAX.	6.35 MAX.
G	.424 MAX.	10.77 MAX.
H	.065 MIN. DIA.	1.68 MIN. DIA.



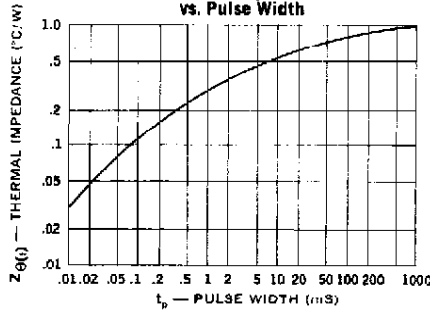
Notes:

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.

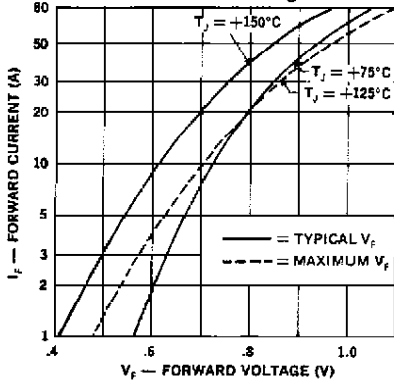
Maximum Forward Surge vs. Number of Cycles



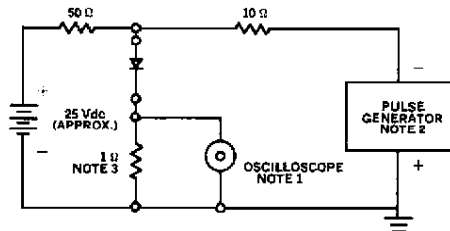
Thermal Impedance vs. Pulse Width



Forward Current vs. Forward Voltage



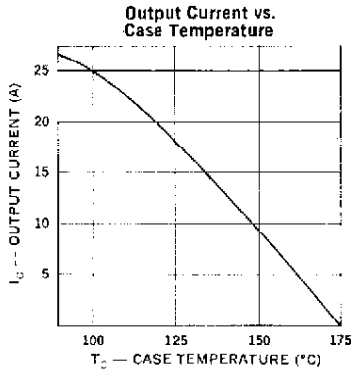
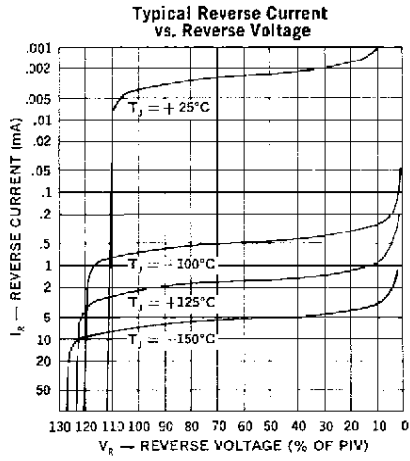
Reverse-Recovery Circuit



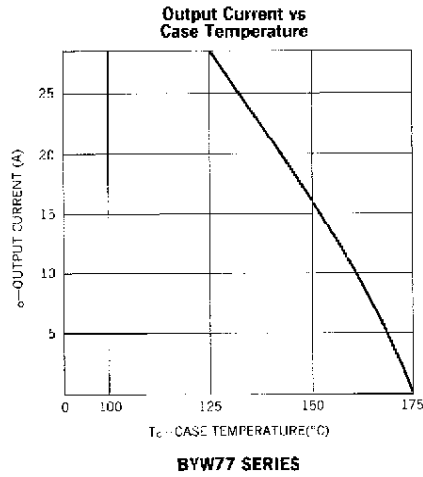
NOTES:

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

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