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.

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ABSOLUTE MAXIMUM RATINGS

	UES701	UES702	UES703
Peak Inverse Voltage, V_R	50V	100V	150V
Repetitive Peak Inverse Voltag, 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°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°C	T_C = 125°C		T_C = 25°C	T_C = 125°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[1]
		T_C = 25°C	T_C = 100°C		T_C = 25°C	T_C = 100°C	
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[2]
		T_C = 25°C	T_C = 100°C		T_C = 25°C	T_C = 100°C	
			V_F	I_F			
BYW77-50 BYW77-100 BYW77-150	50V 100V 150V	1.1V @ I_F = 63A	0.75V 0.85V 1.2V	10A 20A 100A	25μA @ Rated V_R	2.5mA @ Rated V_R	50ns[2]

(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/μs

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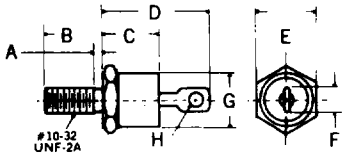
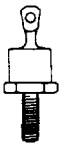
MECHANICAL SPECIFICATIONS

UES701 SERIES
BYW31 SERIES
BYW77 SERIES



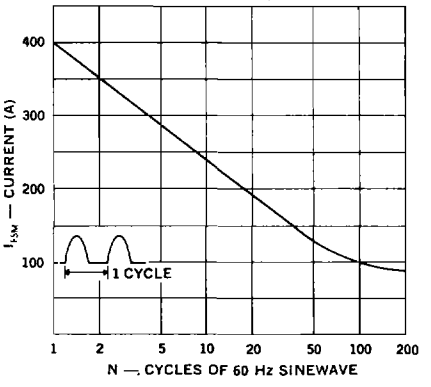
	ins.	mm
A	.078 MAX.	1.98 MAX
B	.437 ± .015	11.10 ±0.38
C	.405 MAX.	10.29 MAX.
D	.800 MAX.	20.32 MAX.
E	.430 ± .010	10.92 ± 0.25
F	.250 MAX.	6.35 MAX.
G	.424 MAX.	10.77 MAX.
H	.066 MIN. DIA.	1.68 MIN. DIA.

DO-4

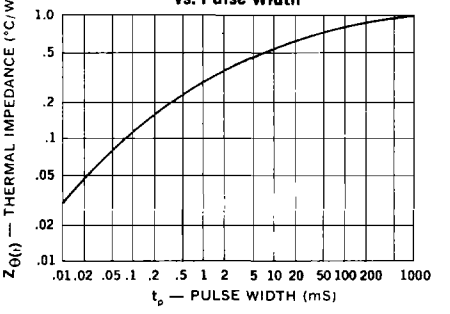


Notes:
1. Cathode is stud.
2. All metal surfaces tin plated
3. Maximum unlubricated stud torque: 10 inch pounds.
4. Angular Orientation of terminal is undefined.

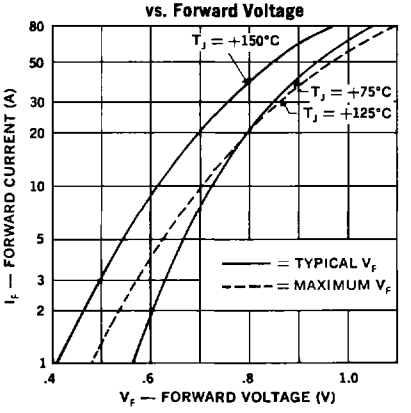
Maximum Forward Surge vs. Number of Cycles



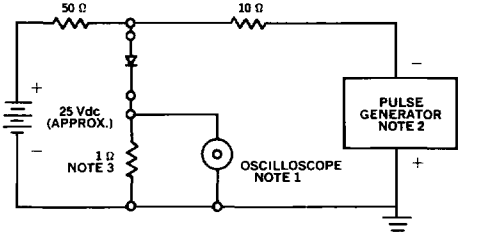
Thermal Impedance vs. Pulse Width



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 10Ω.
3. Current viewing resistor, non-inductive, coaxial recommended.

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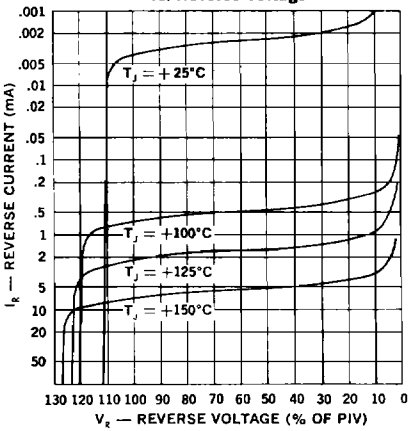
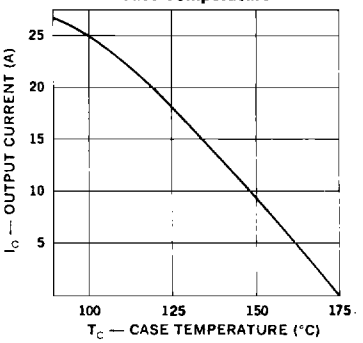
Typical Reverse Current vs. Reverse Voltage

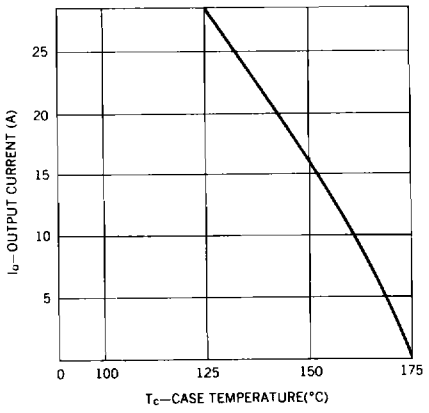


Output Current vs. Case Temperature



UES701 SERIES
BYW31 SERIES

Output Current vs Case Temperature



BYW77 SERIES