RECTIFIERS
High Efficiency, 7A and 8A

UES1401 BYW29-50 BYW80-50
UES1402 BYW29-100 BYW80-100
UES1403 BYW29-150 BYW80-150
UES1404 BYW29-200 BYW80-200

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FEATURES
- Very Low Forward Voltage
- Very Fast Recovery Times
- Economical, Convenient Plastic Package
- Low Thermal Resistance
- Mechanically Rugged

DESCRIPTION
The UES1400/BYW29/BYW80 Series, in a plastic package similar to the TO-220, is specifically designed for operation in power switching circuits to frequencies in excess of 100KHz. The very low forward voltage and very fast recovery time make them particularly suited for switching type power supplies.

ABSOLUTE MAXIMUM RATINGS

	UES1401	UES1402	UES1403	UES1404
Peak Inverse Voltage, V_R	50V	100V	150V	200V
Repetitive Peak Inverse Voltage, V_{RWM}	50V	100V	150V	200V
Non-Repetitive Peak Inverse Voltage, V_{RSM}	50V	100V	150V	200V
Maximum Average D.C. Output Current, I_O				
@ T_C = 125°C, (Note 1)	8.0A			
@ T_A = 25°C	3.0A			
@ T_A = 25°C, (Note 2)	8.0A			
Non-Repetitive Sinusoidal Surge Current at 8.3 ms, I_{FSM}	80A			
Thermal Resistance, Junction to Case, $R_{\theta JC}$	2.5°C/W			
Thermal Resistance, Junction to Ambient, $R_{\theta JA}$	60°C/W			
Storage Temperature Range, T_{STG}	-55°C to +150°C			
Maximum Operating Junction Temperature, T_{jmax}	+150°C			

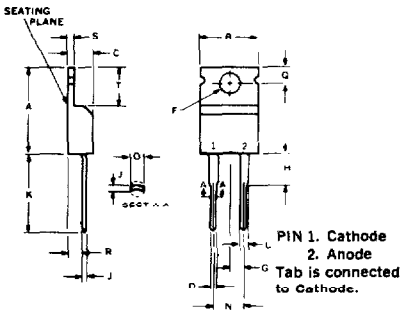
Note 1. Above 100°C use the tab for electrical connection.

Note 2. Using Wakefield Type 295 heatsink with convection cooling. For more definitive data refer to the Output Current vs. Temperature Curves on this datasheet.

	BYW29-50	BYW29-100	BYW29-150	BYW29-200	BYW80-50	BYW80-100	BYW80-150	BYW80-200
Peak Inverse Voltage, V_R	50V	100V	150V	200V	50V	100V	150V	200V
Repetitive Peak Inverse Voltage, V_{RWM}	50V	100V	150V	200V	50V	100V	150V	200V
Non-Repetitive Peak Inverse Voltage, V_{RSM}	50V	100V	150V	200V	50V	100V	150V	200V
Maximum Average D.C. Output Current @ T_C = 125°C, (Note 1)	7.0A				7.0A			
Non-Repetitive Sinusoidal Surge Current at 8.3ms,	80A				100A			
Thermal Resistance, Junction to Case, $R_{\theta JC}$	2.5°C/W							
Thermal Resistance, Junction to Ambient, $R_{\theta JA}$	60°C/W							
Operating and Storage Temperature Range	-55°C to +150°C							
Maximum Operating Junction Temperature, T_{jmax}	+150°C							

Note 1. Above 100°C use the tab for electrical connection.

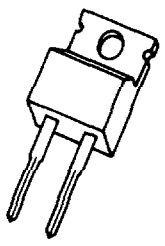
MECHANICAL SPECIFICATIONS



UES1401 SERIES
BYW29 SERIES
BYW80 SERIES

DIM	MILLIMETERS MIN	MILLIMETERS MAX	INCHES MIN	INCHES MAX
A	14.23	15.87	0.560	0.625
B	9.66	10.66	0.380	0.420
C	3.56	4.82	0.140	0.190
D	0.51	1.14	0.020	0.045
F	3.531	3.733	0.139	0.147
G	2.29	2.79	0.090	0.110
H	—	6.35	—	0.250
J	0.38	0.64	0.015	0.025
K	12.70	14.27	0.500	0.562
L	1.14	1.77	0.045	0.070
N	4.83	5.33	0.190	0.210
Q	2.54	3.04	0.100	0.120
R	2.04	2.92	0.080	0.115
S	1.14	1.39	0.045	0.055
T	5.85	6.85	0.230	0.270

TO-220AC



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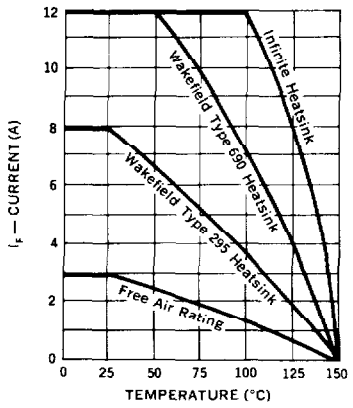
UES1401	BYW29-50	BYW80-50
UES1402	BYW29-100	BYW80-100
UES1403	BYW29-150	BYW80-150
UES1404	BYW29-200	BYW80-200

ELECTRICAL SPECIFICATIONS

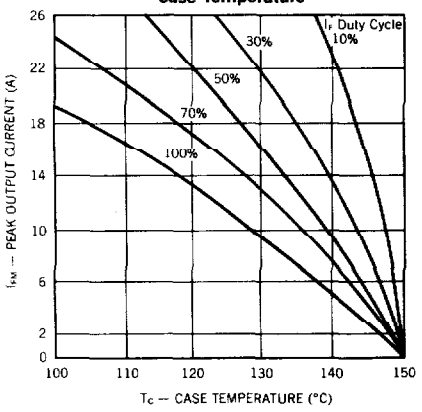
Type	Maximum Reverse Voltage V_R	Maximum Forward Voltage, V_F		Maximum Reverse Current, I_R @ rated V_R		Maximum Reverse Recovery Time	Typical Forward Recovery Voltage @ 1A	Typical Forward Recovery Charge
		T_J = 25°C	T_J = 100°C	T_J = 25°C	T_J = 100°C	T_{rr}	T_R = 8nS	Q_{RR} @ 25°
UES1401 UES1402 UES1403 UES1404	50V 100V 150V 200V	0.9V @ 4A 0.975V @ 8A tp = 300μS	0.8V @ 4A 0.895V @ 8A	5μA	150μA 150μA 150μA 500μA	35nS[1]	1.4V	—
BYW29-50 BYW29-100 BYW29-150 BYW29-200	50V 100V 150V 200V	1.300V @ 20A	0.850V @ 5A		600μA	35nS[2]	1.4V	
BYW80-50 BYW80-100 BYW80-150 BYW80-200	50V 100V 150V 200V	1.25V @ 22A	0.850V @ 7A	10μA	1mA	35nS[2]	—	15nc[3]

NOTES: 1. Measured in circuit I_F = 0.5A, I_R = 1.0A, I_{REC} = 0.25A
2. Measured in circuit I_F = 1A to $V_R \geq$ 30V, di_F/dt = 50A/μS
3. Measured in circuit I_F = 2A, $V_R \leq$ 30V, di_F/dt = ~20A/μS

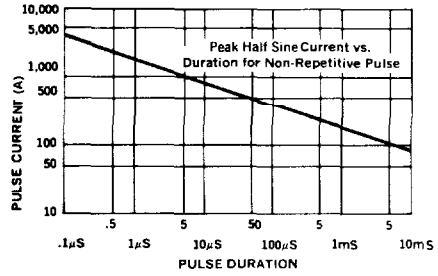
Output Current vs Temperature



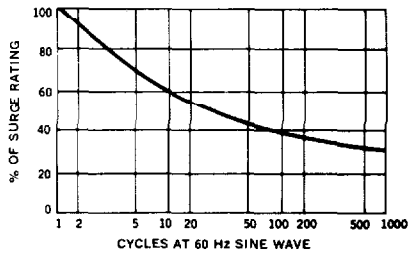
Peak Output Current vs Case Temperature



Forward Pulse Current vs. Duration



Multiple Surge Current vs. Duration



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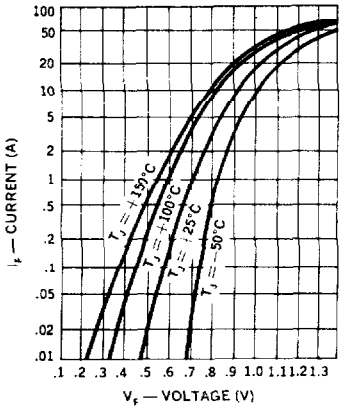
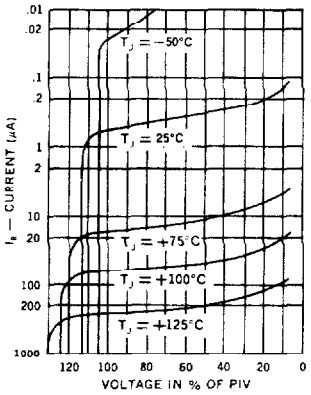
UES1401	BYW29-50	BYW80-50
UES1402	BYW29-100	BYW80-100
UES1403	BYW29-150	BYW80-150
UES1404	BYW29-200	BYW80-200

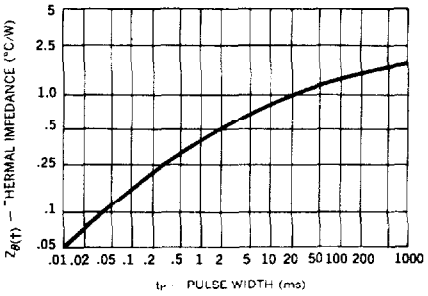
Typical Forward Current vs Forward Voltage



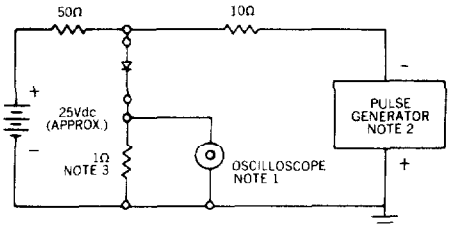
Typical Reverse Current vs Voltage



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.

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