

# 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

### 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, $V_a$ .....	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 $I_o$				
@ $T_c = 125^\circ\text{C}$ , (Note 1) .....		8.0A		
@ $T_a = 25^\circ\text{C}$ .....		3.0A		
@ $T_a = 25^\circ\text{C}$ , (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		

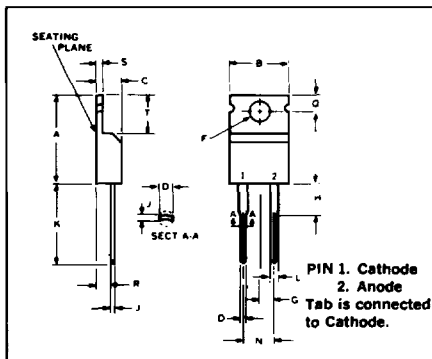
**Note 1.** Above 100°C use the tab for electrical connection.

**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								
@ $T_c = 125^\circ\text{C}$ , (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.

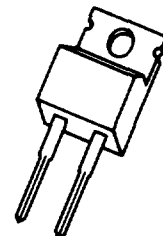
### MECHANICAL SPECIFICATIONS



### UES1401 SERIES BYW29 SERIES BYW80 SERIES

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	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



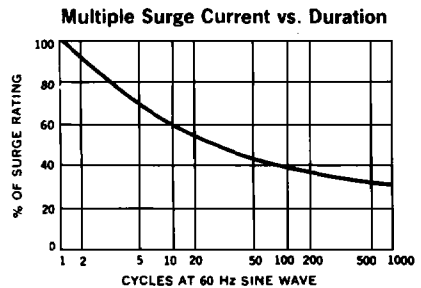
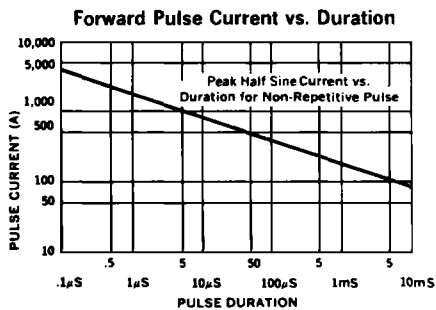
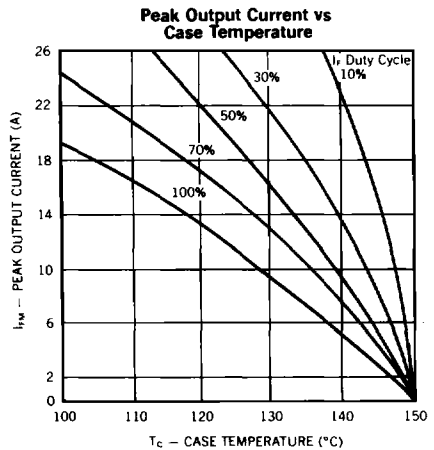
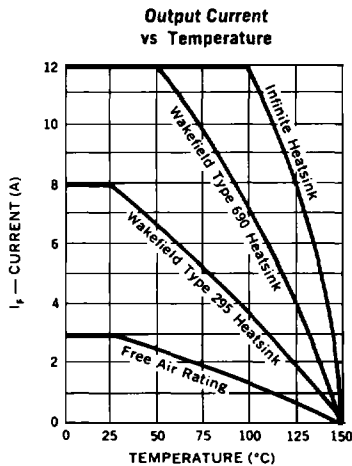
**UNITRODE**

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

**ELECTRICAL SPECIFICATIONS**

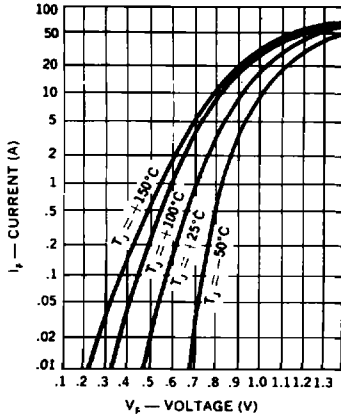
Type	Maximum Reverse Voltage $V_R$	Maximum Forward Voltage, $V_F$		Maximum Reverse Current, $I_R$ @ rated $V_R$		Maximum Reverse Recovery Time $T_{rr}$	Typical Forward Recovery Voltage @ 1A $T_R = 8nS$	Typical Forward Recovery Charge $Q_{RR}$ @ 25°
		$T_J = 25^\circ C$	$T_J = 100^\circ C$	$T_J = 25^\circ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

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  $V_R \geq 30V$ ,  $dI_F/dt = 50A/\mu S$   
 3. Measured in circuit  $I_F = 2A$ ,  $V_R \leq 30V$ ,  $dI_F/dt = -20A/\mu S$

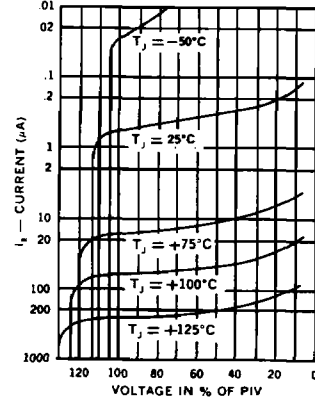


UES1401	BYW29-50	BYW80-50
UES1402	BYW29-100	BYW80-100
UES1403	BYW29-150	BYW80-150
UES1404	BYW29-200	BYW80-200

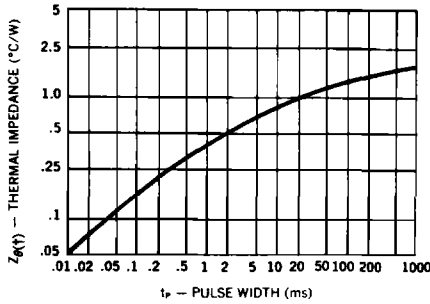
**Typical Forward Current vs Forward Voltage**



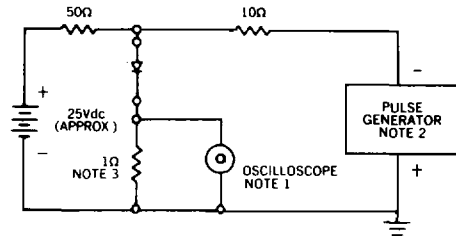
**Typical Reverse Current vs Voltage**



**Thermal Impedance vs Pulse Width**



**Reverse-Recovery Circuit**



- NOTES:**
- 1 Oscilloscope: Rise time  $\leq 3$ ns, input impedance = 50 $\Omega$
  - 2 Pulse Generator: Rise time  $\leq 8$ ns, source impedance 10 $\Omega$
  - 3 Current viewing resistor, non inductive, coaxial recommended