

# RECTIFIERS

## High Efficiency, 50A and 70A

UES801 BYW78-50  
 UES802 BYW78-100  
 UES803 BYW78-150

### FEATURES

- High Continuous Current Rating
- Very Low Forward Voltage
- Very Fast Switching Speeds
- High Surge Capability
- Low Thermal Resistance
- Mechanically Rugged DO-5 Package

### DESCRIPTION

This Series is specifically designed for operation in power switching circuits operating at frequencies of at least 20KHz. The very low forward voltage and very fast recovery time make them particularly suited for switching type power supplies.

### ABSOLUTE MAXIMUM RATINGS

|  | UES801          | UES802 | UES803 | BYW78-50 | BYW78-100 | BYW78-150 |
|--|-----------------|--------|--------|----------|-----------|-----------|
| 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, $I_o$ @ $T_c = 100^\circ C$ | 70A             |        |        |          |           |           |
| Non-Repetitive Sinusoidal Surge Current (8.3ms), $I_{FSM}$       | 800A            |        |        | 1500A    |           |           |
| Thermal Resistance, Junction to Case, $R_{\theta JC}$            | 0.8°C/W         |        |        |          |           |           |
| Storage Temperature Range, $T_{STG}$                             | -55°C to +175°C |        |        |          |           |           |
| Maximum Operating Junction Temperature, $T_{J MAX}$              | +175°C          |        |        |          |           |           |

### ELECTRICAL SPECIFICATIONS

| Type                               | Maximum Reverse Voltage $V_R$ | Maximum Forward Voltage $V_F$ |                           | Maximum Reverse Current $I_R$  |                          | Maximum Reverse Recovery Time $t_{RR}$ |
|------------------------------------|-------------------------------|-------------------------------|---------------------------|--------------------------------|--------------------------|--|
|                                    |                               | $T_c = 25^\circ C$            | $T_c = 150^\circ C$       | $T_c = 25^\circ C$             | $T_c = 150^\circ C$      |  |
| UES801<br>UES802<br>UES803         | 50V<br>100V<br>150V           | 0.9/5V<br>@<br>$I_F = 70A$    | 0.84V<br>@<br>$I_F = 70A$ | 25 $\mu A$<br>@<br>Rated $V_R$ | 30mA<br>@<br>Rated $V_R$ | 50ns <sup>(1)</sup>                    |
| BYW78-50<br>BYW78-100<br>BYW78-150 | 50V<br>100V<br>150V           | 1.1V<br>@<br>$I_F = 160A$     | 0.85V<br>@<br>$I_F = 50A$ | 50 $\mu A$<br>@<br>Rated $V_R$ | 5mA<br>@<br>Rated $V_R$  | 60ns <sup>(2)</sup>                    |

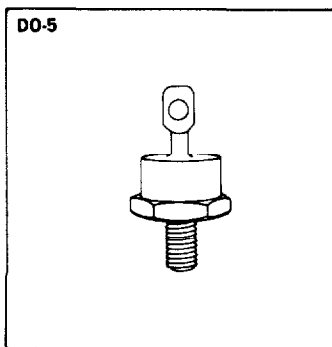
(1) Measured in circuit  $I_F = 0.5A$ ,  $I_R = 1A$ ,  $I_{REC} = 0.25A$

(2) Measured in circuit  $I_F = 1A$ ,  $V_R = 30V$ ,  $dI_F/dt = 50A/\mu s$

### MECHANICAL SPECIFICATIONS

#### UES800 SERIES BYW78 SERIES

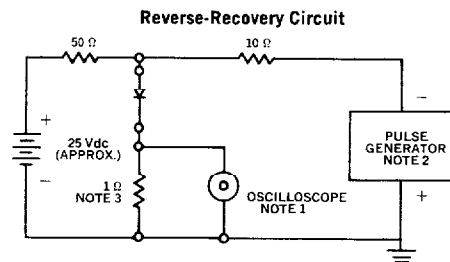
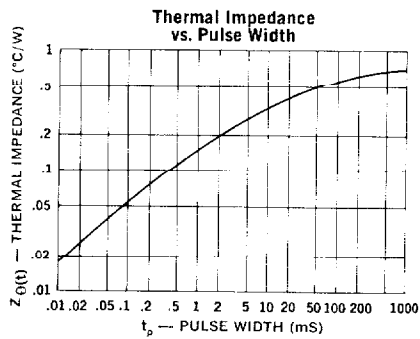
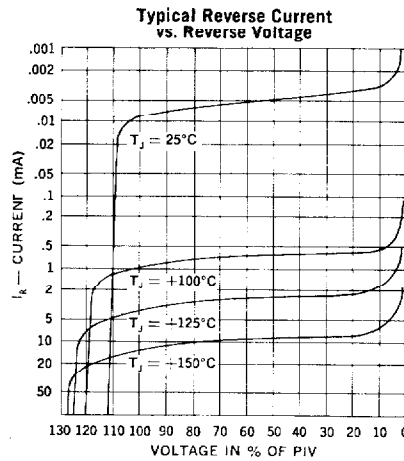
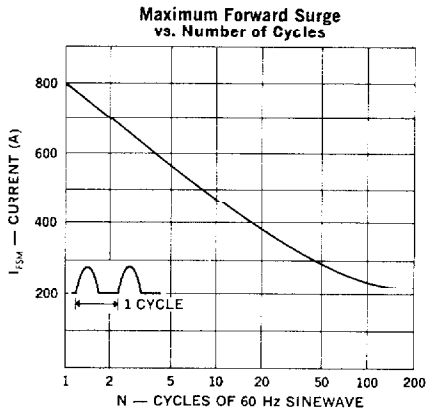
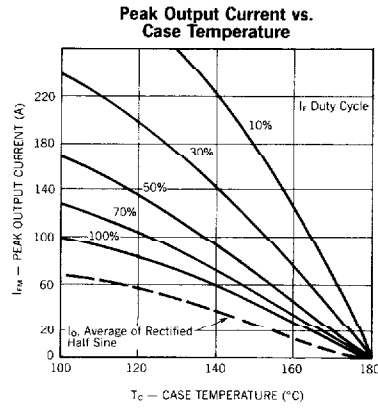
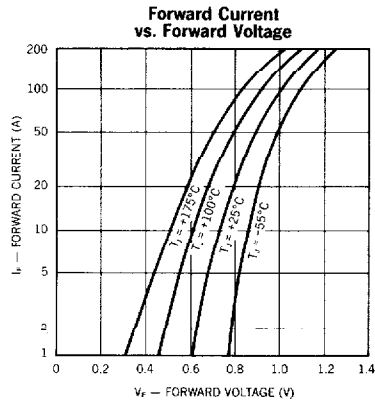
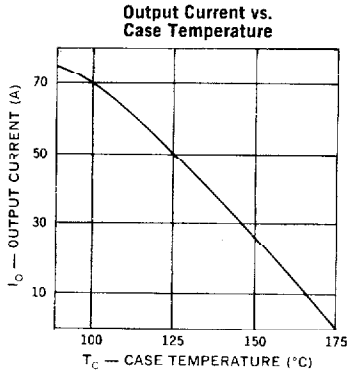
|   | ins.          | mm              |
|---|---------------|-----------------|
| A | 225 ± .005    | 5.72 ± 0.13     |
| B | 060 MIN.      | 1.52 MIN.       |
| C | 156 ± .020    | 3.96 ± 0.51     |
| D | 156 MIN. FLAT | 3.96 MIN. FLAT  |
| E | 667 DIA. MAX. | 16.94 DIA. MAX. |
| F | 090 MAX.      | 2.29 MAX.       |
| G | 677 ± .010    | 17.20 ± 0.25    |
| H | 375 MAX.      | 9.43 MAX.       |
| J | 140 MIN. DIA. | 3.56 MIN. DIA.  |
| K | 1 000 MAX.    | 25.40 MAX.      |
| L | 450 MAX.      | 11.43 MAX.      |
| M | 438 ± .015    | 11.13 ± 0.38    |
| N | 078 MAX.      | 1.98 MAX.       |



#### Notes:

1. Standard polarity is cathode-to-stud
2. All metal surfaces tin plated.
3. Maximum unlubricated stud torque: 20 inch pounds (20 kg. cm).
4. Angular orientation of terminal is undefined.

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**Watertown**  
 The diode experts



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