

# 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<br>UES702<br>UES703         | 50V<br>100V<br>150V           | 0.95V<br>@<br>$I_F = 25\text{A}$ | 0.825V<br>@<br>$I_F = 25\text{A}$   | 20μA<br>@<br>Rated $V_R$      | 4mA<br>@<br>Rated $V_R$   | 35ns <sup>(1)</sup>                    |     |       |     |      |      |                          |                           |                     |
| BYW31-50<br>BYW31-100<br>BYW31-150 | 50V<br>100V<br>150V           | 1.3V<br>@<br>$I_F = 100\text{A}$ | 0.85V<br>@<br>$I_F = 20\text{A}$  | 20μA<br>@<br>Rated $V_R$      | 2.5mA<br>@<br>Rated $V_R$ | 50ns <sup>(2)</sup>                    |     |       |     |      |      |                          |                           |                     |
| BYW77-50<br>BYW77-100<br>BYW77-150 | 50V<br>100V<br>150V           | 1.1V<br>@<br>$I_F = 63\text{A}$  | <table border="1"> <tr> <td><math>V_F</math></td> <td><math>I_F</math></td> </tr> <tr> <td>0.75V</td> <td>10A</td> </tr> <tr> <td>0.85V</td> <td>20A</td> </tr> <tr> <td>1.2V</td> <td>100A</td> </tr> </table> | $V_F$                         | $I_F$                     | 0.75V                                  | 10A | 0.85V | 20A | 1.2V | 100A | 25μA<br>@<br>Rated $V_R$ | 2.5mA<br>@<br>Rated $V_R$ | 50ns <sup>(2)</sup> |
| $V_F$                              | $I_F$                         |                                  |   |                               |                           |  |     |       |     |      |      |                          |                           |                     |
| 0.75V                              | 10A                           |                                  |   |                               |                           |  |     |       |     |      |      |                          |                           |                     |
| 0.85V                              | 20A                           |                                  |   |                               |                           |  |     |       |     |      |      |                          |                           |                     |
| 1.2V                               | 100A                          |                                  |   |                               |                           |  |     |       |     |      |      |                          |                           |                     |

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

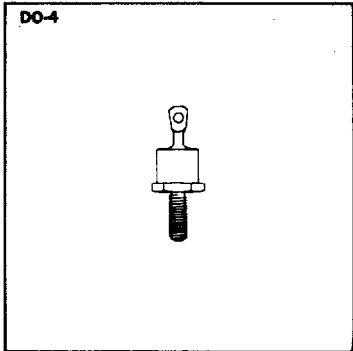
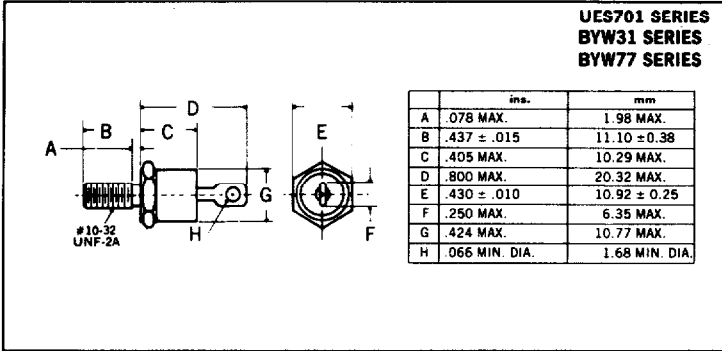
**Microsemi Corp.**  
**Watertown**  
 The diode experts



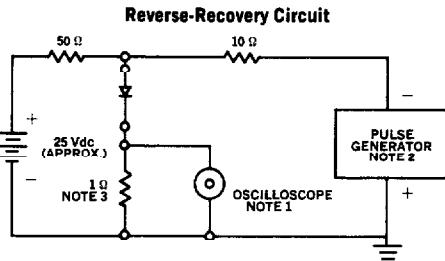
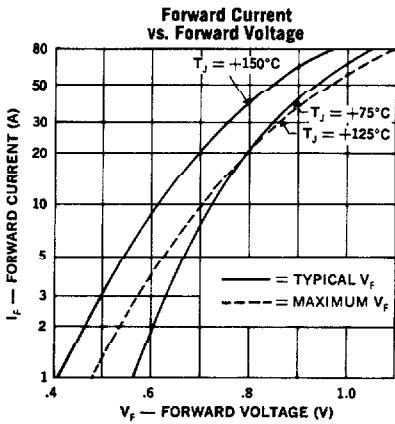
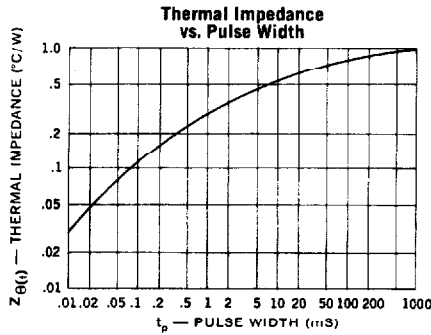
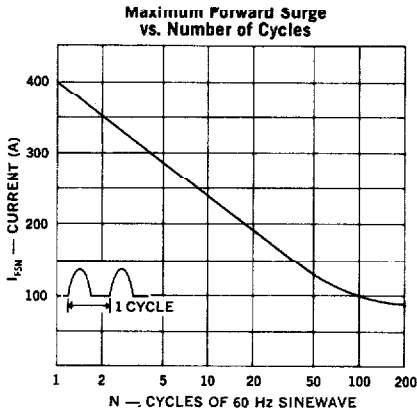
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**MECHANICAL SPECIFICATIONS**



- 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.



- NOTES:**
1. Oscilloscope: Rise time ≤ 3ns; input impedance = 50Ω.
  2. Pulse Generator: Rise time < 8ns; source impedance 100.
  3. Current viewing resistor, non-inductive, coaxial recommended.

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