

### DESCRIPTION

This UPS360e3 in the Powermite3<sup>®</sup> package is a high efficiency Schottky rectifier that is also RoHS compliant offering high current/power capabilities previously found only in much larger packages. They are ideal for SMD applications that operate at high frequencies. In addition to its size advantages, the Powermite3<sup>®</sup> package includes a full metallic bottom that eliminates the possibility of solder flux entrapment during assembly and a unique locking tab act as an efficient heat path to the heat-sink mounting. Its innovative design makes this device ideal for use with automatic insertion equipment.

### KEY FEATURES


- Very low thermal resistance package
- RoHS Compliant with e3 suffix part number
- Guard-ring-die construction for transient protection
- Efficient heat path with Integral locking bottom metal tab
- Low forward voltage
- Full metallic bottom eliminates flux entrapment
- Compatible with automatic insertion
- Low profile-maximum height of 1mm

**IMPORTANT:** For the most current data, consult MICROSEMI's website: <http://www.microsemi.com>

### ABSOLUTE MAXIMUM RATINGS AT 25° C (UNLESS OTHERWISE SPECIFIED)

| Rating   | Symbol                          | Value                    | Unit |
|--|---------------------------------|--------------------------|------|
| Peak Repetitive Reverse Voltage<br>Working Peak Reverse Voltage<br>DC Blocking Voltage                 | $V_{RRM}$<br>$V_{RWM}$<br>$V_R$ | 60                       | V    |
| RMS Reverse Voltage  | $V_{R(RMS)}$                    | 42                       | V    |
| Average Rectified Output Current   | $I_o$                           | 3                        | A    |
| Non-Repetitive Peak Forward Surge Current<br>8.3ms Single half sine wave Superimposed<br>on Rated Load | $I_{FSM}$                       | 100 @ 25°C<br>50 @ 100°C | A    |
| Storage Temperature  | $T_{STG}$                       | -55 to +150              | °C   |
| Junction Temperature   | $T_J$                           | -55 to +125              | °C   |

### APPLICATIONS/BENEFITS

- Switching and Regulating Power Supplies.
- Silicon Schottky (hot carrier) rectifier for minimal reverse voltage recovery
- Elimination of reverse-recovery oscillations to reduce need for EMI filtering
- Charge Pump Circuits
- Reduces reverse recovery loss with low  $I_{RM}$
- Small foot print   
190 X 270 mils (1:1 Actual size)  
See mounting pad details on pg 3

### MECHANICAL & PACKAGING

- CASE: Void-free transfer molded thermosetting epoxy compound meeting UL94V-0
- FINISH: Annealed matte-Tin plating over copper and readily solderable per MIL-STD-750 method 2026 (consult factory for Tin-Lead plating)
- POLARITY: See figure (left)
- MARKING: S360•
- WEIGHT: 0.072 gram (approx.)
- Package dimension on last page
- Tape & Reel option: 16 mm tape per Standard EIA-481-B, 5000 on 13" reel

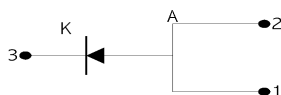
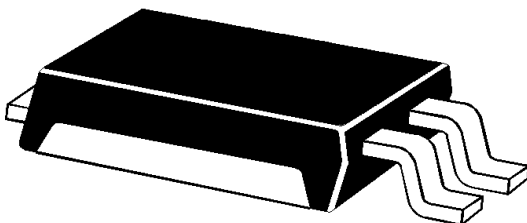
### THERMAL CHARACTERISTICS

#### Thermal Resistance

|                           |                 |     |          |
|---------------------------|-----------------|-----|----------|
| Junction-to-case (bottom) | $R_{\theta JC}$ | 3.2 | °C/ Watt |
| Junction to ambient (1)   | $R_{\theta JA}$ | 65  | °C/ Watt |

(1) When mounted on FR-4 PC board using 2 oz copper with recommended minimum foot print

Powermite 3™



**ELECTRICAL PARAMETERS @ 25°C (unless otherwise specified)**

| Parameter                           | Symbol   | Conditions  | Min | Typ.                         | Max                          | Units                     |
|-------------------------------------|----------|---|-----|------------------------------|------------------------------|---------------------------|
| Forward Voltage (Note 1)            | $V_F$    | $I_F = 3.5 \text{ A}, T_J = 25^\circ\text{C}$<br>$I_F = 3.5 \text{ A}, T_J = 125^\circ\text{C}$<br>$I_F = 7 \text{ A}, T_J = 25^\circ\text{C}$<br>$I_F = 7 \text{ A}, T_J = 25^\circ\text{C}$ |     | 0.59<br>0.53<br>0.72<br>0.63 | 0.63<br>0.57<br>0.76<br>0.67 | V                         |
| Reverse Break Down Voltage (Note 1) | $V_{BR}$ | $I_R = 0.2 \text{ mA}$  | 60  |                              |                              | V                         |
| Reverse Current (Note 1)            | $I_R$    | $V_R = 60\text{V}, T_J = 25^\circ\text{C}$<br>$V_R = 60\text{V}, T_J = 100^\circ\text{C}$<br>$V_R = 60\text{V}, T_J = 125^\circ\text{C}$  |     | 2<br>0.6<br>2.5              | 200<br>20<br>150             | $\mu\text{A}$<br>mA<br>mA |
| Capacitance                         | $C_T$    | $V_R = 4 \text{ V}; f = 1 \text{ MHz}$  |     | 130                          |                              | pF                        |

Note: 1 Short duration test pulse used to minimize self-heating effect.

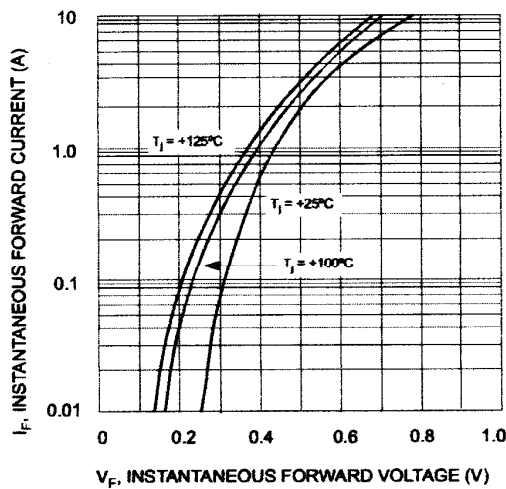


Fig. 1 Typ. Forward Characteristics

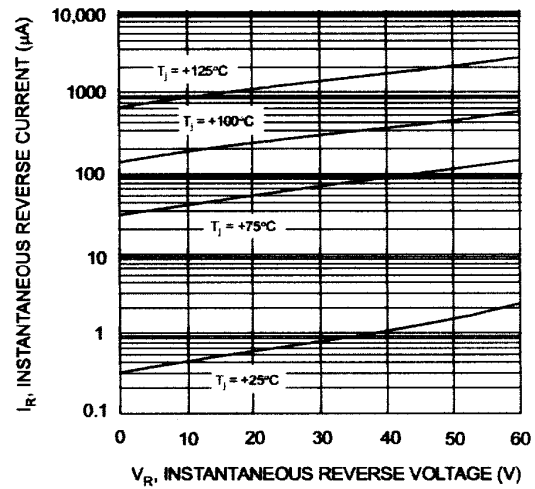


Fig. 2 Typical Reverse Characteristics

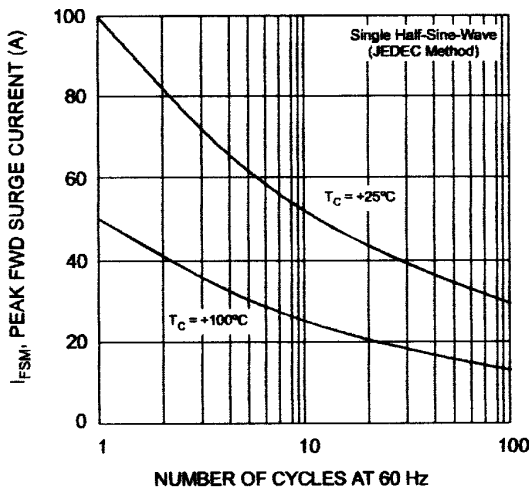


Fig. 3 Max Non-Repetitive Peak Fwd Surge Current

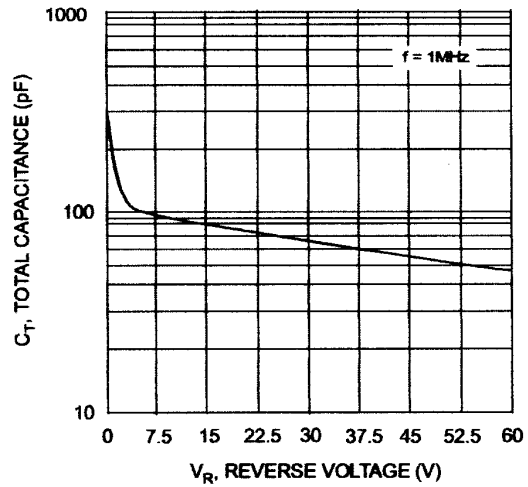
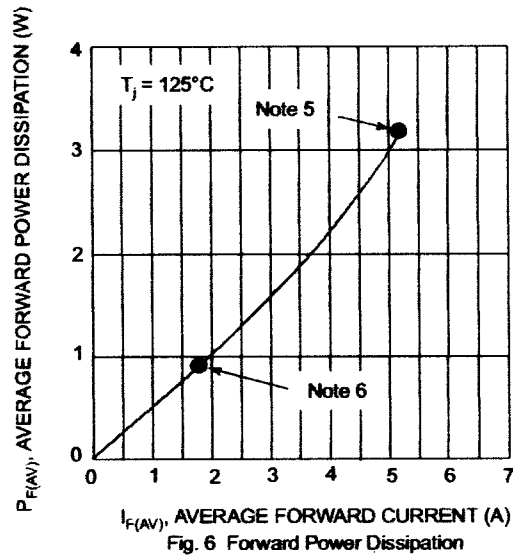
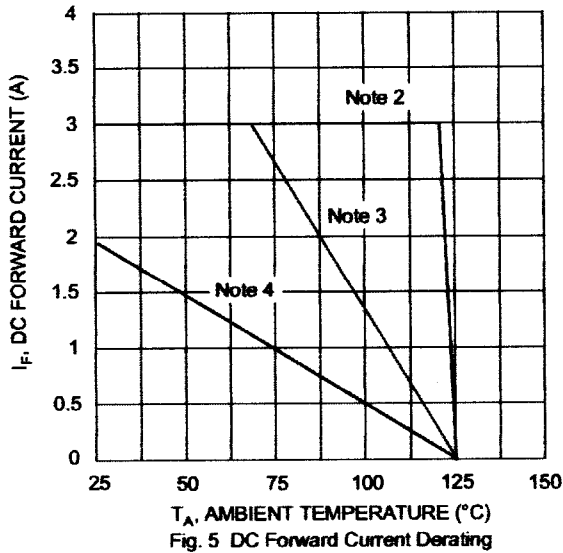
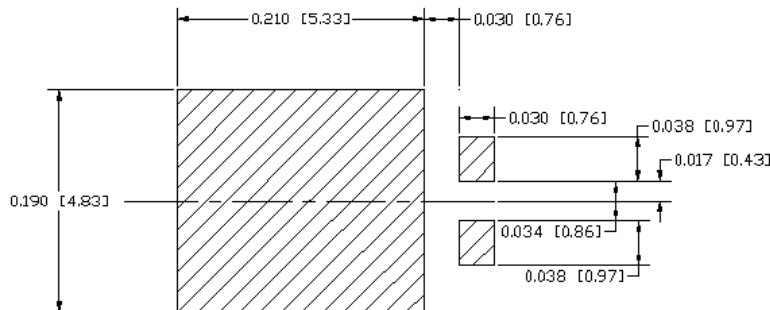


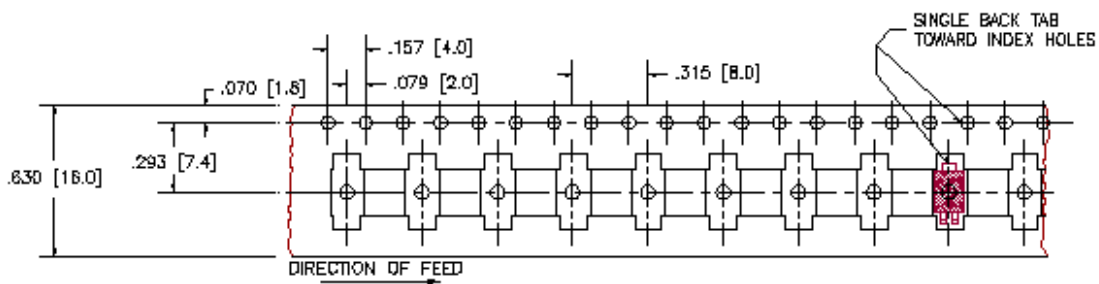
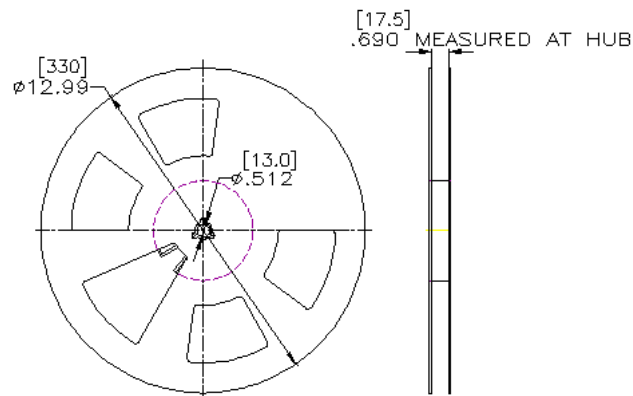
Fig. 4 Typical Capacitance vs. Reverse Voltage

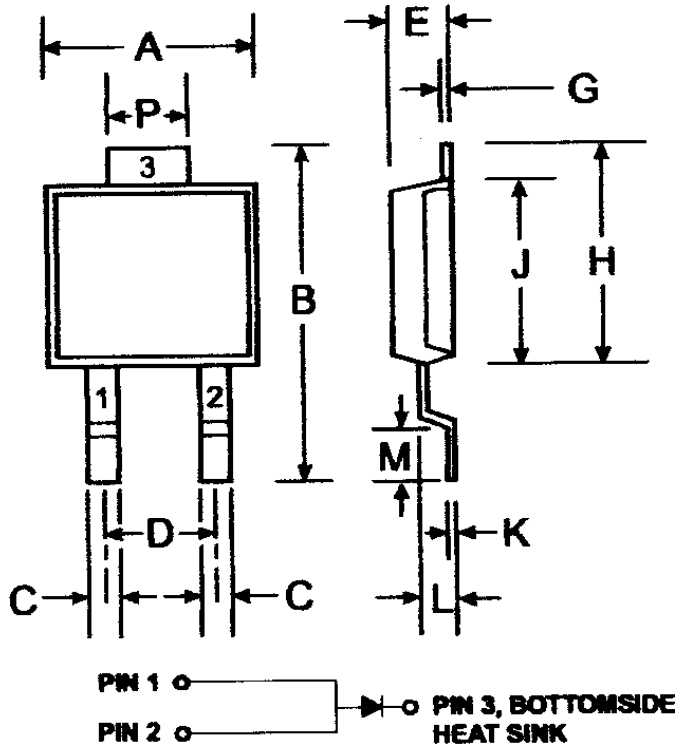


- Notes:
2.  $T_A = T_{\text{SOLDERING POINT}}$ ,  $R_{\theta JS} = 3.2^\circ \text{C/W}$   $R_{\theta SA} = 0^\circ \text{C/W}$ .
  3. Device mounted on GETEK substrate, 2" x 2", 2 oz. copper, double-sided, cathode pad dimensions 0.75" x 1.0", anode pad dimensions 0.25" x 1.0".  $R_{\theta JA}$  in range of 20-40° C/W.
  4. Device mounted on FRA-4 substrate, 2" x 2", 2 oz. copper, single-sided, pad layout  $R_{\theta JA}$  in range of 65° C/W. See mounting pad below.
  5. Maximum power dissipation when the device is mounted in accordance to the conditions described in Note 3.

**PAD LAYOUT**  
inches [mm]



**16 mm TAPE****13 INCH REEL**

**PACKAGE & MOUNTING PAD DIMENSIONS**


**Note:** Pins 1 & 2 must be electrically connected at the printed circuit board.

| POWERMITE®3                 |          |      |
|-----------------------------|----------|------|
| Dim                         | Min      | Max  |
| A                           | 4.03     | 4.09 |
| B                           | 6.40     | 6.61 |
| C                           | .889 NOM |      |
| D                           | 1.83 NOM |      |
| E                           | 1.10     | 1.14 |
| G                           | .178 NOM |      |
| H                           | 5.01     | 5.17 |
| J                           | 4.37     | 4.43 |
| K                           | .178 NOM |      |
| L                           | .71      | .77  |
| M                           | .36      | .46  |
| P                           | 1.73     | 1.83 |
| <b>All Dimensions in mm</b> |          |      |

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