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## Contact us

Tel: +86-755-8981 8866 Fax: +86-755-8427 6832

Email & Skype: info@chipsmall.com Web: www.chipsmall.com

Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China





## Powermite Package Commercial Two-Way Radio Antenna Switch Diode

### DESCRIPTION

This Microsemi Powermite PIN diode is perfect for two-way radio antenna switch applications where size and power handling capability are critical with its high isolation, low loss and low distortion characteristics. Its advantages also include the low forward-bias resistance and high zero-bias impedance that are essential for low loss, high isolation and wide bandwidth antenna switch performance. It is an ideal selection for applications requiring low profile and high-density mounting and is also RoHS compliant. The Powermite package provides a full-metallic bottom that eliminates the possibility of solder flux entrapment during assembly, which in combination with its unique locking tab acts as an efficient heat path to the mounting surface. Its innovative design makes this device ideal for use with automatic insertion equipment. Microsemi also offers numerous other products to meet higher and lower power voltage regulation applications.

**Important:** For the latest information, visit our website <http://www.microsemi.com>.

### FEATURES

- High power surface mount package with very low thermal resistance.
- Specified low distortion.
- Low bias current requirements.
- High zero bias impedance.
- Full metallic bottom eliminates flux entrapment.
- Integral heat sink/locking tabs.
- RoHS compliant.

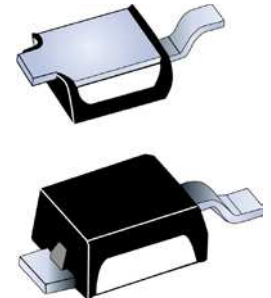
### APPLICATIONS / BENEFITS

- Two-way radio antenna switch.
- Low forward bias resistance.
- Low loss high isolation for wide bandwidth performance.
- Small size DO-216 package.
- Compatible with automatic insertion equipment.
- Very low inductance and capacitance.

### MAXIMUM RATINGS

| Parameters/Test Conditions  | Symbol                              | Value       | Unit |
|---|-------------------------------------|-------------|------|
| Junction and Storage Temperature  | T <sub>J</sub> and T <sub>STG</sub> | -55 to +150 | °C   |
| Thermal Resistance Junction-to-Case                                       | R <sub>θJC</sub>                    | 10          | °C/W |
| Steady-State Power Dissipation @ T <sub>TAB1</sub> = 75 °C <sup>(1)</sup> | P <sub>D</sub>                      | 2.5         | W    |
| Reverse Voltage   | V <sub>R</sub>                      | 50          | V    |
| Solder Temperature @ 10 s   | T <sub>SP</sub>                     | 260         | °C   |

**Notes:** 1. When mounted on a PC board with 2 oz copper.



**DO-216 Package**

#### **MSC – Lawrence**

6 Lake Street,  
Lawrence, MA 01841  
1-800-446-1158  
(978) 620-2600  
Fax: (978) 689-0803

#### **MSC – Ireland**

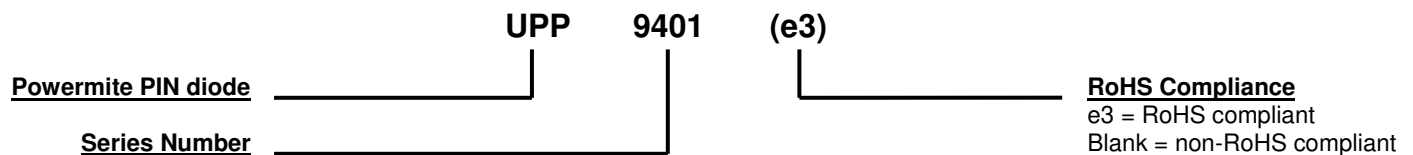
Gort Road Business Park,  
Ennis, Co. Clare, Ireland  
Tel: +353 (0) 65 6840044  
Fax: +353 (0) 65 6822298

#### **Website:**

[www.microsemi.com](http://www.microsemi.com)

**MECHANICAL and PACKAGING**

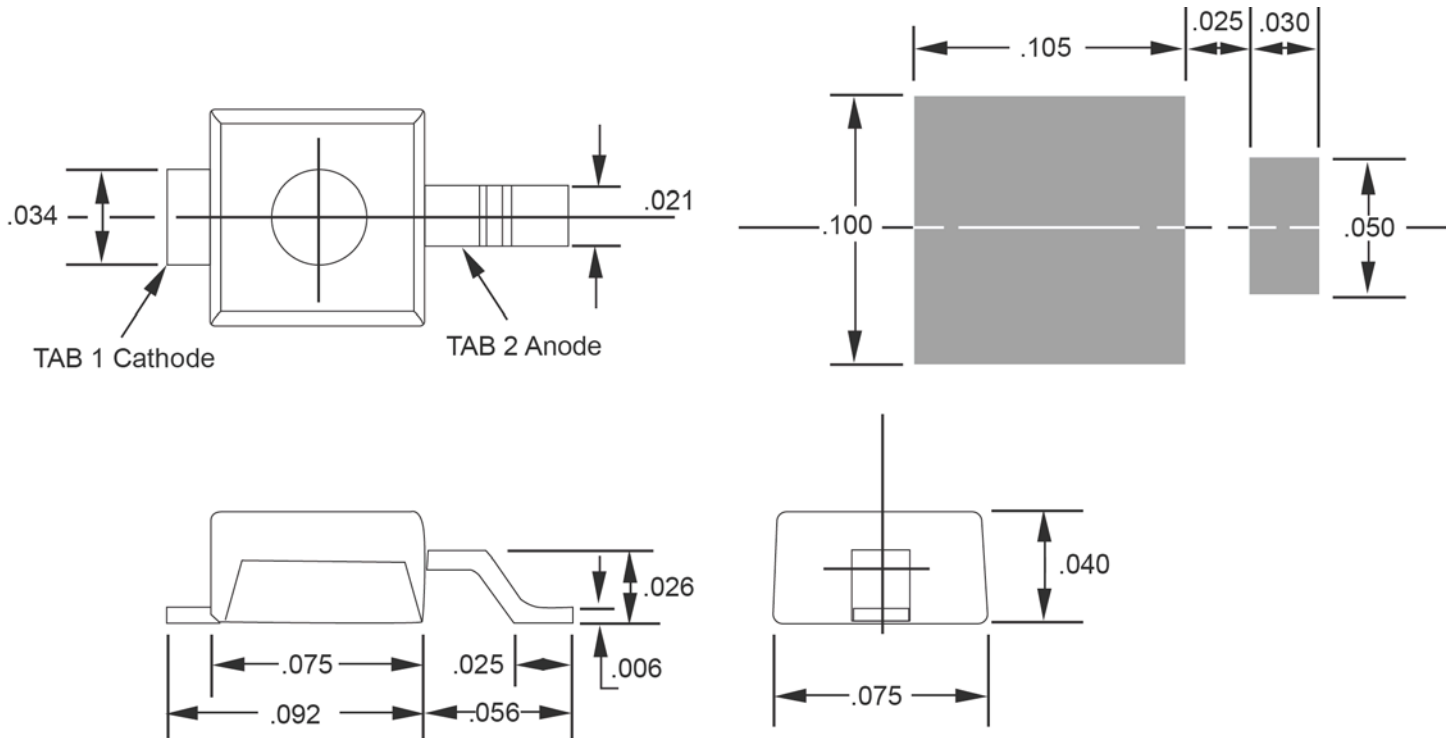
- CASE: Void-free transfer molded thermosetting epoxy compound meeting UL94V-0.
- TERMINALS: Tin/lead or RoHS compliant annealed matte-tin over copper. Readily solderable per MIL-STD-750, method 2026.
- MARKING: P01• (dot indicates “e3” designation).
- POLARITY: Cathode connected to TAB 2.
- TAPE & REEL option: 16 mm tape per standard EIA-481-B. Consult factory for quantities.
- WEIGHT: Approximately 0.016 gram.
- See [Package Dimensions](#) on last page.

**PART NOMENCLATURE**

**SYMBOLS & DEFINITIONS**

| Symbol | Definition      |
|--------|-----------------|
| f      | Frequency       |
| $I_R$  | Reverse current |
| $I_F$  | Forward current |

**ELECTRICAL CHARACTERISTICS @  $T_A = +25^\circ\text{C}$  unless otherwise noted**

| SERIES RESISTANCE<br>$R_S$             |     | CAPACITANCE<br>$C_T$                 |     | PARALLEL RESISTANCE<br>$R_P$       |     | CARRIER LIFETIME<br>$\tau$ |     | TRANSMIT HARMONIC DISTORTION                                     | RECEIVE 3 <sup>rd</sup> ORDER HARMONIC DISTORTION  | VOLTAGE RATING<br>$V_R$  | FORWARD VOLTAGE<br>$V_F$ |
|--|-----|--------------------------------------|-----|------------------------------------|-----|----------------------------|-----|--|--|--------------------------|--------------------------|
| @ f = 100 MHz<br>$I_F = 50 \text{ mA}$ |     | @ f = 100 MHz<br>$V_R = 0 \text{ V}$ |     | @ f = 100 MHz<br>$V = 0 \text{ V}$ |     | @ $I_F = 10 \text{ mA}$    |     | @ $P_{in} = 50 \text{ W}$<br>f = 50 MHz<br>$I_F = 50 \text{ mA}$ | @ f = 100 MHz<br>$V = 0 \text{ V}$<br>f <sub>1</sub> = 50 MHz<br>f <sub>2</sub> = 51 MHz | @ $I_R = 10 \mu\text{A}$ | @ $I_F = 50 \text{ mA}$  |
| Ohms                                   |     | pF                                   |     | Ohms                               |     | $\mu\text{S}$              |     | -dB  | -dB  | Volts                    | Volts                    |
| TYP                                    | MAX | TYP                                  | MAX | MIN                                | TYP | MIN                        | TYP | MIN  | MIN  | MIN                      | MAX                      |
| 0.75                                   | 1.0 | 0.75                                 | 1.0 | 5K                                 | 10K | 1.0                        | 2.0 | 80   | 60   | 50                       | 1.0                      |

**PACKAGE and MOUNTING PAD DIMENSIONS**


DIMENSIONS in inches