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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

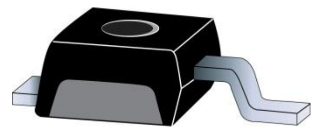
RoHS Compliant

Powermite Package Commercial Two-Way Radio Antenna Switch Diode

DESCRIPTION

With high isolation, low loss, and low distortion characteristics, this Microsemi Powermite PIN diode is perfect for two-way radio antenna switch applications where size and power handling capability are critical. 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. The Powermite package's full metallic bottom eliminates the possibility of solder flux entrapment during assembly, and its unique locking tab acts as an integral heat sink. Its innovative design makes this device ideal for use with automatic insertion equipment.

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



DO-216 Package

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.
- High zero 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_J and T_{STG}	-55 to +150	ºC
Thermal Resistance Junction-to-Tab 1		$R_{\Theta JL}$	30	ºC/W
Thermal Resistance Junction-to-Case		$R_{\Theta JC}$	10	ºC/W
Steady-State Power Dissipation @ T_{TAB1} = 75 ºC [(1)]		P_D	2.5	W
Reverse Voltage @ I_R = 10 µA	UPP1001e3	V_R	100	V
	UPP1002e3		200	
	UPP1004e3		400	
Solder Temperature @ 10 s		T_{SP}	260	°C

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

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

MECHANICAL and PACKAGING

- CASE: Void-free transfer molded thermosetting epoxy compound meeting UL94V-0.
- TERMINALS: Annealed matte-tin over copper and readily solderable per MIL-STD-750, method 2026.
- MARKING: P11• for UPP1001, P02• for UPP1002, and P04• for UPP1004 (dot indicates "e3" designation).
- POLARITY: Cathode designated by 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

UPP 1001 e3

- **UPP** — Powermite PIN diode
- **1001** — Series Number
- **e3** — RoHS Compliant

SYMBOLS & DEFINITIONS

Symbol	Definition
f	Frequency
I_R	Reverse current
I_F	Forward current

ELECTRICAL CHARACTERISTICS @ T_A = +25 ºC unless otherwise noted

Series Resistance R_S @ f = 100 MHz I_F = 10 mA (see Figure 1) Ohms		Series Resistance R_S @ f = 100 MHz I_F = 50 mA Ohms		Capacitance C_T @ f = 1 MHz V_R = 0 V (see Figure 2) pF		Parallel Resistance R_P @ f = 100 MHz V = 0 V (see Figure 3) KOhms		Carrier Lifetime τ @ I_F = 10 mA µS		Reverse Current I_R @ V_R µA		Forward Voltage V_F @ I_F = 50 mA (see Figure 4) Volts	
TYP	MAX	TYP	MAX	TYP	MAX	MIN	TYP	MIN	TYP	TYP	MAX	TYP	MAX
0.75	1.0	0.35	0.45	1.2	1.6	5	8	2.0	3.5	0.1	10	0.75	1.0

GRAPHS

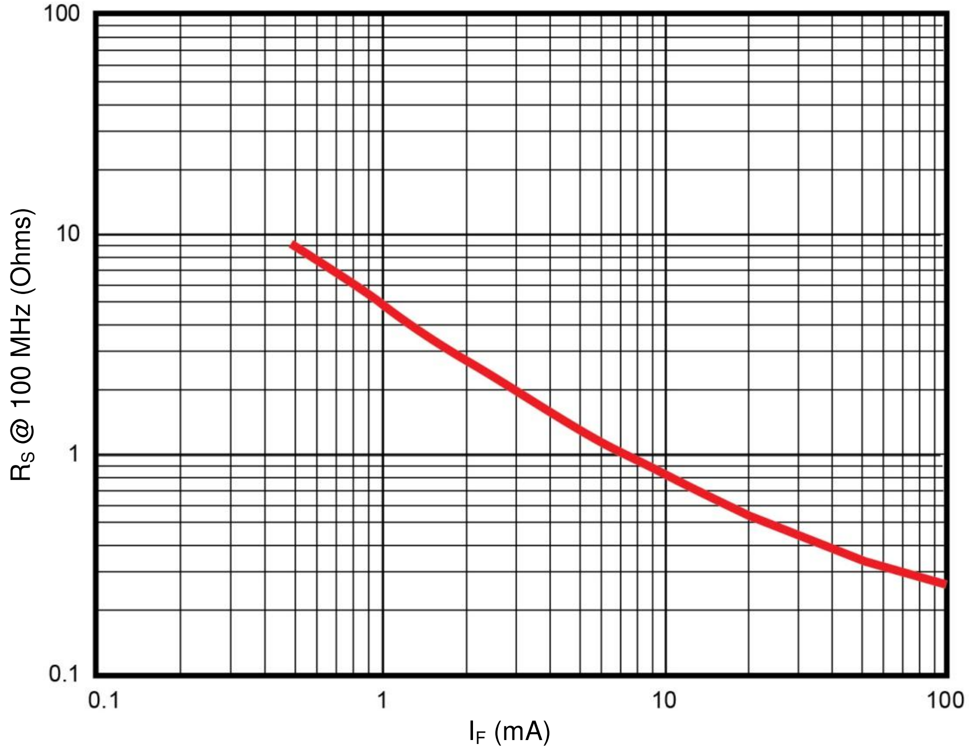


FIGURE 1 - SERIES RESISTANCE (TYPICAL)

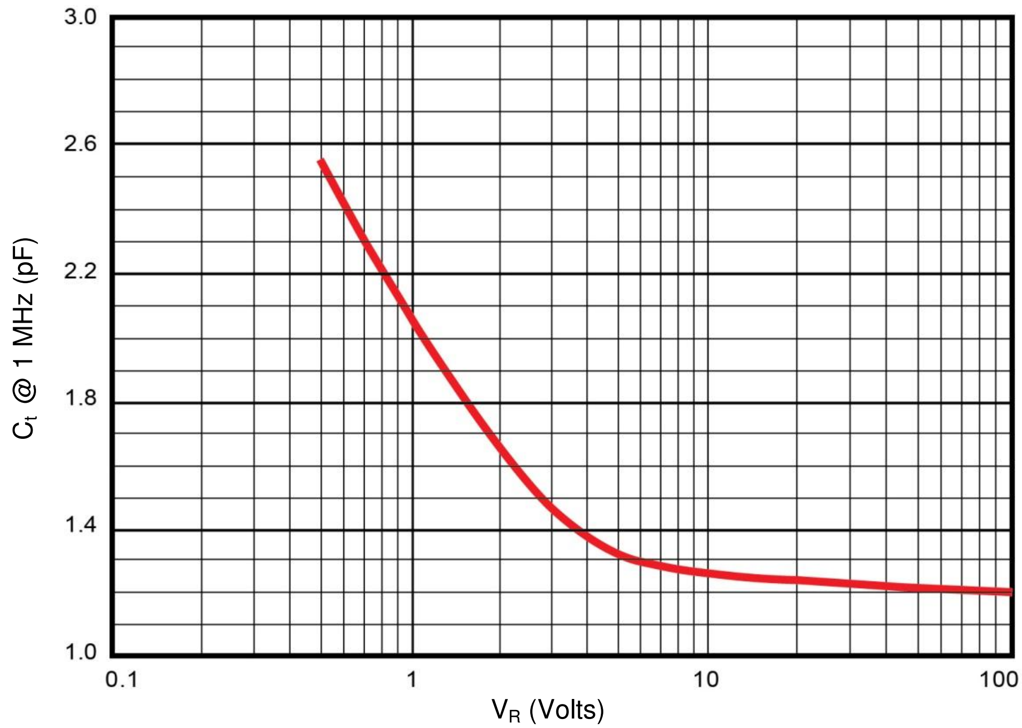


FIGURE 2 – CAPACITANCE (TYPICAL)

GRAPHS (continued)

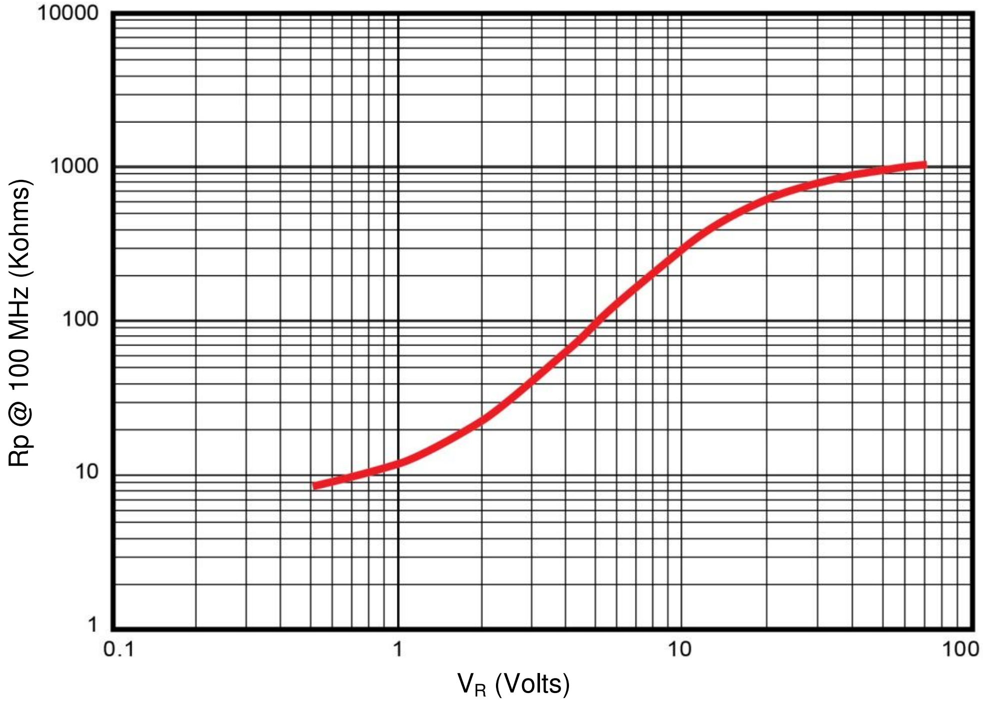


FIGURE 3 – PARALLEL RESISTANCE (TYPICAL)

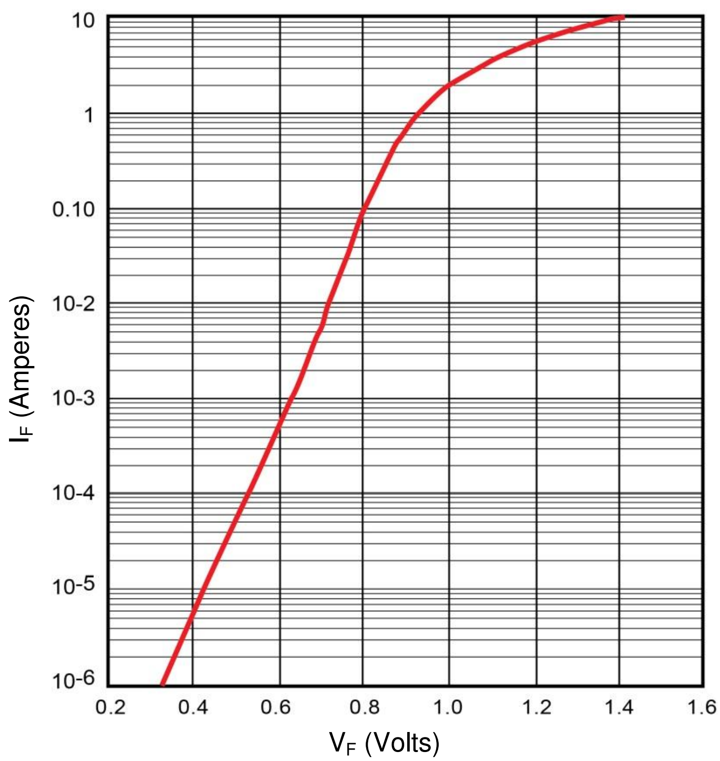
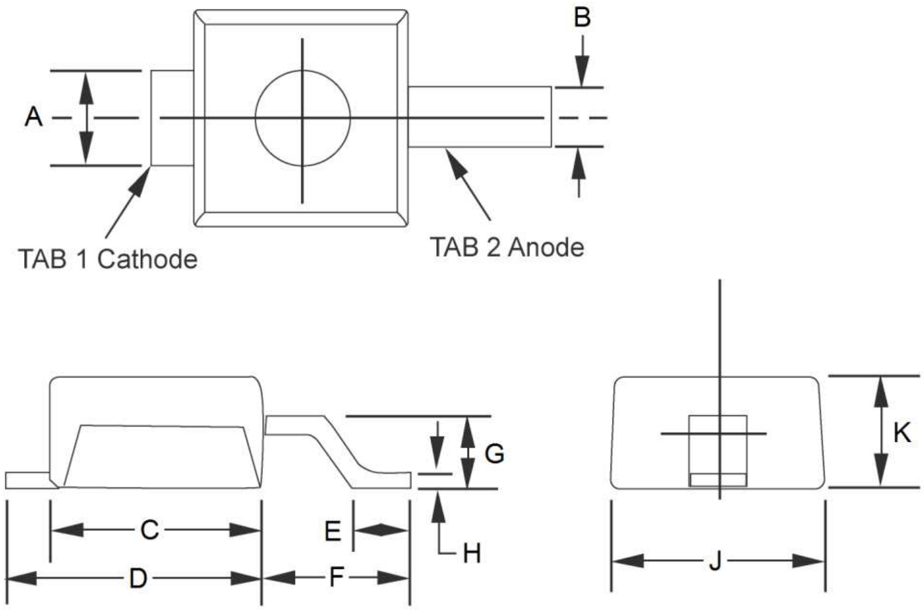


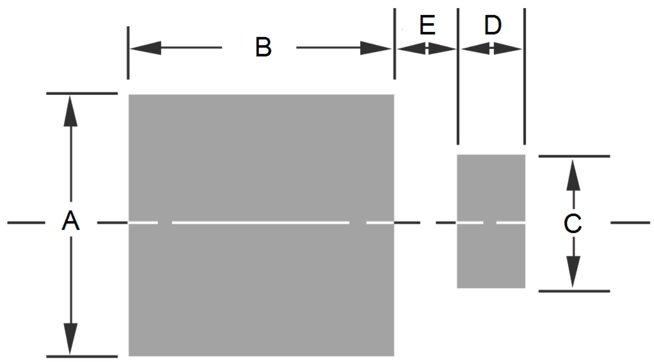
FIGURE 4 – FORWARD CURRENT vs FORWARD VOLTAGE (TYPICAL)

PACKAGE DIMENSIONS



Ltr	Dimensions			
	Inch		Millimeters	
	Min	Max	Min	Max
A	0.029	0.039	0.73	0.99
B	0.016	0.026	0.40	0.66
C	0.070	0.080	1.77	2.03
D	0.087	0.097	2.21	2.46
E	0.020	0.030	0.50	0.76
F	0.051	0.061	1.29	1.54
G	0.021	0.031	0.53	0.78
H	0.004	0.008	0.10	0.20
J	0.070	0.080	1.77	2.03
K	0.035	0.045	0.89	1.14

MOUNTING PAD DIMENSIONS



Ltr	Dimensions	
	Inch	Millimeters
A	0.100	2.54
B	0.105	2.67
C	0.050	1.27
D	0.030	0.76
E	0.025	0.64