

**FEATURES**

- HF band (2-30 MHz) PIN
- Long Lifetime (25µs typ.)
- High Power (1KW, CW)
- High Isolation (32dB)
- Low Loss (0.25dB)
- Very Low Distortion (IP3=60dBm)
- Voltage Ratings to 1000V

**DESCRIPTION**

UM2100 Series PIN diodes are designed for transmit/receive switch and attenuator applications in HF band (2-30MHz) and below. As series configured switches, these long lifetime (25µs typ) diodes can control up to 2.5KW, CW in a 50 ohm system. In HF band, insertion loss is less than 0.25dB and isolation is greater than 32dB (off-state).

The UM2100 series offers the lowest distortion performance in both the transmit and receive modes. Less than 50 mA forward bias is required to obtain an IP3 of 60 dBm at 300 KHz with 1 watt per tone. The forward biased resistance/reactance vs. frequency characteristics are flat down to 10 KHz. The capacitance vs. reverse bias voltage characteristic is flat down to 2 MHz.

In attenuator configurations, the UM2100 produces extremely low distortion at low values of attenuator control current, and very low insertion loss (0.2dB) in the "0dB" attenuator state.

**MAXIMUM RATINGS**

**Average Power Dissipation and Thermal Resistance**

| Package            | Condition                                     | UM2100         |          |
|--------------------|---|----------------|----------|
|                    |   | P <sub>D</sub> | θ        |
| A                  | 25°C Pin Temperature                          | 25W            | 6°C/W    |
| B&E (Axial Leads)  | 1/2 in. (12.7mm) Total Length to 25°C Contact | 12W            | 12.5°C/W |
| B&E (Axial Leads)  | Free Air                                      | 2.5W           | —        |
| C (Studded)        | 25°C Stud Temperature                         | 25W            | 6°C/W    |
| D (Insulated Stud) | 25°C Stud Temperature                         | 18.75W         | 8°C/W    |
| Melf B             | 25°C End Cap Temperature                      | 15W            | 10°C/W   |

**Peak Power Dissipation Rating**

|   |                                    |                 |
|---|------------------------------------|-----------------|
| All Packages                                    | 1µs Pulse (Single) at 25°C Ambient | 100KW           |
| <b>Operating and Storage Temperature Range:</b> |                                    | -65°C to +175°C |



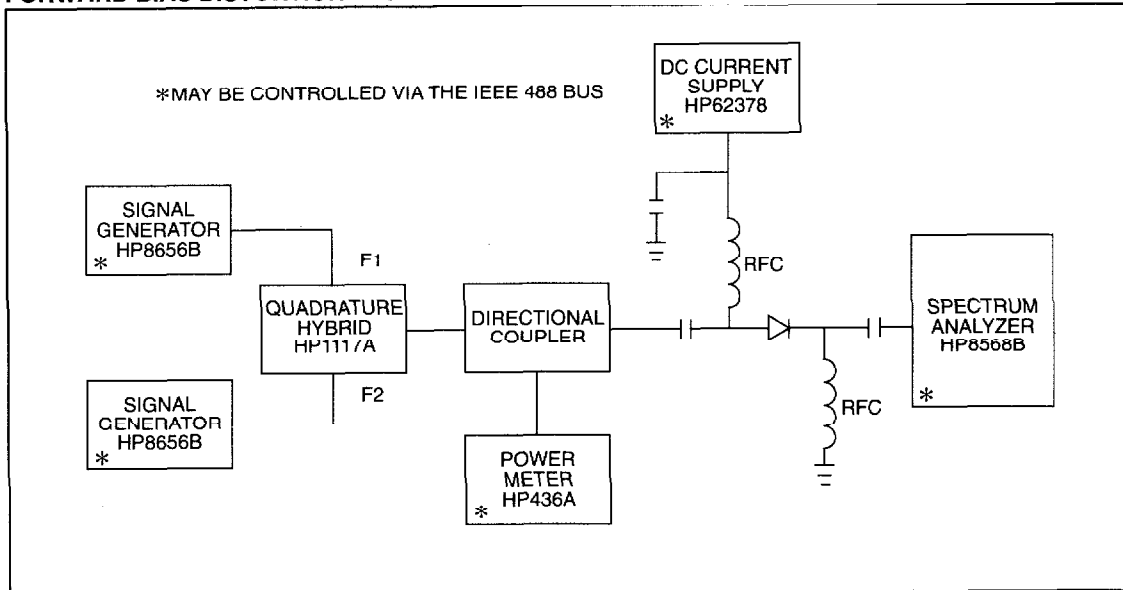
**VOLTAGE RATINGS (25°C)**

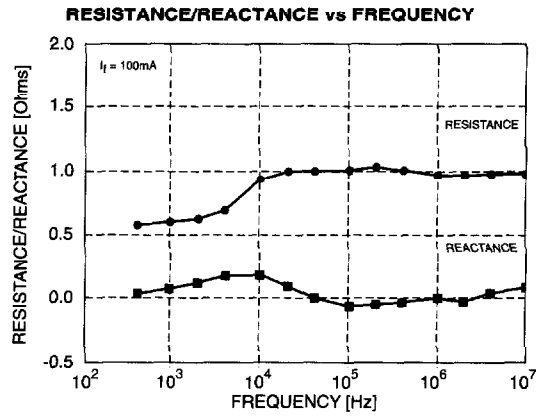
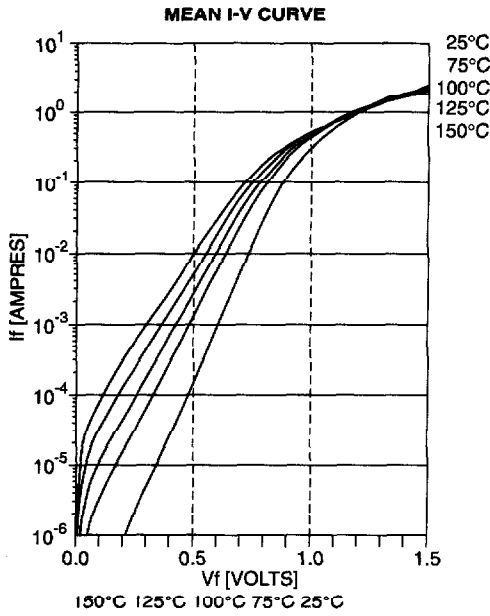
| Reverse Voltage<br>(V <sub>R</sub> ) – Volts<br>I <sub>R</sub> = 10μA | Part type |
|---|-----------|
| 100V  | UM2101    |
| 200V  | UM2102    |
| 400V  | UM2104    |
| 600V  | UM2106    |
| 800V  | UM2108    |
| 1000V   | UM2110    |

**ELECTRICAL SPECIFICATIONS (25°C)**

| Test                            | Min. | Typ. | Max. | Units | Conditions  |
|---------------------------------|------|------|------|-------|---|
| Diode Resistance R <sub>s</sub> |      | 1.0  | 2.0  | Ω     | 2MHz, 100mA   |
| Capacitance C <sub>T</sub>      |      | 1.9  | 2.5  | pF    | 1MHz, 100V  |
| Reverse Current I <sub>R</sub>  |      |      | 10   | μA    | @ Rated Voltage   |
| Carrier Lifetime t              | 20   | 25   |      | μs    | I = 10 mA/100V  |
| IP3                             | 50   | 60   |      | dBm   | 2W total, I <sub>f</sub> = 25mA<br>F1 = 1.999 MHz<br>F2 = 2.001 MHz<br>1.0 W/tone |

**FORWARD BIAS DISTORTION TEST**





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