

## PIN DIODE MICROWAVE LIMITERS 0.1 to 18.0 GHz



### FEATURES

- LOW INSERTION LOSS
- LOW VSWR
- MEDIUM POWER (100 WATTS PEAK, 2 WATTS CW)
- HERMETIC MODULES
- FAST RECOVERY TIME
- INTERNAL DC RETURN (Most Models)

### DESCRIPTION

Omniyig's PIN diode limiters are designed for octave-band performance, although their multi-octave performance is excellent. The OLP2644A is an 8.0 to 16.0 GHz unit with SMA connectors. This limiter performs very well from 6.0 to 18.0 GHz. The OLP2716 is designed to operate from 1.0 to 2.0 GHz, but performs very well from 0.5 to 4.0 GHz.

Omniyig's limiters are optimized for low insertion loss and VSWR at  $\leq 0$  dBm. At and above the turn-on point (+5 to +10 dBm), these limiters act as variable shunt R.F. impedances and they are reflective.

All of these limiters are available with SMA connectors, or cylindrical, or rectangular modules for stripline and minstrip applications, without d.c. returns. Units may be supplied without or with other connector configurations as specials.

Omniyig fabricates these units utilizing semiconductor chips high temperature die attach and thermocompression bonding technique. All units are in hermetic modules.

### APPLICATIONS

The Omniyig limiters are generally used as protective devices. They protect sensitive devices such as tunnel diode amplifiers, mixers, detectors, and receivers from medium powers (100 watts peak, 2 watts C.W.) which might damage them.

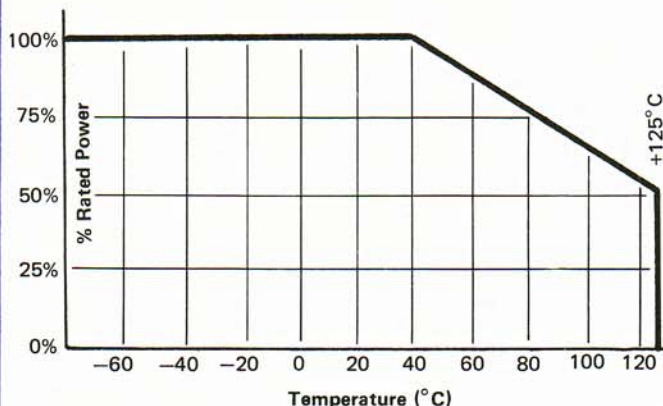
These limiters have other applications such as contouring frequency response and keeping input amplitudes to amplifiers at lower level. This will keep them out of undesirable overdrive output characteristics.

Limiters of this type, without d.c. returns, have been used as switches at lower level signals to modulate signals. With the proper logic circuits, external d.c. returns are applied during high power conditions allowing normal limiter operation.

### ENVIRONMENTAL

| Temperature Range              | MIL-STD-883 | CONDITION   |
|--------------------------------|-------------|---|
| Storage                        | 1008C       | -65°C to +150°C   |
| Operating (see derating curve) | 1008C       | -65°C to +125°C   |
| Temperature Cycling            | 1010C       | 5 cycles, -65°C to +125°C                               |
| Thermal Shock                  | 1011A       | 5 cycles, 0 to +100°C                                   |
| Moisture Resistance            | 1004        | 10 days, 90 to 98% R.H.                                 |
| Shock (Mechanical)             | 2002A       | 5 blows, X, Y, Z @ 50 G's                               |
| Vibration Variable Frequency   | 2007A       | 4, 4-min. cycles x, y, z @ 20 G's peak, 100 to 2,000 Hz |
| Constant Acceleration          | 2001A       | X <sub>1</sub> , Y <sub>1</sub> Y <sub>2</sub> 500 G's  |

### DERATING CURVE FOR RATED POWER (Peak and C.W.)



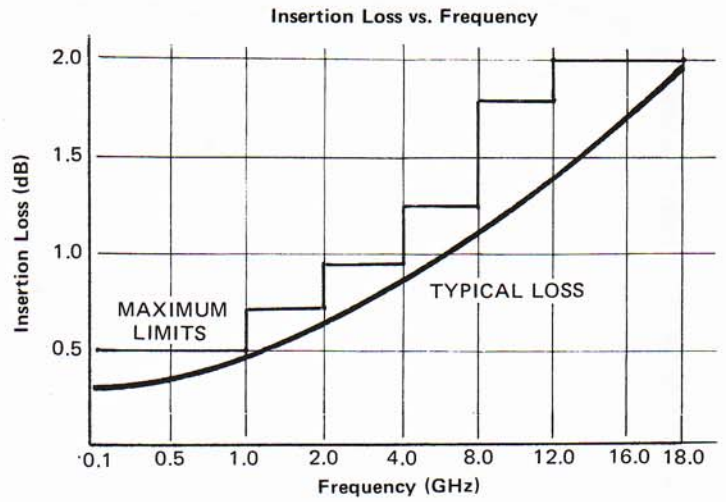
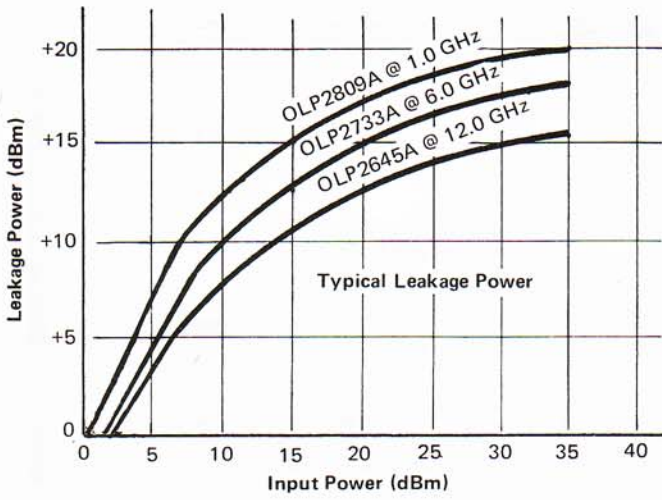


# ELECTRICAL SPECIFICATIONS

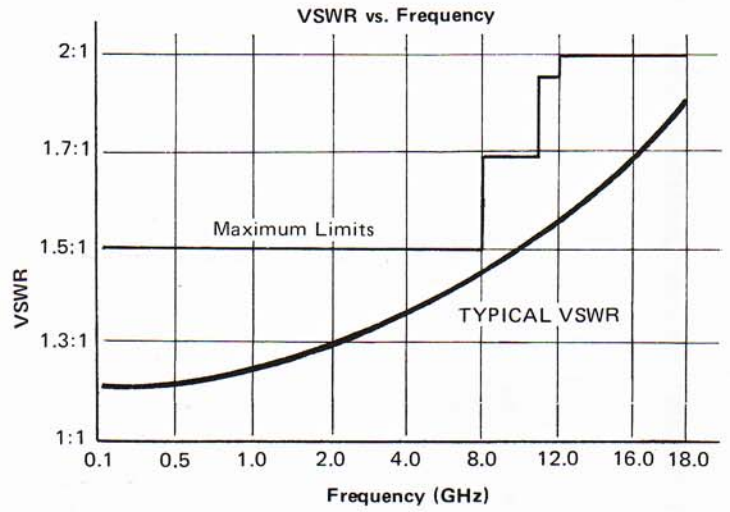
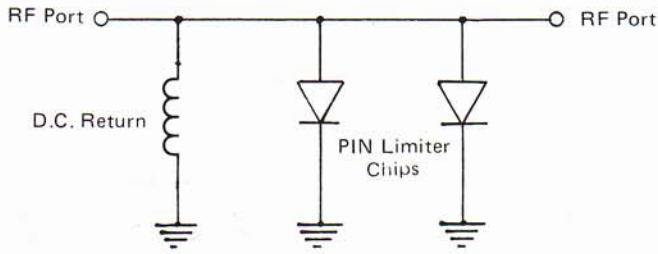
|                                       | MODEL NUMBER <sup>5</sup> | FREQUENCY RANGE (GHz) | MAX. INSERTION LOSS (dB) <sup>1</sup> | MAX. VSWR <sup>1</sup> ___ : 1 | MAX. LEAKAGE POWER (dBm) <sup>2</sup> | MAX. CW POWER (Watts) <sup>4</sup> | MAX. PEAK POWER (Watts) <sup>3,4,-</sup> | OUTLINE STYLE NUMBER |
|---------------------------------------|---------------------------|-----------------------|---------------------------------------|--------------------------------|---------------------------------------|------------------------------------|--|----------------------|
| SMA MALE INPUT<br>SMA MALE OUTPUT     | OLP2801A                  | 0.1 - 0.5             | 0.5                                   | 1.5                            | +20                                   | 2.0                                | 100                                      | 28                   |
|                                       | OLP2808A                  | 0.5 - 1.0             | 0.5                                   | 1.5                            | +20                                   | 2.0                                | 100                                      | 28                   |
|                                       | OLP2809A                  | 0.5 - 2.0             | 0.6                                   | 1.5                            | +20                                   | 2.0                                | 100                                      | 28                   |
|                                       | OLP2816A                  | 1.0 - 2.0             | 0.6                                   | 1.5                            | +20                                   | 2.0                                | 100                                      | 28                   |
|                                       | OLP2817A                  | 1.0 - 4.0             | 0.8                                   | 1.5                            | +20                                   | 2.0                                | 100                                      | 28                   |
|                                       | OLP2725A                  | 2.0 - 4.0             | 0.8                                   | 1.5                            | +19                                   | 2.0                                | 100                                      | 27                   |
|                                       | OLP2726A                  | 2.0 - 8.0             | 1.2                                   | 1.5                            | +19                                   | 2.0                                | 100                                      | 27                   |
|                                       | OLP2731A                  | 2.5 - 5.0             | 1.0                                   | 1.5                            | +18                                   | 2.0                                | 100                                      | 27                   |
|                                       | OLP2733A                  | 4.0 - 8.0             | 1.2                                   | 1.5                            | +18                                   | 2.0                                | 100                                      | 27                   |
|                                       | OLP2737A                  | 5.0 - 10.0            | 2.0                                   | 2.0                            | +18                                   | 1.0                                | 100                                      | 25                   |
|                                       | OLP2640A                  | 6.0 - 18.0            | 2.0                                   | 2.0                            | +18                                   | 1.0                                | 70                                       | 25                   |
|                                       | OLP2641A                  | 7.0 - 11.0            | 2.0                                   | 2.0                            | +18                                   | 1.0                                | 90                                       | 25                   |
|                                       | OLP2643A                  | 8.0 - 12.0            | 2.0                                   | 2.0                            | +18                                   | 1.0                                | 80                                       | 25                   |
|                                       | OLP2644A                  | 8.0 - 16.0            | 2.0                                   | 2.0                            | +18                                   | 1.0                                | 70                                       | 25                   |
|                                       | OLP2645A                  | 8.0 - 18.0            | 2.0                                   | 2.0                            | +18                                   | 1.0                                | 70                                       | 25                   |
|                                       | OLP2649A                  | 12.0 - 18.0           | 2.0                                   | 2.0                            | +18                                   | 1.0                                | 70                                       | 25                   |
|                                       | OLP2650A                  | 0.5 - 18.0            | 3.0                                   | 3.5:1                          | +20                                   | 1.0                                | 70                                       | 25                   |
| OLP2651A                              | 1.0 - 18.0                | 2.8                   | 3.0:1                                 | +20                            | 1.0                                   | 70                                 | 25                                       |                      |
| OLP2652A                              | 2.0 - 18.0                | 2.5                   | 2.8:1                                 | +20                            | 1.0                                   | 70                                 | 25                                       |                      |
| SMA FEMALE INPUT<br>SMA FEMALE OUTPUT | OLP3301A                  | 0.1 - 0.5             | 1.5                                   | 1.35                           | +20                                   | 2.0                                | 100                                      | 33                   |
|                                       | OLP3308A                  | 0.5 - 1.0             | 0.5                                   | 1.5                            | +20                                   | 2.0                                | 100                                      | 33                   |
|                                       | OLP3309A                  | 0.5 - 2.0             | 0.6                                   | 1.5                            | +20                                   | 2.0                                | 100                                      | 33                   |
|                                       | OLP3316A                  | 1.0 - 2.0             | 0.6                                   | 1.5                            | +20                                   | 2.0                                | 100                                      | 33                   |
|                                       | OLP3317A                  | 1.0 - 4.0             | 0.8                                   | 1.5                            | +20                                   | 2.0                                | 100                                      | 33                   |
|                                       | OLP3225A                  | 2.0 - 4.0             | 0.8                                   | 1.5                            | +19                                   | 2.0                                | 100                                      | 32                   |
|                                       | OLP3226A                  | 2.0 - 8.0             | 1.2                                   | 1.5                            | +19                                   | 2.0                                | 100                                      | 32                   |
|                                       | OLP3231A                  | 2.5 - 5.0             | 1.0                                   | 1.5                            | +18                                   | 2.0                                | 100                                      | 32                   |
|                                       | OLP3233A                  | 4.0 - 8.0             | 1.2                                   | 1.5                            | +18                                   | 2.0                                | 100                                      | 32                   |
|                                       | OLP3237A                  | 5.0 - 10.0            | 2.0                                   | 2.0                            | +18                                   | 1.0                                | 100                                      | 30                   |
|                                       | OLP3140A                  | 6.0 - 18.0            | 2.0                                   | 2.0                            | +18                                   | 1.0                                | 70                                       | 30                   |
|                                       | OLP3141A                  | 7.0 - 11.0            | 2.0                                   | 2.0                            | +18                                   | 1.0                                | 90                                       | 30                   |
|                                       | OLP3143A                  | 8.0 - 12.0            | 2.0                                   | 2.0                            | +18                                   | 1.0                                | 80                                       | 30                   |
|                                       | OLP3144A                  | 8.0 - 16.0            | 2.0                                   | 2.0                            | +18                                   | 1.0                                | 70                                       | 30                   |
|                                       | OLP3145A                  | 8.0 - 18.0            | 2.0                                   | 2.0                            | +18                                   | 1.0                                | 70                                       | 30                   |
|                                       | OLP3149A                  | 12.0 - 18.0           | 2.0                                   | 2.0                            | +18                                   | 1.0                                | 70                                       | 30                   |
|                                       | OLP3150A                  | 0.5 - 18.0            | 3.0                                   | 3.5:1                          | +20                                   | 1.0                                | 70                                       | 30                   |
| OLP3151A                              | 1.0 - 18.0                | 2.8                   | 3.0:1                                 | +20                            | 1.0                                   | 70                                 | 30                                       |                      |
| OLP3152A                              | 2.0 - 18.0                | 2.5                   | 2.8:1                                 | +20                            | 1.0                                   | 70                                 | 30                                       |                      |
| CYLINDRICAL<br>MODULE                 | OLP6201K                  | 0.1 - 0.5             | 0.5                                   | 1.5                            | +20                                   | 2.0                                | 100                                      | 62                   |
|                                       | OLP6208K                  | 0.5 - 1.0             | 0.5                                   | 1.5                            | +20                                   | 2.0                                | 100                                      | 62                   |
|                                       | OLP6209K                  | 0.5 - 2.0             | 0.6                                   | 1.5                            | +20                                   | 2.0                                | 100                                      | 62                   |
|                                       | OLP6216K                  | 1.0 - 2.0             | 0.6                                   | 1.5                            | +20                                   | 2.0                                | 100                                      | 62                   |
|                                       | OLP6217K                  | 1.0 - 4.0             | 0.8                                   | 1.5                            | +20                                   | 2.0                                | 100                                      | 62                   |
|                                       | OLP6025K                  | 2.0 - 4.0             | 0.8                                   | 1.5                            | +19                                   | 2.0                                | 100                                      | 60                   |
|                                       | OLP6026K                  | 2.0 - 8.0             | 1.2                                   | 1.5                            | +19                                   | 2.0                                | 100                                      | 60                   |
|                                       | OLP6031K                  | 2.5 - 5.0             | 1.0                                   | 1.5                            | +18                                   | 2.0                                | 100                                      | 60                   |
|                                       | OLP6033K                  | 4.0 - 8.0             | 1.2                                   | 1.5                            | +18                                   | 2.0                                | 100                                      | 60                   |
|                                       | OLP6037K                  | 5.0 - 10.0            | 2.0                                   | 2.0                            | +18                                   | 1.0                                | 100                                      | 58                   |
|                                       | OLP5940K                  | 6.0 - 18.0            | 2.0                                   | 2.0                            | +18                                   | 1.0                                | 70                                       | 58                   |
|                                       | OLP5941K                  | 7.0 - 11.0            | 2.0                                   | 2.0                            | +18                                   | 1.0                                | 90                                       | 58                   |
|                                       | OLP5943K                  | 8.0 - 12.0            | 2.0                                   | 2.0                            | +18                                   | 1.0                                | 80                                       | 58                   |
|                                       | OLP5944K                  | 8.0 - 16.0            | 2.0                                   | 2.0                            | +18                                   | 1.0                                | 70                                       | 58                   |
|                                       | OLP5945K                  | 8.0 - 18.0            | 2.0                                   | 2.0                            | +18                                   | 1.0                                | 70                                       | 58                   |
|                                       | OLP5949K                  | 12.0 - 18.0           | 2.0                                   | 2.0                            | +18                                   | 1.0                                | 70                                       | 58                   |
|                                       | OLP5950K                  | 0.5 - 18.0            | 3.0                                   | 3.5:1                          | +20                                   | 1.0                                | 70                                       | 58                   |
|                                       | OLP5951K                  | 1.0 - 18.0            | 2.8                                   | 3.0:1                          | +20                                   | 1.0                                | 70                                       | 58                   |
|                                       | OLP5952K                  | 2.0 - 18.0            | 2.5                                   | 2.8:1                          | +20                                   | 1.0                                | 70                                       | 58                   |

- NOTES:
1. Measured at 0 dBm input power.
  2. Measured at 1 watt input power.
  3. 1  $\mu$ sec. pulse width, 1 kHz PRF.
  4. These ratings are at +25°C. See derating table for other temps.

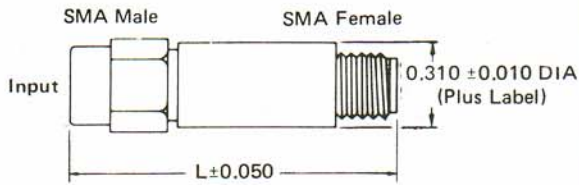
# TYPICAL PERFORMANCE CURVES



# CIRCUIT



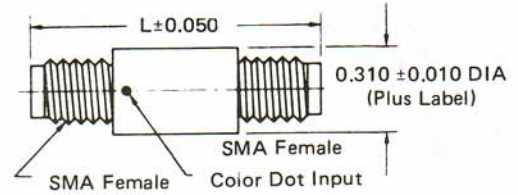
## OUTLINES



Finish: Gold Plate or Passivate Stainless Steel.

| STYLE | $L \pm 0.050$ |
|-------|---------------|
| 25    | 1.10          |
| 26    | 1.20          |
| 27    | 1.30          |
| 28    | 1.45          |

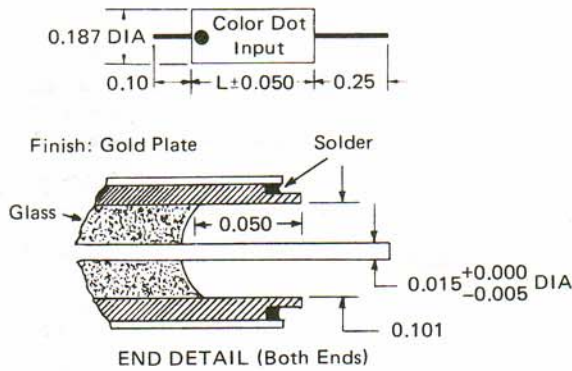
SMA CONNECTOR STYLES



Finish: Gold Plate or Passivate Stainless Steel.

| STYLE | $L \pm 0.050$ |
|-------|---------------|
| 30    | 1.05          |
| 31    | 1.15          |
| 32    | 1.25          |
| 33    | 1.45          |

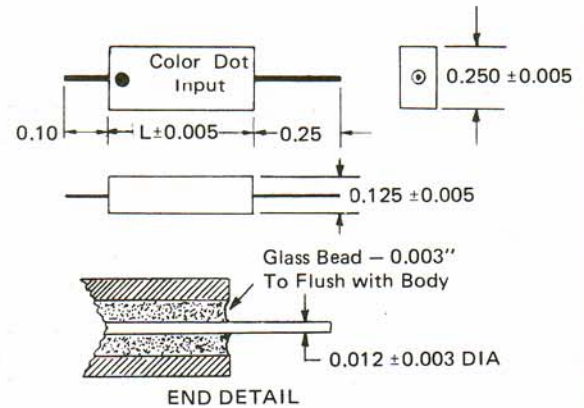
SMA CONNECTOR STYLES



| STYLE | $L \pm 0.005$ |
|-------|---------------|
| 58    | 0.430         |
| 59    | 0.530         |
| 60    | 0.650         |
| 62    | 0.800         |

Finish: Gold Plate

CYLINDRICAL MODULE STYLES



| STYLE | $L \pm 0.005$ |
|-------|---------------|
| 52    | 0.330         |
| 53    | 0.530         |
| 54    | 0.750         |
| 55    | 1.000         |

Finish: Gold Plate

RECTANGULAR MODULE STYLES