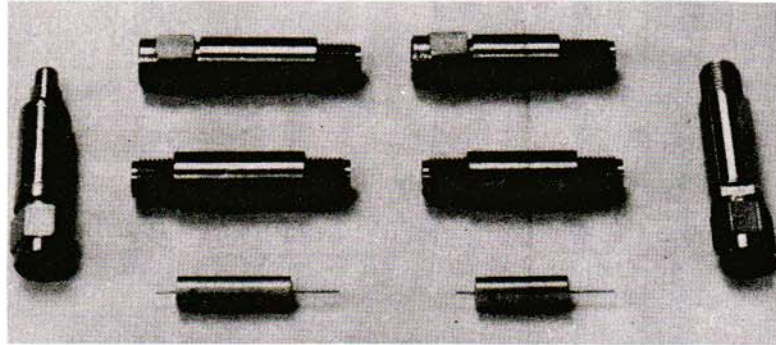


## MICROWAVE DETECTORS



### DESCRIPTION

Omniyig offers a large selection of octave and broadband detectors from .1 to 18 GHz. These detectors utilize Tunnel, Schottky or Zero Bias Schottky diodes as the detector element. The advantages of each detector type are outlined below:

#### TUNNEL

- NO BIAS REQUIRED.
- EXCELLENT TEMPERATURE STABILITY.
- LOWEST VIDEO RESISTANCE.
- WIDEST VIDEO BANDWIDTH.
- GOOD TANGENTIAL SIGNAL SENSITIVITY.

#### SCHOTTKY

- HIGH SENSITIVITY.
- GOOD TEMPERATURE STABILITY
- EXCELLENT TANGENTIAL SIGNAL SENSITIVITY.

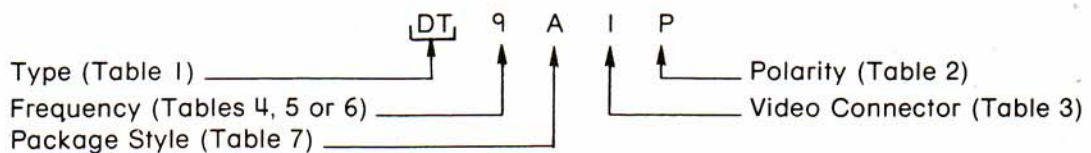
#### ZERO BIAS SCHOTTKY

- HIGH SENSITIVITY.
- NO BIAS REQUIRED.
- FAIR TEMPERATURE STABILITY.
- EXCELLENT TANGENTIAL SIGNAL SENSITIVITY.

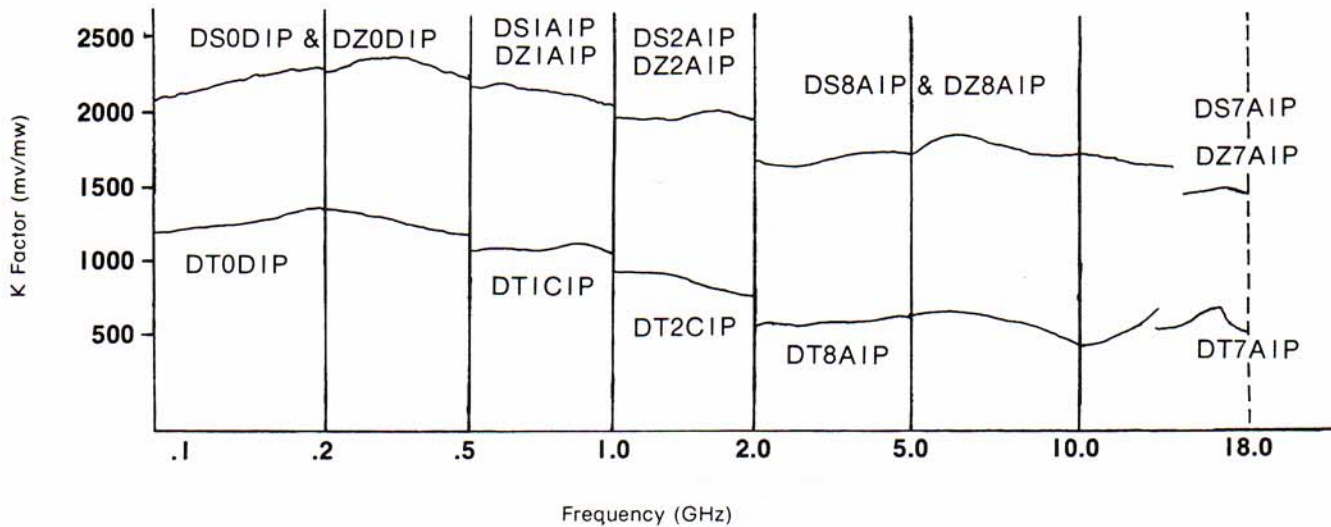
All detectors include all circuit elements necessary for operation. These elements are D.C. return, matching network, diode and bypass capacitor.

The safe power handling capability of Tunnel detectors is +17 dBm. For Schottky and Zero Bias Schottky detectors +20 dBm is the maximum safe input power.

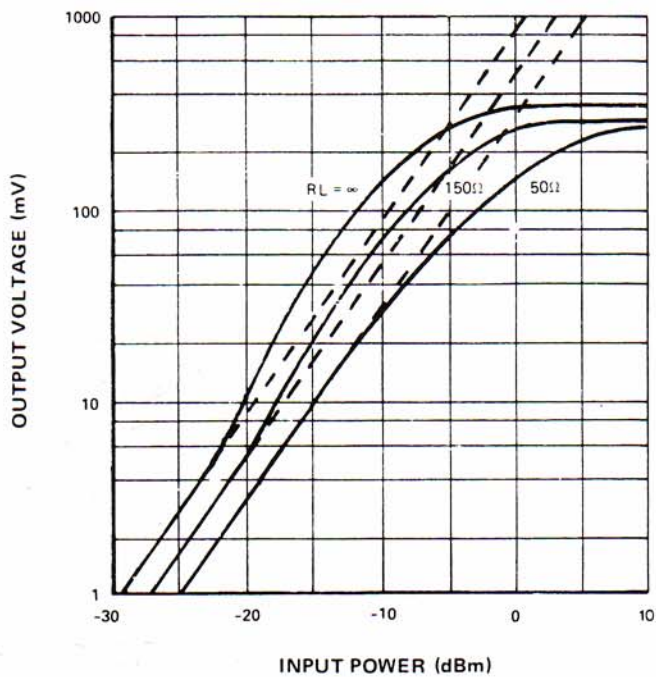
### MODEL NUMBER SYSTEM



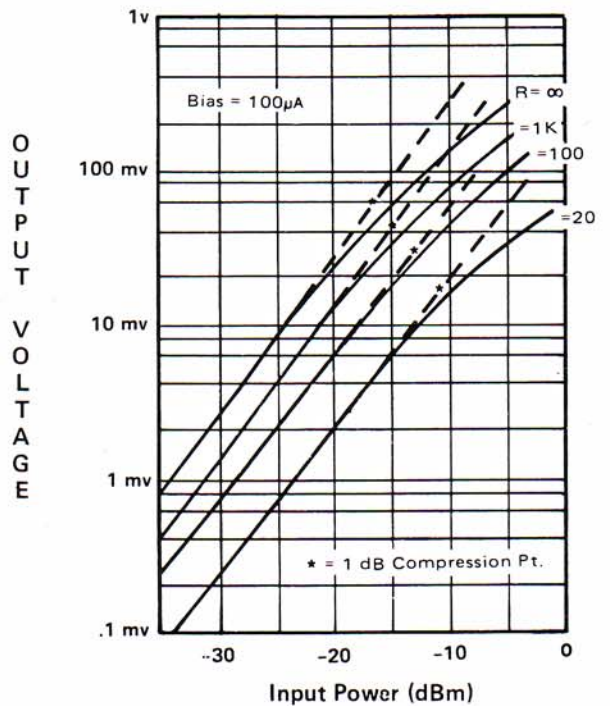
## TYPICAL PERFORMANCE CURVES



## TUNNEL



## SCHOTTKY



**TABLE 1:  
TYPE**

DT = Tunnel Detector  
 DS = Schottky Detector  
 DZ = Zero Bias Schottky Detector

**TABLE 2:  
VIDEO POLARITY**

P = Positive  
 N = Negative

**TABLE 3:  
VIDEO CONNECTOR**

1 = SMA Female  
 2 = SMB Male  
 3 = SMC Male  
 4 = SMA Male (SMA Female Input)  
 5 = Module Lead

**TABLE 4: TUNNEL DETECTOR SPECIFICATIONS**

Code Number	Frequency Range (GHz)	K Factor <sup>1</sup> (mv/mw) minimum	Flatness (±dB) maximum	VSWR <sup>5</sup> (-:1) Typical	Tss <sup>2</sup> (dBm) Typical	R.F. Bypass Capacitor	Package Style
0	0.1 to 0.5	800	0.4	4.0	-50	550 pf	D, H, L
1	0.5 to 1.0	1000	0.4	4.5	-50	100 pf	C, K, G
2	1 to 2	800	0.4	4.5	-50	50 pf	C, K, G
3	2 to 4	600	0.4	3.5	-49	30 pf	A
4	4 to 8	600	0.4	3.5	-49	30 pf	A
5	8 to 12	550	0.5	4.0	-49	30 pf	A
6	8 to 16	500	0.8	4.5	-48	30 pf	A
7	12 to 18	450	1.0	4.5	-48	30 pf	A
8	2 to 12	550	0.8	4.0	-49	30 pf	A
9	2 to 18	450	1.0	4.5	-48	30 pf	A

**TABLE 5: SCHOTTKY DETECTOR SPECIFICATIONS**

Code Number	Frequency Range (GHz)	K Factor <sup>1</sup> (mv/mw) minimum	Flatness (±dB) maximum	Tss <sup>2</sup> (dBm) Typical	R. F. Bypass Capacitor	Bias (micro amps)	Package Style
0	0.1 to 0.5	2000	0.5	-54	550 pf	100	D, H, L
1	0.5 to 1.0	2000	0.5	-54	100 pf	100	C, G, K
2	1 to 2	2000	0.5	-53	50 pf	100	C, G, K
3	2 to 4	2000	0.7	-53	30 pf	100	A
4	4 to 8	2000	0.7	-53	30 pf	100	A
5	8 to 12	2000	0.8	-52	30 pf	100	A
6	8 to 16	1500	1.0	-52	30 pf	100	A
7	12 to 18	1250	1.0	-51	30 pf	100	A
8	2 to 12	1250	1.2	-52	30 pf	100	A
9	2 to 18	1000	1.5	-51	30 pf	100	A

**TABLE 6: ZERO BIAS SCHOTTKY DETECTOR SPECIFICATIONS**

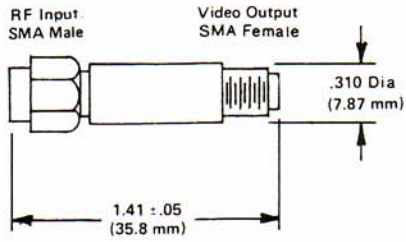
Code Number	Frequency Range (GHz)	K Factor <sup>1</sup> (mv/mw) minimum	Flatness (±dB) maximum	Tss <sup>2</sup> (dBm) Typical	R.F. Bypass Capacitor	Package Style
0	0.1 to 0.5	2000	0.5	-54	550 pf	D, H, L
1	0.5 to 1.0	2000	0.5	-54	100 pf	C, G, K
2	1 to 2	2000	0.5	-53	50 pf	C, G, K
3	2 to 4	2000	0.7	-53	30 pf	A
4	4 to 8	2000	0.7	-53	30 pf	A
5	8 to 12	2000	0.8	-52	30 pf	A
6	8 to 16	1500	1.0	-52	30 pf	A
7	12 to 18	1250	1.0	-51	30 pf	A
8	2 to 12	1250	1.2	-52	30 pf	A
9	2 to 18	1000	1.5	-51	30 pf	A

**NOTES:**

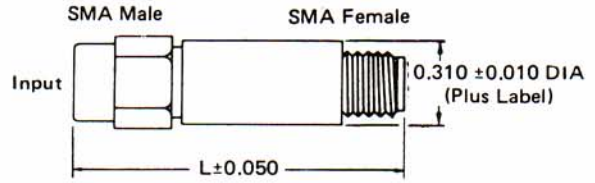
1. K factor is the small signal, open circuit signal sensitivity, Vout/Pin. Measurements are taken at -20 dBm.
2. BW = 2 MHz, NF = 3 dB.
3. Video Connector availability:  

<b>Package Style</b>	<b>Video Connector</b>
A	1, 2 & 3
B, C, D, E	1 & 4
F, G, H, I	1 only
J, K, L, M	5 only
4. Warranty applies to mount only, not the diode element. This element may be replaced at the factory for a nominal charge of \$50.00
5. RL = 100 ohms.
6. Specifications subject to change without notice.

**TABLE 7: PACKAGE STYLES**



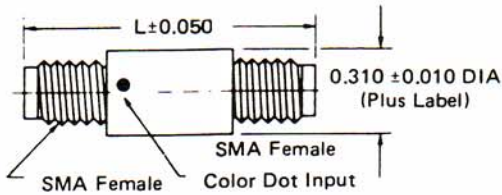
**STYLE A**



Finish: Gold Plate or Passivate Stainless Steel.

STYLE	L±0.050
B	1.10
C	1.20
D	1.30
E	1.45

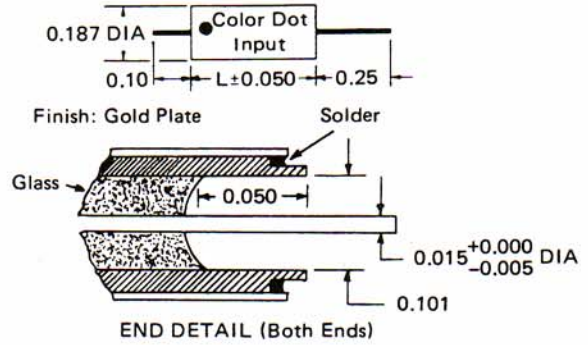
**SMA CONNECTOR STYLES**



Finish: Gold Plate or Passivate Stainless Steel.

STYLE	L±0.050
F	1.05
G	1.15
H	1.25
I	1.45

**SMA CONNECTOR STYLES**



STYLE	L±0.005
J	0.430
K	0.530
L	0.650
M	0.800

Finish: Gold Plate  
**CYLINDRICAL MODULE STYLES**

**ENVIRONMENTAL**

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

**CIRCUIT**

