

ZERO BIAS SCHOTTKY DETECTORS ML 7744-0000 SERIES

DESCRIPTION

Zero bias Schottky detectors offer generally higher voltage sensitivities over greater RF bandwidths when compared with biased Schottky detectors and require no external DC bias. However, the RF impedance of the diode is substantially higher than the biased Schottky or tunnel diode resulting in diminished input match to 50 ohms. These detectors are also more temperature sensitive and performance severely degrades below -20°C. The performance of this series of detectors can be modified with certain trade offs e.g. improved VSWR with reduced sensitivity or improved sensitivity for reduced bandwidth.

The usable RF input range of 72dB is from T_{ss} to +20dBm. Within this range square law response is from T_{ss} to -21dBm, linear response from -21dBm to +20dBm. Above +23dBm diode damage and subsequent burn out occurs.

SPECIFICATIONS @ +25°C

Frequency Range (GHz)	Voltage Sensitivity (K) (mV/mW) Min.	Flatness (dB) Max.	T_{ss} (dBm) Min.	RF Bypass Capacitance (pF) Typ.	Rise Time (ns) Typ.	Video Resistance (ohms) Typ.	Part Number
0.1 - 2.0	1700	±0.7	-52	100	20	3000	ML 7744X-0020
2.0 - 8.0	2000	±0.6	-52	20	10	3000	ML 7744X-0021
8.0 - 18.0	1600	±1.0	-52	20	10	3000	ML 7744X-0022
2.0 - 18.0	1600	±1.5	-52	20	10	3000	ML 7744X-0023

NOTES

- Available package styles for these detectors are A, D, J, H or M. To specify the package style please replace 'X' with the required letter in the above part numbers, e.g. for a coaxial package detector the part number is ML 7744A-0020.
- Detectors are normally supplied with negative (-) output voltage polarity, referenced to case ground, positive (+) output polarity is available for most parts. To specify positive output please add suffix 'P' to the end of the part number e.g. ML 7744A-0020P.
- Minimum open circuit voltage sensitivity (K) is the ratio of output voltage to input RF power and is measured at -20dBm RF input power into 30kohm external video load resistance (R_L).
- Tangential signal sensitivity (T_{ss}) is defined as the RF input power which produces an 8dB video output to noise voltage ratio and is measured using a video amplifier restricted to 2MHz bandwidth and having a noise contribution of 3dB maximum.
- Pulse rise time (t_r) is measured into an external load (R_L) of 100ohms with 12pF in parallel and 0dBm RF power applied.
- Video resistance is measured at -20dBm RF input power.
- Case operating temperature -20°C to +125°C
Storage temperature -55°C to +125°C.

TYPICAL PERFORMANCE

