

Tunnel Diode Detectors

7700A and 7700T Series

Description

The 7700A series features a standard cylindrical coaxial package with SMA connectors and internal hermetically sealed module containing microstrip hybridized circuit and chip devices.

The 7700T series provides capability for multiple, packaged tunnel diodes with coaxial matching structure and coaxial capacitor. DC return coil is included. Ease of diode selection and match (unit-to-unit) is an advantage of this package.

These detectors provide a usable 67 dB dynamic range from nominal T_{SS} of -50 dBm, through maximum saturation at +17 dBm. Within this range, square law transfer response is -50 dBm through -15 dBm, linear region is -15 dBm through +5 dBm and saturation +5 dBm through +17 dBm. Above +17 dBm RF input power diode damage and subsequent burnout occurs.

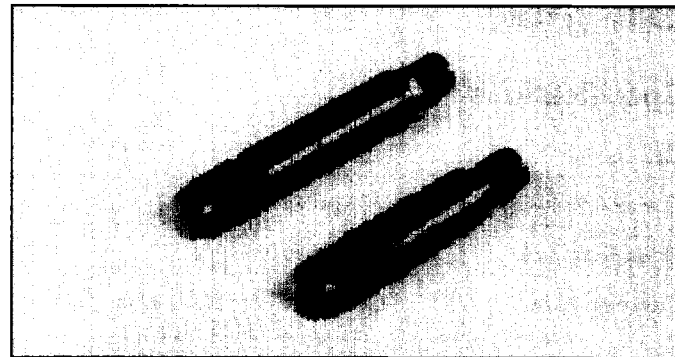
Tunnel diode detectors have excellent temperature stability, very fast pulse response time, good RF match and broadband frequency flatness. Open circuit voltage sensitivity (K) and high power burnout are less than silicon based Schottky detectors, but the tunnel detector's relatively low video impedance with no dc bias requirement enables dc and ac coupling with video and log video post amplifiers.

Specifications*

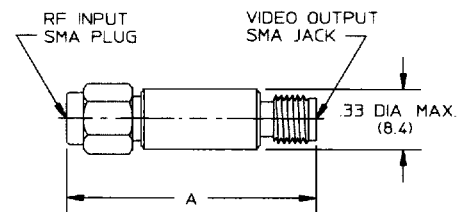
Frequency Range (GHz)	Voltage ² Sensitivity (K) Min. (mV/mW)	VSWR ³ Typ.	Flatness Max. (dB)	T_{SS} ⁴ Typ. (-dBm)	RF Bypass Capacitance Typ. (pF)	Rise ⁵ Time Typ. (nS)	Video ⁶ Resistance Typ. (Ohms)	Part Number ¹
0.1-2.0	800	2.0:1	±0.5	50	100	13	120	7700A-0020
	800	2.0:1	±0.5	50	100	13	120	7700T-0020
2.0-8.0	800	2.0:1	±0.6	50	20	4	120	7700A-0021
	700	2.3:1	±0.6	50	20	4	120	7700T-0021
8.0-18.0	500	2.3:1	±1.0	50	12	3	100	7700A-0022
	600	3.0:1	±1.0	50	12	3	100	7700T-0022
2.0-18.0	500	2.5:1	±1.5	50	20	4	100	7700A-0023
	500	3.0:1	±1.5	50	20	4	100	7700T-0023

Notes:

- Detectors are normally supplied with negative (-) output voltage polarity, referenced to case ground. Positive (+) output polarity is available for most parts. To designate, add suffix "P" to end of part numbers.
 - Minimum open circuit voltage sensitivity (K) in mV/mW is measured at -20 dBm RF input power into 30K ohm, external video load resistance (R_L).
 - VSWR measured at -20 dBm RF power input into 100 ohm, external video load resistance.
 - Tangential signal sensitivity (T_{SS}) is measured using a video amplifier restricted to 2 MHz bandwidth and having a noise contribution of 3 dB maximum.
 - Pulse rise time (t_r) in nanoseconds, is measured into an external load (R_L) of 100 ohms with 12 picofarads in parallel.
 - Video resistance is measured at -20dBm.
- * Performance curves can be found at the end of the Detector section.



Mechanical Outline



Series	Dim. A Inches (mm)
7700A Series	1.37 (34.8) Ref.
7700T Series	1.70 (43.2) Ref.

