

Modular Tunnel Diode Detectors

T-74-13-01

7700J and 7700N Series

Description

The 7700J series provides a minimized, hermetically sealable, 50 ohm module designed especially for TEM stripline and microstrip media. These detectors are ideal components for dense packaging requirements.

The 7700N series features additional circuit area for increased RF-to-video isolation (typically greater than 21 dB) as well as space for support functions including RF limiting, matching and video protection. Consult factory with custom requirements.

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	7700J-0020
	800	2.0:1	±0.5	50	100	13	120	7700N-0020
2.0-8.0	800	2.0:1	±0.6	50	20	4	120	7700J-0021
	800	2.0:1	±0.6	50	20	4	120	7700N-0021
8.0-18.0	600	2.3:1	±1.0	50	12	3	100	7700J-0022
	600	2.3:1	±1.0	50	12	3	100	7700N-0022
2.0-18.0	500	2.5:1	±1.5	50	20	4	100	7700J-0023
	500	2.5:1	±1.5	50	20	4	100	7700N-0023

Notes:

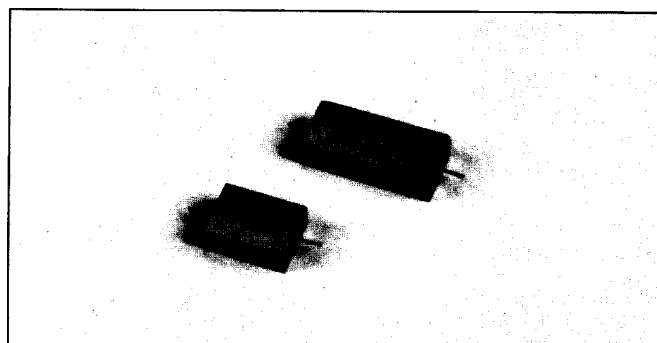
1. Detectors are normally supplied with negative (-) output voltage polarity, referenced to case ground. Positive (+) output polarity is available for most parts. To designate, add suffix "P" to end of part numbers.
2. Minimum open circuit voltage sensitivity (K) in mV/mW is measured at -20 dBm RF input power into 30K ohm, external video load resistance (R_L).
3. VSWR measured at -20 dBm RF power input into 100 ohm, external video load resistance.

4. 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.

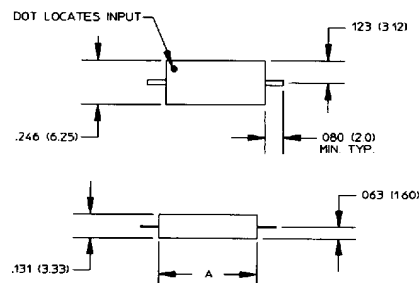
5. Pulse rise time (t_r) in nanoseconds, is measured into an external load (R_L) of 100 ohms with 12 picofarads in parallel.

6. 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)
7700J Series	.330 (8.4)	
7700N Series	.532 (13.5)	

Leads are $\pm .002$ (0.3) diameter (std.).
May be supplied as optional tabs.

