

# Modular Biased Schottky Limiter Detectors

T-74-13-01

## 7715J and 7715N Series

### Description

The 7715J series provides a minimized, hermetically sealable, 50 ohm module designed especially for TEM stripline and microstrip media. These detectors make ideal components for dense packaging requirements.

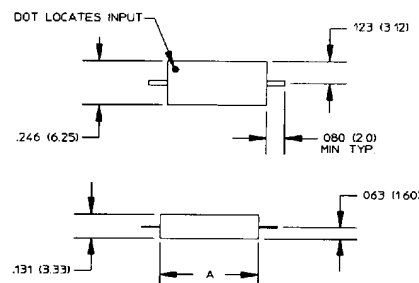
The 7715N series features additional circuit area for increased RF-to-video isolation (typically greater than 21 dB) as well as space for support functions, including padding, matching and video protection. Consult factory with custom requirements.

The usable RF input power range is from  $T_{SS}$  through +10 dBm, which includes both square law and linear regions for the biased Schottky detector. Power levels greater than +10 dBm up to +30 dBm, CW and +50 dBm pulsed (1.0 microsecond, 1% duty cycle) are reflected back to the source by the shunt limiter.

Below limiting, these detectors perform much the same as the 7709 series, with square law region from  $T_{SS}$  to approximately -15 dBm and linear region from -15 dBm through approximately +6 dBm. Some shift/extension of these ranges may be achieved with multiple diode circuits, available on special order. Consult factory.

The high sensitivity (K) and RF power handling of these detectors make them particularly useful in signal processing, RF power monitors, pulse detection, and AGC or leveling loops.

### Mechanical Outline



Series	Dim. A	Inches	(mm)
7715J Series	.330	(8.4)	
7715N Series	.532	(13.5)	

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

### Specifications\*

Frequency Range (GHz)	Voltage <sup>2</sup> Sensitivity (K) Min. (mV/mW)	Flatness Max. (dB)	$T_{SS}$ <sup>3</sup> Typ. (-dBm)	RF Bypass Capacitance Typ. (pF)	Rise <sup>4</sup> Time Typ. (nS)	Video <sup>5</sup> Resistance Typ. (Ohms)	Part Number <sup>1</sup>
0.1-2.0	1800	$\pm 0.5$	51	100	50	300	7715J-0020
	1800	$\pm 0.5$	51	100	50	300	7715N-0020
2.0-8.0	2000	$\pm 0.6$	51	20	15	300	7715J-0021
	2000	$\pm 0.6$	51	20	15	300	7715N-0021
8.0-18.0	1800	$\pm 1.0$	51	12	10	300	7715J-0022
	1800	$\pm 1.0$	51	12	10	300	7715N-0022
2.0-18.0	1800	$\pm 1.5$	51	20	15	300	7715J-0023
	1800	$\pm 1.5$	51	20	15	300	7715N-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 with 100 microamps forward bias applied via video port, with RF input power of -20 dBm and external video load resistance ( $R_L$ ) of 30K ohms.
3. 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.

4. Pulse rise time ( $t_r$ ) in nanoseconds, non-limiting, is measured into an external load ( $R_L$ ) of 1.0K ohms with 12 picofarads in parallel and 100 microamps bias applied through 30K ohm series resistor.
5. Video resistance is measured at -20dBm with 100  $\mu$ A bias.
6. Video protection against ESD and transients is available. One or more shunt diodes clamp any reverse voltages present at video output port.

\* Performance curves can be found at the end of the Detector section.

