



## 7810 Video Receiver Module

The 7810 video receiver is a single-mode fiber pigtailed module featuring a low-noise, impedance-matched broadband photodiode and RF amplification

The device receives optical analog and/or digital signals for a range of video broadcast options, and delivers the corresponding RF electrical output. The wide bandwidth supports the delivery of up to 110 CATV analog signals or a combination of analog and digital channels (80/30 for example), including HDTV broadcast.

The 7810 exhibits excellent distortion performance with values well above standards over the entire bandwidth and temperature specifications (40 MHz – 1000 MHz, -40 °C to +85 °C).

Moreover, the proprietary impedance-match circuitry between the photodetector and RF amplification stages resolves a number of OEM design obstacles with very low noise performance value, typically less than 4.5 pA/√Hz.

The 7810 video receiver can be used in both 1310 nm and 1550 nm applications being useful at different points of a given network.

The 7810 is compliant with all criteria of the Restriction of the Use of Hazardous Substances in Electrical and Electronic Equipment (RoHS) guidelines 2002/95/EC.

### Applications

- Video signal distribution in HFC and FTTx nodes
- Video overlay in passive optical networks (PON)

### Features

- Wide 40 MHz – 1000 MHz bandwidth supports as many as 110 CATV analog channels or a combination of analog and digital channels including HDTV broadcast.
- Excellent RF frequency and distortion characteristics for high linearity
- Low noise (4.5 pA/√Hz typ.) low power dissipation (1.35 W max.) as well as high RF output
- RoHS compliant
- Internal proprietary impedance match circuitry (75Ω)
- Robust small package with single-mode fiber pigtail and connector options
- Wide operating temperature range, -40 °C to +85 °C



*For more information on this and other products:*

Contact Sales at Emcore 626-293-3400, or visit [www.emcore.com](http://www.emcore.com).

### Absolute Maximum Ratings

Stresses in excess of the absolute maximum ratings can cause permanent damage to the device. These are absolute stress ratings only. Functional operation of the device is not implied at these or any other conditions in excess of those given in the operational sections of the data sheet. Exposure to absolute maximum ratings for extended periods can adversely affect device reliability

Parameter	Symbol	Min	Max	Unit
Operating Temperature Range	T <sub>OP</sub>	-40	85	°C
Storage Temperature Range	T <sub>stg</sub>	-40	85	°C
Humidity at 85 °C	RH	--	95	%
Shock (1 ms duration; half sine wave: X, Y, Z axis)	--	--	100	g
Vibration (Single Sine)	--			
5 MHz – 100 MHz, 0.10 Oct/Min.		--	0.5	g
100MHz – 500 MHz, 0.25 Oct/Min.		--	3.0	g

Note: For all tables, typical values are performed at 25 °C; min and max values are performance vs. temperature.

### Characteristics

**Table 1. Electrical/Optical Characteristics**

Parameter	Symbol	Min	Typ	Max	Unit
Optical Power	P <sub>IN</sub>	-10*	2	4*	dBm
Power Supply					
Bias, Pin 1	V <sub>CC</sub>	--	15	--	V
Bias, Pin 2	V <sub>CC</sub>	--	12	--	V
Wavelength	λ	1200	1310/1550	1600	nm
Responsivity	--	--	>0.85 at 1310 nm >0.95 at 1550 nm	--	mA/mW mA/mW
Dissipation	P <sub>DISS</sub>	--	1.25	1.35	W

\* Depends on channel loading. Refer to the 7810 Video Receiver Module Application Note.

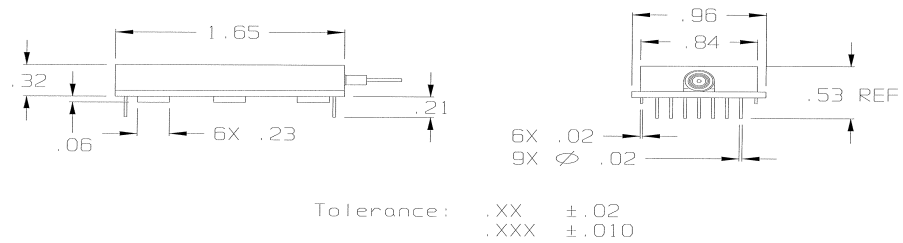
**Table 2. RF Characteristics**

Parameter	Symbol	Min	Typ	Max	Unit
Frequency Response	F	40	--	1000	MHz
Gain	G	16	17	18	dB
Ripple	--				
40 MHz – 859 MHz			± 0.5	± 0.6	dB
860MHz – 1 GHz			± 0.75	± 0.85	dB
Output Return Loss	RL	-13	-11	-10	dB
Noise	--	4.0	4.5	5.0	pA/√Hz
Distortion (absolute value): <sup>1</sup>					
Composite Second-Order	CSO				
40 MHz – 859 MHz		67	70	--	dBc
860 MHz – 1 GHz		65	67	--	dBc
Composite Triple beat	CTB	82	85	--	dBc

1. Two laser test at 1310 nm/1550 nm. Each laser has 40% modulation index. Total received optical power is 2 dBm. Distortion products measured at 80 MHz, 450 MHz, 600 MHz, 745 MHz, and 850 MHz.

### Outline Diagram

Dimensions are in inches.



Pin	Function
1	15V
2	12V
3	Ground
4	N
5	No connection
6	Case Ground
7	Case Ground
8	Data Output (inverse)
9	Case Ground

**Ordering Information**

Contact EMCORE Corp., for ordering information on this or any other product at (626) 293-3400.

**Table 4. Ordering Information**

<b>Device Code</b>	<b>Description</b>
7810N060	7810A no connector, 0.60 m fiber
7810N115	7810A no connector, 1.15 m fiber
7810S060	7810A SC/APC Connector 0.60 m fiber
7810S115	7810A SC/APC Connector 1.15 m fiber
7810F060	7810A FC/APC Connector 0.60 m fiber
7810F115	7810A FC/APC Connector 1.15 m fiber

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