RX192DL PIN Receiver Module

Multiplex, Inc.
Photonics for Communications

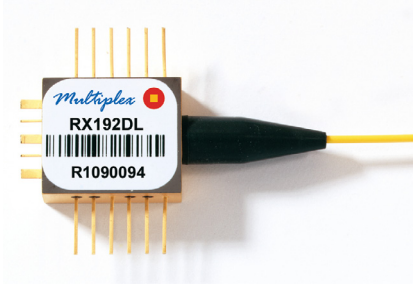
High sensitivity *optical receiver module with an integrated output limiting amplifier which is optimized for 10 Gb/s point-to-point operation.*

May 2002

Features:

- RX192DL: A member of the Multiplex Receiver Family of APDs, PINs, single and differential output products: **High sensitivity** optical receiver module including PIN diode, low noise TIA and a limiting amplifier in a small form factor, low profile package.
- G-S-G-S-G lead configuration (patent pending) for ease of interface with DeMUX chipsets.
- Low power consumption.
- Differential output.
- Eliminates RF connector.
- Non-inverted, AC-coupled or DC coupled output
- Case Operational Temperature: -20°C to + 70°C.

PIN



Performance Specifications:

Parameters	Unit	Worst Case	Typ	Best Case	Comments/Test Conditions
* Receiver sensitivity[1]	dBm	-19	-20	-	10 Gb/s. BER at $1x10^{-10}$. λ = 1.5µm
* Maximum operational optical input power	dBm	-	0	-	λ=1.5µm; error free operation, at Room Temperature. BER<10^{-14}

Parameters	Unit	Min	Typ	Max	Comments/Test Conditions
* PIN responsivity	A/W	0.75	> 0.8	-	λ=1.5µm
TIA transimpedance gain	Ω	1K	1.2K	-	Small signal gain
TIA 3dB Bandwidth	GHz	8	9	-	Small signal frequency response
Receiver low frequency cutoff (3dB)	kHz	-	< 50	100	-20°C to +70°C
TIA transfer function phase linearity deviation	degree	-	< 10	20	(100 kHz to 8 GHz)
TIA transfer function amplitude peaking	dB	-	< 1	1.5	(100 kHz to 9GHz)
* Input optical reflectance[2]	dB	-	-	-27	For λ=1.3µm and 1.5µm; excluding reflection from optical connector.
Output Rise and Fall Time	ps	-	< 40	-	10% - 90%
Total Power consumption	mW	-	-	750	

* Measured on every device.

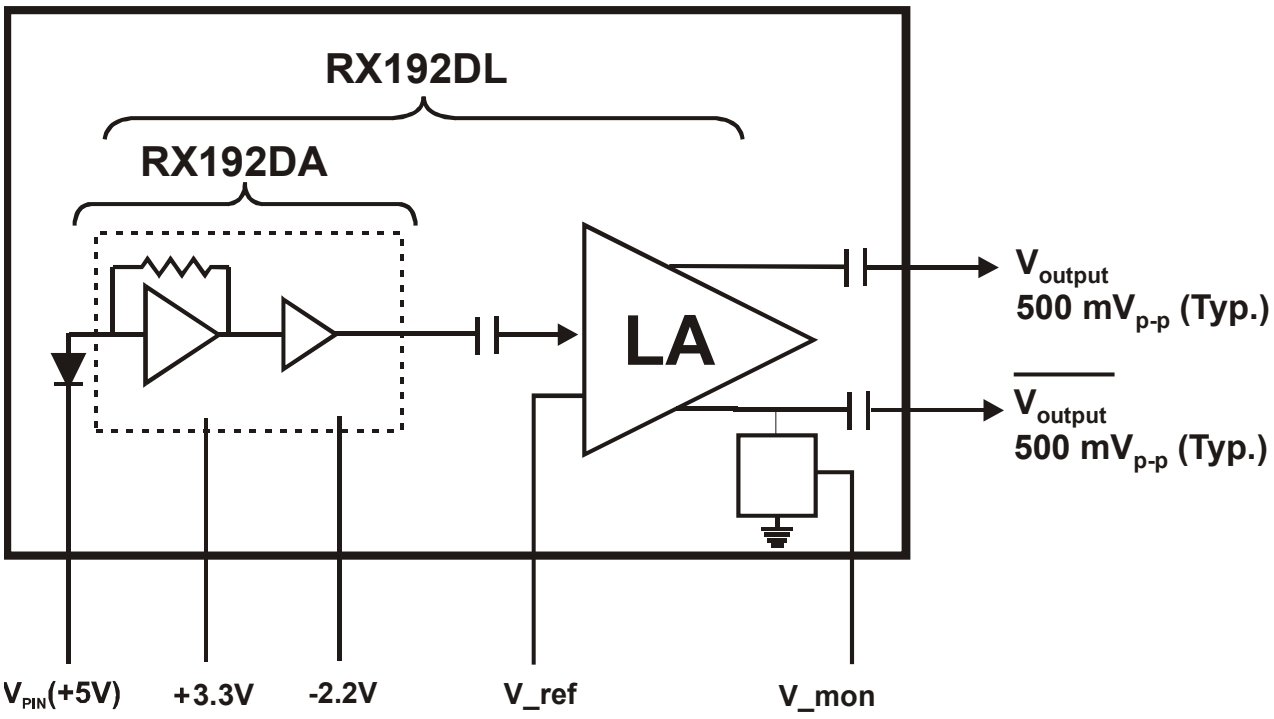
[1] A BER Plot is provided with every device.

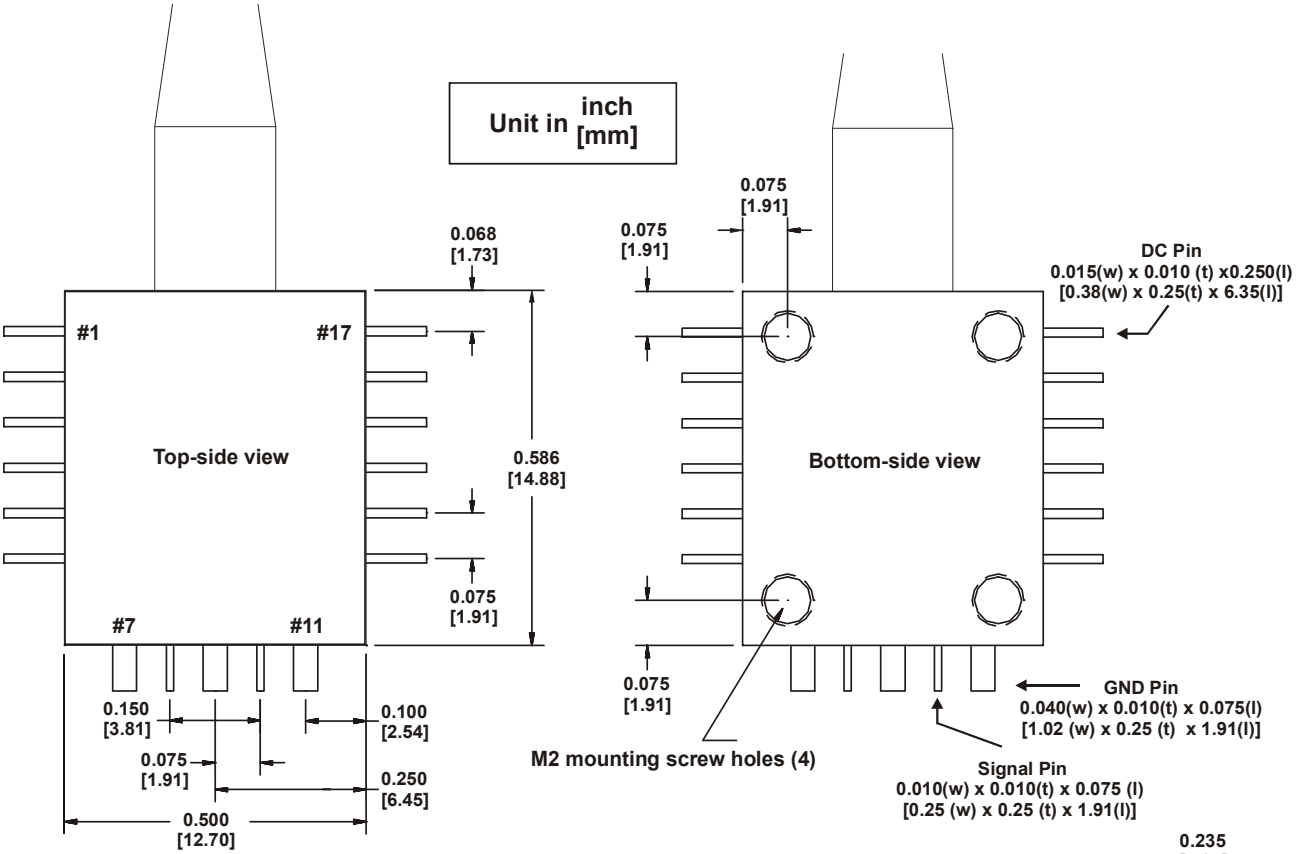
[2] Screened on every device.

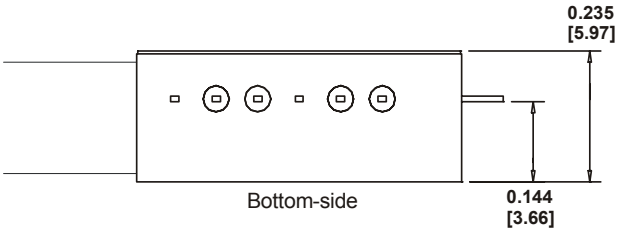
DC Operating Characteristics (RX192DL):

Parameters	Unit	Min	Typ	Max	Current (mA; Max)
PIN diode bias (Note-1)	V	+3.3	+5	+10	-
Positive receiver module bias	V	+3.0	+3.3	+3.6	110
Negative receiver module bias	V	-2.4	-2.2	-2.0	160

Note-1. All tests were performed with 5V reverse bias for the PIN photo diode. Increasing the PIN reverse bias will, in general, enhance the receiver sensitivity slightly. Higher reverse bias voltage tends to increase the dark current slightly, however, this increase should not cause any receiver sensitivity degradation.







DC Pins

Pin #	Function		Pin #	Function
1	GND		17	GND
2	V_PD		16	NC
3	-2.2V		15	+3.3V
4	GND		14	GND
5	-2.2V		13	V_ref
6	NC		12	V_mon

RF OUTPUT PINS:

Pin #	7	8	9	10	11
Function	GND	$\overline{Q}$	GND	Q	GND

RX192DL Optical Receiver Package

Ordering Code Options for PIN Receiver Product Family:

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Part Number Description	Output Coupling		Connector						Fiber Lengths (meters) (Single Mode Fiber)			Low Optical Signal to Noise Optimization (with W versions only)
	AC	DC	Electrical			Optical			0.6	1.0	1.5	
Ordering Symbol	**XA**	**XD**	**S (SMA)**	**G (GPO, Standard)**	**K**	**SC**	**FC**	**LC**	**06**	**10**	**15**	**- O**
MTRX192AR *RF Connector Pkg, Single Analog Output, High Sensitivity*	X	X	X	X	X	X	X	X	X	X	X	
MTRX192AW *RF Connector Pkg., Single Analog Output, Low OSNR or 12.5 Gb/s*	X	X	X	X	X	X	X	X	X	X	X	X
MTRX192L *RF Connector Pkg., Single Digital Output, High Sensitivity*	X	X	X	X	X	X	X	X	X	X	X	
MTRX192LW *RF Connector Pkg., Single Digital Output, Low OSNR or 12.5 Gb/s*	X	X	X	X	X	X	X	X	X	X	X	X
RX192DA *CoplanarPkg., Differential, Analog Output*	X	X	-	-	-	X	-	X	*	*	-	
RX192AW *Coplanar-Differential Pkg., Single Analog Output, Low OSNR or 12.5 Gb/s*	X	X	-	-	-	X	-	X	*	*	-	X
RX192DL *Coplanar Pkg., Differential, Digital Output*	X	X	-	-	-	X	-	X	*	*	-	
RX192DLW *Coplanar Pkg., Differential, Digital Output, Low OSNR or 12.5 Gb/s*	X	X	-	-	-	X	-	X	*	*	-	X

*The LC-connectorized pigtail on these packages is offered with a 0.6 meter pigtail length.
*The SC-connectorized pigtail on these packages is offered with a 1.0 meter pigtail length

The following examples are given for ease of ordering:

Example 1: For a PIN receiver in a coplanar package, with differential digital output, AC coupled and LC optical connector (0.6 meter pigtail length only) for high sensitivity 10Gb/s applications:

Multiplex Ordering Code: RX192DLXASC06

Example 2: For a PIN receiver in an RF-connector package, with a single analog output, DC coupled, GPO electrical connector, SC optical connector (1 meter fiber pigtail only) and optimized for low OSNR (10 Gb/s) applications:

Multiplex Ordering Code: MTRX192AWXDGSC10-O

Example 3: For a PIN receiver in a coplanar package, with differential digital output, DC coupled, SC optical connector (1 meter fiber pigtail only), and optimized for 12.5 Gb/s applications:

Multiplex Ordering Code: RX192DLWXDSC10

For Product Inquiries please contact:

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