AC6984

40Gb/s High Overload Receiver Module

The AC6984 is a high performance 40 Gbps Receiver Module for the fiber optic telecommunications market.

The universal 40G Receiver leads the industry with a sensitivity of -11dBm. It features +3dBm optical overload, bandwidth greater than 40 GHz and provides efficient operation at 43.5Gbps, 18Gbps, 12.5Gbps, or 10.7Gbps.

The AC6984 40 Gbps Receiver Module incorporates a high-performance waveguide photodetector with a pre-amplifier for excellent performance at 40 Gbps. The receiver is manufactured on-site at Archcom's Indium Phosphide (InP) wafer fabrication facility.

The extremely high sensitivity and high gain of Archcom's new 40 Gbps module makes it ideally suited for test and measurement equipment, for transponders and telecom systems, and for defense applications. Compatible with conventional surface illuminated pin receivers, the AC6984 comes in a high-speed 14-pin butterfly package with V-connector RF output and single-mode fiber pigtail.

Features

- World-leading performance
- Industry leading sensitivity
- 14dB dynamic range
- High speed, efficient InP detector
- Low power consumption
- Conversion gain of 480 V/W

Applications

- Test and measurement equipment
- Transponder applications
- DWDM, SONET/SDH
- Metro and Long Haul Networks (RZ/NRZ)
- Very short reach

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Optical Characteristics (25 °C case temperature)

Parameter	Symbol	Min	Typ	Max	Unit
Sensitivity[1]	P_{LOW}	-	-11	-10	dBm
Input Overload[1]	P_{HIGH}	+3	-	-	dBm
Conversion gain[2]	-	450	480	-	V/W
Bandwidth (-3dBm)	f_{HI}	40	45	-	GHz
Low frequency cutoff	f_{LO}	-	-	100	KHz
Group delay variation (2.5 Ghz to 30 GHz)	GDV	–	±25	±35	ps
Group delay variation (30 GHz to 45 GHz)	GDV	–	±35	±40	ps
Polarization sensitivity	PDL	-	0.1	0.2	dB
Dark current	-	-	0.1	0.35	µA

1 (10^{-12} BER, PRBS $2^{31}-1$)
2 Conversion gain is defined as the ratio of output voltage swing (peak-peak) to optical power swing (OMA).

Electrical Characteristics (25 °C case temperature)

Parameter	Symbol	Min	Typ	Max	Unit
Detector supply bias voltage	V_{PD}	4	5	6	V
Preamp supply voltage	V_{CC}	4.75	5	5.25	V
Maximum Output voltage Swing (peak to peak)	V_O	-	250	-	mV
Power dissipation	P_{DISS}	-	325	350	mW

Absolute Maximum Ratings (25 °C case temperature)

| Parameter	Symbol	Min	Max	Unit
Operating temperature range	T_{OP}	-5	80	°C
Storage temperature	T_{STG}	-40	85	°C
Humidity range	RH	5	95	%
Preamp supply voltage	V_{CC}	-	6	V
Detector supply voltage[1]	V_{PD}	-	7	V
Optical input power (Vpd=5V)	P_{IN}	-	+6	dBm
Fiber bend radius	-	35	-	mm
Lead soldering time at 250°C	-	-	10	Sec

1 Under dark conditions

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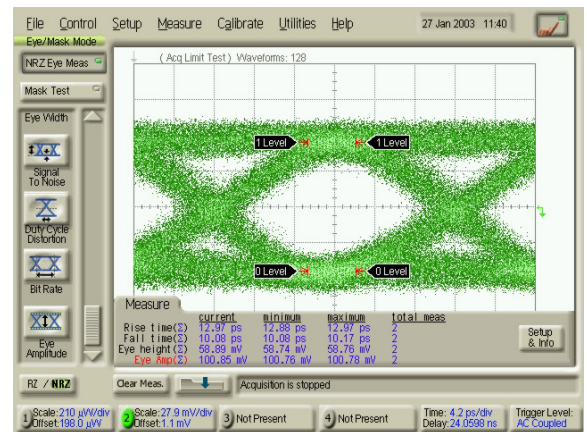## 40 Gb/s High Overload Receiver Module

Quality

Archcom Technology has established full capability for both environmental stressing and failure analysis. In addition, Archcom Technology has focused on qualifying Core Manufacturing Technologies and meeting standards for hermetically packaged components (GR-486-CORE, GR-63-CORE). Quality and reliability is considered one of the most important success factors for Archcom Technology.
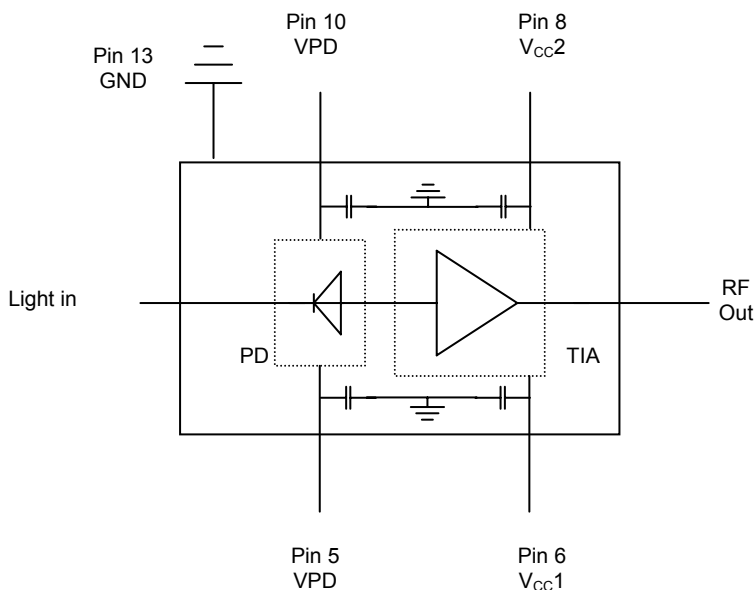
40 Gb/s Eye Diagram
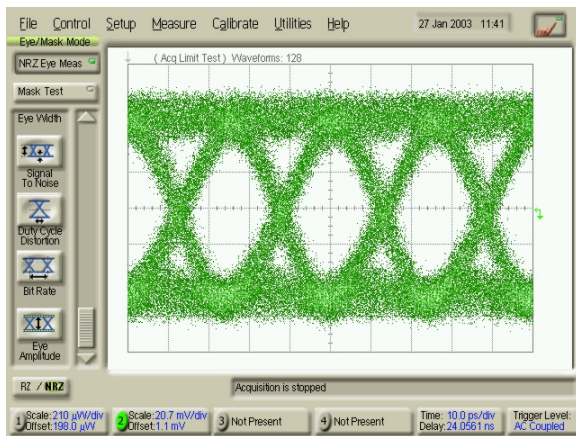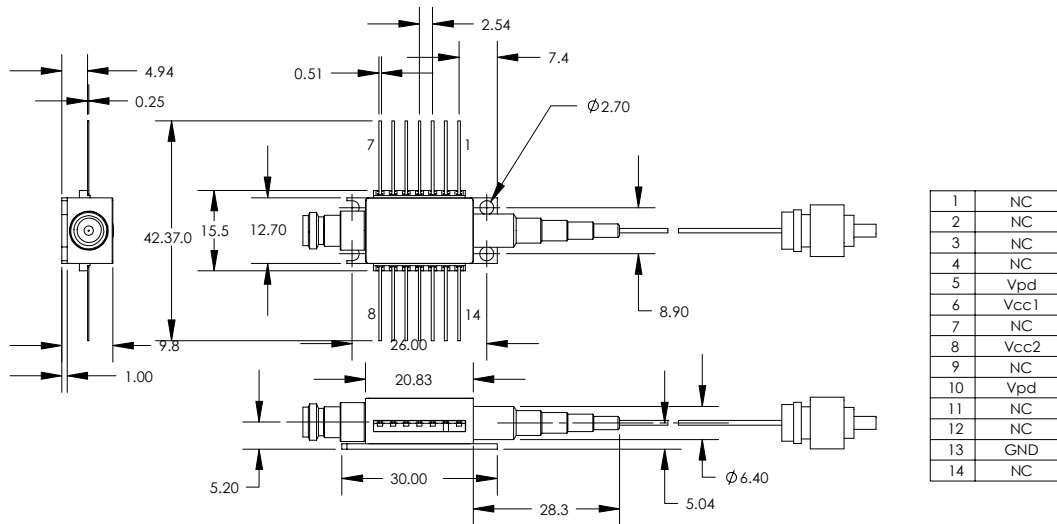

-10dBm input

Circuit Diagram

Pin Information

Pin No.	Function
1	NC
2	NC
3	NC
4	NC
5	V_{PD}
6	$V_{CC}1$
7	NC
8	$V_{CC}2$
9	NC
10	V_{PD}
11	NC
12	NC
13	GND
14	NC

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Outline Diagram

1	NC
2	NC
3	NC
4	NC
5	Vpd
6	Vcc1
7	NC
8	Vcc2
9	NC
10	Vpd
11	NC
12	NC
13	GND
14	NC

Ordering Information

AC6984	40Gb/s High Overload Receiver Module

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