Preliminary

Discovery Semiconductors, Inc.

An ISO 9001:2000 Certified Company

Data Sheet
March 2002

DSC-R404HG: High Gain 40 Gb/s Optical Receiver

Description:

With conversion gain of 150 V/W, this broadband optical receiver is ideal for digital 40 Gbits/s transmission and analog RF-over-fiber from L to K bands. High responsivity of 0.6 A/W and 250-ohm transimpedance gain in a small footprint package meet the needs of high-channel count DWDM systems.

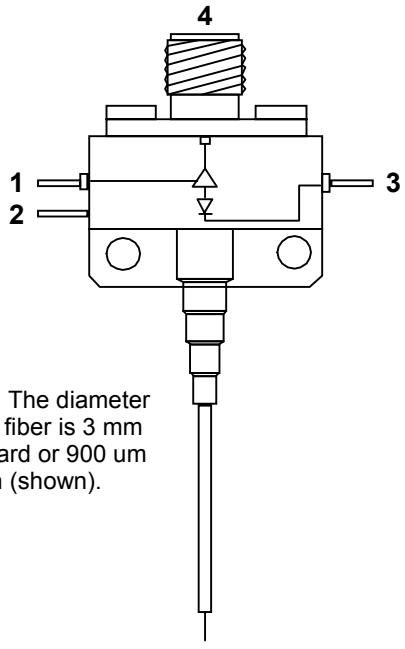
Features:

- Ultra-wide bandwidth: 100 KHz to 32 GHz
- High responsivity for 1310, S, C & L wavelength bands
- Low noise: 20 pA/√Hz
- Low optical PDL @ 1550 nm < 0.12 dB
- Low electrical return loss < - 10 dB
- Low power dissipation: 200 mW
- Small foot print miniature package
- Hermetically sealed and built following GR-468
- Uni-polar power supply

Applications:

- SONET/SDH OC768/STM-256 transport systems
- 40/43 Gbit/s NRZ formats
- Analog RF
- Use with or without optical pre-amplification

Block Diagram:



Note: The diameter of the fiber is 3 mm standard or 900 um option (shown).

Pin Connections:

1.	Bias Voltage Amplifier V_{dd} = + 6 V
2.	Case Ground [1]
3.	Bias Voltage Photodiode V_{bd} = + 6 V [2]
4.	RF Signal Out [3]

[1] Observe Polarities
ALWAYS connect ground FIRST, either at case or by RF connection, and ALWAYS disconnect ground LAST.

[2] Set $V_{bd} = V_{dd}$ -- no special turn-on sequence is needed.

[3] Needs DC block for connecting the device to the next stage.

Electrical / Optical Specifications:

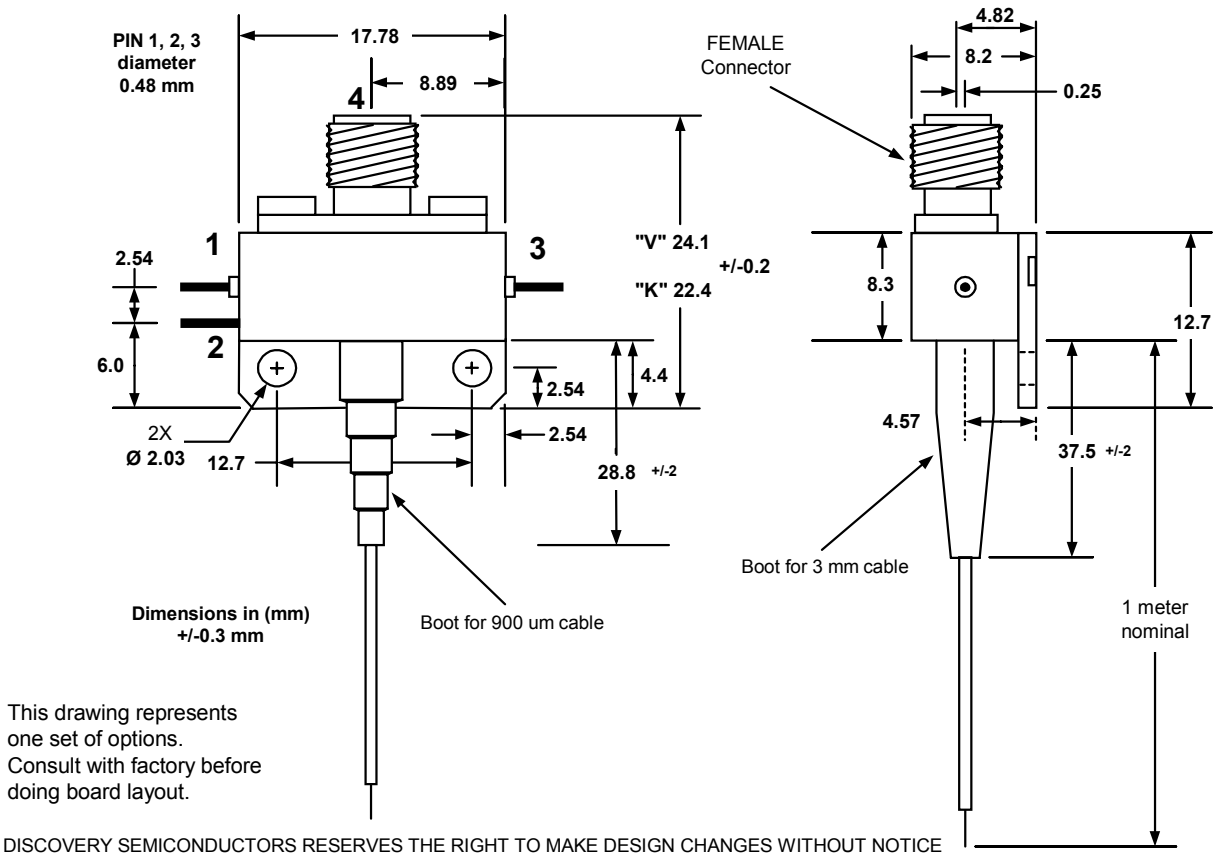
Parameter		Min	Typical	Max	Units
Sensitivity (PRBS:2^{23}-1, BER 10^{-9})		- 9	- 12	-	dBm
Responsivity	@ 1550 nm	0.5	0.6	-	A / W
	@ 1310 nm	0.5	0.6	-	
Conversion Gain @ 1550 nm		120	150	-	V / W
Transimpedance		-	250	-	Ω
Gain Flatness (Relative To Mean)		-	+/- 1	-	dB
Logic Sense		-	Inverting	-	-
Low Frequency Cutoff		50	100	-	KHz
Noise		20	25	-	pA / √Hz
Power Dissipation		-	< 200	-	mW
Electrical Return Loss		-	10	-	dB
Optical Return Loss		+25	-	-	dB
Wavelength Response Range		800	-	1650	nm
V_{dd} Bias (Amplifier)		4	6	6.5	V
V_{bd} Bias (Photodiode)		4	6	6.5	V
Optical Overload (BER < 10^{-9}) (1)		-	6	-	dBm Peak
Optical PDL @ 1550 nm (2)		-	0.06	0.12	dB

Absolute Maximum Ratings:

Operating Temperature Range	0 to +70	°C
Storage Temperature Range	-40 to +85	°C
Photodiode Bias V_{bd} (3)	10	V
Max (Amplifier Bias) V_{dd}	6.5	V
Optical Input Power Damage Threshold (1)	8	dBm Peak
Lead Soldering Temperature (10 s)	250	°C

(1) Assumes 50% duty cycle
(2) Optical PDL measured with the Agilent measurement system
(3) Set V_{bd} equal V_{dd}

Dimensioned Outline Drawing:



DISCOVERY SEMICONDUCTORS RESERVES THE RIGHT TO MAKE DESIGN CHANGES WITHOUT NOTICE

Optical Input:

Connector	Polish	Fiber	Buffer	Length
FC	UPC or APC	SMF28	3 mm std 900 µm option	1 meter
SC				Option
others by request		50 mm Graded Index		1 meter

Electrical Output:

"V" type female standard
"V" type male option*

* V connector is a trademark of Anritsu Company

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Specifications are subject to change without notice.