Discovery Semiconductors, Inc.
An ISO 9001:2000 Certified Company

Data Sheet
March 2002

DSC-R404AC & R404DC: 40 Gb/s Optical Receivers

Description:

Broadband optical receiver for 40 Gbits/s transmission and RF over fiber from L to Q/V bands. This receiver offers conversion gain of 35 V/W and low electrical return loss.

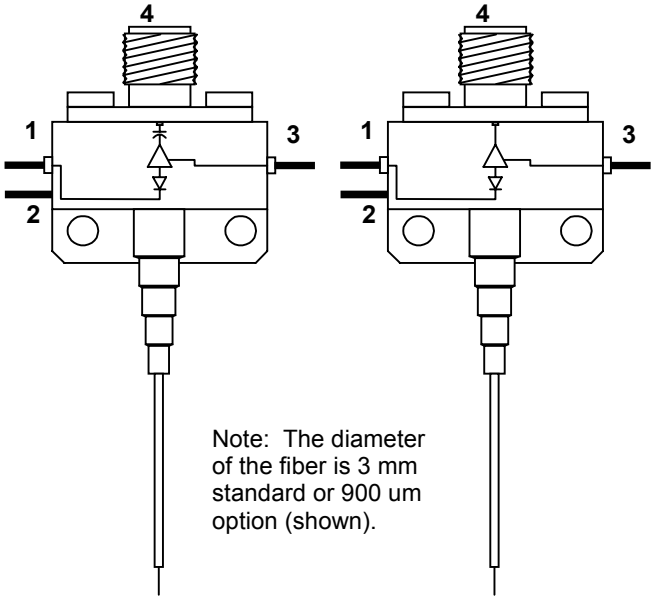
Features:

- Ultra wide bandwidth: 100 KHz to 35 GHz (DSC-R404DC)
- Small foot print miniature package
- Hermetically sealed and built following GR-468 standards
- Low electrical return loss
- Low Optical PDL @ 1550 nm

Applications:

- OC768 40 Gbit/s with optical preamplification
- SONET/SDH
- Analog RF

Block Diagram:



R404AC R404DC

Pin Connections:

1.	Bias Voltage (Photodiode & Amplifier) V_{dd} = +5 V
2.	Case Ground (1)
3.	Bias Voltage Amplifier/Gate R404AC: V_{ss} = -0.5 V R404DC: V_{ss} = -1 V
4.	RF Signal Out (2)

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

(2) Needs DC block (for R404DC only)

Electrical / Optical Specifications:

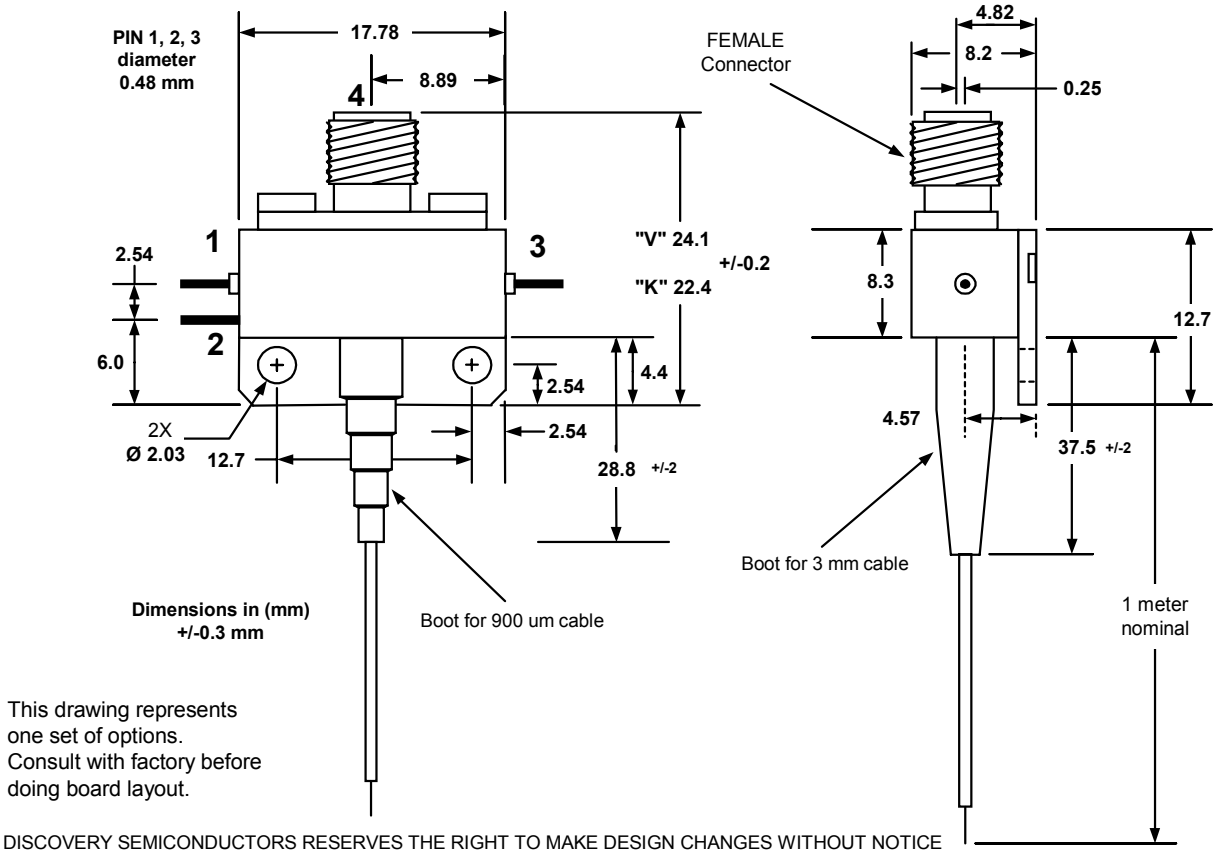
Parameter		Min	Typical	Max	Units
Responsivity	@ 1550 nm	0.5	0.6	-	A / W
	@ 1310 nm	0.5	0.6	-	
Power Gain of Amp.		7	8	-	dB
Transimpedance		-	60	-	Ω
Gain Flatness (Relative To Mean)		-	+/- 1	-	dB
Logic Sense		-	Inverting	-	-
Bandwidth		32	35	-	GHz
Low Frequency Cutoff	R404AC	-	5	-	MHz
	R404DC	50	100	-	KHz
Noise		20	25	-	pA / √Hz
Power Dissipation		-	400	-	mW
Electrical Return Loss		-	10	-	dB
Optical Return Loss		+25	+30	-	dB
Wavelength Response Range		800	-	1650	nm
V_{dd} Bias (Diode & Amplifier)		3	5	-	V
V_{ss} Bias (Amplifier/Gate)	R404AC	-	-0.5	-	V
	R404DC	-	-1	-	
Optical Overload (BER < 10^{-9}) (1)		-	10	-	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
Amplifier/Gate Bias V_{ss}	0	V
Max (Diode & Amplifier Bias) V_{dd}	+7	V
Max Amp Current I_{dd}	170	mA
Optical Input Power Damage Threshold (1)	13	dBm Peak
Lead Soldering Temperature (10 s)	250	°C

(1) Assumes 50% duty cycle
(2) Optical PDL measured with the Agilent measurement system.

Dimensioned Outline Drawing:



DISCOVERY SEMICONDUCTORS RESERVES THE RIGHT TO MAKE DESIGN CHANGES WITHOUT NOTICE

Optical Input:

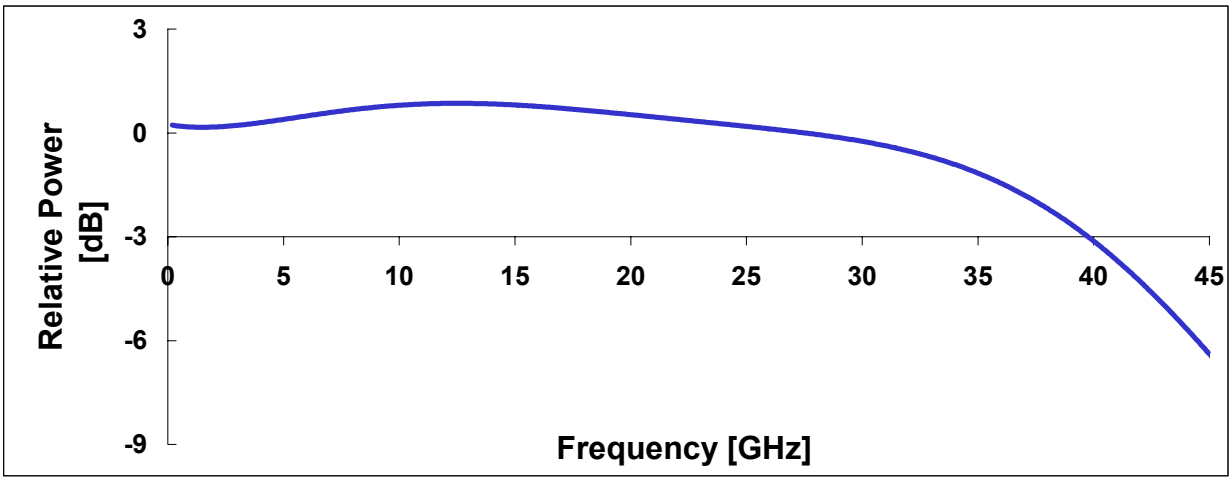
Connector	Polish	Fiber	Buffer	Length
FC	UPC or APC	SMF28	3 mm std 900 μm option	1 meter
SC				Option
others by request		50 mm Graded Index		1 meter

Electrical Output:

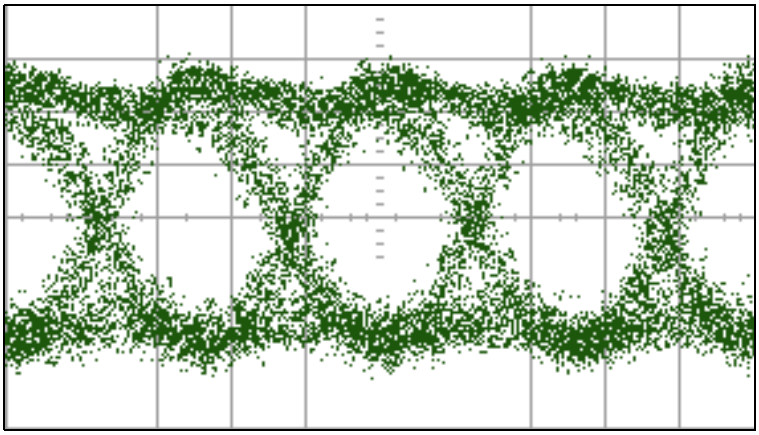
"V" type female standard
"V" type male option*

* V connector is a trademark of Anritsu Company

Frequency Response Curve:



Eye Diagram:



In: 9 dBmV
R404DC

Out: >500 mVp-p
w/PRBS: 2^{31} -1

For additional information, please contact the following:

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Specifications are subject to change without notice.