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

Data Sheet
February 2002

DSC 30S, 40S, 50S: Wide Bandwidth High Power Low Distortion PIN Diodes

Description:

The DSC 30S, 40S and 50S are hermetically sealed, high reliability, low harmonic distortion photodiode modules designed for high optical power applications with minimum bandwidths of 18, 14 and 10 GHz, respectfully. The devices are well suited for receiver applications with optical preamplification. The modules have a small physical footprint and removable RF connector.

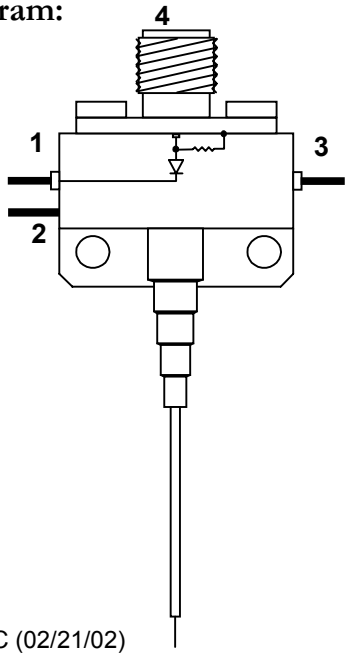
Features:

- High Optical Power Delivers up to 1 V_{pp} Output
- Low Group Delay
- Low PDL
- Low Harmonic Distortion
- Small Footprint
- High Reliability
- Meets GR-468 Standards

Applications:

- Optically Amplified Systems
- RZ, NRZ, super FEC formats to 30 GHz
- Low Distortion Analog Links

Block Diagram:



Pin Connections:

1.	Bias Voltage Photodiode V_{bd}
2.	Case Ground *
3.	NC
4.	RF Signal Out

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

Optical / Electrical Specifications:

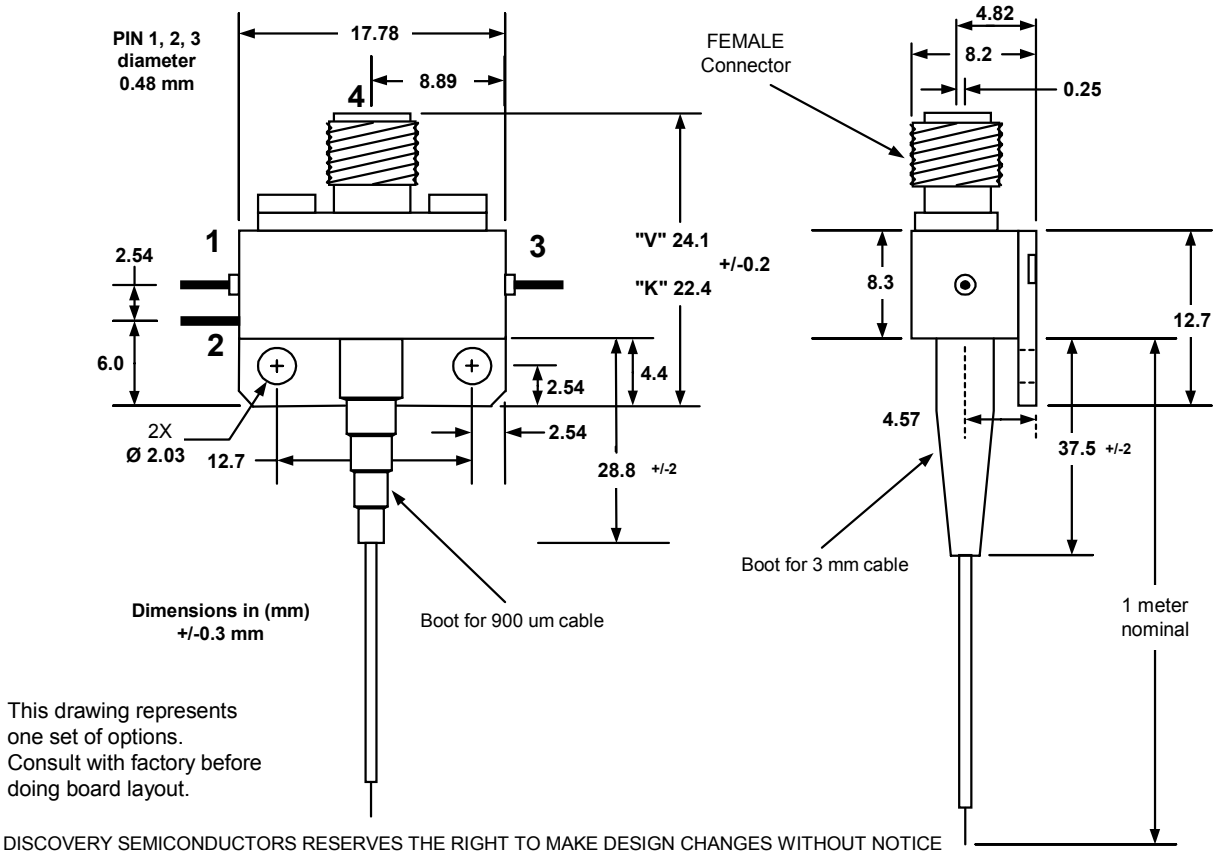
Parameter		Min	Typ	Max	Units
Responsivity	@ 1550 nm	0.70	0.80	-	A / W
	@ 1310 nm	0.75	0.80	-	
Ripple (1)		-0.5	-	+1.5	dB
Logic Sense / Coupling		Positive Non-Inverting / DC 50 Ω			
Group Delay (2)		-	± 7	-	ps
3 dB Bandwidth	30S	18	22	-	GHz
	40S	14	16	-	
	50S	10	12	-	
Power Dissipation	30S	-	-	150	mW
	40S, 50S	-	-	200	
Dark Current @ 25 °C, 5V		-	10	100	nA
Optical Return Loss		-30	-35	-	dB
Wavelength Response Range		800		1650	nm
Bias Voltage @ + 13 dBm		-	+6	-	V
CSO (Composite Second Order Distortion) @ + 4 dBm		-70	-	-	dBc
CTO (Composite Third Order Distortion) @ + 4 dBm		-75	-	-	dBc
Optical PDL @ 1550 nm (3)		-	0.06	0.12	dB

Absolute Maximum Ratings:

Operating Temperature Range (4)		0 to +70	°C
Storage Temperature Range		-40 to +85	°C
PIN Bias Voltage		+0.5 to +10	V
Optical Input Power Damage Threshold	30S	+17	dBm Peak NRZ 50% duty cycle
	40S, 50S	+19	
Lead Soldering Temp (10 s)		250	°C

(1) Flatness – relative to mean DC to 70% of the 3 dB bandwidth
(2) Group Delay – 500 MHz to 3 dB bandwidth
(3) Optical PDL measured with the Agilent measurement system
(4) Heat sink is required

Dimensioned Outline Drawing:



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Optical Input:

Connector	Polish	Fiber	Buffer	Length
FC or SC	UPC or APC	SMF28	3 mm option 900 um tight buffer (std)	1 meter
FC	UPC	125 / 50 MM	3 mm	option
FC	UPC	125 / 62.5 MM	3 mm	option
others by request	UPC or APC	SMF28		option

Electrical Output:

DSC 30S, 40S, 50S

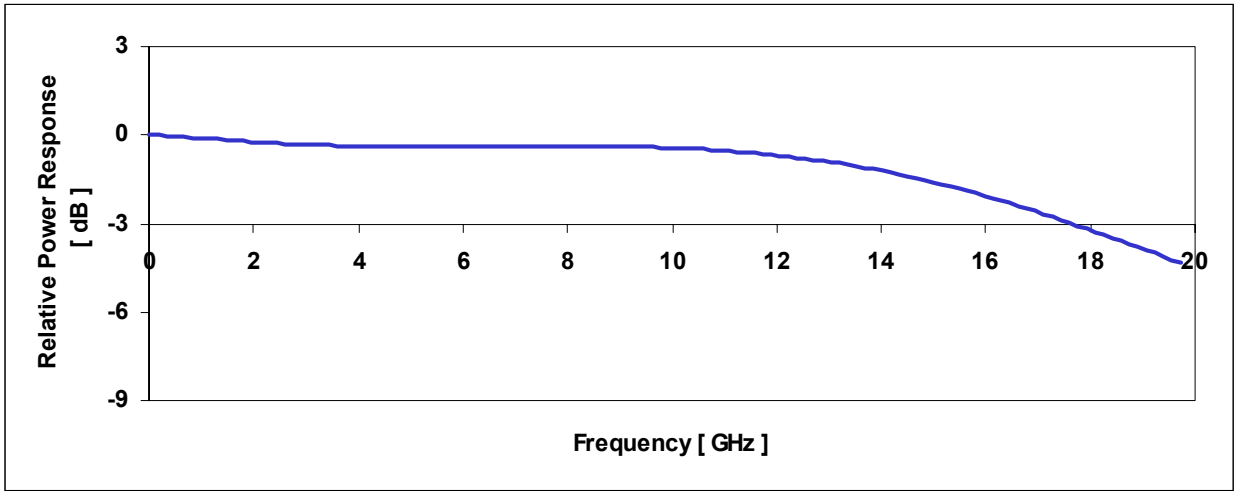
"K" type connector female standard
"K" type connector male option*

* K connector is a trademark of Anritsu Company

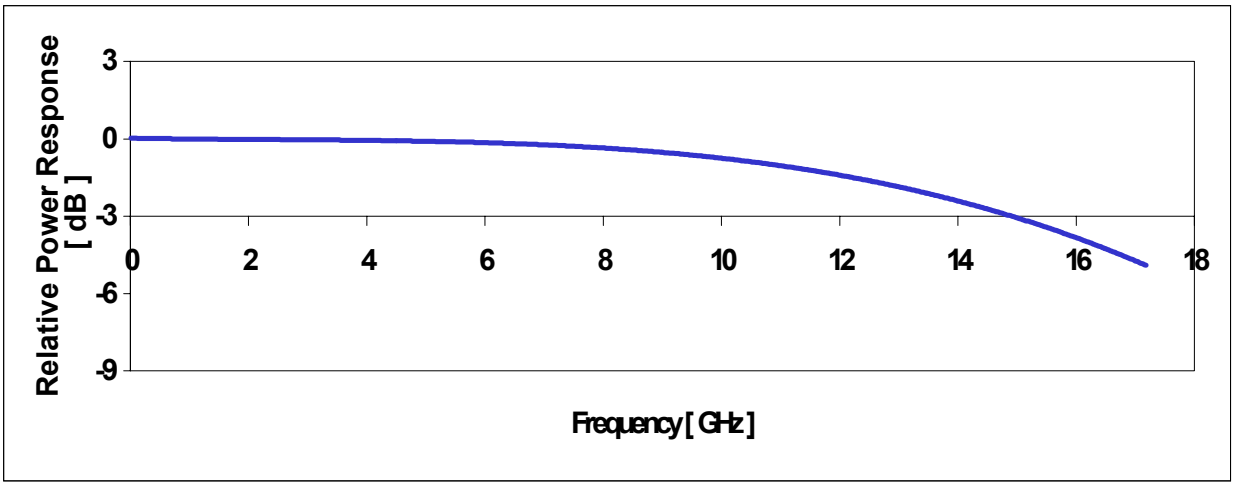
K connectors are 2.92 mm RF co-axial (compatible with 3.5 mm SMA).

Frequency Response Curves:

DSC40S:



DSC50S:



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