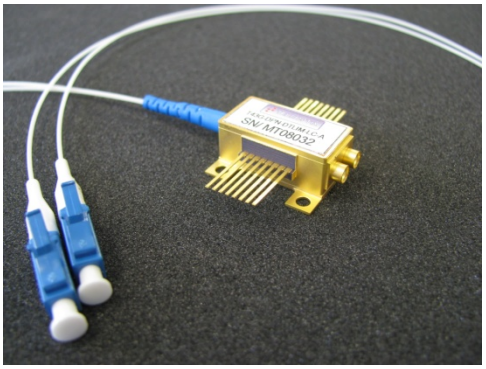
Balanced PHOTORECEIVER
with Linear TIA
Module name: DualPIN-DTLin Rx

PRELIMINARY DATASHEET



Description: The balanced photo-receiver module integrates a dual UTC photodiode array with a differential trans-impedance linear amplifier suitable for 40 Gbit/s and >100 Gbit/s optical transmissions using electronic post-processing. Thanks to the optical characteristics of the UTC photodiodes associated with a high performances linear amplifier giving an overall O/E -3dBm adjustable bandwidth up to 32.5 GHz, this dual-photodiode receiver is well adapted to address 100 Gbit/s PM-QPSK with coherent detection and/or 8/16 QAM modulation formats for even higher optical transmission bit-rates. The module is in a 16 pin package format with GPPO and LC/PC optical connectors.

Main Features:

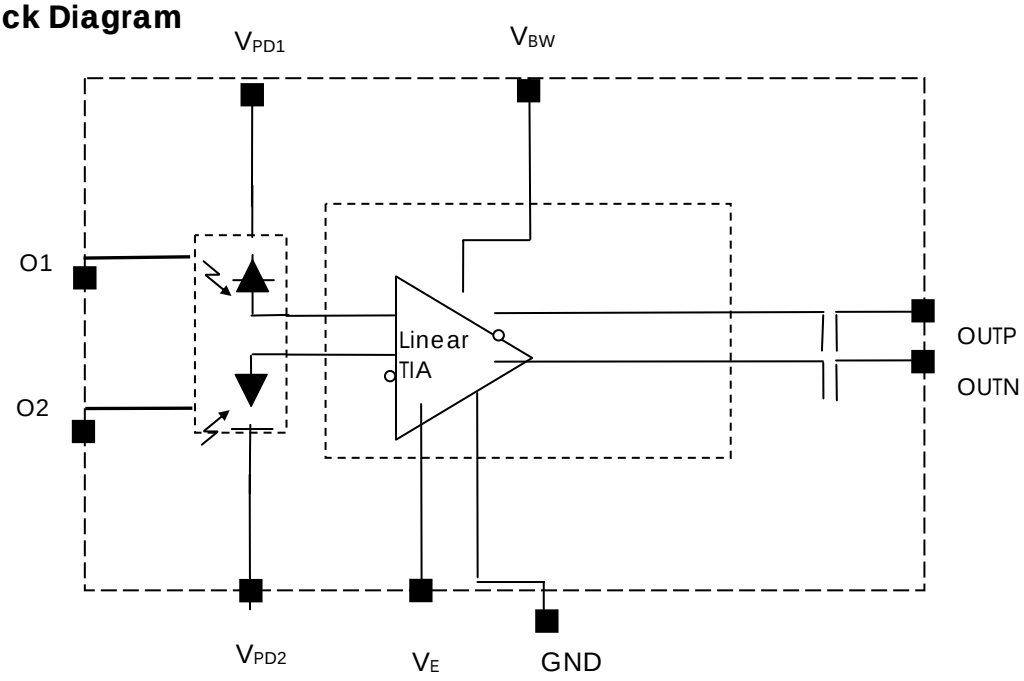
- Up to +7 dBm optical input power per photodiode
- Butterfly package with GPPO™ connectors
- Low polarisation dependent loss (typ. : 0.2 dB)
- Differential RF output, AC-coupled
- Operating case temperature: 0°...70°C

Applications :

- 40 Gbit/s optical transmissions
- 100 Gbit/s PM-QPSK with coherent detection, 8/16 QAM, optical transmissions WDM optical

Enclosed data :

1. Block Diagram



$V_{PD1,2}$: Photodiodes power supply voltages
V_E : Amplifier power supply voltage
V_{BW} : Bandwidth adjustment control voltage

2. Absolute Maximum Ratings

Parameter	Symbol	Min	Max	Unit
PD bias voltage	$V_{PD1,2}$	- 0.5	+ 3.5	V
Amplifier power supply voltage	V_E	TBD	TBD	V
Bandwidth adjustment voltage	V_{BW}	TBD	TBD	V
Optical input power	$P_{optIN\ mean}$	-	+ 7	dBm
Operating temperature	T_{OP}	0	+ 70	°C
Storage temperature	T_{ST}	- 40	+ 80	°C

3. Typical Operating Conditions

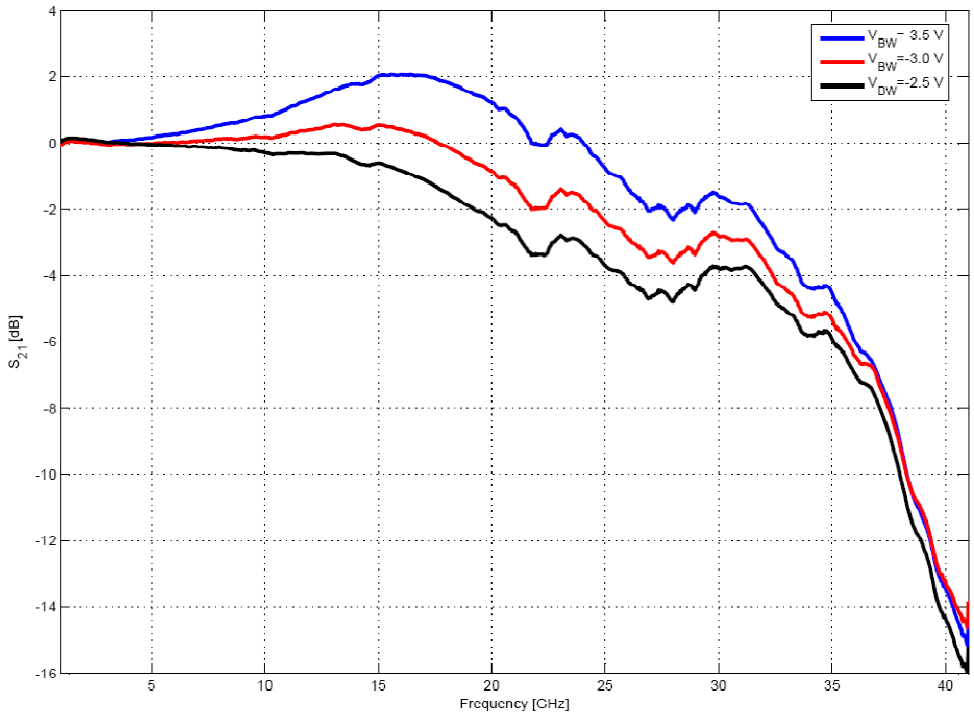
Parameter	Symbol	Typ.	Unit
Amplifier power supply voltage	V_E	- 4.5	V
Amplifier power supply current	I_E	- 200	mA
Bandwidth adjustment voltage	V_{BW}	- 3.5	V
Bandwidth adjustment current	I_{BW}	- 6	mA
Amplifier power dissipation	P_{DC}	< 920	mW
PD bias voltage	V_{PD1}, V_{PD2}	+2.0	V

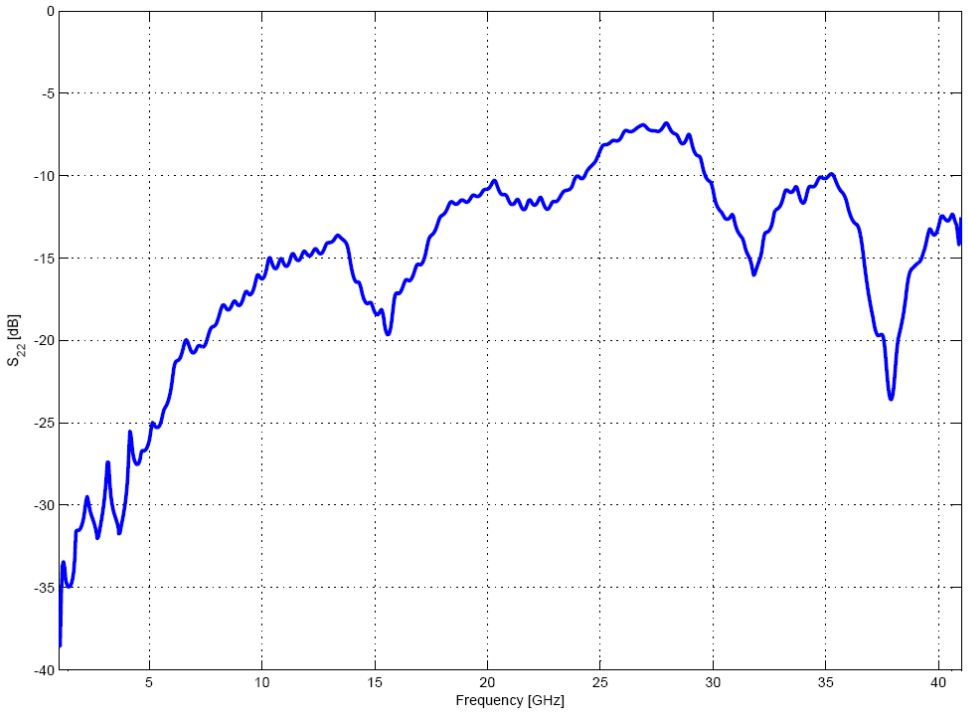
4. Main Characteristics

N°	Parameter	Symbol	Conditions	Min	Typ.	Max	Unit
1	Wavelength range	λ		1525		1620	nm
2	Optical Input Power	$P_{optIN\ mean}$			+3		dBm
3	$PD_{1,2}$ responsitivity	$R_{PD1,2}$	$V_{PD1,2}$ = + 2.0 V		0.6	-	A/W
4	PD dark current	I_{Dark}	$V_{PD1,2}$ = + 2.0 V	-	10	100	nA
5	$PDL_{1,2}$ polarisation dependent loss	$PDL_{1,2}$	V_{PD1} = + 2.0 V	-	0.2	0.5	dB
6	3 dB bandwidth (1)	f_{-3dB}	$V_{PD1,2}$ = +2.3V V_E = -4.5 V V_E = -3.5 V		32.5	-	GHz
7	Electrical return loss	S_{22}	DC ~ 20 GHz 20 GHz ~ 45 GHz	-	-10 - 7	-	dB
8	Small signal differential conversion gain(2,5)	G_{Conv_diff}	V_E = -4.5 V V_E = -3.5 V	-	150	-	V/W
10	Optical path delay(4)	O_{PD}	-	-	0.5	1	ps
13	Power dissipation	P_{DC}	V_E = -4.5 V V_E = -3.5 V	-	915		mW

Notes : (1) : Measurements performed in single-ended operation with 0 dBm optical input power.
(2) : G_{Conv_diff} = Eye_amp(differential) / P_{opt_INpp}(differential).
P_{optIN_mean} (injected on both photodiodes) = –10dBm.
Evaluated from NRZ eye diagram measurements at 43 Gbit/s.
(4) : Between the two input fibres.
(5) : Differential output voltage.

O/E S_{21} and E/E S_{22} measured using an Agilent Lightwave Component Analyzer in single-ended operation:

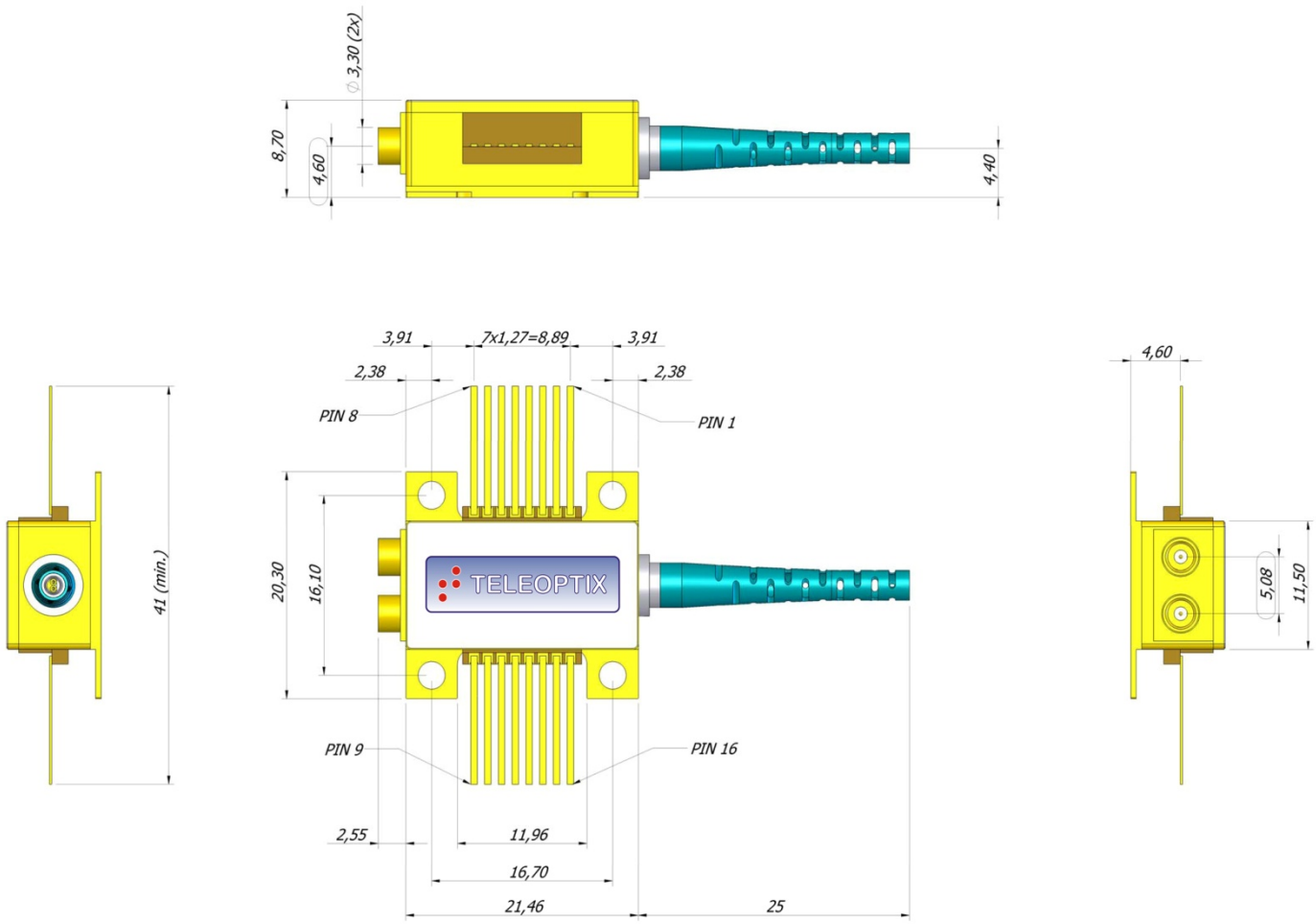




5. Connector and Fibre Specification

Parameter	Specification	Unit
Type	SMF	-
Jacket diameter	900	µm
Length	700 +/- 20	mm
Fibre Bend Radius	25 min	mm
Connector	LC/PC	-

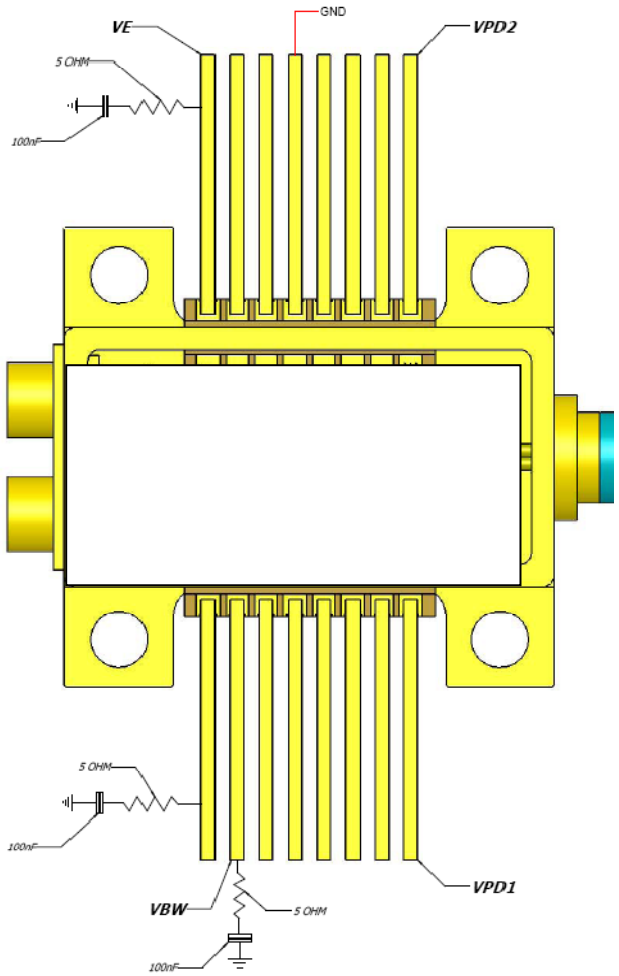
6. Mechanical Dimensions



7. Pin Allocation (subject to change)

Pin	Name	Pin	Name
1	V_{PD2}	16	V_{PD1}
2	No internal connection	15	No internal connection
3	No internal connection	14	No internal connection
4	No internal connection	13	No internal connection
5	GND	12	No internal connection
6	No internal connection	11	No internal connection
7	No internal connection	10	V_{BW}
8	V_E	9	-

5 ohm resistors and 100nF capacitors must be added externally as reported here below:



8. Ordering Information:

For orders or more information, please contact our sales office:

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