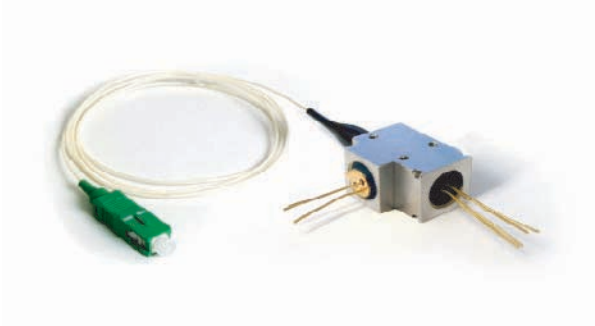
GPON High Power Diplexer
PRELIMINARY

ODP-34-PE



Features

- Low cost 1310 FP TX design, 1490 nm receive
- High Isolation
- -40 to 85˚C operation
- Multiple TIA versions for 155, 622, and 1250 Mbps applications
- Compliant to ITU-T G.GPON class c at 155Mbps and 622Mbps Tx
- Compliant to ITU-T G.GPON class B at 1250 Mbps

Absolute Maximum Ratings

Parameter	Min	Typical	Max	Units
Operating Temperature(case)	-40	-	85	ºC
Storage Temperature	-40	-	85	ºC

Module Requirements

Parameter	Min	Typical	Max	Units
1550 Enhancement Band to 1490 RX isolation[a]	29	-	-	dB
1310 TX to 1490 RX crosstalk	-	-	-47	dB
Back Reflection @ 1310 nm	-	-	-6	dB
Back Reflection @ 1550 nm	-	-	-20	dB
Back Reflection @ 1490 nm	-	-	-20	dB

[a] With Enhancement Band block from 1535nm to 1565nm

Transmitter Requirements

Parameter	Symbol	Min	Typical	Max	Units
Wavelength	λ	1260	-	1360	nm
Spectral Width (RMS)	$\Delta\lambda$	-	2	3	nm
1/2 P_{peak} set point @ 25ºC (GPON)	P_{set}	-	2.5	-	dBm
1/2 P_{peak} over temp and EOL(GPON)	P_{ave}	-1	-	4	dBm
Bias Current	I_{bias}	6	-	70	mA
Bias Current@EOL	$I_{bias,EOL}$	-	-	100	mA
Modulation Current[c]	I_{mod}	10	-	60	mA
PD Monitor Current	$I_{PD,mon}$	100	-	1000	µA
Forward Voltage	V_f	-	1.2	1.8	Volts
Rise/Fall Time[b]	tr/tf	-	-	0.5	ns
PD Monitor Dark Current	$I_{PD, dark}$	-	-	1	µA
PD Monitor Capacitance	C_{PD}	-	10	20	pF

[b] 10% to 90%

[c] Greater modulation current can be used for higher output powers

Digital Receiver Characteristics (155 Mbps)

Parameter	Symbol	Min	Typical	Max	Units
Detection Wavelength	λ	1260	-	1360	nm
Gain differential	G	20	-	-	mV/µW
Supply Voltage	V_{cc}	3	5.0	5.5	V
Supply Current (V_{cc}= 5V)[a]	I_{cc}	20	38	60	mA
Supply Current (V_{cc}= 3.3V)[a]	I_{cc}	20	35	50	mA
High Frequency -3 dB point[b]	$f_{-3dB(h)}$	100	130	-	MHz
Single-ended output voltage(p-p)[c]	$V_{o(se)(p-p)}$	40	110	200	mV
Single-ended output resistance[d]	$R_{o(se)}$	36	44	57	Ohm

a) AC Coupled; R_L= 50 Ohm
b) AC coupled; measured differentially; C_i =0.7 pF; R_L =50 Ohm; T_j= 100°C
c) AC coupled; R_L = 50 Ohm; input current =100 $\mu A_{(p-p)}$
d) DC tested

Digital Receiver Characteristics (622 Mbps)

Parameter	Symbol	Min	Typical	Max	Units
Detection Wavelength	λ	1260	-	1360	nm
Gain differential	G	10	-	-	mV/µW
Supply Voltage	V_{cc}	3	5.0	5.5	V
Supply Current (V_{cc}= 5V)[a]	I_{cc}	23	28	45	mA
Supply Current (V_{cc}= 3.3V)[a]	I_{cc}	20	28	42	mA
High Frequency -3 dB point (V_{cc}= 5V)[b]	$f_{-3dB(h)}$	450	580	750	MHz
High Frequency -3 dB point (V_{cc}= 3.3V)[b]	$f_{-3dB(h)}$	440	520	600	MHz
Single -ended output voltage(p-p)[c]	$V_{o(se)(p-p)}$	75	200	330	mV
Single-ended output resistance[d]	$R_{o(se)}$	40	50	62	Ohm

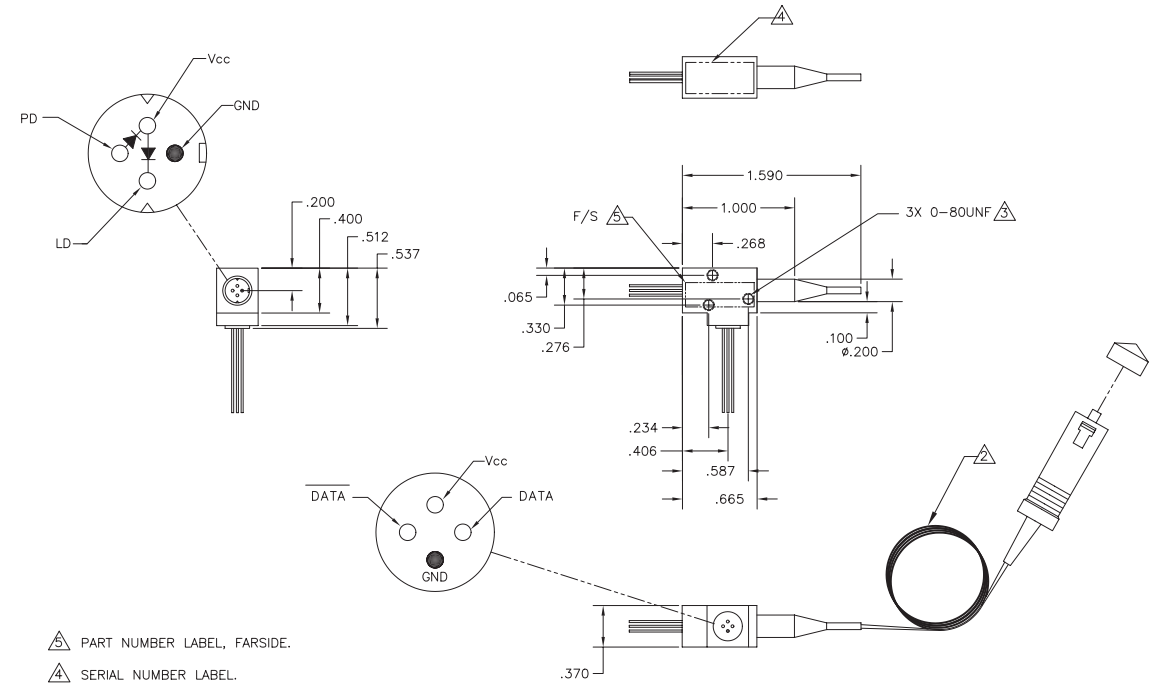
a) AC coupled; R_L =50 Ohm
b) C_i= 0.7 pF
c) AC coupled; R_L = 50 Ohm; input current =100 $\mu A_{(p-p)}$
d) DC tested

Digital Receiver Characteristics (1250 Mbps)

Parameter	Symbol	Min	Typical	Max	Units
Detection Wavelength	λ	1260	-	1360	nm
Gain differential	G	4	-	-	mV/µW
Supply Voltage	V_{cc}	3	5.0	5.5	V
Supply Current [a]	I_{cc}	-	34	47	mA
High Frequency -3 dB point (V_{cc}= 5V)[b]	$f_{-3dB(h)}$	1000	1200	-	MHz
High Frequency -3 dB point (V_{cc}= 3.3V)[b]	$f_{-3dB(h)}$	850	1100	-	MHz
Single -ended output voltage(p-p)[c]	$V_{o(se)(p-p)}$	75	200	330	mV
Single-ended output resistance[d]	$R_{o(se)}$	40	50	62	Ohm

a) AC coupled; R_L =50 Ohm
b) C_i= 0.7 pF
c) AC coupled; R_L = 50 Ohm; input current =100 $\mu A_{(p-p)}$
d) Single-ended; DC tested

Outline Drawing



5 PART NUMBER LABEL, FARSIDE.

4 SERIAL NUMBER LABEL.

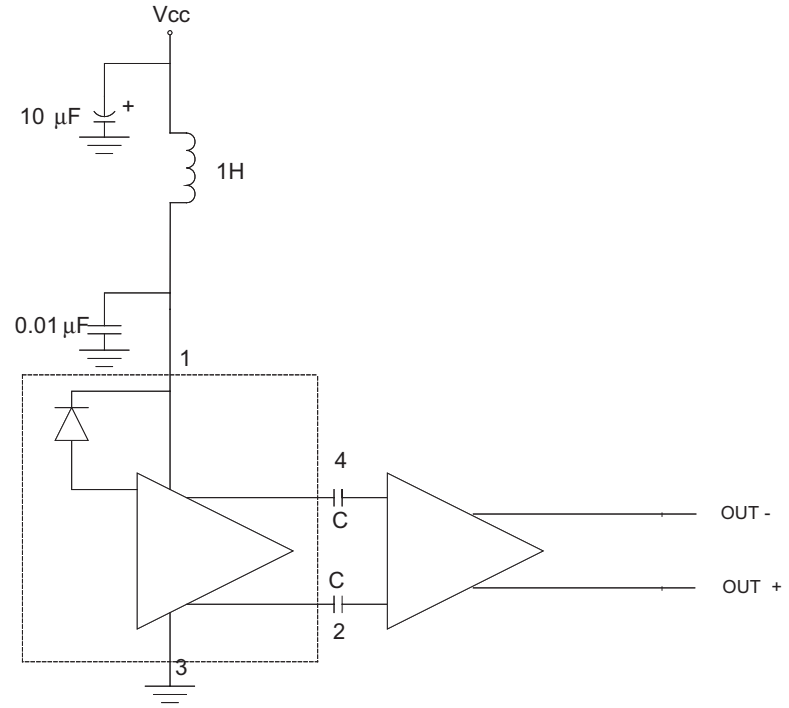
3 MAX TORQUE 2 IN/LBS.

2 1.0 METER 900uM BUFFERED FIBER TERMINATED WITH SCA CONNECTOR OR UNLESS OTHERWISE SPECIFIED.

1. CUSTOMER MAKES ALL EXTERNAL CONNECTIONS TO FIBER COMPONENTS AND WIRING.

NOTES: UNLESS OTHERWISE SPECIFIED

Receiver Block Diagram



Luminent Optical block

Customer Interface

At 155 Mbps, C= 0.1µF
At 622 Mbps, C= 0.1 µF
At 1250 Mbps, C= 0.022 µF

ODP-34-PE

Ordering Information

Available Options:
ODP-34-PE--155x
ODP-34-PE--622x
ODP-34-PE--1250x

Part numbering Definition:

ODP - 34 - Min. Half Peak Output Power -- Digital TIA - Connector Type - Temperature Range - Customer Specific

- (Separator)
- Blank = No TIA
  155
  622
  1250
  xxxB (B=Burst)

- PX
  PAA = -13 to -16dBm
  PA = -9 to -13 dBm
  PB = -6 to -9 dBm
  PC = -3 to -6 dBm
  PD = -1 to -3 dBm
  PE = -1 to +1 dBm
  PF = +1 and up

- SCX
  LCX
  FCX
  STX
  X = A (angled)
  X = U (ultra)

- Blank = Industrial (-40 to 85)
  C = Commercial (0 to 70°C)
  R = Reduced Industrial (-20 to 85°C)

- Labelling, Serial Number, TIA, or shipping instructions etc.

Warnings

Handling Precautions: This device is susceptible to damage as a result of electrostatic discharge (ESD). A static free environment is highly recommended. Follow guidelines according to proper ESD procedures.
Laser Safety: Radiation emitted by laser devices can be dangerous to human eyes. Avoid eye exposure to direct or indirect radiation.

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