

Approved		Charged
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Customer Approval	Approved	

Preliminary

Specification for 10Gb/s PD Receiver module

FU-322SPP-*7

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	x		
Date		Approved	
30 Aug.'02		T.Nambara	

mitsubishi (optical devices)

FU-322SPP-*7

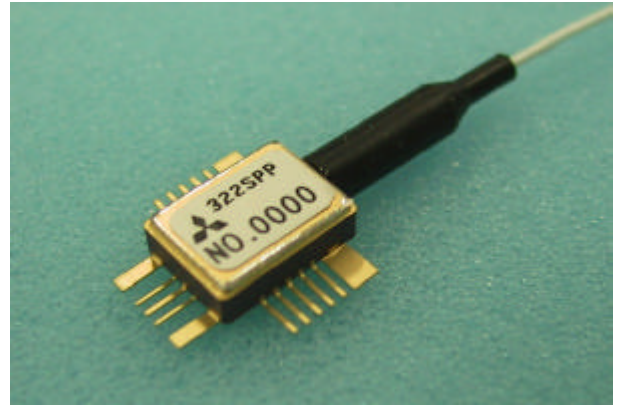
PD RECIEVER MODULE FOR THE 1.31μm and 1.55μm WAVELENGTH RANGE

DESCRIPTION

FU-322SPP-*7 are PIN photodiode module with transimpedance amplifier, designed for use in high-speed, long haul optical communication systems. The butterfly package contains an PIN photodiode coupled with single-mode fiber pigtail and preamplifier.

FEATURES

- High-sensitivity (-18dBm typ)
- 17pin butterfly package
- Transimpedance amplifier supply voltage (+3.3V)
- Photodiode bias voltage (+3.3V)
- Transimpedance(Single end) 1kΩ typical(RL=50Ω)
- Transimpedance amp with limiting amp and differential output (Zo=50Ω,each output)



APPLICATION

- 10Gbps.optical receiver (OC-192, STM-64)
- Extended reach datacom and telecom applications
- Long haul optical communication systems

ABSOLUTE MAXIMUM RATINGS (Tc=25°C)

Parameter	Symbol	Conditions	Rating	Unit
PD reverse voltage	Vpd	-	15	V
PD reverse current (CW)	I _r	-	1.6	mA
PD forward current (CW)	I _f	-	2	mA
Power supply voltage	V _{cc}	-	0~+4	V
Operating case temperature	T _c	-	0~+80	°C
Storage temperature	T _{stg}	-	-40~+85	°C

FU-322SPP-*7**PD RECIEVER MODULE FOR THE 1.31 μ m and 1.55 μ m WAVELENGTH RANGE****ELECTRICAL/OPTICAL CHARACTERISTICS**(Tc=25°C, λ =1.31 μ m, Vcc=+3.3V, Vpd=+3.3V unless otherwise noted)

Parameter	Symbol	Test Conditions	Limits			Unit
			Min.	Typ.	Max.	
PD responsivity(Note 1)	R	CW	0.7	0.8	-	A/W
Transimpedance	Zt	f=100MHz, RL=50 Ω , Single end	-	1	-	k Ω
Bandwidth (-3dB)	BW	RL=50 Ω , Single end	7.5	-	-	GHz
	fc L	RL=50 Ω , Single end	-	-	100	kHz
Average input equivalent noise current density	in	RL=50 Ω , Single end, 1MHz~7.5GHz	-	11	-	pA/ $\sqrt{\text{Hz}}$
Output impedance	Zo	Single end	-	50	-	Ω
Electrical return loss	S22	1GHz<f<7GHz	-	-	-7	dB
Receiver sensitivity	Pr	RL=50 Ω , ,Single end NRZ, 9.95328Gbps., PRBS=2 ³¹ -1, BER=10 ⁻¹⁰	-	-18	-17	dBm
Receiver over load	Po	(Note 1)	+1	-	-	
Differential output at overload	Vomax	RL=100 Ω , Pin=+1dBm	-	-	2000	mVpp
Differential output sensitivity	Vomin	RL=100 Ω , Pin=-17dBm	15	-	-	mVpp
Amplifier voltage supply	Vcc	-	+3.14	+3.3	+3.46	V
Photodiode bias voltage	Vpd	-	+3.14	+3.3	+5.25	V
Power supply current	Icc	Vcc=+3.3V	-	-	150	mA
Optical return loss	Prtn	-	27	-	-	dB

Note 1. Used post-amp bandwidth is 8GHz, Laser souse extinction ratio is 10dB.

OPTICAL FIBER SPECIFICATION

Parameter	Limits	Unit
Type	SM	-
Mode filed dia.	9.5 $\pm$ 1	μ m
Cladding dia.	125 $\pm$ 2	μ m
Jacket dia.	0.9 typ.	mm
Fiber length	1000~1200	mm

CONNECTOR OPTION

Type number	Connector type	Connector return loss
FU-322SPP-W7	SC connector	40dB(min.)
FU-322SPP-V7	FC/PC connector	40dB(min.)
FU-322SPP-7	With out connector	-

DOCUMENTATION

Parameter	Symbol	Test conditions (Vpd=Vcc=+3.3V, Tc=25°C, λ =1.31 μ m)
PD responsivity	R	CW
Bandwidth (-3dB)	BW	RL=50 Ω
Receiver sensitivity	Pr	RL=50 Ω , NRZ, 9.95328Gbps., PRBS=2 ³¹ -1, BER=10 ⁻¹⁰
Power supply current	Icc	-

MITSUBISHI (OPTICAL DEVICES)

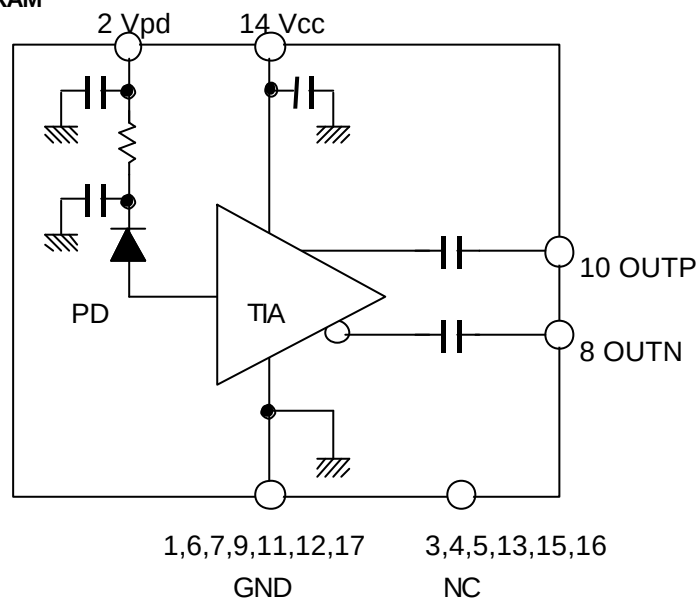
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PD RECIEVER MODULE FOR THE 1.31 μ m and 1.55 μ m WAVELENGTH RANGE

PIN ASSIGNMENTS

Pin#	Symbol	Parameter	Pin#	Symbol	Parameter
1	GND	Case Ground	10	Out_P	Positive Output
2	Vpd	Photodiode Bias	11	GND	Case Ground
3	NC	No Connection	12	GND	Case Ground
4	NC	No Connection	13	NC	No Connection
5	NC	No Connection	14	Vcc	Power Supply(+3.3V)
6	GND	Case Ground	15	NC	No Connection
7	GND	Case Ground	16	NC	No Connection
8	Out_N	Negative Output	17	GND	Case Ground
9	GND	Case Ground	-	-	-

BLOCK DIAGRAM



OUTLINE DIAGRAM (Unit : mm)

