

OD9653N**Preliminary**

Optical Receiver Module for OC-192/STM64

1. DESCRIPTION

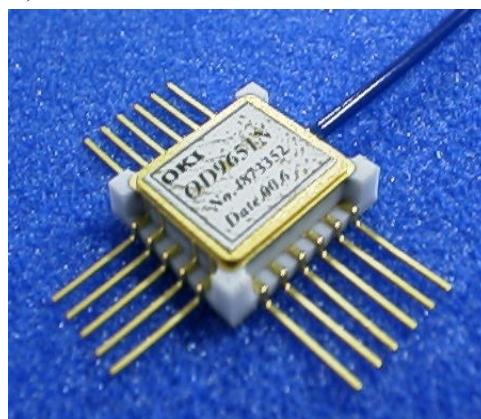
The OD9653N is a optical receiver module for 12.5Gbps applications. The OD9653N is manufactured in a small size, 17-pin surface mount type package (gull wing lead).

2. FEATURES

- High data rate capability, 12.5Gb/s
- High trans-impedance
- Low equivalent input noise current density
- Integrated InGaAs pin-photodiode and GaAs pre-amplifier
- Low power consumption
- Inverted, single-end output

3. APPLICATION

- High speed transmission systems (~ 12.5Gb/s)

**4. OPTICAL AND ELECTRICAL CHARACTERISTICS**

(Wavelength=1550nm, Ta = +25°C, VDD=+3.3V, VSS=-2V, VPD=+10V, unless otherwise specified)

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Wavelength	λ		1280		1580	nm
PD Responsivity	RPD	$\lambda=1550\text{nm}$	0.7	0.8		A/W
Transimpedance	Zt	Pin<-10dBm, RL=50 Ω Single, AC	49	52		dB Ω
PD Dark Current	ID	VR=+10V		1	5	nA
Bandwidth	BW	f3dB, RL=50 Ω	9.5	10		GHz
Sensitivity	Pmin	12.5Gbps, NRZ, BER=10 ⁻¹² , PRBS2 ³¹ -1		-15	-14	dBm
Overload	Pmax	12.5Gbps, NRZ, BER=10 ⁻¹² , PRBS2 ³¹ -1	0	+2		dBm
Equivalent Input Noise Current Density	in	Average within 0.5GHz to BW RL=50 Ω		10	12	pA/ $\sqrt{\text{Hz}}$
Recommended Supply Voltage	VDD			+3.3		V
	VSS			-2		V
	VPD			+10		V
Supply Current	IDD	Pin=0mW		80		mA
	ISS	Pin=0mW		15		mA
Optical Return Loss	ORL	$\lambda=1550\text{nm}$		-30	-27	dB
Electrical Return Loss	ERL	F=BW GHz		-10		dB

5.ABSOLUTE MAXIMUM RATING

(Ta = +25 °C, unless otherwise specified)

Parameter	Symbol	Rating	Unit
PD Supply Voltage	VR	+12	V
TIA Supply Voltage	VDD	+5	V
	VSS	-5	V
PD Forward Current	IF	20	mA
PD Reverse Current	IR	2	mA
Operating Temperature	Top	0 to 70	°C
Storage Temperature	Tstg	-40 to 85	°C
Lead Soldering Temperature (10s)	--	260	°C

6. CONNECTOR AND FIBER SPECIFICATIONS

Parameter	Specifications	Unit
Fiber	1.31μm Single Mode Fiber	--
	Code Diameter:0.9	mm
	Blue	--
	Bending Radius:20(min)	mm
	Length:1000+/-50	mm
Connector	SC-PC	--

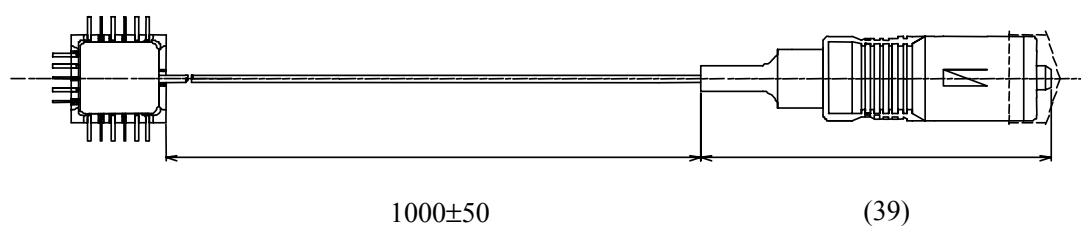
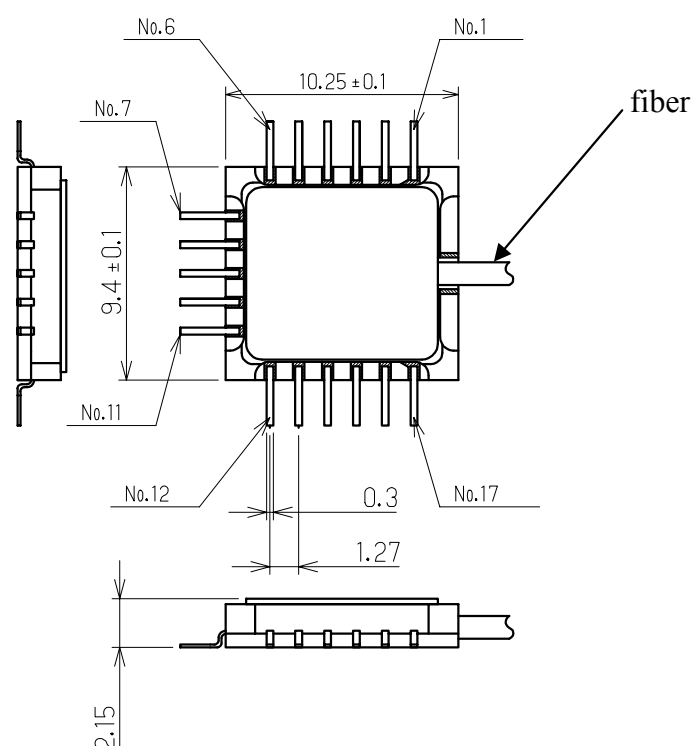
7.OUTLINE DRAWING

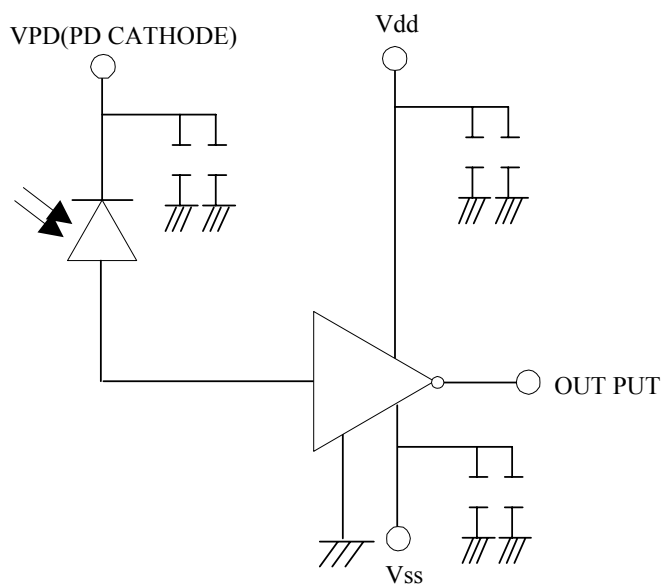
All dimensions in millimeters

Package No. (Unit: mm)

Pin Assignment

No.	function	Power Supply
1	GND	
2	V _{PD}	+10V
3	NC	
4	V _{SS}	-2V
5	NC	
6	NC	
7	GND	
8	GND	
9	OUT PUT	
10	GND	
11	GND	
12	GND	
13	NC	
14	NC	
15	V _{DD}	+3.3V
16	NC	
17	GND	

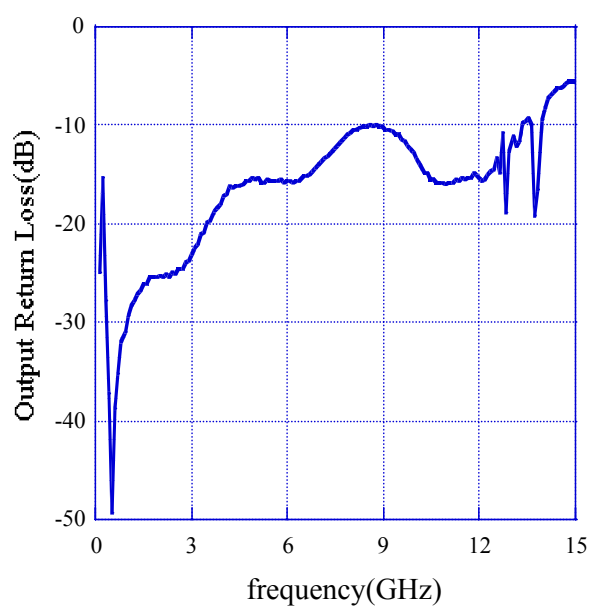
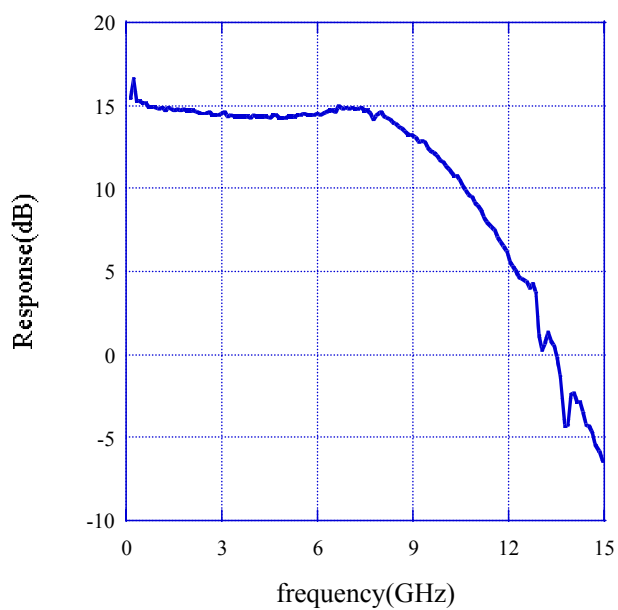


Diagram

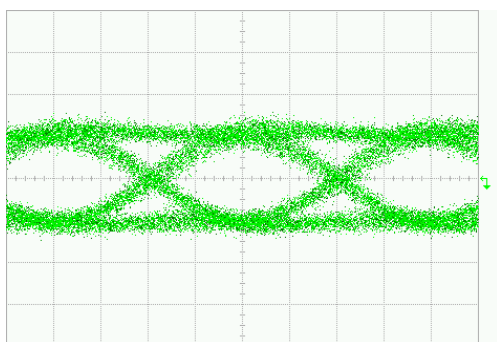
Typical Characteristics

<Frequency Characteristics> (Ta=25deg.)

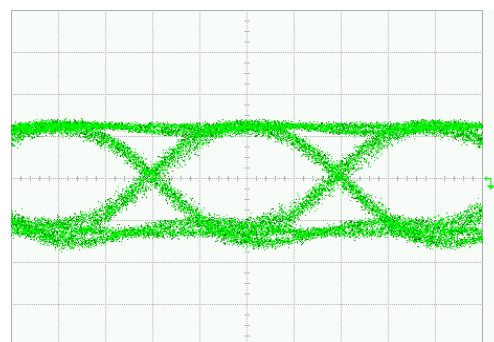
Optical Input Power = -10dBm
R=0.9A/W (@1.55um)



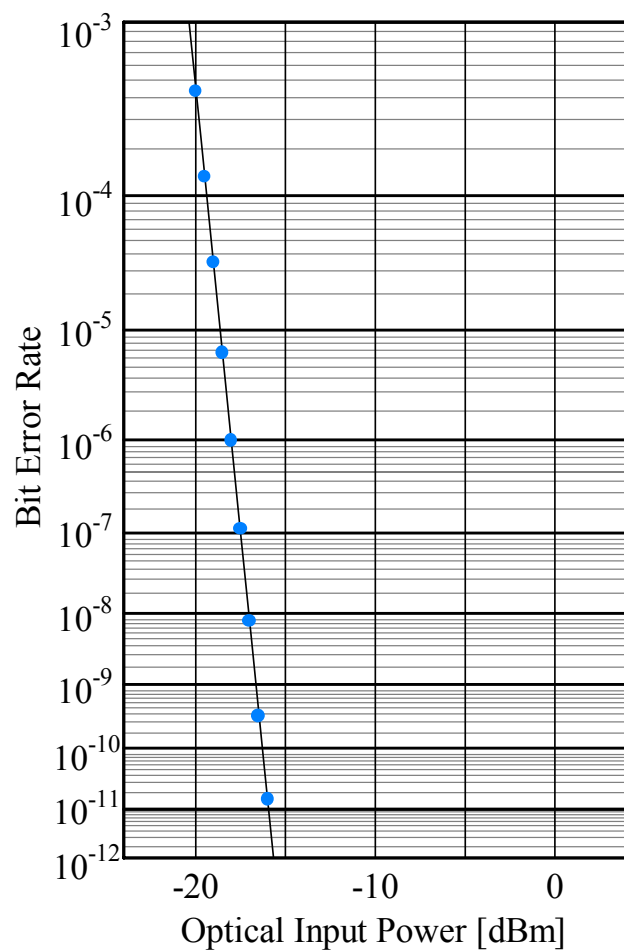
<Eye Chart>



Optical Input Power = -15.7dBm
20ps/div , 5mV/div



Optical Input Power = +3dBm
20ps/div , 200mV/div

<BER Characteristics>

12.5Gp/s , NRZ, $2^{31}-1$ PRBS , 1.55 μ m
Rext=8.5dB
Ta=25deg.