

Optical Components

Rev. 3 [10. 2008]

OF3249N-MS

10Gbps APD-TIA/AGC receiver module

1. DESCRIPTION

OF3249N-MS is an APD receiver module for the digital transmission system up to 10.7Gbps. It incorporates an InGaAs/InP avalanche photodiode with an integrated trans-impedance and AGC amplifier in a hermetically sealed package. OF3249N-MS adopts compact surface mount package, minimizing the space on PCB. The outline is based on a multi-source agreement (MSA) that defines small footprint coplanar OC-192 receivers.

2. FEATURES

Power supply (TIA): 3.3V

Typical sensitivity: -27.0dBm Typ.

Differential transimpedance: 0.2 to 7.0k Ω

Power consumption: 0.2W Typ.

Surface-mount and hermetically sealed package

Small footprint co-planar output

3. APPLICATION

SONET OC-192/SDH STM-64 applications

WDM applications

4. OPTICAL AND ELECTRICAL CHARACTERISTICS

(Wavelength=1550nm, T_c =25°C, VCC=+3.3V, unless otherwise specified)

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Wavelength	λ	-	1250	-	1620	nm
APD Breakdown Voltage	VBR	ID=10 μ A	20	27	35	V
Temperature Coefficient of VBR	γ	-	0.03	0.05	0.07	V/°C
APD Responsivity	RAPD	λ =1.55 μ m	0.75	0.85	-	A/W
		λ =1.31 μ m	0.7	0.80	-	
Dark Current	ID	VB=0.9xVBR	-	-	100	nA
Maximum Transimpedance	Ztmax	Differential, Pin=0mW	-	7.0	-	k Ω
Minimum Transimpedance	Ztmin	Differential, Overload condition	-	0.2	-	k Ω
Bandwidth	BW	f-3dB, RL=50 Ω Pin=-25dBm, M=9	6.5	8.0	-	GHz
Sensitivity	Prmin	9.95328Gbps, NRZ, BER=10 ⁻¹² , PRBS2 ³¹ -1, Rext.=12dB, M=Mopt.	-	-27	-26	dBm
Group Delay Deviation	GD	130MHz to 8GHz	-	-	± 40	
Low Frequency Cutoff	f _{LOW}	f-3dB from 130MHz	-	45	-	kHz
Overload	Prmax	9.95328Gbps, NRZ, BER=10 ⁻¹² , PRBS2 ³¹ -1 M=Mopt.	-6	-3	-	dBm
Output Voltage Swing	Vout	Differential	-	350	-	mV
Supply Current	Icc		-	60	-	mA
Recommended TIA Supply Voltage	VCC	-	3.1	3.3	3.5	V
Output Return Loss	ERL	10MHz to 10GHz Differential S22	-	-	-8	dB
Optical Return Loss	ORL	-	-	-	-27	dB
Thermistor Resistance	Rth	Tthm=25°C	9	10	11	k Ω
Thermistor B Constant*1	B	---	3180	3380	3580	K

*1) Optional B constant of 3900+/-100K is available.

5.ABSOLUTE MAXIMUM RATING

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

Parameter	Symbol	Rating	Unit
APD Supply Voltage	VB	0 to VBR	V
TIA Supply Voltage	Vcc	0 to +3.7	V
DC Offset Adjustment Voltage	Vth	Vcc-1.0 to Vcc+0.5* ¹⁾	V
APD Reverse Current (cw)	IR	2	mA
Input Optical Power	Pin	+0	dBm
Operating Case Temperature	Tc	-20 to 85	°C
Storage Temperature	Tstg	-40 to 85	°C
Soldering Temperature	--	260 (10s)	°C

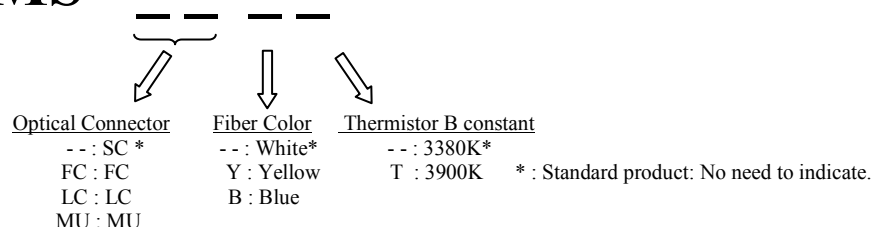
*1) at all times including power up/down.

6. CONNECTOR AND FIBER SPECIFICATIONS

Parameter	Specifications	Unit
Type	SM	--
Flame Rating	UL94 V-0	--
	UL1581 VW-1	--
Mode Field Diameter	10	μm
Cladding Diameter	125	μm
Jacket Diameter	900	μm
Length	1	M
Standard Connector	SC/SPC	--
Standard Fiber Color	White	--

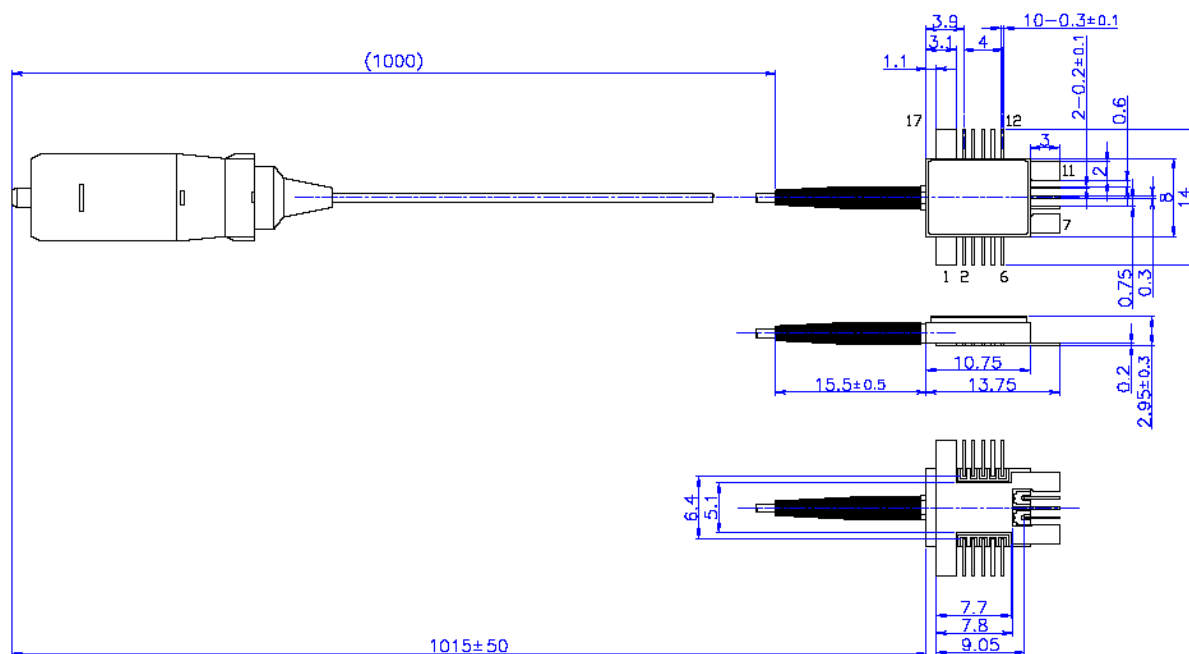
7. ORDERING INFORMATION

OF3249N - MS -



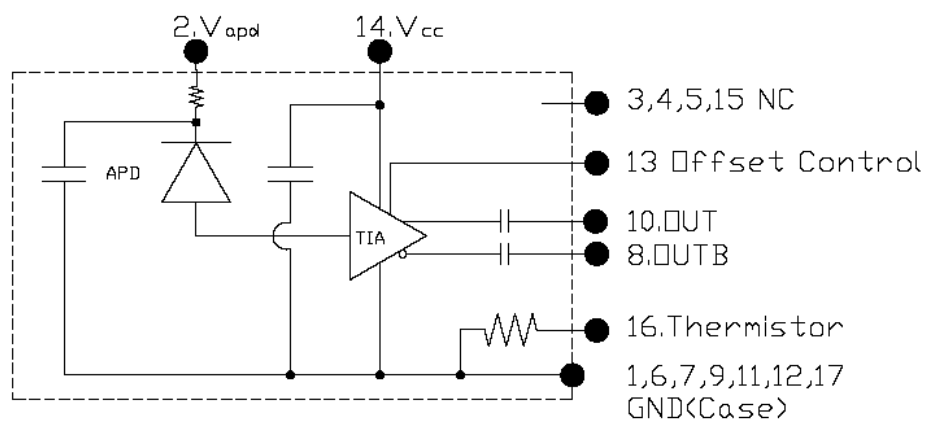
8. OUTLINE DRAWING

Package No. OF3249N-MS (Unit: mm)



Pin Connection			
1	Case GND	10	OUT (AC-coupled)
2	Vapd (APD Bias)	11	Case GND
3	NC	12	Case GND
4	NC	13	Vth (DC Offset Control)
5	NC	14	Vcc (TIA Power supply)
6	Case GND	15	NC
7	Case GND	16	Thermistor
8	OUTB(AC-coupled)	17	Case GND
9	Case GND		

9. BLOCK DIAGRAM



SAFETY INFORMATION ON THIS PRODUCT

Caution GaAs Product	The product contains gallium arsenide, GaAs. GaAs vapor and powder are hazardous to human health if inhaled, ingested or swallowed. Do not destroy or burn the product. Do not crush or chemically dissolve the product. Do not put the product in the mouth. Observe related laws and company regulations when discarding this product. The product should be excluded from general industrial waste or household garbage.
Caution Optical Fiber	A glass-fiber is attached on the product. Handle with care. When the fiber is broken or damaged, handle carefully to avoid injury from the damaged part or fragments.
Attention ESD sensitive	Appropriate precautions must be taken to avoid exposure to ESD and EOS during handling the product.

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