NR4211TH

Data Sheet

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RECEIVER (Limiting TIA, with DCA function)

InAlAs APD RECEIVER WITH INTERNAL PRE-AMPLIFIER FOR 10 Gb/s APPLICATIONS

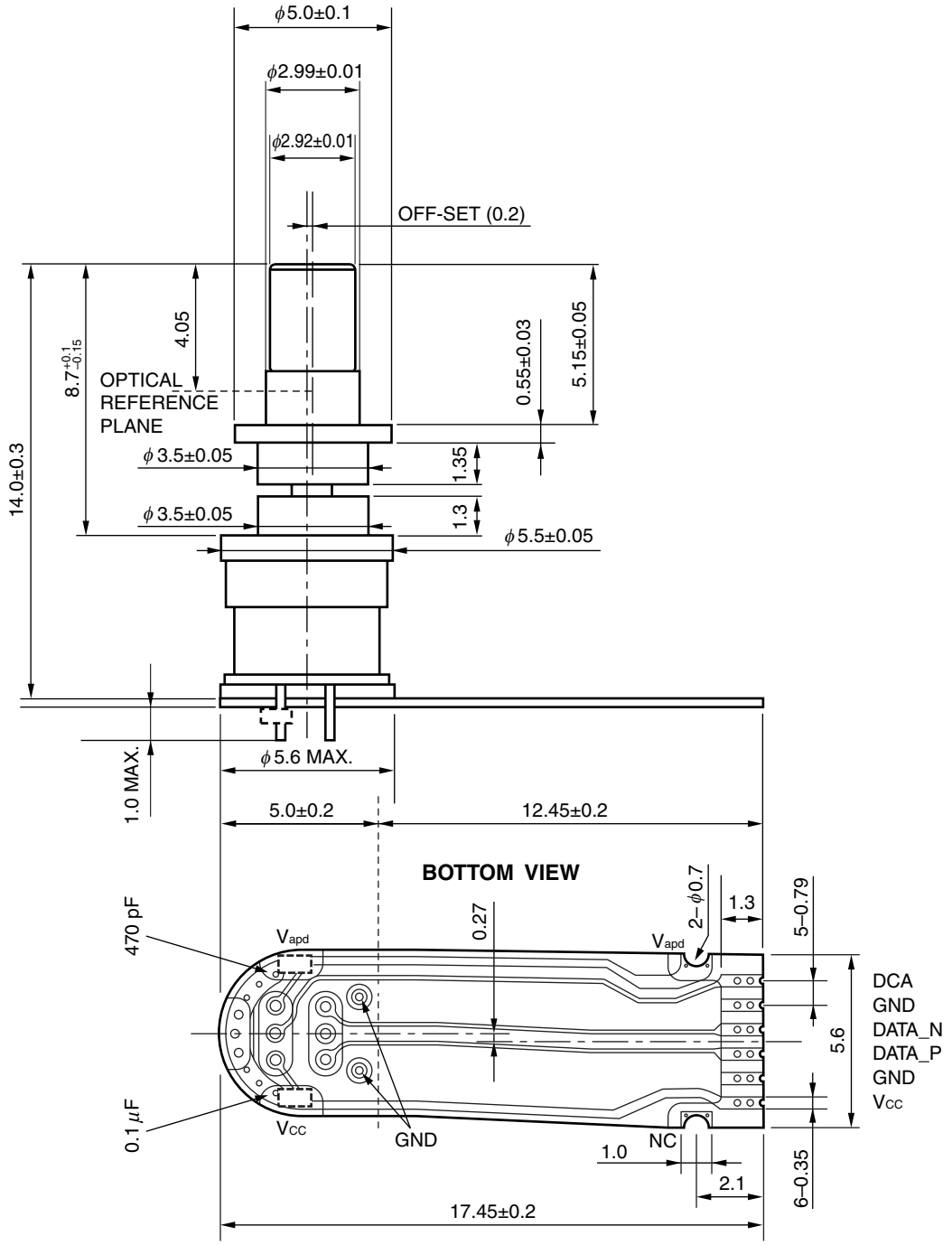
DESCRIPTION

The NR4211TH product consists of InAIAs-APD (avalanche photo diode) ROSAs (Receiver Optical Sub-Assembly) with internal pre-amplifiers designed for 10 Gb/s long-reach optical transceivers such as the XENPAK/X2/XFP and Transponder. These modules are ideal as receivers for IEEE 10G BASE and SONET OC-192 systems and D-WDM systems.

FEATURES

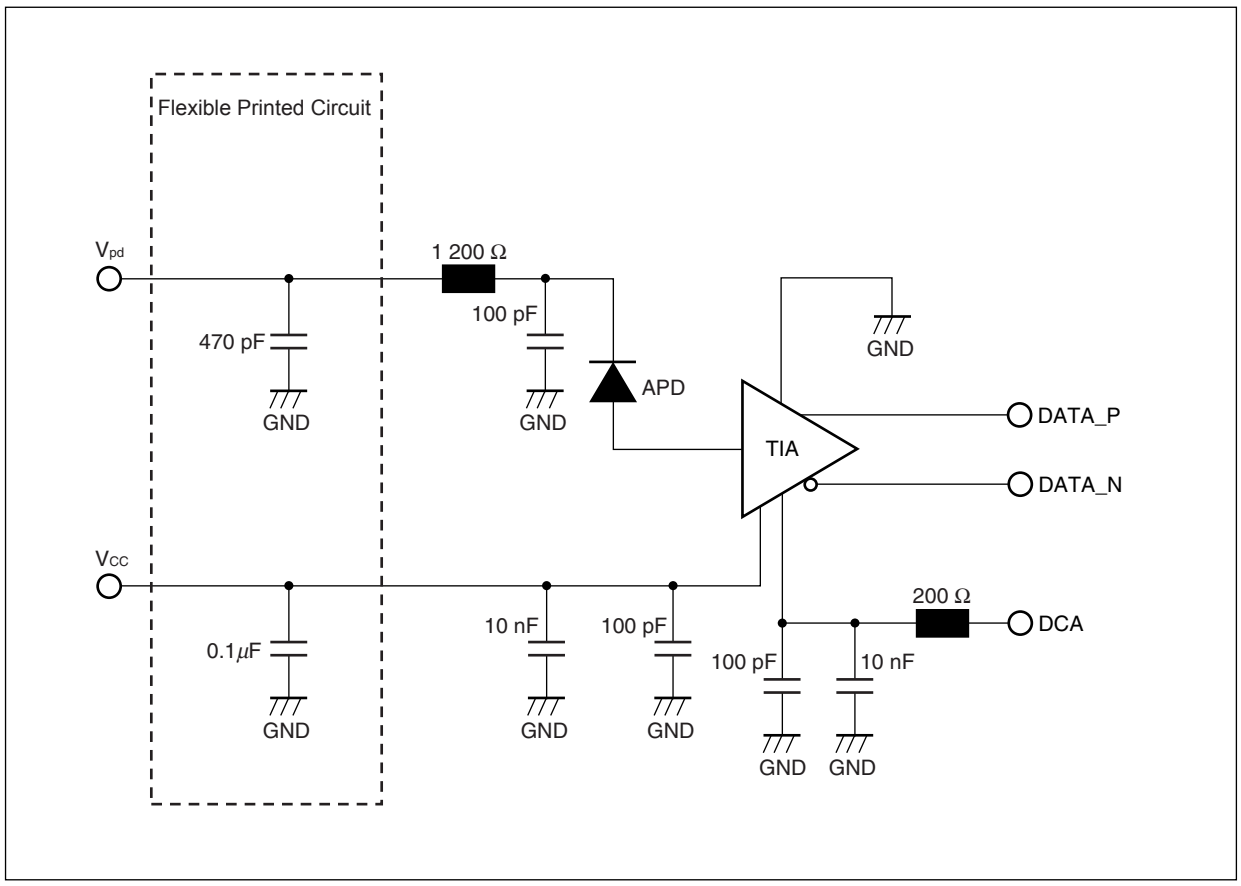
- XMD-MSA compliant ROSA
- 10 Gb/s high sensitivity InAlAs-APD
- +3.3 V transimpedance pre-amplifier
- Minimum receiver sensitivity P_r = –27.5 dBm
- Operating case temperature T_C = –5 to +90°C
- Transimpedance Z_t = 6 000 Ω (Single-ended)
- Cut-off frequency f_C = 7.5 GHz
- With DCA function (Cross point control)
- With flexible printed circuit

PACKAGE DIMENSIONS (UNIT: mm)



Remark Tolerance is ±0.1 unless otherwise specified.

BLOCK DIAGRAM



ABSOLUTE MAXIMUM RATINGS (T_A = 25°C, unless otherwise specified)

Parameter	Symbol	Ratings	Unit
APD Reverse Voltage	V_R	V_{BR}	V
APD Reverse Current	$I_{R\ (peak)}$	4	mA
Maximum Optical Input Power	$P_{in\ (peak)}$	3	dBm
Maximum Optical Input Power (with 7.5 kΩ serial resistance)		7	
IC Supply Voltage	V_{CC}	–0.5 to +3.7	V
DCA Voltage	V_{DCA}	0 to +4 and < V_{CC}+0.5	V
Operating Case Temperature	T_C	–5 to +90	°C
Storage Temperature	T_{stg}	–40 to +90	°C
Lead Soldering Temperature (Flexible Printed Circuit)	T_{sld}	260 (10 sec.)	°C

ELECTRO-OPTICAL CHARACTERISTICS
(T_C = –5 to +90°C, V_{CC} = +3.13 to +3.47 V, λ = 1 550 nm, unless otherwise specified)

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
APD Sensitivity	S	λ = 1 310 nm, M = 1	0.75	0.9		A/W
		λ = 1 550 nm, M = 1	0.75	0.9		
APD Breakdown Voltage	V_{BR}	I_D = 10 μA			36	V
Temperature Coefficient of APD Breakdown Voltage	δ *1		0	0.02	0.05	V/°C
APD Dark Current	I_D	$V_R = V_{BR} \times 0.9$, T_C = 25°C			0.7	μA
IC Supply Current	I_{CC}				50	mA
DCA input Voltage	V_{DCA}		2.5		3.5	V
DCA current	I_{DCA}		–30		30	μA
Transimpedance	Z_t	Single-ended	3 000	6 000	10 000	Ω
Maximum Output Voltage Swing	V_{clip}	Single-ended			350	mV_{PP}
Cut-off Frequency	f_C	M = 9, P_{in} = –27 dBm	6	7.5		GHz
RF Output Return Loss	S_{22}	1G–6G, M = 9, Single-ended			–5	dB
Minimum Receiver Sensitivity	P_r	9.95 Gb/s, BER = 10^{-12}, M_{opt}, PRBS = 2^{31}–1, ER = 13 dB, NRZ		–27.5	–26.0	dBm
Overload	P_O	9.95 Gb/s, BER = 10^{-12}, M_{opt}, PRBS = 2^{31}–1, ER = 13 dB, NRZ	–6.5			dBm
Optical Return Loss	ORL	λ = 1 310 nm			–27	dB
		λ = 1 550 nm			–27	

Note: *1. $\delta = \frac{\Delta V_{BR}}{\Delta T_C}$

SAFETY INFORMATION ON THIS PRODUCT

Caution GaAs Products	This product uses gallium arsenide (GaAs). GaAs vapor and powder are hazardous to human health if inhaled or ingested, so please observe the following points. • Follow related laws and ordinances when disposing of the product. If there are no applicable laws and/or ordinances, dispose of the product as recommended below. 1. Commission a disposal company able to (with a license to) collect, transport and dispose of materials that contain arsenic and other such industrial waste materials. 2. Exclude the product from general industrial waste and household garbage, and ensure that the product is controlled (as industrial waste subject to special control) up until final disposal. • Do not burn, destroy, cut, crush, or chemically dissolve the product. • Do not lick the product or in any way allow it to enter the mouth.

Revision History	NR4211TH Data Sheet

Rev.	Date	Description	
		Page	Summary
1.00	Sep 13, 2012	–	First edition issued