Multi-source Agreement (MSA) of 10 Gbit/s Miniature Device (XMD)

XMD12

Electrical & Optical Interfaces of ROSA APD

Rev. 1.2
January 17, 2006

Description

This technical document has been created by the XMD MSA committee. This document is offered to both users and suppliers of 10Gbit/s compact optical sub-assembly (OSA) modules as a basis for a technical agreement. However, it is not a warranted document. Each OSA supplier will have its own datasheet. If the users wish to find a warranted document, they should consult the datasheet of the chosen OSA supplier.

The MSA committee reserves the rights at any time to add, amend or withdraw technical data contained in this document.

Revision History

Revision	Date	Purpose/ changes
1.0	September 1, 2004	First public issue
1.1	October 29, 2004	Addition of scope and reference document. Amend of electrical interface.
1.2	January 17, 2006	Addition of SC documents. Change document name to identify connector type.

1 Scope

The XMD MSA committee has created this technical document to specify the electrical and optical interfaces of ROSA APD.

2 Reference Documents

[1] XMD14
"Physical Interface of LC ROSA Type 2 Package"

[2] XMD16
"Physical Interface of SC ROSA Type 2 Package"

[3] IEC62007-1
"Semiconductor optoelectronic devices for fibre optic system applications - Part 1: Essential ratings and characteristics"

[4] IEC62007-2
"Semiconductor optoelectronic devices for fibre optic system applications - Part 2: Measuring methods"

[5] Telcordia GR-253-CORE
"SONET Transport Systems: Common Generic Criteria"

[6] ITU-T G.691
"Optical interfaces for single channel STM-64 and other SDH systems with optical amplifiers"

[7] ITU-T G.709
"Network node interface for the Optical Transport Network (OTN)"

[8] ITU-T G.959.1
"Optical transport network physical layer interfaces"

[9] Telcordia GR-468-CORE
"Generic Reliability Assurance Requirements for Optoelectronic Devices Used In Telecommunications Equipment"

3 Abbreviations

APD	Avalanche photo diode
OSA	Optical sub-assembly
ROSA	Receiver optical sub-assembly
TIA	Trans-impedance amplifier
TOSA	Transmitter optical sub-assembly

4 Electrical Interface

Table 1 Specifications of electrical and optical performances

Item	Symbol	Condition	Min.	Typ.	Max.	Unit	Notes
O/E Conversion gain	G	Single-ended (M = 1)	0.7	—	—	kV/W	
APD gain	M		—	—	—		Note 1
Output impedance	Z_0	Single-ended	—	50	—	Ω	Fig. 1, 2
Output voltage swing	V_0	Single-ended AC, 50 Ω load	—	—	0.6	Vpp	Fig. 2
APD breakdown voltage	Vb	—	—	—	45	V	
TIA power supply voltage	Vcc	—	3.135	3.3	3.465	V	Note 1
			4.75	5.0	5.25	V	
Power supply current	Icc	—	—	—	100	mA	Note 2
Thermistor Resistance	Rth	25degC	9.5	10.0	10.5	kΩ	
Thermistor B constant	B		3800	3900	4000	K	

Note 1: Specified by vendor.
Note 2: For both TIA and APD.

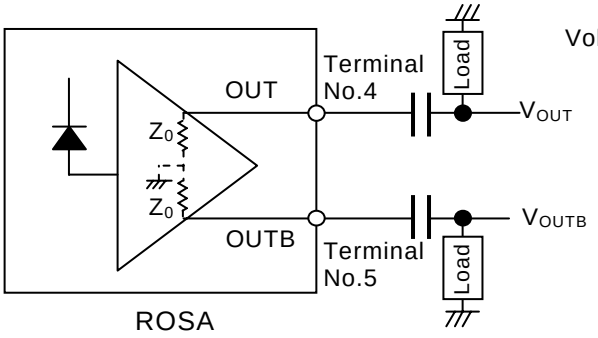

Fig. 1 Definition of output impedance

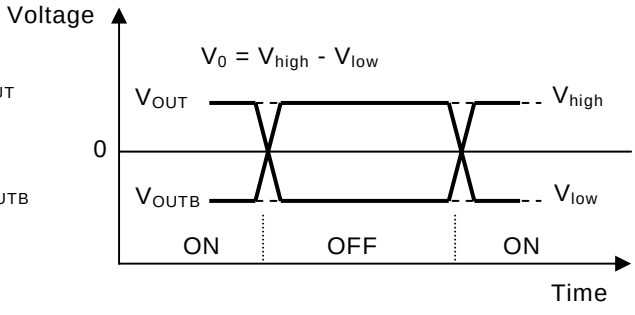

Fig. 2 Definition of single-ended output

ON: Optical input on
OFF: Optical input off

5 Optical Interface

The applicable optical interface shall be specified by each vendor considering the following.

Telcordia (GR-253-CORE)	LR1	LR2(a and C)
Optical Device	DM/EM	EM

ITU-T (G.691)	S-64.2a	L-64.1	L-64.2a	L-64.2c
Optical Device	SLM	SLM	SLM	SLM

ITU-T (G.959.1)	P1S1-2D2a	P1L1-2D1	P1L1-2D2
Optical Device	SLM	SLM	SLM