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

XMD11

Electrical & Optical Interfaces of ROSA PIN

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	June 7, 2004	First public issue
1.1	October 29, 2004	Addition of Scope. Addition of optical interfaces and reference for ITU-T G.959.1. Amend the definition of output impedance.
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 interface of ROSA PIN. The specifications were based on the investigation of PIN PD ROSA with TIA.

2 Reference Documents

[1] XMD13
"Physical Interface of LC ROSA Type 1 Package"

[2] XMD15
"Physical Interface of SC ROSA Type 1 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] IEEE 802.3ae
"IEEE Standard for Carrier Sense Multiple Access with Collision Detection (CSMA/CD) Access Method and Physical Layer Specifications - Media Access Control (MAC) Parameters, Physical Layer, and Management Parameters for 10 Gb/s Operation"

[6] ANSI INCITS 364-2003
"Information Technology - Fibre Channel 10 Gigabit (10GFC)"

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

[8] ITU-T G.691
"Optical interfaces for single channel STM-64, STM-256 and other SDH systems with optical amplifiers"

[9] ITU-T G.693
"Optical interfaces for intra-office systems"

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

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

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

3 Abbreviations

OSA Optical sub-assembly
PD Photo diode
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	0.6	—	—	kV/W	
Output impedance	Z_0	Single-ended	—	50	—	Ω	Fig. 1
Output voltage swing	V_0	Single-ended AC, Load=50Ω	—	—	0.6	Vpp	Fig. 1 Fig. 2
Power supply voltage	Vpd	—	—	—	5.25	V	PD bias
	Vcc	—	3.135	3.3	3.465	V	Note 1
			4.75	5.0	5.25	V	TIA
Power supply current	Icc	—	—	—	100	mA	Note 2 TIA

Note 1: Specified by vendor.
Note 2: For both 3.3V and 5.0V.

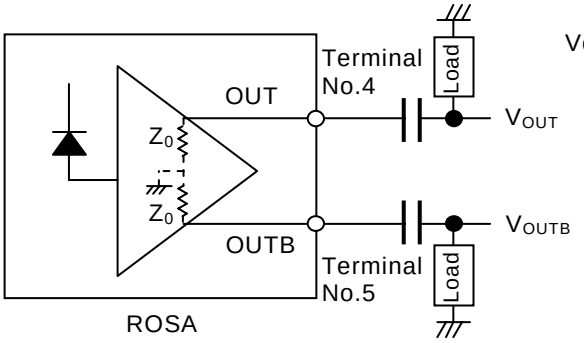

Fig. 1 Definition of the output impedance

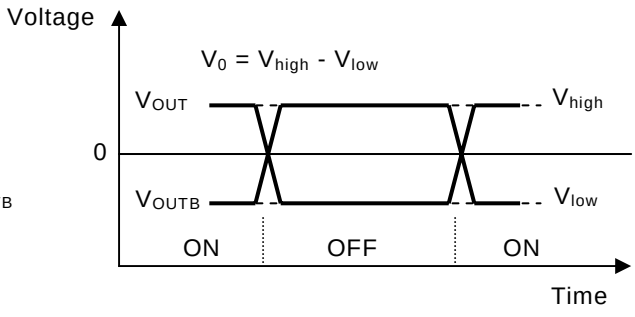

Fig. 2 Definition of single-ended output

ON: Optical input on
OFF: Optical input off

5 Optical Interface

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

Ethernet (IEEE802.3)	10GBASE-LW/LR	10GBASE-EW/ER
Optical Device	-	-

ANSI 10GFC	1200-SM-LL-L
Optical Device	-

Telcordia (GR-253-CORE)	SR-1	IR-1	SR-2
Optical Device	DM	DM	EM

ITU-T (G.691)	I-64.1r	I-64.1	I-64.2r	I-64.2
Optical Device	MLM	SLM	SLM	SLM

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

ITU-T (G.693)	VSR600-2R1	VSR600-2M1	VSR600-2M2	VSR2000-2R1
Optical Device	MLM	MLM	SLM	SLM

ITU-T (G.693)	VSR2000-2L2
Optical Device	SLM

ITU-T (G.959.1)	P1I1-2D1r	P1I1-2D1	P1I1-2D2r	P1I1-2D2
Optical Device	MLM	SLM	SLM	SLM

ITU-T (G.959.1)	P1S1-2D1	P1S1-2D2b
Optical Device	-	SLM