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

XMD13

Physical Interface of
LC ROSA Type 1 Package

Rev. 2.1
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
2.0	October 29, 2004	Addition of Scope. Changes to unify the descriptions in ROSA Type1 and Type2 Package documents.
2.1	January 17, 2006	Changes document name to identify connector type

1 Scope

The XMD MSA committee has created this technical document to specify the physical interface of LC ROSA type 1 package. The specifications were based on the investigation of ROSA to be mated with LC connector, mainly assuming a co-axial type as the type 1 package.

2 Reference Documents

[1] IEC 61754-20
“Fibre optic connector interfaces – Part 20: Type LC connector family”

[2] XMD11
“Electrical & Optical Interfaces of ROSA PIN”

[3] XMD12
“Electrical & Optical Interfaces of ROSA APD”

3 Abbreviations

APD	Avalanche photo diode
FPC	Flexible printed circuit
OSA	Optical sub-assembly
PCB	Printed circuit board
PD	Photo diode
ROSA	Receiver optical sub-assembly
TOSA	Transmitter optical sub-assembly
XFP	10 gigabit small form factor pluggable

4 Electrical Interface

4.1 Numbering of electrical terminals

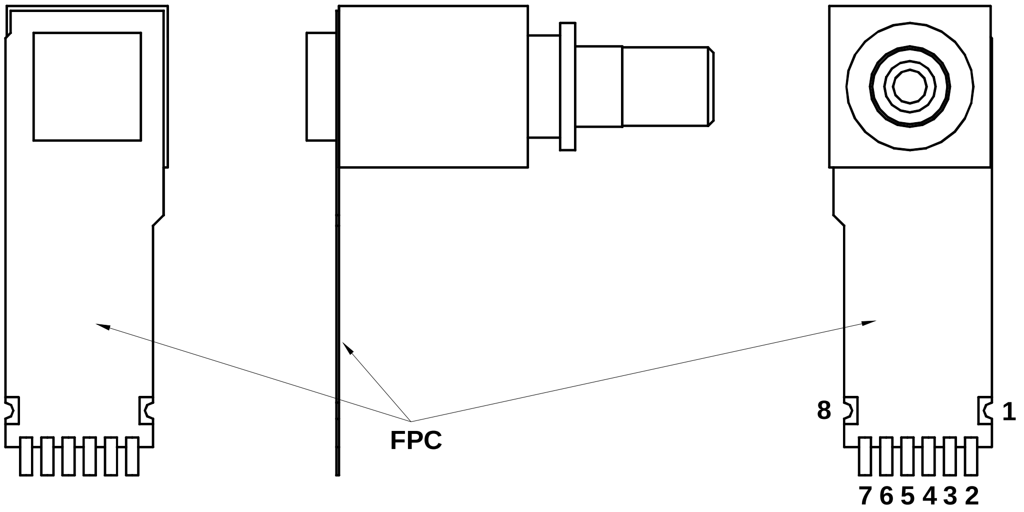

Fig. 1 Electrical terminal numbering assignments

Note 1: The FPC structure in this figure is prepared as an example only. The vender should specify its FPC structure based on the mechanical interface in Session 5. The electrical terminal numbering assignments shall be defined by the pattern layout in Figure 3

4.2 Electrical terminal assignment

Table 1 Terminal function definitions

Terminal number	PIN	APD
1	Signal Ground	Thermistor
2	Vcc	Vcc
3	Signal Ground	Signal Ground
4	Out	Out
5	OutB	OutB
6	Signal Ground	Signal Ground
7	Vpd	No User Connection
8	Signal Ground	Vapd

Note 1: Package potential shall be specified by each vendor.

Note 2: Definitions of “Out” and “OutB can be obtained in the references [2] and [3].

5 Mechanical interface

5.1 Package outline

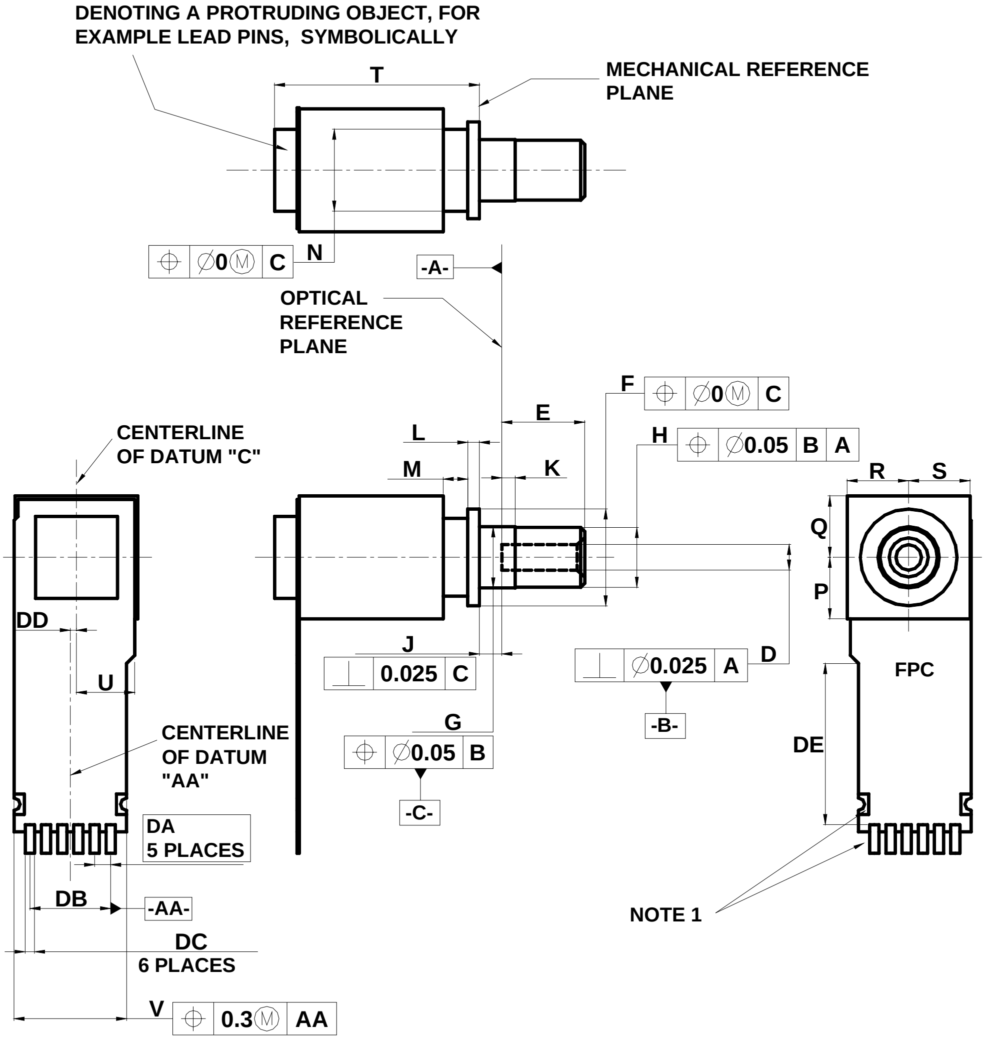

Fig. 2 Package outline drawing

Note 1: Denoting 8 soldering pads corresponding to the terminals described in Figure 1 and Table 1. Features and dimensions of the pads and the FPC end portion shape around the pads shall be specified by each vendor to comply with the recommended pattern layout described in Figure 3. The features of the pads and the FPC end portion shape described in this figure are prepared as examples only.

Note 2: The vendor should design the FPC by considering electrical crosstalk and mechanical stress.

Table 2 Dimensions of the package outline

Reference	Dimensions mm		Notes
	Minimum	Maximum	
D	-	-	Note 1
E	4.0	4.1	
F	4.7	5.1	Diameter
G	2.98	3.00	Diameter
H	-	2.97	Diameter
J	1.065	1.135	
K	0.55	0.70	
L	0.52	0.63	
M	1.0	-	
N	-	4.1	Diameter
P	-	3	Note 2
Q	-	3	Note 2
R	-	3	Note 2
S	-	3	Note 2
T	-	9.8	
U	-	3	
V	-	5.7	
DA	0.79		Basic dimension
DB	3.95		Reference dimension
DC	-	-	Note 3
DD	0.05	0.55	Note 4
DE	2.5	-	

Note 1: Refer IEC 61754-20.

Note 2: P, Q, R and S only define the maximum dimension, thus do not specify the shape of the package.

Note 3: The dimension and the positional tolerance of “DC” shall be specified by each vendor considering the pattern layout described in Figure 3.

Note 4: Denoting the dimension from the centerline of the datum “C” to the centerline of the datum “AA”.

5.2 Recommended pattern layout

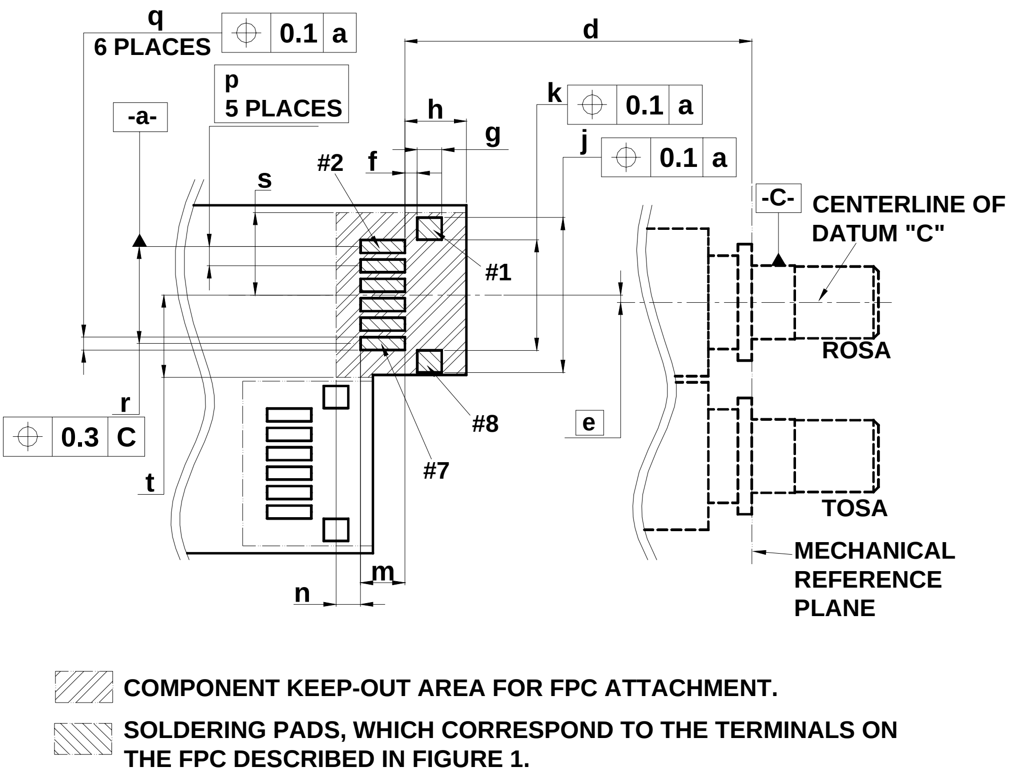

Fig. 3 Recommended pattern layout for the PCB in a XFP transceiver

Note 1: The datum “C” described here is the same one as described in Figure 2.

Note 2: #1, #2, #7 and #8 in this figure are denoting pad numbers corresponding to the terminal numbers described in Figure 1 and Table 1.

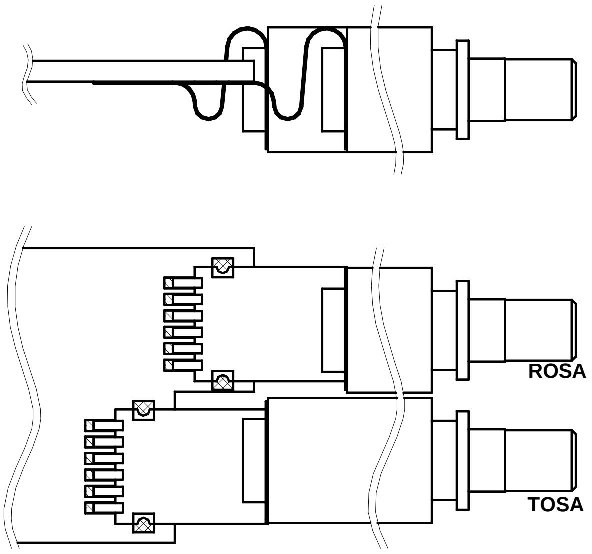

Fig. 4 Recommended arrangement of the PCB, FPCs, TOSA and ROSA

Note 1: The soldering pads for FPC attachment shall be prepared on the top side of the PCB as described here. The bending shape of the FPC shall be specified by each vendor. The FPC bending shape described here is prepared as an example only

Table 3 Dimensions of the recommended pattern layout for the PCB

Reference	Dimensions mm		Notes
	Minimum	Maximum	
d	14.5	15.2	
e	0.3		Basic dimension, Note 1
f	0.50	0.55	
g	1.0	1.1	
h	-	2.5	
j	6.10	6.35	
k	4.45	4.55	
m	1.4	-	
n	1.0	-	
p	0.79		Basic dimension
q	0.45	0.50	
r	3.95		Reference dimension
s	3.35	-	Note 2
t	3.35	-	Note 2

Note 1: Denoting the offset between the datum “C” and the datum “a”.

Note 2: Denoting the dimension from the datum “a”.