40GE 10km SMF PMD Economic Feasibility

IEEE 802.3ba Task Force 40GE Ad Hoc

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Outline

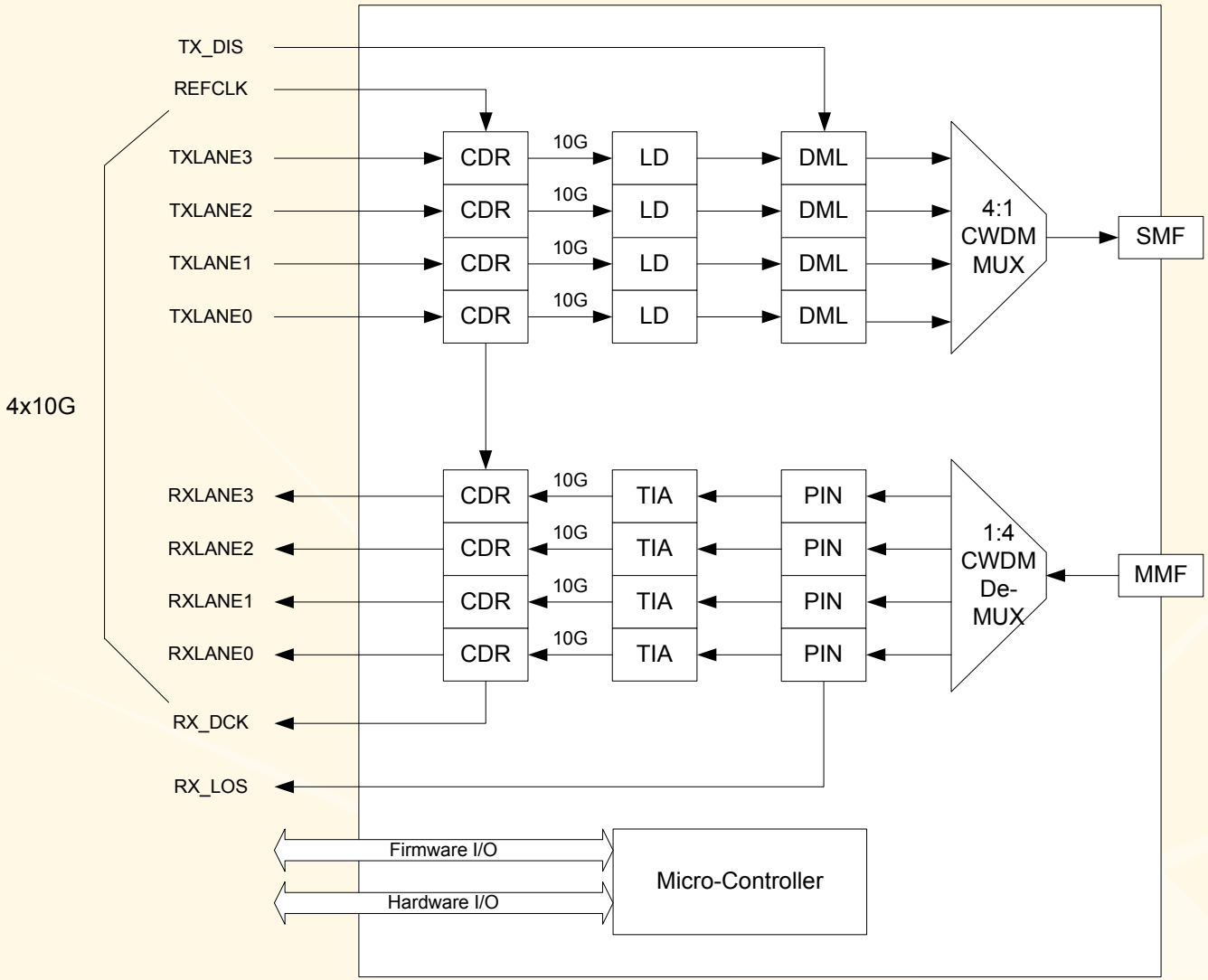
40GE 10km SMF(MMF) PMD

- SMF(MMF) PMD Block Diagram
- Gen1 Relative Cost
- Economic Feasibility Discussion

Appendix: 100GE 10km SMF PMD

- Gen1 Relative Cost

40GE 10km SMF(MMF) 4x10G 1310nm DML PMD



Common with LX4:

- Duplex SMF/MMF
- 10km SMF

Different from LX4:

- 4x10G I/O (vs. 4x2.5G I/O)
- 100m OM3 MMF (vs. 300m)
- CWDM grid (vs. LX4 grid)

DC Power

- 8W

Form Factor

- Shared with 100GE Transceivers for interoperability and future high DC power applications

Gen1 40GE 10km 1310nm PMD Relative Cost

Gen1 10GE-LR 10km XFP Component	Relative Cost	Gen1 4x10G 10km Transceiver Component	Relative Cost
2 CDRs	1x	8 CDRs	2x
Single LD	1x	Quad LD	2x
DML (DFB) TOSA	1x	Quad DML TOSA w/ CWDM Mux	4x
PIN/TIA ROSA	1x	Quad PIN/TIA ROSA w/ CWDM DeMux	4x
FR4 PCBA, XFP parts & connector	1x	FR4 PCBA, new form factor parts & connector	4x
Single channel testing	1x	Four channel parallel testing	1x
Weighted average	**1x**	**Weighted average at similar volumes, stages in product life cycle**	**4x ***

* Amortization of development and test equipment costs not included. Components leverage existing technology investments. New development costs are 3 lasers on CWDM grid, TOSA & ROSA packages, transceiver engineering, and parallel testing infrastructure.

* May increase up to 2x depending on volume and ROI assumptions.

40GE 10km 1310nm PMD Economic Feasibility

- 40GE 10km SMF 4x10G 1310nm un-cooled DML PMD is Economically Feasible.
- Economic Feasibility is enhanced (development cost driven) by leveraging existing 10GE-LR Transmitter, 10GE-LRM Receiver, and 100GE form factor technology.
- Economic Feasibility is enhanced (yield driven) by taking advantage of new 10G DML technology and relaxing 802.3 10GE-LR Transmitter assumptions to reduce the 10km Link Budget and improve DML yield.
- Economic Feasibility is enhanced (volume driven) by using 40GE SMF PMD for 100m duplex OM3 MMF applications.
- Economic Feasibility is enhanced (volume driven) by 40GE addressing near term cost sensitivity markets that can not be addressed by 100GE

  Gen1 100GE 10km SMF PMD cost (p6) is 8x to 12x Gen1 40GE 10km SMF PMD cost (p4)

Appendix: Gen1 100GE 10km PMD Relative Cost *

Gen1 10GE-ER 40km XENPAK Component	Relative Cost	Gen1 4x25G 10km Transceiver Component	Relative Cost
XAUI (SiGe)	1x	10:4 SerDes (SiGe)	3x
Mod Driver (InP)	1x	Quad MD (InP)	3x
EML + TEC TOSA	1x	Quad EML + TEC TOSA w/ WDM micro-optic Mux	4x
PIN/TIA ROSA	1x	Quad PIN/TIA ROSA w/ WDM micro-optic DeMux	4x
FR4 PCBA, XENPAK parts & PT20 connector	1x	Nelco PCBA, new form factor parts & connector	2x
Single channel testing	1x	Four channel parallel testing	1x
Weighted average	**1x**	**Weighted average at similar volumes, stages in product life cycle**	**4x ****

* Gen1 100GE 10km SMF 1310nm Transceiver Economic Feasibility, cole_01_0307 (p12)

** Amortization of development and test equipment costs not included

** May increase up to 2x depending on volume and ROI assumptions.