40GE 10km SMF PMD

IEEE 802.3ba Task Force

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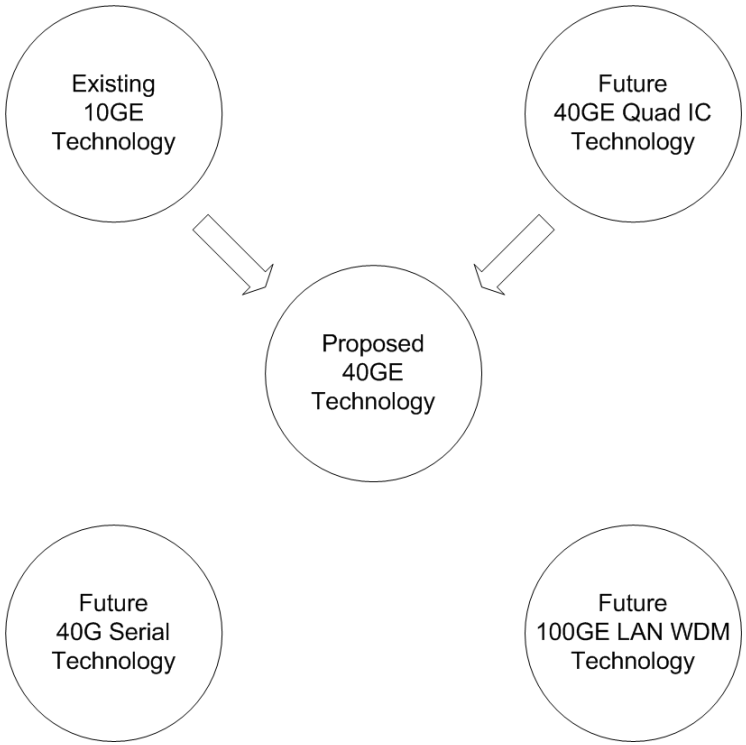
Outline

- Status
- Approach
- Architecture
- Link and Power Budget
- Appendix 1: MMF Option

40GE 10km SMF Status

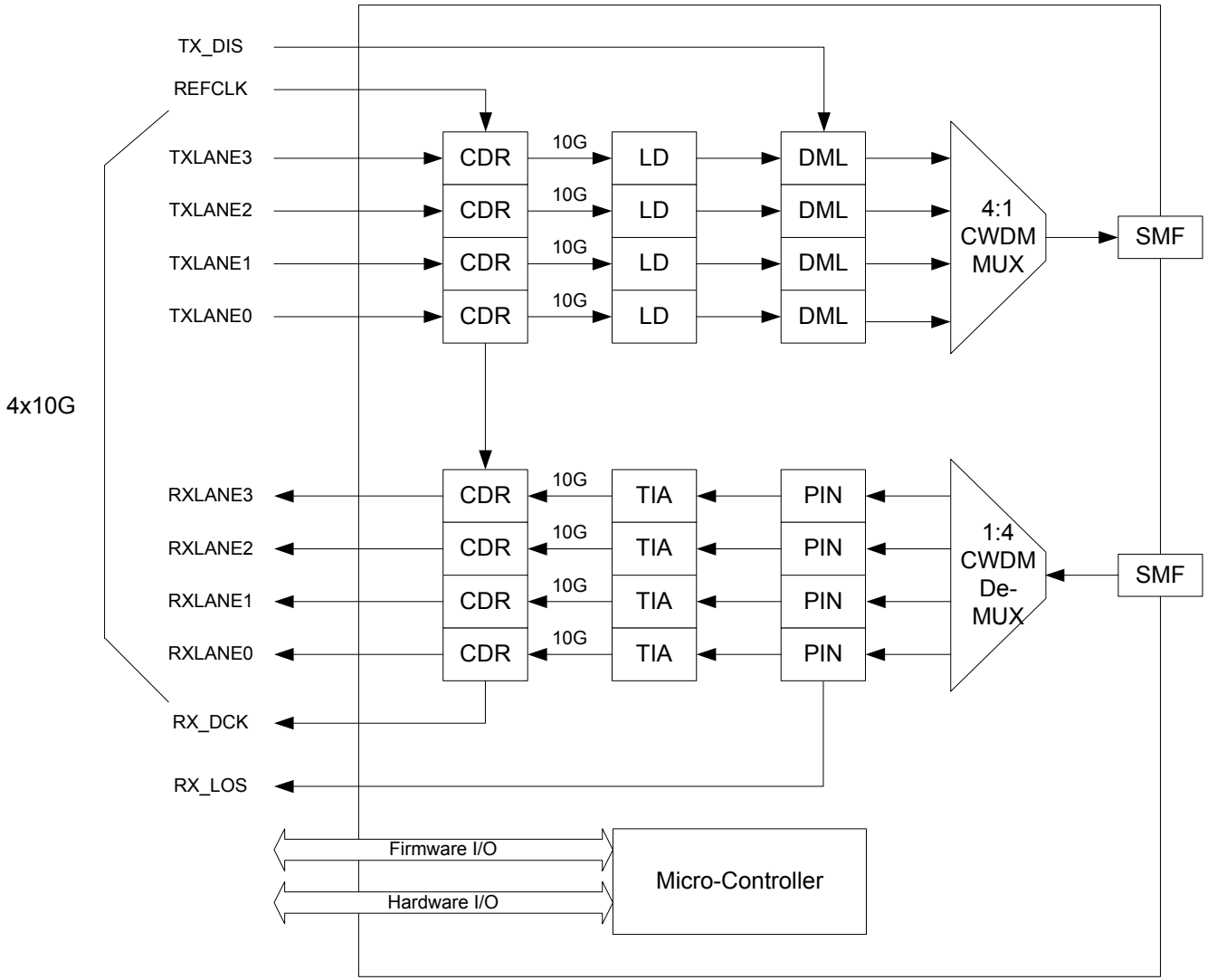
- Baseline Approach to 40GE 10km SMF reach
  - TX: 4x10G LD-DFB → CWDM Mux
  - RX: 4x10G PIN-TIA ← CWDM DeMux
- Technical presentations discussing baseline approach
  - cole_40_01_0208, cole_40_02_0208, cole_03_0308
  - traverso_40_01_0208, traverso_40_01_0308, traverso_04_0308
  - tsumura_40_01_0208, tsumura_040808_comparison_of_power
- Key Issues analyzed
  - Near term versus long term PMD cost trade-off
  - Link Budget
  - DML effects
  - MMF option
  - Power consumption

4x10G Approach to 40GE 10km SMF PMD



- 4x10G proposal leverages existing 10GE technology investment to achieve lowest cost PMD in the near/mid term
- 40G serial leverages CMOS integration cost curve and single optics to achieve lowest cost PMD in the mid/long term
- Choice of 4x10G approach is based on prioritizing near/mid term objectives

4x10G 1310nm DML 10km SMF PMD



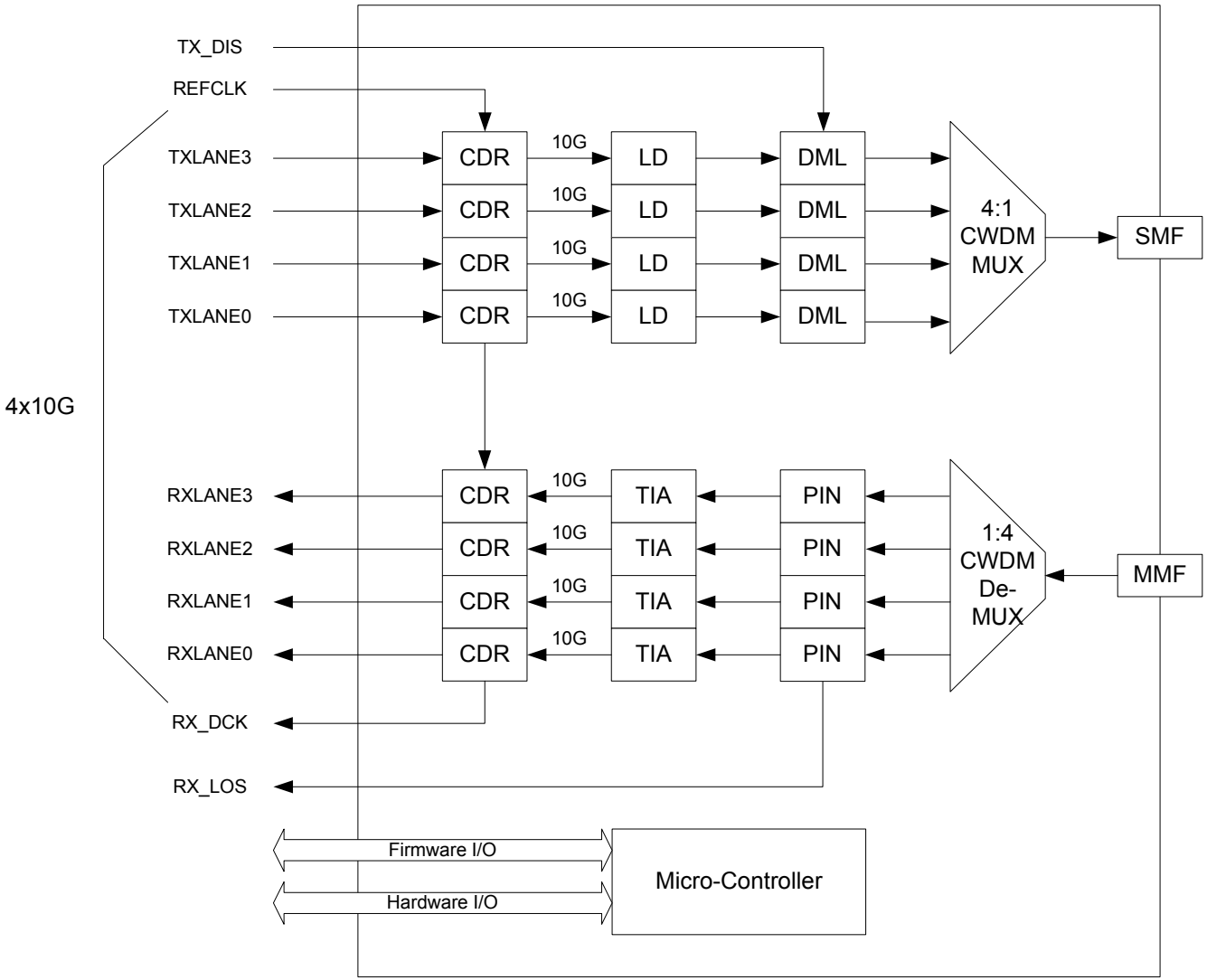
4x10G 1310nm DML 10km SMF Power Budget

10G Link Budget 10km SMF	CWDM DML λ = 1331nm ER = 3.5 → 5.0 dB
Fiber Loss (G.652 A&B)	4.3 dB
Penalties (10GBASE-L)	0.9 → 3.2
Connector loss	2.0
Total budget	7.2 → 9.5 dB

10G Pwr. Budget 10km SMF OMA	CWDM DML λ = 1331nm ER = 3.5 → 5.0dB
TX Min	-1.7 → 2.5 dBm
TP2 TX Min 2.5dB Mux loss	-3.2 → 0.0
Link Budget (dB)	7.2 → 9.5 dB
TP3 RX Min 2.5dB DeMux loss	-10.4 → -9.5
RX Min (with crosstalk penalty)	-12.9 → 12.0 dBm

- CWDM Grid: 1271, 1291, 1311, 1331nm (1291, 1311, 1331, 1351nm alternative)
- Link Budget range of values is due to different DML technology assumptions
- Power Budget range of values is due to Link Budget differences
- Final CWDM Grid set and final Link and Power Budget numbers are T.B.D.

Appendix 1: MMF Support option



- Use of a MMF receiver permits support of both 10km SMF and OM3 MMF applications
- 4 x CDR receiver (shown) supports 100m OM3 MMF applications
- 4 x LRM EDC receiver (in place 4 x CDR shown) supports ~220m OM3 MMF applications
- MMF support does not need to be specified in the IEEE