QSFP-DD Overview

Tom Palkert

Editor

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Introduction

MSA formed in March 2016 to respond to the market need for a High density 400G solution

- Backwards compatible to facilitate ease of network upgrades
- Leverages proven technology
- Members include complete eco-system
  - Multiple connector companies, OEMs, module companies, silicon providers

www.QSFP-DD.com

QSFP-DD

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Supporters (page 1)

- Umesh Chandra-Dell
- Joe Dambach-Molex
- Winston Way-Neophotonics
- Gary Nicholl-Cisco
- Brian Welch-Luxtera
- Colin Bradbury-Molex
- Sergio Nunes-Celestica
- Darcy Phillips-Panduit
- Robert Reid-Panduit
- Jerry Wiltjer-Panduit
- Brett Lane-Panduit
- Phil Irwin-Panduit
- Charlie Fu-Oclaro
- Scott Sommers-Molex
- Tiger Ninomiya-Senko
- David Estes-Spirent
- Kai Keskinen PhD-Celestica
- David Piehler-Dell-EMC
- Matt Traverso-Cisco
- Tatiana Berdinskikh PhD-Celestica
- Nathan Tracy-TE
- William Wang-Finisar
- Greg Schmidt-MaxLinear
- Larry Dano-Delta Products
- Jane Lim-Cisco

Supporters (page 2)

- Ed Ulrich-Source Photonics
- Piers Dawe-Mellanox
- Rob Stone-Broadcom
- Takeshi Nishimura-Yamaichi
- Sven Otte-Sicoya
- Fadi Daou-Multilane
- Marek Tlalka-Macom
- David Chen-AOI
- John Petrilla-Foxconn Interconnect Technology
- Chris DiMinico-
- Attila Aranyosi-Juniper
- Mike Ressl-Hitachi Cable
- Ray Nering-Cisco
- Ming Wu-Delta Electronics
- Kinya Yamazaki-Apresia
- David Hochenedel-Skorpios
- Ken Ly-Cisco
- Ed Frlan-Semtech
- Marika Herod-Semtech
- Patrick Casher-Loram
- Pirooz Tooyserkani-Cisco

Supporters (page 3)

- Feng Pan-Luxshare
- Stephen Nelson-Finisar
- Xin Wu PhD-Genesis
- Thananya Baldwin-Ixia
- Dan Symes-Ixia
- Nelson Murga-Ixia
- Jerry Pepper-Ixia
- Rick Rabinovich-Ixia
- Kapil Shrikhande-Innovium

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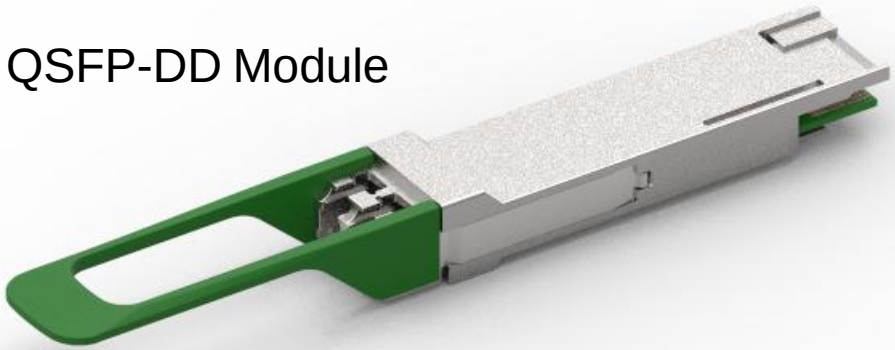
QSFP-DD Overview

- Supports 8x electrical interface
- Connector / Cage Backwards compatible with QSFP+/QSFP28 modules
- Increased thermal power capacity above current QSFP28
  - At least 12W, target 14W
- MSA to define, QSFP-DD Module form factor, 2x1 Cage and Connector form factor, pin out and management interface

QSFP-DD Module



QSFP-DD 2X1 Connector/cage and Cable

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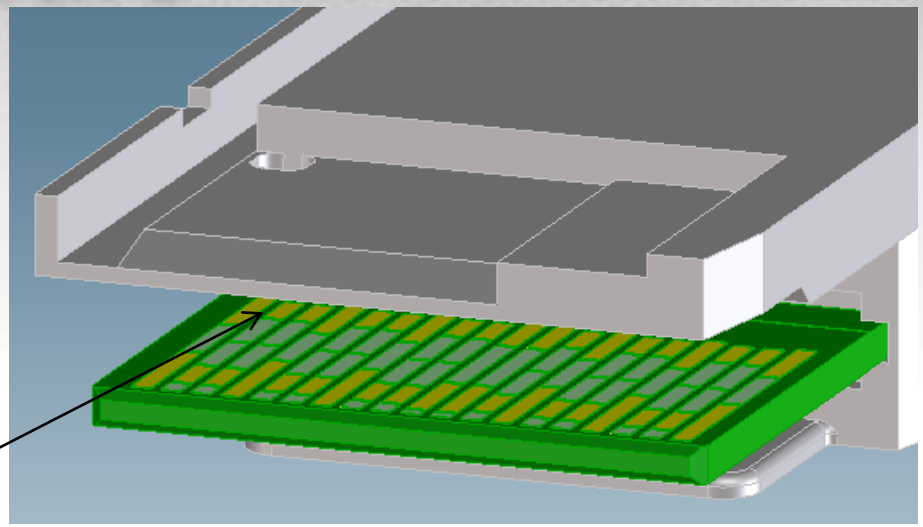
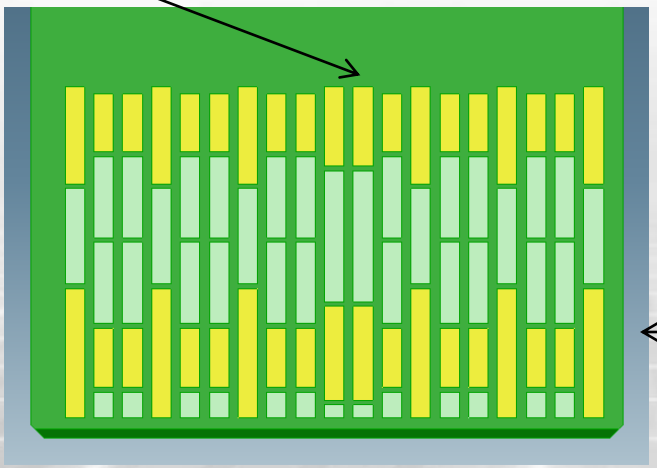
QSFP-DD Module

Light Green areas are passive,
Gold areas are active

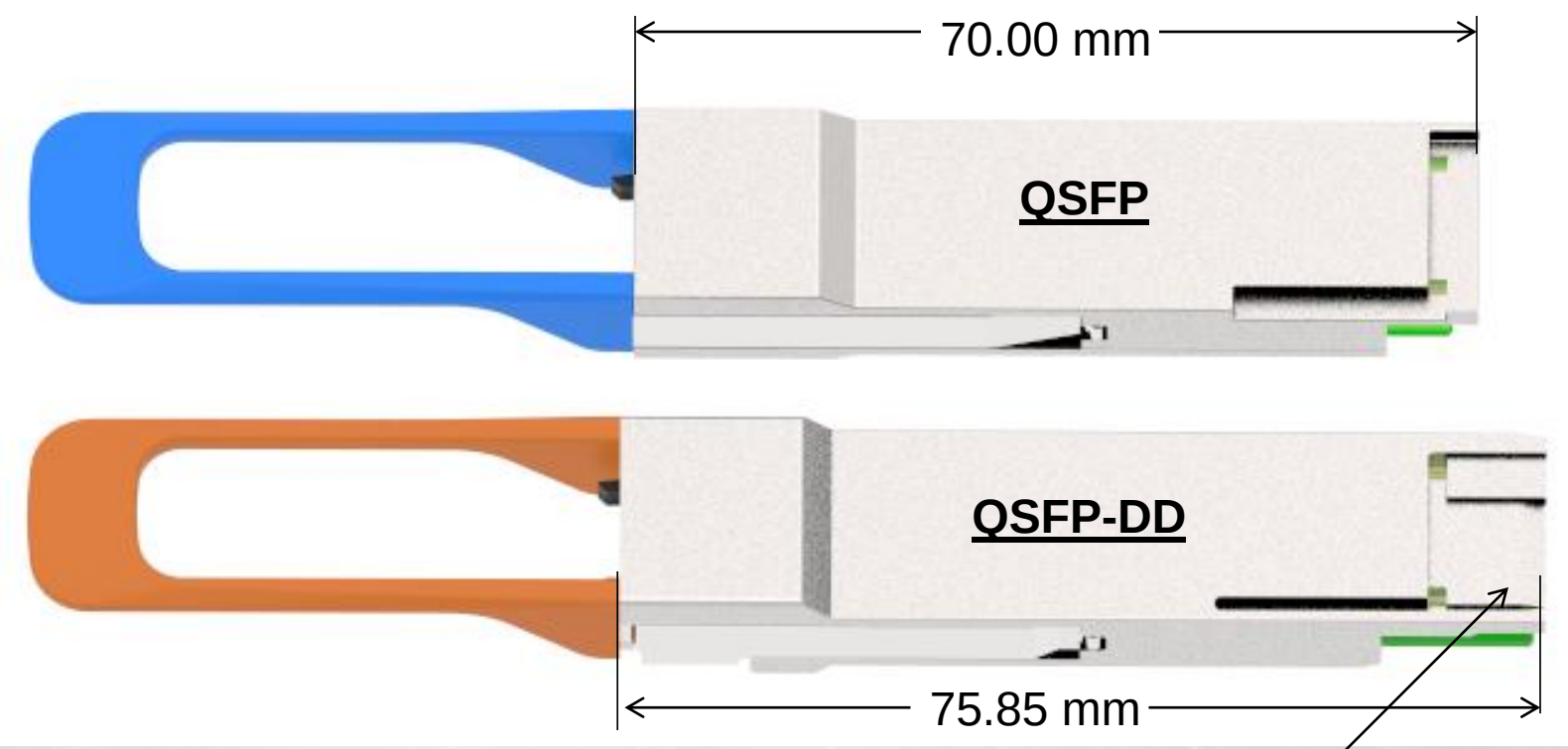


QSFP
Pads

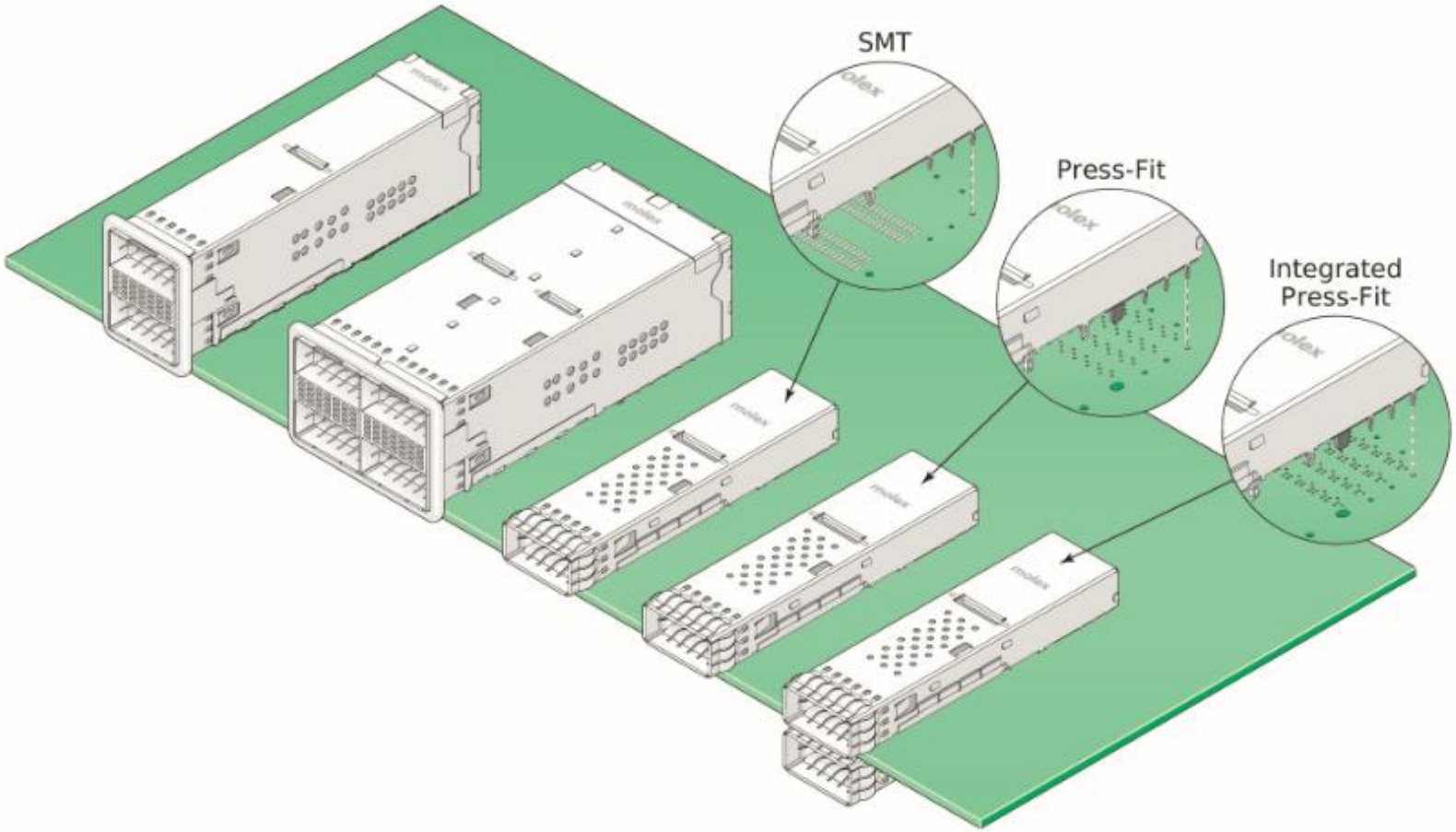


Additional 4 lanes doubles
the density

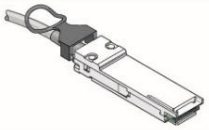
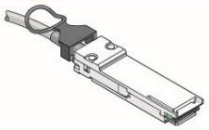
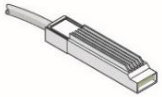
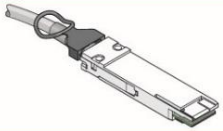
QSFP-DD Module Dimensions



QSFP-DD Cage options



1RU Port Comparison

Product	Plug Design	19"/1RU "Usable" Faceplate (352.75mmx41mm)	Throughput	Port Count
SFP+ (benchmark) 1x16G			720Gb	72
zSFP+ (benchmark) 1x28G			1.8Tb	72
QSFP28 4x28G			3.6Tb	36
QSFP28 4x56G			7.2Tb	36
microQSFP 4x56G			14.4Tb	72
QSFP-DD 8x56G			14.4Tb	36

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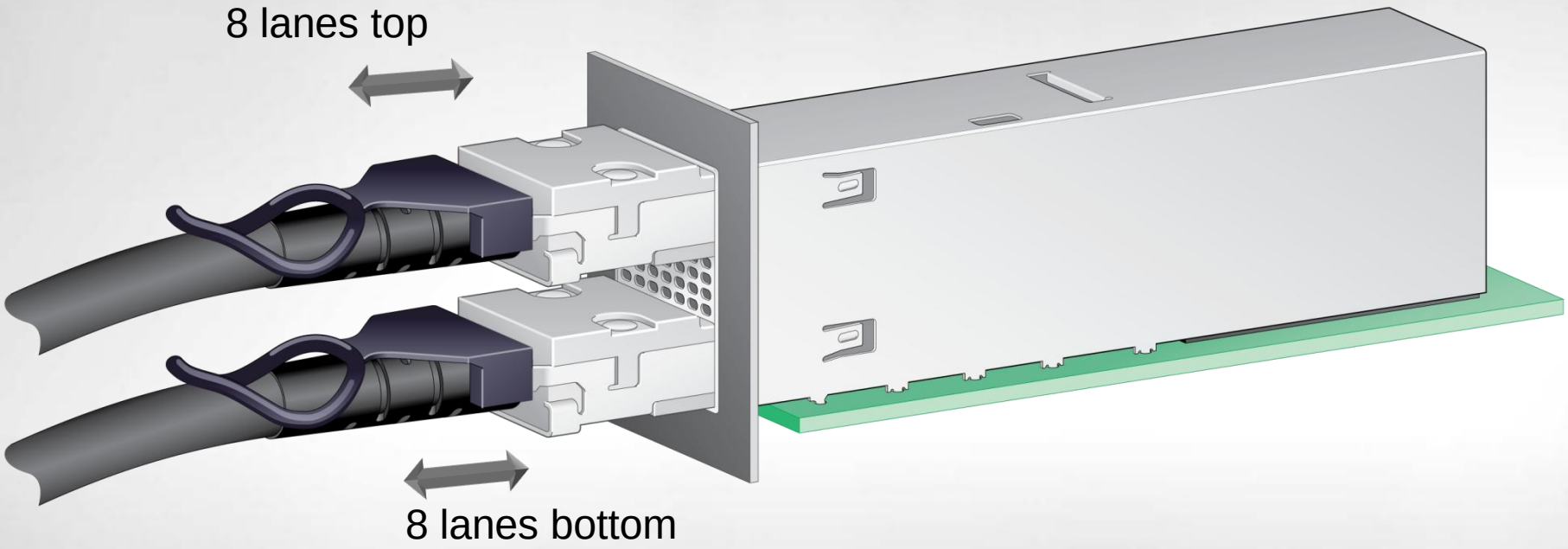
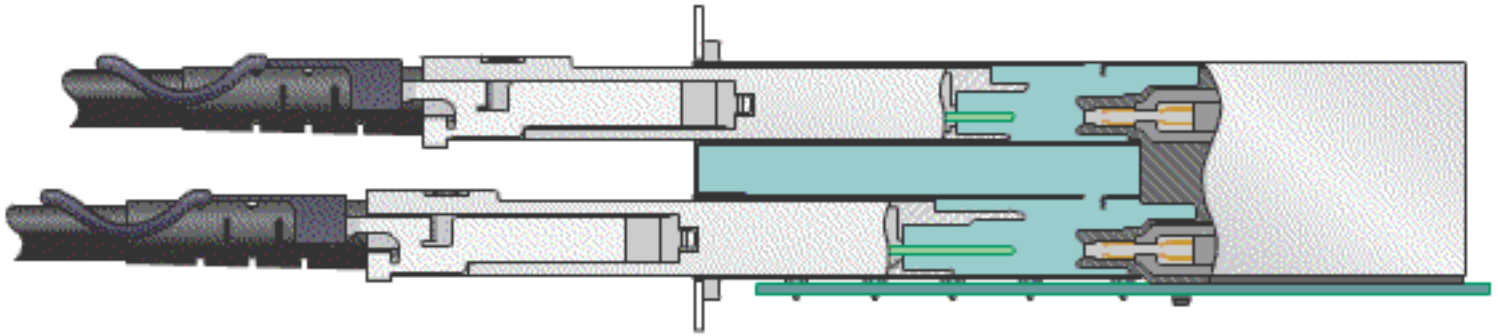
QSFP-DD 2X1 Cage and Connector

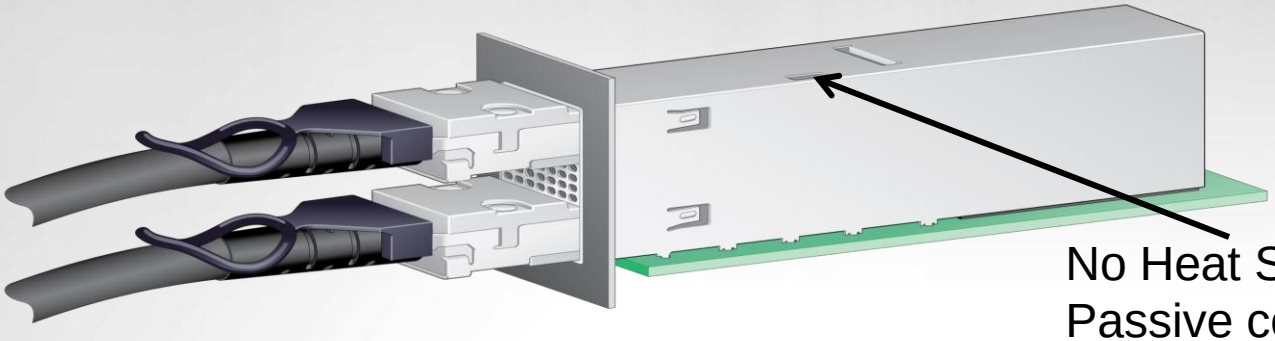


QSFP-DD Cage and Connector – 89.4 mm long (cage length)
QSFP connector/cage – 73.1 mm long (cage length)
Cage and Connector accepts either QSFP or QSFP-DD module
Picture shows (2) QSFP-DD modules inserted in a 2x1 Cage and Connector

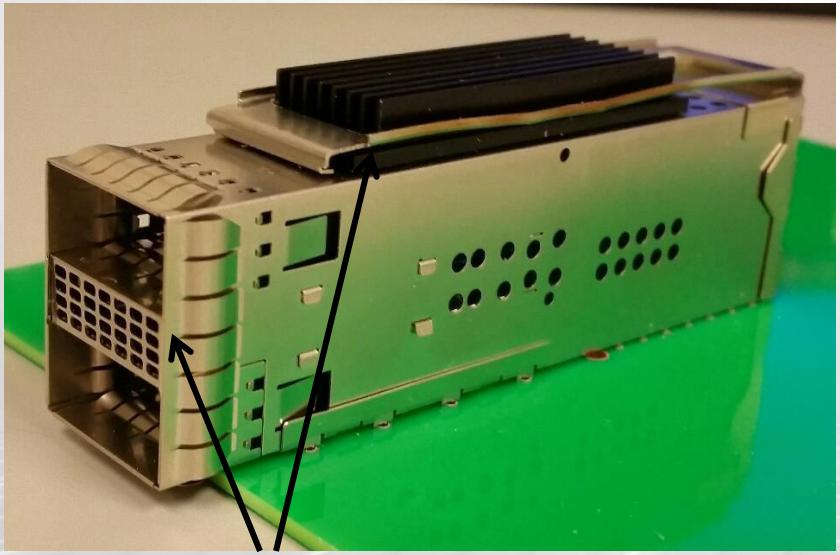
Module Mating



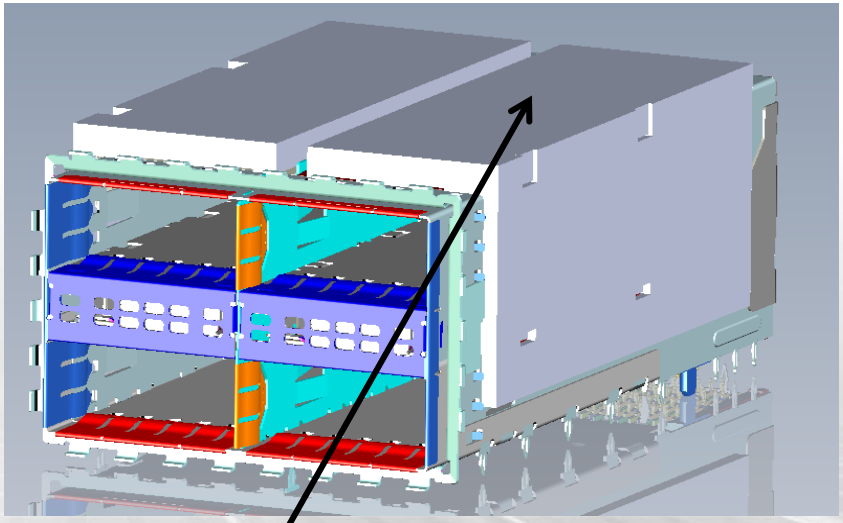
QSFP-DD Cooling versatility



No Heat Sinks required for
Passive copper cables



Integrated Heat Sinks for High
Density Optical modules



Even liquid cooled options exist

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Direct Attach Copper– 3m 28awg

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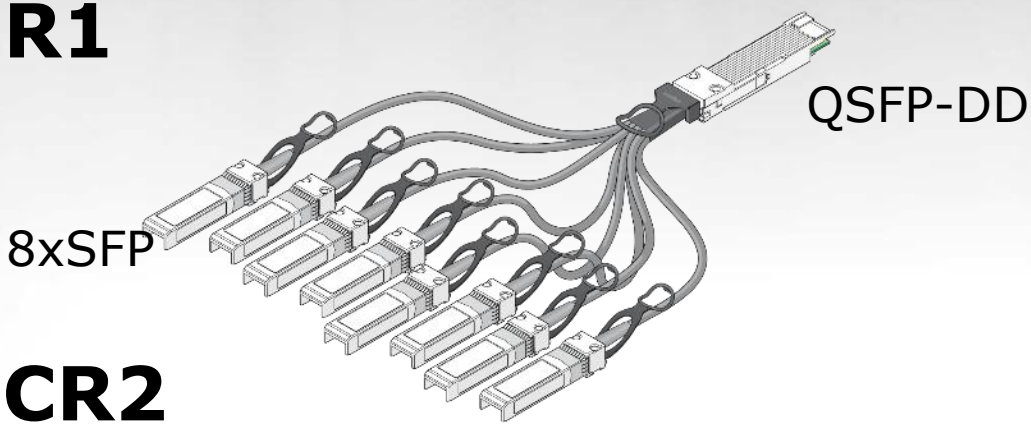
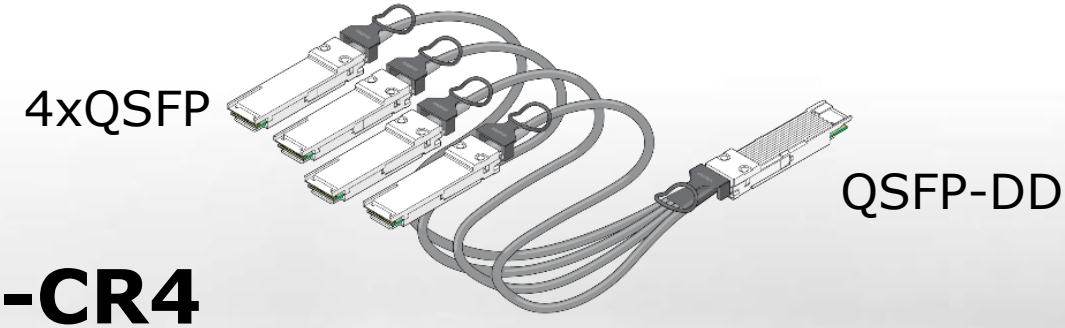
Proposed MDIs (Clause 136)

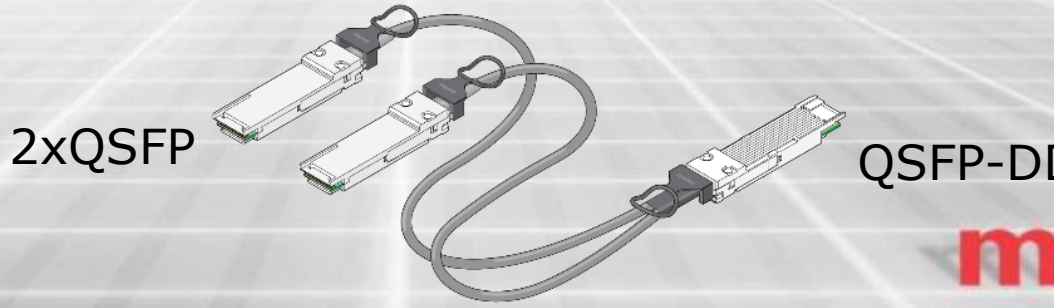
- **50GBASE-CR1**



- **100GBASE-CR2**



- **200GBASE-CR4**



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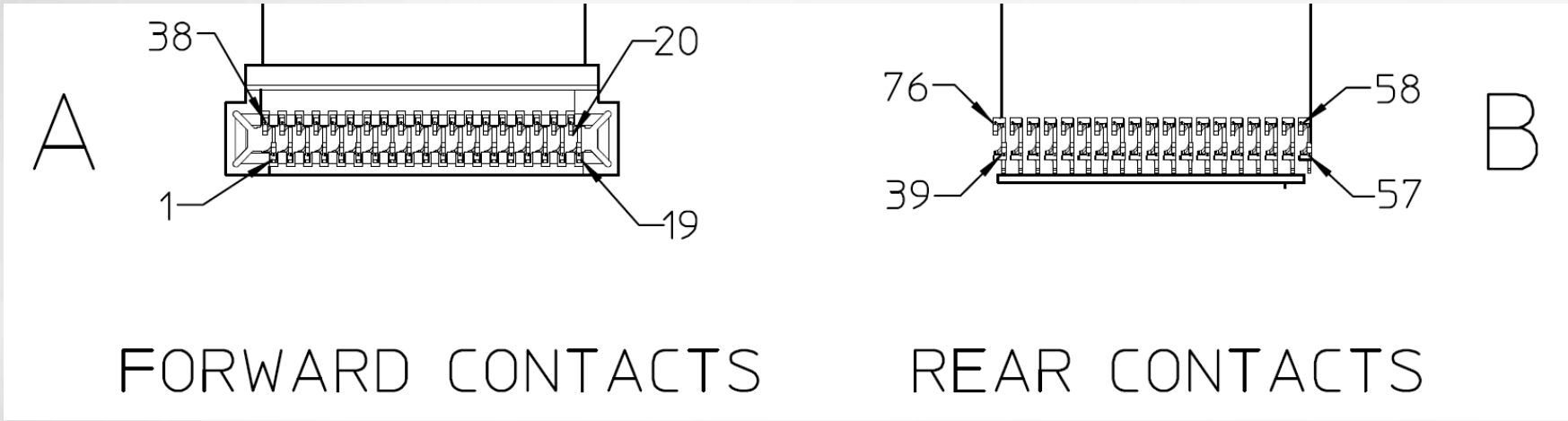
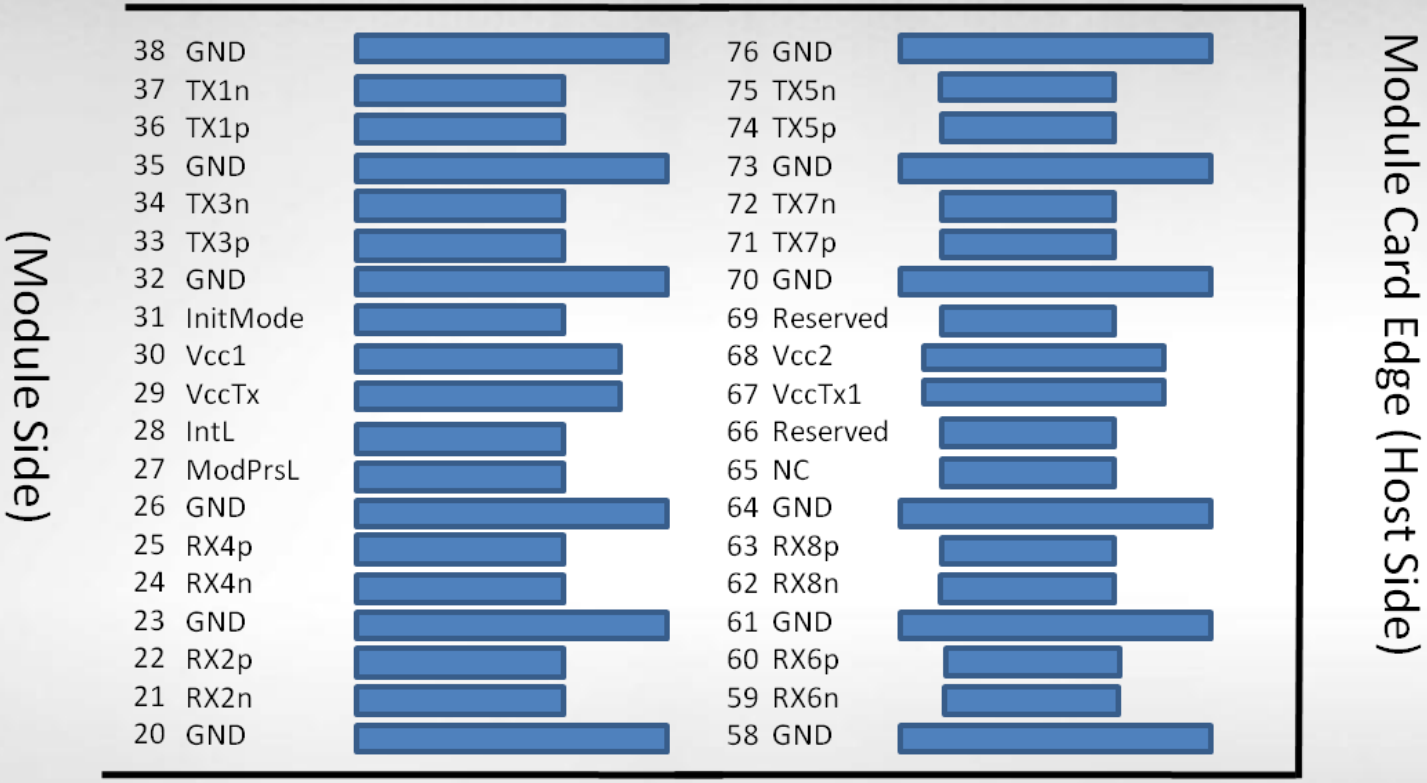
Host Connector pinouts



Module pads (top side)



Legacy QSFP28 Pads

Additional QSFP-DD Pads

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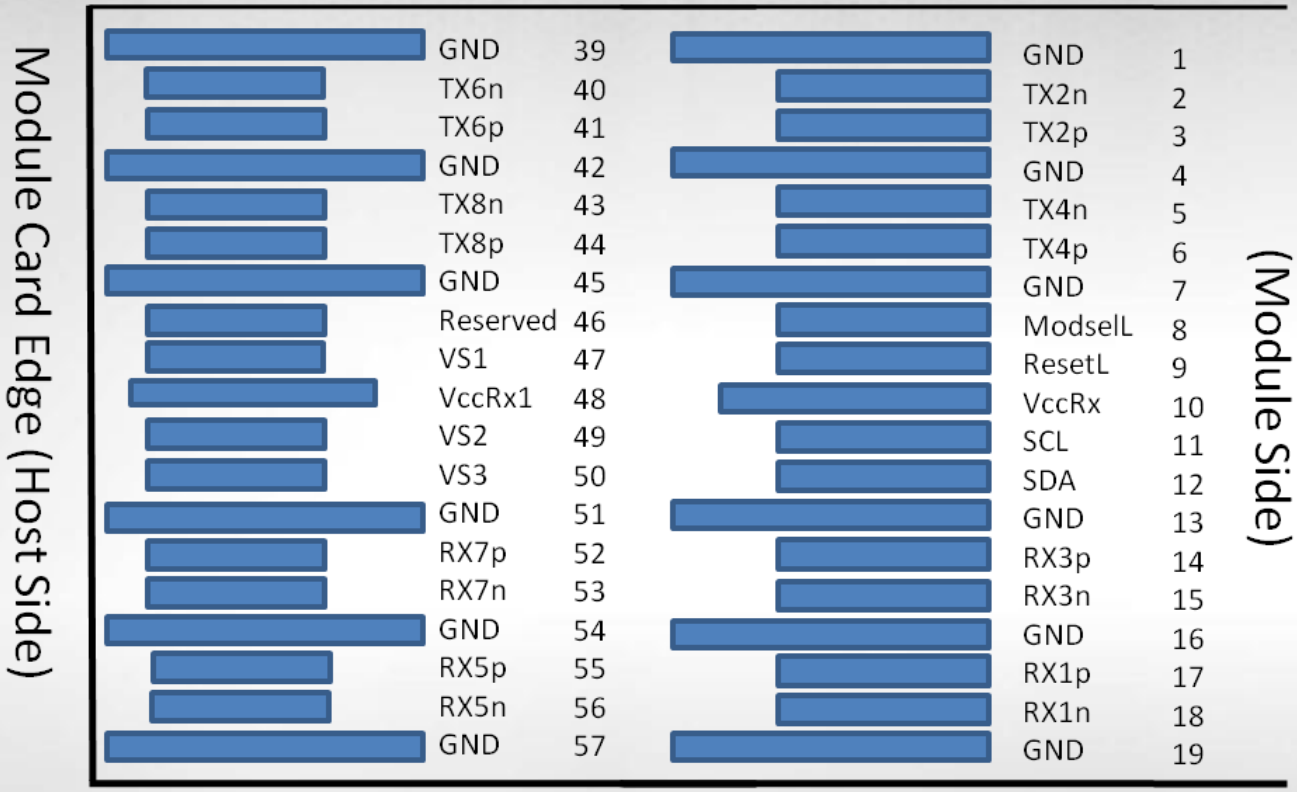
Module pads (bottom side)



Bottom side viewed from bottom

Additional QSFP-DD Pads

Legacy QSFP28 Pads

Thank You!