
TABLE OF CONTENTS

1. EXECUTIVE SUMMARY	7
1.1 Key Findings.....	8
1.2 Companies Covered.....	9
2. 100/400G MARKETS & TECHNOLOGY	12
2.1 Market Overview	12
2.3 40G/100G Ethernet	15
2.4 25/50/200G Ethernet.....	18
2.5 400G Ethernet	18
2.6 InfiniBand	19
2.7 Fibre Channel	20
2.8 Sonet/SDH, DWDM and OTN.....	21
3. OPTICAL MODULES FOR DATA CENTER & ENTERPRISE	22
3.1 25G, 50G, and 100G Optical Module Overview	22
3.2 200G/400G Optical Module Overview	26
3.3 Active Cables.....	29
3.4 SFP28/56 Optical Modules	32
3.5 QSFP28/QSFP56 Optical Modules.....	37
3.6 QSFP-DD Optical Modules.....	49
3.7 OSFP Optical Modules	52
3.8 CFP Optical Modules	53
3.9 CFP2 Optical Modules.....	56
3.10 CFP4 Optical Modules.....	59
3.11 CFP8 Optical Modules.....	61
3.12 Cisco CPAK Optical Modules	62
4. LONG-HAUL AND METRO SOLUTIONS.....	64
4.1 ODB, DPSK, DQPSK, and OOK Modulation	64
4.2 DP-QPSK and Coherent Receiver	64
4.3 QAM Modulation.....	65
4.4 Metro/Long-Haul CFP Modules.....	66
4.5 Metro CFP2 Modules	67
4.6 Long-Haul and Metro Transponder Modules	69
5. 100g TO 600g SILICON DEVICES.....	72
5.1 Coherent Transceiver Devices	72
5.2 Gearbox/Mux Devices	73
5.3 PAM4 PHY Devices.....	75
5.4 Multi-Lane CDR Devices	78
5.5 Driver and Receiver Arrays	80
6. OPTICAL MODULE VENDORS	85
6.1 Acacia Communications Inc	87
6.2 Accelink Technologies Co., Ltd.	87

6.3	Amphenol Corp.	87
6.4	Applied Optoelectronics Inc.	88
6.5	Champion ONE.....	88
6.6	Cisco Systems Inc.	88
6.7	ColorChip Inc.	89
6.8	Dust Photonics.....	89
6.9	Eoptolink Technology Inc.	89
6.10	Finisar Corp.	89
6.11	FoxConn Interconnect Technology Limited.....	90
6.12	Fujitsu Optical Components Ltd.	90
6.13	Gigalight (Shenzhen Gigalight Technology Co. Ltd.).....	90
6.14	Hisense Broadband Multimedia Technologies Co. Ltd.	90
6.15	InnoLight Technology Corp.	91
6.16	Inphi Corp.	91
6.17	Intel Corp.	91
6.18	Kaiam Corp.	92
6.19	Lumentum Holdings.....	92
6.20	Luxtera Inc.	92
6.21	Mellanox Technologies Ltd.	93
6.22	Menara Networks	93
6.23	NEC Corp.	93
6.24	NeoPhotonics Corp.	93
6.25	OE Solutions Co. Ltd.	94
6.26	Oplink Communications LLC.....	94
6.27	Optcore Technology Co. Ltd.	94
6.28	Shenzhen OPWAY Communication Co., Ltd	94
6.29	ProLabs Ltd.	94
6.30	Reflex Photonics Inc.	94
6.31	Smartoptics AS	95
6.32	Shenzhen Sourcelight Technology Co., Ltd.	95
6.33	Source Photonics Inc.	95
6.34	Sumitomo Electric Industries Ltd.	95
6.35	TE Connectivity Ltd.	95
6.36	Wuhan RayOptek CO. Ltd.	96
7.	SILICON VENDORS.....	97
7.1	Achronix Semiconductor Corp.	97
7.2	Broadcom Corp.	98
7.3	Credo Semiconductor.....	98
7.4	Flex Logix Technologies Inc.	99
7.5	Inphi Corp.	99
7.6	Integrated Device Technology.....	100
7.7	Intel Corp.	100
7.8	MACOM (M/A-COM) Technology Solutions Holdings Inc.	101
7.9	Marvell Technology Group Ltd.	101
7.10	Max Linear Inc.	101
7.11	Mellanox Technologies Ltd.	102
7.12	Microsemi Corp.	102
7.13	MoSys Inc.	102
7.14	MultiPhy Ltd.	103

7.15	NTT Electronics Corp.....	103
7.16	Semtech Corp.....	103
7.17	Xilinx Inc.....	104

8. TERMS OF USE

Use of this PDF file is governed by the terms and conditions stated in the license agreement included in this file. Any violation of the terms of this agreement, including unauthorized distribution of this file to third parties, is considered a breach of copyright. Heavy Reading will pursue such breaches to the full extent of the law. Such acts are punishable in court by fines of up to \$100,000 for each infringement.

For questions about subscriptions and account access, please contact support@heavyreading.com.

For questions and comments about report content, please contact Heavy Reading at reports@heavyreading.com.