



电子元器件系列 (中国.厦门)

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Ethernet Solutions

LAN Products Selection Guide

Applications: Backbone Switches (L2/L3, ATM), Backbone Routers (IP, IP/ATM), Workgroup Hubs/Switches, NICs, Media Converters

SerDes ICs

	Description	Package Type	Pin-Out	Part Number
1.25 GBd GbE SerDes IC	w/Dual Serial I/O & Differ. PECL Clock Inputs	10 mm PQFP	64-pin	HDMP-1638
	with Differential PECL Clock Inputs	10 mm PQFP	64-pin	HDMP-1637A
		10mm PQFP	64-pin	HDMP-1636A
		10mm TQFP	64-pin	HDMP-T1636A
		14mm PQFP	64-pin	HDMP-1646A
1.25 GBd Quad GbE SerDes IC	w/5-pins/Channel Parallel Interface	23 mm TBGA	208-Ball	HDMP-1685A
	w/REFCLK as TX Clock	23 mm TBGA	208-Ball	HDMP-1687

Port Bypass/Repeater ICs

1.06-1.25 GBd Single PBC/Repeater	w/CDR	SSOP	24-pin	HDMP-0421
	w/CDR/VDD	SSOP	24-pin	HDMP-0422
1.06-1.25 GBd Quad PBC/ Repeater	w/o CDR	PQFP	44-pin	HDMP-0440
	w/o CDR (5 muxes)	PQFP	44-pin	HDMP-0450
	w/CDR	PQFP	44-pin	HDMP-0452
1.06-1.25 GBd Octal Cell PBC/Repeater	w/o CDR	PQFP	64-pin	HDMP-0480
	w/CDR/VDD	PQFP	64-pin	HDMP-0482

Fiber Optic Transmitters and Receivers

	Temp	Voltage	Package	Connector	Pin-Out	Part Number
10 Mb/s 820 nm Ethernet (Multi-Mode)	-40 to +85°C	5 V	Duplex	ST	8 Pin	HFBR-14x4 Transmitters
				SMA	8 Pin	
				SC	8 Pin	
				FC	8 Pin	
				ST	8 Pin	HFBR-24xx Receivers
				SMA	8 Pin	
				SC	8 Pin	
				FC	8 Pin	
100 Mb/s Fast Ethernet/FDDI 1300 nm LED (Multi-Mode)	0 to +70°C	5 V	Duplex	ST	16 Pin	HFBR-1115T Transmitter
				ST	16 Pin	HFBR-2115T Receiver

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Fiber Optic Transceivers

10/125/155 Mb/s Fast Ethernet/FDDI 1300 nm LED (Multi-Mode)	0 to +70°C	5 V	Duplex	SC	1x9	HFBR-5103 Standard Height	
				ST	1x9	HFBR-5103T	
				SC	1x9	HFBR-5103P Mezzanine Height	
				SC	1x9	HFBR-5103PE Mezzanine Height w/Extended Shield	
				MIC	2x11	HFBR-5111	
				MIC	1x13	HFBR-5112	
				MIC	1x13	HFBR-5113	
				SC	1x9	HFBR-5803	
				ST	1x9	HFBR-5803T	
	3.3 V	Duplex	SC	1x9	HFBR-5803		
			ST	1x9	HFBR-5803T		
		SFF PTH	MTRJ	2x5	HFBR-5903		
			MTRJ	2x5	HFBR-5903E w/Extended Shield		
			LC	2x5	HFBR-5961L		
	SFP	LC	Pluggable	HFBR-5963L SD=LV TTL			
	-40 to +85°C	5 V	Duplex	SC	1x9	HFBR-5103A HFBR-5803A	
				ST	1x9	HFBR-5103AT HFBR-5803AT	
		3.3 V	Duplex	SC	1x9	HFBR-5803A	
ST				1x9	HFBR-5803AT		
SFF PTH			MTRJ	2x5	HFBR-5903A		
		LC	2x5	HFBR-5961AL			
SFP		LC	Pluggable	HFBR-5963AL SD=LV TTL			
100/125 Mb/s Fast Ethernet/FDDI 1300 nm Laser (Single-Mode)		0 to +70°C	5 V	Duplex	SC	1x9	HFCT-5103B (Black case)
					SC	1x9	HFCT-5103D (Blue case)
			3.3 V	SFF PTH	MTRJ	2x5	HFCT-5903E
					LC	2x5	HFCT-5961xxx

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Fiber Optic Transceivers

	Temp	Voltage	Package	Connector	Pin-Out	Part Number	
1000 Mb/s Gigabit Ethernet 850 nm VCSEL (Multi-Mode)	0 to +70°C	5 V	GBIC	SC	20 Pin	HFBR-5601	
			Duplex	SC	1x9	HFBR-53D5	
						HFBR-53D5EM (Extended Shield)	
						HFBR-53D5FM (Flush Shield)	
		3.3 V	Duplex	SC	1x9	HFBR-53A5VEM (Extended Shield)	
						HFBR-53A5VFM (Flush Shield)	
			SFP	LC	Pluggable	HFBR-5710L (Standard De-latch)	
						HFBR-5710LP (Bail De-latch)	
	SFF	LC	2x5	HFBR-5701L (Standard De-latch)(Dual Spec GbE/FC)			
				HFBR-5701LP (Bail De-latch)(Dual Spec GbE/FC)			
	-10 to +85°C	3.3 V	SFP	LC	Pluggable	HFBR-5710L (Standard De-latch)(Dual Spec GbE/FC)	
						HFBR-5701LP (Bail De-latch)(Dual Spec GbE/FC)	
			SFF PTH	LC	2x5	HFBR-5911L	
						HFBR-5912E	
1000 Mb/s Gigabit Ethernet 1300 nm FP Laser (Single-Mode)	0 to +70°C	5 V	GBIC	SC	20 Pin	HFCT-5611	
			Duplex	SC	1x9	HFCT-53D5EM (Extended Shield)	
						HFCT-53D5FM (Flush Shield)	
		3.3 V	SFF PTH	MTRJ	2x5	HFCT-5912E	
	-10 to +85°C	3.3 V	SFF PTH	LC	2x5	HFCT-5911ATL (1.25Gb/s)	
					2x10	HFCT-5914ATL (1.25Gb/s)	
					2x5	HFCT-59L1ATL (1.25 Gb/s and 1G FC)	
			SFP	LC	Pluggable	HFCT-5710L (Standard De-latch)(Dual Spec GbE/FC)	
						HFCT-5710LP (Bail De-latch)(Dual Spec GbE/FC)	
						HFCT-5701L (Standard De-latch)(Dual Spec GbE/FC)	
						HFCT-5701LP (Bail De-latch)(Dual Spec GbE/FC)	
	10 GbE XENPAK 1310 nm DFB Laser (Single-Mode)	0 to +70°C		XENPAK	SC	Pluggable	HFCT-701XB

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Tachyon Protocol Controller Selection Guide

Model	FC Speed	Bus Info	Memory	FC Topology/ Service	Integration	Other Features
HPFC-5100	1.0625 GBd	<ul style="list-style-type: none"> • PCI 33 MHz, 32/64-bit 	Local 32-bit synch. SRAM option	<ul style="list-style-type: none"> • Pt-pt, Arbitrated Loop, Fabric - Class 2 (ACK_0) & 3 	External SerDes interface	<ul style="list-style-type: none"> • FCP sequence segmentation and reassembly • 1024-byte frame support • Loop map, bypass, broadcast and direct reset support
HPFC-5166	1.0625 GBd	<ul style="list-style-type: none"> • PCI 66 MHz, 32/64-bit 	Local 32-bit synch. SRAM option	<ul style="list-style-type: none"> • Pt-pt, Arbitrated Loop, Fabric • Class 2 (ACK_0) & 3 	External SerDes interface	<ul style="list-style-type: none"> • FCP sequence segmentation and reassembly • 1024-byte frame support • Loop map, bypass, broadcast and direct reset support
HPFC-5200	2.125 GBd	<ul style="list-style-type: none"> • PCI 66 MHz, 32/64-bit 	No external SRAM required	<ul style="list-style-type: none"> • Pt-pt, Arbitrated Loop (FC_AL2), Fabric • Class 2 (ACK_0/1) & 3 	1 / 2 Gb/s integrated transceiver and external SerDes interface	<ul style="list-style-type: none"> • 1-chip FC-to-PCI solution • Inbound frame buffers • 8-bit data parity protection • High-priority frames • Multiple in/outbound Sequence support
HPFC-5400	2.125 GBd, Dual Channel (FC, full rate)	<ul style="list-style-type: none"> • PCI-X 66/100/133 MHz, 32/64-bit • PCI 33/66 MHz, 32/64-bit • MSI and PCI/PCI-X hot plug compatible 	No external SRAM required 4k on-chip boot RAM	<ul style="list-style-type: none"> • Fabric, Pt-pt, & Arbitrated Loop (FC_AL2), • Class 2 (ACK_0/1) & 3 	1 / 2 Gb/s integrated transceiver and external SerDes interface	<ul style="list-style-type: none"> • 1-chip FC-to-PCI solution • Inbound frame buffers • 8GPIO Pins/ channel • High-priority frames • Multiple in/ outbound sequence support • 8-bit data parity protection

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Fiber Optic Transceivers Selection Guide

Model	Speed	Compliance	Package Type	Performance	Other Features
HFBR-57M5AP	2 GBd FC 1 GBd FC 1 GbE	FC-P1 FC-PH-2 1000Base-SX	• SFP LC MM	<ul style="list-style-type: none"> • 0.5 to 300 m over 50/125 μm MMF at 2.125 Gbps • 0.5 to 500 m over 50/125 μm MMF at 1.06 Gbps • 0.2 to 550 m over 50/125 μm MMF at 1 GbE 	<ul style="list-style-type: none"> • Diagnostic Monitoring Interface (DMI) • Programmable alarms and warnings • AEL laser class 1 eye safe operation • Single +3.3 V operation
HFBR-57L5AP	1 GBd FC 1 GbE	FC-P1 1000Base-SX	• SFP LC MM	<ul style="list-style-type: none"> • 0.5 to 300 m over 50/125 μm MMF at 2.125 Gbps • 0.5 to 500 m over 50/125 μm MMF at 1.06 Gbps 	<ul style="list-style-type: none"> • Diagnostic Monitoring Interface (DMI) • Programmable alarms and warnings • Single +3.3 V operation • AEL laser class 1 eye safe operation
HFBR-5910E	1.0625 GBd	ANSI X3.297 FC-PH-2 r7.4 for 100-M5-SN-I and 100-M6-SN-I interfaces	<ul style="list-style-type: none"> • 2x5 SFF MM • Internal MT-RJ connector 	<ul style="list-style-type: none"> • 300 m over 62.5/125 μm MMF • 500 m over 50/125 μm MMF 	<ul style="list-style-type: none"> • Single +3.3 V operation • TTL signal detect • Wave solder and aqueous wash capable
HFCT-5910E	1.0625 GBd	ANSI 100-SM-LC-L r2 to X3.297 FC-PH-2 r7.4	<ul style="list-style-type: none"> • 2x5 SFF MM • Internal MT-RJ connector 	<ul style="list-style-type: none"> • 500 m over 50/125 μm MMF • 10 km over 9/125 μm SMF 	<ul style="list-style-type: none"> • Single +3.3 V operation • TTL signal detect • Wave solder and aqueous wash capable
HFCT-5921TL	2.125/ 1.0625 GBd	FICON	2x5 SFF LC SM	<ul style="list-style-type: none"> • 2 m to 10 Km at 2.125 and 1.063 GBd for 9/125 μm SMF 	<ul style="list-style-type: none"> • Single +3.3 V operation • Interoperable 1G and 2G links
HFBR-5701L	1.25/ 1.0625 GBd	802.3 GbE, FC-P1	SFP LC MM	<ul style="list-style-type: none"> • 550 m over 50/125 μm MMF • 275 m over 62.5/125 μm MMF 	<ul style="list-style-type: none"> • Single +3.3 V operation • AEL laser class 1 eye safe
HFBR-5720L Note: Use HFBR-5720ALP for new designs	2.125/ 1.0625 GBd	<ul style="list-style-type: none"> • 2.125 GBd FC FC-PI standard • 1.0625 GBd VCSEL operation for both 50/125, 62.5/125 μm MMF 	SFP LC MM	<ul style="list-style-type: none"> • 0.5 to 300 m over 50/125 μm MMF at 2.125 Gbps • 0.5 to 500 m over 50/125 μm MMF at 1.06 Gbps 	<ul style="list-style-type: none"> • Single +3.3 V operation • AEL laser class 1 eye safe
HFBR-5730L	1.0625 GBd	FC-P1, FC-PH-2	SFP MM	<ul style="list-style-type: none"> • 500 m over 50/125 μm MMF • 300 m over 62.5/125 μm MMF 	<ul style="list-style-type: none"> • Single +3.3 V • AEL laser class 1 eye safe operation
HFBR-5720AL/ALP	2.125/ 1.0625 GBd	<ul style="list-style-type: none"> • 2.125 GBd FC FC-PI standard • 1.0625 GBd VCSEL operation for both 50/125, 62.5/125 μm MMF 	SFP LC MM	<ul style="list-style-type: none"> • 0.5 to 300 m over 50/125 μm MMF at 2.125 Gbps • 0.5 to 500 m over 50/125 μm MMF at 1.06 Gbps 	<ul style="list-style-type: none"> • Extended operating voltage +3.3 V ±10% • Extended temperature range (-20°C to +85°C)
HFBR-5921L/AL Note: Use HFBR-5921AL for new designs	2.125/1.0 625 GBd	<ul style="list-style-type: none"> • 2.125 GBd FC FC-PI standard • 1.0625 GBd VCSEL operation for both 50/125, 62.5/125 μm MMF 	2x5 SFF LC MM	<ul style="list-style-type: none"> • 0.5 to 300 m over 50/125 μm MMF at 2.125 Gbps • 0.5 to 500 m over 50/125 μm MMF at 1.06 Gbps 	<ul style="list-style-type: none"> • Single +3.3 V operation • Wave solder and aqueous wash process compatible • HFBR-5921AL with Extended temperature range (-10°C to +85°C)

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Fiber Optic Transceivers Selection Guide

Model	Speed	Compliance	Package Type	Performance	Other Features
HFCT-5701L/LP	1.25/ 1.0625 GBd	<ul style="list-style-type: none"> • 802.3 GbE • FC 100-M5-SN-I, 100-M6-SN-I 	SFP SM	<ul style="list-style-type: none"> • 2 to 550 m over 50/125 μm MMF • 2 to 275 m over 62.5/125 μm MMF 	<ul style="list-style-type: none"> • Single +3.3 V operation
HFBR-5320	200 MBd	<ul style="list-style-type: none"> • ESCON • SBCON 	4x7 w/ duplex interface		<ul style="list-style-type: none"> • Wave solder and aqueous wash capable • Low radiated emissions • High immunity to cond. noise
HFBR-5930/5930E	200 MBd	<ul style="list-style-type: none"> • ESCON • SBCON 	<ul style="list-style-type: none"> • 2x5 SFF, MM • Internal MT-RJ connector • E is extended shield 		<ul style="list-style-type: none"> • Wave solder and aqueous wash capable • Low radiated emissions • High immunity to cond. noise
HFBR-5602	1.0625 GBd	GBIC, ANSI X3.297 FC-PH-2 r7.4	GBIC MM	<ul style="list-style-type: none"> • 300 m over 62.5/125 μm MMF • 500 m over 50/125 μm MMF 	<ul style="list-style-type: none"> • Hot-pluggable • AEL laser class 1 eye safe
HFCT-5612	1.0625 GBd	GBIC, ANSI 100-SM-LC-L r2 to ANSI X3.297 FC-PH-2 r7.4	GBIC SM	<ul style="list-style-type: none"> • 500 m over 50/125 μm MMF • 500 m over 62.5/125 μm MMF • 10 km over 9/125 μm SMF 	<ul style="list-style-type: none"> • Hot-pluggable • AEL laser class 1 eye safe
HFBR-53A3VEM/FM	1.0625 GBd	ANSI X3.297 FC-PH-2 r7.4 for 100-M5-SN-I and 100-M6-SN-I interfaces	<ul style="list-style-type: none"> • 1x9 SC Duplex MM • EM: Extended shield • FM: Flush shield 	<ul style="list-style-type: none"> • 300 m over 62.5/ 125 μm MMF • 500 m over 50/125 μm MMF 	<ul style="list-style-type: none"> • Single +3.3 V operation • TTL Signal Detect • Wave solder and aqueous wash capable
HFBR-53D3EM/FM	1.0625 GBd	ANSI X3.297 FC-PH-2 r7.4 for 100-M5-SN-I and 100-M6-SN-I interfaces	<ul style="list-style-type: none"> • 1x9 SC Duplex MM • EM: Extended shield • FM: Flush shield 	<ul style="list-style-type: none"> • 300 m over 62.5/125 μm MMF • 500 m over 50/125 μm MMF 	<ul style="list-style-type: none"> • Single +5 V operation • Wave solder and aqueous wash capable
HFCT-53D3EM/FM	1.0625 GBd	ANSI X3.297 FC-PH-2 r7.4 for 100-M5-SN-I and 100-M6-SN-I interfaces	<ul style="list-style-type: none"> • 1x9 SC Duplex SM • EM: Extended shield • FM: Flush shield 	<ul style="list-style-type: none"> • 500 m over 50/125 μm MMF • 500 m over 62.5/125 μm MMF • 10 km over 9/125 μm SMF 	<ul style="list-style-type: none"> • Single +5 V operation • Wave solder and aqueous wash capable

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SerDes ICs Selection Guide

Model	Speed	Compliance	Package Type	Other Features
HDMP-1636A	1.0625-1.25 GBd	<ul style="list-style-type: none"> • FC (ANSI X3.230 FC-0) • X3T11 10-bit interface spec. • 802.3 GbE 	10 mm QFP (10 mm TQFP= HDMP-T1636A)	<ul style="list-style-type: none"> • Single +3.3 V supply • Low power • Backplane serialization • Bus extender • 5 V I/O's
HDMP-T1636A	1.0625-1.25 GBd	<ul style="list-style-type: none"> • FC (ANSI X3.230 FC-0) • X3T11 10-bit interface spec. • 802.3 GbE 	10 mm QFP (10 mm TQFP= HDMP-T1636A)	<ul style="list-style-type: none"> • Single +3.3 V supply • Low power • Backplane serialization • Bus extender • 5 V I/O's
HDMP-1646A	1.0625- 1.25 GBd	<ul style="list-style-type: none"> • FC (ANSI X3.230 FC-0) • X3T11 10-bit interface spec. • 802.3 GbE 	14 mm PQFP	<ul style="list-style-type: none"> • Single +3.3 V supply • Low power • Backplane serialization • Bus extender • 5V I/O's
HDMP-2689	1.0625-2.125 GBd	SSTL_2	19 mm, PBGA package	<ul style="list-style-type: none"> • 4-ports in one package • +1.8V core power supply, 2.5 V power supply for SSTL_2 I/O • Independently selectable channel data rates • Source-centered double data rate clocking of receive parallel data for 1 and 2 Gbps serial rates. • MII management interface for chip control & status
HDMP-1687	1.0625 GBd	<ul style="list-style-type: none"> • FC (ANSI X3.230 FC-0) • X3T11 10-bit interface spec. • 802.3 GbE 	23 mm, TBGA package	<ul style="list-style-type: none"> • Single +3.3 V supply • Ref clock (RFCT) for Tx Data Latching • 5V tolerant TTL I/O's

Storage Solutions

Port Bypass ICs Selection Guide

Model	Speed	Support	Package Type	Other Features
HDMP-0421	1.0625-1.25 GBd	<ul style="list-style-type: none"> • PBC, CDR, SD • FC-AL • 802.3z GbE 	<ul style="list-style-type: none"> • 24 Pin SSOP (+3.3 V) • Single cell PBC 	<ul style="list-style-type: none"> • Bi-directional, symmetric bypass capability • Envelope detect equalizers
HDMP-0422	1.0625-1.25 GBd	<ul style="list-style-type: none"> • PBC, CDR, SD • FC-AL • 802.3z GbE 	<ul style="list-style-type: none"> • 24 Pin SSOP (+3.3 V) • Single cell PBC 	<ul style="list-style-type: none"> • Valid amplitude detect • Equalizers • Buffered Line Logic (BLL) outputs
HDMP-0440	1.0625-1.25 GBd	<ul style="list-style-type: none"> • PBC, SD • FC-AL 	<ul style="list-style-type: none"> • 44 Pin, 10 mm PQFP (+3.3 V) • Quad cell PBC 	<ul style="list-style-type: none"> • Equalizers • Buffered line logic (BLL) outputs
HDMP-0450	1.0625-1.25 GBd	<ul style="list-style-type: none"> • PBC, SD • FC-AL 	<ul style="list-style-type: none"> • 44 Pin, 10 mm PQFP (+3.3 V) • Quad cell PBC 	<ul style="list-style-type: none"> • Equalizers • Buffered line logic (BLL) outputs • Cable input on any of five cells • Envelope detect on one cell
HDMP-0452	1.0625-1.25 GBd	<ul style="list-style-type: none"> • PBC, CDR, SD • FC-AL 	<ul style="list-style-type: none"> • 44 Pin, 10 mm PQFP (+3.3 V) • Quad cell PBC 	<ul style="list-style-type: none"> • Equalizers • Buffered line logic (BLL) outputs • Envelope detect on cable input for CDR at entry case
HDMP-0480	1.0625-1.25 GBd	<ul style="list-style-type: none"> • PBC, SD • FC-AL • 802.3z GbE 	<ul style="list-style-type: none"> • 64 Pin, 10 mm MQFP (+3.3 V) • Octal cell PBC 	<ul style="list-style-type: none"> • Amplitude detection • Equalizers • High speed LVPECL I/O • Buffered line logic (BLL) outputs
HDMP-0482	1.0625-1.25 GBd	<ul style="list-style-type: none"> • PBC, CDR, SD • FC-AL • 802.3z GbE 	<ul style="list-style-type: none"> • 64 Pin, 14 mm MQFP (+3.3 V) • Octal cell PBC/CDR 	<ul style="list-style-type: none"> • Amplitude and Data Valid detection • Equalizers • High speed LVPECL I/O • Buffered line logic (BLL) outputs
HDMP-0552	1.0625/2.125 GBd	<ul style="list-style-type: none"> • PBC, CDR, SD • FC-AL 	<ul style="list-style-type: none"> • 64 Pin, 10 mm PQFP (+3.3 V) • Quad cell PBC/CDR 	<ul style="list-style-type: none"> • Amplitude and data valid detection • High speed LVPECL I/O • Buffered line logic (BLL) outputs

Infiniband

Model	Speed	Support	Package Type	Other Features
HDMP-2840	10 Gbps/port	<ul style="list-style-type: none"> • Infiniband Compliant Switch IC 	<ul style="list-style-type: none"> • 22 mm x 22 mm BGA 	<ul style="list-style-type: none"> • 8 ports of 4x (10 Gbps) Infiniband switching • Aggregate switch bandwidth of 160 Gbps • Integrated SerDes for reduced systems cost and power consumption • Fully non-blocking switch architecture

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Fibre Channel Adapters Selection Guide

Model	FC Speed	FC Transfer Rate	Card Type	FC Typology/ Service	Bus	Physical Interface	Other Features
HHBA-5101C	1 Gb/s	400 MB/s Full Duplex	Single port, Short PCI Card	FC_AL, Fabric (F and FL_Port Login) Class 3	33 MHz; 64-bit PCI	GBIC (optical or copper)	
HHBA-5121B	1 Gb/s	400 MB/s Full Duplex	Single port, Short PCI Card	FC_AL, Fabric (F and FL_Port Login) Class 3	66 MHz; 64-bit PCI	GBIC (optical or copper)	
HHBA-5218A	1 or 2 Gb/s, auto speed negotiation	400 MB/s Full Duplex	Single port, Short PCI Card	FC_AL, Fabric (F and FL_Port Login) Class 2 and 3	66 MHz; 64-bit PCI	Small form factor pluggable (SFP) for optical transceiver or copper connector	Loop and fabric boot BIOS
HHBA-5219A	1 or 2 Gb/s, auto speed negotiation	400 MB/s Full Duplex	Single port, Short PCI Card	FC_AL, Fabric (F and FL_Port Login) Class 2 and 3	66 MHz; 64-bit PCI	Small form factor (SFF) optical transceiver	Loop and fabric boot BIOS
HHBA-5220B	1 or 2 Gb/s, auto speed negotiation	400 MB/s Full Duplex	Single port, Short PCI Card	FC_AL, Fabric (F and FL_Port Login) Class 2 and 3	66 MHz; 64-bit PCI	Small form factor pluggable (SFP) for optical transceiver or copper connector	Loop and fabric boot BIOS
HHBA-5221B	1 or 2 Gb/s, auto speed negotiation	400 MB/s Full Duplex	Single port, Short PCI Card	FC_AL, Fabric (F and FL_Port Login) Class 2 and 3	66 MHz; 64-bit PCI	Small form factor (SFF) optical transceiver	Loop and fabric boot BIOS
HHBA-5418A	1 or 2 Gb/s, auto speed negotiation	Two independent 2 Gb/s ports for a combined bandwidth of 800 MB/s	Dual Port, Low Profile MD2	FC_AL, Fabric (F and FL_Port Login) Class 2 and 3	133 MHz; 64-bit PCI-X. Backward compatible w/ 33/66 MHz PCI	Small form factor pluggable (SFP) for optical transceiver or copper connector	Loop and fabric boot BIOS, EFI support
HHBA-5420A	1 or 2 Gb/s, auto speed negotiation	Two independent 2 Gb/s ports for a combined bandwidth of 800 MB/s	Dual Port	FC_AL, Fabric (F and FL_Port Login) Class 2 and 3	133 MHz; 64-bit PCI-X. Backward compatible w/ 33/66 MHz PCI	Small form factor pluggable (SFP) for optical transceiver or copper connector	Loop and fabric boot BIOS, EFI support

METRAK Solutions for Metro Network

Ethernet to SONET/SDH Framer/Mapper Selection Guide

Data Rate	SONET/SDH Data Rate	Ethernet Data	Protocol	Part Number
155 Mb/s	Line Side Parallel STS-3c/STM-1	Full Duplex Fast Ethernet	GFP, and LAPS	HDMP-3001

G-Link Selection Guide

Data Rates	Parallel Data Bits	Package Type	Parallel I/O	Tx/Rx	Part Number
260-1400 Mb/s	16,17	64 pin PQFP	LVTTTL	Tx	HDMP-1032A
				Rx	HDMP-1034A
150-1500 Mb/s	16,17,20,21	80 pin MQUAD	TTL	Tx	HDMP-1022
				Rx	HDMP-1024

Parallel Optics Transceivers Selection Guide

	Temp	Voltage	Package	Connector	Pin-Out	Part Number
10 Gbps Short Reach 500 m 850 nm (Multi-Mode)	0 to 70°C	3.3 V	Pluggable	MTP™/MPO	10x10 MegArray	HFBR-7924 (4+4 x 2.7 Gbd, Pluggable MSA Compliant)

Parallel Optics Transmitters and Receivers Selection Guide

Proprietary System Interconnect (PSI) Short Reach 500 m 850 nm (Multi Mode)	0 to 70°C	3.3 V	Pluggable	MTP™/MPO	10x10 MegArray	HFBR-772B (Transmitter, 12 x 2.5-2.72 Gbd Pluggable MSA Compliant, 50/125 μm)
				MTP™/MPO	10x10 MegArray	HFBR-782B (Receiver, 12 x 2.5-2.72 Gbd Pluggable MSA Compliant, 50/125 μm)
				MTP™/MPO	10x10 MegArray	HFBR-7793 (Transmitter, 12 x 2.5-2.72 Gbd Pluggable MSA Compliant, 62.5/125 μm)
				MTP™/MPO	10x10 MegArray	HFBR-789B (Receiver, 12 x 2.5-2.72 Gbd Pluggable MSA Compliant, 62.5/125 μm)

DWDM Transceiver Selection Guide

	Temp	Voltage	Package	Connector	Pin-Out	Part Number
OC-48 100 km reach DWDM (single mode)	-5 to 70°C	3.3 V	MSA (1)	LC	70 pin	AFKC-xxxxD (xxxx specifies wavelength - note 2 AFKC-1000D (unspecified wavelength)
OC-48 160 km reach DWDM (single mode)	-5 to 70°C	3.3 V	MSA (1)	LC	70 pin	AFKC-xxxxE (xxxx specifies wavelength - note 2 AFKC-1000E (unspecified wavelength)

Notes

- MSA package can be found at www.hotplugdwdm.org/msa.htm
- See page 11 of datasheet

Accessories

- AFKA-0001 Rail mechanism for AFKC series
AFKA-0002 EMI kennel for AFKC series

METRAK Solutions for Metro Network

OC-3/SONET/SDH SFF/SFP Fiber Optic Transceivers Selection Guide

	Temp	Voltage	Package	Connector	Pin-Out	Part Number
OC-3 Short Reach <2 km 1300 nm (Multi-Mode)	0 to 70°C	5 V	Duplex	SC	1x9	HFBR-5204 (500 m)
				SC	1x9	HFBR-5204P (Mezzanine height)
				SC	1x9	HFBR-5205
				SC	1x9	HFBR-5205P (Mezzanine height)
				SC	1x9	HFBR-5205PE (Mezzanine height w/extended shield)
				ST	1x9	HFBR-5204T
		ST	1x9	HFBR-5205T		
		3.3 V	Duplex	SC	1x9	HFBR-5805
				ST	1x9	HFBR-5805T
			SFF PTH	MTRJ	2x5	HFBR-5905A (No nose shield)
	LC			2x5	HFBR-5961L	
	SFP	LC	2x5	HFBR-5963L SD=LV TTL		
		LC	Pluggable	HFBR-5760L		
	-40 to +85°C	5 V	Duplex	SC	1x9	HFBR-5205A
	ST			1x9	HFBR-5205AT	
	-10 to +85°C	3.3 V	Duplex	SC	1x9	HFBR-5805A
	ST			1x9	HFBR-5805AT	
	-40 to +85°C		SFF PTH	MTRJ	2x5	HFBR-5905 (No nose shield)
				LC	2x5	HFBR-5961AL
		LC		2x5	HFBR-5963AL SD=LV TTL	
SFP	LC	Pluggable	HFBR-5760AL			

METRAK Solutions for Metro Network

OC-3/SONET/SDH SFF/SFP Fiber Optic Transceivers Selection Guide

	Temp	Voltage	Package	Connector	Pin-Out	Part Number
OC-3 Intermediate Reach 15 km 1300 nm (Single Mode)	0 to 70°C	5 V	Duplex	SC	1x9	HFCT-5205B (Black Case)
				SC	1x9	HFCT-5205D (Blue Case)
				SC	2x9	HFCT-5201B (Black Case)
				SC	2X9	HFCT-5201D (Blue Case)
		3.3 V	Duplex	SC	1x9	HFCT-5805B (Black Case)
				SC	1x9	HFCT-5805D (Blue Case)
				SC	2x9	HFCT-5801B (Black Case)
				SC	2x9	HFCT-5801D (Blue Case)
			SFF PTH	LC	2x10	HFCT-5962TG (No nose shield)
				LC	2x10	HFCT-5962TL
				LC	2x10	HFCT-5964TG (SD LV TTL, no nose shield)
				LC	2x10	HFCT-5964TL (Signal Detect LV TTL)
				LC	2x5	HFCT-5961TG (No nose shield)
				LC	2x5	HFCT-5961TL
				LC	2x5	HFCT-5963TG (SD LV TTL, no nose shield)
				LC	2x5	HFCT-5963TL (Signal Detect LV TTL)
	SFP	LC	Pluggable	HFCT-5760TL (w/o diagnostic monitoring interface "DMI"), std de-latch		
		LC	Pluggable	HFCT-5760TP (w/o diagnostic monitoring interface "DMI"), bail de-latch		
	-40 to +85°C	5 V	Duplex	SC	1x9	HFCT-5205A (Black Case)
				SC	1x9	HFCT-5205C (Blue Case)
				SC	2x9	HFCT-5201A (Black Case)
				SC	2x9	HFCT-5201C (Blue Case)
		3.3 V	Duplex	SC	1x9	HFCT-5805A (Black Case)
				SC	1x9	HFCT-5805C (Blue Case)
				SC	2x9	HFCT-5801A (Black Case)
				SC	2x9	HFCT-5801C (Blue Case)
			SFF PTH	LC	2x10	HFCT-5962ATG (no nose shield)
				LC	2x10	HFCT-5962ATL
LC				2x10	HFCT-5964ATG (SD LV TTL, no nose shield)	
LC				2x10	HFCT-5964ATL (Signal Detect LV TTL)	
LC	2x5	HFCT-5961ATG (No nose shield)				
LC	2x5	HFCT-5961ATL				
LC	2x5	HFCT-5963ATG (SD LV TTL, no nose shield)				
LC	2x5	HFCT-5963ATL (Signal Detect LV TTL)				
SFP	LC	Pluggable	HFCT-5760ATL (w/o diagnostic monitoring interface "DMI"), std de-latch			
	LC	Pluggable	HFCT-5760ATP (w/o diagnostic monitoring interface "DMI"), bail de-latch			

METRAK Solutions for Metro Network

OC-3/SONET/SDH SFF/SFP Fiber Optic Transceivers Selection Guide

	Temp	Voltage	Package	Connector	Pin-Out	Part Number
OC-3 Long Reach 40 km 1300 nm (Single Mode)	0 to 70°C	5 V	Duplex	SC	1x9	HFCT-5215B (Black Case)
				SC	1x9	HFCT-5215D (Blue Case)
		3.3 V	SFF PTH	LC	2x10	HFCT-5962NG (No nose shield)
				LC	2x10	HFCT-5962NL
				LC	2x10	HFCT-5964NG (SD LV TTL, no nose shield)
				LC	2x10	HFCT-5964NL (Signal Detect LV TTL)
				LC	2x5	HFCT-5961NG (No nose shield)
				LC	2x5	HFCT-5961NL
				LC	2x5	HFCT-5963NG (SD LV TTL, no nose shield)
				LC	2x5	HFCT-5963NL (Signal Detect LV TTL)
				MTRJ	2x5	HFCT-5915E
				SFP	LC	Pluggable
			LC		Pluggable	HFCT-5760NP (w/o diagnostic monitoring interface "DMI"), bail de-latch
			LC		Pluggable	HFCT-5760ANL (w/o diagnostic monitoring interface "DMI"), std de-latch
		LC	Pluggable		HFCT-5760ANP (w/o diagnostic monitoring interface "DMI"), bail de-latch	

METRAK Solutions for Metro Network

OC-12/SONET/SDH SFF/SFP Fiber Optic Transceivers Selection Guide

	Temp	Voltage	Package	Connector	Pin-Out	Part Number
OC-12 Short Reach 500 m 1300 nm (Multi-Mode)	0 to 70°C	5 V	Duplex	SC	1x9	HFBR-5208EM (Extended shield)
				SC	1x9	HFBR-5208FM (Flush shield)
				SC	1x9	HFBR-5208M (No shield, metallized housing)
	-40 to +85°C	5 V	Duplex	MTRJ	2x5	HFBR-5908E (With nose shield)
				SC	1x9	HFBR-5208AEM (Extended shield)
				SC	1x9	HFBR-5208AFM (Flush shield)
			SC	1x9	HFBR-5208AM (No shield, metallized housing)	
OC-12 Intermediate Reach 15 km 1300 nm (Single Mode)	0 to 70°C	5 V	Duplex	SC	1x9	HFCT-5208EM (Extended shield)
				SC	1x9	HFCT-5208FM (Flush shield)
				SC	1x9	HFCT-5208M (No shield, metallized housing)
		3.3 V	SFF PTH	LC	2x10	HFCT-5952TG (No nose shield)
				LC	2x10	HFCT-5952TL
				LC	2x5	HFCT-5951TG (No nose shield)
				LC	2x5	HFCT-5951TL
				LC	2x5	HFCT-5954TG (No nose shield, multi-rate)
				LC	2x5	HFCT-5954TL (Multi-rate)
				LC	2x5	HFCT-5953TG (No nose shield, multi-rate)
	SFP	LC	Pluggable	HFCT-5750TL (w/o diagnostic monitoring interface "DMI"), std de-latch		
		LC	Pluggable	HFCT-5750TP (w/o diagnostic monitoring interface "DMI"), bail de-latch		
	-40 to +85°C	5 V	Duplex	SC	1x9	HFCT-5208AEM (Extended shield)
				SC	1x9	HFCT-5208AFM (Flush shield)
				SC	1x9	HFCT-5208AM (No shield, metallized housing)
		3.3 V	SFF PTH	LC	2x10	HFCT-5952ATG (No nose shield)
				LC	2x10	HFCT-5952ATL
				LC	2x5	HFCT-5951ATG (No nose shield)
				LC	2x5	HFCT-5951ATL
				LC	2x10	HFCT-5954ATG (No nose shield, multi-rate)
LC				2x10	HFCT-5954ATL (Multi-rate)	
LC				2x5	HFCT-5953ATG (No nose shield, multi-rate)	
SFP	LC	Pluggable	HFCT-5750ATL (w/o diagnostic monitoring interface "DMI"), std de-latch			
	LC	Pluggable	HFCT-5750ATP (w/o diagnostic monitoring interface "DMI"), bail de-latch			
OC-12 Long Reach 40 km 1300 nm (Single Mode)	0 to 70°C	3.3 V	SFF PTH	LC	2x10	HFCT-5952NG (No nose shield)
				LC	2x10	HFCT-5952NL
				LC	2x5	HFCT-5951NG (No nose shield)
				LC	2x5	HFCT-5951NL

METRAK Solutions for Metro Network

OC-48/SONET/SDH SFF/SFP Fiber Optic Transceivers Selection Guide

	Temp	Voltage	Package	Connector	Pin-Out	Part Number
OC-48 Short Reach 2 km 1300 nm (Single-Mode)	0 to 70°C	3.3 V	SFF PTH	LC	2x10	HFCT-5942G (no nose shield)
				LC	2x10	HFCT-5942L
				LC	2x5	HFCT-5941G (no nose shield)
				LC	2x5	HFCT-5941L
				LC	2x10	HFCT-5944L (Multi-rate)
				LC	2x10	HFCT-5944G (No nose shield, multi-rate)
				LC	2x5	HFCT-5943L (Multi-rate)
				LC	2x5	HFCT-5943G (No nose shield, multi-rate)
	-40 to +85°C	3.3 V	SFF PTH	LC	2x10	HFCT-5942AG (no nose shield)
				LC	2x10	HFCT-5942AL
				LC	2x5	HFCT-5941AG (no nose shield)
				LC	2x5	HFCT-5941AL
				LC	2x10	HFCT-5944AL (Multi-rate)
				LC	2x10	HFCT-5944AG (No nose shield, multi-rate)
				LC	2x5	HFCT-5943AL (Multi-rate)
				LC	2x5	HFCT-5943AG (No nose shield, multi-rate)
OC-48 Intermediate Reach 15 km 1300 nm (Single Mode)	0 to 70°C	3.3 V	SFF PTH	LC	2x10	HFCT-5942TG (no nose shield)
				LC	2x10	HFCT-5942TL
				LC	2x5	HFCT-5941TG (no nose shield)
				LC	2x5	HFCT-5941TL
				LC	2x10	HFCT-5944TL (Multi-rate)
				LC	2x10	HFCT-5944TG (No nose shield, multi-rate)
				LC	2x5	HFCT-5943TL (Multi-rate)
				LC	2x5	HFCT-5943TG (No nose shield, multi-rate)
	-20 to +85°C	3.3 V	SFF PTH	LC	2x10	HFCT-5942ATG (no nose shield)
				LC	2x10	HFCT-5942ATL
				LC	2x5	HFCT-5941ATG (no nose shield)
				LC	2x5	HFCT-5941ATL
				LC	2x10	HFCT-5944ATL (Multi-rate)
				LC	2x10	HFCT-5944ATG (No nose shield, multi-rate)
				LC	2x5	HFCT-5943ATL (Multi-rate)
				LC	2x5	HFCT-5943ATG (No nose shield, multi-rate)

Industrial Networking Solutions

650 nm discrete optical components selection guide

Data Rate	Transmitter	Receiver	Distance (@ 0-70°C)		Connectors	Application Note
			POF	HCS		
DC-40kBd	HFBR-1523 HFBR-1533	HFBR-2523 HFBR-2533	110 m		Versatile Link	AN1035
DC-1MBd	HFBR-1522 HFBR-1532	HFBR-2522 HFBR-2532	45 m		Versatile Link	AN1035
DC-2MBd	HFBR-1505C	HFBR-2505C	50 m		SMA	
DC-4MBd	HFBR-1604	HFBR-2602	40 m		SMA	
DC-5MBd	HFBR-1521 HFBR-1531	HFBR-2521 HFBR-2531	20 m		Versatile Link	AN1035
DC-10MBd	HFBR-1505A HFBR-1515B HFBR-1528	HFBR-2505A HFBR-2515B HFBR-2528	40 m	200 m	SMA Versatile Link	ST AN1080
DC-16MBd	HFBR-1506AM	HFBR-2506AM	40 m	200 m	SMA	
DC-32MBd	HFBR-1527 HFBR-1537	HFBR-2526 HFBR-2536	40 m	1000 m	Versatile Link	AN1121
32MBd	HFBR-1527 HFBR-1537	HFBR-2526 HFBR-2536	75 m	400 m	Versatile Link	AN1066
55MBd	HFBR-1527 HFBR-1537	HFBR-2526 HFBR-2536	60 m	240 m	Versatile Link	AN1066
125MBd	HFBR-1527 HFBR-1537	HFBR-2526 HFBR-2536	30 m	100 m	Versatile Link	AN1066
160MBd(N.A.= 0.375)	HFBR-1527 HFBR-1537	HFBR-2526 HFBR-2536	50 m	50 m	Versatile Link	AN1123

820 nm discrete optical components selection guide

Data Rate	Transmitter	Receiver	Distance (@ 0-70°C) 62.5/125 µm MM fiber	Connectors	Application Note
DC-5 MBd	HFBR-14X4	HFBR-24X2	2000 m	ST, SMA, FC	
20 MBd	HFBR-14X4	HFBR-24X6	2700 m	ST, SC, SMA	AN1038
20 Mbd	HFBR-1312T*	HFBR-2316T*	5000 m	ST	AN1038
32 MBd	HFBR-14X4	HFBR-24X6	2200 m	ST, SC, SMA	AN1065
32 MBd	HFBR-1312T*	HFBR-2316T*	3200 m	ST	AN1065
55 MBd	HFBR-14X4	HFBR-24X6	1400 m	ST, SC, SMA	AB78
55 MBd	HFBR-1312T*	HFBR-2316T*	3200 m	ST	AB78
125 MBd	HFBR-14X4	HFBR-24X6	700 m	ST, SC, SMA	AB78
125 MBd	HFBR-1312T*	HFBR-2316T*	2800 m	ST	AB78
155 MBd	HFBR-14X4	HFBR-24X6	600 m	ST, SC, SMA	AB78
155 MBd	HFBR-1312T*	HFBR-2316T*	2700 m	ST	AB78
160 MBd	HFBR-14X4	HFBR-24X6	500 m	ST, SC, SMA	AN1123
160 MBd	HFBR-1312T*	HFBR-2316T*	2000 m	ST	AN1123

*1300 nm