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JDS Uniphase

Product Bulletin



SFP Pluggable Transceivers for Ethernet and Fibre Channel

The JDS Uniphase Datacom Small Form Factor Pluggable (SFP) transceivers product families provide high-speed serial links at signaling rates of up to 4.25 Gb/s, which conform either to the Gigabit Ethernet 802.3 or American National Standards Institute's (ANSI) Fibre Channel, FC-PI specification. All Datacom SFP transceivers are Class 1 laser safe and have EMI emissions below residential FCC Class B.

This family of product exceeds MSA compliance with broader supply and laser voltage tolerances, interoperability with legacy devices that use CD lasers, and interoperability with other standards-compliant transceivers at link distances up to 80 km. All 850 nm products use enhanced oxide lasers and transmit optical subassemblies designed for reliability and extra-long-life operations.

The JSM family expands upon the original JSP family features with extended temperature operation and a bail latch for high density host card packaging. JSD and JSH products are respectively JSP and JSM product-enhanced with SFF 8472 compliant digital diagnostic monitoring features. JSH-42S4AA1 supports 4.25 Gb/s Fibre Channel operation with or without the use of a rate select pin.

Key Features

- Proven high reliability, <100 FIT
- Low bit error rate ($<10^{-12}$)
- Hot-plug surge protection
- 850 nm VCSEL, 1310 Fabry Perot, 1550 DFB
- Ethernet and/or Fibre Channel data rates
- Tri-speed versions for stocking simplicity
- Pull tab or metal bail de-latching options
- Extended temperature operation options
- Digital Diagnostic Monitoring (SFF8472)
- Support for FICON or LX10 applications

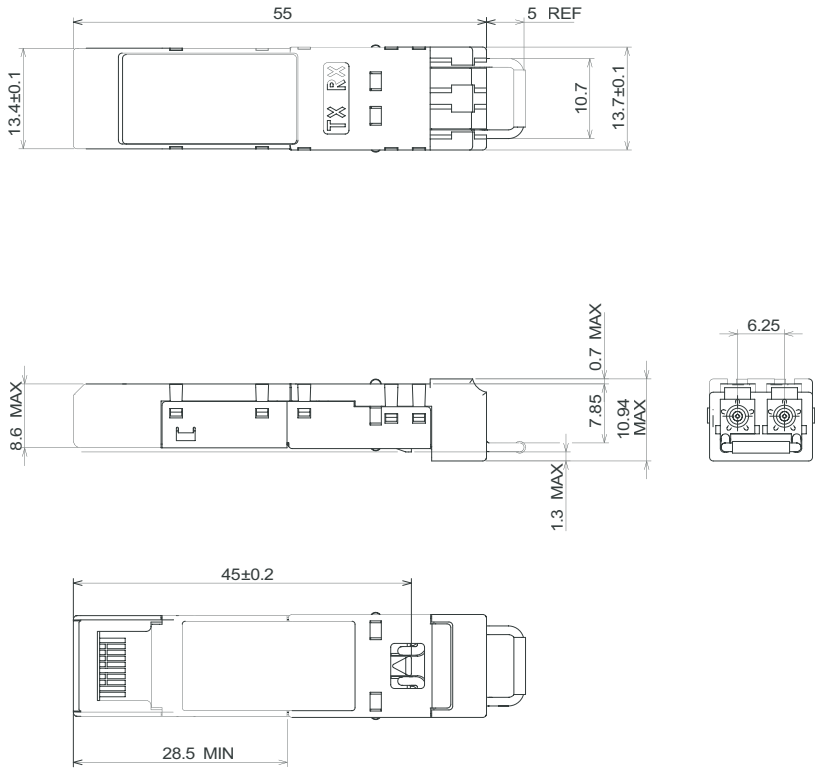
Applications

- High speed data communications

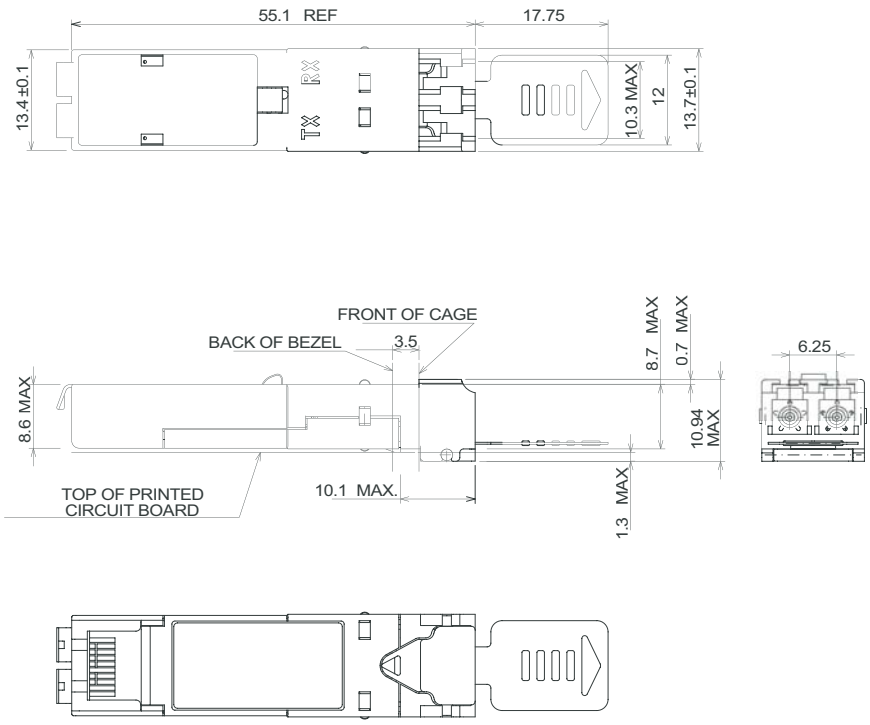
Compliance

- Class 1 laser safe
- EMI emissions below FCC Class B
- UL, CDRH, and TUV certified
- SFP Transceiver MSA compliant
- IEC 60825, IEC 60950 compliant
- Ethernet 802.3 compliance
- Fibre Channel FC-PI compliance
- CE Mark, CTIK approved
- Telcordia GR-468-CORE stress tested

JSM and JSH Product Families (Specifications in mm unless otherwise noted.)



JSP and JSD Product Families (Specifications in mm unless otherwise noted.)



850 nm Short Wave Transceivers Specifications

Parameter	JSP-12S0AA1 JSM-12S0AA1 JSD-12S0AA1	JSP-21S0AA1 JSM-21S0AA1 JSD-21S0AA1	JSM-21S3AA1 JSP-21S3AA1	JSH-21S3AA1 JSH-21S3DA1	JSM-42S4AA1 JSH-42S4AA1
Applications					
Fibre channel	1 Gb/s	2/1 Gb/s	2/1 Gb/s	2/1 Gb/s	4/2/1 Gb/s
Ethernet	1 Gb/s (SX)	-	1 Gb/s (SX)	1 Gb/s (SX)	1 Gb/s (SX) compatible
Diagnostic monitoring	JSD model	JSD model	-	Yes	JSH model
Electrical Interface					
Transmit signal input differential swing			400 to 2000 mV_{p-p}		
Receive signal input differential swing			600 to 1000 mV_{p-p}		
Control I/O signals			TTL		
Optical					
Data rate(s)	1.0625, 1.250 Gb/s	1.0625, 2.125 Gb/s	1.0625, 1.250, 2.125 Gb/s	1.0625, 1.250, 2.125 Gb/s	1.0625, 1.250, 2.125, 4.25 Gb/s
Max. launch power into fiber (average)	-4.0 dBm	-4.0 dBm	-4.0 dBm	-4.0 dBm	-1.5 dBm
Min. launch power into fiber (average)	-9.5 dBm	-10.0 dBm	-9.5 dBm	-9.5 dBm	-9.0 dBm
Receiver optical modulation amplitude (OMA)					
1.0625 Gb/s	31 to 2000 µW	31 to 2000 µW	31 to 2000 µW	31 to 2000 µW	31 to 2000 µW
2.125 Gb/s	49 to 2000 µW	49 to 2000 µW	49 to 2000 µW	49 to 2000 µW	49 to 2000 µW
4.25 Gb/s	-	-	-	-	61 to 2000 µW
Maximum bit error rate at minimum receiver sensitivity			$<10^{-12}$		
Power					
Voltage			3.3 V±10%		
Current	200 mA maximum	200 mA maximum	200 mA maximum	200 mA maximum	200 mA maximum
Environmental					
Operating temperature					
JSP/JSD	0 to 70 °C	0 to 70 °C	0 to 75 °C	n/a	n/a
JSM/JSH (except JSH-21S3DA1)	-10 to 85 °C	-10 to 85 °C	0 to 75 °C	-15 to 85 °C	-15 to 85 °C
JSH-21S3DA1	-	-	-	-40 to 85 °C	-
Operating humidity			8 to 80%		
Storage temperature			-40 to 90 °C		
Mechanical					
Dimension			SFP MSA compliant		
Form Factor			Small form factor, LC connector		
Digital Diagnostics (JSD/JSH models)					
Standard	-	SFF8472	-	SFF8472	SFF8472
Enhance features	-	-	-	Yes	Yes
Laser Safety					
US			DHHS 21 CFR(J) conformant and UL Class-1		
International			IEC 60825 -1 with TUV and UL marks, Class-1		

1310 and 1550 nm Long Wave Transceivers Specifications

Parameter	JSP-12L0AA1 JSM-12L0AA1	JSP-21L0AA1 JSM-21L0AA1	JSH-12L0AA1 JSH-12L0DA1	JSH-21L3AH1 JSH-21L3DH1 JSH-21L3AF1	JSH-12Z0AA1
Laser Wavelength	1310 nm	1310 nm	1310 nm	1310 nm	1550 nm
Applications					
Fibre channel	1 Gb/s	2/1 Gb/s	1 Gb/s	2/1 Gb/s	1 Gb/s
Ethernet	1 Gb/s (LX)	-	1 Gb/s (LX)	1 Gb/s (LX10, FICON)	1 Gb/s (ZX)
Diagnostic monitoring	-	-	Yes	Yes	Yes
Electrical Interface					
Transmit signal input differential swing	400 to 2000 mV_{p-p}	400 to 2000 mV_{p-p}	400 to 2000 mV_{p-p}	400 to 2000 mV_{p-p}	500 to 2400 mV_{p-p}
Receive signal input differential swing			600 to 1000 mV_{p-p}		
Control I/O signals			TTL		
Optical					
Data rate(s)	1.0625, 1.250 Gb/s	1.0625, 2.125 Gb/s	1.0625, 1.250 Gb/s	1.0625, 1.250, 2.125 Gb/s	1.0625, 1.250 Gb/s
Max. launch power into fiber (average)	-3.0 dBm	-3.0 dBm	-3.0 dBm	-3.0 dBm	5 dBm
Min. launch power into fiber (average)	-9.5 dBm	-8.0 dBm	-9.5 dBm	-8.0 dBm	0 dBm
Receiver optical modulation amplitude (OMA)			15 to 1000 µW		
Maximum bit error rate at minimum receiver sensitivity			$<10^{-12}$		
Power					
Voltage			3.3 V±10%		
Current	225 mA maximum	225 mA maximum	250 mA maximum	225 mA maximum	390 mA maximum
Environmental					
Operating temperature					
JSP	0 to 70 °C	0 to 70 °C	n/a	n/a	n/a
JSM/JSH (except JSH-xxLxDxx)	-15 to 85 °C	-15 to 85 °C	-15 to 85 °C	-15 to 85 °C	-5 to 85 °C
JSH-xxLxDxx	-	-	-40 to 85 °C	-40 to 85 °C	-
Operating humidity			8 to 80%		
Storage temperature			-40 to 90 °C		
Mechanical					
Dimension			SFP MSA compliant		
Form Factor			Small form factor, LC connector		
Digital Diagnostics (JSH models)					
Standard	-	-	SFF8472	SFF8472	SFF8472
Enhance features	-	-	Yes	Yes	Yes
Laser Safety					
US			DHHS 21 CFR(J) conformant and UL Class-1		
International			IEC 60825 -1 with TUV and UL marks, Class-1		

850 nm Short Wave Transceivers Link Distances

Maximum Distance	JSP-12S0AA1 JSM-12S0AA1 JSD-12S0AA1	JSP-21S0AA1 JSM-21S0AA1 JSD-21S0AA1	JSM-21S3AA1 JSP-21S3AA1	JSH-21S3AA1 JSH-21S3DA1	JSM-42S4AA1 JSH-42S4AA1
50/125 µm optical fiber, 700 MHz standard					
1.0625 Gb/s	500 m	500 m	500 m	500 m	500 m
1.250 Gb/s	550 m	n/a	550 m	550 m	550 m
2.125 Gb/s	n/a	300 m	300 m	300 m	300 m
4.25 Gb/s	-	-	-	-	150 m
Berk-Tek GIGAlite™ 50/125 µm, 700 MHz					
1.0625 Gb/s	720 m	720 m	720 m	720 m	720 m
1.250 Gb/s	750 m	n/a	750 m	750 m	750 m
2.125 Gb/s	n/a	390 m	390 m	390 m	390 m
4.25 Gb/s	-	-	-	-	210 m
Berk-Tek GIGAlite-10 50/125 µm, 2000 MHz					
1.0625 Gb/s	900 m	900 m	900 m	900 m	900 m
1.250 Gb/s	1000 m	n/a	1000 m	1000 m	1000 m
2.125 Gb/s	n/a	500 m	500 m	500 m	500 m
4.25 Gb/s	-	-	-	-	300 m
62.5/125 µm optical fiber, 200 MHz standard					
1.0625 Gb/s	300 m	300 m	300 m	300 m	300 m
1.250 Gb/s	275 m	n/a	275 m	275 m	275 m
2.125 Gb/s	n/a	150 m	150 m	150 m	150 m
4.25 Gb/s	-	-	-	-	70 m
Berk-Tek GIGAlite 62.5/125 µm, 200 MHz					
1.0625 Gb/s	500 m	500 m	500 m	500 m	500 m
1.250 Gb/s	500 m	n/a	500 m	500 m	500 m
2.125 Gb/s	n/a	220 m	220 m	220 m	220 m
4.25 Gb/s	-	-	-	-	120 m

Note: GIGAlite extended distances are part of the Berk-Tek product warranty.

1310 and 1550 nm Long Wave Transceivers Link Distances

Maximum Distance	JSP-12L0AA1 JSM-12L0AA1	JSP-21L0AA1 JSM-21L0AA1	JSH-12L0AA1 JSH-12L0DA1	JSH-21L3AH1 JSH-21L3DH1 JSH-21L3AF1	JSH-12Z0AA1
Standard Interoperability					
9/125 m optical fiber					
1.0625 Gb/s	10000 m	10000 m	10000 m	10000 m	80000 m
1.250 Gb/s	10000 m	10000 m	10000 m	10000 m	80000 m
2.125 Gb/s	10000 m	10000 m	10000 m	10000 m	n/a
50/125 m optical fiber					
1.0625 Gb/s	n/a	n/a	n/a	n/a	-
1.250 Gb/s	550 m	n/a	550 m	550 m	-
2.125 Gb/s	n/a	n/a	n/a	n/a	-
62.5/125 µm optical fiber					
1.0625 Gb/s	n/a	n/a	n/a	n/a	-
1.250 Gb/s	550 m	n/a	550 m	550 m	-
2.125 Gb/s	n/a	n/a	n/a	n/a	-
JDS Uniphase Interoperability					
9/125 m optical fiber					
1.0625 Gb/s	20000 m	20000 m	20000 m	20000 m	80000 m
1.250 Gb/s	20000 m	20000 m	20000 m	20000 m	80000 m

SFP Selection Guide

Catalog Number	Wavelength			Application					Temp °C			Latch Design		DDM
	850 nm	1310 nm	1550 nm	GbE	FC 1.0625 Gb/s	FC 2.125 Gb/s	FC 4.25 Gb/s	FICON	COM 0 to 70	EXT -15 to 85	IND -40 to 85	Metal Bail Latch	Plastic Pull Tab	
JSD-12S0AA1	•			SX					•				•	•
JSH-42S4AA1	•			SX	•	•	•			•		•		•
JSM-42S4AA1	•			SX	•	•	•			•		•		
JSH-21S3AA1	•			SX	•	•				•		•		•
JSH-21S3DA1	•			SX	•	•					•	•		•
JSM-21S3AA1	•			SX	•	•			•			•		
JSP-21S3AA1	•			SX	•	•			•				•	
JSD-21S0AA1	•				•	•			•				•	•
JSM-21S0AA1	•				•	•				•		•		
JSP-21S0AA1	•				•	•			•				•	
JSM-12S0AA1	•			SX	•					•		•		
JSP-12S0AA1	•			SX	•				•				•	
JSH-21L3AF1		•		LX10	•	•		•	•			•		•
JSH-21L3AH1		•		LX10	•	•				•		•		•
JSH-21L3DH1		•		LX10	•	•					•	•		•
JSM-21L0AA1		•			•	•				•		•		
JSP-21L0AA1		•			•	•			•				•	
JSH-12L0AA1		•		LX	•					•		•		•
JSH-12L0DA1		•		LX	•						•	•		•
JSM-12L0AA1		•		LX	•					•		•		
JSP-12L0AA1		•		LX	•				•				•	
JSH-12Z0AA1			•	ZX	•					•		•		•

Ordering Information

For more information on this or other products and their availability, please contact your local JDS Uniphase account manager or JDS Uniphase directly at 1-800-498-JDSU (5378) in North America and +800-5378-JDSU worldwide or via e-mail at sales@jdsu.com.

Sample: JSP-12S0AA1

Product Code	Description
JSP-12S0AA1	1.25 Gb/s 1000Base-SX Ethernet, 850 nm, plastic pull tab
JSM-12S0AA1	1.25 Gb/s 1000Base-SX Ethernet , 850 nm, metal bail latch, extended temperature
JSD-12S0AA1	1.25 Gb/s 1000Base-SX Ethernet, 850 nm, plastic pull tab, diagnostic monitoring (DDM)
JSP-21S0AA1	2/1 Gb/s Fibre Channel, 850 nm, plastic pull tab
JSM-21S0AA1	2/1 Gb/s Fibre Channel, 850 nm, metal bail latch, extended temperature
JSD-21S0AA1	2/1 Gb/s Fibre Channel, 850 nm, plastic pull tab, diagnostic monitoring (DDM)
JSM-21S3AA1	2/1 Gb/s Fibre Channel, 1.25 Gb/s 1000Base-SX Ethernet, 850 nm, metal bail latch
JSP-21S3AA1	2/1 Gb/s Fibre Channel, 1.25 Gb/s 1000Base-SX Ethernet, 850 nm, plastic pull tab
JSH-21S3AA1	2/1 Gb/s Fibre Channel, 1.25 Gb/s 1000Base-SX Ethernet, 850 nm, metal bail latch, extended temperature, diagnostic monitoring (DDM)
JSH-21S3DA1	2/1 Gb/s Fibre Channel, 1.25 Gb/s 1000Base-SX Ethernet, 850 nm, metal bail latch, industrial temperature, diagnostic monitoring (DDM)
JSM-42S4AA1	4 / 2 / 1 Gb/s Fibre Channel, 1.25 Gb/s 1000Base-SX Ethernet, 850 nm, metal bail latch, plastic pull tab
JSH-42S4AA1	4 / 2 / 1 Gb/s Fibre Channel, 1.25 Gb/s 1000Base-SX Ethernet, 850 nm, metal bail latch, plastic pull tab, diagnostic monitoring (DDM)
JSP-12L0AA1	1.25 Gb/s 1000Base-SX Ethernet, 1310 nm, plastic pull tab
JSM-12L0AA1	1.25 Gb/s 1000Base-SX Ethernet, 1310 nm, metal bail latch, extended temperature
JSH-12L0AA1	1.25 Gb/s 1000Base-SX Ethernet, 1310 nm, metal bail latch, extended temperature, diagnostic monitoring (DDM)
JSH-12L0DA1	1.25 Gb/s 1000Base-SX Ethernet, 1310 nm, metal bail latch, industrial temperature, diagnostic monitoring (DDM)
JSH-12Z0AA1	1.25 Gb/s 1000Base-ZX Ethernet, 1550 nm, metal bail latch, diagnostic monitoring (DDM)
JSP-21L0AA1	2/1 Gb/s Fibre Channel, 1310 nm, plastic pull tab
JSM-21L0AA1	2/1 Gb/s Fibre Channel, 1310 nm, metal bail latch, extended temperature
JSH-21L3AH1	2/1 Gb/s Fibre Channel, Ethernet LX10, 1310 nm, metal bail latch, extended temperature, diagnostic monitoring (DDM)
JSH-21L3DH1	2/1 Gb/s Fibre Channel, Ethernet LX10, 1310 nm, metal bail latch, industrial temperature, diagnostic monitoring (DDM)
JSH-21L3AF1	2/1 Gb/s Fibre Channel, Ethernet LX10, FICON, 1310 nm, metal bail latch, diagnostic monitoring (DDM)

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