



100G QSFP28 FR1/LR1 Optical Transceiver

FEATURES

- Compact Qai2()T -1.2 -1.944 Td(•)Tj/ Span<</ActualText<FEFF0009>BDC ()TjEMC 0 Tw 1.2 0 Td[C]-8.1 (A)1.8 (U)-2.1 (I)-23.4 (-)-28.1 (4 c)

ABSOLUTE MAXIMUM RATINGS

Stresses beyond those listed under “absolute maximum ratings” may cause permanent damage to the device. These are stress ratings only and functional operation of the device at these or any other conditions beyond those indicated under “recommended operating conditions” is not implied. Exposure to absolute maximum rated conditions for extended periods may affect device reliability.

PARAMETER	SYMBOL	MIN	MAX	UNITS
Storage Temperature	Ts	-40	+85	°C
Case Operating Temperature	Tc	-5	75	°C

LOW-SPEED ELECTRICAL SPECIFICATIONS

PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS
Power Consumption	Pcon	-	-	3.5	W
Control Input High	Vih	+2.8	-	+3.3	V
Control Input Low	Vil	-0.3	-	+0.8	V
Control Output High	Voh	+2.8	-	+3.3	V
Control Output Low	Vol	0.0	-	+0.4	V
Control Output Current (*)		-	-	30	mA
LOS output current		-	-	30	mA
SDA, SCL min sink current (**)		-	-	3	mA

(*) IntL

Optical Transmitter

The 100G FR1/LR1 optical transceiver electric interface is based on IEEE 802.3 CAUI-4 host to module retimed interface. Optical transmitter/receiver specifications are compliant with 100G FR specification.

TRANSMITTER ELECTRICAL INPUT CHARACTERISTICS

RECEIVER OPTICAL INPUT CHARACTERISTICS CONT.

PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	NOTES
100G LR1 (10KM PRODUCT VARIANT)						
Average receive power		-8.2	-	4.8	dBm	
Receive power	OMA _{outer}	-	-	4.7	dBm	
Damage threshold		-	-	5.8	dBm	
Receiver reflectance		-	-	-26	dB	
Unstressed receiver sensitivity (OMA _{outer}), each lane at pre-FEC BER of 2 x 10 ⁻⁴	URS	Max (-6.1, SECO – 7.5)			dBm	1
Stressed receiver sensitivity (OMA _{outer}), each lane at pre-FEC BER of 2 x 10 ⁻⁴	SRS	-	-	-4.1	dBm	1
CONDITIONS OF STRESSED RECEIVER SENSITIVITY TEST						
Stressed eye closure for PAM4 (SECO)	SECO	3.4			dB	2

(1) URS is informational.

(2) These test conditions are for measuring stressed receiver sensitivity. They are not characteristics of the receiver.

Electrical PIN Assignment

The 100 Gbps FR1/LR1 QSFP28 Optical Transceiver pinout is compliant with the QSFP specifications in SFF-8436. Table below

Power Supply

Here we describe the power supply filtering requirements and the power supply sequencing requirements.

POWER SUPPLY FILTERING

The power supply filtering requirements for the 100 Gbps FR1/LR1 QSFP28 Optical Transceiver have been designed to be consistent with those required for QSFP modules. A representative power supply filtering circuit is shown in figure below.

One filtering circuit is recommended for each power supply rail.

RECOMMENDED POWER SUPPLY FILTERING CIRCUIT

POWER SUPPLY SEQUENCING

No host power supply sequencing is required.

Management Interface

GENERAL FUNCTIONALITY

An I²C interface shall be used for management interface between the optical transceiver and the host system. The communication protocol shall follow the industry standard SFF-8636 specification for Common Management Interface. Additional detail and clarified functionality is described in this sub-section.

MONITOR ACCURACY

REGISTER MAPPING CONT.

QSFP28 DIMENSIONS

The following printed label is attached to the product (note that the certification labels will be added/removed according to requests and certification process results):

Regulatory and Compliance

EMC — Immunity	<ul style="list-style-type: none"> • EN 55024 (EU) • IEC EN 61000-4-3 (International) 	<ul style="list-style-type: none"> • EMC Directive 89/336/EEC • IEC /CISPR/24
EMC — Emission	<ul style="list-style-type: none"> • CISPR 22, class B (Comité International Spécial des Perturbations Radioélectriques — CISPR; Special international committee on radio interference. International). • AS/NZS CISPR22 (Australia/New Zealand) 	<ul style="list-style-type: none"> • VCCI-03 (Japan) • FCC 47 CFR Part 15, class B (US) • ICES-003, Issue 4 (Canada) • EN 55022 (EU) • EMC Directive 2004/108/EEC (EU)
ESD Threshold	<ul style="list-style-type: none"> • Per MIL-STD 883C Method 3015.4 or ANSI/ESDA/JEDEC JS-001-2012 (component level). • IEC EN 61000-4-2; +/- 8kV contact, +/- 15kV air. 	
Product Safety	<ul style="list-style-type: none"> • UL Recognized Component: UL 60950-1 (2nd Ed.) Information Technology Equipment; CAN/CSA-C22.2 No. 60950-1 (2007) Information Technology Equipment; UL94-V0 flammability. • TUV Bauart Certificate: EN 60950-1 (2006+ A1:2012) Information Technology Equipment. • CB Certificate: IEC 60950-1 (2005 +A1:2009) Information Technology Equipment. 	
Fire Safety	<ul style="list-style-type: none"> • PCB material must be fully compliant to UL796: Temperature class B (IEC 60085); flammability class V-0- UL94). 	
Optical Safety	<ul style="list-style-type: none"> • FDA/CDRH certified with accession number, Class 1 laser product: <ul style="list-style-type: none"> • U.S. 21 CFR 1040; • UL mark • UL Certificate: <ul style="list-style-type: none"> • IEC 60825-1:2014; • EN 60825-1:2014 + A11:2021 	<ul style="list-style-type: none"> • Complies with 21 CFR 1040.10 and 1040.11 except for conformance with IEC 60825-1 Ed. 3., as described in Laser Notice No. 56, dated May 8, 2019. • Caution – Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.
RoHS	<ul style="list-style-type: none"> • 2002/95/EC and the revised and recast Directive 2011/65/EC (RoHS) Restriction on Hazardous Substances. • 2006/1907/EC (REACH) Registration, Evaluation, Authorization of Chemicals. 	<ul style="list-style-type: none"> • JIG 101-A, JIG 101-B Joint Industry Guide Japanese Material Composition Declaration. • CAITEC SJ/T 11363-2006 Requirements for Concentration Limits for Certain Hazardous Substances in Electronic Information Products (China RoHS) • Complies with RoHS II Directive 2011/65/EU.

Ordering Information

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