

10G BASE-SR SFP+ Module for MMF LC duplex 300m data range, Cisco compatible

## GBIC-, SFP-, XFP-, XENPAK-Transceiver

The tde Small Form Pluggable Optical Transceiver are easy installed for enterprise and telecom applications. The tde SFP modular line provides a fully compatible, highly reliable and volume accessible supply of quality transceiver products with excellent performance for design-in manufacturing and end-user enterprise applications.

Agilestar's SFP-10G-SR-AS Transceiver is designed for 10GBASE-SR/SW, and 8.5G/10G Fiber- Channel applications. The transceiver consists of two sections: The transmitter section incorporates a VCSEL laser. And the receiver section consists of a PIN photodiode integrated with a TIA. All modules satisfy Class I Laser safety requirements. Agilestar SFP-10G-SR-AS Digital Diagnostics functions are available via a 2-wire serial interface, as specified in SFF-8472, which allows real-time access to device operating parameters such as transceiver temperature, laser bias current, transmitted optical power, received optical power and transceiver supply voltage.



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### Technical Data

#### Features

- Compliant with SFF-8413 and IEEE802.3ae
- Data rate selectable  $\leq 9.95$  Gbps to 10.52 Gbps bit rates
- 850nm VCSEL Transmitter and PIN Receiver
- Link length up to 300m over Multi Mode Fiber
- Low Power Dissipation 1.0W Maximum
- -5°C to 70°C Operating Case Temperature
- Single 3.3V power supply
- Diagnostic Performance Monitoring of module temperature, supply Voltages, laser bias current, transmit optical power, receive optical power
- RoHS compliant and lead free

#### Applications:

- 10G BASE-SR/SW
- 10G Fiber Channel
- Other High Speed Data Connections

#### Absolute Maximum Ratings

Parameter	Symbol	Min	Max
Supply	Vcc	-0.5V	3.8V
Storage Temperature	Tst	-40°C	85°C
Relative Humidity	Rh	0%	85%

#### Operating Conditions

Parameter	Symbol	Min	Typical	Max
Supply Voltage	Vcc	3.13V	3.3V	3.47V
Supply current	Icc		360mA	450mA
Operating Case Temperature	Tca	-5°C		70°C
Module Power Dissipation	Pm		1.0W	

#### Transmitter Specifications - Optical

Parameter	Symbol	Min	Typical	Max
Center Wavelength	$\lambda_c$	840pm		860pm
Optical Average Power	Po	-7.3dBm		-1.3dBm
Optical OMA Power	Pom	-5.2dBm		

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Side Mode Suppression Ratio	SMSR	30dB		
Optical Transmit Power (disabled)	PTX_DISABLE			-30dBm
Extinction Ratio	ER		3.0dB	
RIN <sub>21</sub> OMA <sup>1)</sup>				128dB/Hz
Optical Return Loss Tolerance				12dB

<sup>1)</sup>RIN measurement is made with a return loss at 12 dB.

### Transmitter Specifications - Electrical

Parameter	Symbol	Min	Typical	Max
Data Rate	Mra		10.3Gbps	11.3Gbps
Input differential impedance	Rim		100Ω	
Differential data Input	VtxDIFF	120mV		850mV
Transmit Disable Voltage	VD	2.0V		Vcc3+0.3V
Transmit Enable Voltage	Ven	0V		+0.8V
Transmit Disable Assert Time	Vn			100us

### Receiver Specifications - Optical

Parameter	Symbol	Min	Typical	Max
Input Operating Wavelength $\lambda$		840nm		860nm
Average receive power		-9.9dBm		-1.0dBm
Receiver sensitivity in OMA				-11.1dBm
Stressed receiver sensitivity in OMA <sup>1)</sup>				-7.5dBm
Maximum Input Power	RX-overload			-1.0dBm
Reflectance	Rrx			-12dB
Loss of Signal Asserted		-25dBm		
LOS De-Asserted				
LOS Hysteresis		0.5dB		

<sup>1)</sup>Measured with conformance test signal for BER = 10<sup>-12</sup>. The stressed sensitivity values in the table are for system level BER measurements which include the effects of CDR circuits. It is recommended that at least 0.4 dB additional margin be allocated if component level measurements are made without the effects of CDR circuits.

### Receiver Specifications - Electrical

Parameter	Symbol	Min	Typical	Max
Data Rate	Mra		10.3Gbps	11.3Gbps
Differential Output Swing	Vout P-P	350mV		850mV

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Rise/Fall Time	Tr/Tf	24ps	
Loss of Signal - Asserted	VOH	2.0V	Vcc3+0.3V
Loss of Signal - Negated	VOL	0V	+0.4V

## Product variants & accessories

Art.-No.	Description
TDE-SFP-10G-SR	10G BASE-SR SFP+ Module for MMF LC duplex 300m data range, Cisco compatible