10G Multimode 850nm Industrial-grade 10Pin Optical Module

RS-10G03-85-02DI

Feature Description

- More compact structural design: module height only 12mm
- Surface-mount I/O pins optimized for high-speed signal integrity
- Full metal casing
- Wide temperature range with anti-vibration design
- Equipped with received data signal detection function
- Operates solely on +3.3V single power supply
- LC interface type
- Pin and mounting dimensions fully compatible with STRATOS products

Applications

- Various digital optical communication systems
- 10Gbase-SR
- Fiber Channel
- SONET/SDH
- Switches

Description

The RS-10G03-85-02DI dual-fiber bidirectional ultra-compact optical transceiver module integrates the transmitting and receiving components within a compact metal housing, significantly enhancing its electromagnetic interference resistance.

The optical transmitter section employs a high-power LD, with the transmit signal pins (TD+ and TD-) adhering to the CML interface standard.

The optical receiver section consists of a PIN photodiode, a preamplifier with transimpedance, and a limiting amplifier, with the receive signal pins (RD+ and RD-) also conforming to the CML interface standard.

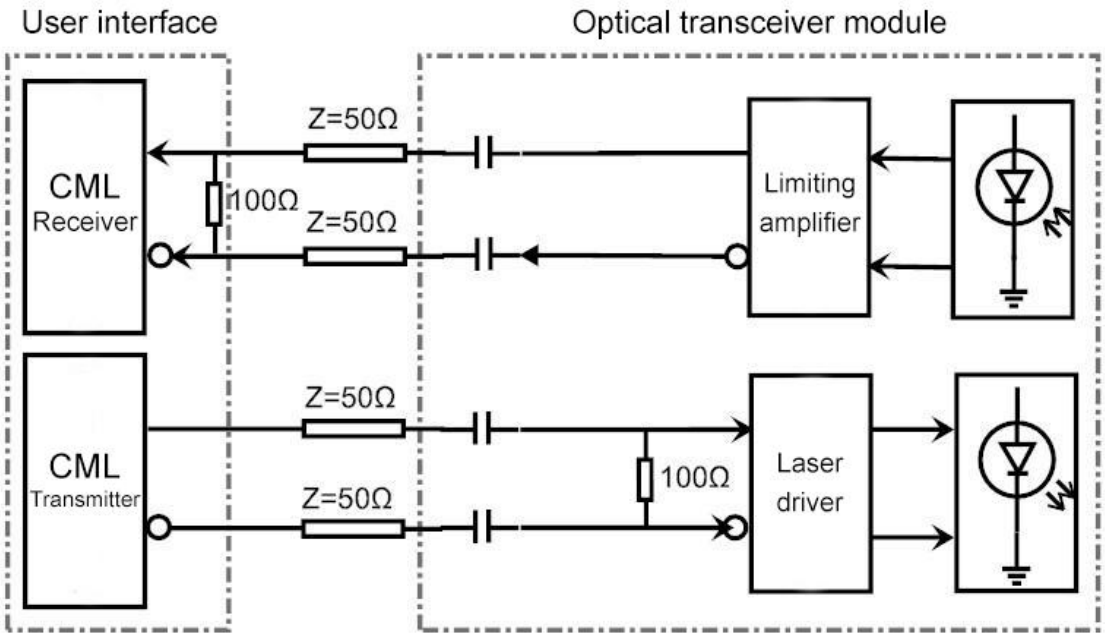
The signal detection pin (SD) follows the standard LVTTL interface level. The module can enter a power-saving mode via the transmit disable pin (TDIS).

The module's pin configuration and mounting dimensions are fully compatible with similar products from STRATOS. Functional pins, mounting, and form factors can be customized according to user requirements, ensuring flexible application.

Rigorous screening and environmental testing guarantee the module's reliability and adaptability, featuring resistance to vibration, electromagnetic interference, humidity, and extreme temperatures. It is widely suitable for medical, power, high-altitude, and other demanding environments.

With its compact size, lightweight, and all-metal construction, the module stands at a mere 12mm in height, facilitating easy installation in space-constrained boards or chassis.

Module Principle Block Diagram

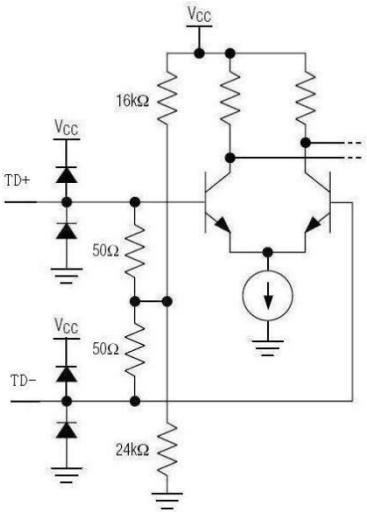


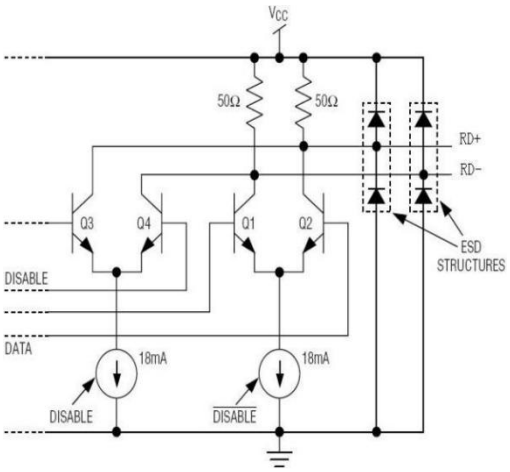
Module Parameter

Absolute Maximum Ratings					
Parameter	**Symbol**	**minimum value**	**Typical value**	**maximal value**	**unit**
Storage temperature	T_{STG}	-55	-	+85	℃
Soldering temperature	T_{SOLD}	-	-	+260	℃
Soldering time	t_{SOLD}	-	-	5	S
Power supply voltage	V_{CC}	+3	-	+3.6	V
Data input voltage	V_I	-0.5	-	V_{CC}	V
Differential input voltage (peak-to-peak)	V_D	-	-	2.0	V
Note: 1. The module cannot pass through the reflow soldering machine; 2. After pin soldering, cleaning cannot be done by spraying—only wiping is permitted.					

Recommended Working Conditions					
Parameter	**Symbol**	**minimum value**	**Typical value**	**maximal value**	**unit**
Working temperature	T_A	-40	-	+85	℃
Power supply voltage	V_{CC}	-	+3.3	-	V
Transmit differential input voltage (peak-to-peak)	V_D	0.2	-	1	V
Send cutoff voltage	V_{TD}	2.0	-	-	V
Enable voltage transmission	V_{TEN}	-	-	0.8	V
Signal receiving terminal matching	R_L	-	50	-	Ohms

Data input/output port details





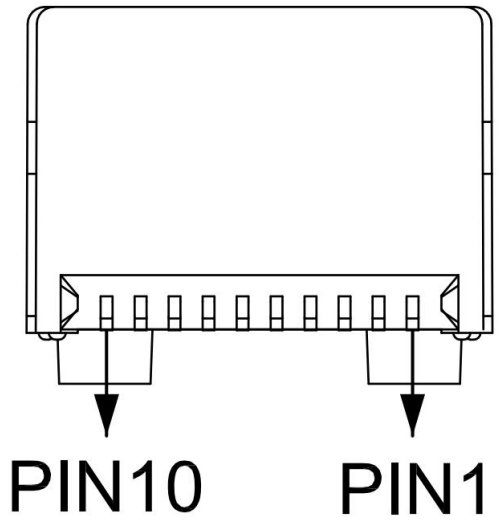
Module Performance

Transmission Section Test Conditions: VCCTX=3.3V, TA=25° C, Test Module Rate=10.3125Gbps, PRBS31					
Parameter	**Symbol**	**minimum value**	**Typical value**	**maximal value**	**unit**
Data rate	Bitrate		10.3125Gbps	-	-
Output optical power	P_0	-5	-	+1	dBm
Output optical wavelength	λ_{OUT}	840	850	860	nm
Extinction ratio	ER	3	5	-	dB
Input current	I_{CC}	-	120	160	mA
Rise/Fall Time of Optical Signal (20% to 80%)	t_{RF}	-	-	0.1	ns
Shake	T_j	-	-	80	ps
Send shutdown voltage	V_D	2.0	-	V_{CC}	V
Enable voltage transmission	V_{EN}	-	-	0.8	V

Reception section Test conditions: VCCRX=3.3V, TA=25℃, test module rate=10.3125Gbps, PRBS31					
Parameter	**Symbol**	**minimum value**	**Typical value**	**maximal value**	**unit**
Receiving sensitivity	S	-	-	-10	dBm
Shake	T_j	-	-	80	ps
Rise/Fall Time of Optical Signal (20% to 80%)	$t_{R,F}$	-	-	100	ps
Optical modulation amplitude	OMA	30	-	-	μW
Optical input wavelength range	λ_{IN}	840	-	860	nm
Optical return loss	ORL	12	-	-	dB
Input current	I_{CC}	-	70	120	mA
Signal detection arbitration time	t_{SDAS}	-	<10	50	μs
Signal detection timeout period	T_{SDDA}	-	<10	50	μs
Signal detection failure arbitration level	SD_{OFF}	-21	-	-	dBm
Signal detection arbitration level	SD_{ON}	-	-	-19	dBm
Signal detection lag	HYS	2	-	4	dB
Receive data output low level	V_{OL}–V_{CC}	-1.810	-	-1.475	V
Receive data output high level	V_{OH}–V_{CC}	-1.165	-	-0.880	V

Pin Definition

Side view

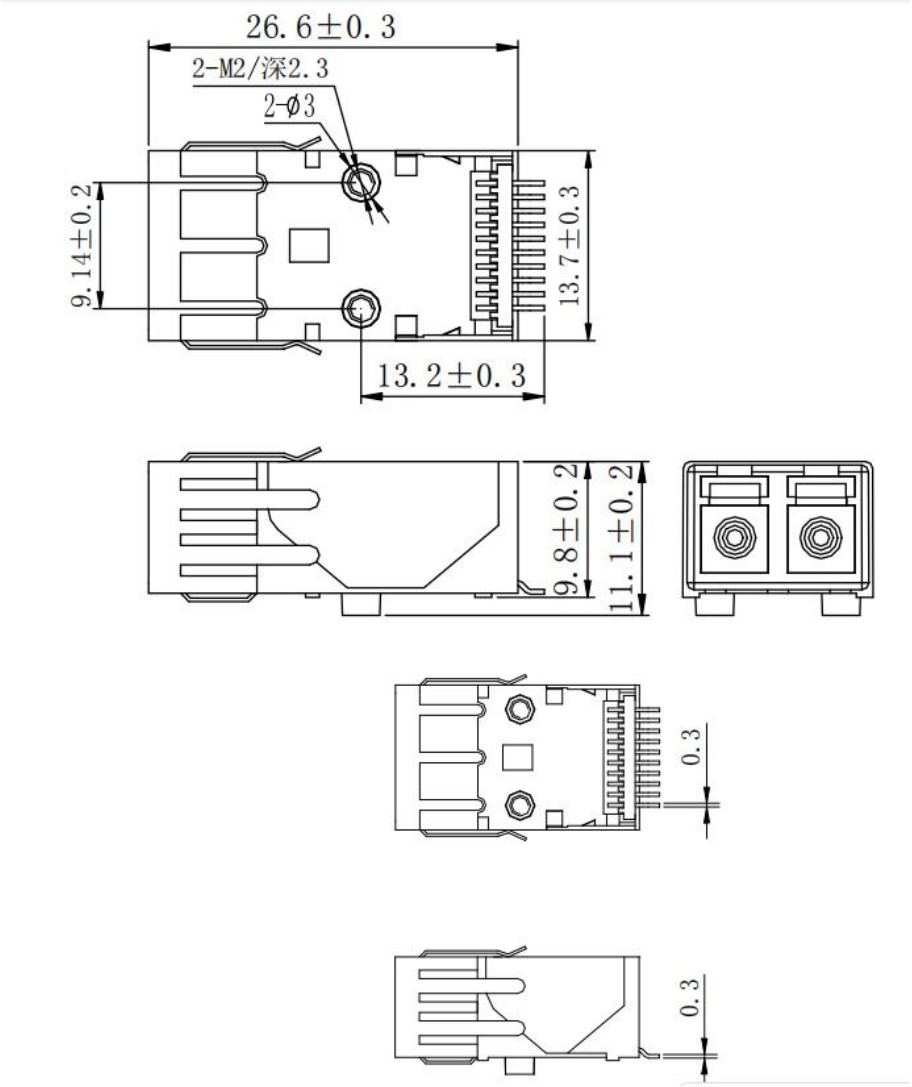


PIN	Symbol	Type	Description

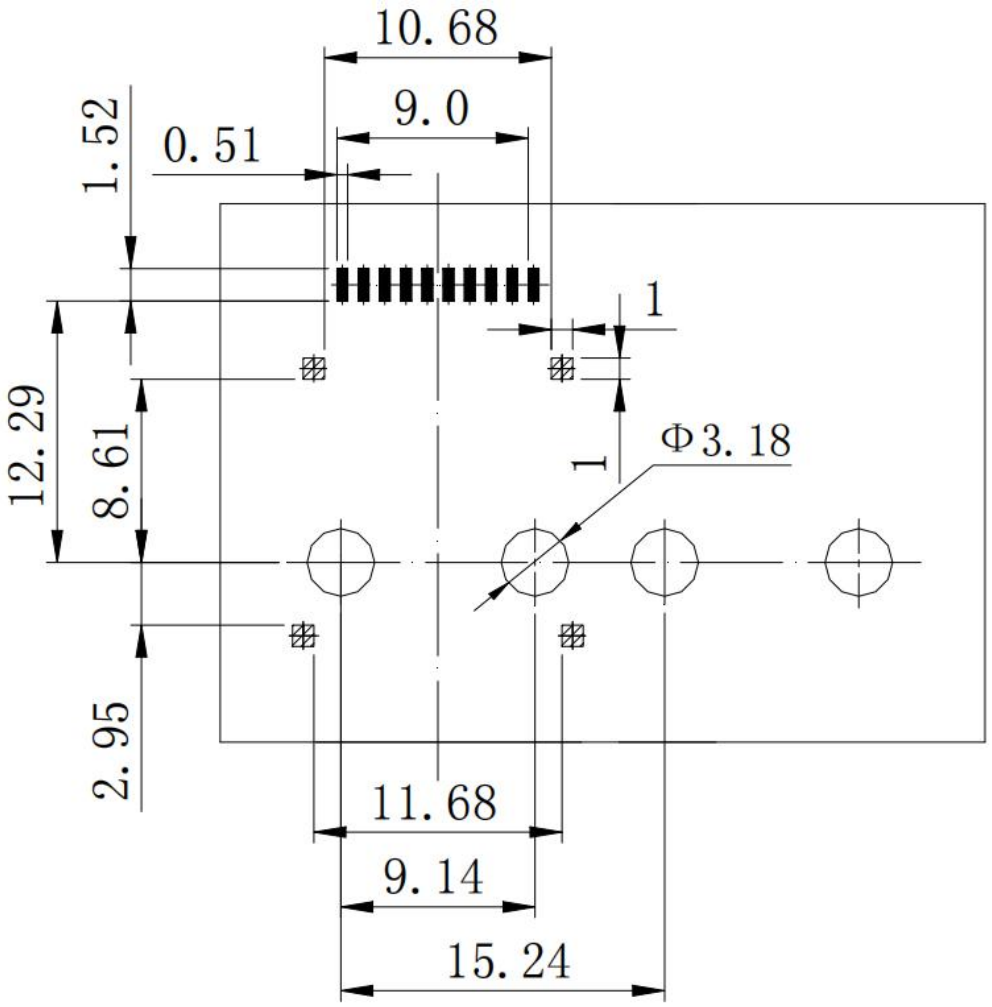
1	TD+	CML, Input	Input data to the forward terminal
2	GND	Supply	Ground
3	TD-	CML, Input	Reverse end input for sending data
4	VCCTX	Supply	Power source
5	LOS	LVTTL, Output	Signal loss output
6	TxDIS	LVTTL, Input	Send shutdown signal input
7	RD+	CML, Output	Positive terminal output of received data
8	SDA	LVTTL, I/O	IIC communication port
9	RD-	CML, Output	Reverse terminal output of received data
10	SCL	LVTTL, I/O	IIC communication port

Note: 2. If the TX_DISABLE function is used, the TDIS pin should be pulled up to the power supply to maintain a high level on this pin; if the TX_DISABLE function is not used, the TDIS pin should be pulled down to ground to maintain a low level on this pin and must not be left floating, otherwise it may cause abnormal module operation.

Dimension Drawing(mm)

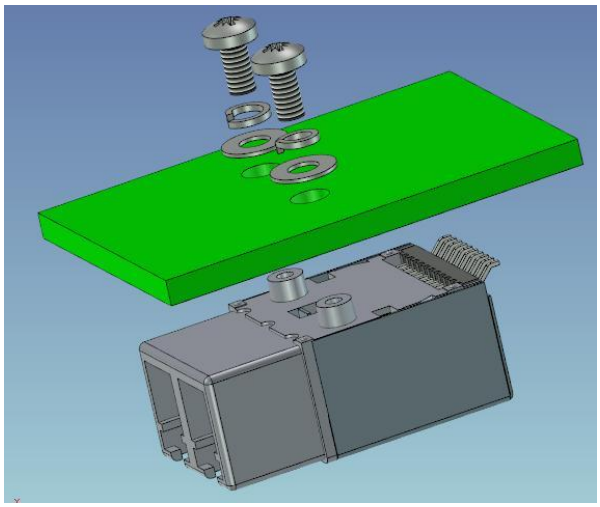


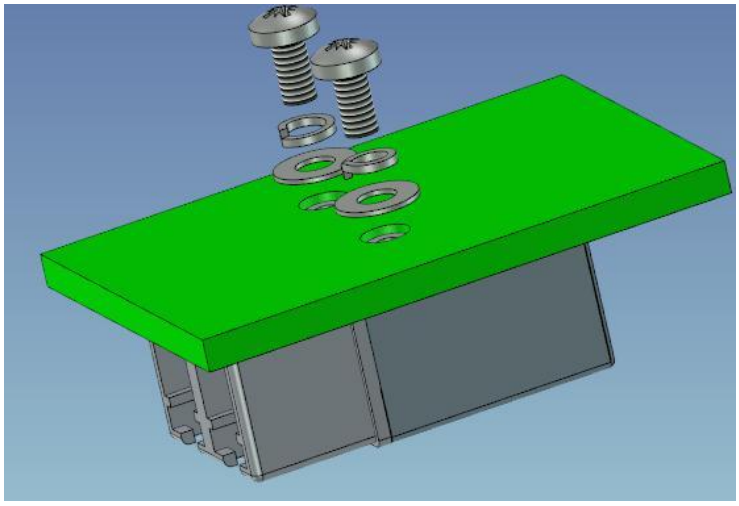
Module Installation Diagram (Top View) (mm)

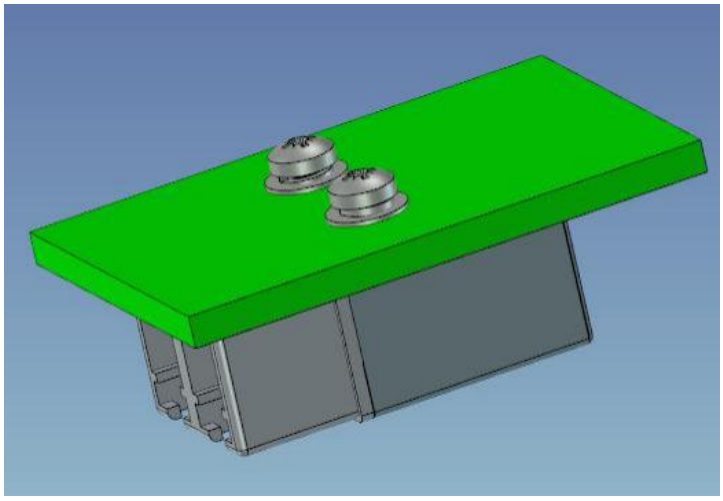


PCB Mounting Dimension Drawing (No wiring allowed in the hatched areas shown in the figure)

Module Installation Diagram







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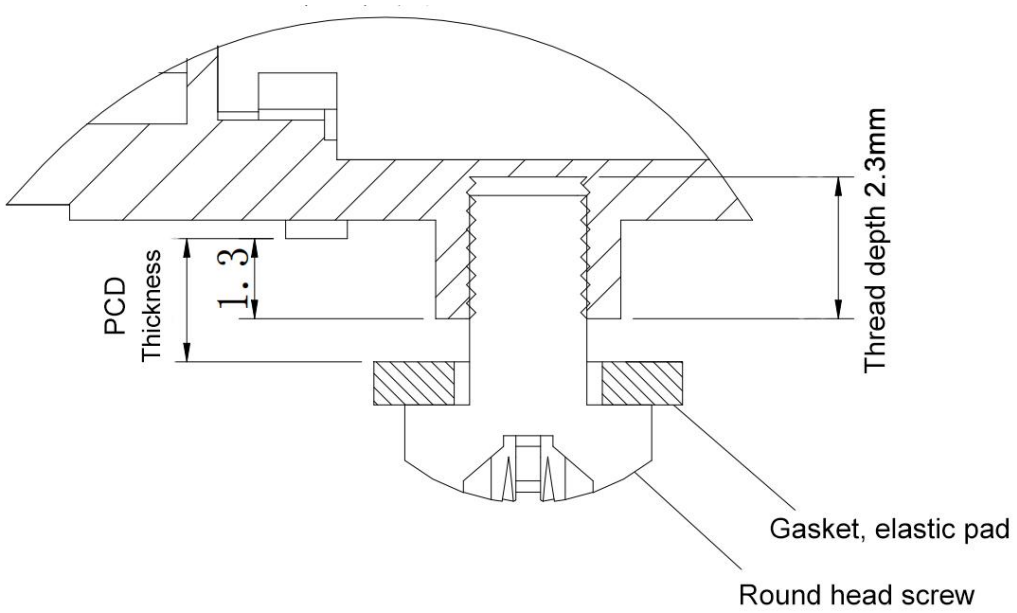

The specifications and quantities of screws, washers, and spring washers selected for module

installation can be found in the Module Screw Installation Table.

Example: If the PCB thickness is 2.0mm, then select 1 round head M2x4mm screw + 1 Φ2 washer + 1 Φ2 spring washer per mounting hole.
If the PCB thickness is 1.6mm, then select 1 round head M2x3mm screw + 1 Φ2 washer + 1 Φ2 spring washer per mounting hole.

Module Screw Installation Table							
No.	PCB board thickness	Screw		Washer		Spring washer	
		specifications	Qty	specifications	Qty	specifications	Qty
1	1.6	Round head M2×3mm	1	Φ2	1	Φ2	1
2	2.0	Round head M2×4mm	1	Φ2	1	Φ2	1
3	2.2	Round head M2×4mm	1	Φ2	1	Φ2	1
4	2.5	Round head M2×4mm	1	Φ2	1	Φ2	1

Ordering information

Part Number	Product Description
RS-10G03-85-02DI	Dual fiber 10G Multimode 850nm 300m Industrial-grade 10Pin Mini Optical Transceiver Module