

TRW7403

WDM Bi-Directional OC-3 Transceiver

Preliminary Product Disclaimer

This preliminary data sheet is provided to assist you in the evaluation of functional samples of the products which are under development and reliability test has not be completed. Until Hitachi, Ltd. releases these products for general sales, Hitachi, Ltd. reserves the right to change prices, features, functions, specifications, capabilities and release schedule.

FEATURES

- **1550 nm/ 1300 nm WDM Bi-Directional 155 Mbit/s Transceiver**
- **Pin-compatible with Industry Standard 1x9 Transceiver**
- **Single +5 V power supply**
- **PECL Logic Interface**
- **2-km Transmission Length with SMF Cable**

DESCRIPTION

General

TBD

Block Diagram

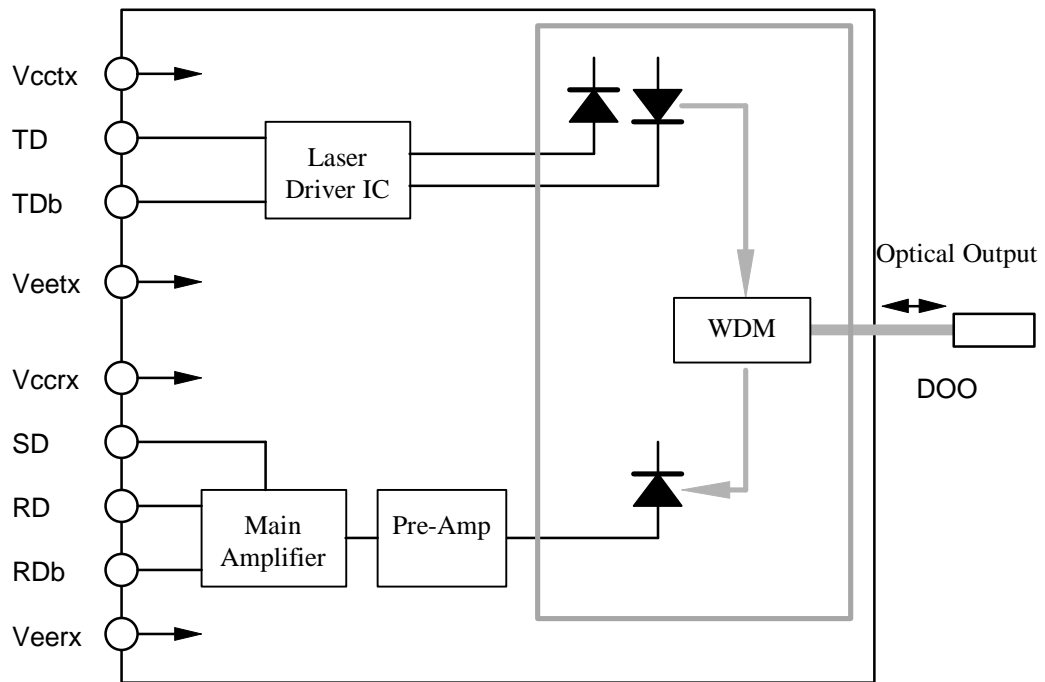


Figure 1. Block diagram of TRW7403

Functional Description

(1) Light output

No.	TD	DOO	Remarks
1	H	H	Light-on
2	L	L	Light-off

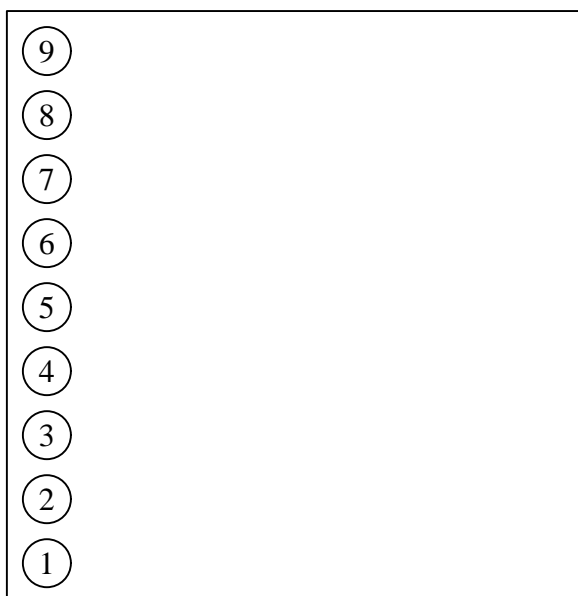
(2) Signal detect

No.	SD-n	Function	Remarks
1	L	Fault condition	
2	H	(Normal Operation)	

Pin Configuration

Table 1. Pin configuration

Pin	Symbol	Description	Remarks
1	Veetx	Tx GND	
2	TD	Data In	PECL
3	TDb	Data In -N	PECL
4	Vcctx	Tx Vcc	
5	Vccrx	Rx Vcc	
6	SD	Signal Detect	PECL
7	RDb	Data Output -N	PECL
8	RD	Data Output	PECL
9	Veerx	Rx GND	



Top view

Recommended Circuit

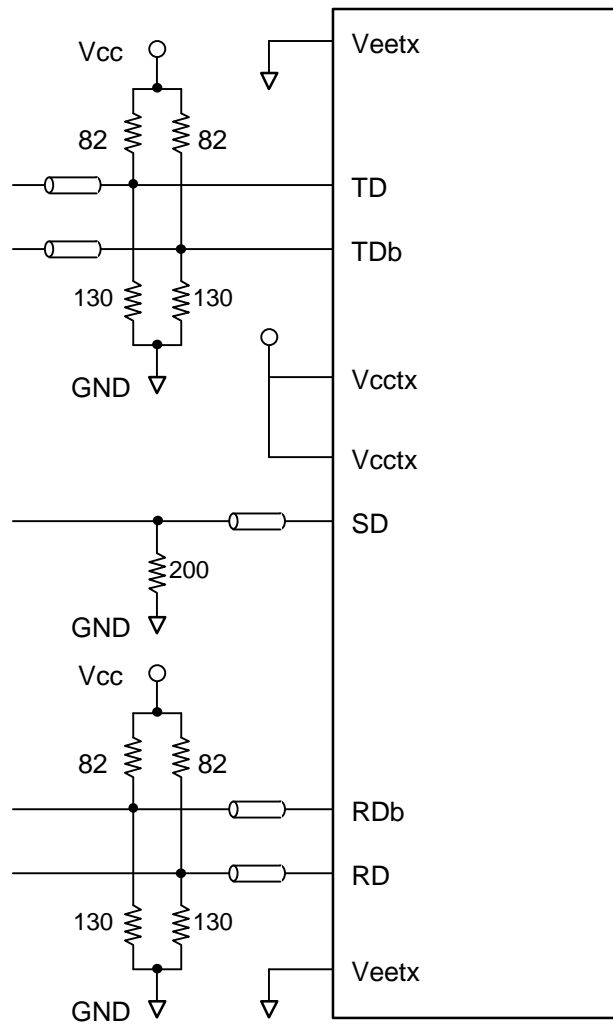


Figure 2. Recommended Circuit

PERFORMANCE SPECIFICATIONS

Absolute Maximum Ratings

Table 2. Absolute Maximum Ratings

No.	Parameter	Symbol	Min	Max	Unit	Remarks
1	Supply Voltage	Vcc	0	+6	V	
2	Input Voltage	Vi	GND	Vcc	V	
3	Output Current	Iout		250	mA	
4	Operating Temperature	Tc	0	70	°C	
5	Storage Temperature	Tstr	-20	80	°C	
6	Pigtail Fiber Tensile Strength	Lpg	5.0		N	
7	Pigtail Fiber Bend Radius	Rpg	30		mm	

Operating Environment

Electrical and optical characteristics below are defined under this operating environment, unless otherwise specified.

Table 3. Operating Environment

No.	Parameter	Symbol	Min	Typ	Max	Unit	Remarks
1	Power Supply Voltage	Vcc	4.75	5.0	5.25	V	
2	Operating Temperature	Tc	0		70	°C	

Isolation

Table 4. Isolation

No.	Parameter	Symbol	Min	Typ	Max	Unit	Remarks
1	Isolation	Iso	30			dB	

Transmitter Section

Table 5. Power Consumption

No.	Parameter	Symbol	Min	Typ	Max	Unit	Remarks
1	Power Consumption	Pds			1.05	W	
2	Power Supply Current	Pds			200	mA	

Table 6. Optical Characteristics

No.	Parameter	Symbol	Min	Typ	Max	Unit	Remarks
1	Center wavelength	λ_c	1480		1580	nm	
2	Spectral Width (RMS)	$\Delta\lambda$			7	nm	
3	Average Optical Output Power	Po	-15		-8	dBm	
4	Extinction Ratio	Er	8.2			dB	
7	Eye Pattern Mask						ITU-T G.957

Receiver Section

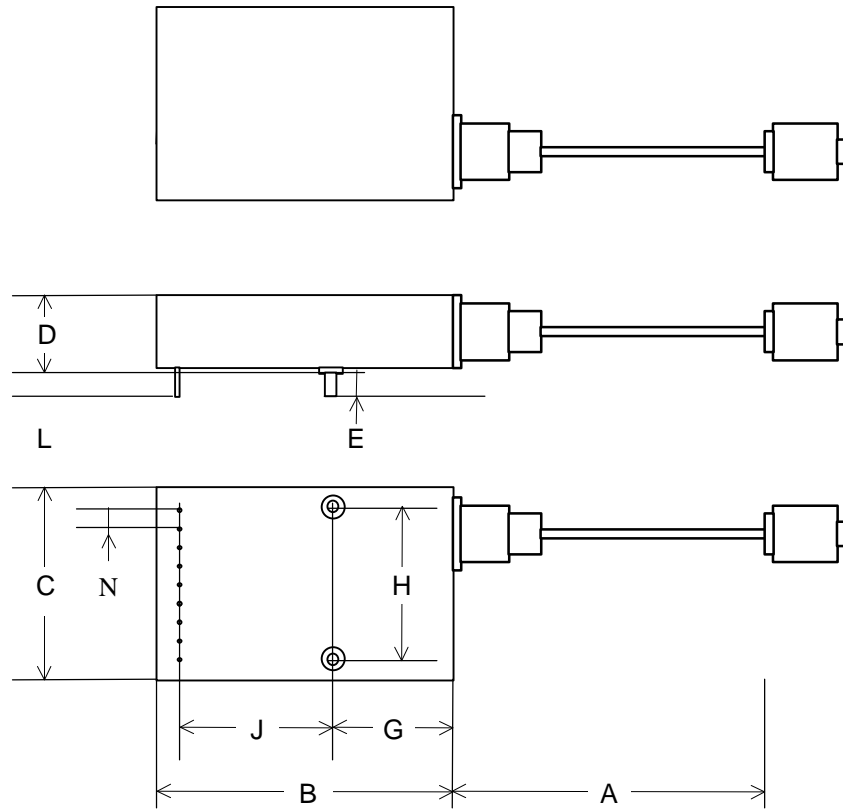
Table 7. Power Consumption

No.	Parameter	Symbol	Min	Typ	Max	Unit	Remarks
1	Power Consumption	Pds			0.45	W	
2	Power Supply Current	Pds			90	mA	

Table 8. Optical Characteristics

No.	Parameter	Symbol	Min	Typ	Max	Unit	Remarks
1	Received wavelength	λ_r	1260		1360	nm	
2	Minimum Received Power	Pinmin			-28	dBm	
3	Overload	PinOL	-8			dBm	
4	Signal Detect Power				-34	dBm	

Outline Dimensions



All dimensions in mm

	MIN.	TYP.	MAX.
A	400	500	600
B	39	40	42
C		25.4	
D		9.5	
E		3.1	
G	16	17	19
H	20.07		20.57
J		20.32	
L		3.1	
N		2.54	

Qualification

The following qualification test is scheduled.

Table 9 Qualification Test Plan

No.	Test	Reference	Condition	Sampling (a)		
				LTPD	SS	C
1	Mechanical Shock	MIL-STD-883 Method 2002	Condition B 14,710 m/s ² , 0.5 ms 5 times/axis	20	11	0
2	Vibration	MIL-STD-883 Method 2007	Condition A 197 m/s ² , 20-2,000 Hz 4 min/cycle 4 cycle/axis	20	11	0
3	Thermal Shock	MIL-STD-883 Method 1011	DT = 100°C	20	11	0
4	Solderability	MIL-STD-883 Method 2003		20	11	0
5	Fiber Pull (b)	Bellcore 983	1 kg, 3 times	20	11	0
6	Accelerated Aging (High Temp.)	Bellcore 983	Life time assured temperature condition (c) ≥ 5,000 hrs			
7	Temperature Cycling (biased test is recommended)	Bellcore 983	Between max. and min. operating temperature 100 times pass/fail 500 times for information (d)	20	11	0
8	High Temperature Storage	Bellcore 983	Max. storage temperature ≥ 2,000 hrs	20	11	0
9	Low Temperature Storage	Bellcore 983	Min. storage temperature ≥ 2,000 hrs	20	11	0
10	Damp Heat (If using epoxy)	MIL-STD-883 Method 103	40°C, 95%RH 56 days	20	11	0
11	Internal Moisture	MIL-STD-883 Method 1018	≤ 5,000 ppm water vapor	20	11	0
12	Flammability	TR-TSY-000357		-	-	-
13	ESD Threshold	Bellcore 983		-	6	-

(a) LTPD: Lot Tolerance Percentage Defective, SS: Minimum acceptable sample size, C: Corresponding number of allowed failures.

(b) If the module includes fiber pigtail(s).

(c) Max. operating temperature unless otherwise specified.

(d) Test result including failure analysis.

USER INFORMATION

Handling Precautions

CAUTION: Take proper electrostatic-discharge (ESD) precautions while handling these devices. These devices are sensitive to ESD.

Laser Safety

This product complies with IEC 60825-2 Class 1.

Because of size constraints, laser safety labeling is not affixed to the module but attached to the outside of the shipping carton.

Ordering Information

Table 10 Ordering Information

Device Name	Description			
	Connector			
TRW7403M	MUJ			