



3.3V SFF 2×10 1.25G Single Mode Transceiver Module

RTXM177X Series

Features

- *Duplex LC receptacle optical interface*
- *SFF 2×10 metallic package with EMI nose shield*
- *Distance options of 30km, 40km and 80km on*
- *9/125 μm SMF cables*
- *CML or PECL logic I/O interfaces*
- *TTL transmitter disable input*
- *Receiver signal detect output (TTL / PECL optional)*
- *Single + 3.3V power supply*
- *Low power consumption*

Application

- *Gigabit Ethernet*
- *Fiber Channel*

Standards

- *Compliant with SFF MSA July 5,2000*
- *Compliant with IEEE 802.3z*

Absolute Maximum Ratings

Parameter	Symbol	Unit	Min	Max
Storage Temperature	Ts	°C	- 40	+ 85
Relative Humidity	RH	%	5	95
Power Supply Voltage	Vcc	V	- 0.5	+ 4.0
Lead Solder Temperature	-	°C	-	260
Lead Solder Duration	-	sec	-	10

Note: Stresses in excess of absolute maximum ratings may cause damage to the device. Exposure to absolute maximum ratings for extended periods may affect device reliability.

Recommended Operating Conditions

Parameter	Symbol	Unit	Min	Typ	Max
Ambient Operating Temperature	TA	°C	0	-	+ 70
Power Supply Voltage	Vcc	V	3.14	3.3	3.47

Specifications

(tested under recommended operating conditions, unless otherwise noted)

Parameter		Symbol	Unit	Min	Typ	Max	Note
Electrical Characteristics							
Supply Current		Icc	mA	-	-	250	
Transmitter Differential Data Input Swing		VIN	mV	400	-	2000	1
Transmitter Disable Voltage		-	V	Vcc-1.3	-	Vcc+0.3	
Transmitter Enable Voltage		-	V	0	-	0.8	
Transmitter Disable Assert Time		t_off	μs	-	-	10	
Transmitter Disable Deassert Time		t_on	ms	-	-	1.0	
Receiver Differential Data Output Swing		VOUT	mV	370	-	2000	1
Signal Detect	High	-	V	Vcc-1.3	-	Vcc+0.3	
Output Voltage (TTL)	Low	-	V	0	-	0.8	
Signal Detect	High	-	V	Vcc-1.1	-	Vcc-0.7	
Output Voltage (PECL)	Low	-	V	Vcc-1.95	-	Vcc-1.5	
Optical Transmitter Characteristics							
Launch Optical Power	177X - A1 - 1	PO	dBm	- 11	-	- 5	2, 3

		177X - A2 - 4			- 5	-	0		
		177X - A4 - 4							
		177X - A4 - 5			- 2	-	+ 2		
Center Wavelength Range		177X - A1 - 1	λ_c	nm	1260	1310	1360		
		177X - A2 - 4							
		177X - A4 - 4			1500	1550	1580		
		177X - A4 - 5							
Extinction Ratio			EX	dB	9.0	-	-		
Spectral Width	RMS	177X - A1 - 1	$\Delta\lambda$	nm	-	-	4		
		177X - A2 - 4							
	-20dB	177X - A4 - 4			-	-	1		
		177X - A4 - 5							
Rise/Fall Time (20% ~ 80%)			tr/ff	ns	-	-	0.26		
Disabled Transmitter Output Power			-	dBm	-	-	- 35		
Eye Diagram					IEEE 802.3z			4	

Specifications (continued)

(tested under recommended operating conditions, unless otherwise noted)

Parameter		Symbol	Unit	Min	Typ	Max	Note		
Optical Receiver Characteristics									
Receiver Sensitivity		177X - A1 - 1	S	dBm	-	-	- 20	5	
		177X - A2 - 4							
		177X - A4 - 4							
		177X - A4 - 5			-	-	- 22		
Overload Input Optical Power			dBm	- 3	-				
Signal Detect	Assert	177X - A1 - 1	-	dBm	-	-	- 20		
		177X - A2 - 4							
		177X - A4 - 4							
	177X - A4 - 5	-			-	- 22			
	Deassert		dBm	- 35	-	-			
Signal Detect Hysteresis			dB	0.5	-	-			

Note 1: AC coupled internally.

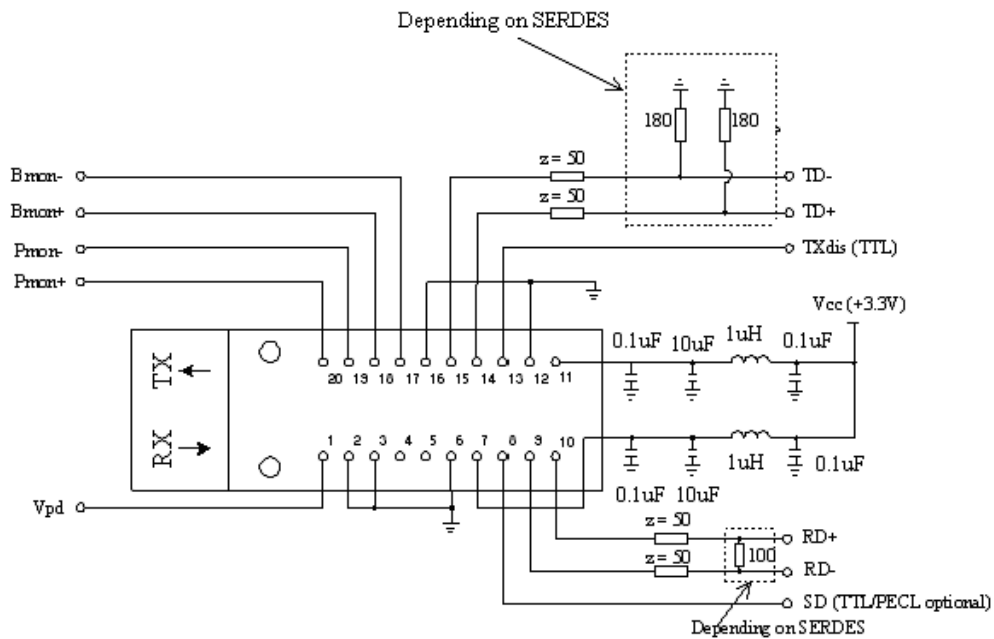
Note 2: Minimum output optical level is at end of life (EOL).

Note 3: Coupled into 9/125 μ m SMF.

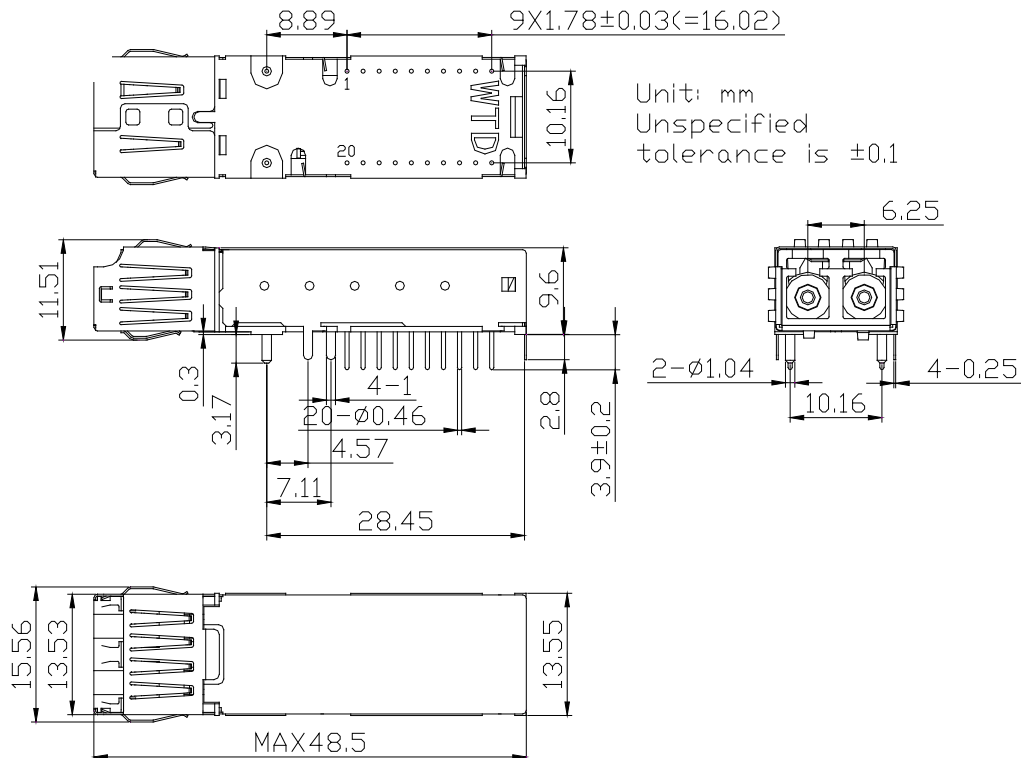
Note 4: Measured with PRBS 27-1 test pattern @1.25Gbps.

Note 5: Measured with PRBS 27-1 test pattern @1.25Gbps, EX=10dB, BER \leq 10⁻¹².

Typical Application Circuit



Package Outline *(units in mm)*



Regulatory Compliance

Feature	Test Method	Performance
Electrostatic Discharge (ESD) to the Electrical Pins	MIL-STD-883E Method 3015.7	Class 1 (>1.5kV) – Human Body Model
Electrostatic Discharge (ESD) Immunity	IEC61000-4-2	Class 2(>4.0kV)
Electromagnetic Interference (EMI)	CISPR22 ITE Class B EN55022 Class B	Compliant with standards
Immunity	IEC61000-4-3 Class 2 EN55024	Typically show no measurable effect from a 3V/m field swept from 80 to 1000MHz applied to the transceiver without a chassis enclosure.
Eye Safety	FDA 21 CFR 1040.10 and 1040.11 <div style="border: 1px solid black; padding: 2px; display: inline-block;">UL</div> TUV EN 60825-1	Compliant with Class I ,CDRH/IEC 825 UL file E239070

Update Information

From datasheet V3.0 to datasheet V3.1

1. Correct the parameter "Dessert" from "-30dBm" to "-35dBm" (in "specifications" table page 2).

Ordering Information

Part No.	Specifications										Application Code
	Package	Data rate	Laser	Optical Power	Detector	Sensitivity	Sig. Coupling	SD Level	Temp	Reach	
RTXM177X-A1-1*	2×10 SFF	1.25G	1310nm FP	-11~-5dBm	PIN	-20dBm (max)	AC	TTL	0~70°C	30km	1000BASE-LH
RTXM177X-A1-1-P	2×10 SFF	1.25G	1310nm FP	-11~-5dBm	PIN	-20dBm (max)	AC	PECL	0~70°C	30km	1000BASE-LH
RTXM177X-A2-4*	2×10 SFF	1.25G	1310nm DFB	-5~0dBm	PIN	-20dBm (max)	AC	TTL	0~70°C	40km	1000BASE-LH1
RTXM177X-A2-4-P*	2×10 SFF	1.25G	1310nm DFB	-5~0dBm	PIN	-20dBm (max)	AC	PECL	0~70°C	40km	1000BASE-LH1
RTXM177X-A4-4*	2×10 SFF	1.25G	1550nm DFB	-5~0dBm	PIN	-20dBm (max)	AC	TTL	0~70°C	40km	1000BASE-LH2
RTXM177X-A4-4-P*	2×10 SFF	1.25G	1550nm DFB	-5~0dBm	PIN	-20dBm (max)	AC	PECL	0~70°C	40km	1000BASE-LH2
RTXM177X-A4-5*	2×10 SFF	1.25G	1550nm DFB	-2~+2dBm	PIN	-22dBm (max)	AC	TTL	0~70°C	80km	1000BASE-ZX

RTXM177X-A4-5-P*	2 × 10	1550nm	-2	~	-	22dBm	AC	PECL	0~70°C	80km	1000BASE-ZX
	SFF	DFB	+2dBm	PIN	(max)						

*: The product marked with * is not available at present.

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