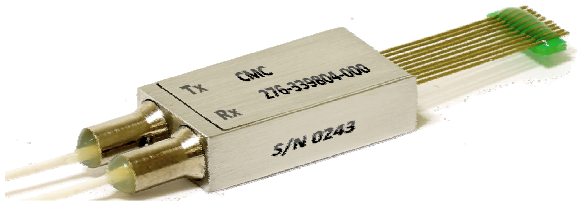
Transceiver 2.5Gbps
1 RX + 1 TX
Pigtailed

MICROELECTRONICS

276-339804-000

Features

- Up to 2.5 Gbps
- 1 RX + 1 TX channels
- Operating -40 to +85°C
- Hermetically sealed laser and receiver
- RF shielded stainless steel housing
- Conformal coating on circuit board
- RoHS compliant and Military standard compliant
- Compact and weighs less than 9g



Applications

- Aircraft Networking
- Avionic Data Transmission
- High Speed Avionic Communications
- In Flight Entertainment

CMC Electronics' Fiber Optic Transceiver 276-339804 Series incorporates proprietary ruggedization techniques suitable for applications requiring 100% reliability in harsh environmental conditions. Housed in a shielded stainless steel housing package, this transceiver has gigabits per second capability.

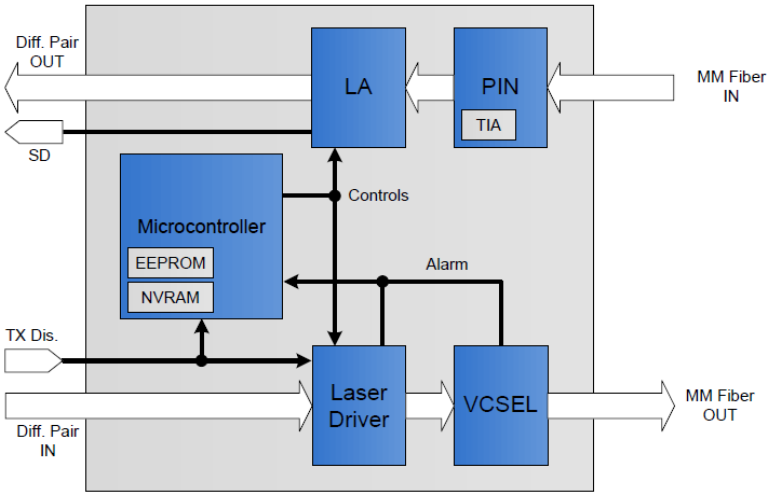


Figure 1: CMC 276-339804 SERIES BLOCK DIAGRAM

Electro-Optical Specifications

Unless otherwise specified: V+=3.3V, 100Ω AC coupled.

Performance over operation temperature range -40°C / +85°C						
Parameter	**Symbol**	**Min.**	**Typ.**	**Max.**	**Units**	**Notes**
Optical connection		1 Tx + 1 Rx				
Optical fiber		MM 50/125 GI 900 µm tight buffer				
Optical wavelength	λ		850		nm	
Transmission Data rate	BR	0.5		2.5	Gbps	
Tx optical average output power	P_{OUT}	-2.5		+0.5	dBm	3, 3.1 to 3.4
Tx optical average output power stability	ΔP_{OUT}	± 0.5			dB	4
Extinction ratio	ER	7		16	dB	5
Rx sensitivity	R_{SENS}			-18	dBm	2
Signal detect Assert	SD		-20		dBm	
Signal Detect De-Assert	SD		-22		dBm	
Supply Voltage	V_{cc}	3.0	3.3	3.6	V	
Supply Current	I_{CC}		145		mA	
Tx input differential impedance	Zi_{diff}		100		Ω	1
Rx Output differential impedance	Z_{Odiff}		100		Ω	1
Differential Data Input Swing	$V_{IN,pp}$	300		800	mVpp	1
Differential Data Output Swing	$V_{OUT,pp}$	600	800	950	mVpp	1
Transmitter Disable Voltage	V_D	V_{CC}-1.3		V_{CC}	V	
Transmitter Enable Voltage	V_E	V_{ee}		V_{ee}+0.8	V	
Power Consumption	P		450	575	mW	

1. CML AC coupled
2. BER < 10^{-9} Average power, ER = 7dB, PRBS7 test pattern
3. Includes device to device variations and power stability
   3.1. Excessive bias current → Laser shutdown
   3.2. APC op-amp saturation (low bias current or loss of feedback) → Laser shutdown
   3.3. Excessive transmit power → Laser shutdown
   3.4. Inadequate supply voltage → Laser shutdown
4. Variation for a single device over the operating temperature range
5. No hit on eye diagram mask (1000 waveforms) CJTPAT test pattern at 2.5 Gbps
6. Turn on at -55ºC

Environmental Specifications

Parameter	Symbol	Min.	Typ.	Max.	Units	Notes
Operating Temperature	T_{OP}	-40		+85	°C	
Storage Temperature	T_S	-55		+95	°C	6
Enclosure		Non-hermetic Permeable to humidity only				
PCB Protection		Conformal coating				
HBM ESD component classification		3B				
Weight				8.5	g	

Parameter	Specification	Units	Qualification method
Strain relief	250	g	Std Telcordia GR-468, Fiber side pull test
Vibration	20	G rms	MIL-STD-883, Method 2026, Condition I, Letter F, 20Grms
Shock	50	G	Mechanical shock: MIL-STD-810, Method 516, 50G, 11ms half sine pulse, 3 axes
Altitude	55 000	ft	Pressure excursion to 9.2 kPa

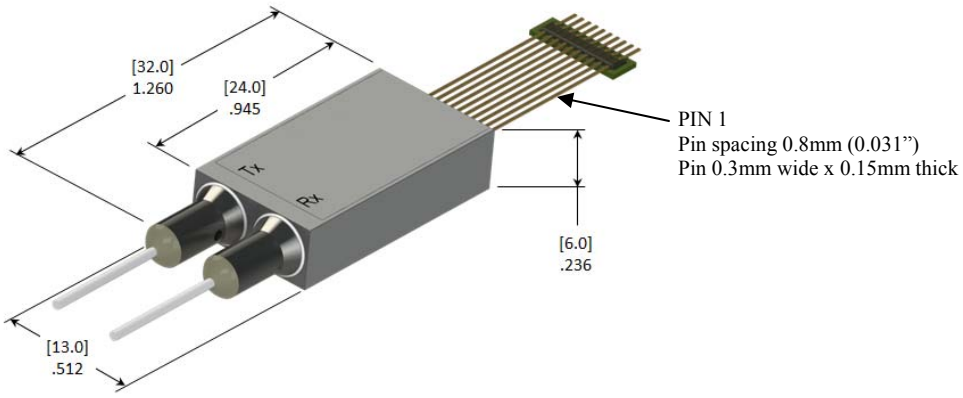
Reliability

Parameter	Specification	Units	Qualification method
Thermal Cycling	1000 cycles, -55 to 95ºC	-	Thermal cycling: MIL-STD-883, Method 1010, Condition B (95°C replace 125°C as maximum T°)
Damp Heat	500	hrs	85°C/85% RH
MTBF 25°C	23.2	yrs	MIL-HDBK-217 Notice2, Airborne Uninhabited Cargo (AUC), Duty cycle of 50%, 90% CL
MTBF 25°C	42.1	yrs	MIL-HDBK-217 Notice2, Airborne Uninhabited Fighter (AUF), Duty cycle of 20%, 90% CL

Pinout

Pin #	Pin Name	Type	Pin Function
1	RX_GND	Receiver Ground	Receiver Ground
2	RX_VCC	Receiver Positive Supply Rail	Receiver Voltage Supply
3	SD	Open-Collector Logic Level Output	Signal-Detect **HIGH** = When the receiver data input amplitude rises above signal detect assert level **LOW** = When the receiver data input amplitude falls below signal detect de-assert level **2dB typical optical hysteresis to prevent chattering.*
4 5	RXOUT- RXOUT+	CML Outputs	Receiver Differential CML Outputs. Internally 100Ω differential AC Coupled.
6	TX_VCC	Transmitter Positive Supply Rail	Transmitter Voltage Supply
7	TX_GND	Transmitter Ground	Transmitter Ground
8	TXDIS	Logic Level Input	Transmit Disable. Control signal that enables or disables the VCSEL optical output. **HIGH** = Transmitter outputs Disabled (Default state on start-up) **LOW** = Transmitter outputs Enabled
9 10	TXIN+ TXIN-	CML Inputs	Transmitter Differential Data CML Inputs. Internally 100Ω differential AC Coupled.

Package Outline



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