

Product Specification

8Gbps 850nm optical transmitter

MFE7192-6x1

PRODUCT FEATURES

- Low electrical parasitic TO package with flexible interface
- Data rates from DC to 8.5Gbps
- Complete isolation between the laser diode Monitor Photodiode and Case
- Mechanically compatible with all SFF, SFP and SFP+ MSA
- Optional Flex Circuit



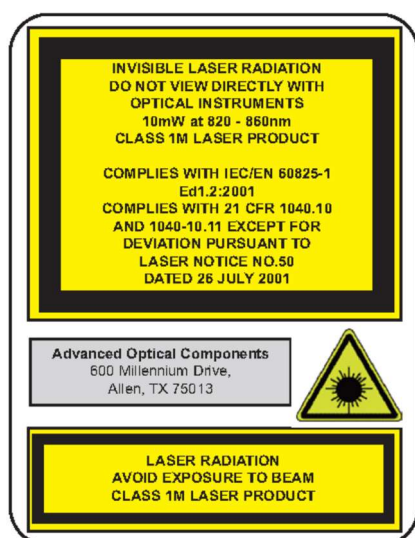
The MFE7192-6x1 uses a high-performance laser diode designed to meet performance requirements for 1/2/4/8 Gbps data communication over multimode optical fiber for the ANSI X2.T11 Fiber Channel protocols. The optical assembly is designed to interface either 50um or 62.5um multimode fiber and ensure launch conditioning requirements compatibility with enhanced bandwidth fiber as specified by TIA 455-203. The MFE7192-6x1 incorporates a power monitoring photodiode that can be used for temperature compensation, average power control, and for compliance with Class 1 eye safety limits.

PRODUCT SELECTION

Part Number	Description
MFE7192-661	Differentially Driven, attenuated, LC TOSA, with 50W flex
MFE7192-681	Differentially Driven, attenuated, SC TOSA

I. Absolute Maximum Ratings

Parameter	Rating
Storage Temperature	-40 to +85°C
Case Operating Temperature	-20 to +85°C
Lead Solder Temperature	260°C, 10 sec.
Reverse Power Supply Voltage	5V
Max continuous forward current	12mA
ESD Exposure (Human Body Model)	150V ¹



Notice

Stresses greater than those listed under “Absolute Maximum Ratings” may cause permanent damage to the device. This is a stress rating only and functional operation of the device at these or any other conditions above those indicated in the operations section for extended periods of time may affect reliability.

Notice

The inherent design of this component causes it to be sensitive to electrostatic discharge (ESD). To prevent ESD-induced damage and/or degradation to equipment, take normal ESD precautions when handling this product

II. Electro-Optical Characteristics (T_A=25C, unless otherwise stated)

Laser Parameters	Test Condition	Symbol	Min.	Typ.	Max.	Units	Notes
Fiber coupled optical power	I _F =6.7mA peak	P _{OC}	360	470		uW	
Coupling Efficiency	50/125um fiber	PO_PCT	65			%	1
Threshold Current		I _{TH}		1	1.5	mA	
Threshold Current Temperature Variation		ΔI _{TH}			1.5	mA	2
Slope Efficiency	T _A =0 to 70°C	η	0.065	0.075	0.105	mW/mA	3
Slope Efficiency Temperature Variation	P _{OC} =0.47mW	Δη/ΔT		-0.4		%/°C	
Peak Wavelength	T _A =0 to 70°C	λ _P	840		860	nm	
λ _P Temperature Variation	I _F =6.7mA	Δλ _P /ΔT		0.06		nm/°C	
RMS Spectral Bandwidth	T _A =0 to 70°C	Δλ			0.4	nm	
Laser Forward Voltage	I _F =6.7mA	V _F	1.5	1.8	2.2	V	
Laser Reverse Voltage	I _F =6.7mA	V _R	5	10		V	
Rise/Fall Time	I _R =10uA	T _R T _F			50 50	ps	4
Relative Intensity Noise	Bias above threshold 20%-80%	RIN ₁₂			-128	dB/Hz	5
Series Resistance	I _F =6.7mA	R	35	50	75	Ohms	
Series Resistance Temperature Variation	I _F =6.7mA	ΔR/ΔT		-0.2		%/°C	
Total Capacitance	I _F =6.7mA	C _T			0.5	pF	6
Encircled Flux Diameter	I _F =6.7mA	EF					7
Photodiode Parameters	Test Condition	Symbol	Min.	Typ.	Max.	Units	Notes
Monitor Current	P _{OC} =0.47mW, V _R =3V	I _{PD}	100	250	500	uA	
Monitor Current Temperature Variation	P _{OC} =0.47mW T _A =0 to 70°C	ΔI _{PD} /ΔT		0.0		%/°C	
Tracking Ratio Variation (Open Bore)	P _{OB} =-2.5dBm T _A =0 to 70°C	ΔTR	-0.5		+0.5	dB	
Dark Current	P _{OC} =0mW, V _R =3V	I _{DARK}			20	nA	
PD Reverse Voltage	P _{OC} =0mW, I _R =10uA	BVR _{PD}	30	115		V	8
PD Capacitance	V _R =0V, Freq=1MHz V _R =3V, Freq=1MHz	C _{PD}		75 40	100 55	pF	

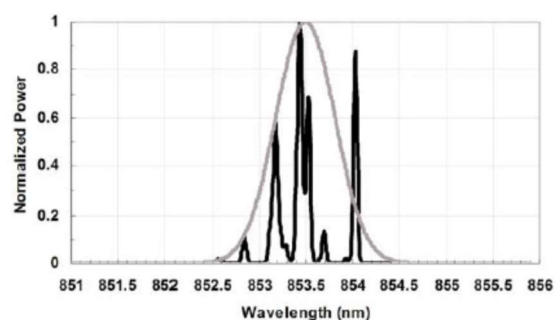
Notes:

- PO_PCT is defined as the ratio of the coupled power into a 50/125um fiber to the total power output from the optical front end as measured on a large area detector.
- Operation outside of the specified range may result in the threshold current exceeding the maximums defined in the electro-optical characteristics table. DITH is the maximum deviation from the 25°C value.
- Slope efficiency is defined as ΔPO/ΔIF at a total power output of 0.6mW. Slope efficiency is intentionally lowered to the value shown by attenuation.

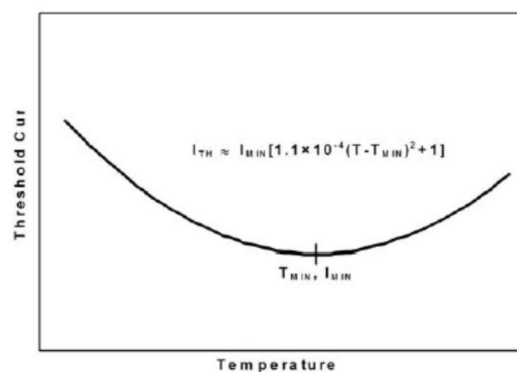
4. Rise and fall times are sensitive to drive electronics. Rise and fall times are measured 20%-80% using a 1GHz square wave AC coupled to the laser diode using a bias-T. The DC current is adjusted to achieve a minimum OMA of -4dBm. Corrections are made for finite detector bandwidth.
5. RIN12 is measured using the OMA technique with 12dB return.
6. Total capacitance is measured with the laser diode forward biased using a Network analyzer at 1GHz.
7. Encircled flux is measured per TIA-455-203.
8. To prevent laser diode damage, short the laser diode anode and cathode during BVR testing

III. Typical Performance Curves

RMS Spectral Width is defined and measured using TIA-455-127



Threshold Current vs. Temperature: Threshold current varies parabolically with temperature; thus it can be nearly constant for a limited temperature range.



IV. Environmental Specifications

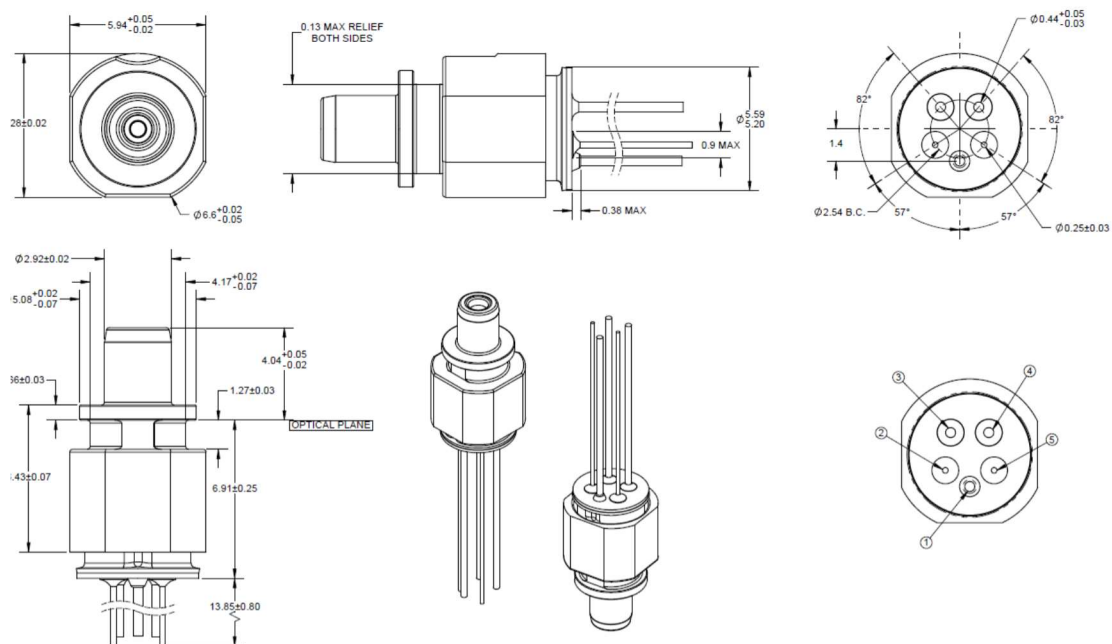
Parameter	Symbol	Min	Typ	Max	Units	Ref.
Case Operating Temperature	T_{op}	-20		85	°C	
Storage Temperature	T_{sto}	-40		85	°C	

V. Mechanical Specifications

(Dimensions are in mm)

PIN	Description	
	MFE7192-681	MFE7192-661
1	Case	PDK
2	LDK	GND
3	MPK	LDA
4	MPA	LDK

5	LDA	GND
6		PDA



LC
All dimensions in mm

