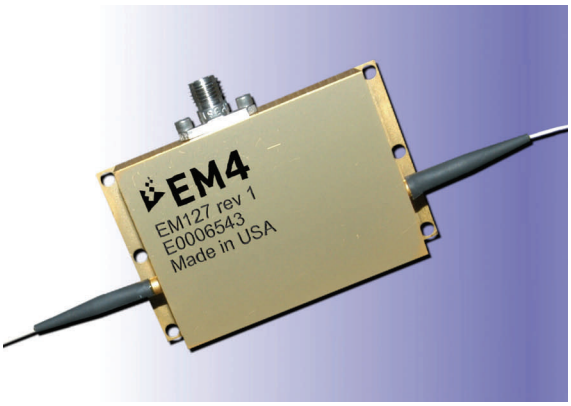
Acousto Optic Modulator

Features

- Hermetic to MIL-Std 883
- Rugged laser welded construction
- Fast rise / fall time
- High throughput
- High contrast ratio
- High PER
- Wide operating temperature range



Applications

- Fast optical shutter
- Optical switch
- Pulse picker
- Frequency shifter

General Description

The EM4 Fiber Coupled Acousto-Optic Modulator is a rugged, hermetic module that has been designed and built using technologies and processes developed for high reliability defense and telecommunications applications. It is pigtailed with polarization maintaining fiber on the input and output as required and contains internal circuitry for 50Ω RF matching. With rise/fall times <10ns it can be used in fast pulse picking and switching applications.

Ordering Information

Part	λ_C [nm]	Fiber
EM416	1060	PM
EM416-01	1060	SM

Absolute Maximum Ratings

Stresses beyond those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only and operation of the device at these or conditions beyond these are not implied. Exposure to absolute maximum ratings for extended periods of time may affect device reliability.

Parameter	Sym	Condition	Min	Max	Unit
Storage Temperature	T_{STG}		-40	85	°C
Operating Case Temperature	T_{OP}		-40	85	°C
Humidity	I_F	Non Condensing		90	%
Optical Input Power (Peak)	P_{PEAK}	Less than 10ns		1000	W
Optical Input Power (Average)	P_{IN}			5	W
RF Input Power	P_{RF}	10 seconds		4	W
RF Input Power	P_{RF}	Continuous		1.2	W
Fiber Bend Radius			30		mm
Fiber Pull Force				5	N
ESD		HBM		500	V

For pricing and delivery information, please contact EM4 inc. direct at +1 781 275 7501, sales@em4inc.com or any of the representatives listed at www.em4inc.com.

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Optical, Electrical & Environmental Characteristics

T_{OP}=25°C, beginning of life unless otherwise specified.

Parameter	Sym.	Condition	Min	Typ.	Max	Unit
Operating Wavelength	λ_C		1040	1060	1080	nm
Input Optical Power (Average)	P_{IN}				1	W
Input Optical Power (Peak)	P_{PEAK}				500	W
On State Transmission	T_{TRANS}		45	55		%
Throughput change over temperature	ΔT	Temp. range from 10 C to 60C, % change relative to 25C Transmission	-10		+10	%
Optical Return Loss	RL_{OPT}	Both input and output signals	40			dB
Polarization Extinction Ratio	PER	PM input and output fiber	17	20		dB
Polarization Dependent Loss	PDL	SM input and output fiber			10	%
Rise Time	t_r	10% to 90% signal @1050nm			10	ns
Fall Time	t_f	90% to 10% signal @1050nm			10	ns
Contrast Ratio	C_r		40			dB
RF Matching	Z_{IN}			50		Ω
Electrical Return Loss	RL_{RF}				-10	dB
RF Peak Power	$P_{RF\ PK}$	To achieve Contrast Ratio	1.5	2.5	3.0	W
RF Average Power	$P_{RF\ AVG}$			0.6	0.8	W
RF Center Frequency	RF_{CF}			200		MHz
Operating Temperature			10		60	°C
Storage Temperature			-40		85	°C
Humidity		Non condensing			90	%
Air Pressure			700		1060	kPa
Hermeticity (Leak Rate)		MIL-Std 883			1E-6	ATM cc/s He

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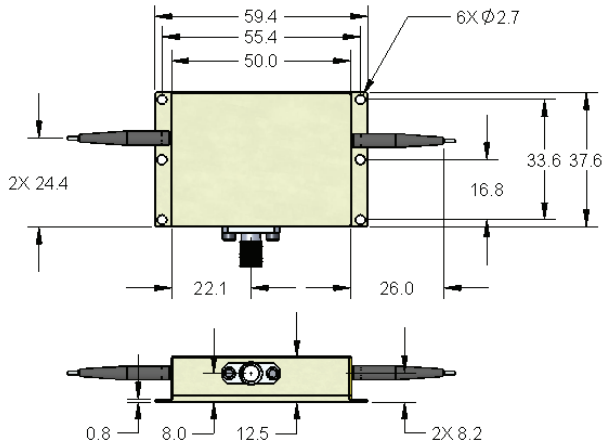
Mechanical

Parameter	Description
Package Body Material	Gold plated kovar or equivalent
RF Connector	SMA, female

All units in mm



Reliability

Description	Requirement
Mechanical Shock	MIL-Std 883, Method 2002
Vibration	MIL-Std 883, Method 2007
Fiber Pull	GR-468, 0.5kg minimum strength
Temperature Cycling	GR-468, section 5:20

Fiber Characteristics

Description	Specification	Min	Typ	Max	Unit
PM 980 or SM 1060					
Fiber bend radius		30			mm
Fiber length (input & output)			1		m
Connectors	None				
Fiber Jacket	Acrylate		250		µm
Stress Rod Alignment	Light aligned to slow axis of both input and output fibers				

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