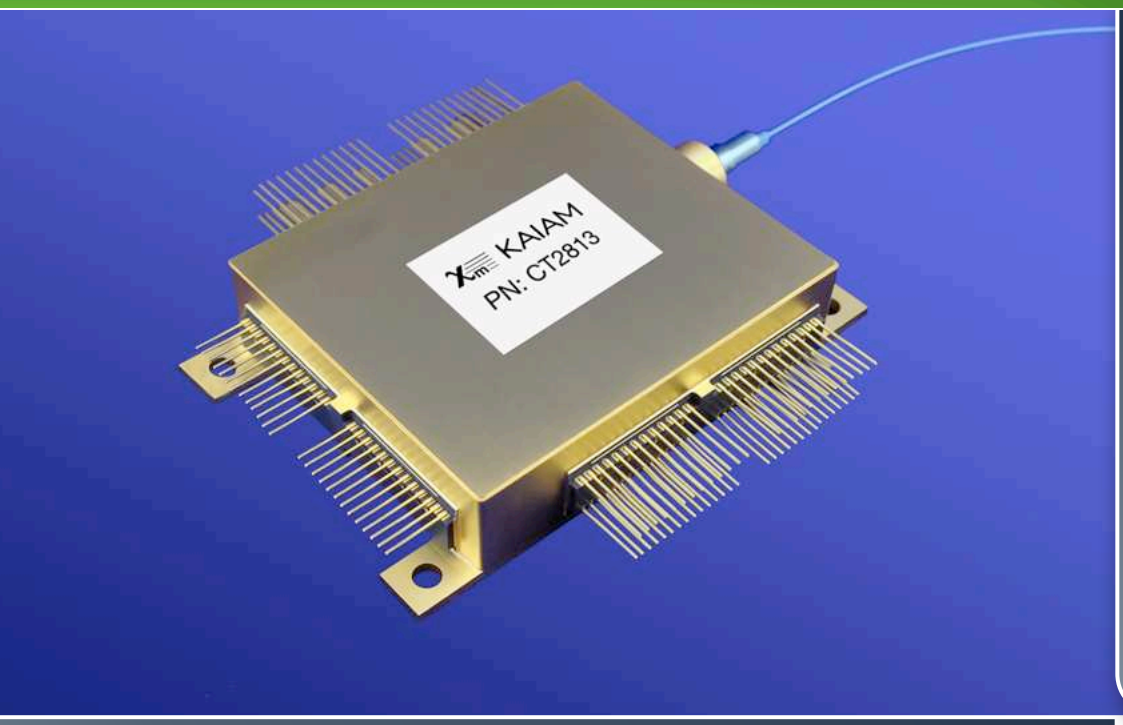
Smart photonic integration



KEY FEATURES

- *100Gb/s = 10x10Gb/s*
- *100GBASE-ER10*
- *40km reach*
- *400GHz wavelength spacing*

10x10 Gb/s WDM ER10 TOSA

with 40km Reach

The **KAIAM** ER10 TOSA is a 100G transmitter optical sub-assembly incorporating 10 independent WDM channels, on a 400GHz wavelength grid, with each channel operating from 9.95 Gb/s to 11.1809 Gb/s. The ER10 TOSA for each channel consists of a modulator driver and an EML laser diode chip, each on a different channel of the 400GHz wavelength grid. All 10 wavelength channels are combined into one single mode fiber by the use of an optical multiplexer chip. A temperature controller (TEC) and thermistor is included for wavelength tuning and stability, laser currents are provided for fine tuning of individual channels.

The WDM ER10 TOSA is designed to work in point-to-point unamplified links with up to 40km of dispersion reach using G.652 compliant fiber.

KAIAM

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OPTICAL TRANSMITTER PERFORMANCE

PARAMETER	SYM	UNITS	MIN	TYP	MAX	CONDITIONS/COMMENTS
Average Power	P_{avg}	dBm	-7		1.7	
Optical Modulation Amp	OMA	dBm	-4.0			
OMA minus TDP	OMA-TDP	dBm	-4.4			
Extinction Ratio	ER	dB	6			
Optical Mask						compliant with 10GBASE-ER
Side Mode Suppression Ratio	SMSR	dB	30			modulated
-20dB Spectral Width		nm			0.4	modulated (informative, superseded by dispersion penalty)
Relative Intensity Noise	RIN_{OMA}	dB/Hz			-130	
Optical Return Loss Tolerance		dB			-21	

OPTICAL LINK PARAMETERS

PARAMETER		UNITS	MIN	MAX	CONDITIONS/COMMENTS
Data Rate	10 x OC-192	Gb/s	9.95328 ±20ppm		
	100GbE		10.3125 ±100ppm		
	OTU4		11.1809 ±100ppm		
Dispersion Penalty		dB		2	@ 800ps/nm, BER = 10^{-12}

WAVELENGTH ASSIGNMENTS

PARAMETER	UNITS	MIN	MAX	CONDITIONS/COMMENTS
WDM Channel Count		10		
Channel Spacing	GHz	400		
Channel width	nm	-2	+2	from center
CHANNEL	**UNITS**	**CENTER**		
Ch1	nm	1523		
Ch2	nm	1531		
Ch3	nm	1539		
Ch4	nm	1547		
Ch5	nm	1555		
Ch6	nm	1563		
Ch7	nm	1571		
Ch8	nm	1579		
Ch9	nm	1587		
Ch10	nm	1595		

ELECTRICAL SPECIFICATIONS

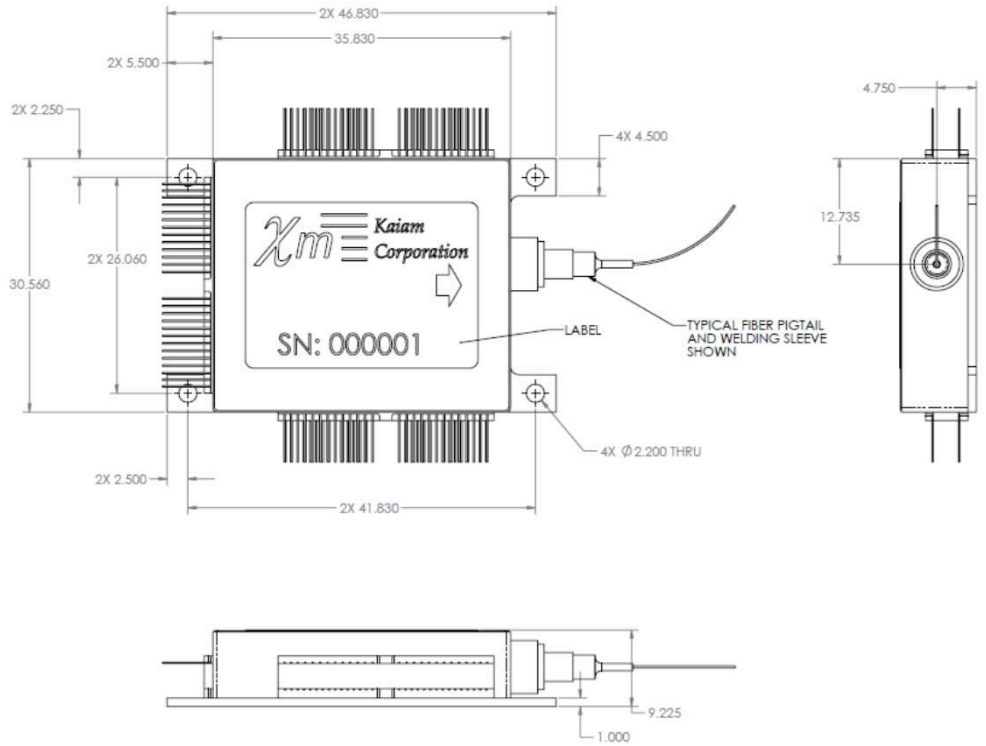
PARAMETER	SYM	UNITS	MIN	TYP	MAX	CONDITIONS/COMMENTS
Laser Operating Current	I_{op}	mA		70		
Laser Operating Voltage	V_{op}	V			2	
Modulator DC Bias Voltage	V_{ea}	V	-3		0	
Modulator DC load	R_m	Ω	40	50	60	
Data differential input swing	V_{in}	V_{pp}	0.5		1.2	AC coupled
Differential input return loss	S_{11DD}	dB			-10	100kHz to 100MHz
Differential input Impedance	Z_{indiff}	Ω	80	100	120	DC
Modulation amplitude control signal	V_{C1}	V	0		1.2	high input impedance
Cross Point control signal	V_{B1}	V	0.4		2.0	high input impedance
TEC current	I_{TEC}	A	-2.5		+2.5	
TEC Voltage	V_{TEC}	V	-6		+6	
TEC Power	P_{TEC}	W			7	VTEC x ITEC
TEC Temperature Difference	ΔT	°C	-50		35	T_{case} - T_{set}
Thermistor Resistance	R_{th}	kΩ	9.5	10	10.5	at 25°C
Thermistor slope		%/°C		4.4		
Temperature Set Point	T_{set}	°C	40		45	
MPD current	I_{mpd}	mA			0.5	common cathode
MPD dark current	I_{dark}	μA			0.5	
Supply current VD1	I_{d1}	mA			75	per channel
Supply current VD2	I_{d2}	mA			75	per channel

OPERATING CONDITIONS

PARAMETER	UNITS	MIN	MAX
Operating Case Temperature	°C	-5	+75
DC Supply Voltage (VD1 and VD2)	V	3.135	3.465

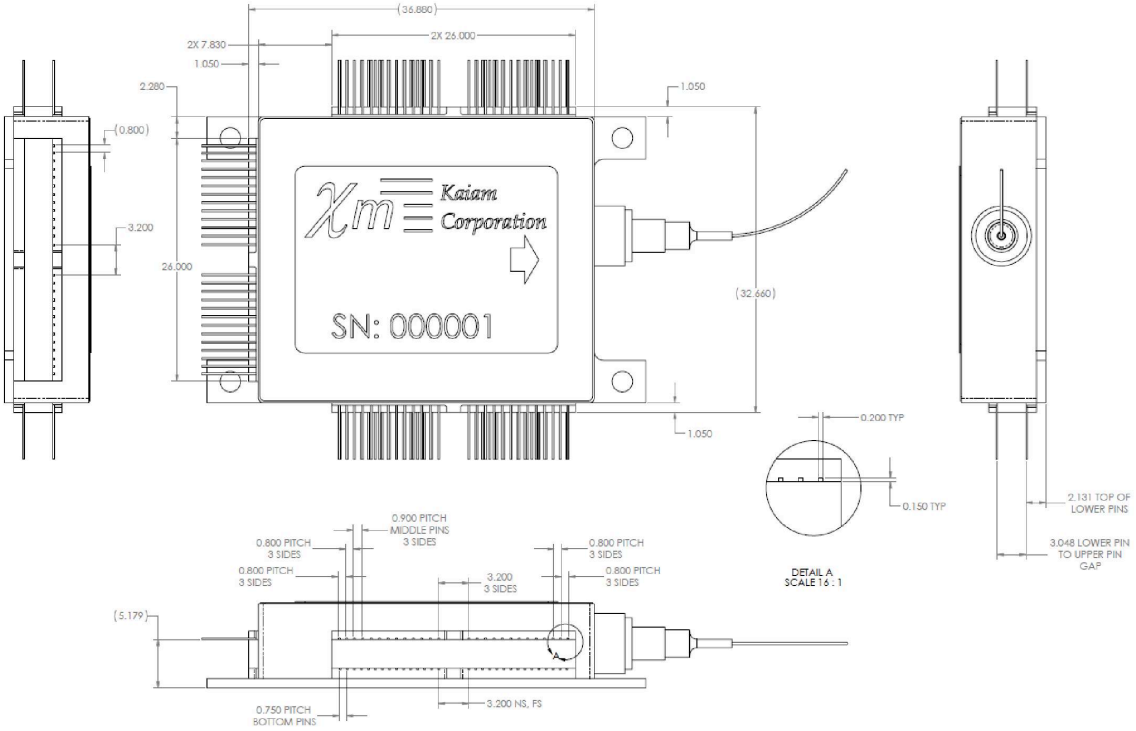
WDM ER10 TOSA MECHANICAL OUTLINE

(all dimensions in mm)



WDM ER10 TOSA LEAD DIMENSIONS

(all dimensions in mm)



For more information please visit www.kaiamcorp.com or call 1-510-344-2231.