Preliminary

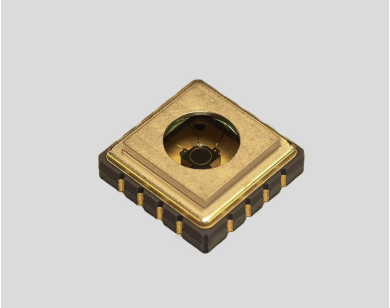
Marktech Optoelectronics

SWIR Multichip Emitter & Detector

Product No: **MTSM10415SMF3**

Peak Emission Wavelengths: 1040,1300,1460,1550nm
Detector Sensitivity Wavelength Range: 600-1750nm

The MTSM10415SMF3 is a SWIR multi-chip emitter with a InGaAs Photodiode designed for applications requiring various emission sources in a small, densley packaged area. These devices can be custom designed for specific wavelengths and outputs.



FEATURES

> Seam Welded Surface Mount Package
> PIN Photodiode Chip Active Area: 1.0mm
> High Output Power

APPLICATIONS

> NDIR / Spectroscopy
> Medical / Chemical Analysis
> Biofluorescense Analysis

Emitter Absolute Maximum Ratings (Ta=25ºC)

ITEMS	SYMBOL	RATINGS				UNIT
		1040	1300	1460	1550	
Forward Current (DC)	IF	50	50	50	50	mA
Forward Current (Pulse) *1	IFP	--	--	--	--	A
Reverse Voltage	VR	5	5	5	5	V
Power Dissipation	PD	50	50	50	50	mW
Operating Temperature Range	Topr		-40~+85			ºC
Storage Temperature Range	Tstg		-40~+125			ºC
Junction Temperature	Tj		100			ºC

*1: Tw=10µsec, T=10msec.

Note: Also available on PCB - Starboard MTSM10415SMF3S (See Page 4)

Emitter Electrical & Optical Characteristics (Ta=25ºC)

ITEMS	SYMBOL	WAVELENGTH	CONDITIONS	MIN	TYP	MAX	UNIT
Forward Voltage	VF	1040	IF=50mA	--	1.3	--	V
Forward Voltage	VF	1300	IF=50mA	--	1.05	--	V
Forward Voltage	VF	1460	IF=50mA	--	1.02	--	V
Forward Voltage	VF	1550	IF=50mA	--	1.03	--	V
Reverse Current	IR	--	VR=5V	--	--	10	uA
Power Output	PO	1040	IF=50mA	--	6.3	--	mW
Power Output	PO	1300	IF=50mA	--	2.9	--	mW
Power Output	PO	1460	IF=50mA	--	1.8	--	mW
Power Output	PO	1550	IF=50mA	--	1.6	--	mW

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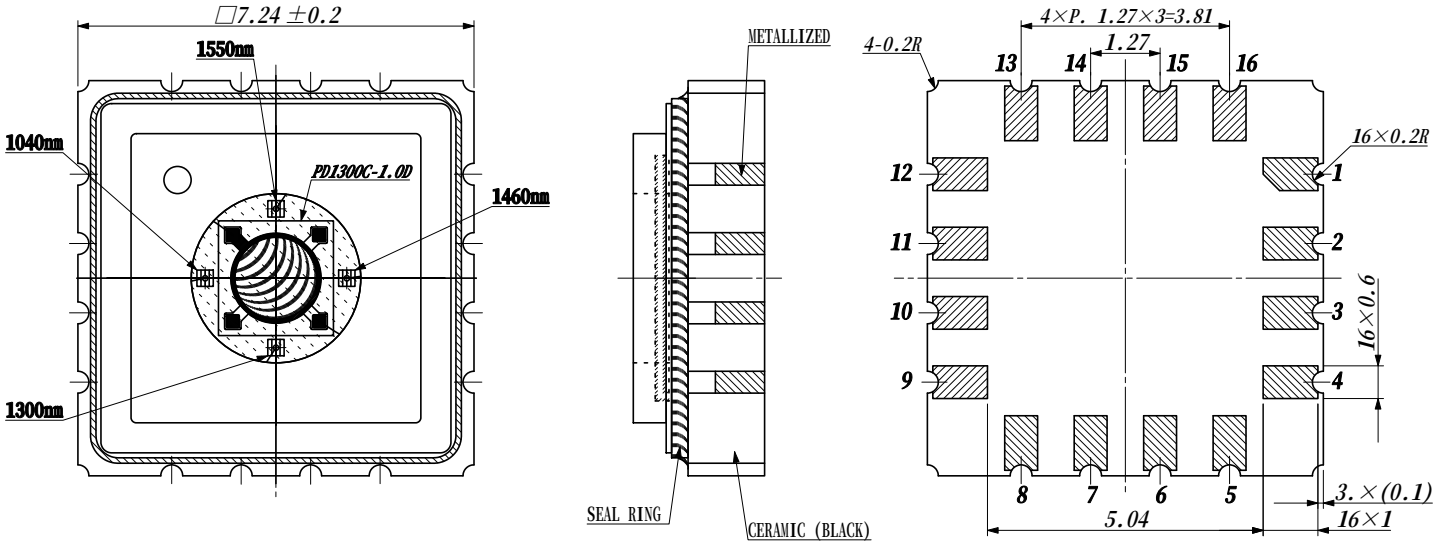
Emitter Electrical & Optical Characteristics (Ta=25ºC)

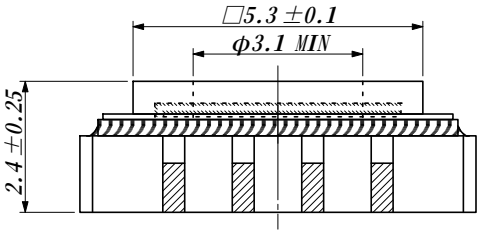
ITEMS	SYMBOL	WAVELENGTH	CONDITIONS	MIN	TYP	MAX	UNIT
Peak Emission Wavelength	λp	1040	IF=50mA	--	1040	--	nm
Peak Emission Wavelength	λp	1300	IF=50mA	--	1300	--	nm
Peak Emission Wavelength	λp	1460	IF=50mA	--	1460	--	nm
Peak Emission Wavelength	λp	1550	IF=50mA	--	1530	--	nm
Spectral Line Half Width	Δλ	1040	IF=50mA	--	35	--	nm
Spectral Line Half Width	Δλ	1300	IF=50mA	--	75	--	nm
Spectral Line Half Width	Δλ	1460	IF=50mA	--	120	--	nm
Spectral Line Half Width	Δλ	1550	IF=50mA	--	110	--	nm

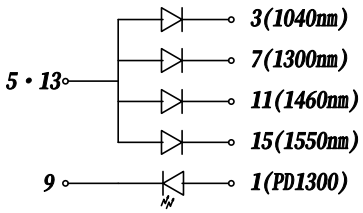
Detector Electrical & Optical Characteristics (Ta = 25ºC)

ITEMS	SYMBOL	CONDITION	MIN	TYP	MAX	UNIT
Breakdown Voltage	VR	IR=10uA	--	--	1	V
Sensitivity Range	λ	VR=0V	600	--	1750	nm
Dark Current	ID	VR=1V	--	--	2.0	uA
Junction Capacitance	C	VR=0V	--	60	--	pF
Capacitance	C	VR=1V	--	--	--	pF
Responsivity	R	λ=1550nm	--	0.70	--	A/W
Shunt Resistance	RS	VR=10mV	--	2	--	MOhm
Quantum Efficiency	QE	λ=1660nm	--	55	--	%
Light Current @1300nm	IL	If=10mA	--	100	--	uA
Switching Times	Tr, Tf	Vr=2V	--	0.63	--	ns

Package Dimensions

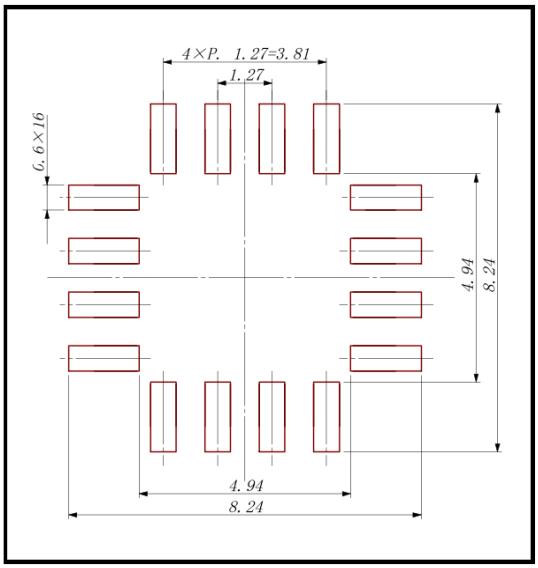




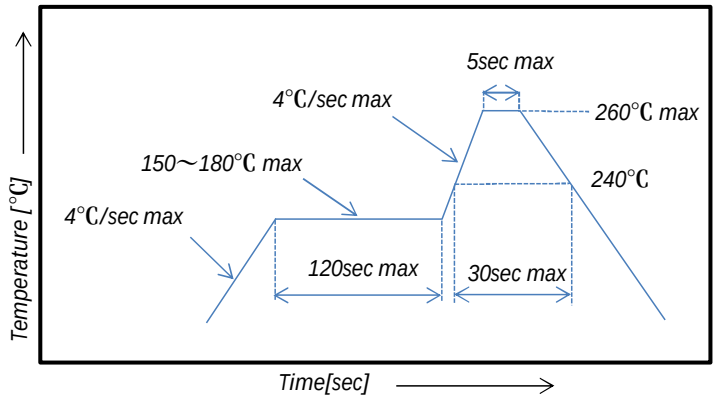


1- PD1300 Anode	9- PD1300 Cathode
2- NC	10- NC
3- 1040nm Cathode	11- 1460nm Cathode
4- NC	12- NC
5- LED Anode com	13- LED Anode com
6- NC	14- NC
7- 1300nm Cathode	15- 1550nm Cathode
8- NC	16- NC

Recommended Soldering Pattern [mm]



Reflow Soldering Temperature-Profile [Pb free Soldering] (Recommend condition)



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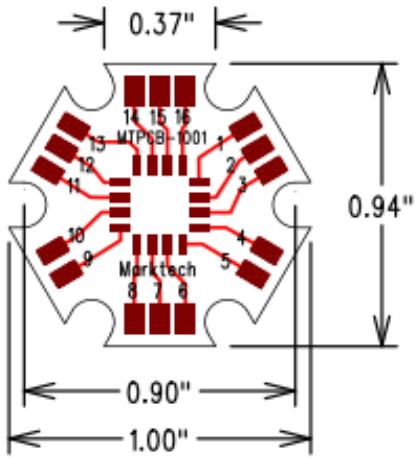
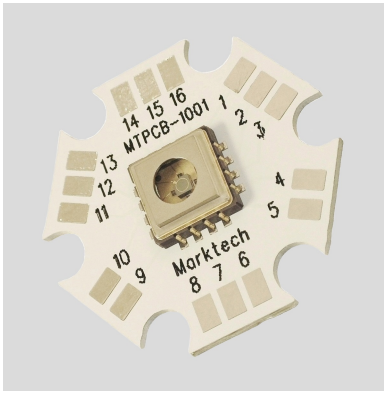
Starboard Dimensions



Starboard Pin Out

1- NC	*9*- NC
2- 1040nm Cahode	*10*- 1460nm Cathode
3- NC	*11*- NC
4- PD 1300nm Anode	*12*- PD 1300nm Cathode
5- NC	*13*- NC
6- 1550nm Cathode	*14*- 1300nm Cathode
7- NC	*15*- NC
8- LED Anode - Common	*16*- LED Anode - Common



Aluminum Core Board 0.040" (1.02mm) Thickness
Overall Board Dimensions: +/- 0.010" (0.254mm)

RoHS COMPLIANT
Pb-Free

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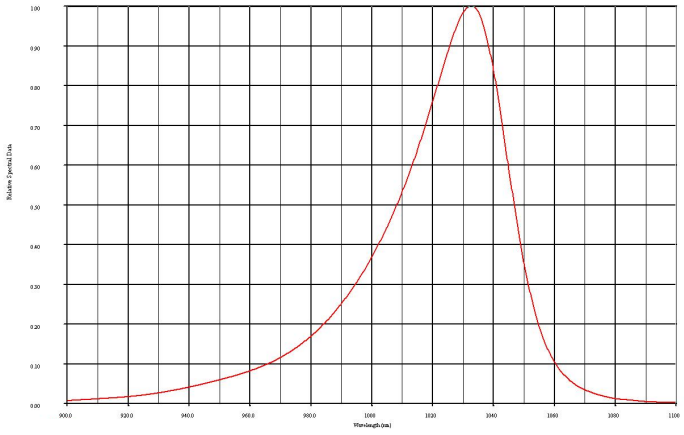
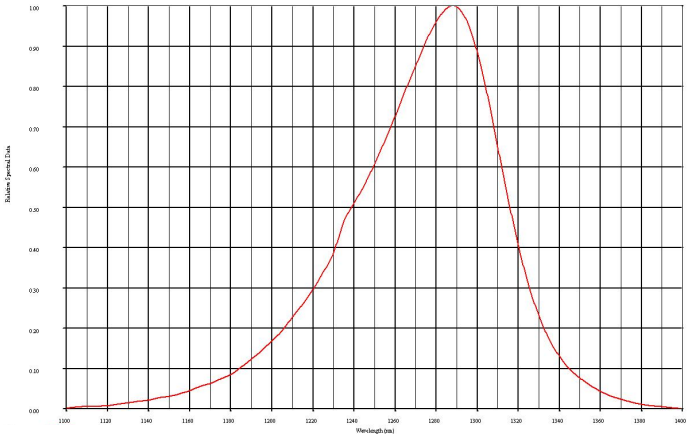
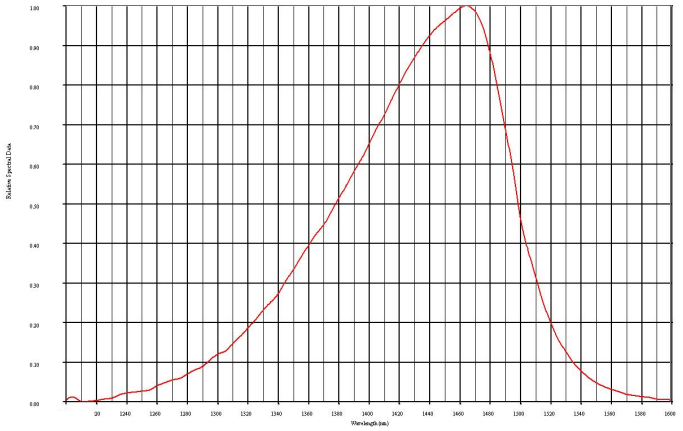
1040nm Spectral Response



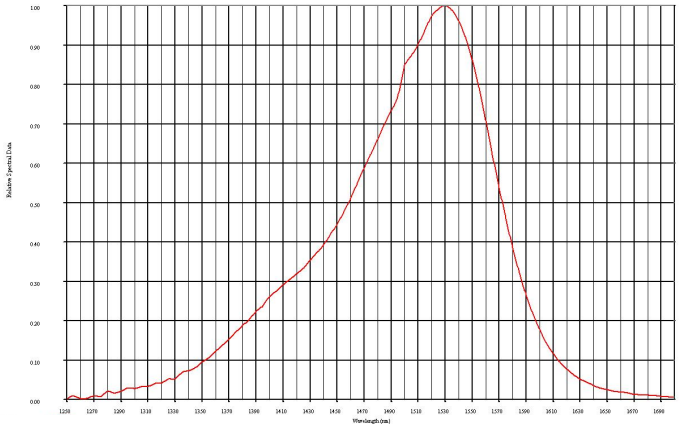
1300nm Spectral Response



1460nm Spectral Response



1550nm Spectral Response



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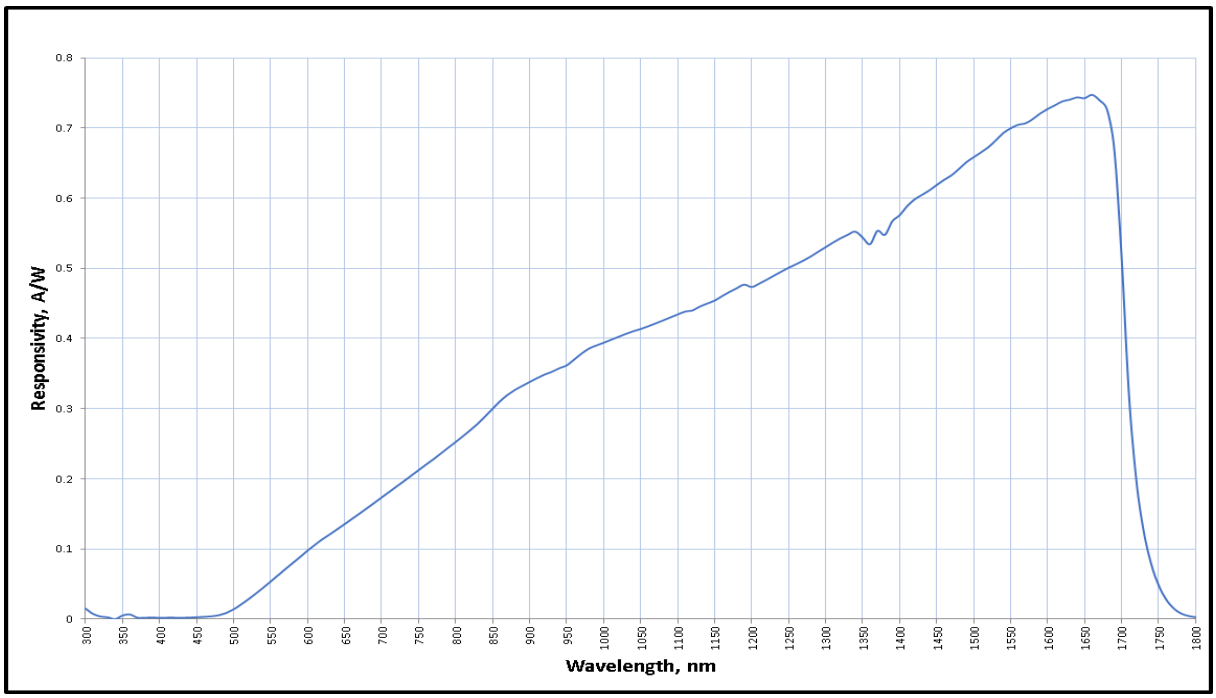
Spectral Responsivity



Quantum Efficiency