Preliminary

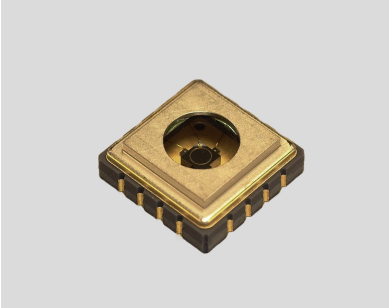
Marktech Optoelectronics

SWIR Multichip Emitter & Detector

Product No: **MTSM13190SMF3**

Peak Emission Wavelengths: 1300,1460,1720,1900nm
Detector Sensitivity Wavelength Range: 800-2600nm

The MTSM13190SMF3 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
		1300	1460	1720	1900	
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 MTSM13190SMF3S (See Page 4)

Emitter Electrical & Optical Characteristics (Ta=25ºC)

ITEMS	SYMBOL	WAVELENGTH	CONDITIONS	MIN	TYP	MAX	UNIT
Forward Voltage	VF	1300	IF=50mA	--	1.05	--	V
Forward Voltage	VF	1460	IF=50mA	--	1.02	--	V
Forward Voltage	VF	1720	IF=50mA	--	0.96	--	V
Forward Voltage	VF	1900	IF=50mA	--	0.90	--	V
Reverse Current	IR	--	VR=5V	--	--	10	uA
Power Output	PO	1300	IF=50mA	--	2.9	--	mW
Power Output	PO	1460	IF=50mA	--	1.8	--	mW
Power Output	PO	1720	IF=50mA	--	1.6	--	mW
Power Output	PO	1900	IF=50mA	--	1.2	--	mW

2025-01-10

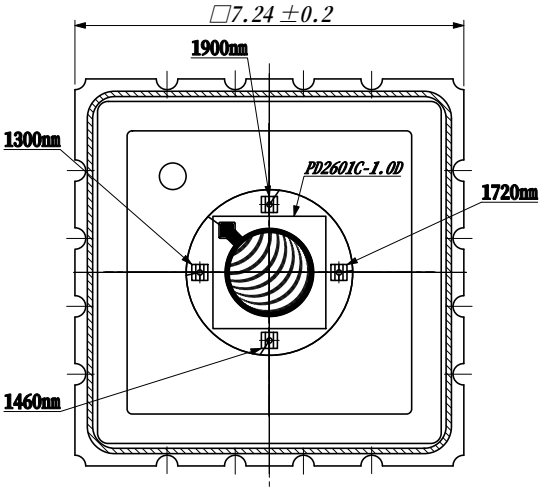
Emitter Electrical & Optical Characteristics (Ta=25ºC)

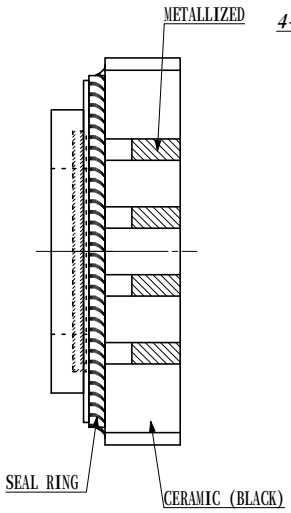
ITEMS	SYMBOL	WAVELENGTH	CONDITIONS	MIN	TYP	MAX	UNIT
Peak Emission Wavelength	λp	1300	IF=50mA	--	1300	--	nm
Peak Emission Wavelength	λp	1460	IF=50mA	--	1460	--	nm
Peak Emission Wavelength	λp	1720	IF=50mA	--	1730	--	nm
Peak Emission Wavelength	λp	1900	IF=50mA	--	1900	--	nm
Spectral Line Half Width	Δλ	1300	IF=50mA	--	75	--	nm
Spectral Line Half Width	Δλ	1460	IF=50mA	--	120	--	nm
Spectral Line Half Width	Δλ	1720	IF=50mA	--	135	--	nm
Spectral Line Half Width	Δλ	1900	IF=50mA	--	130	--	nm

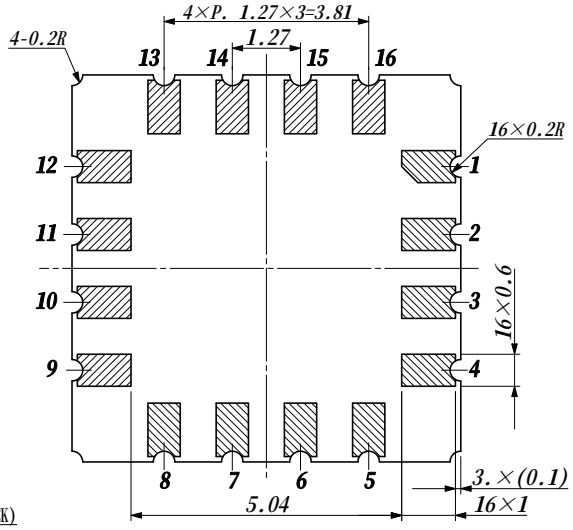
Detector Electrical & Optical Characteristics (Ta = 25ºC)

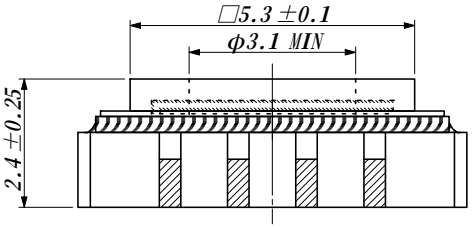
ITEMS	SYMBOL	CONDITION	MIN	TYP	MAX	UNIT
Breakdown Voltage	VR	IR=100uA	--	--	1	V
Sensitivity Range	λ	VR=0V	800	--	2600	nm
Dark Current	ID	VR=1V	--	--	300	uA
Capacitance	C	VR=0V	--	1000	--	pF
Capacitance	C	VR=1V	--	85	--	pF
Responsivity	R	λ=2400nm	--	1.24	--	A/W
Shunt Resistance	RS	VR=10mV	--	3.3	--	MOhm
Quantum Efficiency	QE	λ=1840nm	--	72	--	%
Light Current @1300nm	IL	If=10mA	--	30	--	uA
Light Current @1300nm	IL	If=20mA	--	65	--	uA

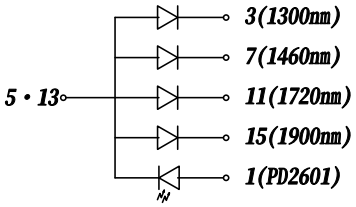
Package Dimensions





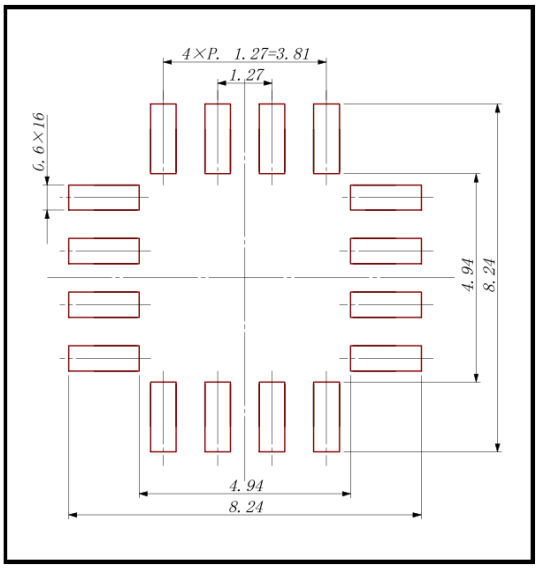




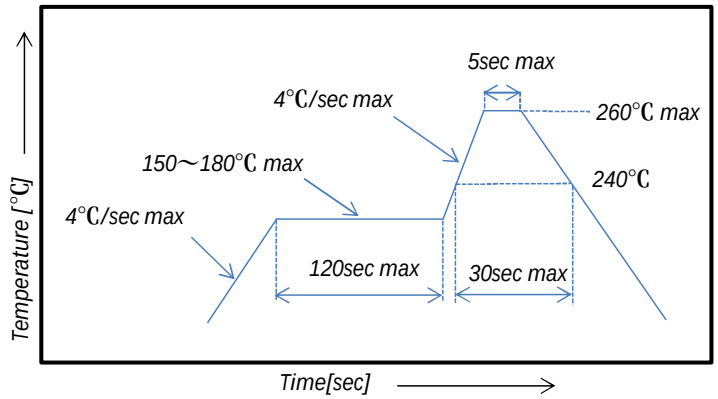


1- PD2601 Anode
2- NC
3- 1300nm Cathode
4- NC
5- LED Anode • PD Cathode
6- NC
7- 1460nm Cathode
8- NC
9- NC
10- NC
11- 1720nm Cathode
12- NC
13- LED Anode • PD Cathode
14- NC
15- 1900nm Cathode
16- NC

Recommended Soldering Pattern [mm]



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



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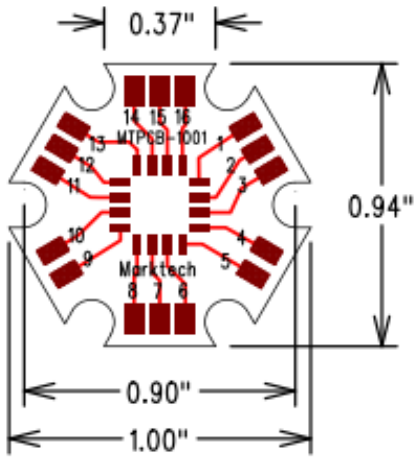
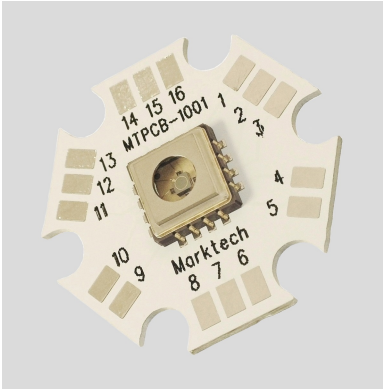
Starboard Dimensions



Starboard Pin Out

1- NC	*9*- NC
2- 1300nm Cahode	*10*- 1720nm Cathode
3- NC	*11*- NC
4- NC	*12*- NC
5- NC	*13*- NC
6- 1900nm Cathode	*14*- 1460nm Cathode
7- NC	*15*- NC
8- LED Anode / PD Cathode	*16*- LED Anode / PD Cathode



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

RoHS COMPLIANT
Pb-Free

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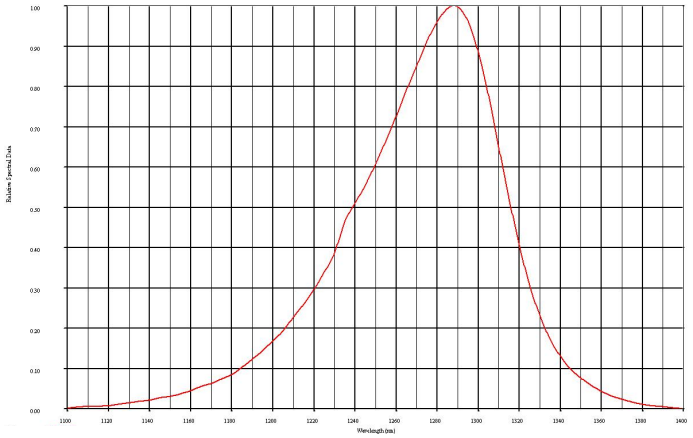
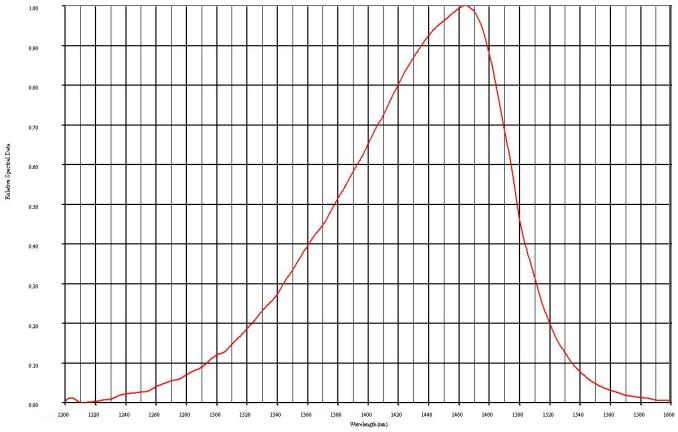
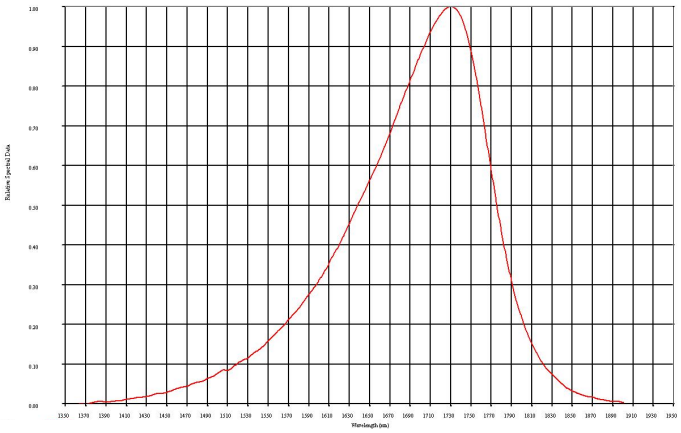
1300nm Spectral Response



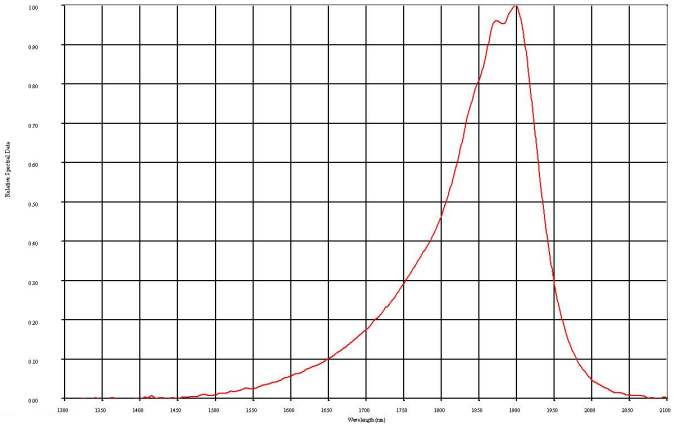
1460nm Spectral Response



1720nm Spectral Response



1900nm Spectral Response



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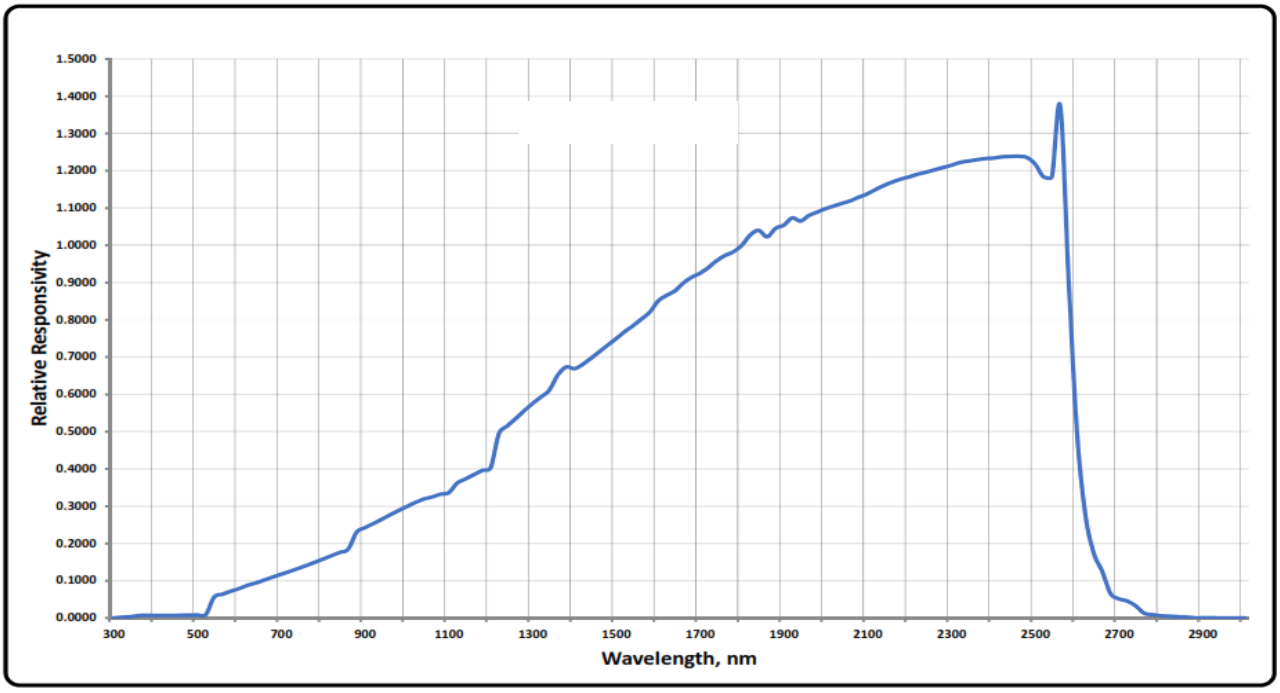
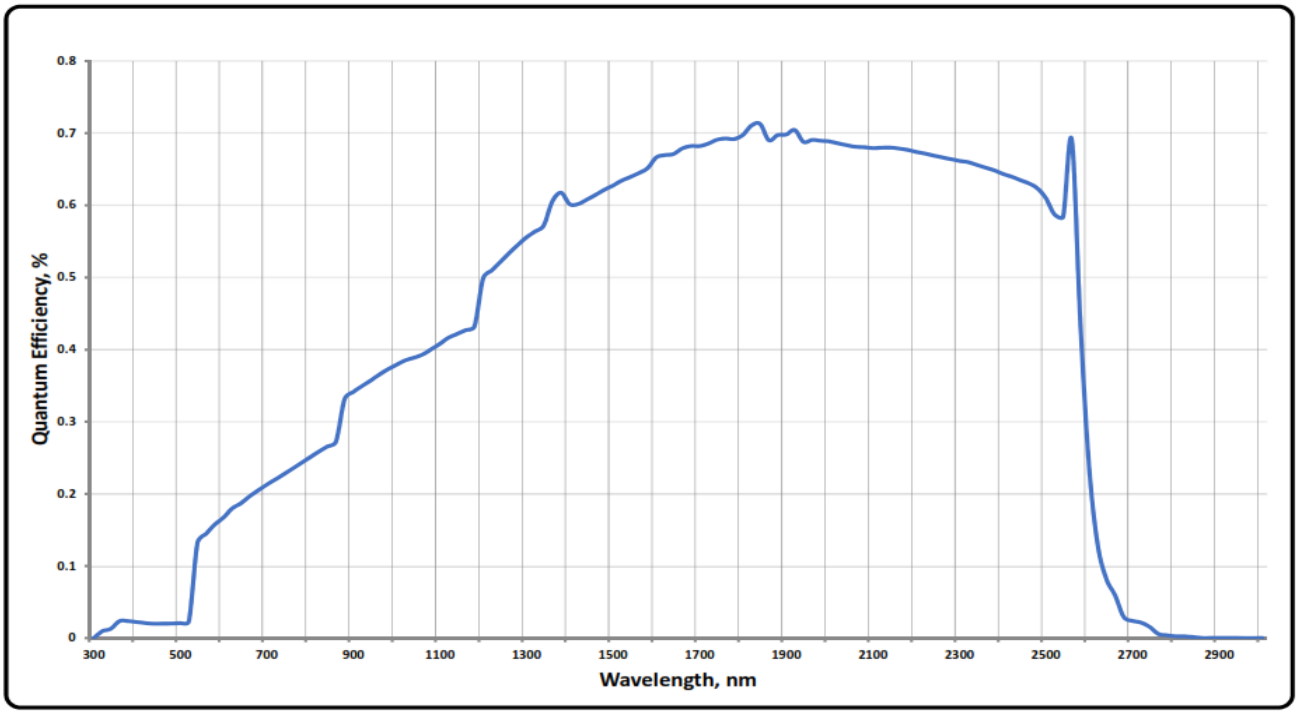
Spectral Responsivity



Quantum Efficiency



2025-01-10