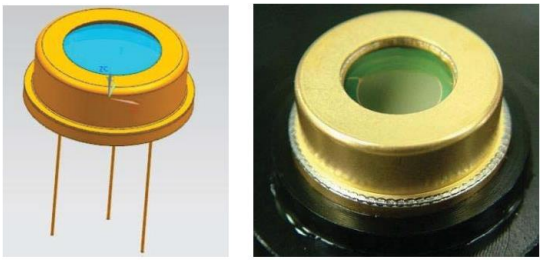
EOTNIR-I InGaAs Unit detector

Application: Calibration, Laser control, Optical power meter

Characteristics: frontal exposure structure, low noise, low dark current, large photosensitive surface.

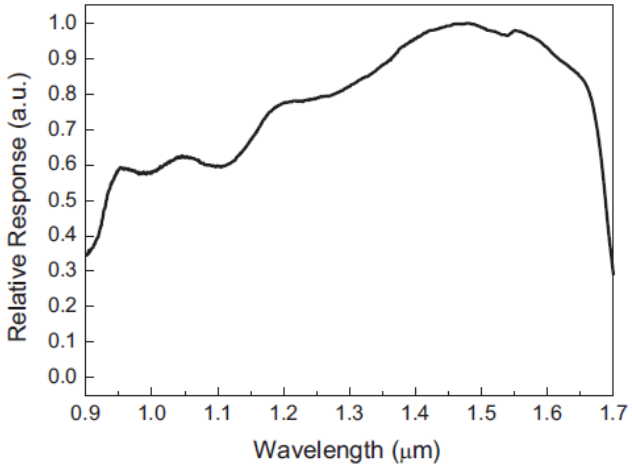


Product appearance and picture

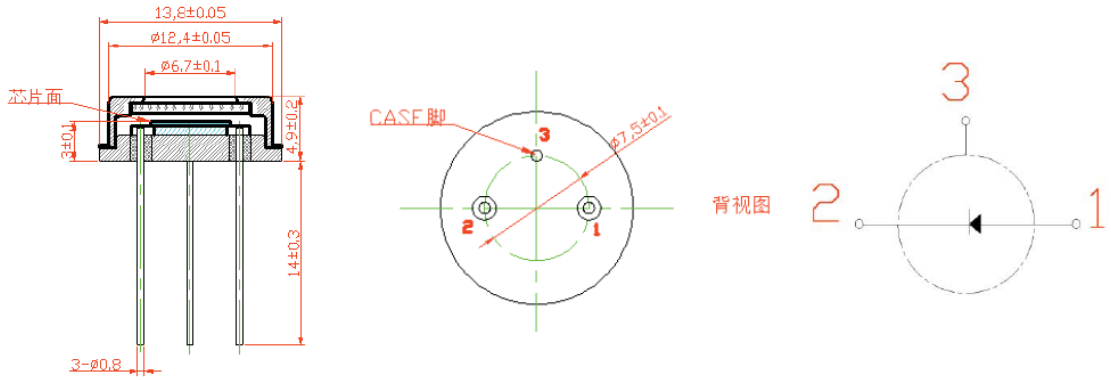
Performance parameters

Characteristic parameter	Typical value	mark
photosensitive surface diameter	1mm	customizable
Scale	Unit	
Working temp	-20～60℃	
Storage temp	-55～70℃	
Waveband	0.9～1.7μm	
Peak wavelength	1.55μm	
Peak Quantum Efficiency	≥90%	Room temp
Peak response rate	≥1.1 A/W	Room temp
Device resistance	$1.5\times10^{9}\Omega$	Room temp
Dark current	$\leq8\times10^{-12}$ A	@-0.1V, Room temp
Equivalent noise power	$\leq3\times10^{-14}$ W/Hz$^{1/2}$	@1.55μm, Room temp
Peak detectivity	$\geq3\times10^{12}$ cm·Hz$^{1/2}$/W	Room temp
Package type	TO shell	customizable

Spectrum response curve



Appearance dimension and Pin description (Unit: mm)



Note:

1. An electrostatic protection device is arranged on the pin of the component. In the use of components, operators should wear electrostatic wrist, take proper electrostatic protection measures, and then remove the electrostatic protection device, use

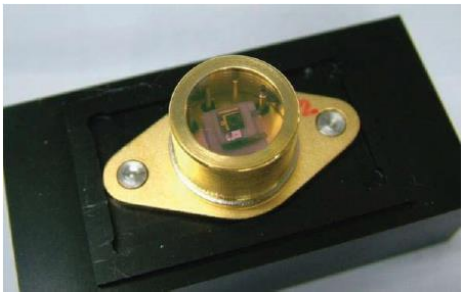
2. Pin insertion and withdrawal should be careful, bending angle from the root should not over 45°, in case of breaking the glass bead.

3. Any insertion or withdrawal operation should be after power switching off.

EOTNIR-II InGaAs Unit detector

Application: Spectrum detection and analysis, gas analysis, water content analysis.

Characteristics: frontal exposure structure, low noise, low dark current, large photosensitive surface.

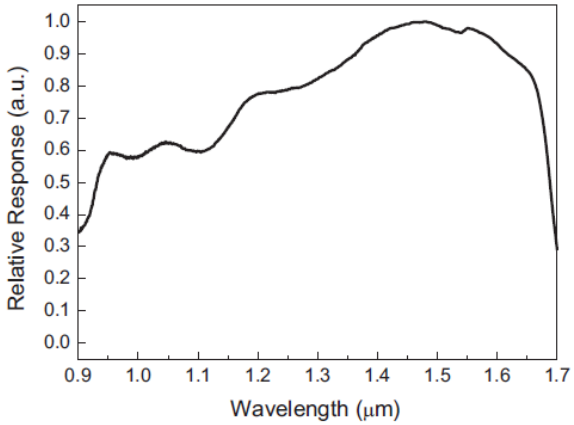


Product picture

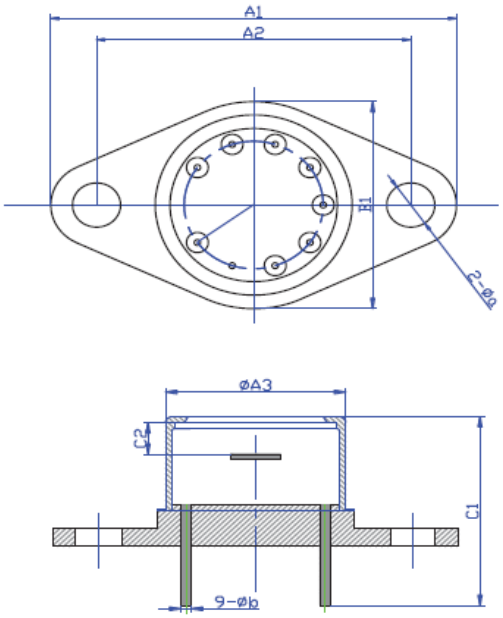
Performance parameters

Characteristic parameter	Typical value	mark
photosensitive surface diameter	1mm	customizable
Scale	Unit	
Working temp	-20～60℃	
Storage temp	-55～70℃	
Waveband	0.9～1.7μm	
Peak wavelength	1.55μm	
Peak Quantum Efficiency	≥90%	Room temp
Peak response rate	≥1.1 A/W	Room temp
Device resistance	$1.5\times10^{9}\Omega$	Room temp
Dark current	$\leq8\times10^{-12}$ A	@-0.1V, Room temp
Equivalent noise power	$\leq3\times10^{-14}$ W/Hz$^{1/2}$	@1.55μm, Room temp
Peak detectivity	$\geq3\times10^{12}$ cm·Hz$^{1/2}$/W	Room temp
Package type	TO-9 shell, integrate Thermoelectric Cooler	customizable

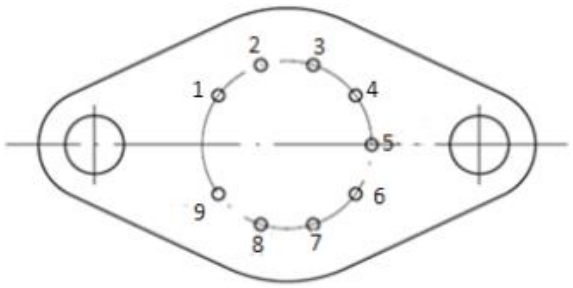
Spectrum response curve



Appearance dimension and Pin description (Unit: mm)



Symbol	Dimension		
	Min	Nominal	Max
A1	31.45	-	31.55
A2	24.35	-	24.45
A3	-	14	-
B1	17.47	-	17.57
C1	15.8	-	16.2
C2	1.94	-	2.24
a	3.69	-	3.79
b	0.55	-	0.65



1	TEC+	5	Thermosensitive resistance
2	GND	6	Thermosensitive resistance
3	Signal +	7	NULL
4	Signal _	8	NULL
		9	TEC-

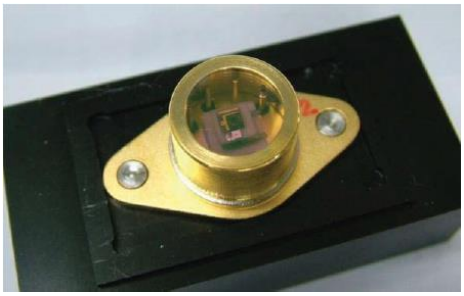
Working condition and rated parameter

	Min	Typical	Max	Unit
Working temp	-20	-	+60	℃
Storage temp	-55	-	+70	℃
Bias voltage	-	0	-	V
Bias current	-	0	-	A
TEC voltage	-	-	2.1	V
TEC current	-	-	1.2	A

EOTSWIR-I InGaAs Unit detector

Application: Spectrum detection and analysis, gas analysis, water content analysis.

Characteristics: frontal exposure structure, high sensitivity, fast respond, integrate 2 stage thermoelectrical cooler.

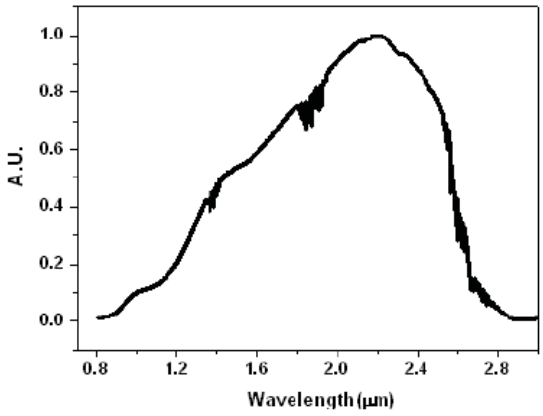


Product picture

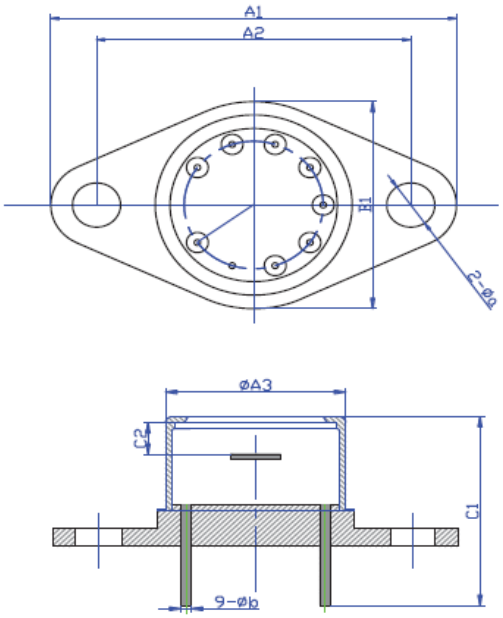
Performance parameters

Characteristic parameter	Typical value	mark
photosensitive surface diameter	1mm	customizable
Scale	Unit	
Working temp	-20～60℃	
Storage temp	-55～70℃	
Waveband	1.0～2.5μm	
Peak wavelength	2.2μm	
Peak Quantum Efficiency	≥70%	-20℃
Peak response rate	≥1.1 A/W	-20℃
Device resistance	2.5×10^{5} Ω	-20℃
Dark current	$\leq4\times10^{-7}$ A	@-0.01V, -20℃
Equivalent noise power	$\leq4.5\times10^{-13}$ W/Hz$^{1/2}$	@2.2μm, -20℃
Peak detectivity	$\geq2\times10^{11}$ cm·Hz$^{1/2}$/W	-20℃
Package type	TO-9 shell, integrate Thermoelectric Cooler	customizable

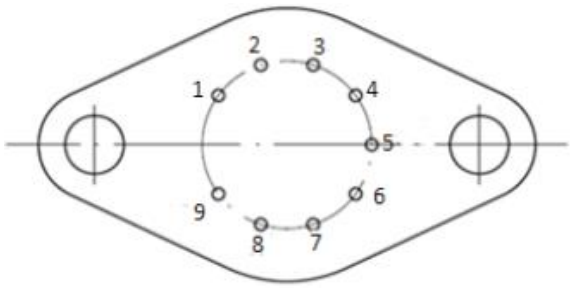
Spectrum response curve



Appearance dimension and Pin description (Unit: mm)



Symbol	Dimension		
	Min	Nominal	Max
A1	31.45	-	31.55
A2	24.35	-	24.45
A3	-	14	-
B1	17.47	-	17.57
C1	15.8	-	16.2
C2	1.94	-	2.24
a	3.69	-	3.79
b	0.55	-	0.65



1	TEC+	5	Thermosensitive resistance
2	GND	6	Thermosensitive resistance
3	Signal +	7	NULL
4	Signal _	8	NULL
		9	TEC-

Working condition and rated parameter

	Min	Typical	Max	Unit
Working temp	-20	-	+60	℃
Storage temp	-55	-	+70	℃
Bias voltage	-	0	-	V
Bias current	-	0	-	A
TEC voltage	-	-	2.1	V
TEC current	-	-	1.2	A

EOTNIR-256 InGaAs Linear detector

Application: Near infrared spectrograph.

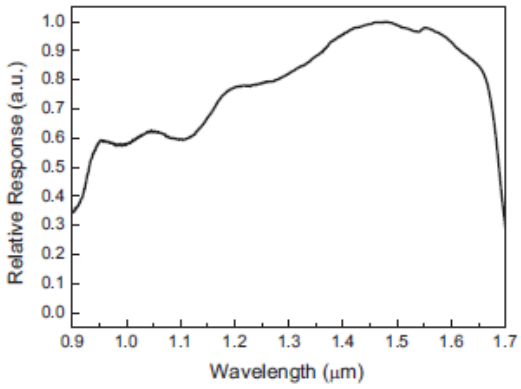
Characteristics: frontal exposure structure, high length-width ratio, integrate thermoelectrical cooler.

Product picture

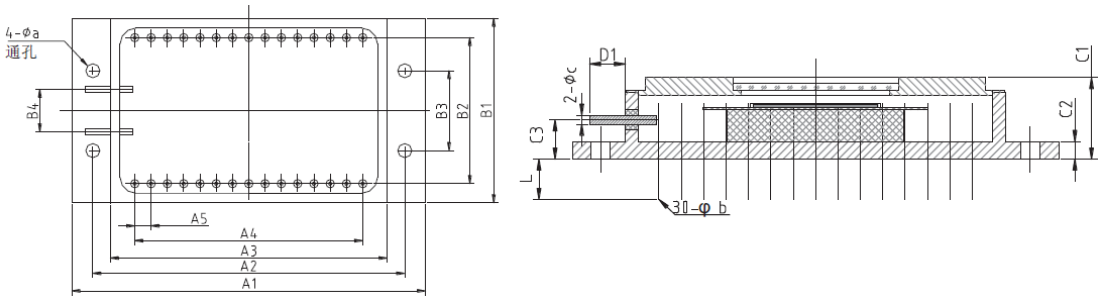
Performance parameters

Characteristic parameter	Typical value
photosensitive surface size	50μm×500μm
Scale	256×1
Pixel center distance	50μm
Filling rate	≥85%
Spectrum response bandwidth	0.9～1.7μm
Peak detectivity	≥1×10^{12} cm·$Hz^{1/2}$/W@5℃ 1.55μm
Peak Quantum Efficiency	≥80%
Response non-uniformity	≤5%
Blind element rate	≤0.5%
Dynamic range	≥70dB
Working temp	-20～60℃
Storage temp	-40～70℃
Dimension (L×W×H)	55×30×10mm
Package type	Metal shell airtight package, integrate Thermoelectric Cooler

Spectrum response curve

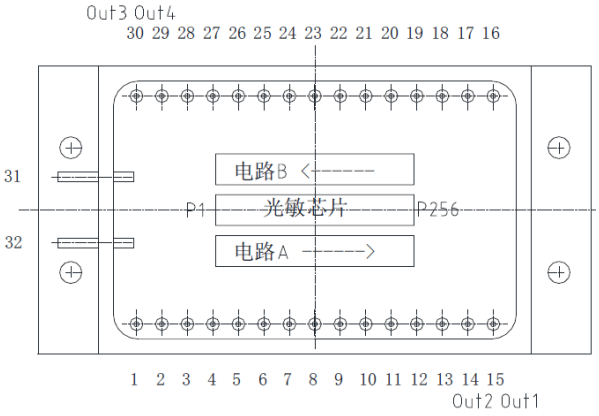


Appearance dimension and Pin description (Unit: mm)



Size	Symbol								
	A1	A2	A3	A4	A5	B1	B2	B3	B4
Min	54	-	42.5	35.26	-	28.4	22.6	-	-
Nominal	-	49	-	-	2.54	-	-	12.5	6.6
Max	56	-	43.5	35.86	-	29.4	23.2	-	-
	C1	C2	C3	L	D1	a	b	c	
Min	9	1.8	4.15	4.6	3.1	2.1	-	-	-
Nominal	-	-	-	-	-	-	1	0.5	-
Max	10	2.2	4.75	-	-	2.5	-	-	-

Pin description



Pin	Symbol	Function	Pin	Symbol	Function
1	Pt-I	Thermosensitive resistance I	16	Pt-II	Thermosensitive resistance II
2	Pt-I	Thermosensitive resistance I	17	Pt-II	Thermosensitive resistance II

3	Sgnd	Chip public lead	18	Sgnd	Chip public lead
4	RST	Reset pulse	19	RST	Reset pulse
5	SH2	Sampling 2	20	SH2	Sampling 2
6	SH1	Sampling 1	21	SH1	Sampling 1
7	ST	Start pulse	22	ST	Start pulse
8	Vdd	Power supply 5V	23	Vdd	Power supply 5V
9	CLK1	Clock 1	24	CLK1	Clock 1
10	CLK2	Clock 2	25	CLK2	Clock 2
11	Vref	Reference voltage	26	Vref	Reference voltage
12	Bias	Bias voltage	27	Bias	Bias voltage
13	GND	GND	28	GND	GND
14	Out2	Output 2	29	Out4	Output 4
15	Out1	Output 1	30	Out3	Output 3
31	TEC-	Cooler (-)	32	TEC+	Cooler (+)
Note: all pins are suspended against shell.					

Photosensitive element No.	P1	P2	P3	P4	……	P253	P254	P255	P256
Circuit A Out1 Out2	-----	A1	-----	A3	……	-----	A127	-----	A128
Circuit A Out3 Out4	B128	-----	B127	-----	……	B2	-----	B1	-----

1. Power voltage Vdd typical 5V, Min 4.8V, Max 5.2V

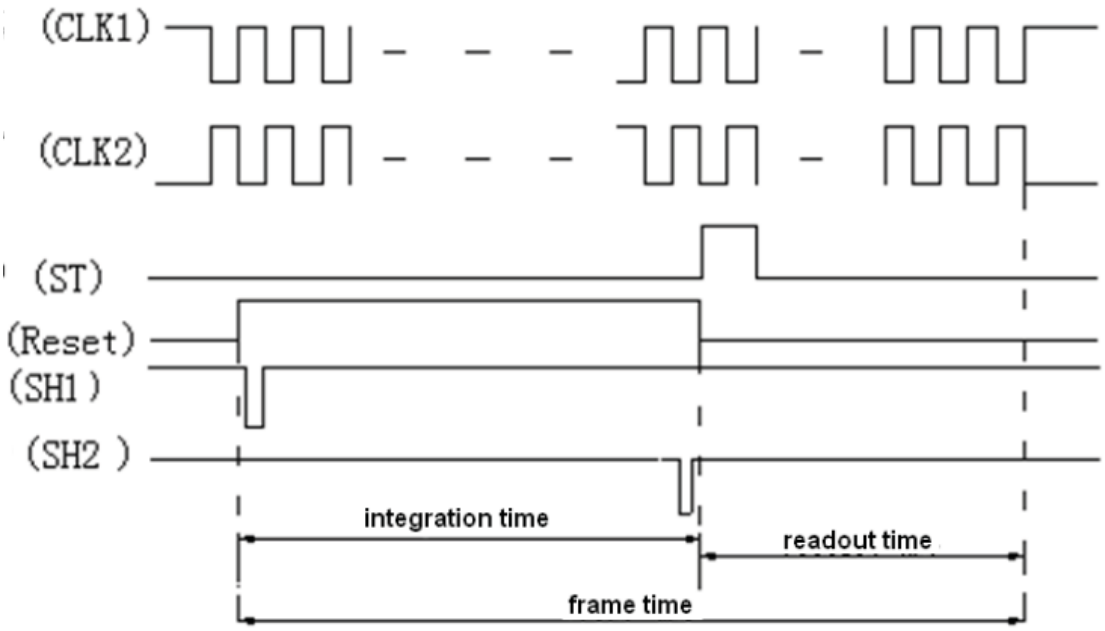
2. Bias voltage external connect 100K ohm resistance to ground.

3. Output signal Vout external connect 100K ohm resistance to ground.

4. Reference voltage Vref and chip public lead Sgnd typical 2.5V, Min 2V, Max 4V.

5. Adopt related dual sampling readout mode, Out1 and Out2, Out3 and Out4 differential then get final signal. Normal clock frequency is 20kHz~100kHz.

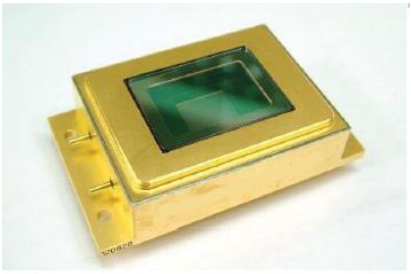
Working pulse waveform



EOTTU-I InGaAs 320×256 plane array detector

Application: Near infrared imaging, hyperspectral imaging, night vision imaging, laser detecting, environmental monitoring, industrial imaging, medical imaging.

Characteristics: 320×256 elements scale, center distance 30μm, 0.9~1.7μm wavelength, high detectivity, normal temperature working

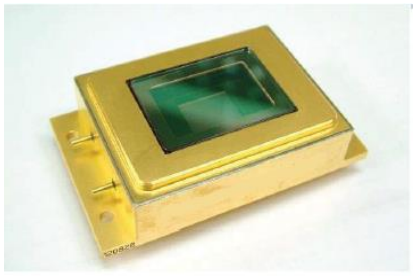


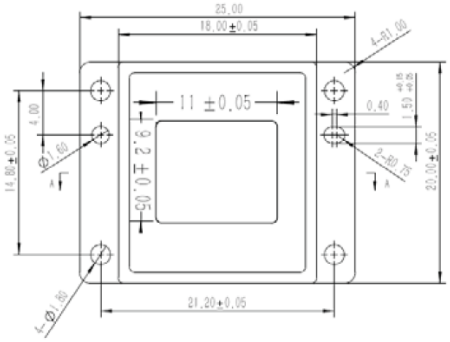
Parameter	Performance	Parameter	Performance
Detector type	InGaAs	Max pixel readout speed	10MHz
Sacle	320×256	Dynamic range	≥60dB
Pixel size	30μm×30μm	Temperature sensing output	support
Pixel center distance	30μm	Size(L*W*H)	55×33×13 mm
Spectrum response	0.9~1.7μm	Package type	Metal airtight package
Peak detectivity	≥5×10^{12} cm·$Hz^{1/2}$/W	Cooler	Thermoelectrical cooler
Peak Quantum Efficiency	≥80%@1.55μm	Window	Sapphire(20*13mm)
Response non-uniformity	≤2%	Pins	38
Blind element rate	≤0.1%	Working temp	-20～60℃
Gain	2 stages adjustable (0.7μV/e; 12μV/e)	Storage temp	-40～70℃

EOTTU-II InGaAs 320×256 plane array detector

Application: Near infrared imaging, hyperspectral imaging, night vision imaging, laser detecting, environmental monitoring, industrial imaging, medical imaging.

Characteristics: miniature structure, 320×256 elements scale, center distance 30μm, 0.9~1.7μm wavelength, high detectivity, normal temperature working





Parameter	Performance	Parameter	Performance
Detector type	InGaAs	Blind element rate	≤0.1%
Scale	320×256	Dynamic range	≥60dB
Pixel size	30μm×30μm	Size(L*W*H)	25×20×7.2 mm
Pixel center distance	30μm	Package type	Metal airtight package
Spectrum response	0.9~1.7μm	Cooler	Thermoelectrical cooler
Peak detectivity	≥5×10^{12} cm·$Hz^{1/2}$/W	Window	Sapphire (11.1*9.3mm)
Peak Quantum Efficiency	≥80%@1.55μm	Pins	38
Dark current	≤5fA@5℃, -5mV	Working temp	-20～60℃
Response non-uniformity	≤2%	Storage temp	-40～70℃

EOTHU-I InGaAs 640×512 plane array detector

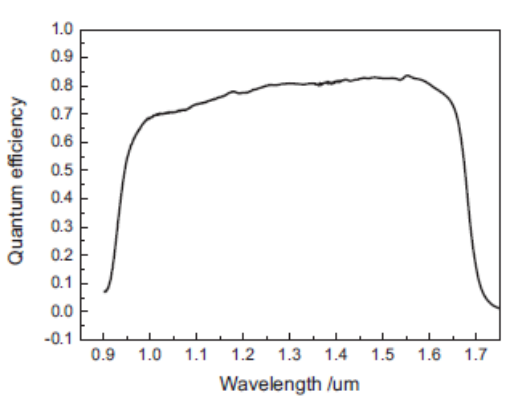
Application: Near infrared imaging, hyperspectral imaging, night vision imaging, laser detecting, environmental monitoring, industrial imaging, medical imaging.

Characteristics: 640×512 elements scale, 0.9~1.7μm wavelength, high detectivity, normal temperature working

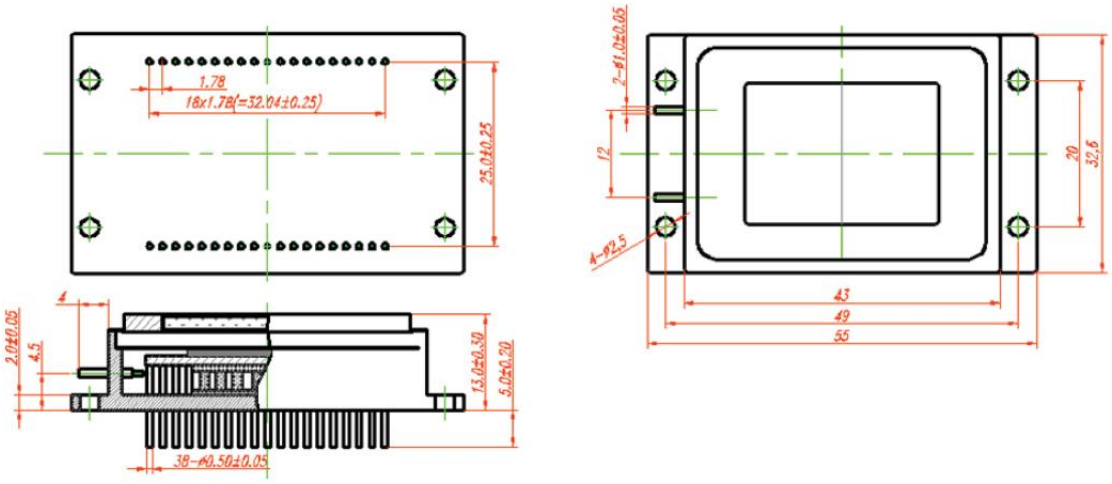
Performance parameters

Characteristic parameter	Typical value
Detector Scale	640×512
Pixel size	25μm×25μm
Pixel center distance	25μm
Spectrum response bandwidth	0.9～1.7μm
Peak detectivity	≥5×10^{12} cm·$Hz^{1/2}$/W@5℃ 1.55μm
Peak Quantum Efficiency	≥80%@1.55μm
Dark current	≤5fA@5℃, -5mV
Response non-uniformity	≤3%
Blind element rate	≤1%
Dynamic range	≥60dB
Power consumption	≤100mW
Working temp	-20～60℃
Storage temp	-40～70℃
Dimension (L×W×H)	55×33×13mm
Package type	Metal shell airtight package, integrate Thermoelectric Cooler

Quantum Efficiency curve



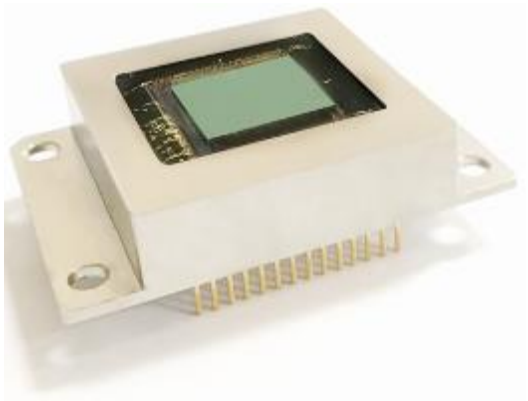
Product sturcture and dimension (Unit: mm)



There are 38 φ0.5mm pins lead out form backside of shell, pin distance is 1.78mm, for the electrical lead out of detector and Temperature measurement component, 2 φ1.0mm pins on the side for thermoelectrical cooler connection. 4 φ2.5mm through-hole on the two sides for fixation. The design value of the distance photosensitive array from the lower surface of the window is 5.1±0.2mm, and the design value of the distance photosensitive array from the mounting surface/the bottom of the shell is 7.9±0.2mm. The window material is sapphire, with a thickness of 1.5±0.02mm, transmittance > 96%, size 26.0mm×19.0 mm, and a transmittance area is 20.0mm×13.0mm, diaphragm size is 16.4mm×13.2 mm.

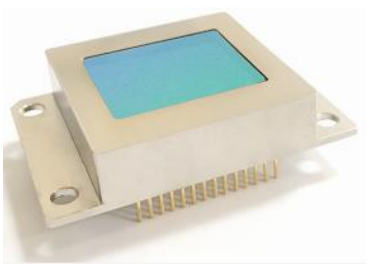
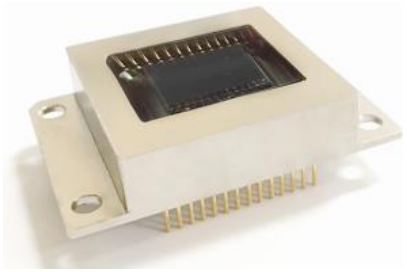
InGaAs SWIR Detector

Our company's visible-short infrared focal plane array detectors, extend traditional InGaAs detector's spectrum respond range from 900-1700nm to 400-1700nm. It can realize visible, near infrared and short infrared detecting and imaging simultaneously. It can be used widely in multi spectrum and high spetrum imaging filed.



Product Type	EOT-VSW640-F15c	EOT-SW640-F15c
Array size	640 x 512	640 x 512
Pixel element spacing	15μm	15μm
Spectrum respond	0.4~1.7μm	0.9~1.7μm
Effective dimension	9.6 x 7.68 mm	
Fill factor	100%	
Quantum efficiency	≥65% (1.0~1.6μm)	
Detection ratio D	≥5 x 10^{12} cm $Hz^{1/2}$ W^{-1}	
Noise electron	50 e^- (@HG, read out noise)	
Full well capacitance	1.8 x 10^6 e^- (@LG, 1.8V)	
	7.3x 10^4 e^- (@MG, 1.8V)	
	1.7 x 10^4 e^- (@HG, 1.8V)	
Dynamic Range	76dB (linear mode)	
	120dB (logarithms mode)	
Photoresponse heterogeneity	< 3%	
Operable pixel rate	>99.5%	
Exposure time	37μs ~ frame time	
Maximum frame rate	240fps	
Reading mode	ITR, IWR, NDRO, IMRO	
Operation temperature	-40~60 ºC	
Storage temperature	-40~70 ºC	
Weight	< 30g	

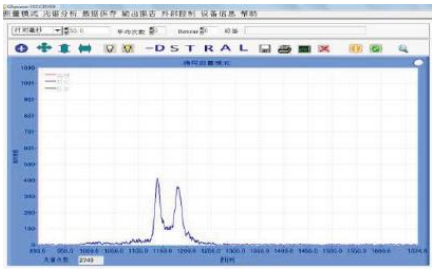
Our company's short infrared InGaAs focal plane array detector can provide TEC cooling according to requirement, to increase detector sensitivity. These detectors choose flip-chip technology to realize electrical connection with reading circuit. It has advantages of good performance, high reliability and excellent sensitivity.

Product Type	EOT-SW640-F25a	EOT-SW320-F30a
Product picture		
Array size	640 x 512	320 x 256
Pixel element spacing	25μm	30μm
Spectrum respond	0.9~1.7μm	0.9~1.7μm
Effective dimension	16 x 12.8 mm	9.6 x7.68 mm
Fill factor	> 99%	> 99%
Quantum efficiency	≥70% (1.0~1.6μm)	≥70% (1.0~1.6μm)
Detection ratio D	≥5 x 10^{12} cm $Hz^{1/2}$ W^{-1}	≥5 x 10^{12} cm $Hz^{1/2}$ W^{-1}
Noise electron	70 e^- (@HG, read out noise)	50 e^- (@HG, read out noise)
Full well capacitance	1.9 x 10^6 e^- (@LG)	3.5 x 10^6 e^- (@LG)
	3.9 x 104 e^- (@HG)	1.7 x 104 e^- (@HG)
Photoresponse heterogeneity	≤4%	≤4%
Operable pixel rate	>99%	>99%
Exposure time	1μs ~ frame time	1μs ~ frame time
Maximum frame rate	107 fps	346 fps
Reading mode	ITR, IWR, IMRO	ITR, IWR, IMRO
Operation temperature	-20~85 ºC	-20~85 ºC
Storage temperature	-40~85 ºC	-40~85 ºC
Weight	< 30g	< 30g

EOT256NIR micro spectrometer

Application: sugar content analysis, humidity analysis, blood detection, food security.

Characteristics: miniature and portable structure, high resolution, high wavelength accuracy.



Mechanical specification		PC requirement	
Size/mm	125×90×60	OS	XP, Win7, Win10(32 or 64 bits)
Wight/g	600	Interface	USB 2.0@12Mbps, RS232@115.2Kbps
Detector		Electrical specification	
Detector	InGaAs 256 linear array	Data speed	10ms
Detecting range/nm	900-1700	Excitation mode	optional
Pixel scale	256×1	Output control	YES
Pixel size	50μm×500μm	Power supply	5V@2A
Optical platform		Optical specification	
Design focal length/mm	Flat field achromatic grating 100	Optical resolution FWHM	4~12nm
Aperture	5,10,25,100 or 200μm wide slit or fiber (no slit)	SNR	2000:1
detector collecting lens	NO	A/D conversion accuracy	16 bits
Light filter option	850nm long pass	Dark Noise (counts)	12 RMS
Other optical platform	NO	Dynamic range	5000:1
Correction and focusing	Standard	Integration time(ms)	1~1000

mirror			
UV strengthening	NO	Linearity after correction	>99.8%
Fiber connection	SMA 905, 0.22 single core fiber		

EOTTUE-I 320×256 near infrared Camera movement

Application: Near infrared imaging, hyperspectral imaging, night vision imaging, laser detecting, environmental monitoring, industrial imaging, medical imaging.

Characteristics: 320×256 pixel scale, 0.9~1.7μm wavelength, normal temperature working, small size, light weight, low power consumption

Parameter	Performance	Parameter	Performance
Detector type	InGaAs	Image collection	Original data (.dat) Standard image (BMP)
Scale	320×256	Non-uniformity correction	Support
Pixel size	30μm×30μm	Blind element elimination	Support
Filling rate	>99%	Interface	Integration interface (power, video, 6pin keyboard, RS232)
Spectrum response	0.9~1.7μm	Dimension (L*W*H)	58×46×54, exclude lens
Average detectivity	$\geq 5\times10^{12}$ cm·Hz$^{1/2}$/W	Weight	0.2kg, exclude lens
Exposure time	adjustable	External power supply	3.5V~5.5V, DC
Color palette	Black & White Pseudo color optional	Power consumption	≤1.3W (no TEC)
Video frame	PAL ,100Hz	Working temp	-20～60℃
Image magnification	Support	Storage temp	-40～80℃
Image strengthen	Support		

EOT-SWC2 series shortwave infrared camera

EOT-SWC2 series camera, Max support 640x512, 50Hz, 14 Bit digital image output, integrate USB 2.0 interface, friendly for industrial application.

- ✧ Onboard image process function
- ✧ Light weight, small size, low consumption
- ✧ Provide SDK secondary development kit
- ✧ Support PAL analog video sync-output

Product type	EOT-SWC2-vs15	EOT-SWC2-15	EOT-SWC2-25	EOT-SWC2-30
Detector	InGaAs focal plane array detector			
Spectrum response	0.4~1.7μm	0.9~1.7μm	0.9~1.7μm	0.9~1.7μm
Pixel	640x512	640x512	640x512	320x256
Pixel distance	15μm	15μm	25μm	30μm
Effective area	9.6 x 7.68mm	9.6 x 7.68mm	16 x 12.8mm	9.6 x 7.68mm
Quantum efficiency	>70% (1.0~1.6μm)			
Frame frequency	50Hz/ 100Hz			
Integration type	Snapshot			
Integration time	50us~20ms			
Onboard image process	Single/double point correction, error point replacement, image denoising Image smoothing, controllable shutter compensation			
ADC	14bit			
Analog video output	PAL & NTSC self-adaptation, SMA interface			
Digital output	USB			
Power supply input	12V DC			
Power	Camera movement consumption ≤2.5W (25°C, No TEC mode)			
Dimension	65mm x 58mm x 64.5mm			
Weight	300g (exclude lens)			
Camera interface	C type			
Installation thread	1/4-20 camera standard thread			
Work temperature	-20°C~+50°C (standard)(-40°C~+60°C available)			
Storage temperature	-40°C ~+80°C			