

## General Description

OIT19C consists in a silicon phototransistor's monolithic array of 13 elements.

The phototransistors have a common collector, every emitter is available as a pad. The pitch of the silicon arrays is 0.6 mm, while the component electrical pitch is 1.27 mm. The active area of each element is 0.2 x 0.45 mm. The encapsulant is an high quality microelectronic transparent resin, its transmission value is 100% in the range 300-900nm.

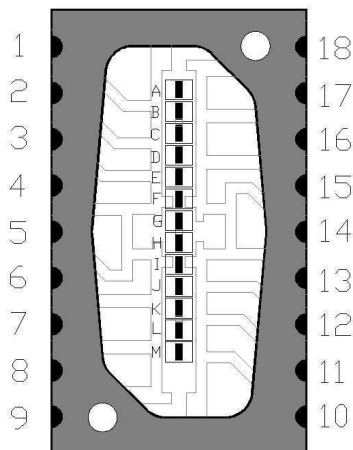
The advantages of this product are the high uniformity of the silicon sensors, due to the monolithic construction and the high optica responsivity, due to the antireflective coating deposited on the phototransistor's areas.

The packaging method is oriented to industrial harsh applications, which means high temperature range, high stability in time and very high uniformity of the silicon cells.



## Applications

- Optical encoders
- 13- bit absolute encoders
- Optical Receivers
- Controls/drives



TOP VIEW

## Features

- High uniformity
- High gain
- High transparency resin
- Designed to meet industrial specifications
- Reference holes for precise mounting
- Custom design available
- 0.6 mm optical pitch (0.68 mm on request)
- RoHS compliant

## Pin Functions

No.	Name	Function
1	AE	Phototransistor A Emitter
2	CE	Phototransistor C Emitter
3	EE	Phototransistor E Emitter
4	GE	Phototransistor G Emitter
5	NC	Not conected
6	IE	Phototransistor I Emitter
7	KE	Phototransistor K Emitter
8	ME	Phototransistor M Emitter
9	CC	Common collector
10	NC	Not connected
11	LE	Phototransistor L Emitter
12	JE	Phototransistor J Emitter
13	HE	Phototransistor H Emitter
14	NC	Not connected
15	FE	Phototransistor F Emitter
16	DE	Phototransistor D Emitter
17	BE	Phototransistor B Emitter
18	CC	Common collector

## Ordering Information

OIT19C 13 elements monolithic phototransistor 0.60mm

**ABSOLUTE MAXIMUM RATINGS**

Symbol	Parameter	Min	Max	Unit
T <sub>A</sub>	Operating Temperature Range	-40	85	°C
T <sub>S</sub>	Storage Temperature	-40	100	°C
T <sub>Sol</sub>	Lead Temperature (solder) 3s		230	°C
V <sub>R(BR)</sub>	Breakdown Voltage Collector-Emitter @ T <sub>A</sub> =25°C I <sub>B</sub> =100nA I <sub>C</sub> =1mA	50		V
P <sub>D</sub>	Power Dissipation @ T <sub>A</sub> =25°C		150	mW

Stresses beyond those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications is not implied. Exposure to absolute maximum rated conditions for extended periods may affect device reliability.

**ELECTRICAL CHARACTERISTICS**

T<sub>A</sub> = 25°C unless otherwise noted.

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
I <sub>D</sub>	Dark Current	V <sub>R</sub> =10V		10	100	nA
R <sub>λ</sub>	Responsivity	V <sub>CE</sub> =5V λ=880nm	0.5			A/W
λ <sub>p</sub>	Peak wavelength	V <sub>CE</sub> =5V		750		nm
Δλ	Spectral Bandwidth @ 50%	V <sub>CE</sub> =5V	500		950	nm
I <sub>ec0</sub>	Emitter-Collector Current	V <sub>CE</sub> =7.7V		0.1	100	μA
I <sub>ce0</sub>	Collector-Emitter Current	V <sub>CE</sub> =52V		0.1	100	μA
H <sub>FE</sub>	Gain	V <sub>CC</sub> =5V I <sub>C</sub> =2mA		600		
V <sub>CE(sat)</sub>	Saturation Voltage	I <sub>E</sub> =2mA I <sub>B</sub> =20μA		160	200	mV
I <sub>C(on)</sub>	On-state Collector Current	V <sub>CE</sub> =5V E <sub>E</sub> =1.0mW/cm <sup>2</sup>		1		mA

**AC SWITCHING CHARACTERISTICS**

T<sub>A</sub> = 25°C unless otherwise noted.

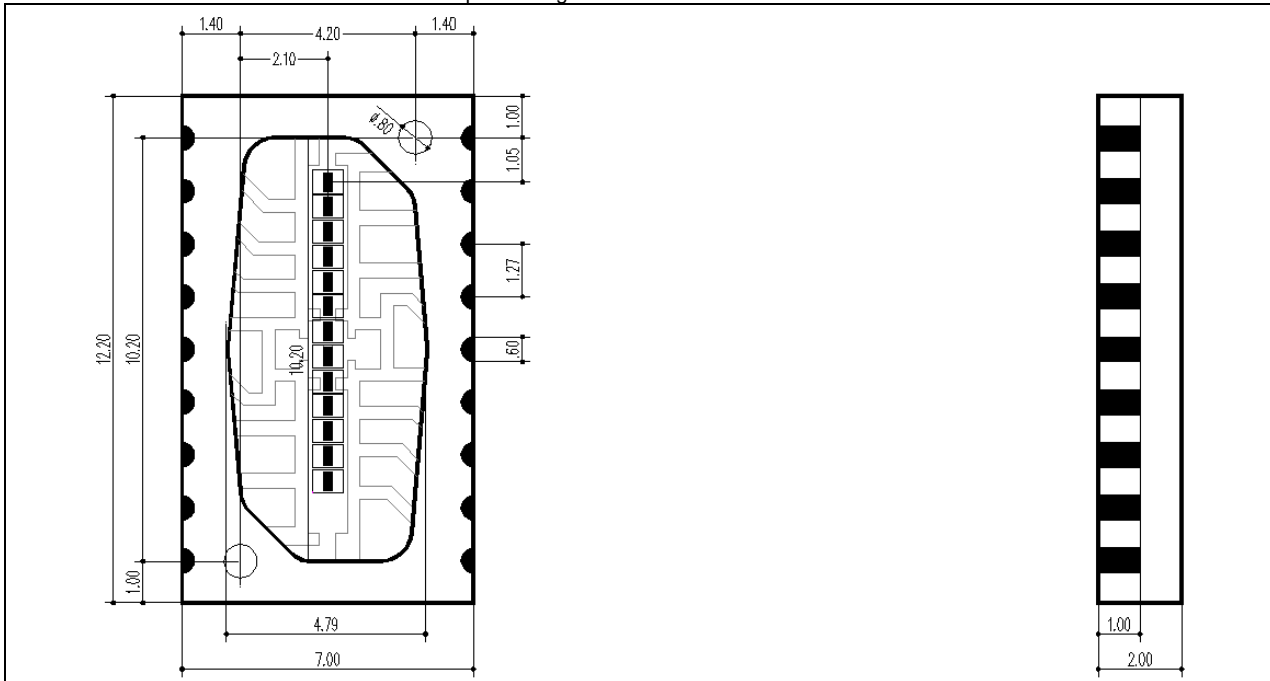
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
t <sub>R</sub>	Rise Time	V <sub>CC</sub> =5V I <sub>C</sub> =1mA R <sub>1</sub> =1kΩ		10		μs
t <sub>F</sub>	Fall Time	V <sub>CC</sub> =5V I <sub>C</sub> =1mA R <sub>1</sub> =1kΩ		11		μs

**MECHANICAL CHARACTERISTICS**

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
A	Phototransistor Active Area			0.09		mm <sup>2</sup>
L	Length of the Active Area			0.2		mm
W	Width of the Active Area			0.45		mm

**MECHANICAL DIMENSIONS**

Units=mm Mechanical tolerance=+/-0.2mm Die positioning tolerance=+/-0.030mm



TYPICAL PERFORMANCE CURVES

Figure 1 – Output voltage Vs Temperature

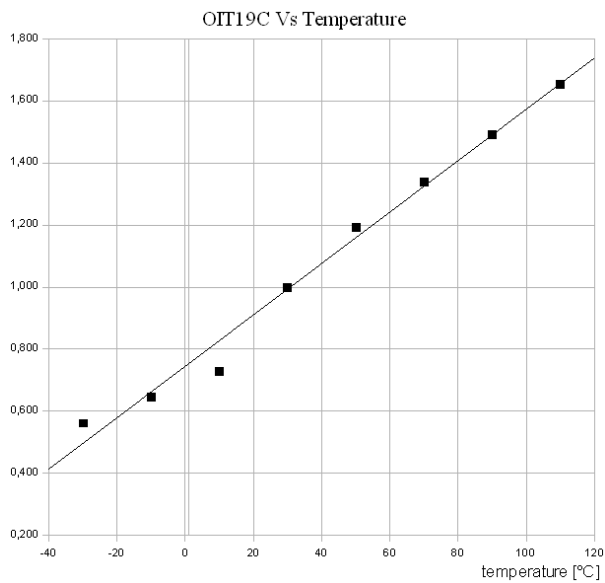


Figure 2 – Normalized spectral responsivity

