

General Description

OIT25C consists in a six single diced silicon phototransistor. The phototransistors have a common collector on the back substrate, which is tied to a single pad and every emitter is accessible to specific pad. The optical pitch of the array is 0.68 mm (available also on 0.60 mm), the LCC package electrical pitch is 1.27 mm. The active area of each element is 0.20 x 0.45 mm².

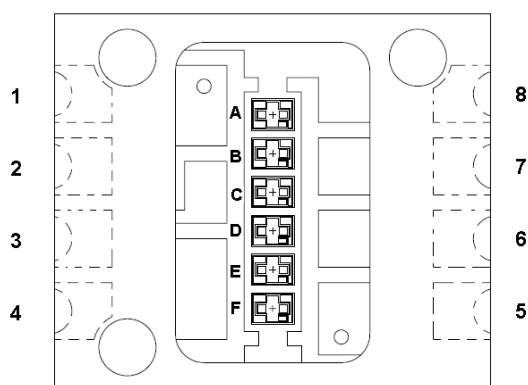
The advantages of this product are the high uniformity of the silicon sensors, due to the monolithic construction and to the extremely controlled microelectronic process, the high stability of the signal and the high optical responsivity, due to the antireflective coating deposited on the phototransistor's areas.

The encapsulant is a clear silicone material, having medium hardness, in order to be robust against RoHS soldering processes and high optical performances (transmittance close to 100% in the range 300-900nm).

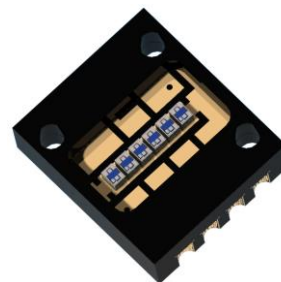
Two reference marks are available for the precise collimator positioning.

Applications

Optical encoders
Incremental encoders
Optical Receivers
Controls/drives



TOP VIEW



Features

- High uniformity of silicon cells
- High temperature range
- High transparency resin
- High gain
- Designed to meet industrial specifications
- Reference holes for precise mounting
- Reference dots for very precise mounting

Pin Functions

No.	Name	Function
1	N.C.	Not connected
2	AE	Phototransistor A Emitter
3	CE	Phototransistor C Emitter
4	EC	Phototransistor E Emitter
5	FE	Phototransistor F Emitter
6	DE	Phototransistor D Emitter
7	BE	Phototransistor B Emitter
8	CC	Common collector

Ordering information

OIT25C 6-ch. phototransistor array 0.68mm optical pitch on plastic SMD package

ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Min	Max	Unit
T_A	Operating Temperature Range	-40	100	°C
T_S	Storage Temperature	-40	100	°C
T_{Sol}	Lead Temperature (solder) 3s		230	°C
$V_{R(BR)}$	Breakdown Voltage Collector-Emitter @ $T_A=25^\circ\text{C}$ $I_B=100\text{nA}$ $I_C=1\text{mA}$	50		V
P_D	Power Dissipation @ $T_A=25^\circ\text{C}$		150	mW
ESDS	Electrostatic Discharge Susceptibility (Human Body Model, ESCC20800)		3	class

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

$T_A = 25^\circ\text{C}$ unless otherwise noted.

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
I_D	Dark Current	$V_R=10\text{V}$		5	100	nA
R_λ	Responsivity	$V_{CE}=5\text{V}$ $\lambda=880\text{nm}$	0.5			A/W
λ_p	Peak Responsivity	$V_{CE}=5\text{V}$		750		nm
$\Delta\lambda$	Spectral Bandwidth @ 50%	$V_{CE}=5\text{V}$	500		950	nm
I_{ec0}	Emitter-Collector Current	$V_{CE}=7.7\text{V}$		0.1	100	μA
I_{ce0}	Collector-Emitter Current	$V_{CE}=52\text{V}$		0.1	100	μA
H_{FE}	Gain	$V_{CC}=5\text{V}$ $I_C=2\text{mA}$	500	1100	2000	
$V_{CE(sat)}$	Saturation Voltage	$I_E=2\text{mA}$ $I_B=20\mu\text{A}$		80	200	mV
$I_{C(on)}$	On-state Collector Current	$V_{CE}=5\text{V}$ $E_E=1.0\text{mW/cm}^2$		1		mA

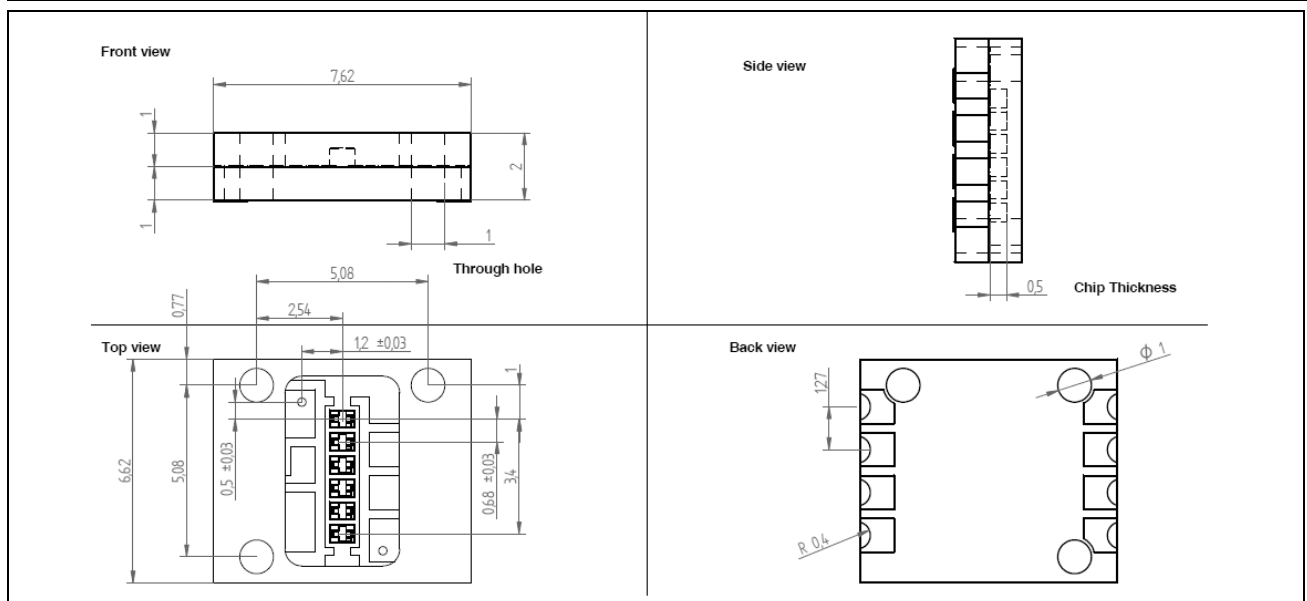
AC SWITCHING CHARACTERISTICS

$T_A = 25^\circ\text{C}$ unless otherwise noted.

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
t_R	Rise Time	$V_{CC}=5\text{V}$ $I_C=1\text{mA}$ $R_1=1\text{k}\Omega$		10		μs
t_F	Fall Time	$V_{CC}=5\text{V}$ $I_C=1\text{mA}$ $R_1=1\text{k}\Omega$		11		μs

MECHANICAL CHARACTERISTICS

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



Units=mm Mechanical tolerance= $\pm 0.2\text{mm}$ Die positioning tolerance= $\pm 0.050\text{mm}$

PACKAGE CHARACTERISTICS

Symbol	Parameter	Value	Unit
S _F	Pad Surface Finishing	GOLD	
S _L	Pad Shelf Life	6	months
MSL	Moisture Sensitive Level ‡ (see note at bottom page)	3	Level

TYPICAL PERFORMANCE CURVES

Figure 1 – Output voltage Vs Temperature

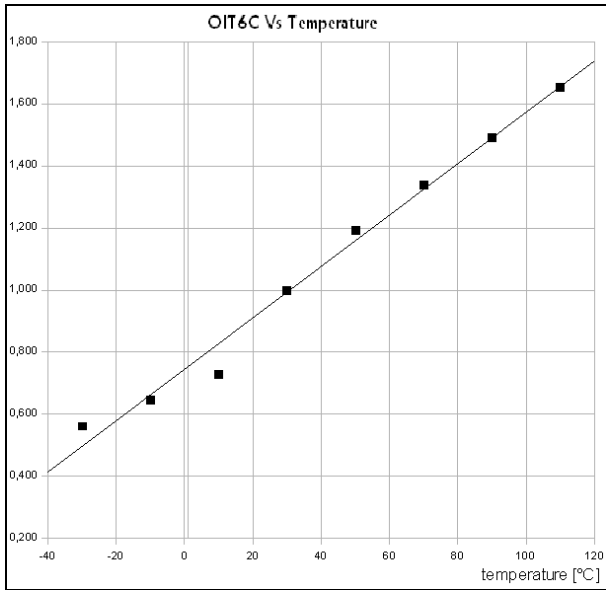
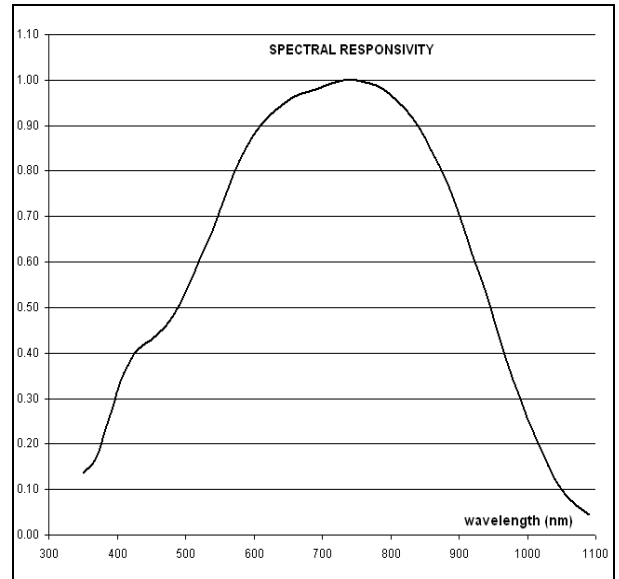


Figure 2 – Normalized spectral responsivity



‡ According to Jedec standard J-STD-020D.1