

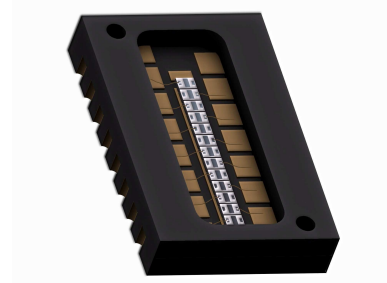
General Description

Optical device consisting of a monolithic 13 silicon NPN phototransistor array chip with high gain uniformity for the output signals.

The active area of each phototransistor is 0.2 x 0.45 mm².

The high optical responsivity is due to the antireflective coating deposited on the phototransistor active areas.

The package type is intended for direct mounting on ceramic or PC boards by manual soldering or SMT.



Applications

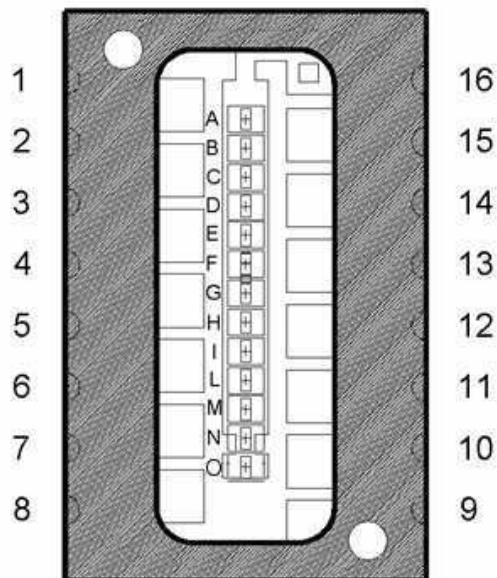
13-bits Absolute Encoders
General Purpose

Features

- High Gain Uniformity $\pm 10\%$
- High Reliability
- Optical Pitch = 0.60 mm
- Available in 0.68 mm Optical Pitch Version
- Available in SMT Suitable Version
- Compatible with OIT20S13

Pin Functions

No.	Name	Function
1	N.C.	Not connected
2	AE	Phototransistor A Emitter
3	CE	Phototransistor C Emitter
4	EE	Phototransistor E Emitter
5	GE	Phototransistor G Emitter
6	IE	Phototransistor I Emitter
7	ME	Phototransistor M Emitter
8	OE	Phototransistor O Emitter
9	N.C.	Not connected
10	NE	Phototransistor N Emitter
11	LE	Phototransistor L Emitter
12	HE	Phototransistor H Emitter
13	FE	Phototransistor F Emitter
14	DE	Phototransistor D Emitter
15	BE	Phototransistor B Emitter
16	CC	Common Collector



Ordering Information

OIT21 Monolithic 13 Silicon NPN Phototransistor Array Chip with Active Area of Each Phototransistor 0.2 x 0.45 mm².

ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Min	Max	Unit
T _A	Operating Temperature Range	-40	85	°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°C I _B =100nA I _C =1mA	50		V
P _D	Power Dissipation @ T _A =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_A = 25°C unless otherwise noted.

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
I _D	Dark Current	V _R =10V		10	100	nA
R _λ	Responsivity	V _{CE} =5V λ=880nm	0.5			A/W
λ _p	Peak Responsivity	V _{CE} =5V		750		nm
Δλ	Spectral Bandwidth @ 50%	V _{CE} =5V	500		950	nm
I _{ec0}	Emitter-Collector Current	V _{CE} =7.7V		0.1	100	μA
I _{ce0}	Collector-Emitter Current	V _{CE} =52V		0.1	100	μA
H _{FE}	Gain	V _{CC} =5V I _C =2mA		600		
V _{CE(sat)}	Saturation Voltage	I _E =2mA I _B =20μA		160	200	mV
I _{C(on)}	On-state Collector Current	V _{CE} =5V E _E =1.0mW/cm ²		1		mA

AC SWITCHING CHARACTERISTICS

T_A = 25°C unless otherwise noted.

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
t _R	Rise Time	V _{CC} =5V I _C =1mA R ₁ =1kΩ		10		μs
t _F	Fall Time	V _{CC} =5V I _C =1mA R ₁ =1kΩ		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

MECHANICAL DIMENSIONS

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

