

### **Features**

- Low power consumption
- General purpose leads
- Bulk, Available on tape and reel
- Fast response time
- High photo sensitivity
- Small junction capacitance
- Compliance with EU REACH
- The product itself remain within RoHS compliant version

## **Applications**

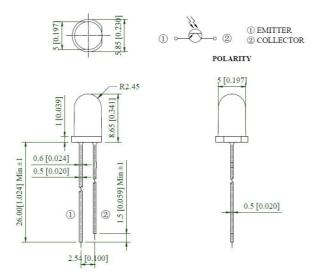
- Infrared application system
- Optoelectronic automatic control system

- Optoelectronic switch
- Printer
- Counters and sorters
- Encoders
- Floppy disk drive
- Video camera, tape and card readers
- Position sensors

## **Description**

- The INL-5ANPT30 is a high speed and high sensitive silicon NPN phototransistor in a standard 5mm epoxy package.
- Due to its black epoxy, the device is matched to visible light and infrared radiation.

## Package Dimensions in mm



#### Notes:

- 1. All dimensions are in millimeters (inches).
- 2. Tolerance is  $\pm$  0.25 mm (.010  $^{\prime\prime}$  ) unless otherwise noted.

Figure 1. INL-5ANPT30 Package Dimensions



Absolute Maximum Rating at 25°C

Symbol	Parameters	Ratings	Units	Notes
BVceo	Collector-Emitter Breakdown Voltage	30	V	1
BVECO	Emitter-Collector Breakdown Voltage	5	V	2
lc	Collector Current	20	mA	
Topr	Operating Temperature	-40~+80	°C	
Tstg	Storage Temperature	-40~+85	°C	
Tsol	Soldering Temperature	260	°C	3
PD	Total Power Dissipation	75	mW	

#### Notes

- 1. Test conditions: Ic=100µA, Ee=0mW/cm2.
- 2. Test conditions: IE=100 $\mu$ A, Ee=0mW/cm<sub>2</sub>.
- 3. Soldering time ≤ 5 seconds.

**Electro-Optical Characteristics** 

Symbol	Parameters	Test conditions	Min	Тур	Max	Units
λD	Rang of Spectral Bandwidth		400	-	1100	nm
λР	Wavelength of Peak Sensitivity		-	940		nm
BVCEO	Collector-Emitter Breakdown Voltage	Ic=100µA E <sub>e</sub> =0mW/cm²	30	-	-	V
BVECO	Emitter-Collector Breakdown Voltage	I <sub>E</sub> =100μA E <sub>e</sub> =0mW/cm²	5	-	-	V
VCE(sat)	Collector-Emitter Saturation Voltage	Ic=0.7mA Ee=1mW/cm²	-	-	0.4	V
ICEO	Collector Dark Current	VCE=20V Ee=0mW/cm²	-	-	100	nA
IC(ON)	On State Collector Current	Ee=1 mW/cm <sup>2</sup> $\lambda_P$ =940nm, $V_{CE}$ =5V	0.7	2.5	-	mA
tr	Rise Time	VcE=5V,	-	15	-	uS
<b>t</b> f	Fall Time	lc=1mA RL=1000Ω	-	15	-	uS

### **ESD Precaution**

ATTENTION: Electrostatic Discharge (ESD) protection



The symbol above denotes that ESD precaution is needed. ESD protection for GaP and AlGaAs based chips is necessary even though they are relatively safe in the presence of low static-electric discharge. Parts built with AlInGaP, GaN, or/and InGaN based chips are STATIC SENSITIVE devices. ESD precaution must be taken during design and assembly.

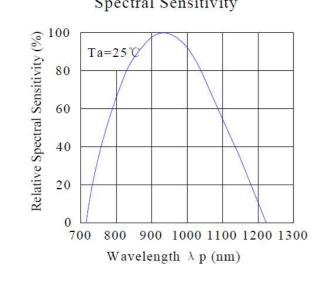
If manual work or processing is needed, please ensure the device is adequately protected from ESD during the process.

Please be advised that normal static precautions should be taken in the handling and assembly of this device to prevent damage or degradation which may be induced by electrostatic discharge (ESD).

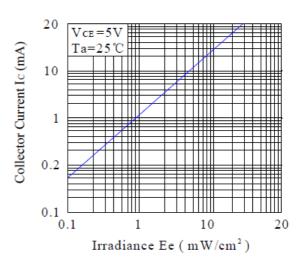


## **Typical Characteristic Curves**

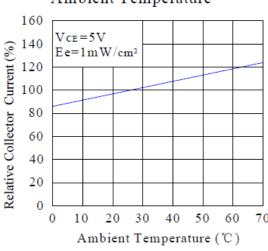
Spectral Sensitivity



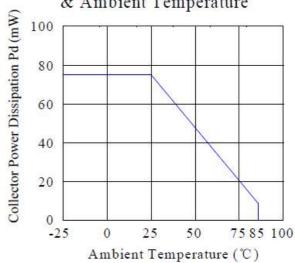
### Collector Current & Irradiance



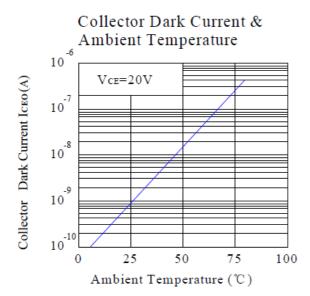
Relative Collector Current & Ambient Temperature

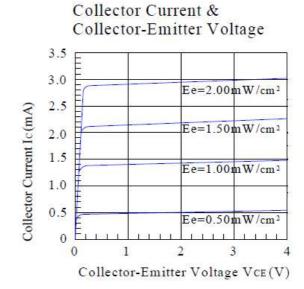


Collector Power Dissipation & Ambient Temperature







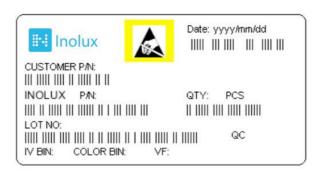




# **Ordering Information**

Product	Symbol	Parameters	Test conditions	Min	Тур	Max	Units	Orderable Part Number
INL-5ANPT30	Ic(on)	On State Collector Current	Ee=1mW/cm <sup>2</sup> $\lambda_P$ =940nm, $V_{CE}$ =5V	0.7	2.5	-	mA	INL-5ANPT30

## **Label Specifications**



### Inolux P/N:

I	N	L	-	5	Α	N	PT	3	0	Χ	Х	Х	Х
				Pacl	kage	Lens	Color	View A	Angle		Custo Stam	mized p-off	
	Inolux Lamp Typ	e		5 <i>F</i> stan 5n		N = Black Epoxy	PT = Photo Transistor	30 = 30	) deg.				

### Lot No.:

Z	2	0	1	7	01	24	001
Internal		Year (2017)	2019 \	Month	Date	Serial	
Tracker		rear (2017)	, 2016,)	WOITH	Date	Serial	



# Reliability

Item	Frequency/ lots/ samples/ failures	Standards Reference	Conditions
Precondition	For all reliability monitoring tests according to JEDEC Level 2	J-STD-020	1.) Baking at 85°C for 24hrs 2.) Moisture storage at 85°C/60% R.H. for 168hrs
Solderability	1Q/ 1/ 22/ 0	JESD22-B102-B And CNS-5068	Accelerated aging 155°C/ 24hrs Tinning speed: 2.5+0.5cm/s Tinning: A: 215°C/ 3+1s or B: 260°C/ 10+1s
Resistance to soldering heat		CNS-5067	Dipping soldering terminal only Soldering bath temperature A: 260+/-5°C; 10+/-1s B: 350+/-10°C; 3+/-0.5s
Operating life test	1Q/ 1/ 40/ 0	CNS-11829	1.) Precondition: 85°C baking for 24hrs 85°C/ 60%R.H. for 168hrs 2.) Tamb25°C; IF=20mA; duration 1000hrs
High humidity, high temperature bias	1Q/ 1/ 45/ 0	JESD-A101-B	Tamb: 85°C Humidity: 85% R.H., IF=5mA Duration: 1000hrs
High temperature bias	1Q/ 1/ 20	IN specs.	Tamb: 55°C IF=20mA Duration: 1000hrs
Pulse life test	1Q/ 1/ 40/ 0		Tamb25°C, If=20mA,, Ip=100mA, Duty cycle=0.125 (tp=125 μ s,T=1sec) Duration 500hrs)
Temperature cycle	1Q/ 1/ 76/ 0	JESD-A104-A IEC 68-2-14, Nb	A cycle: -40 degree C 15min; +85 degree C 15min Thermal steady within 5 min 300 cycles 2 chamber/ Air-to-air type
High humidity storage test	1Q/ 1/ 40/ 0	CNS-6117	60+3°C 90+5/-10% R.H. for 500hrs
High temperature storage test	1Q/ 1/ 40/ 0	CNS-554	100+10°C for 500hrs
Low temperature storage test	1Q/ 1/ 40/ 0	CNS-6118	-40+5°C for 500hrs



## **Revision History**

Changes since last revision	P	Page	Version No.	<b>Revision Date</b>
Initial Release			1.0	01-24-2019

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- 2. A critical component in any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.