



# THE DATASHEET OF H21A1





## H21Ax, H22Ax



### DESCRIPTION

The H21Ax and H22Ax series of opaque photointerrupters are single channel switches consisting of a Gallium Arsenide infrared emitting diode and a NPN silicon photo transistor mounted in a polycarbonate housing. The package is designed to optimise the mechanical resolution, coupling efficiency, ambient light rejection, cost and reliability.

Operating on the principle that objects opaque to infrared will interrupt the transmission of light between the infrared emitting diode and the photo sensor, switching the output from an "ON" state to an "OFF" state.

These photointerrupters are in PWB mounting packages while H21Ax also provides flanges for Screw Mounting.

### FEATURES

- High Gain
- 3mm Gap between LED and Detector
- Polycarbonate Case Protection against Ambient Light
- Pb Free and RoHS Compliant
- Safety Approvals Pending

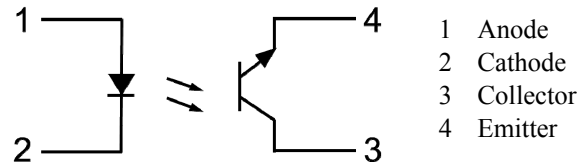
### APPLICATIONS

- Copiers, Printers, Facsimiles
- Record Players, Cassette Decks
- Optoelectronic Switches

### ORDER INFORMATION

- Supplied in Bulk Package

Top View



### ABSOLUTE MAXIMUM RATINGS (T<sub>A</sub> = 25°C)

Stresses exceeding the absolute maximum ratings can cause permanent damage to the device.

Exposure to absolute maximum ratings for long periods of time

#### Input

Forward Current	50mA
Reverse Voltage	5V
Power dissipation	75mW

#### Output

Collector Current	20mA
Collector-Emitter Voltage	30V
Emitter-Collector Voltage	5V
Power Dissipation	100mW

#### Total Package

Operating Temperature	-25 to 85 °C
Storage Temperature	-55 to 100 °C
Lead Soldering Temperature (10s)	260°C

can adversely affect reliability.

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## H21Ax, H22Ax

### ELECTRICAL CHARACTERISTICS ( $T_A = 25^\circ\text{C}$ unless otherwise specified)

#### INPUT

Parameter	Symbol	Test Condition	Min	Typ.	Max	Unit
Forward Voltage	$V_F$	$I_F = 20\text{mA}$		1.2	1.6	V
Reverse Current	$I_R$	$V_R = 5\text{V}$			100	$\mu\text{A}$

#### OUTPUT

Parameter	Symbol	Test Condition	Min	Typ.	Max	Unit
Collector-Emitter Dark Current	$I_{CEO}$	$V_{CE} = 10\text{V}$			100	nA

#### COUPLED

Parameter	Symbol	Test Condition	Min	Typ.	Max	Unit	
On-State Collector Current	$I_{C(ON)}$	H21A1, H22A1				mA	
		$I_F = 5\text{mA}, V_{CE} = 5\text{V}$	0.15				
		$I_F = 20\text{mA}, V_{CE} = 5\text{V}$	1.0				
		$I_F = 30\text{mA}, V_{CE} = 5\text{V}$	1.9				
		H21A2, H22A2					
		$I_F = 5\text{mA}, V_{CE} = 5\text{V}$	0.3				
		$I_F = 20\text{mA}, V_{CE} = 5\text{V}$	2.0				
		$I_F = 30\text{mA}, V_{CE} = 5\text{V}$	3.0				
		H21A3, H22A3					
$I_F = 5\text{mA}, V_{CE} = 5\text{V}$	0.6						
$I_F = 20\text{mA}, V_{CE} = 5\text{V}$	4.0						
$I_F = 30\text{mA}, V_{CE} = 5\text{V}$	5.5						
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$	$I_F = 20\text{mA}, I_C = 0.25\text{mA}$			0.4	V	

#### SWITCHING

Parameter	Symbol	Test Condition	Min	Typ.	Max	Unit
Output Rise Time (10% to 90%)	$t_r$	$V_{CE} = 5\text{V}, I_C = 2\text{mA}$ $R_L = 100\Omega,$		3	15	$\mu\text{s}$
Output Fall Time (90% to 10%)	$t_f$			4	20	



## H21Ax, H22Ax

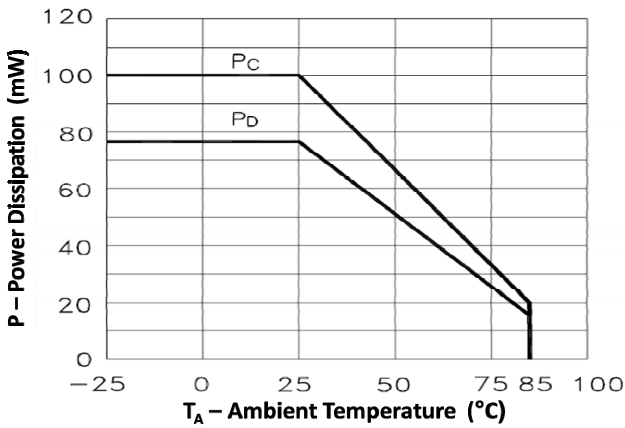


Fig 1 Power Dissipation vs Ambient Temperature

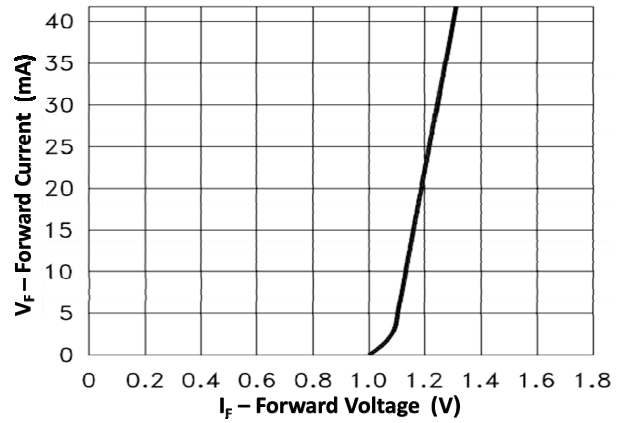


Fig 2 Forward Current vs Forward Voltage

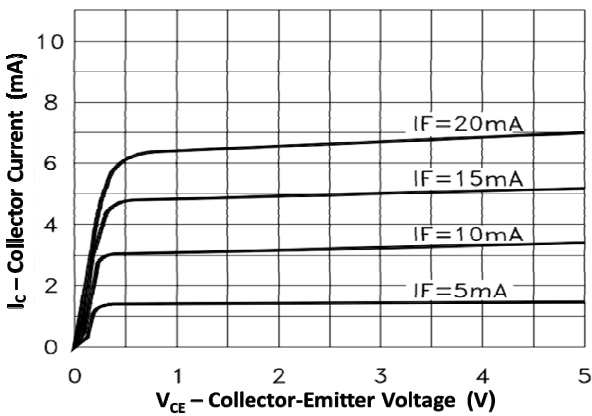


Fig 3 Collector Current vs Collector-Emitter Voltage

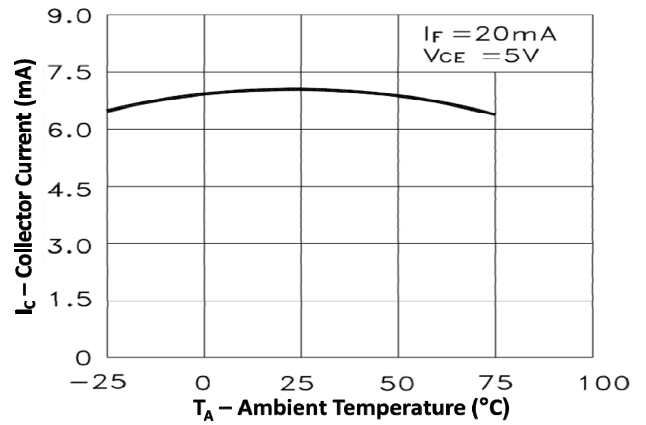


Fig 4 Collector Current vs Ambient Temperature

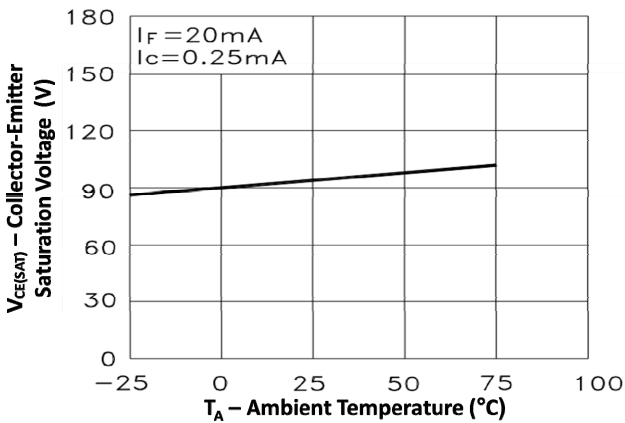


Fig 5 Collector-Emitter Saturation Voltage vs  $T_A$



## H21Ax, H22Ax

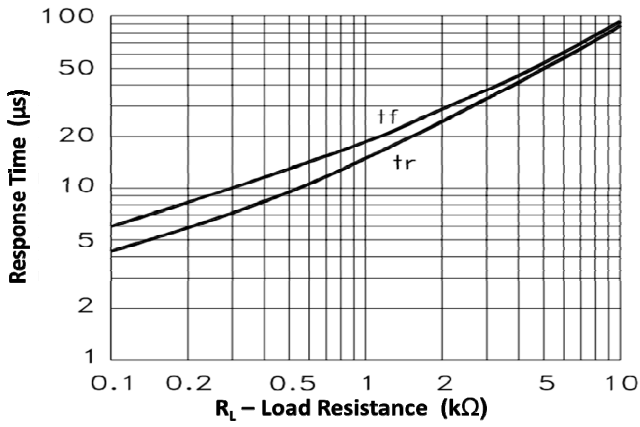
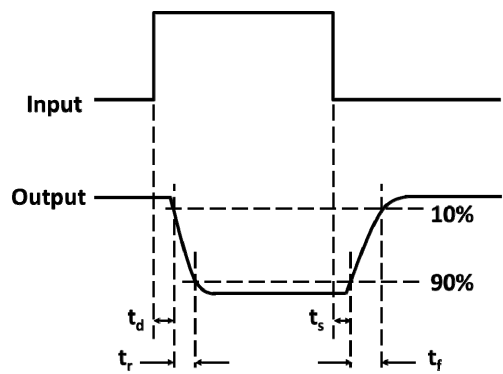
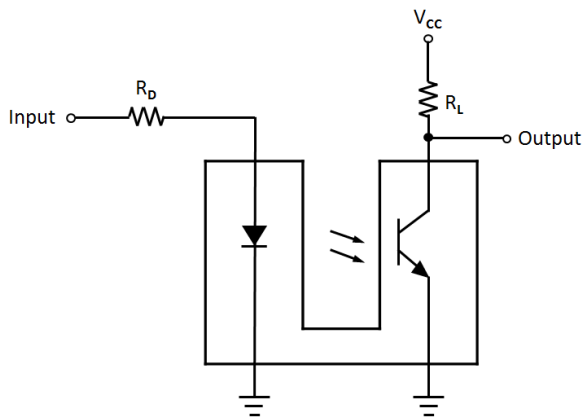


Fig 6 Response Time vs Load Resistance



Test Circuit for Response Time

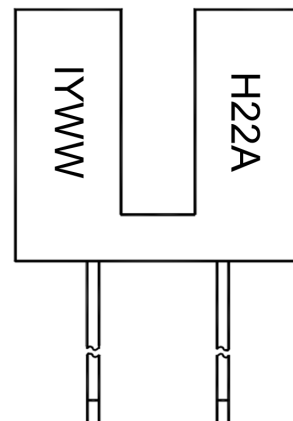
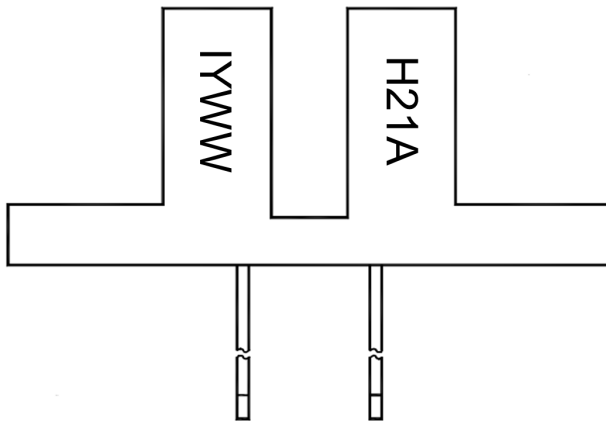


## H21Ax, H22Ax

### ORDER INFORMATION

H21Ax, H22Ax			
After PN	PN	Description	Packing quantity
None	H21A1, H21A2, H21A3 H22A1, H22A2, H22A3	Bulk Package	500pcs

### DEVICE MARKING



H21A / H22A denotes Device Part Number

I denotes Isocom

Y denotes 1 digit Year code

WW denotes 2 digit Week code

Note : H21A Type will be Marked "H21A"  
H22A Type will be Marked "H22A"

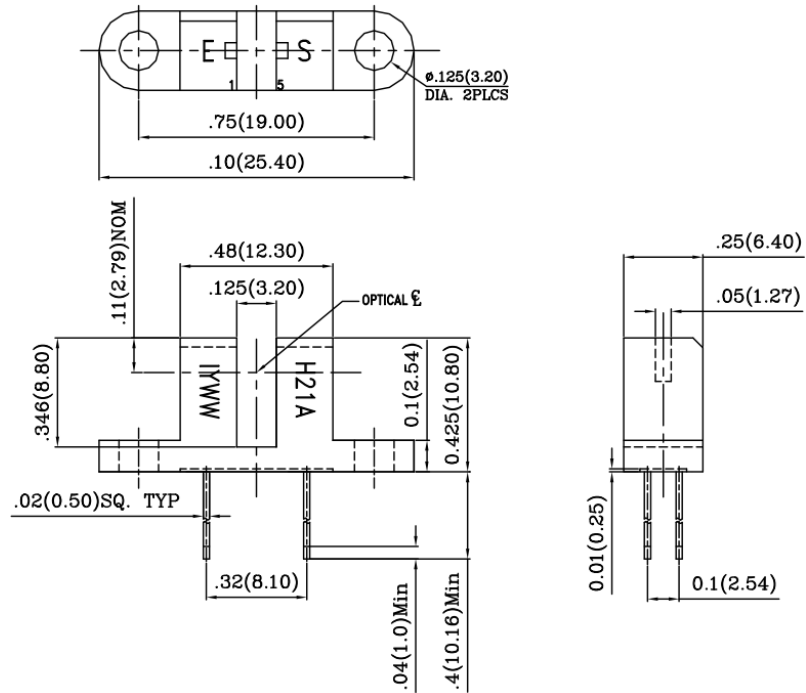


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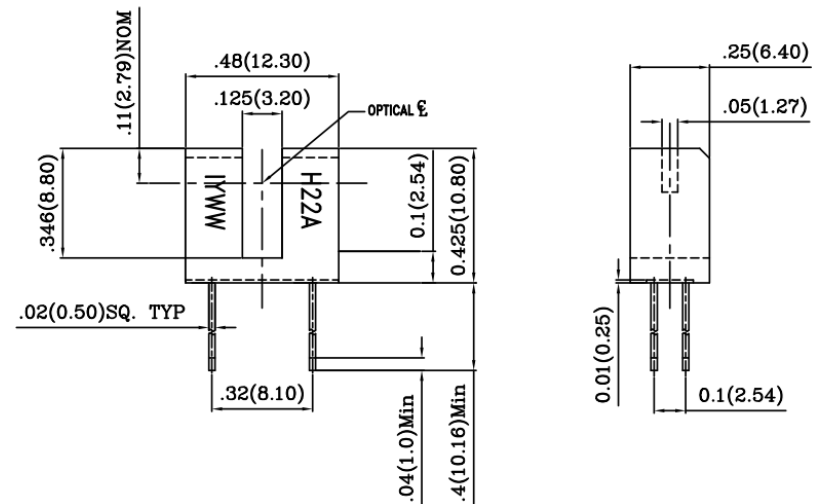
### PACKAGE DIMENSIONS in inch(mm)

Tolerance :  $\pm 0.010''$  (0.25mm) unless otherwise noted.

H21A



H22A







## Looking for pricing, stock, or lifecycle information?

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- [Isocom Components 2004 LTD Information](#)

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