



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

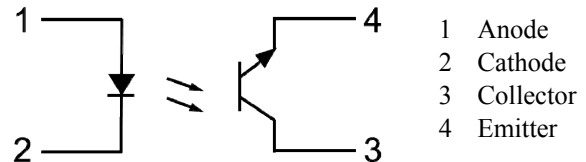
APPLICATIONS

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

ORDER INFORMATION

- Supplied in Bulk Package

Top View



ABSOLUTE MAXIMUM RATINGS (T_A = 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.

ISOCOM COMPONENTS 2004 LTD

Unit 25B, Park View Road West, Park View Industrial Estate
Hartlepool, Cleveland, TS25 1PE, United Kingdom
Tel : +44 (0)1429 863 609 Fax : +44 (0)1429 863 581
e-mail : sales@isocom.co.uk
<http://www.isocom.com>

ISOCOM COMPONENTS ASIA LTD

Hong Kong Office,
Block A, 8/F, Wah Hing Industrial mansion,
36 Tai Yau Street, San Po Kong, Kowloon, Hong Kong.
Tel : +852 2995 9217 Fax : +852 8161 6292
e-mail : sales@isocom.com.hk



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	μA

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	μs
Output Fall Time (90% to 10%)	t_f			4	20	



H21Ax, H22Ax

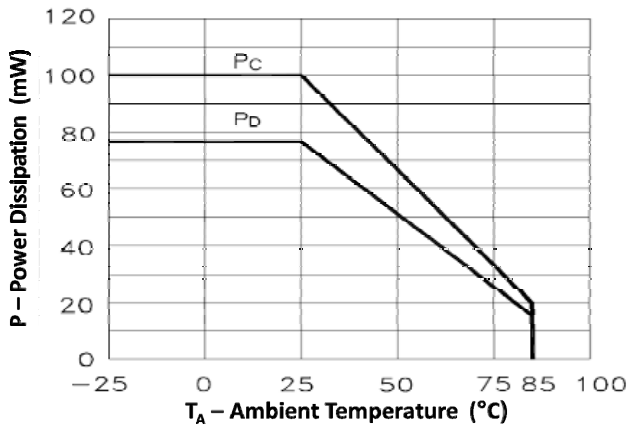


Fig 1 Power Dissipation vs Ambient Temperature

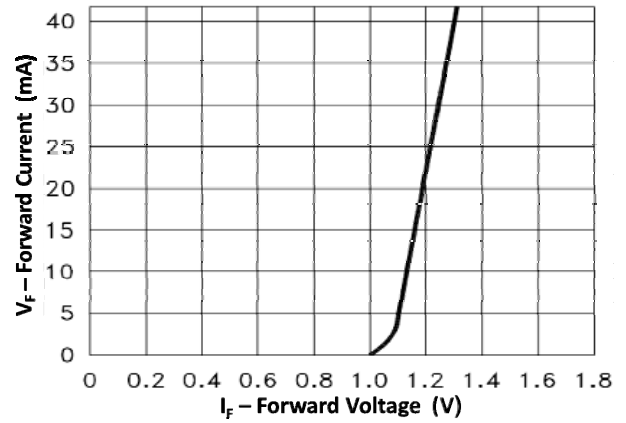


Fig 2 Forward Current vs Forward Voltage

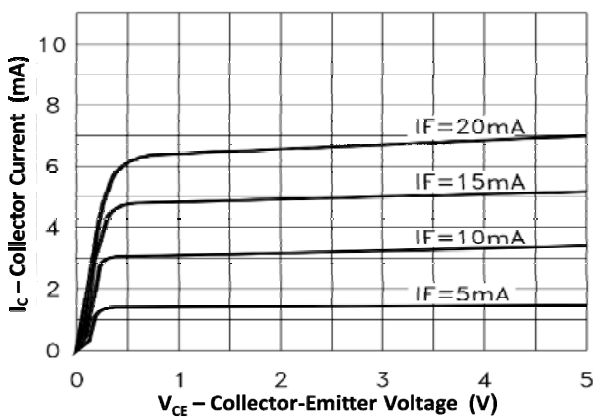


Fig 3 Collector Current vs Collector-Emitter Voltage

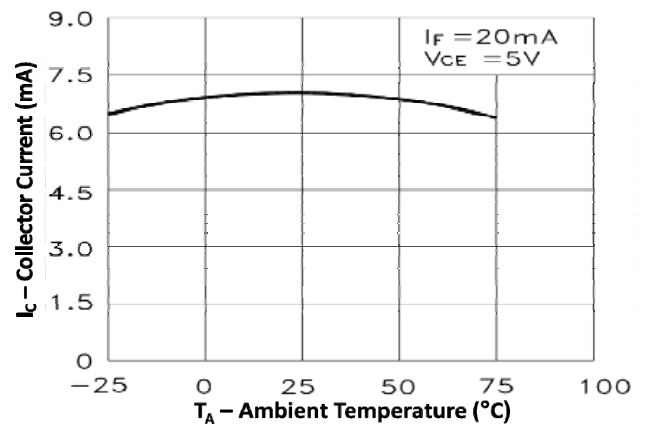


Fig 4 Collector Current vs Ambient Temperature

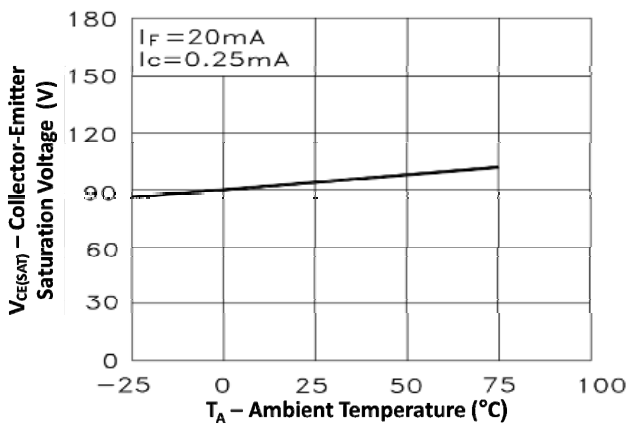


Fig 5 Collector-Emitter Saturation Voltage vs T_A



H21Ax, H22Ax

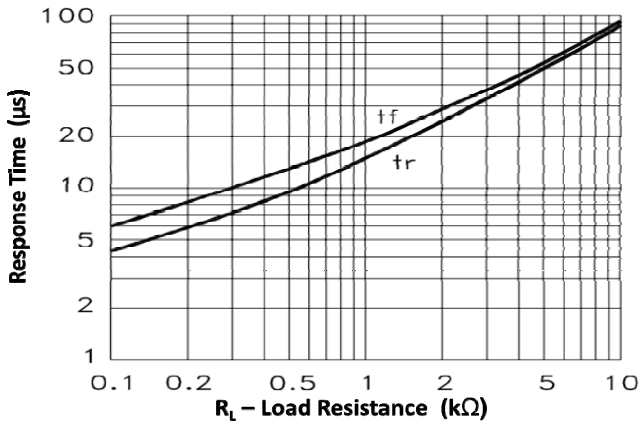
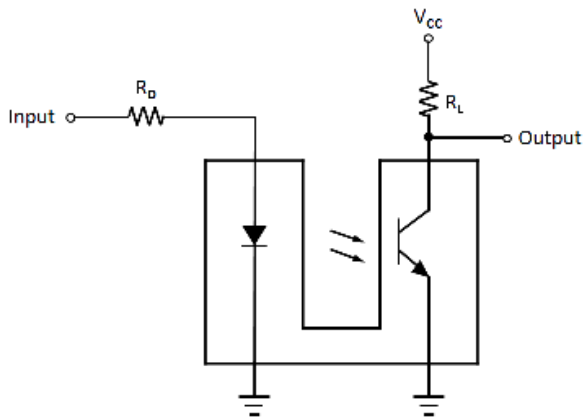
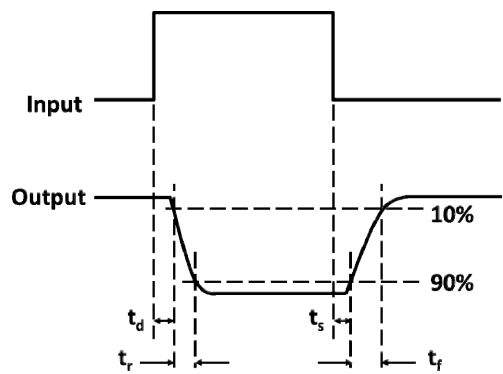


Fig 6 Response Time vs Load Resistance



Test Circuit for Response Time



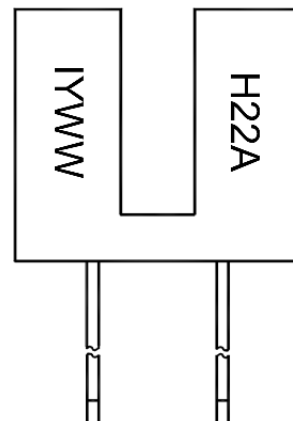
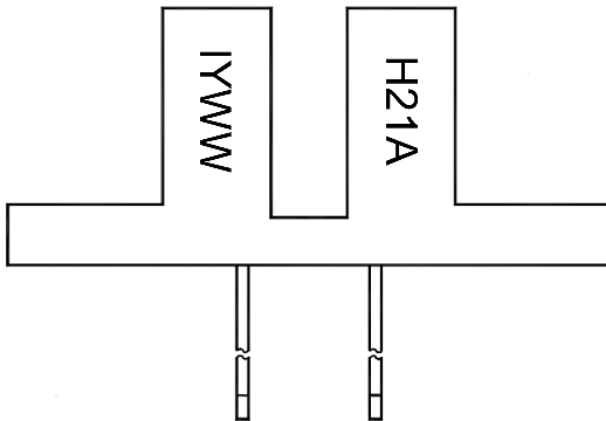


H21Ax, H22Ax

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"

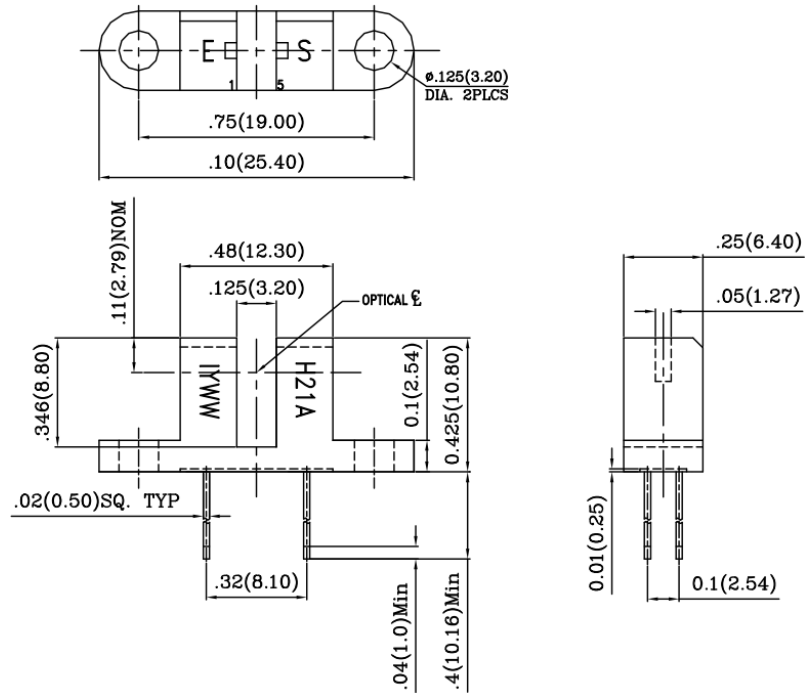


H21Ax, H22Ax

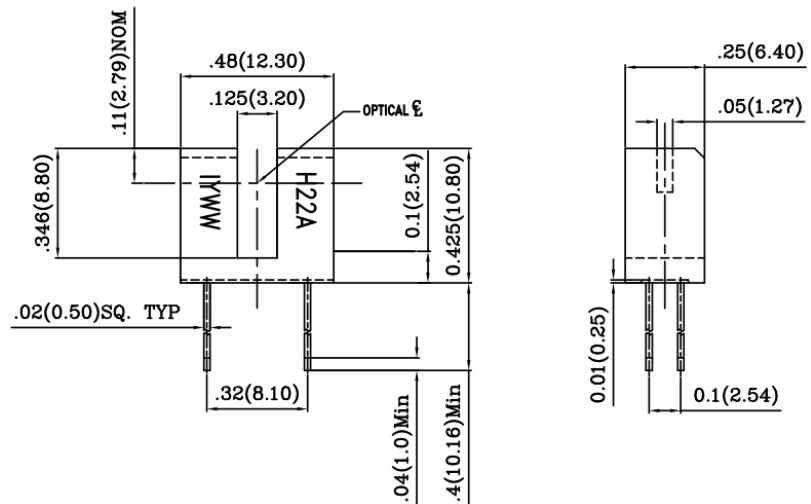
PACKAGE DIMENSIONS in inch(mm)

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

H21A



H22A





ISOCOM
COMPONENTS

H21Ax, H22Ax

NOTES :

- Isocom is continually improving the quality, reliability, function or design and Isocom reserves the right to make changes without further notices.
- The products shown in this publication are designed for the general use in electronic applications such as office automation equipment, communications devices, audio/visual equipment, electrical application and instrumentation.
- For equipment/application where high reliability or safety is required, such as space applications, nuclear power control equipment, medical equipment, etc., please contact our sales representatives.
- When requiring a device for any "specific" application, please contact our sales for advice.
- The contents described herein are subject to change without prior notice.
- Do not immerse device body in solder paste.



DISCLAIMER

ISOCOM is continually working to improve the quality and reliability of its products. Nevertheless, semiconductor devices in general can malfunction or fail due to their inherent electrical sensitivity and vulnerability to physical stress. It is the responsibility of the buyer, when utilizing ISOCOM products, to comply with the standards of safety in making a safe design for the entire system, and to avoid situations in which a malfunction or failure of such ISOCOM products could cause loss of human life, bodily injury or damage to property.

In developing your designs, please ensure that ISOCOM products are used within specified operating ranges as set forth in the most recent ISOCOM products specifications.

___ The ISOCOM products listed in this document are intended for usage in general electronics applications (computer, personal equipment, office equipment, measuring equipment, industrial robotics, domestic appliances, etc.). These ISOCOM products are neither intended nor warranted for usage in equipment that requires extraordinarily high quality and/or reliability or a malfunction or failure of which may cause loss of human life or bodily injury ("Unintended Usage"). Unintended Usage include atomic energy control instruments, airplane or spaceship instruments, transportation Instruments, traffic signal instruments, combustion control instruments, medical Instruments, all types of safety devices, etc.. Unintended Usage of ISOCOM products listed in this document shall be made at the customer's own risk.

___ Gallium arsenide (GaAs) is a substance used in the products described in this document. GaAs dust and fumes are toxic. Do not break, cut or pulverize the product, or use chemicals to dissolve them. When disposing of the products, follow the appropriate regulations. Do not dispose of the products with other industrial waste or with domestic garbage.

___ The products described in this document are subject to the foreign exchange and foreign trade laws.

___ The information contained herein is presented only as a guide for the applications of our products. No responsibility is assumed by ISOCOM Components for any infringements of intellectual property or other rights of the third parties which may result from its use. No license is granted by implication or otherwise under any intellectual property or other rights of ISOCOM Components or others.

___ The information contained herein is subject to change without notice.