



Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



## Contact us

Tel: +86-755-8981 8866 Fax: +86-755-8427 6832

Email & Skype: info@chipsmall.com Web: www.chipsmall.com

Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China

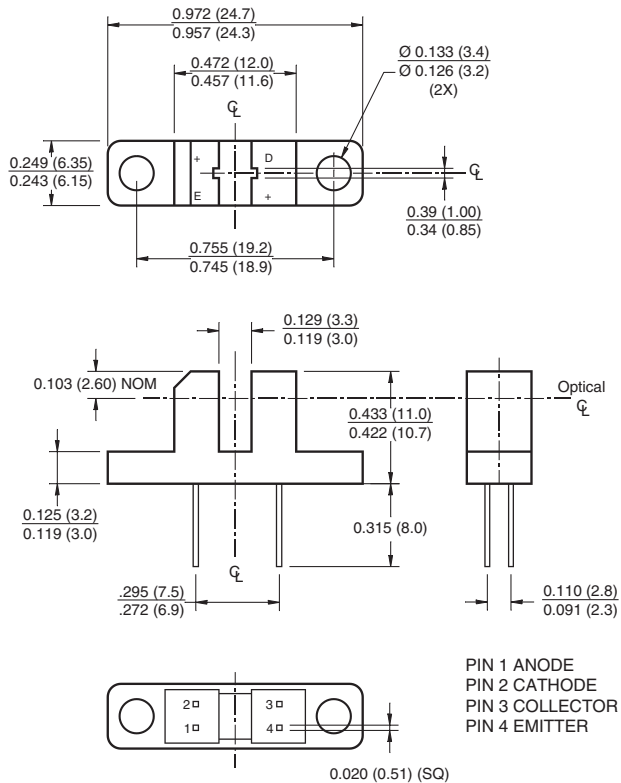


**H21B4**

**H21B5**

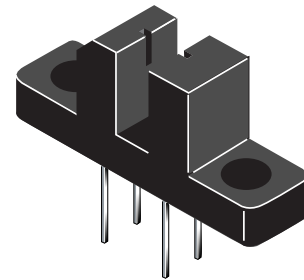
**H21B6**

**PACKAGE DIMENSIONS**

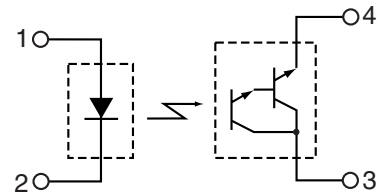


**NOTES:**

1. Dimensions for all drawings are in inches (mm).
2. Tolerance of  $\pm .010$  (.25) on all non-nominal dimensions unless otherwise specified.



**SCHEMATIC**



**DESCRIPTION**

The H21B4, H21B5 and H21B6 consist of a gallium arsenide infrared emitting diode coupled with a silicon photodarlington in a plastic housing. The packaging system is designed to optimize the mechanical resolution, coupling efficiency, ambient light rejection, cost and reliability. The gap in the housing provides a means of interrupting the signal with an opaque material, switching the output from an "ON" to an "OFF" state.

**FEATURES**

- Opaque housing
- Low cost
- .035" apertures
- High  $I_{C(ON)}$

**H21B4**

**H21B5**

**H21B6**

**ABSOLUTE MAXIMUM RATINGS** ( $T_A = 25^\circ\text{C}$  unless otherwise specified)

Parameter	Symbol	Rating	Unit
Operating Temperature	$T_{OPR}$	-55 to +100	$^\circ\text{C}$
Storage Temperature	$T_{STG}$	-55 to +100	$^\circ\text{C}$
Soldering Temperature (Iron) <sup>(2,3 and 4)</sup>	$T_{SOL-I}$	240 for 5 sec	$^\circ\text{C}$
Soldering Temperature (Flow) <sup>(2 and 3)</sup>	$T_{SOL-F}$	260 for 10 sec	$^\circ\text{C}$
<b>INPUT (EMITTER)</b>			
Continuous Forward Current	$I_F$	50	mA
Reverse Voltage	$V_R$	6	V
Power Dissipation <sup>(1)</sup>	$P_D$	100	mW
<b>OUTPUT (SENSOR)</b>			
Collector to Emitter Voltage	$V_{CEO}$	55	V
Emitter to Collector Voltage	$V_{ECO}$	6	V
Collector Current	$I_C$	40	mA
Power Dissipation ( $T_C = 25^\circ\text{C}$ ) <sup>(1)</sup>	$P_D$	150	mW

**NOTES:**

1. Derate power dissipation linearly 1.33 mW/ $^\circ\text{C}$  above 25 $^\circ\text{C}$ .
2. RMA flux is recommended.
3. Methanol or isopropyl alcohols are recommended as cleaning agents.
4. Soldering iron 1/16" (1.6 mm) minimum from housing.

**H21B4**

**H21B5**

**H21B6**

**ELECTRICAL/OPTICAL CHARACTERISTICS** ( $T_A = 25^\circ\text{C}$ )

PARAMETER	TEST CONDITIONS	SYMBOL	DEVICES	MIN	TYP	MAX	UNITS
<b>INPUT (EMITTER)</b>							
Forward Voltage	$I_F = 60 \text{ mA}$	$V_F$	All	—	—	1.7	V
Reverse Breakdown Voltage	$I_R = 10 \mu\text{A}$	$V_R$	All	6.0	—	—	V
Reverse Leakage Current	$V_R = 3 \text{ V}$	$I_R$	All	—	—	1.0	$\mu\text{A}$
<b>OUTPUT (SENSOR)</b>							
Emitter to Collector Breakdown	$I_F = 100 \mu\text{A}, E_e = 0$	$BV_{ECO}$	All	7.0	—	—	V
Collector to Emitter Breakdown	$I_C = 1 \text{ mA}, E_e = 0$	$BV_{CEO}$	All	55	—	—	V
Collector to Emitter Leakage	$V_{CE} = 45 \text{ V}, E_e = 0$	$I_{CEO}$	All	—	—	100	nA
<b>COUPLED</b>							
On-State Collector Current	$I_F = 2 \text{ mA}, V_{CE} = 1.5 \text{ V}$	$I_{C(ON)}$	H21B4	0.5	—	—	mA
			H21B5	1.0	—	—	
			H21B6	2.0	—	—	
	$I_F = 5 \text{ mA}, V_{CE} = 1.5 \text{ V}$		H21B4	2.5	—	—	
			H21B5	5.0	—	—	
			H21B6	10	—	—	
	$I_F = 10 \text{ mA}, V_{CE} = 1.5 \text{ V}$		H21B4	7.5	—	—	
			H21B5	14	—	—	
			H21B6	25	—	—	
Saturation Voltage	$I_F = 10 \text{ mA}, I_C = 1.8 \text{ mA}$	$V_{CE(SAT)}$	All	—	—	1.0	V
	$I_F = 60 \text{ mA}, I_C = 50 \text{ mA}$		H21B5/6	—	—	1.5	V
Turn-On Time	$I_F = 10 \text{ mA}, V_{CC} = 5 \text{ V}, R_L = 750\Omega$	$t_{on}$	All	—	45	—	$\mu\text{s}$
	$I_F = 60 \text{ mA}, V_{CC} = 5 \text{ V}, R_L = 75\Omega$		All	—	7	—	
Turn-Off Time	$I_F = 10 \text{ mA}, V_{CC} = 5 \text{ V}, R_L = 750\Omega$	$t_{off}$	All	—	250	—	$\mu\text{s}$
	$I_F = 60 \text{ mA}, V_{CC} = 5 \text{ V}, R_L = 75\Omega$		All	—	45	—	

**H21B4**

**H21B5**

**H21B6**

Figure 1. Output Current vs. Input Current

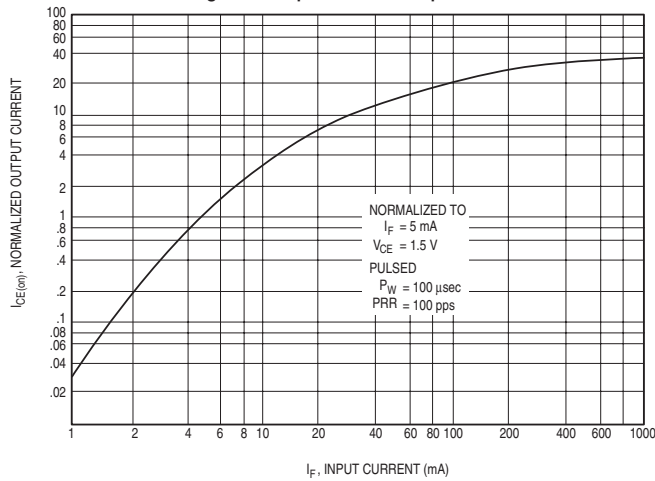


Figure 2. Output Current vs. Temperature

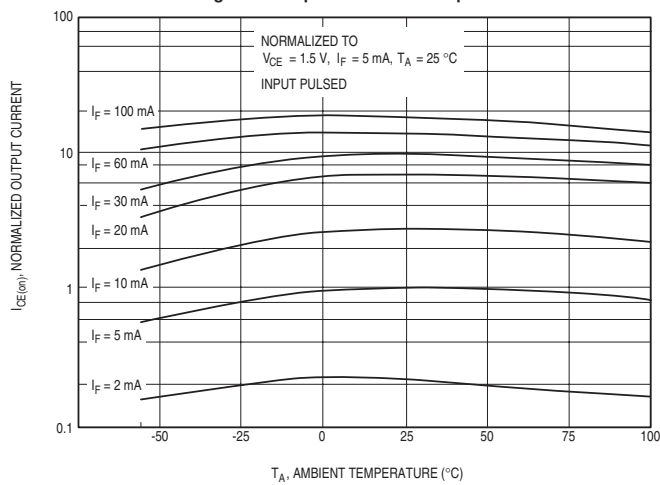
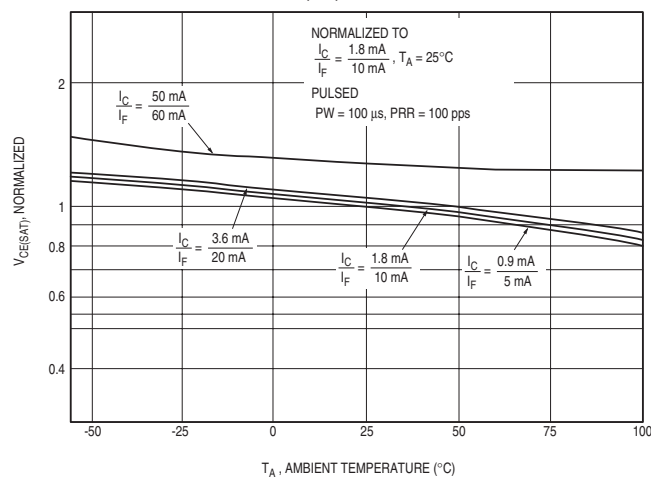


Figure 3.  $V_{CE(SAT)}$  vs. Temperature



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**H21B6**

Figure 4. Leakage Current vs. Temperature

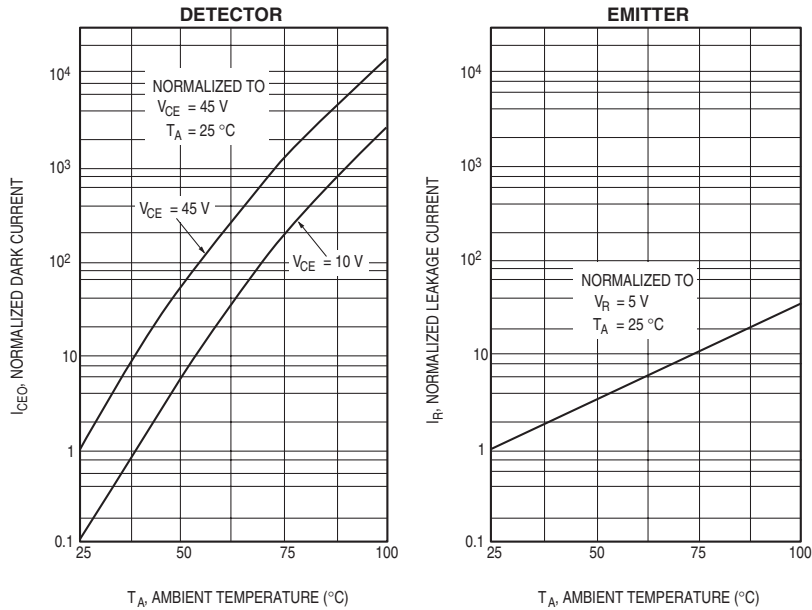


Figure 5. Switching Speed vs.  $R_L$

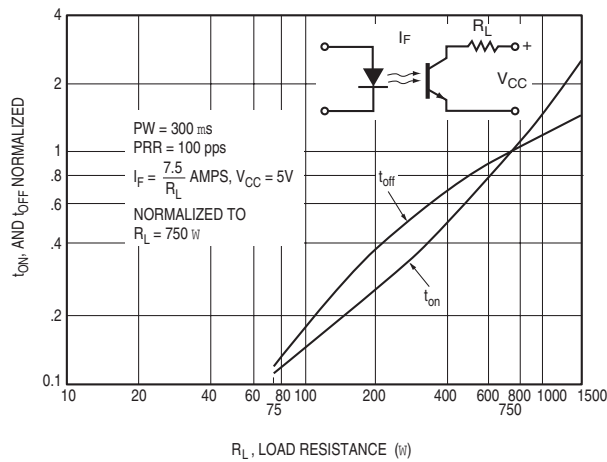
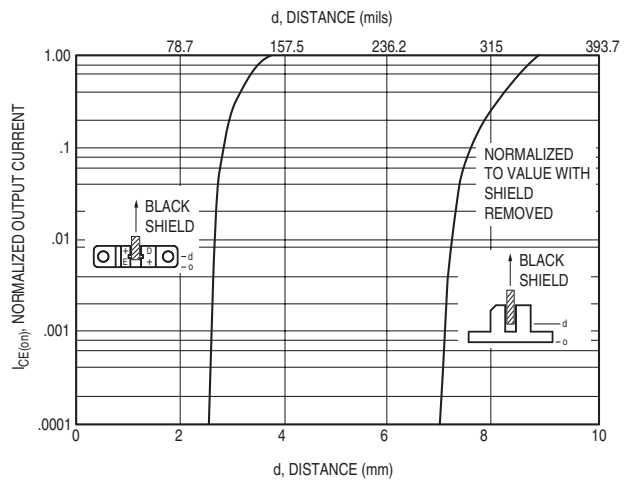


Figure 6. Output Current vs. Distance



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**H21B4**

**H21B5**

**H21B6**

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