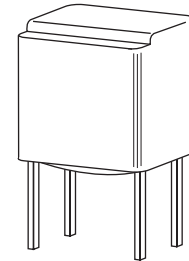
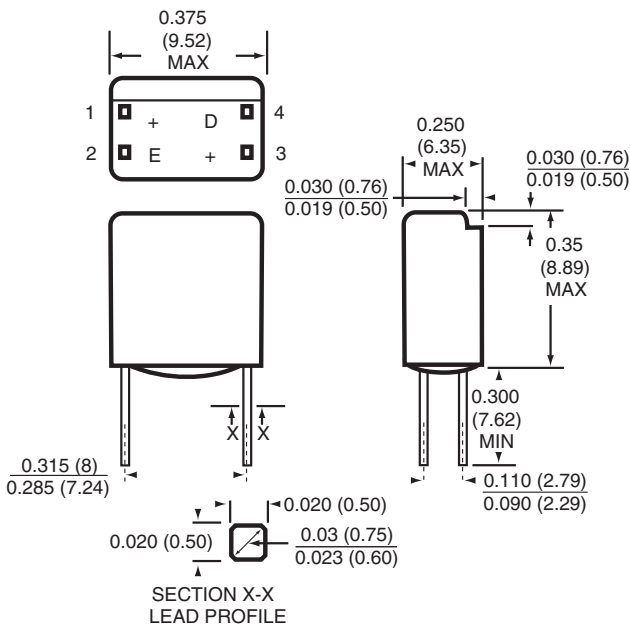
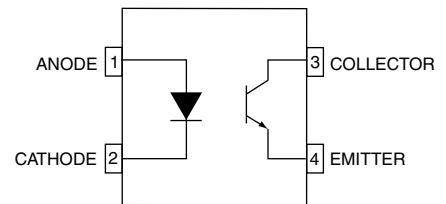


**PACKAGE DIMENSIONS**



**SCHEMATIC**



**NOTES:**

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

**DESCRIPTION**

The H24A series consists of a gallium arsenide infrared emitting diode coupled with a silicon phototransistor. The devices are housed in a low cost plastic package with lead spacing compatible with a dual in line package.

**FEATURES**

- 4-pin configuration
- Small package size and low cost
- UL recognized - file E50151

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

Parameter	Symbol	Rating	Unit
Operating Temperature	$T_{OPR}$	-55 to +85	$^\circ\text{C}$
Storage Temperature	$T_{STG}$	-55 to +85	$^\circ\text{C}$
Soldering Temperature (Flow)	$T_{SOL-F}$	260 for 5 sec	$^\circ\text{C}$
<b>EMITTER</b>			
Power Dissipation at $25^\circ\text{C}$ Ambient <sup>(1)</sup>	$P_D$	100	mW
Continuous Forward Current	$I_F$	60	mA
Reverse Voltage	$V_R$	4	V
<b>DETECTOR</b>			
Power Dissipation $25^\circ\text{C}$ Ambient <sup>(2)</sup>	$P_D$	150	mW
Collector to Emitter Voltage	$V_{CEO}$	30	V
Emitter to Collector Voltage	$V_{ECO}$	6	V
Continuous Forward Current	$I_C$	100	mA

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

**INDIVIDUAL COMPONENT CHARACTERISTICS**

Parameters	Test Conditions	Symbol	Min	Typ	Max	Units
<b>EMITTER</b>						
Forward Voltage	$I_F = 60\text{ mA}$	$V_F$		–	1.7	V
Reverse Current	$V_R = 3.0\text{ V}$	$I_R$		–	1	$\mu\text{A}$
Reverse Breakdown Voltage	$I_R = 10\ \mu\text{A}$	$V_{(BR)R}$	4			V
Capacitance	$V = 0\text{ V}, f = 1\text{ MHz}$	$C$		30		pF
<b>DETECTOR</b>						
Breakdown Voltage Collector to Emitter	$I_C = 1.0\text{ mA}, I_F = 0$	$BV_{CEO}$	30			V
Emitter to Collector	$I_E = 100\ \mu\text{A}, I_F = 0$	$BV_{ECO}$	7			V
Leakage Current Collector to Emitter	$V_{CE} = 10\text{ V}, I_F = 0$	$I_{CEO}$		5	100	nA
Capacitance Collector to Emitter	$V_{CE} = 5\text{ V}, f = 1\text{ MHz}$	$C_{CE}$		3.3		pF

NOTE:

1. Derate power linearly 1.67 mW/ $^\circ\text{C}$  above  $25^\circ\text{C}$
2. Derate power linearly 2.5 mW/ $^\circ\text{C}$  above  $25^\circ\text{C}$

**TRANSFER CHARACTERISTICS** ( $T_A = 25^\circ\text{C}$  Unless otherwise specified.)

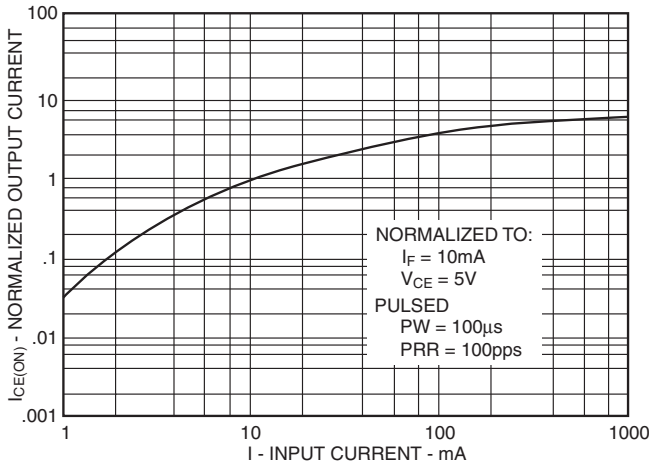
DC Characteristics	Test Conditions	Symbol	Min	Typ	Max	Units
<b>COUPLED</b> DC current Transfer Ratio (note 1)	$V_{CE} = 10\text{ V}, I_F = 10\text{ mA}$	H24A1	100			%
		H24A2	20			
Saturation Voltage	$I_C = 500\ \mu\text{A}, I_F = 10\text{ mA}$	$V_{CE(\text{SAT})}$		0.1	0.4	V
AC Characteristics	Test Conditions	Symbol	Min	Typ	Max	Units
Turn-on Time	$I_C = 2\text{ mA}, V_{CE} = 10\text{ V}$ $R_L = 100\ \Omega$	ton		9		$\mu\text{s}$
Turn-off Time		toff		4		$\mu\text{s}$
Turn-on Time	$I_F = 10\text{ mA}, V_{CC} = 5\text{ V}$ $R_L = 10\text{ k}\Omega$	ton		6.5		$\mu\text{s}$
Turn-off Time		toff		165		$\mu\text{s}$

**ISOLATION CHARACTERISTICS**

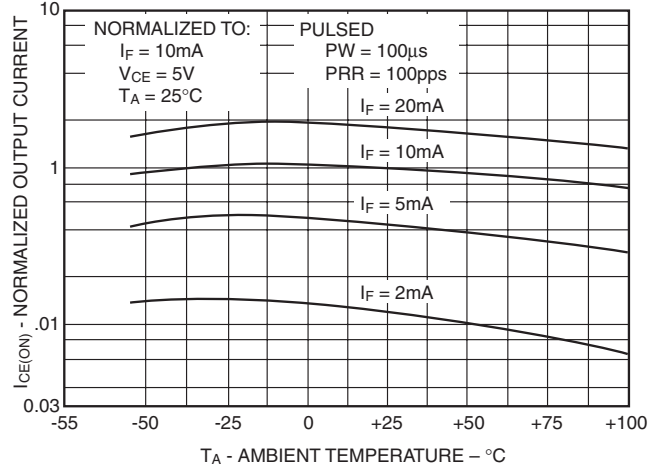
Characteristic	Test Conditions	Symbol	Min	Typ	Max	Units
Surge Isolation Voltage	1 Minute	$V_{ISO}$	6000			$V_{\text{peak}}$
Steady-State Isolation Voltage	1 Minute	$V_{ISO}$	5300			$V_{\text{RMS}}$
Isolation Resistance	$V_{I-0} = 500\text{ VDC}$	$R_{ISO}$	$10^{11}$			Ohm
Isolation Capacitance	$V_{I-0} = 0, f = 1\text{ MHz}$	$C_{ISO}$		0.5		pF

NOTE:

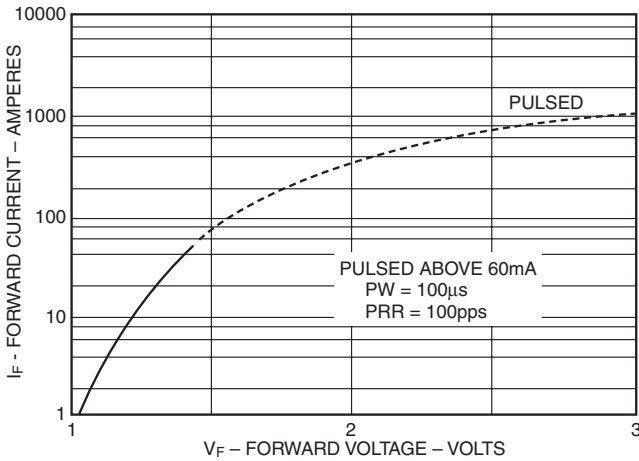
1. The current transfer ratio ( $I_C/I_F$ ) is the ratio of the detector collector current to the LED input current with  $V_{CE}$  at 10 volts.



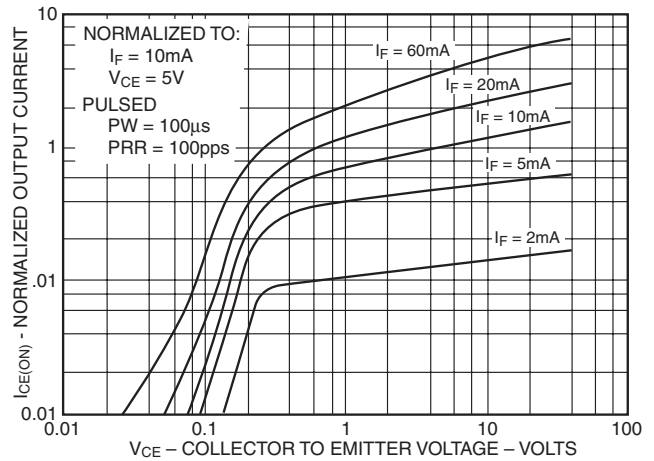
**Fig. 1. Output Current vs. Input Current**



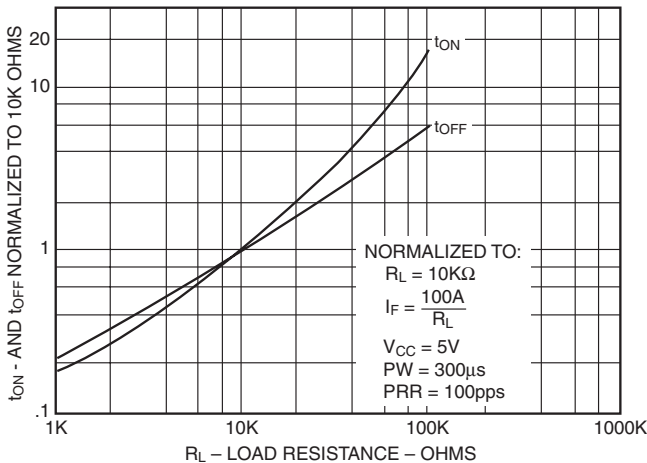
**Fig. 2. Output Current vs. Temperature**



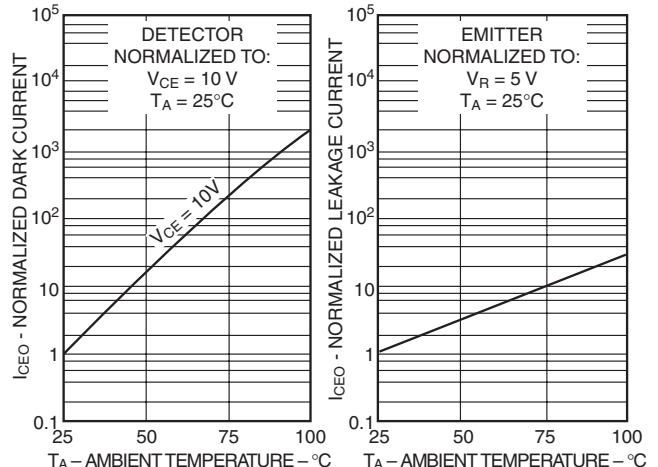
**Fig. 3. Input Characteristics**



**Fig. 4. Output Characteristics**



**Fig. 5. Switching Speed vs.  $R_L$**



**Fig. 6. Leakage Current vs. Temperature**

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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.