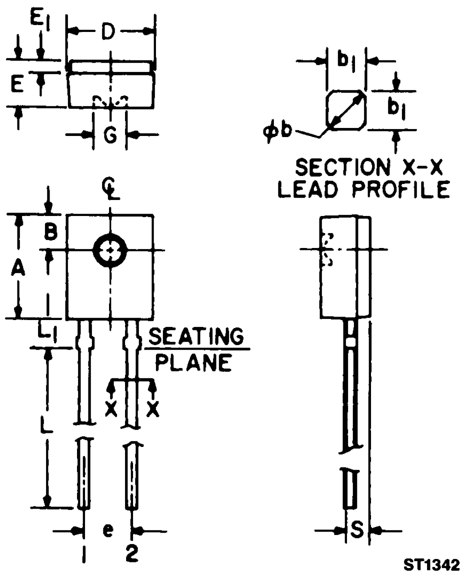
FAIRCHILD SEMICONDUCTOR™

PLASTIC SIDELOOKER PAIR

H23A1/2

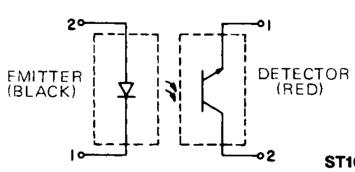
PACKAGE DIMENSIONS



ST1342

SYMBOL	MILLIMETERS		INCHES		NOTES
	MIN.	MAX.	MIN.	MAX.	
A	5.59	5.80	.220	.228	
B	1.78	NOM.	.070	NOM.	2
φb	.60	.75	.024	.030	1
b_1	.51	NOM.	.020	NOM.	1
D	4.45	4.70	.175	.185	
E	2.41	2.67	.095	.105	
E_1	.58	.69	.023	.027	
e	2.41	2.67	.095	.105	3
G	1.98	NOM.	.078	NOM.	
L	12.7	—	.500	—	
L_1	1.40	1.65	.055	.065	
S	.83	.94	.033	.037	3

PACKAGE OUTLINE



ST1611

NOTES
1. TWO LEADS. LEAD CROSS SECTION DIMENSIONS UNCONTROLLED WITHIN 1.27 mm (0.50") OF SEATING PLANE.
2. CENTERLINE OF ACTIVE ELEMENT LOCATED WITHIN .25 mm (.010") OF TRUE POSITION.
3. AS MEASURED AT THE SEATING PLANE.
4. INCH DIMENSIONS DERIVED FROM MILLIMETERS.

DESCRIPTION

The H23A is a matched emitter-detector pair which consists of a gallium arsenide infrared emitting diode and a silicon phototransistor. The clear epoxy packaging system is designed to optimize the mechanical resolution, coupling efficiency, cost, and reliability. The devices are marked with a color dot for easy identification of the emitter and detector.

FEATURES

- Good optical to mechanical alignment
- Color dot for easy recognition of LED and phototransistor
- Low cost

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ABSOLUTE MAXIMUM RATINGS (T_A = 25°C Unless Otherwise Specified)

Storage Temperature . . . . . −55°C to +100°C
Operating Temperature . . . . . −55°C to +100°C
Soldering:
Lead Temperature (Iron) . . . . . 240°C for 5 sec.[3,4,5]
Lead Temperature (Flow) . . . . . 260°C for 10 sec.[3,4,5]

INPUT DIODE
Continuous Forward Current . . . . . 60 mA
Forward Current (pw, 1µS; 33 Hz) . . . . . 3 A
Reverse Voltage . . . . . 6.0 Volts
Power Dissipation . . . . . 100mW[1]

OUTPUT TRANSISTOR
Collector-Emitter Voltage . . . . . 30 Volts
Emitter-Collector Voltage . . . . . 6 Volts
Power Dissipation . . . . . 150 mW [2]

ELECTRICAL CHARACTERISTICS (T_A = 25°C Unless Otherwise Specified)

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNITS	TEST CONDITIONS
INPUT DIODE						
Forward Voltage	V_F	—		1.7	V	I_F = 60 mA
Reverse Leakage Current	I_R	—		10	µA	V_R = 6V
Reverse Breakdown Voltage	BV_R	6.0		—	V	I_R = 10µA
OUTPUT TRANSISTOR						
Emitter-Collector Breakdown	BV_{ECO}	6.0		—	V	I_E = 100µA
Collector-Emitter Breakdown	BV_{CEO}	30		—	V	I_C = 10 mA
Collector-Emitter Leakage	I_{CEO}	—		100	nA	V_{CE} = 10 V
COUPLED						
On-State Collector Current	$I_{C(ON)}$		See page 3.			
Saturation Voltage	$V_{CE(SAT)}$		See page 3.			
Turn-On Time	t_{on}		150		µS	I_F=30 mA, V_{CC}=5V R_L=2.5KΩ
Turn-Off Time	t_{off}		150		µS	I_F=30 mA, V_{CC}=5V R_L=2.5KΩ

NOTES

1. *Derate power dissipation linearly 1.33mW/°C above 25°C.*
2. *Derate power dissipation linearly 2.00mW/°C above 25°C.*
3. *RMA flux is recommended.*
4. *Methanol or Isopropyl alcohols are recommended as cleaning agents.*
5. *Soldering iron tip 1/16″ (1.6 mm) minimum from housing.*
6. *Coupled characteristics are measured at a separation distance of .155″ (4 mm) with the lenses of the emitter and detector on a common axis within 0.1mm and parallel within 5°.*

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PLASTIC SIDELOOKER PAIR

H23A1/2

$I_{C(ON)}$ and $V_{CE(SAT)}$ TABLE

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNITS	TEST CONDITIONS
ON-STATE COLLECTOR CURRENT						
H23A1	$I_{C(ON)}$	1.5	—	—	mA	I_F = 30mA, V_{CE} = 5V (6)
H23A2	$I_{C(ON)}$	0.5	—	—	mA	I_F = 30mA, V_{CE} = 5V (6)
SATURATION VOLTAGE						
H23A1	$V_{CE(SAT)}$	—	—	0.40	V	I_F = 30mA, I_C = 1.0mA (6)
H23A2	$V_{CE(SAT)}$	—	—	0.40	V	I_F = 30mA, I_C = .4mA (6)

TYPICAL CHARACTERISTICS

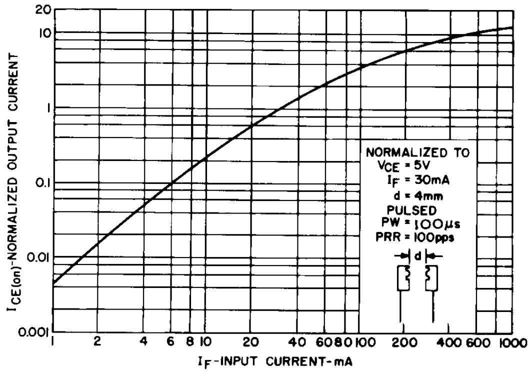

Fig. 1. Output Current vs. Input Current

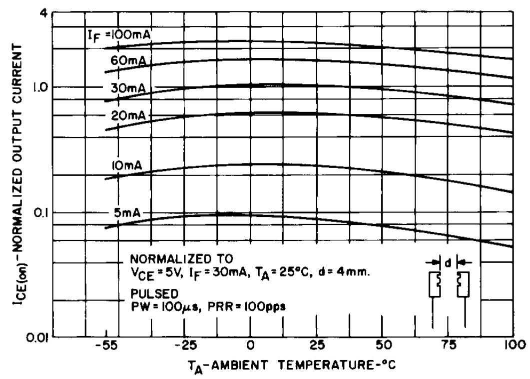

Fig. 2. Output Current vs. Temperature

ST1220

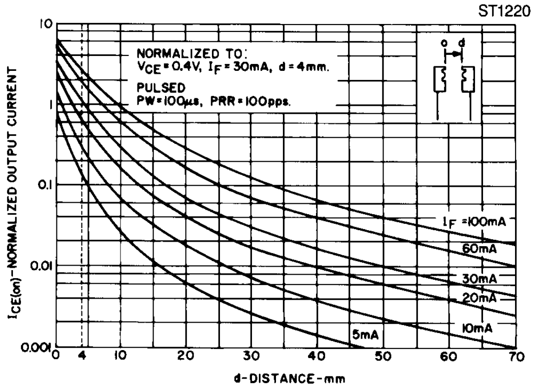

Fig. 3. Output Current vs. Distance

ST1225

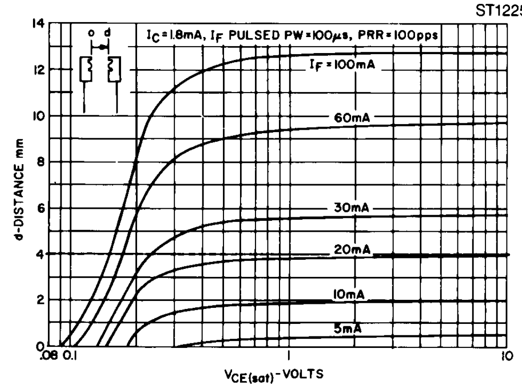

Fig. 4. $V_{CE(SAT)}$ vs. Distance

ST1221

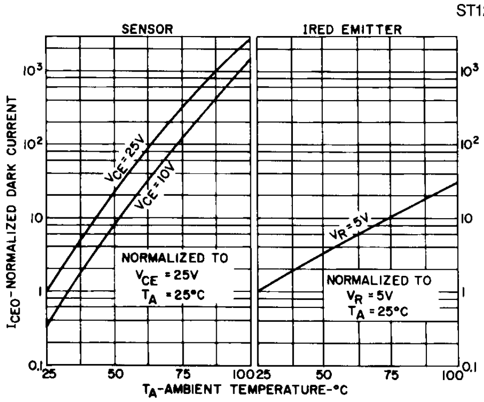

Fig. 5. Leakage Currents vs. Temperature

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ST1224

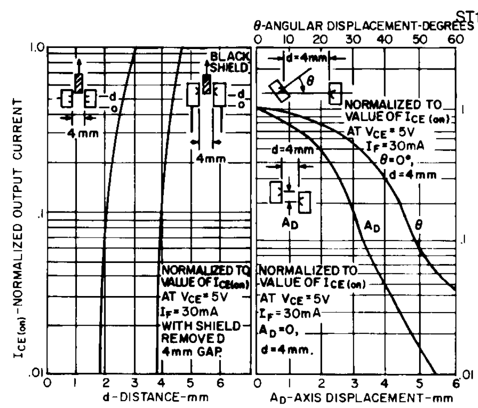

Fig 6A. Output Current vs. Shield Distance

6B. Output Current vs. Displacement (Angular & Axis)

ST1223

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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.