

Matched Emitter-Detector pair H23A1-H23A2

The GE Solid State H23A1 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.

absolute maximum ratings: (25°C)

EMITTER-DETECTOR PAIR

Storage Temperature	T _{STG}	-55°C to +100°C
Operating Temperature	T _J	-55°C to +100°C
Lead Soldering Temperature	T _L	260°C
(5 seconds maximum)		

INFRARED EMITTING DIODE

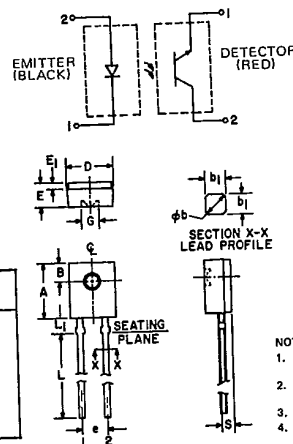
Power Dissipation	P _E	*100	mW
Forward Current	I _F	60	mA
(Continuous)			
Forward Current (Peak)	I _F	3	A
(Pulse Width ≤ 1μs PRR ≤ 300 pps)			
Reverse Voltage	V _R	6	V

*Derate 1.33 mW/°C above 25°C ambient.

PHOTOTRANSISTOR

Power Dissipation	P _D	**150	mW
Collector Current	I _C	100	mA
(Continuous)			
Collector-Emitter	V _{CEO}	30	V
Voltage			
Emitter-Collector	V _{ECO}	6	V
Voltage			

**Derate 2.0 mW/°C above 25°C ambient.



SYM	MILLI-METERS		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
b1	.51	NOM.	.020	NOM.	
D	4.45	4.70	.175	.185	
E	2.41	2.67	.095	.105	
E1	.58	.69	.023	.027	
*E	2.41	2.67	.095	.105	3
G	1.98	NOM.	.078	NOM.	
L	12.7	—	.500	—	
L1	1.40	1.65	.055	.065	
S	.63	.84	.033	.037	3

NOTES

- Two leads. Lead cross section dimensions uncontrolled within 1.27 MM (.050") of seating plane.
- Consistency of active element located within .25 MM (.010") of true position.
- As measured at the seating plane.
- Inch dimensions derived from millimeters.

individual electrical characteristics (25°C) (See Note 1)

EMITTER	MIN.	TYP.	MAX.	UNITS
Reverse Breakdown Voltage V _{(BR)R} I _R = 10μA	6	—	—	V
Forward Voltage V _F I _F = 60 mA	—	—	1.7	V
Reverse Current I _R V _R = 5V	—	—	100	nA
Capacitance C _i V = 0, f = 1 MHz	—	30	—	pF

DETECTOR	MIN.	TYP.	MAX.	UNITS
Breakdown Voltage V _{(BR)CEO} I _C = 1 mA	30	—	—	V
Breakdown Voltage V _{(BR)ECO} I _E = 100μA	6	—	—	V
Collector Dark Current I _{CEO} V _{CE} = 25V	—	—	100	nA
Capacitance C _{ce} V _{CE} = 5V, f = 1 MHz	—	3.3	5	pF

coupled electrical characteristics (25°C) (See Note 1)

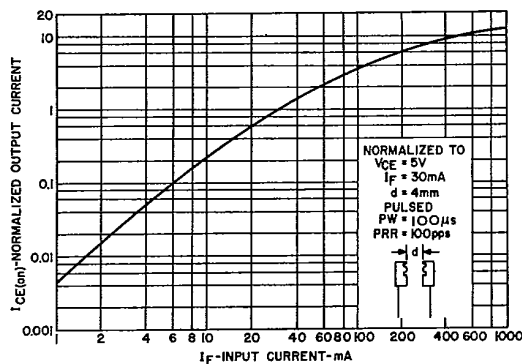
Note: Coupled electrical characteristics are measured at a separation distance of 4mm (.155 inches) with the lenses of the emitter and detector on a common axis within 0.1mm and parallel within 5°.

		MIN.	TYP.	MAX.	UNITS
I _{CE(on)}	I _F = 30mA, V _{CE} = 5V	1.5	—	—	mA
V _{CE(sat)}	I _F = 30mA, I _C = 1.8mA	1.0	—	—	mA
	I _F = 30mA, I _C = .5mA	—	—	0.40	V
t _{on}	V _{CC} = 5V, I _F = 30mA, R _L = 2.5KΩ	—	—	0.40	V
t _{off}	V _{CC} = 5V, I _F = 30mA, R _L = 2.5KΩ	—	8	—	μs
		—	50	—	μs

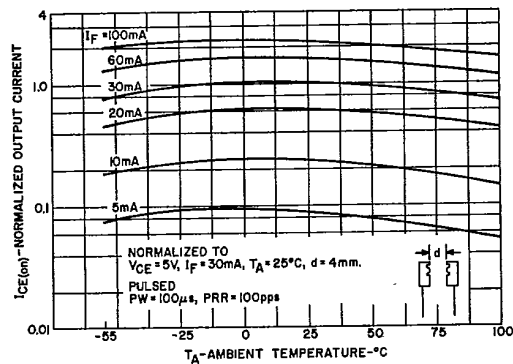
Note 1: Stray irradiation can alter values of characteristics. Adequate shielding should be provided.

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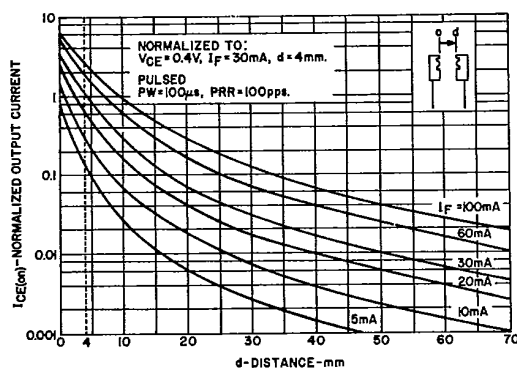
TYPICAL CHARACTERISTICS



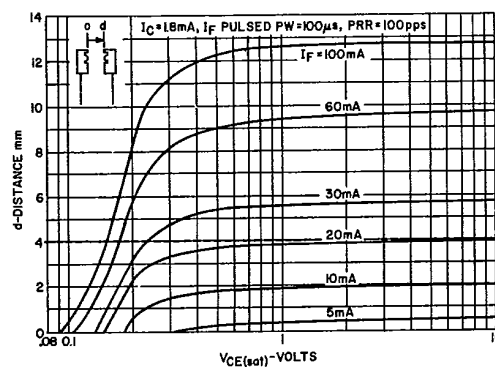
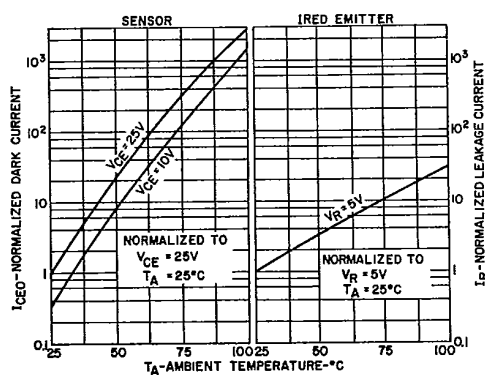
1. OUTPUT CURRENT VS. INPUT CURRENT



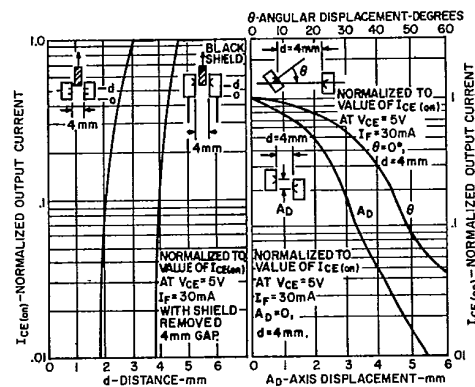
2. OUTPUT CURRENT VS. TEMPERATURE



3. OUTPUT CURRENT VS. DISTANCE

4. $V_{CE(sat)}$ VS. DISTANCE

5. LEAKAGE CURRENTS VS. TEMPERATURE



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