

Optoelectronic Specifications

T-41-71

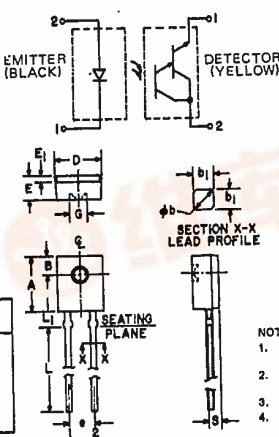
Matched Emitter-Detector Pair H23B1

The GE Solid State H23B1 is a matched emitter-detector pair which consists of a gallium arsenide, infrared emitting diode and a silicon, darlington connected, 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 < 300pps)			
Reverse Voltage	V _R	6	V
*Derate 1.33 mW/°C above 25°C ambient.			



SYM	MILLI-METERS		INCHES		NOTES
	MIN	MAX	MIN	MAX	
A	6.60	6.80	.220	.228	
B	1.78	NOM.	.070	NOM.	2
φb	.80	.75	.024	.030	1
b ₁	.61	NOM.	.020	NOM.	1
D	4.45	4.70	.175	.185	
E	2.41	2.67	.095	.105	
E ₁	.68	.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	1.85	.055	.068	
s	.83	.84	.033	.037	3

- NOTES:
- Two leads. Lead cross section dimensions uncontrolled within 1.27 MM (.050") of seating plane.
 - Centerline of active element located within .26 MM (.010") of true position.
 - As measured at the seating plane
 - Lead dimensions derived from millimeters.

DARLINGTON CONNECTED PHOTOTRANSISTOR			
Power Dissipation	P _D	**150	mW
Collector Current	I _C	100	mA
(Continuous)			
Collector-Emitter Voltage	V _{CEO}	30	V
Emitter-Collector Voltage	V _{ECO}	7	V
**Derate 2.0 mW/°C above 25°C ambient.			

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

EMITTER	MIN.	TYP.	MAX.	UNITS	DETECTOR	MIN.	TYP.	MAX.	UNITS
Reverse Breakdown Voltage	6	—	—	V	Breakdown Voltage	30	—	—	V
V _{(BR)R} I _R = 10μA					V _{(BR)CEO} I _C = 1 mA				
Forward Voltage	—	—	1.7	V	Breakdown Voltage	7	—	—	V
V _F I _F = 60 mA					V _{(BR)ECO} I _E = 100 μA				
Reverse Current	—	—	100	nA	Collector Dark Current	—	—	100	nA
I _R V _R = 5V					I _{CEO} V _{CE} = 25 V				
Capacitance	—	30	—	pF	Capacitance	—	5	8	pF
C _i V = 0, f = 1 MHz					C _{ce} V _{CE} = 5V, f = 1 MHz				

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

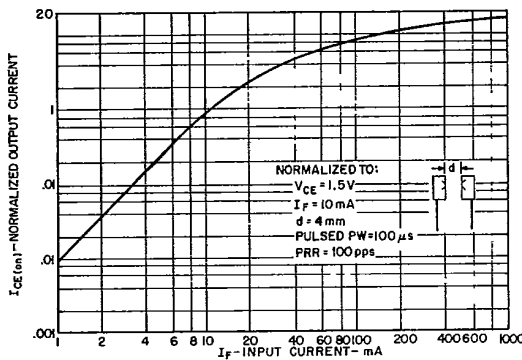
Note: Coupled electrical characteristics are measured at a separation distance of 4mm (.155 inches) with the lenses of the emitter and detector on a common axis within 0.1mm and parallel within 5°.

		MIN.	TYP.	MAX.	UNITS
I _{CE(on)}	I _F = 10mA, V _{CE} = 1.5V	7.5	—	—	mA
V _{CE(sat)}	I _F = 10mA, I _C = 1.8 mA	—	—	1.0	V
t _{on}	V _{CC} = 5V, I _F = 10mA, R _L = 750Ω	—	45	—	μs
t _{off}	V _{CC} = 5V, I _F = 10mA, R _L = 750Ω	—	250	—	μs

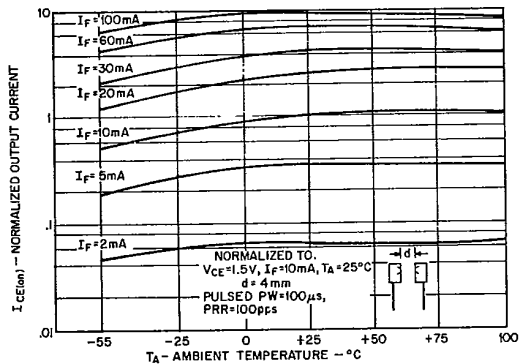
Note 1: Stray irradiation can alter values of characteristics. Adequate shielding should be provided.

TYPICAL CHARACTERISTICS

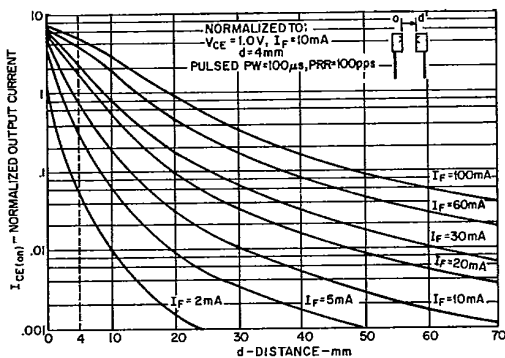
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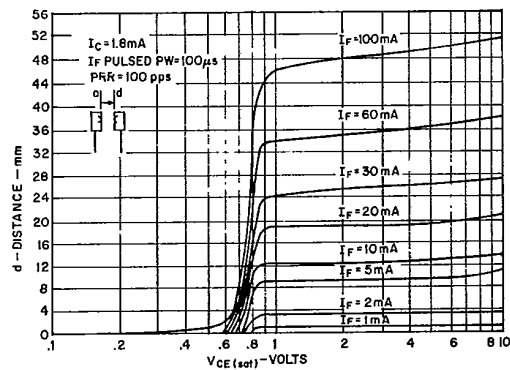
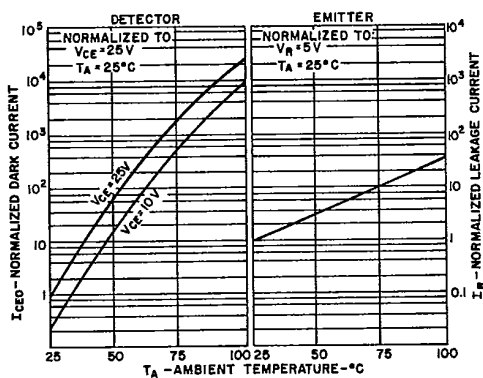
1. OUTPUT CURRENT VS. INPUT CURRENT



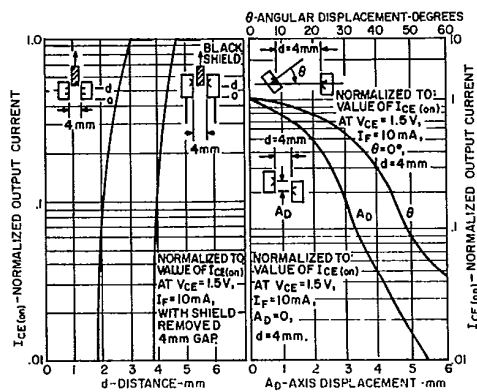
2. OUTPUT CURRENT VS. TEMPERATURE



3. OUTPUT CURRENT VS. DISTANCE

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

5. LEAKAGE CURRENTS VS. TEMPERATURE

6A. OUTPUT CURRENT
VS.
SHIELD DISTANCE6B. OUTPUT CURRENT
VS.
DISPLACEMENT
(ANGULAR & AXIS)

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