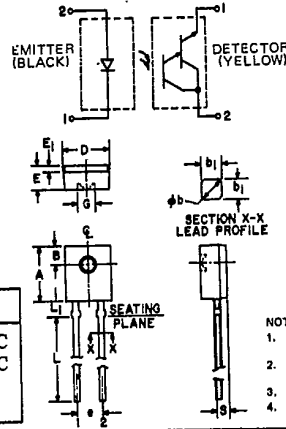


Matched Emitter-Detector Pair H23B1

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.



SYM	MILLI-METERS		INCHES		NOTES
	MIN	MAX	MIN	MAX	
A	5.50	5.80	.220	.228	
B	1.78	NOM.	.070	NOM.	2
φb	.80	.75	.024	.030	1
b1	.61	NOM.	.020	NOM.	1
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	.83	.94	.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 .25 MM (.010") of true position.
 - As measured at the seating plane.
 - Inch dimensions derived from millimeters.

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 (Continuous)	I _F	60	mA
Forward Current (Peak) (Pulse Width < 1μs, PRR < 300pps)	I _F	3	A
Reverse Voltage	V _R	6	V
*Derate 1.33 mW/°C above 25°C ambient.			

DARLINGTON CONNECTED PHOTOTRANSISTOR			
Power Dissipation	P _D	**150	mW
Collector Current (Continuous)	I _C	100	mA
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 V _{(BR)R} I _R = 10μA	6	-	-	V	Breakdown Voltage V _{(BR)CEO} I _C = 1 mA	30	-	-	V
Forward Voltage V _F I _F = 60 mA	-	-	1.7	V	Breakdown Voltage V _{(BR)ECO} I _E = 100 μA	7	-	-	V
Reverse Current I _R V _R = 5V	-	-	100	nA	Collector Dark Current I _{CEO} V _{CE} = 25 V	-	-	100	nA
Capacitance C ₁ V = 0, f = 1 MHz	-	30	-	pF	Capacitance C _{ce} V _{CE} = 5V, f = 1 MHz	-	5	8	pF

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

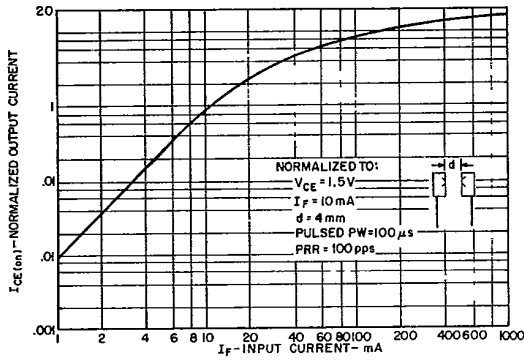
Note: Coupled electrical characteristics are measured at a separation distance of 4mm (.155 inches) with the lenses of the emitter and detector on a common axis within 0.1mm and parallel within 5°.

		MIN.	TYP.	MAX.	UNITS
I _{CE(on)}	I _F = 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

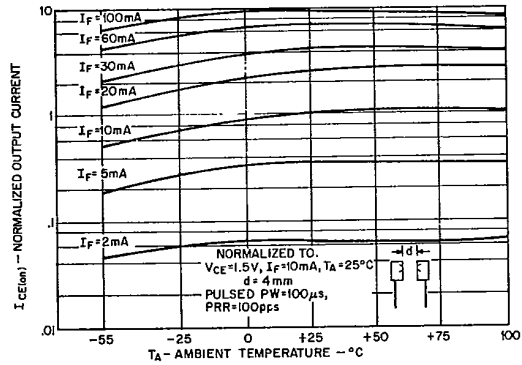
Note 1: Stray irradiation can alter values of characteristics. Adequate shielding should be provided.

TYPICAL CHARACTERISTICS

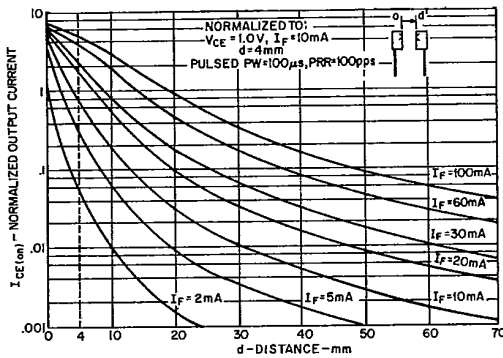
T.41.71



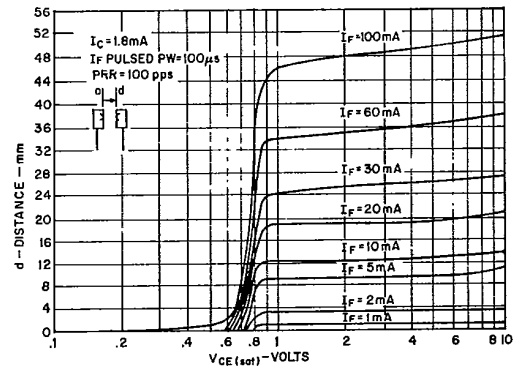
1. OUTPUT CURRENT VS. INPUT CURRENT



2. OUTPUT CURRENT VS. TEMPERATURE

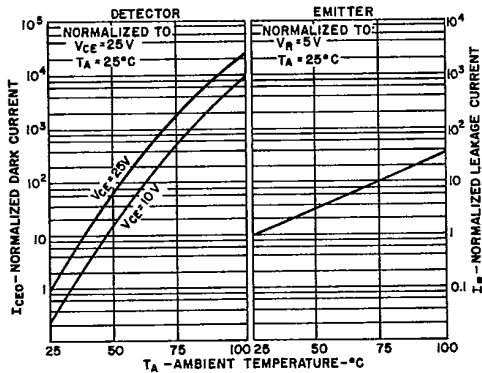


3. OUTPUT CURRENT VS. DISTANCE

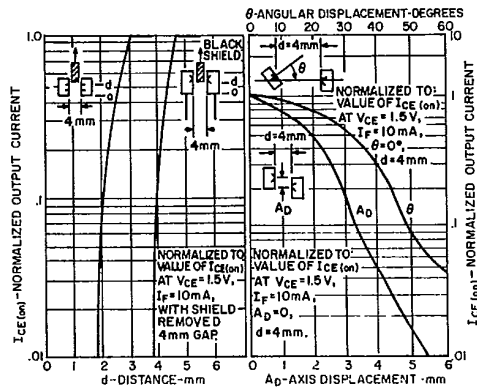


4. V_{CE(sat)} VS. DISTANCE

10



5. LEAKAGE CURRENTS VS. TEMPERATURE



6A. OUTPUT CURRENT VS. SHIELD DISTANCE

6B. OUTPUT CURRENT VS. DISPLACEMENT (ANGULAR & AXIS)