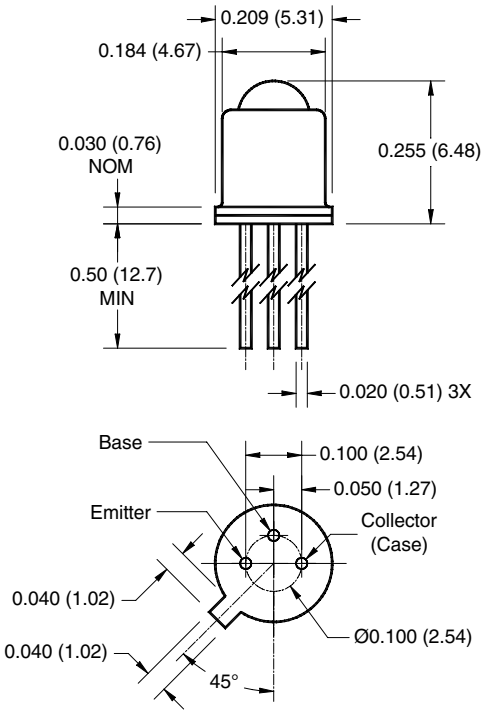
FAIRCHILD
SEMICONDUCTOR®

BPW38
HERMETIC SILICON PHOTODARLINGTON

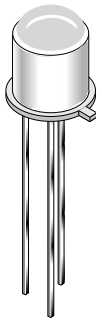
PACKAGE DIMENSIONS



NOTES:

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

FEATURES

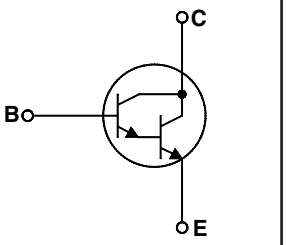


- Hermetically sealed package
- Narrow reception angle
- European “Pro Electron” registered

DESCRIPTION

- The BPW38 is a silicon photodarlington mounted in narrow angle TO-18 package.

SCHEMATIC



1. Derate power dissipation linearly 3.00 mW/°C above 25°C ambient.
2. Derate power dissipation linearly 6.00 mW/°C above 25°C case.
3. RMA flux is recommended.
4. Methanol or isopropyl alcohols are recommended as cleaning agents.
5. Soldering iron tip 1/16” (1.6mm) minimum from housing.
6. As long as leads are not under any stress or spring tension.
7. Light source is a GaAs LED emitting light at a peak wavelength of 940 nm.

ABSOLUTE MAXIMUM RATINGS (T_A = 25°C unless otherwise specified)

Parameter	Symbol	Rating	Unit
Operating Temperature	T_{OPR}	-65 to +125	°C
Storage Temperature	T_{STG}	-65 to +150	°C
Soldering Temperature (Iron)(3,4,5 and 6)	T_{SOL-I}	240 for 5 sec	°C
Soldering Temperature (Flow)(3,4 and 6)	T_{SOL-F}	260 for 10 sec	°C
Collector-Emitter Voltage	V_{CEO}	25	V
Collector-Base Voltage	V_{CBO}	25	V
Emitter-Base Voltage	V_{EBO}	12	V
Power Dissipation (T_A = 25°C)(1)	P_D	300	mW
Power Dissipation (T_C = 25°C)(2)	P_D	600	mW

ELECTRICAL / OPTICAL CHARACTERISTICS (T_A =25°C) (All measurements made under pulse conditions)

PARAMETER	TEST CONDITIONS	SYMBOL	MIN	TYP	MAX	UNITS
Collector-Emitter Breakdown	I_C = 10 mA, Ee = 0	BV_{CEO}	25	—	—	V
Emitter-Base Breakdown	I_E = 100 µA, Ee = 0	BV_{EBO}	12	—	—	V
Collector-Base Breakdown	I_C = 100 µA, Ee = 0	BV_{CBO}	25	—	—	V
Collector-Emitter Leakage	V_{CE} = 12 V, Ee = 0	I_{CEO}	—	—	100	nA
Reception Angle at 1/2 Sensitivity		Θ	—	±8	—	Deg.
On-State Collector Current	Ee = 0.125 mW/cm^2 V_{CE} = 5 V(7)	$I_{C(ON)}$	7.5	—	—	mA
Rise Time	I_C = 10 mA, V_{CC} = 10 V R_L = 100 Ω	t_r	—	300	—	µs
Fall Time	I_C = 10 mA, V_{CC} = 10 V R_L = 100 Ω	t_f	—	250	—	µs

TYPICAL PERFORMANCE CURVES

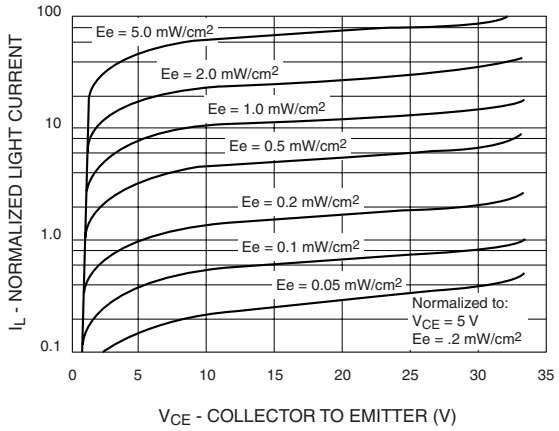


Fig. 1 Light Current vs. Collector to Emitter Voltage

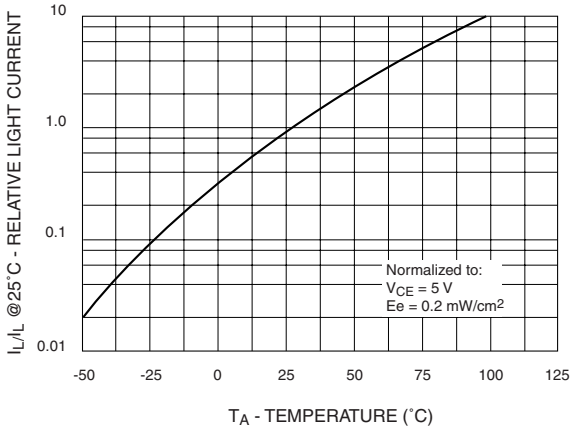


Fig. 2 Relative Light Current vs. Ambient Temperature

TYPICAL PERFORMANCE CURVES

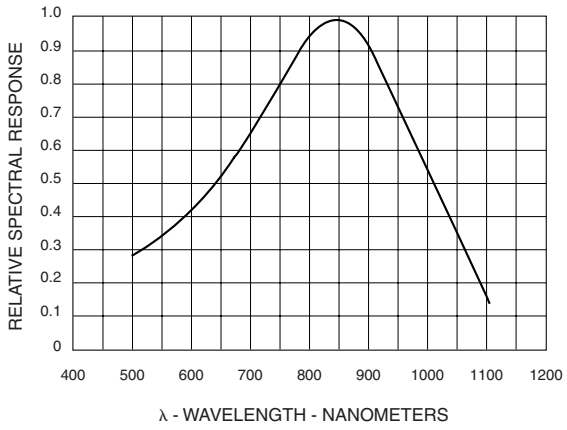


Fig. 3 Spectral Response Curve

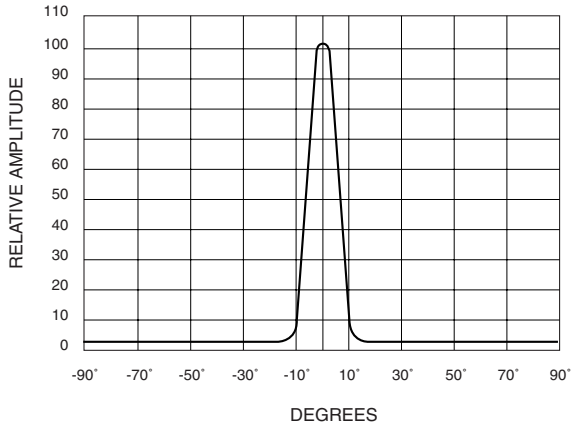


Fig. 4 Angular Response

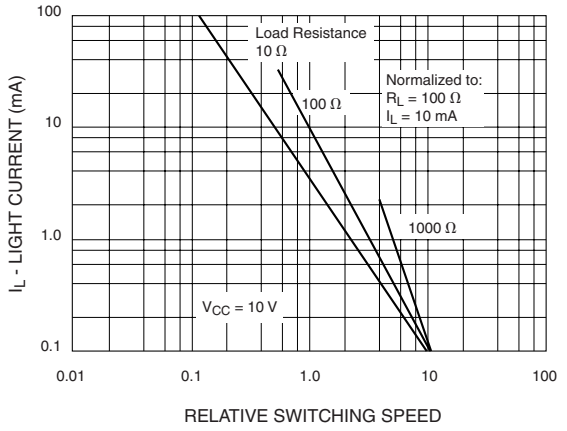


Fig. 5 Light Current vs. Relative Switching Speed

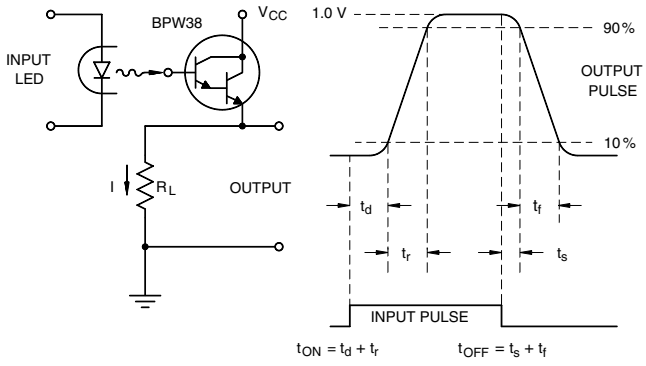


Fig. 6 Test Circuit and Voltage Waveforms

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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.