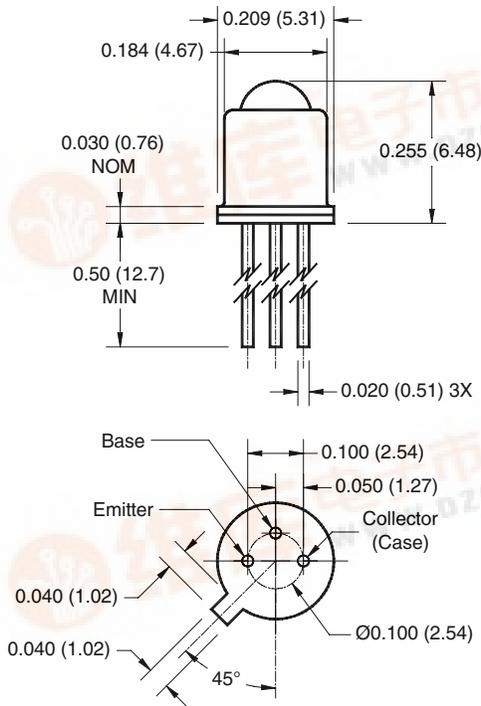


PACKAGE DIMENSIONS

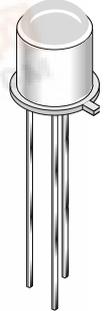


NOTES:

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

FEATURES

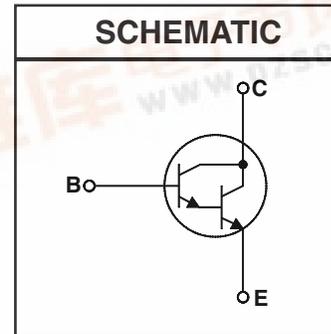
- Hermetically sealed package
- Narrow reception angle
- European "Pro Electron" registered



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 ($T_A = 25^\circ\text{C}$ 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 ($T_A = 25^\circ\text{C}$) ⁽¹⁾	P_D	300	mW
Power Dissipation ($T_C = 25^\circ\text{C}$) ⁽²⁾	P_D	600	mW

ELECTRICAL / OPTICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$) (All measurements made under pulse conditions)						
PARAMETER	TEST CONDITIONS	SYMBOL	MIN	TYP	MAX	UNITS
Collector-Emitter Breakdown	$I_C = 10\text{ mA}$, $E_e = 0$	BV_{CEO}	25	—	—	V
Emitter-Base Breakdown	$I_E = 100\ \mu\text{A}$, $E_e = 0$	BV_{EBO}	12	—	—	V
Collector-Base Breakdown	$I_C = 100\ \mu\text{A}$, $E_e = 0$	BV_{CBO}	25	—	—	V
Collector-Emitter Leakage	$V_{CE} = 12\text{ V}$, $E_e = 0$	I_{CEO}	—	—	100	nA
Reception Angle at 1/2 Sensitivity		θ	—	± 8	—	Deg.
On-State Collector Current	$E_e = 0.125\text{ mW/cm}^2$ $V_{CE} = 5\text{ V}^{(7)}$	$I_{C(ON)}$	7.5	—	—	mA
Rise Time	$I_C = 10\text{ mA}$, $V_{CC} = 10\text{ V}$ $R_L = 100\ \Omega$	t_r	—	300	—	μs
Fall Time	$I_C = 10\text{ mA}$, $V_{CC} = 10\text{ V}$ $R_L = 100\ \Omega$	t_f	—	250	—	μs

TYPICAL PERFORMANCE CURVES

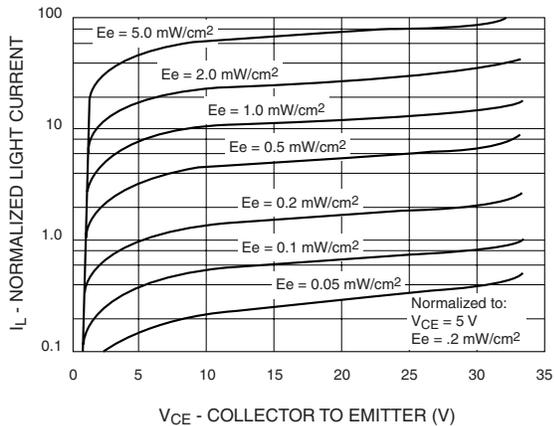


Fig. 1 Light Current vs. Collector to Emitter Voltage

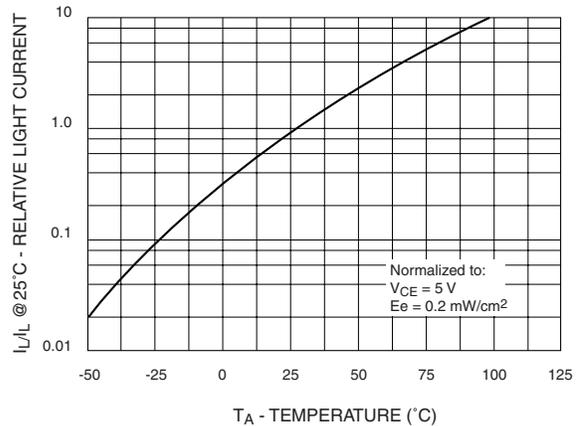


Fig. 2 Relative Light Current vs. Ambient Temperature

TYPICAL PERFORMANCE CURVES

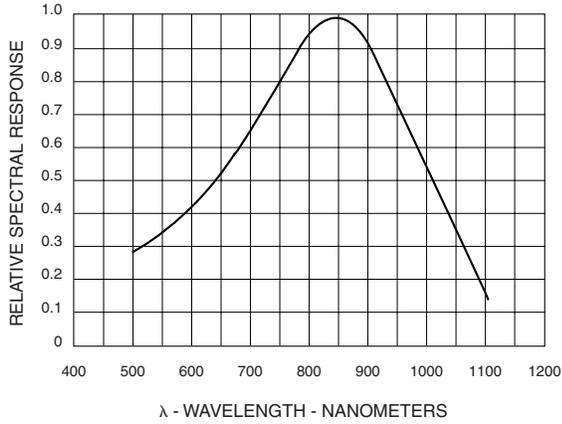


Fig. 3 Spectral Response Curve

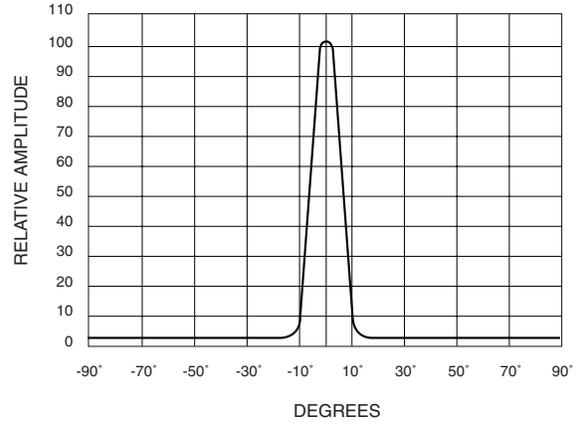


Fig. 4 Angular Response

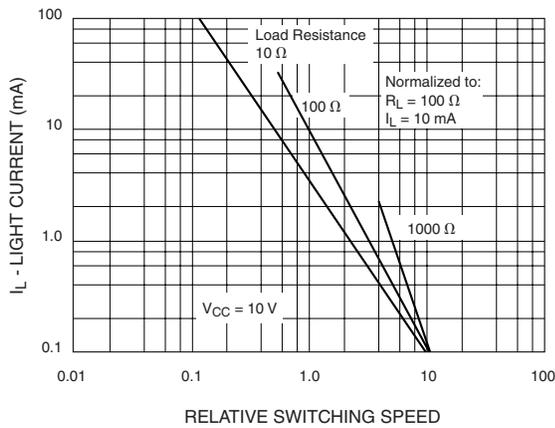


Fig. 5 Light Current vs. Relative Switching Speed

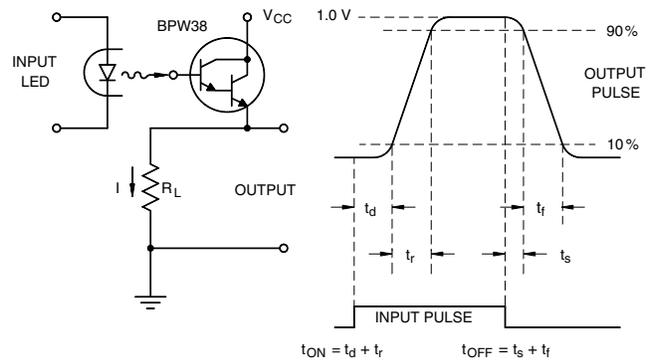


Fig. 6 Test Circuit and Voltage Waveforms

DISCLAIMER

FAIRCHILD SEMICONDUCTOR RESERVES THE RIGHT TO MAKE CHANGES WITHOUT FURTHER NOTICE TO ANY PRODUCTS HEREIN TO IMPROVE RELIABILITY, FUNCTION OR DESIGN. FAIRCHILD DOES NOT ASSUME ANY LIABILITY ARISING OUT OF THE APPLICATION OR USE OF ANY PRODUCT OR CIRCUIT DESCRIBED HEREIN; NEITHER DOES IT CONVEY ANY LICENSE UNDER ITS PATENT RIGHTS, NOR THE RIGHTS OF OTHERS.

LIFE SUPPORT POLICY

FAIRCHILD'S PRODUCTS ARE NOT AUTHORIZED FOR USE AS CRITICAL COMPONENTS IN LIFE SUPPORT DEVICES OR SYSTEMS WITHOUT THE EXPRESS WRITTEN APPROVAL OF THE PRESIDENT OF FAIRCHILD SEMICONDUCTOR CORPORATION. As used herein:

1. Life support devices or systems are devices or systems which, (a) are intended for surgical implant into the body, or (b) support or sustain life, and (c) whose failure to perform when properly used in accordance with instructions for use provided in labeling, can be reasonably expected to result in a significant injury of the user.
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.