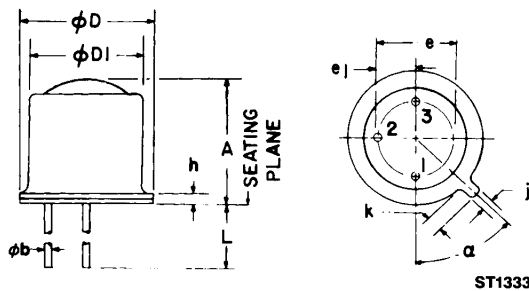


**PACKAGE DIMENSIONS**



ST1333

**DESCRIPTION**

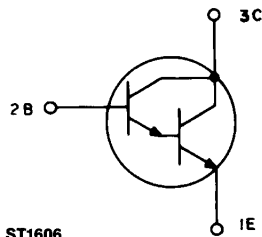
The BPW38 is a silicon photodarlington mounted in a narrow angle TO-18 package.

**FEATURES**

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

SYMBOL	INCHES		MILLIMETERS		NOTES
	MIN.	MAX.	MIN.	MAX.	
A	.225	.255	5.71	6.47	
$\phi b$	.016	.021	.407	.533	
$\phi D$	.209	.230	5.31	5.84	
$\phi D_1$	.178	.195	4.52	4.96	
e	.100 NOM		2.54 NOM		2
$e_1$	.050 NOM		1.27 NOM		2
h	—	.030	—	.76	
j	.036	.046	.92	1.16	
k	.028	.048	.71	1.22	1
L	.500	—	12.7	—	
$\alpha$	45°	45°	45°	45°	3

**PACKAGE OUTLINE**



ST1606

NOTES:

1. MEASURED FROM MAXIMUM DIAMETER OF DEVICE.
2. LEADS HAVING MAXIMUM DIAMETER .021" (.533mm) MEASURED IN GAUGING PLANE .054" + .001" - .000 (1.37 + .025 - .000mm) BELOW THE REFERENCE PLANE OF THE DEVICE SHALL BE WITHIN .007" (.778mm) THEIR TRUE POSITION RELATIVE TO MAXIMUM WIDTH TAB.
3. FROM CENTERLINE TAB.



## HERMETIC SILICON PHOTODARLINGTON

<b>ABSOLUTE MAXIMUM RATINGS</b> ( $T_A = 25^\circ\text{C}$ Unless Otherwise Specified)	
Storage Temperature .....	$-65^\circ\text{C}$ to $+150^\circ\text{C}$
Operating Temperature .....	$-65^\circ\text{C}$ to $+125^\circ\text{C}$
Soldering:	
Lead Temperature (Iron) .....	$240^\circ\text{C}$ for 5 sec. <sup>(3,4,5,6)</sup>
Lead Temperature (Flow) .....	$260^\circ\text{C}$ for 10 sec. <sup>(3,4,6)</sup>
Collector-Emitter Breakdown Voltage .....	25 Volts
Collector-Base Breakdown Voltage .....	25 Volts
Emitter-Base Breakdown Voltage .....	12 Volts
Power Dissipation ( $T_A = 25^\circ\text{C}$ ) .....	300 mW <sup>(1)</sup>
Power Dissipation ( $T_C = 25^\circ\text{C}$ ) .....	600 mW <sup>(2)</sup>

<b>ELECTRICAL CHARACTERISTICS</b> ( $T_A = 25^\circ\text{C}$ Unless Otherwise Specified) (All measurements made under pulse conditions.)						
PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNITS	TEST CONDITIONS
Collector-Emitter Breakdown	$BV_{CEO}$	25	—	—	V	$I_C = 10\text{ mA}$ , $E_e = 0$
Emitter-Base Breakdown	$BV_{EBO}$	12	—	—	V	$I_E = 100\ \mu\text{A}$ , $E_e = 0$
Collector-Base Breakdown	$BV_{CBO}$	25	—	—	V	$I_C = 100\ \mu\text{A}$ , $E_e = 0$
Collector-Emitter Leakage	$I_{CEO}$	—	—	100	nA	$V_{CE} = 12\text{ V}$ , $E_e = 0$
Reception Angle at $\frac{1}{2}$ Sensitivity	$\theta$	—	$\pm 8$	—	Degrees	
On-State Collector Current	$I_{C(ON)}$	3.0	—	—	mA	$E_e = .05\text{ mW/cm}^2$ , $V_{CE} = 5\text{ V}$ <sup>(7,8)</sup>
Rise Time	$t_r$	—	300	—	$\mu\text{S}$	$I_C = 10\text{ mA}$ , $V_{CC} = 10\text{ V}$ , $R_L = 100\ \Omega$
Fall Time	$t_f$	—	250	—	$\mu\text{S}$	$I_C = 10\text{ mA}$ , $V_{CC} = 10\text{ V}$ , $R_L = 100\ \Omega$

<b>NOTES</b>
1. Derate power dissipation linearly $3.00\text{ mW}/^\circ\text{C}$ above $25^\circ\text{C}$ ambient.
2. Derate power dissipation linearly $6.00\text{ mW}/^\circ\text{C}$ above $25^\circ\text{C}$ case.
3. RMA flux is recommended.
4. Methanol or Isopropyl alcohols are recommended as cleaning agents.
5. Soldering iron tip $\frac{1}{16}$ " (1.6 mm) 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.
8. Figure 1 and figure 2 use light source of tungsten lamp at $2870^\circ\text{K}$ color temperature. A GaAs source of $0.05\text{ mW/cm}^2$ is approximately equivalent to a tungsten source, at $2870^\circ\text{K}$ , of $0.2\text{ mW/cm}^2$ .

**TYPICAL CHARACTERISTICS**

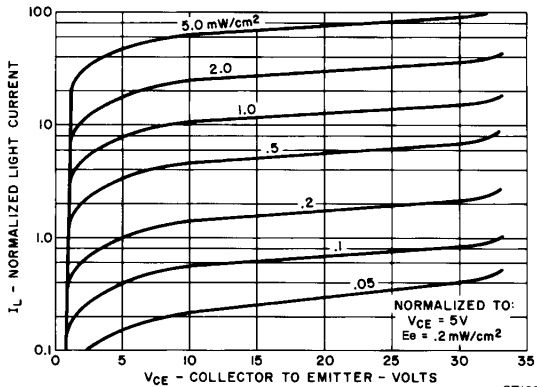


Fig. 1. Light Current vs. Collector to Emitter Voltage

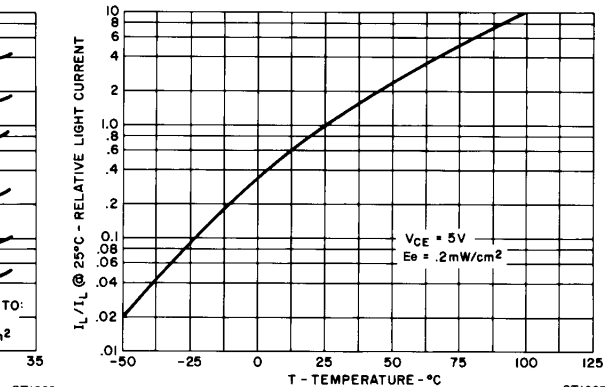


Fig. 2. Relative Light Current vs. Ambient Temperature

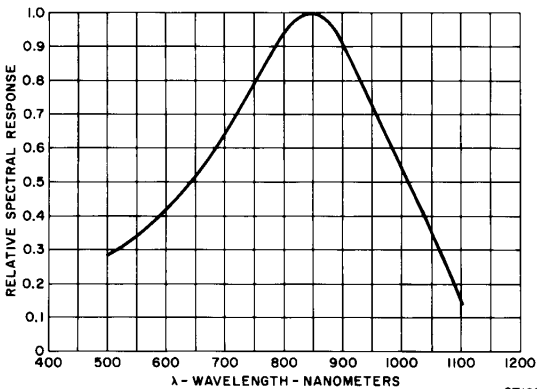


Fig. 3. Spectral Response Curve

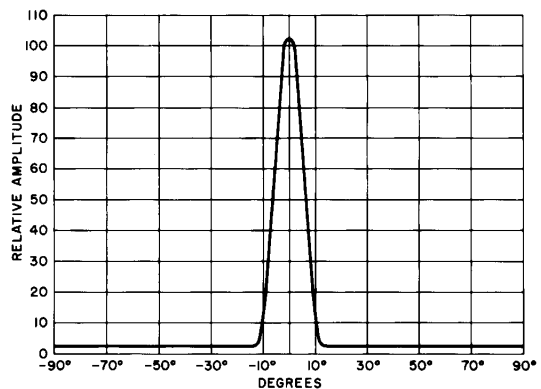


Fig. 4. Angular Response

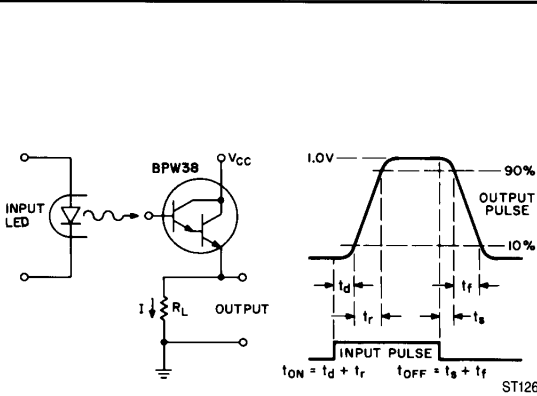


Fig. 5. Test Circuit and Voltage Waveforms

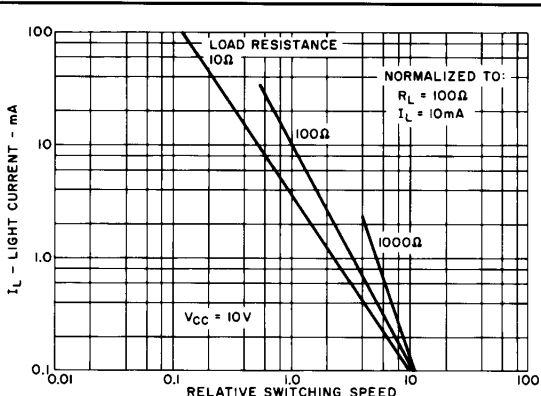


Fig. 6. Light Current vs. Relative Switching Speed