

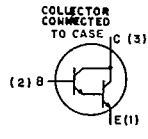
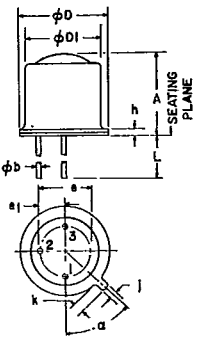
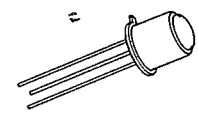
HARRIS SEMICONDUCTOR

37E D ■ 4302271 0027276 5 ■ HAS

T-41-63

Light Detector Planar Silicon Photo-Darlington Amplifier BPW38

The GE Solid State BPW38 is a supersensitive NPN Planar Silicon Photodarlington Amplifier. For many applications, only the collector and emitter leads are used; however, a base lead is provided to control sensitivity and the gain of the device. The BPW38 is a TO-18 style hermetically sealed package with lens cap and is designed to be used in opto-electronic sensing applications requiring very high sensitivity.



absolute maximum ratings: (25°C unless otherwise specified)

VOLTAGES – DARK CHARACTERISTICS

Collector to Emitter Voltage	V _{CEO}	25	volts
Collector to Base Voltage	V _{CBO}	25	volts
Emitter to Base Voltage	V _{EBO}	12	volts

CURRENTS

Light Current	I _L	200	mA
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DISSIPATIONS

Power Dissipation (T _A = 25°C)*	P _T	300	mW
Power Dissipation (T _C = 25°C)**	P _T	600	mW

TEMPERATURES

Junction Temperature	T _J	150	°C
Storage Temperature	T _{STG}	-65 to 150	°C

*Derate 2.4 mW/°C above 25°C ambient.
**Derate 4.8 mW/°C above 25°C case.

electrical characteristics: (25°C unless otherwise specified)

STATIC CHARACTERISTICS		MIN.	MAX.	
LIGHT CURRENT (V _{CE} = 5V, E _c † = 0.2 mW/cm ²)				
I _L		3	—	mA
DARK CURRENT (V _{CE} = 12V, I _B = 0)				
I _D		—	100	nA
EMITTER-BASE BREAKDOWN VOLTAGE (I _E = 100μA)				
V _{(BR)EBO}		12	—	V
COLLECTOR-BASE BREAKDOWN VOLTAGE (I _C = 100μA)				
V _{(BR)CBO}		25	—	V
COLLECTOR-EMITTER BREAKDOWN VOLTAGE (I _C = 10mA)				
V _{(BR)CEO}		25	—	V
SWITCHING CHARACTERISTICS (see Switching Circuit)				
SWITCHING SPEEDS (V _{CC} = 10V, I _L = 10 mA, R _L = 100Ω)				
DELAY TIME	t _d	—	50	μsec
RISE TIME	t _r	—	300	μsec
STORAGE TIME	t _s	—	10	μsec
FALL TIME	t _f	—	250	μsec

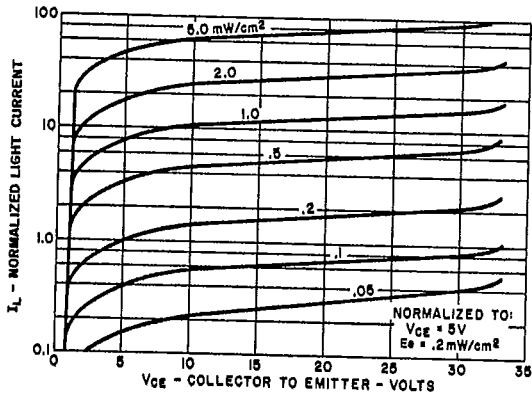
†E_c = Radiation Flux Density. Radiation source is an unfiltered tungsten filament bulb at 2870°K color temperature.
NOTE: The 2870°K radiation is 25% effective on the photodarlington; i.e., a GaAs source of 0.05 mW/cm² is equivalent to this 0.2 mW/cm² tungsten source.

SYMBOL	INCHES		MILLIMETERS		NOTES
	MIN	MAX	MIN	MAX	
A	.225	.235	5.71	6.07	
φb	.016	.021	407	533	
φD	.209	.230	5.31	5.84	
φD1	.178	.195	4.52	4.96	
e	100 NOM		2.54 NOM		2
e1	.050 NOM		1.27 NOM		2
h	.030		.76		
l	.036	.046	.92	1.16	
k	.028	.048	.71	1.22	1
L	.500		12.7		
α	45°	45°	45°	45°	3

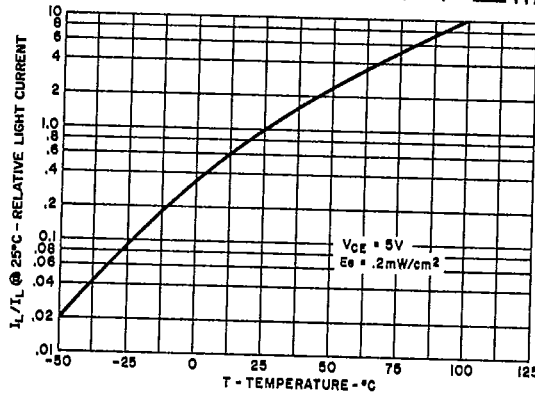
NOTES
1. Measured from maximum diameter of device.
2. Leads having maximum diameter .021" (533mm) measured in gauging plane .054" (+0.01" - 0.00137 + 0.25 - 0.000mm) below the reference plane of the device shall be within .007" (778mm) their true position relative to maximum width tab.
3. From centerline tab

T-41-63

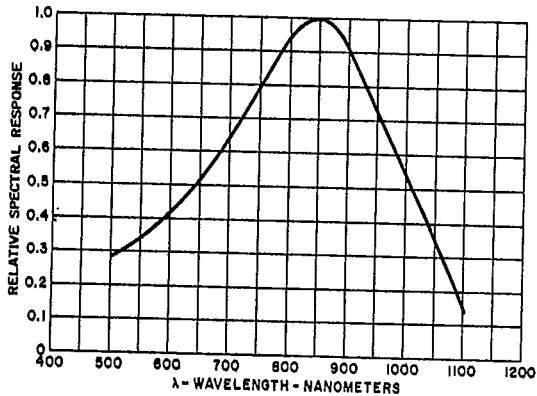
TYPICAL ELECTRICAL CHARACTERISTICS
HARRIS SEMICOND SECTOR 37E D 4302271 0027277 7 HAS



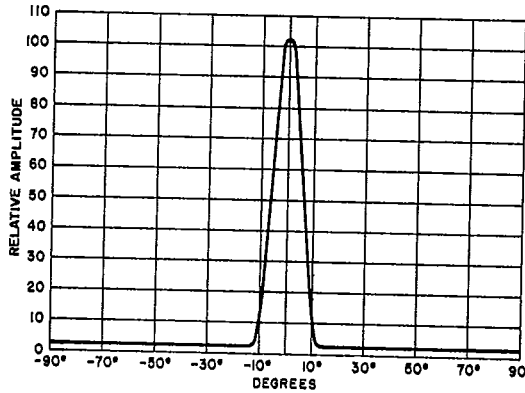
1. LIGHT CURRENT VS. COLLECTOR TO EMITTER VOLTAGE



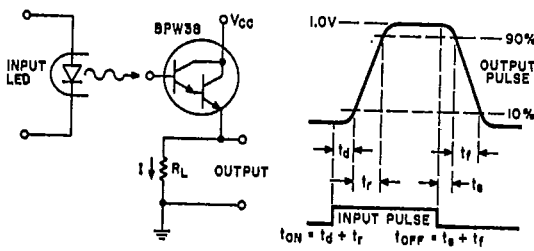
2. RELATIVE LIGHT CURRENT VS. AMBIENT TEMPERATURE



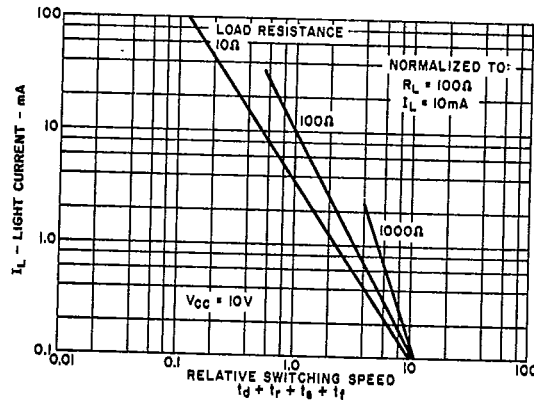
3. SPECTRAL RESPONSE CURVE



4. ANGULAR RESPONSE



5. TEST CIRCUIT AND VOLTAGE WAVEFORMS

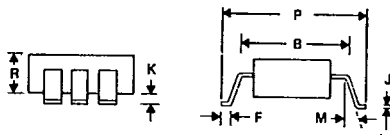
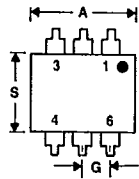


6. LIGHT CURRENT VS. RELATIVE SWITCHING SPEED

10

T-91-20

Surface-Mount Optoisolators



Surface-mount packaging for the entire 6-pin DIP optoisolator line!

Add the "SMA" or "SMB" suffix to any 6-pin optoisolator part number when ordering.

DIMENSIONAL OUTLINE NO. 298
All Surface-Mount Types

SMB (Standard)
Surface-Mount Package

SYMBOL	INCHES		MILLIMETERS		NOTES
	MIN.	MAX.	MIN.	MAX.	
A	0.330	0.350	8.38	8.89	
B	0.330 REF		8.38 REF		
F	0.020	0.040	0.508	1.02	
J	0.008	0.012	0.203	0.305	
K	0.0040	0.0098	0.102	0.249	
M	—	15°	—	15°	
P	0.375	0.395	9.53	10.03	
R	0.115	0.135	2.92	3.43	
S	0.240	0.270	6.10	6.86	
Coplanarity	0	0.002	0	0.051	1

92CS-42862

1. Coplanarity is the distance from a plane, defined by the end of the three longest legs to the end of the shortest leg.

SMA (Low Profile)
Surface-Mount Package

SYMBOL	INCHES		MILLIMETERS		NOTES
	MIN.	MAX.	MIN.	MAX.	
A	0.330	0.350	8.38	8.89	
B	0.330 REF		8.38 REF		
F	0.020	0.040	0.508	1.02	
J	0.008	0.012	0.203	0.305	
K	0.0005	0.0040	0.013	0.102	
M	—	15°	—	15°	
P	0.373	0.393	9.47	9.98	
R	0.115	0.135	2.92	3.43	
S	0.240	0.270	6.10	6.86	
Coplanarity	0	0.002	0	0.051	1

92CS-42861

1. Coplanarity is the distance from a plane, defined by the end of the three longest legs to the end of the shortest leg.

