TOSHIBA PHOTO TRANSISTOR SILICON NPN EPITAXIAL PLANAR

TPS610

FOR PHOTO SENSOR

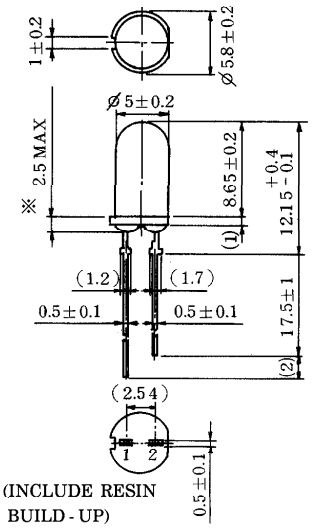
PHOTOELECTRIC COUNTER

VARIOUS KINDS OF READERS

POSITION DETECTION

- ϕ5mm epoxy resin package
- High sensitivity : I_L=250μA (TYP.)
- Half value angle : $\theta\frac{1}{2}$=±8° (TYP.)
- The TLN110 in the same size and TLN205 in the similar external size are available as infrared LEDs.

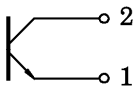
Unit in mm



JEDEC	—
EIAJ	—
TOSHIBA	0-5C1

Weight : 0.3g (TYP.)

PIN CONNECTION



1. EMITTER
2. COLLECTOR

MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Collector-Emitter Voltage	V_{CEO}	30	V
Emitter-Collector Voltage	V_{ECO}	5	V
Collector Current	I_C	50	mA
Collector Power Dissipation	P_C	150	mW
Collector Power Dissipation Derating (Ta > 25°C)	ΔP_C / °C	−2	mW / °C
Operating Temperature Range	T_{opr}	−20~75	°C
Storage Temperature Range	T_{stg}	−30~100	°C

OPTO-ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Dark Current		I_D (I_{CEO})	V_{CE}=24V, E=0	—	0.005	0.1	μA
Light Current		I_L	V_{CE}=3V, E=0.1mW / cm^2 (Note)	100	250	—	μA
Collector-Emitter Saturation Voltage		$V_{CE\ (sat)}$	I_C=50μA, E=0.1mW / cm^2 (Note)	—	0.25	0.4	V
Switching Time	Rise Time	t_r	V_{CC}=5V, I_C=2mA, R_L=100Ω	—	6	—	μs
	Fall Time	t_f		—	6	—	
Peak Sensitivity Wavelength		λ_P	—	—	800	—	nm
Half Value Angle		$\theta\frac{1}{2}$	—	—	±8	—	°

(Note) Color temperature=2870°K, Standard Tungsten Lamp

961001EAA2

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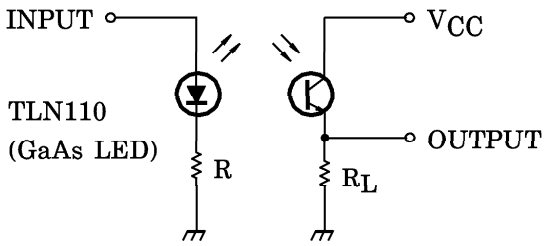
PRECAUTION

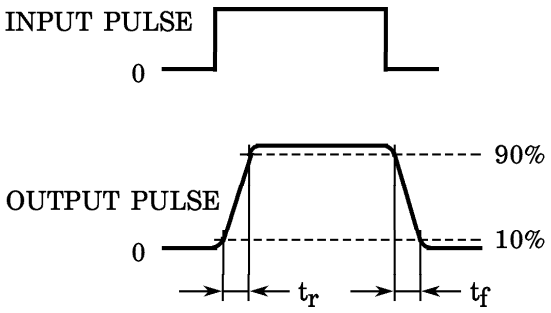
Please be careful of the followings.

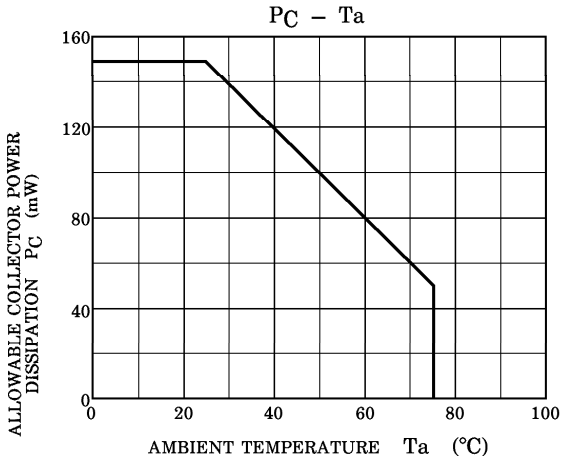
1. Soldering shall be performed at the top portion from the lead stopper.
2. Soldering temperature : 260°C MAX. Soldering time : 5s MAX.
3. When the lead is formed, the lead shall be formed at the top portion of the stopper without leaving forming stress to the body of the device. Soldering shall be performed after lead forming.

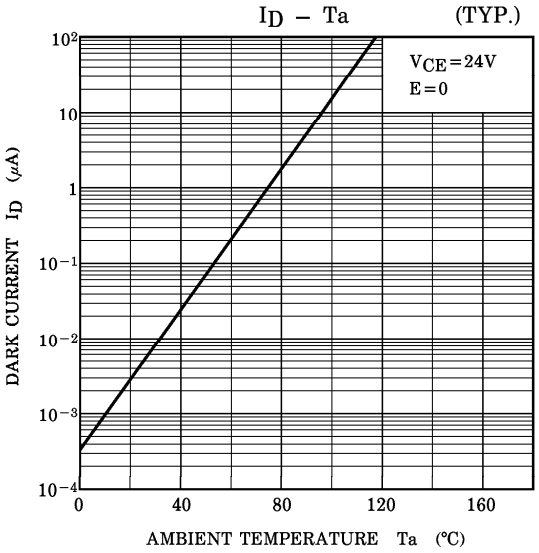
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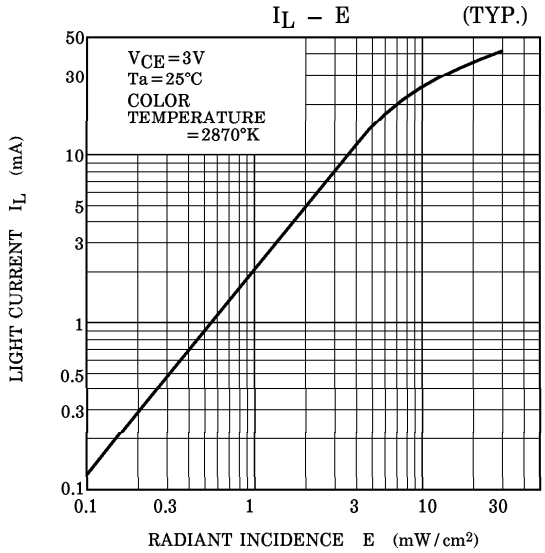
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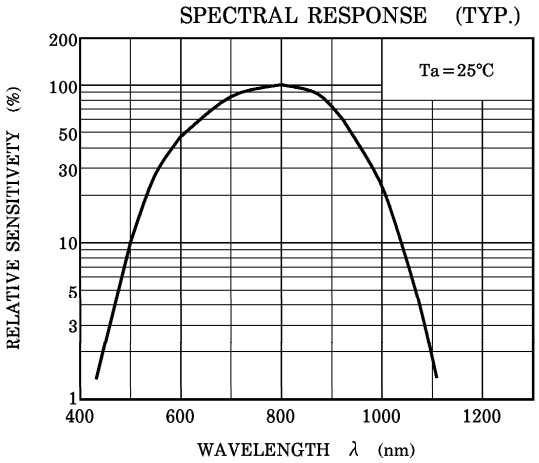

INPUT
TLN110
(GaAs LED)
R
V_{CC}
OUTPUT
R_L


INPUT PULSE
0
OUTPUT PULSE
0
90%
10%
t_r
t_f


P_C – Ta
ALLOWABLE COLLECTOR POWER DISSIPATION P_C (mW)
160
120
80
40
0
0
20
40
60
80
100
AMBIENT TEMPERATURE Ta (°C)


I_D – Ta (TYP.)
V_{CE}=24V
E=0
DARK CURRENT I_D (μA)
10^2
10
1
10^{-1}
10^{-2}
10^{-3}
10^{-4}
0
40
80
120
160
AMBIENT TEMPERATURE Ta (°C)

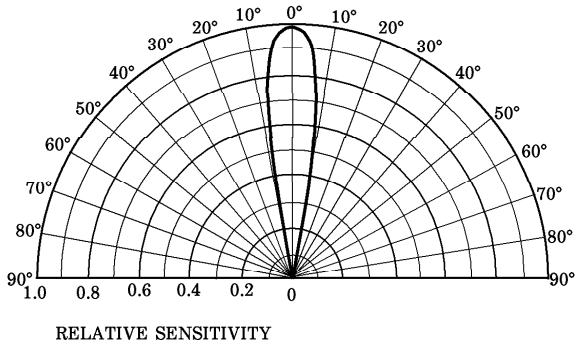

I_L – E (TYP.)
V_{CE}=3V
Ta=25°C
COLOR TEMPERATURE =2870°K
LIGHT CURRENT I_L (mA)
50
30
10
5
3
1
0.5
0.3
0.1
0.1
0.3
1
3
10
30
RADIANT INCIDENCE E (mW/cm²)


SPECTRAL RESPONSE (TYP.)
Ta=25°C
RELATIVE SENSITIVETY (%)
200
100
50
30
10
5
3
1
400
600
800
1000
1200
WAVELENGTH λ (nm)

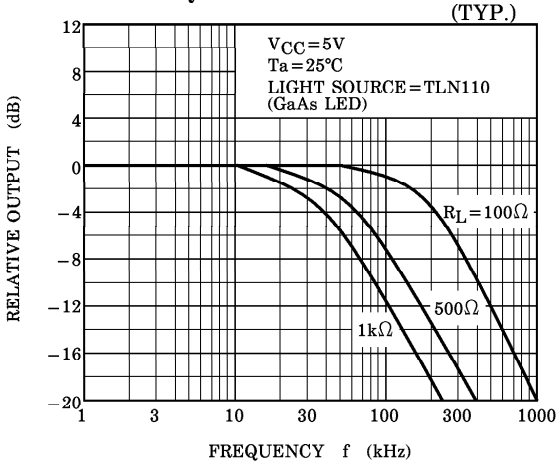
DIRECTIONAL SENSITIVITY CHARACTERISTIC (TYP.)

(Ta = 25°C)

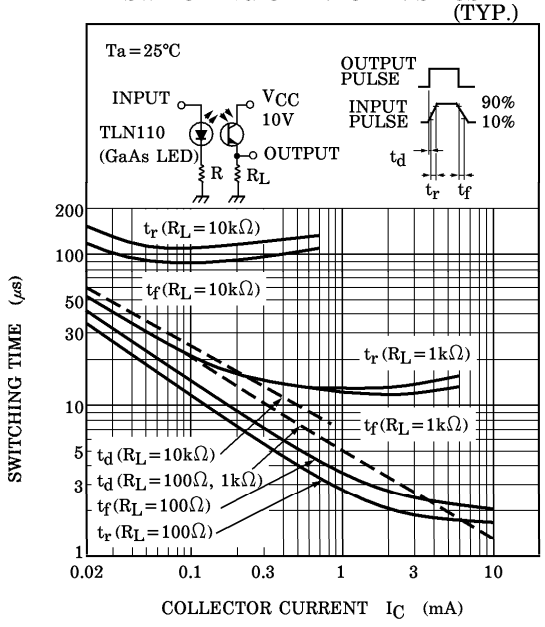
RADIATION ANGLE



FREQUENCY CHARACTERISTICS (TYP.)



SWITCHING CHARACTERISTICS (TYP.)



COUPLING CHARACTERISTICS WITH TLN110

