

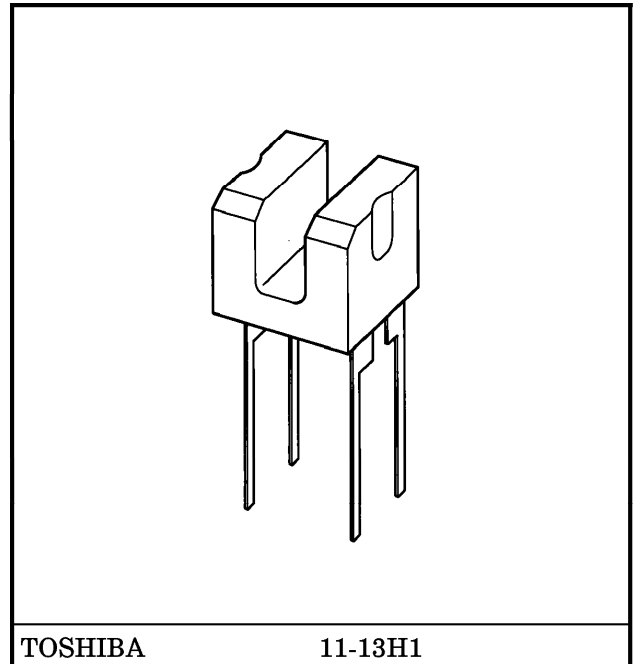
TOSHIBA PHOTO-INTERRUPTER INFRARED LED + PHOTOTRANSISTOR

TLP814

MOTOR ROTATION AND IRIS DETECTION FOR CAMERAS

TRACK DETECTION IN MICRO FLOPPY DISK DRIVE

- Very small package
- High resolution : Slit width = 0.4 mm
- Gap : 1.5 mm
- Current transfer ratio : $I_C / I_F = 2\%$ (min)
- Can be mounted directly on PCB using the stand off of lead.



TOSHIBA 11-13H1

Weight : 0.1 g (typ.)

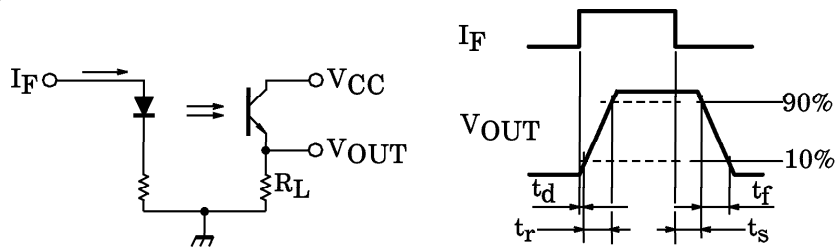
MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	RATING	UNIT
LED	Forward Current	I_F	50	mA
	Forward Current Derating (Ta > 25°C)	$\Delta I_F / ^\circ C$	-0.67	mA / °C
	Reverse Voltage	V_R	5	V
DETECTOR	Collector-Emitter Voltage	V_{CEO}	35	V
	Emitter-Collector Voltage	V_{ECO}	5	V
	Collector Power Dissipation	P_C	75	mW
	Collector Power Dissipation Derating (Ta > 25°C)	$\Delta P_C / ^\circ C$	-1	mW / °C
	Collector Current	I_C	20	mA
Operating Temperature Range		T_{opr}	-25~85	°C
Storage Temperature Range		T_{stg}	-40~100	°C

OPTICAL AND ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	Min	Typ.	Max	UNIT
LED	Forward Voltage	V _F	I _F = 10 mA	1.00	1.15	1.30	V
	Reverse Current	I _R	V _R = 5 V	—	—	10	μA
	Peak Emission Wavelength	λ _P	I _F = 5 mA	—	940	—	nm
DETECTOR	Dark Current	I _D (I _{CEO})	V _{CE} = 20 V, I _F = 0	—	—	0.1	μA
	Peak Sensitivity Wavelength	λ _P		—	800	—	nm
COUPLED	Current Transfer Ratio	I _C / I _F	V _{CE} = 0.6 V, I _F = 5 mA	2	5	—	%
	Collector-Emitter Saturation Voltage	V _{CE} (sat)	I _F = 8 mA, I _C = 0.1 mA	—	0.1	0.4	V
	Rise Time	t _r	V _{CC} = 5 V, I _C = 0.2 mA, R _L = 1 kΩ (Note)	—	50	—	μs
	Fall Time	t _f		—	50	—	

(Note) : t_r, t_f Test circuit



PRECAUTIONS

The following points must be borne in mind.

1. Soldering temperature : 260°C max
Soldering time : 5 s max
(Soldering must be performed 1.5 mm under the package body.)
2. Ensure that no residual flux or chemicals adhere to the light-emitting and light-receiving surfaces.

ENVIRONMENT

- The device should not be exposed to corrosive gases, such as hydrogen sulfide gas and a sea breeze.
- The device should not be exposed to dust.
- The device should not be exposed to direct sunlight.
In essence, the device should not be subjected to any load which may result in deformation or performance deterioration.

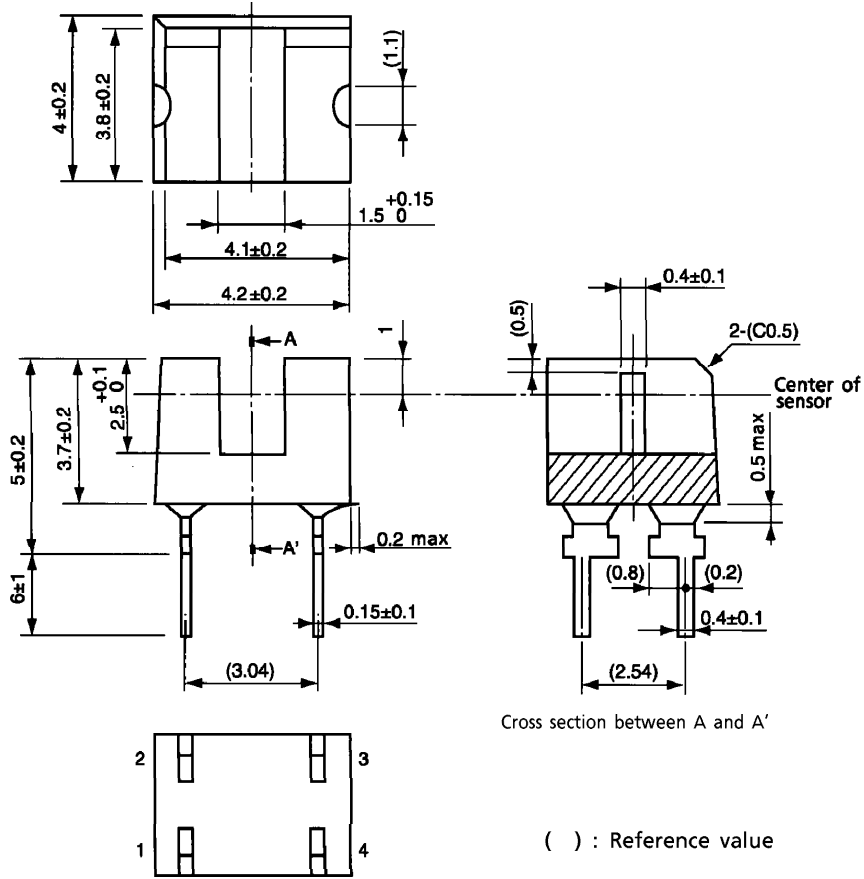
CIRCUIT DESIGN

- Conversion efficiency falls over time due to the current which flows in the infrared LED. When designing a circuit, take into account this change in conversion efficiency over time. The ratio of fluctuation in conversion efficiency to fluctuation in infrared LED optical output is 1 : 1.

$$\frac{I_C / I_F (t)}{I_C / I_F (0)} = \frac{P_O (t)}{P_O (0)}$$

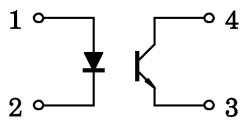
PACKAGE DIMENSIONS
11-13H1

Unit : mm

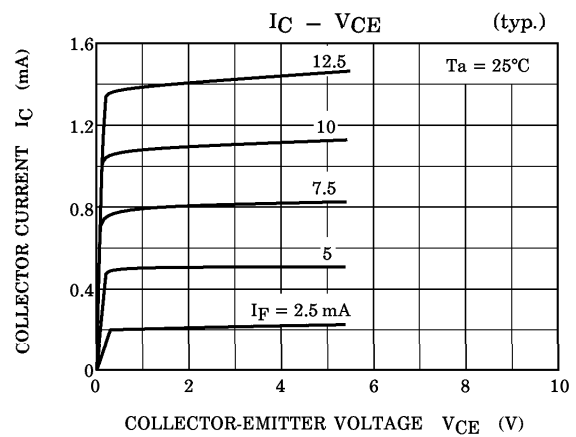
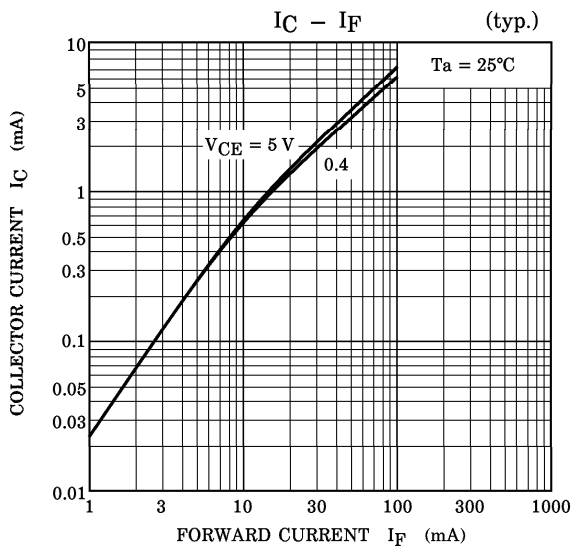
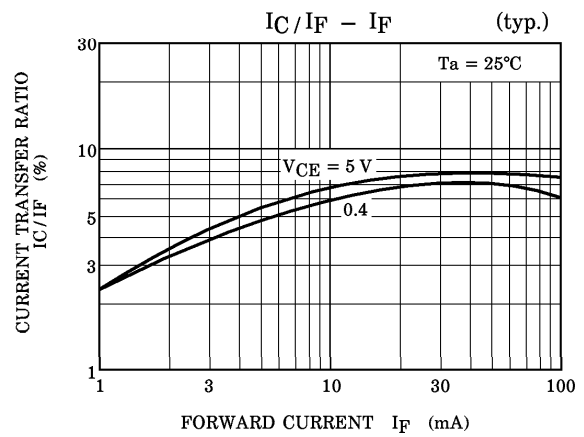
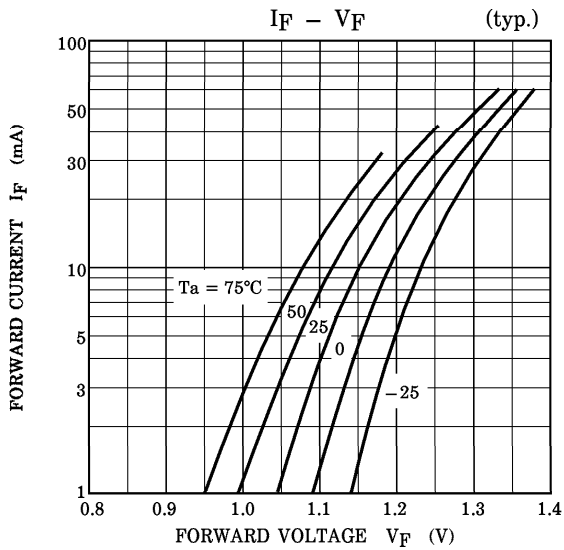
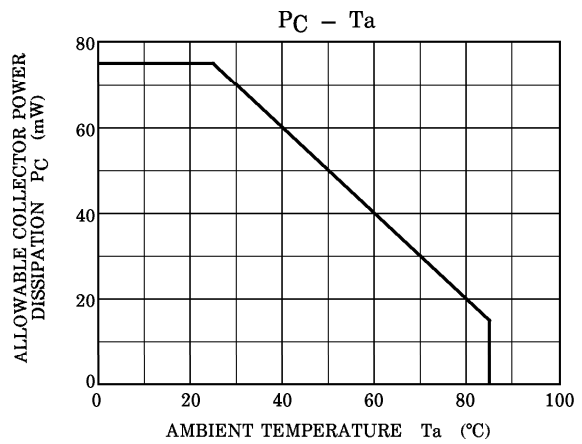
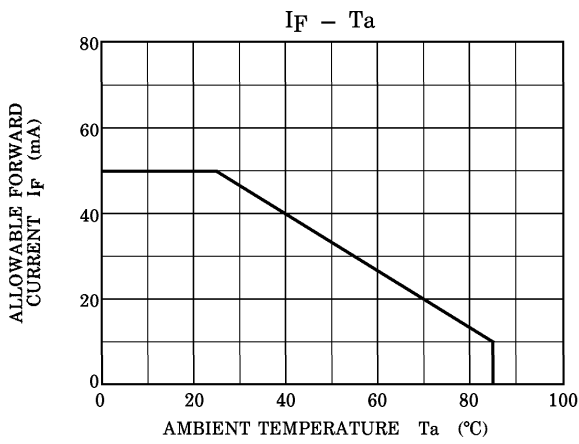


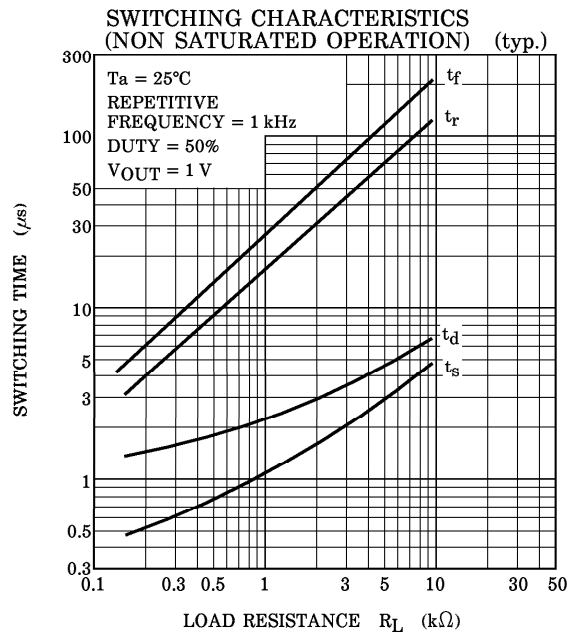
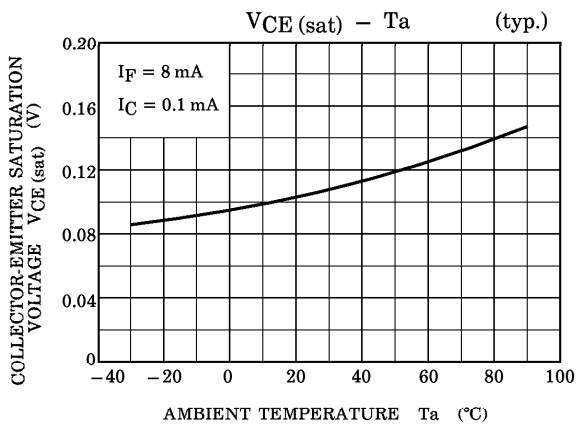
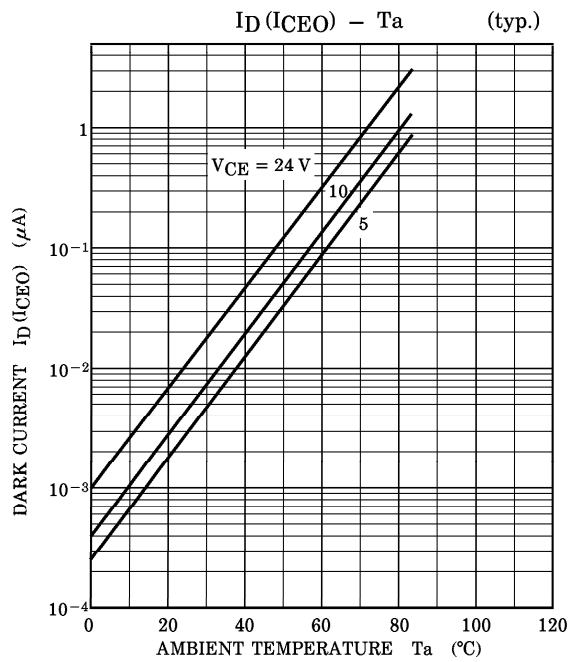
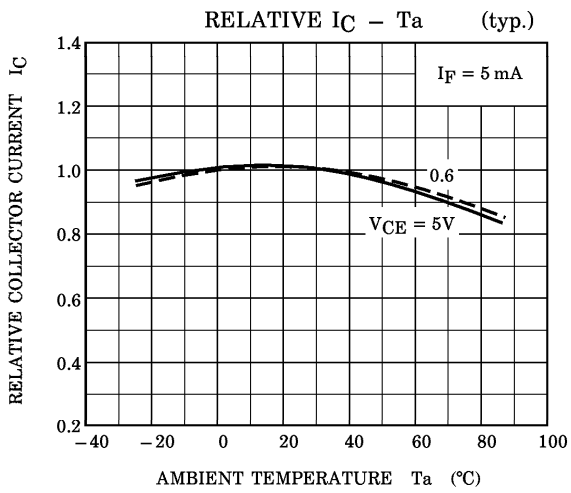
Weight : 0.1 g (typ.)

PIN CONNECTION

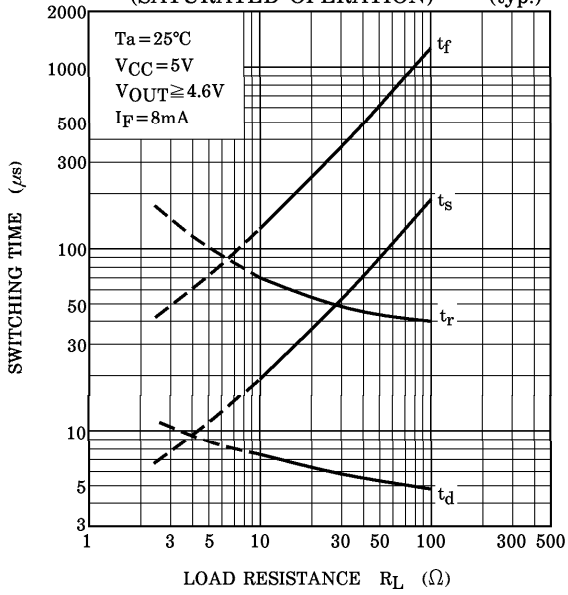


1. Anode
2. Cathode
3. Emitter
4. Collector

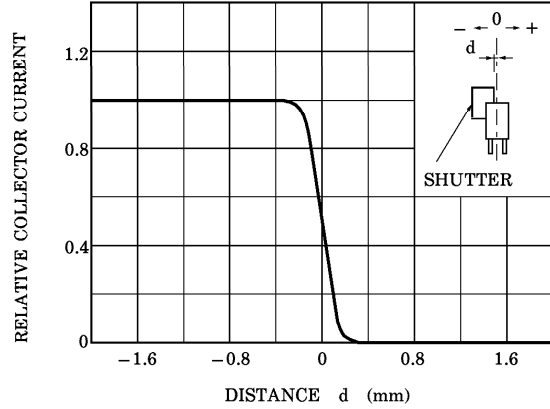




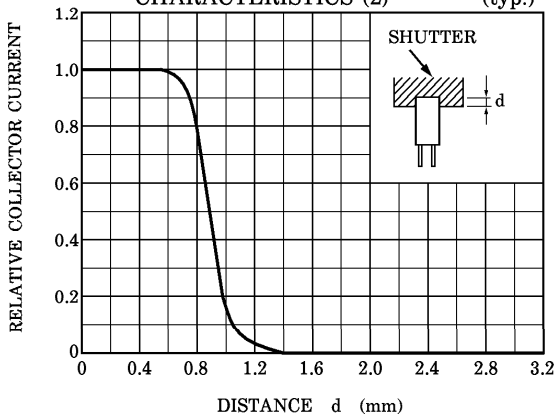
SWITCHING CHARACTERISTICS (SATURATED OPERATION) (typ.)



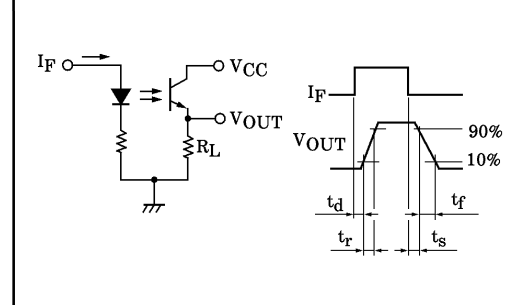
DETECTION POSITION CHARACTERISTICS (1) (typ.)



DETECTION POSITION CHARACTERISTICS (2) (typ.)



SWITCHING TIME TEST CIRCUIT



RESTRICTIONS ON PRODUCT USE

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