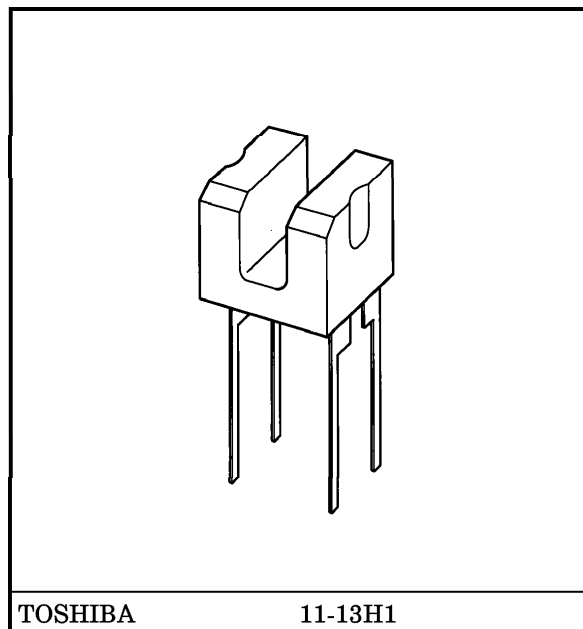


TOSHIBA PHOTO-INTERRUPTER INFRARED LED + PHOTOTRANSISTOR

TLP814MOTOR ROTATION AND IRIS DETECTION FOR
CAMERASTRACK 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.



Weight : 0.1 g (typ.)

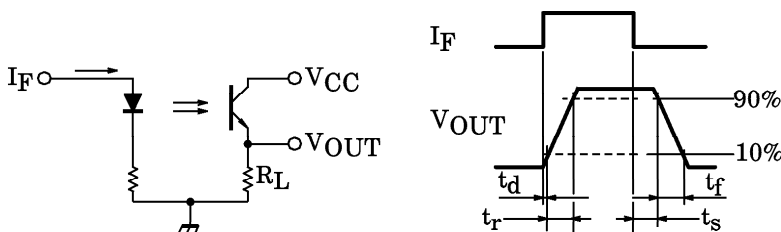
MAXIMUM RATINGS ($T_a = 25^\circ\text{C}$)

CHARACTERISTIC		SYMBOL	RATING	UNIT
LED	Forward Current	I_F	50	mA
	Forward Current Derating ($T_a > 25^\circ\text{C}$)	$\Delta I_F / ^\circ\text{C}$	-0.67	mA / $^\circ\text{C}$
	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 ($T_a > 25^\circ\text{C}$)	$\Delta P_C / ^\circ\text{C}$	-1	mW / $^\circ\text{C}$
	Collector Current	I_C	20	mA
Operating Temperature Range		T_{opr}	-25~85	$^\circ\text{C}$
Storage Temperature Range		T_{stg}	-40~100	$^\circ\text{C}$

OPTICAL AND ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	Min	Typ.	Max	UNIT
LED	Forward Voltage	V_F	$I_F = 10 \text{ mA}$	1.00	1.15	1.30	V
	Reverse Current	I_R	$V_R = 5 \text{ V}$	—	—	10	μA
	Peak Emission Wavelength	λ_P	$I_F = 5 \text{ mA}$	—	940	—	nm
DETECTOR	Dark Current	$I_D (I_{CEO})$	$V_{CE} = 20 \text{ V}, I_F = 0$	—	—	0.1	μA
	Peak Sensitivity Wavelength	λ_P		—	800	—	nm
COUPLED	Current Transfer Ratio	I_C / I_F	$V_{CE} = 0.6 \text{ V}, I_F = 5 \text{ mA}$	2	5	—	%
	Collector-Emitter Saturation Voltage	$V_{CE} (\text{sat})$	$I_F = 8 \text{ mA}, I_C = 0.1 \text{ mA}$	—	0.1	0.4	V
	Rise Time	t_r	$V_{CC} = 5 \text{ V}, I_C = 0.2 \text{ mA},$ $R_L = 1 \text{ k}\Omega$ (Note)	—	50	—	μs
	Fall Time	t_f		—	50	—	

(Note) : t_r, t_f Test circuit



PRECAUTIONS

The following points must be borne in mind.

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

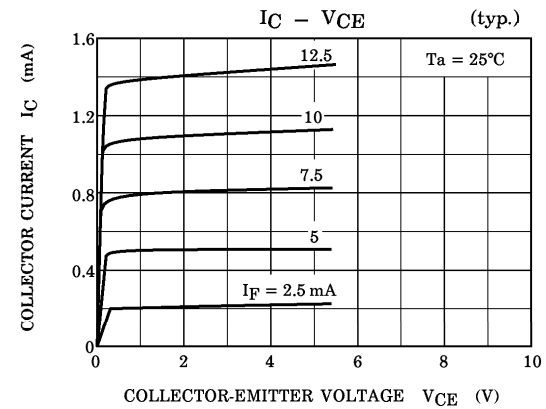
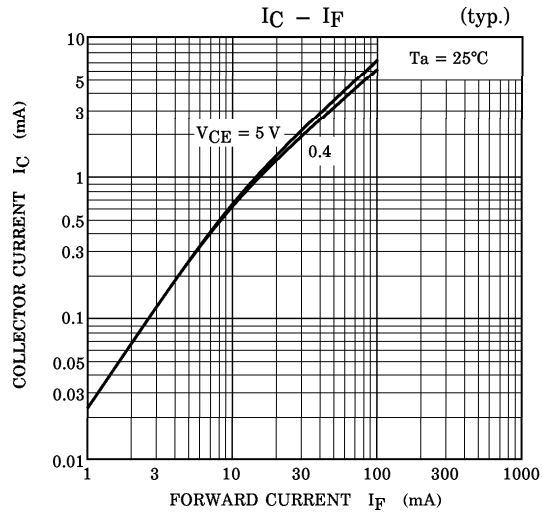
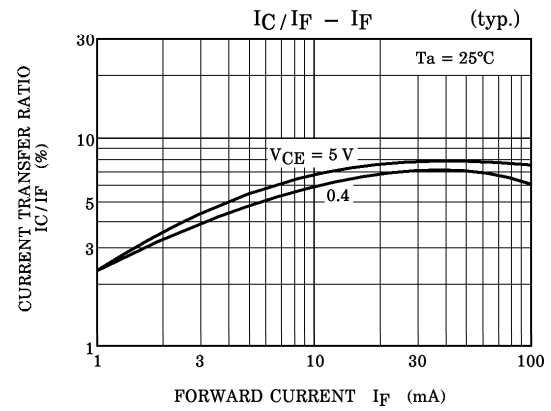
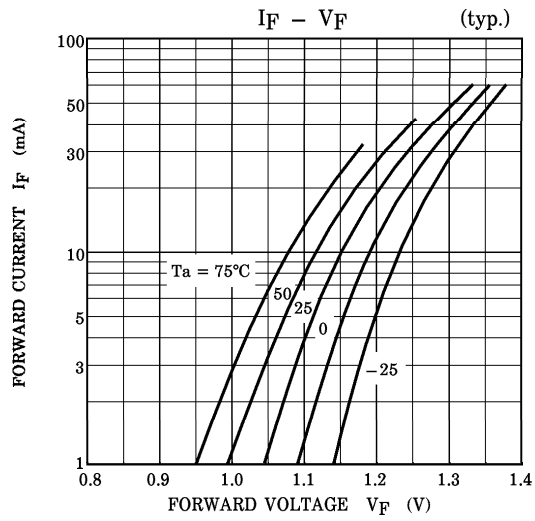
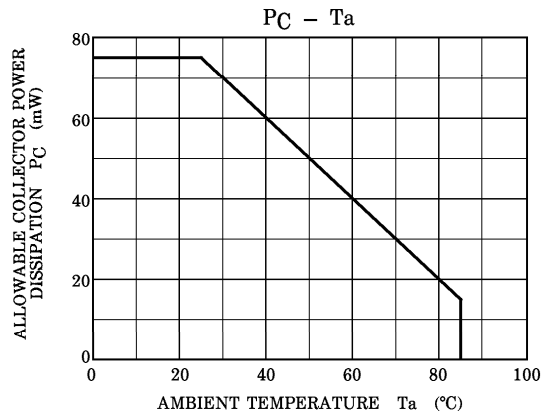
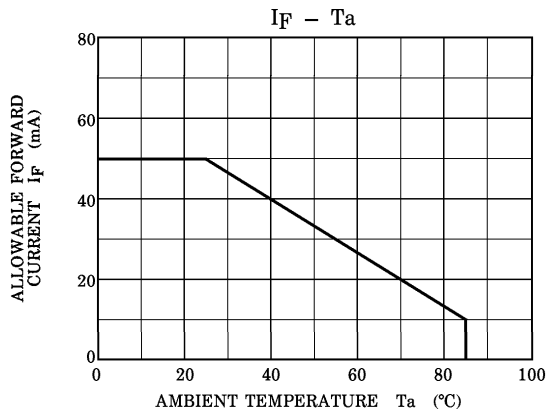
ENVIRONMENT

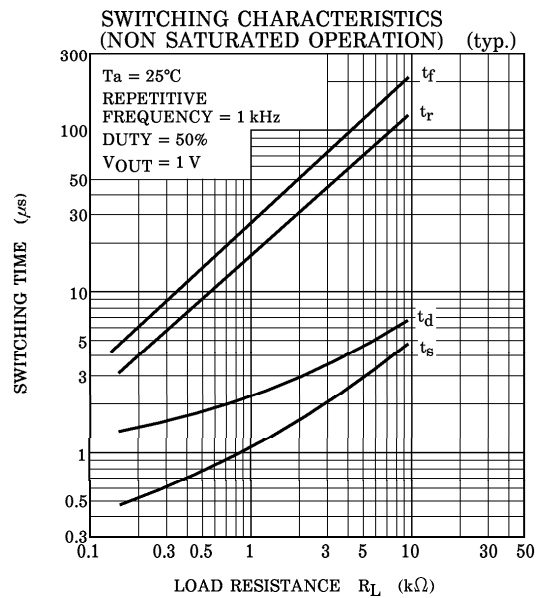
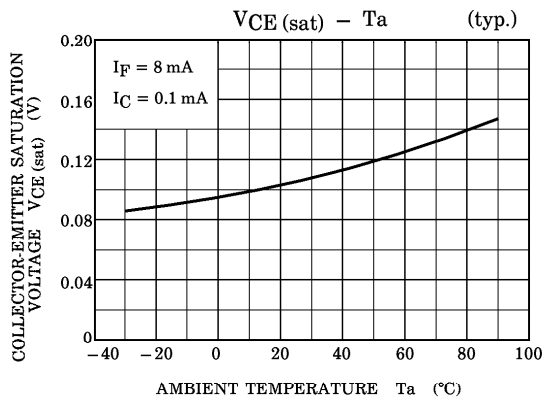
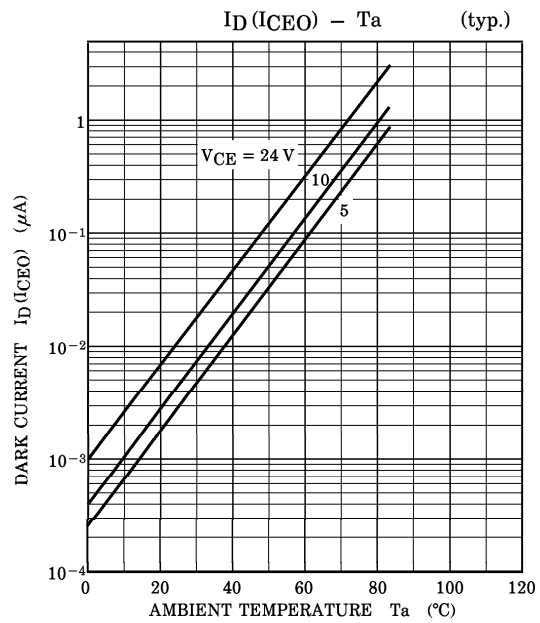
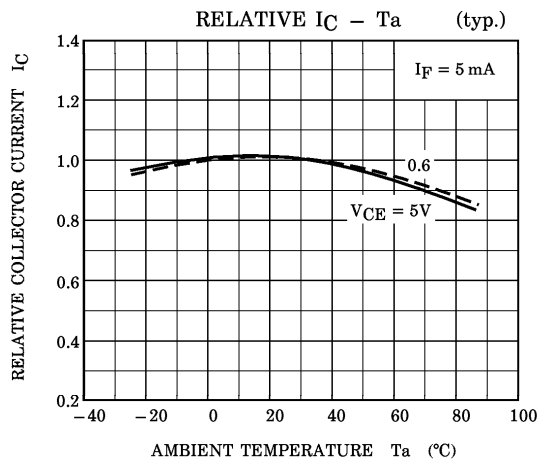
- The device should not be exposed to corrosive gases, such as hydrogen sulfide gas and a sea breeze.
- The device should not be exposed to dust.
- The device should not be exposed to direct sunlight.
In essence, the device should not be subjected to any load which may result in deformation or performance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

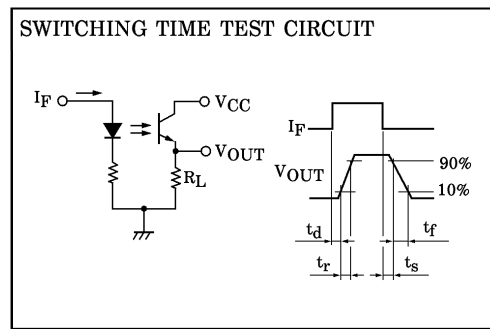
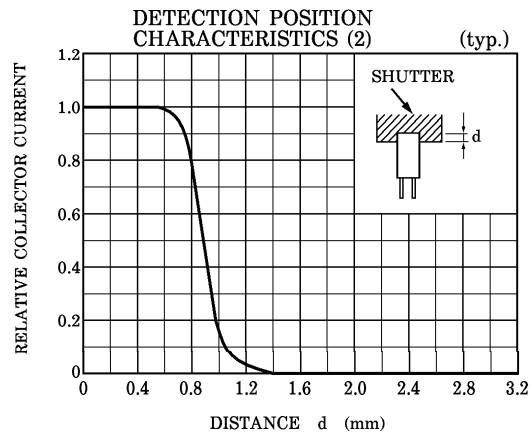
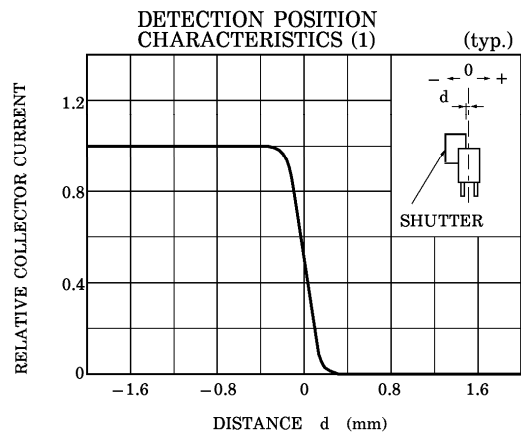
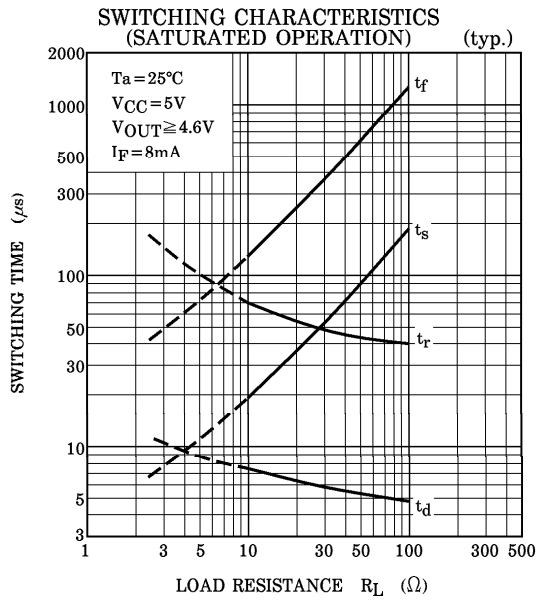
CIRCUIT DESIGN

- 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.

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







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