

TOSHIBA PHOTO INTERRUPTER INFRARED LED + PHOTO TRANSISTOR

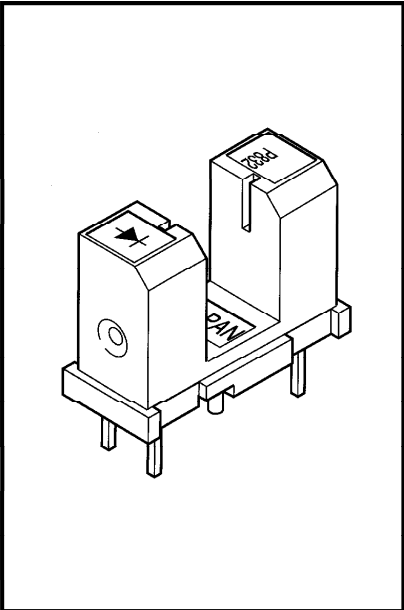
TLP832

HOME ELECTRONICS EQUIPMENT SUCH AS VCRS AND CD PLAYERS  
OA EQUIPMENT SUCH AS COPIERS, PRINTERS, AND FACSIMILES  
AUTOMATIC SERVICING EQUIPMENT SUCH AS COMMODITY AND  
TICKET VENDING MACHINES  
VARIOUS POSITION DETECTION SENSOR

The TLP832 photointerrupter consists of a GaAs infrared LED and a Si phototransistor.

Housed in a short lead package, this device is ideal for automatic mounting.

- Printed wiring board direct mounting type (with a locating pin)
- Short lead type enabling automatic mounting
  - : Lead length  $3.4 \pm 0.3\text{mm}$
- Board thickness : 1mm or less
- Gap : 5mm
- Resolution : Slit width 0.5mm
- High current transfer ratio :  $I_C / I_F = 5\%$  (min)
- High response speed :  $t_r, t_f = 15\mu\text{s}$  (typ.)
- Detector side is of visible light cut type.
- Material of the package : Polybutylene terephthalate (UL94V-0, Black color)



JEDEC	—
EIAJ	—
TOSHIBA	11-14F1

Weight : 0.58g (typ.)

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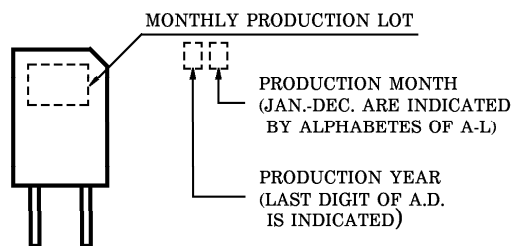
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## MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	RATING	UNIT
LED	Forward Current	$I_F$	50	mA
	Forward Current Derating (Ta > 25°C)	$\Delta I_F / ^\circ\text{C}$	-0.33	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)	$\Delta P_C / ^\circ\text{C}$	-1	mW / °C
	Collector Current	$I_C$	50	mA
Operating Temperature		$T_{opr}$	-30~85	°C
Storage Temperature		$T_{stg}$	-40~100	°C
Soldering Temperature (5s) (Note 1)		$T_{sol}$	260	°C

Note 1 : At the location of 1.5mm from the resin package bottom

## PRODUCT INDICATION



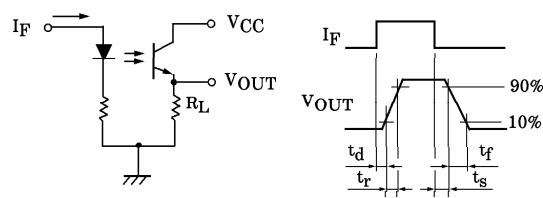
## RECOMMENDED OPERATING CONDITIONS

CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT
Supply Voltage	$V_{CC}$	—	5	24	V
Forward Current	$I_F$	—	—	25	mA
Operating Temperature	$T_{opr}$	-10	—	75	°C

OPTO 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	$\mu\text{A}$
	Peak Emission Wavelength	$\lambda_P$	$I_F = 10\text{mA}$	—	940	—	nm
DETECTOR	Dark Current	$I_D (I_{CEO})$	$V_{CE} = 24\text{V}, I_F = 0$	—	—	0.1	$\mu\text{A}$
	Peak Sensitivity Wavelength	$\lambda_P$		—	870	—	nm
COUPLED	Current Transfer Ratio	$I_C / I_F$	$V_{CE} = 2\text{V}, I_F = 10\text{mA}$	5	—	100	%
	Collector-Emitter Saturation Voltage	$V_{CE}(\text{sat})$	$I_F = 20\text{mA}, I_C = 0.5\text{mA}$	—	0.1	0.35	V
	Rise Time	$t_r$	$V_{CC} = 5\text{V}, I_C = 1\text{mA}, R_L = 1\text{k}\Omega$	—	15	50	$\mu\text{s}$
	Fall Time	$t_f$		—	15	50	

Note 2 : Switching time measurement circuit and waveform

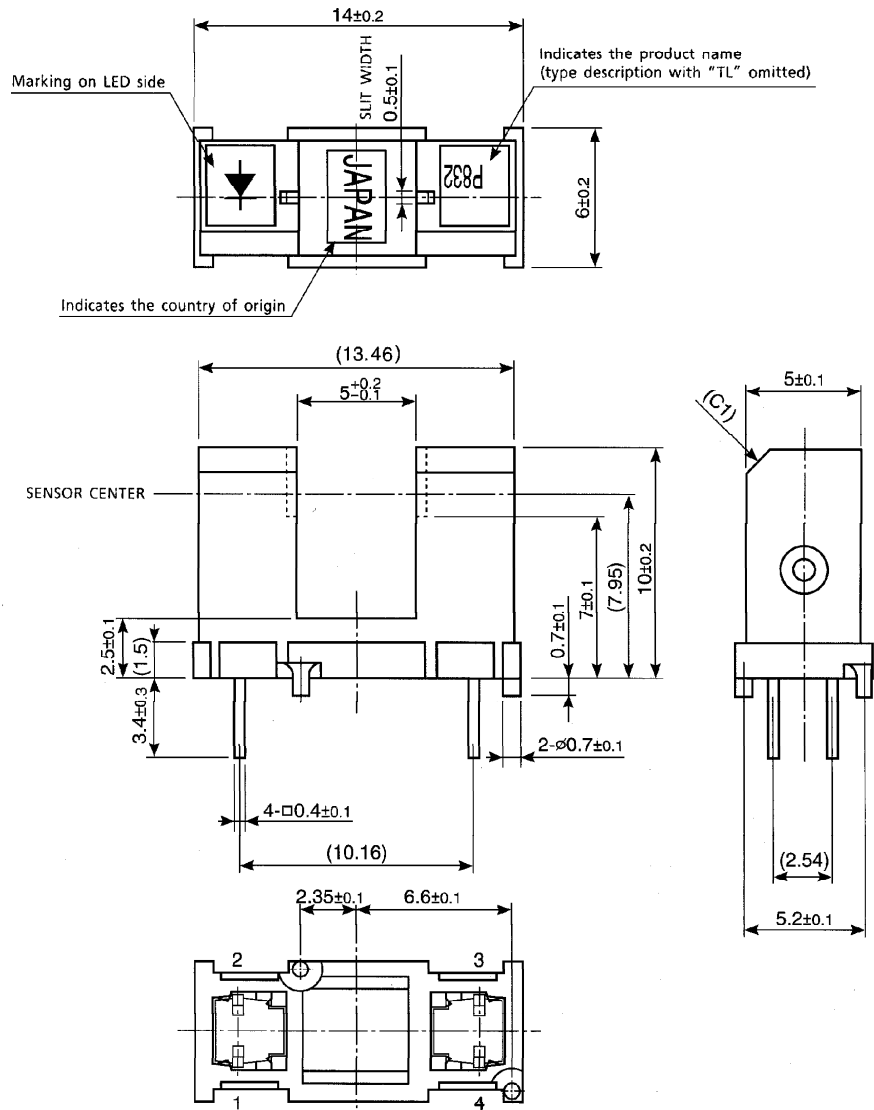


PRECAUTIONS

- When removing flux with chemicals after soldering, clean only the leads on the soldering side; do not dip the whole package for cleaning.  
Chemicals remaining on an LED or phototransistor light emitter or receiver, if any, would have a bad influence to the optical characteristics and it may severely lower the conversion efficiency.
- The environment to install the device should be determined carefully. Oil or chemicals may cause the package to be dissolved or cracked.
- The device should be mounted on an unwarped surface.
- Install this device as avoiding the disturbance light as possible. A visible light cut-off type phototransistor which blocks light with frequencies of 700nm or above is used. However, the device cannot block infrared light with a wavelength of 700nm or more, and it may do mistaken movements.
- The current transfer ratio is gradually lowered when infrared LED is powered. The efficiency deterioration by aging should be considered when designing the circuit.

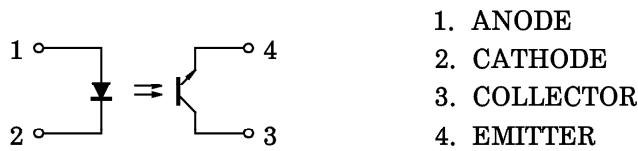
OUTLINE : TOSHIBA

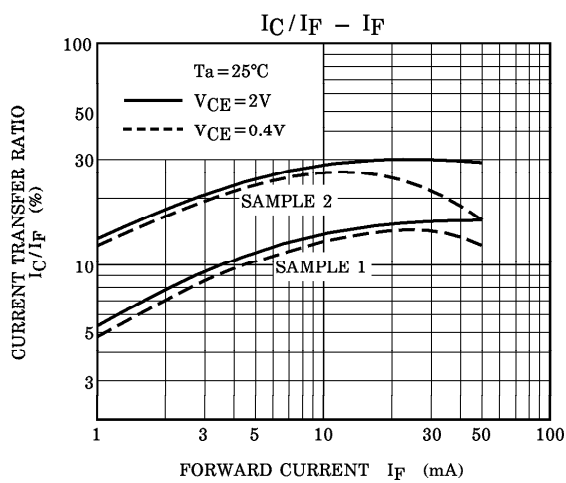
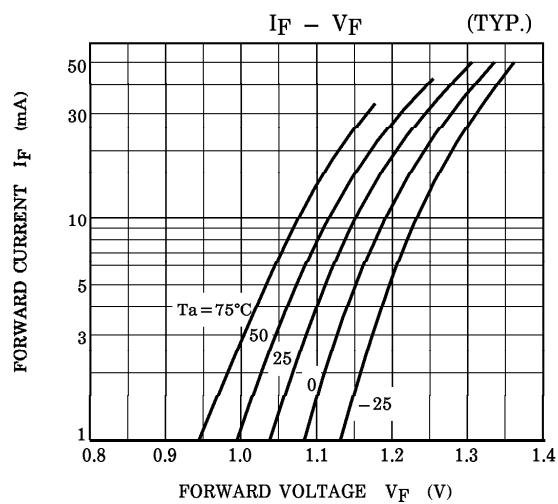
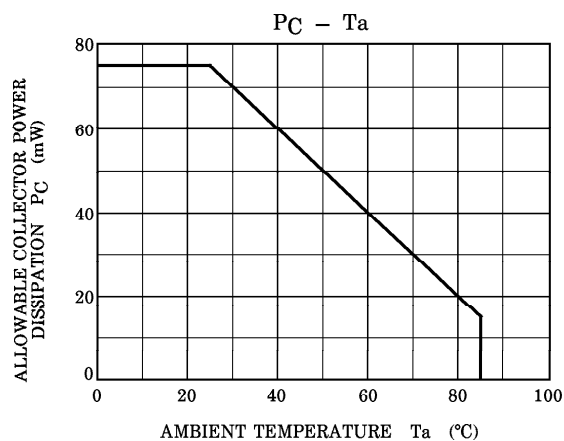
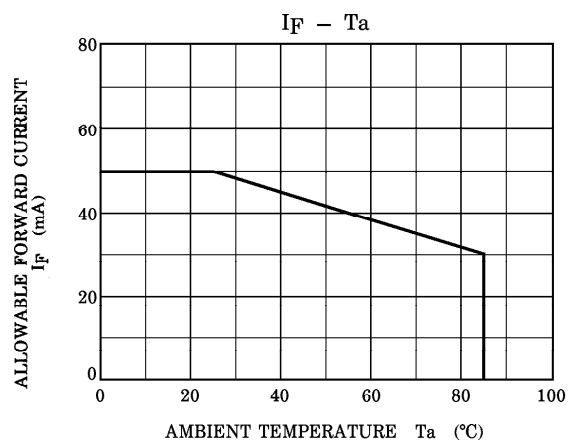
Unit : mm  
( ) : REFERENCE VALUE

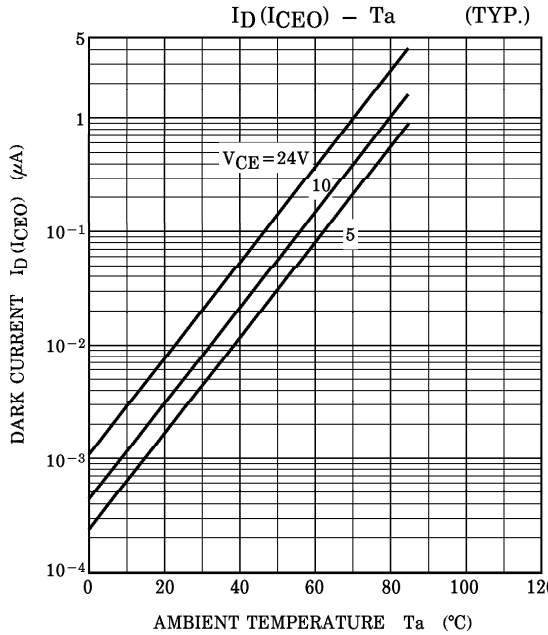
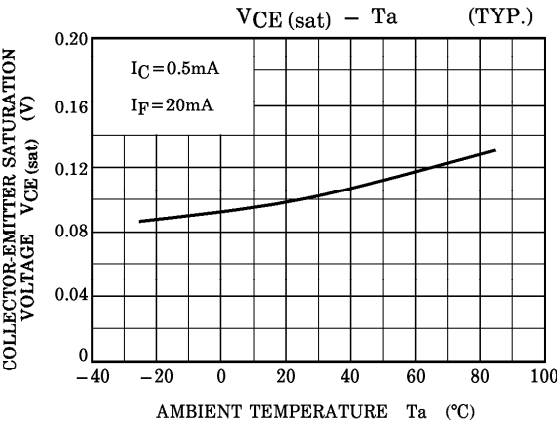
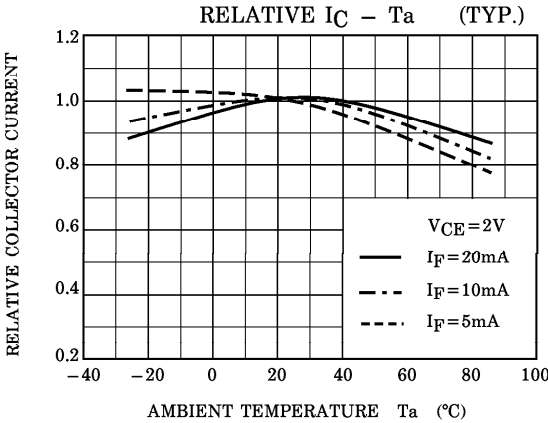
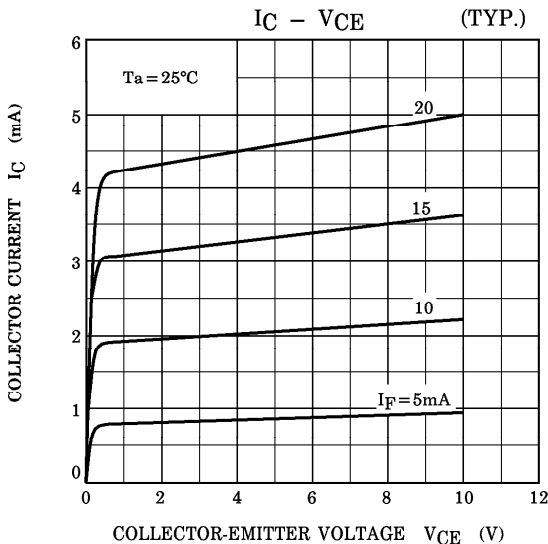
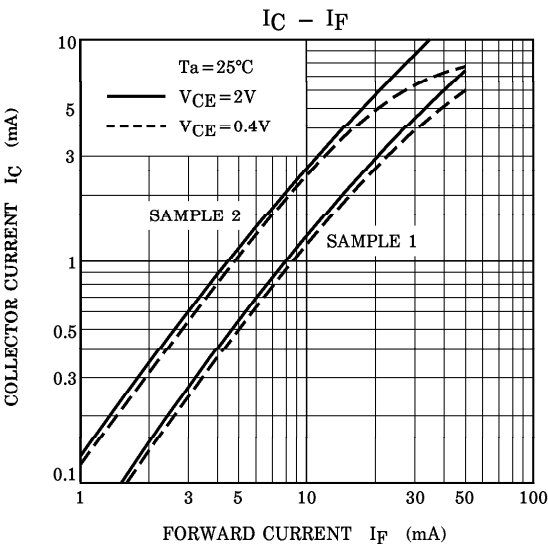


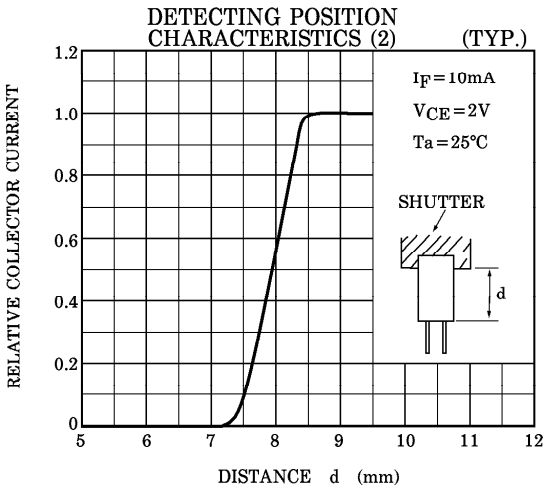
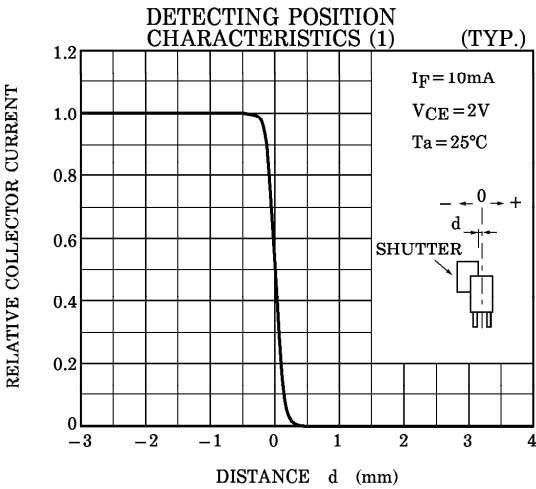
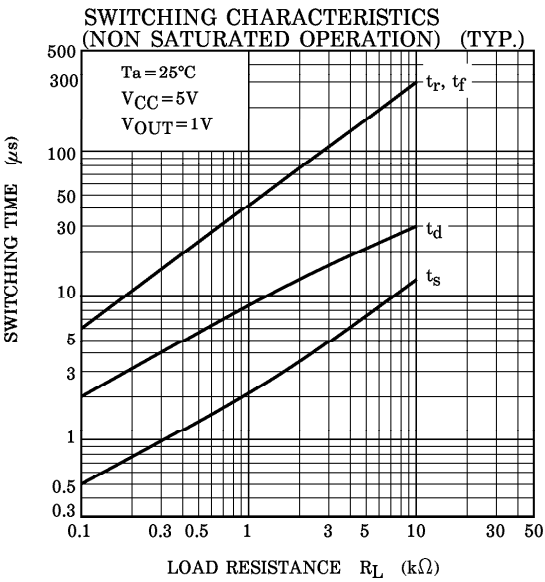
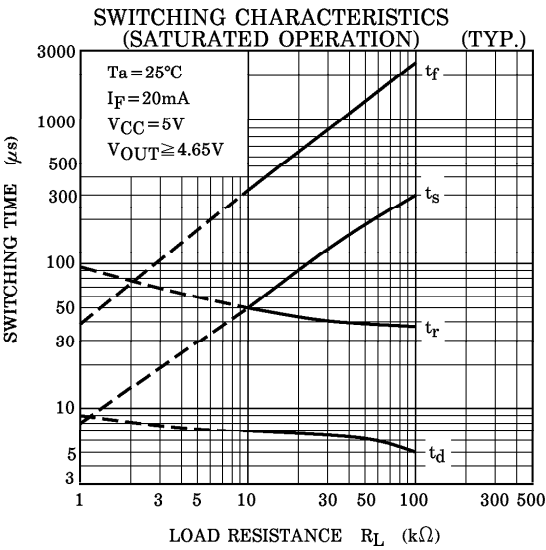
Weight : 0.58g (TYP.)

PIN CONNECTION









## POSITIONING OF SHUTTER AND DEVICE

To operate correctly, make sure that the shutter and the device are positioned as shown in the figure below.

The slit pitch of the shutter must be set wider than the slit width of the device.  
Determine the width taking the switching time into consideration.

