TOSHIBA TLP830

TOSHIBA PHOTOINTERRUPTER INFRARED LED + PHOTOTRANSISTOR

TLP830

TRACK "00" SENSOR FOR FLOPPY DISK DRIVE DETECTION OF SUB-SCANNING QUANTITY BY IMAGE SCANNER

VARIOUS POSITION DETECTION SENSOR

TLP830 is a photointerrupter which uses a highradiant power GaAs LED and a fast-response Si phototransistor, the device is high resolution with a narrow slit pitch.

• Small package : 7.4mm (H), 4.5mm (D)

• Printed wiring board direct mounting type (with a locating pin).

• Board thickness : 1mm or less

Short lead type enabling automated mounting

• Gap : 2mm

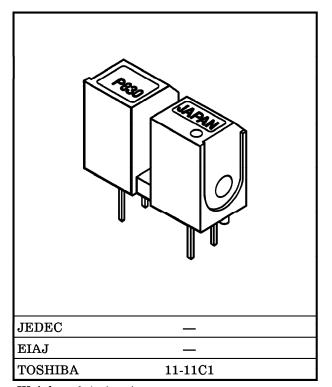
• High resolution : Slit width 0.15mm

• High current transfer ratio : $I_{C}/I_{F}=3\%$ (min)

Material of the package

: Polybutylene terephthalate (UL94V-0, Black color)

• Detector side is of visible light cut type.

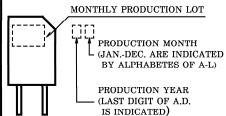


PRODUCT INDICATION

Weight: 0.4g (typ.)

MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	RATING	UNIT	
	Forward Current	$I_{\mathbf{F}}$	50	mA	
LED	Forward Current Derating (Ta > 25°C)	ΔI _F /°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	PC	75	mW	
	Collector Power Dissipation Derating (Ta>25°C)	△P _C /°C	-1	mW/°C	
	Collector Current	$I_{\mathbf{C}}$	50	mA	
Operating Temperature Range		T_{opr}	-30~85	°C	
Storage Temperature Range		$\mathrm{T_{stg}}$	-40~100	°C	
Soldering Temperature (5s)		T_{sol}	260	$^{\circ}\mathrm{C}$	



961001EBC2

TOSHIBA is continually working to improve the quality and the reliability of its products. Nevertheless, semiconductor devices in general can malfunction or fail due to their inherent electrical sensitivity and vulnerability to physical stress. It is the responsibility of the buyer, when utilizing TOSHIBA products, to observe standards of safety, and to avoid situations in which a malfunction or failure of a TOSHIBA product could cause loss of human life, bodily injury or damage to property. In developing your designs, please ensure that TOSHIBA products are used within specified operating ranges as set forth in the most recent products specifications. Also, please keep in mind the precautions and conditions set forth in the TOSHIBA Semiconductor Reliability Handbook.

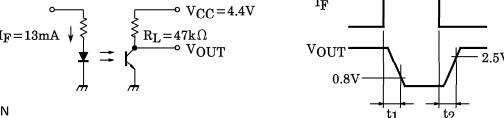
RECOMMENDED OPERATING CONDITIONS

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

OPTO ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT	
Q	Forward Voltage		$V_{\mathbf{F}}$	$I_{\mathbf{F}} = 10 \text{mA}$	1.00	1.15	1.30	V
Reverse Cu		rrent	$I_{ m R}$	$V_R = 5V$	_	_	10	μ A
T	Peak Emiss	ion Wavelength	$\lambda \mathbf{p}$	$I_{\mathbf{F}} = 10 \text{mA}$	_	940	_	nm
OR	Dark Current		$I_{\mathbf{D}}$	$V_{CE} = 24V, I_F = 0$	_	_	0.1	μ A
Dark Curre Peak Sensi		civity Wavelength	$\lambda_{\mathbf{P}}$		_	870	_	nm
	Current Transfer Ratio		I _C /I _F	$V_{CE} = 2V, I_F = 10mA$	3	_	20	%
LED	国 Saturation Voltage		V _{CE} (sat)	$I_{ m F}\!=\!20{ m mA}, I_{ m C}\!=\!0.3{ m mA}$	_	0.1	0.35	V
집		Rise Time	$\mathbf{t_r}$	$V_{CC}=5V$, $I_C=1mA$	1	15	_	μs
0 0	Switching	Fall Time	t_f	$R_L = 1k\Omega$	_	15	_	
ပ်	I • I	Response time (1)	t ₁	$V_{CC} = 4.4V, I_{C} = 13mA$		_	80	
		Response time (2)	t_2	$R_L = 47k\Omega$ (Note)	_	_	800	

Note. t₁, t₂ Test Condition



PRECAUTION

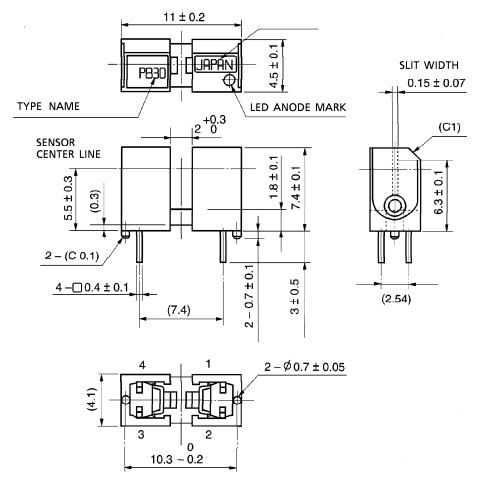
- If the chemical are used for cleaning, the soldered surface only shall be cleaned with chemicals avoiding the whole cleaning of the package.
- The container is made of polybutylene terephthalate. oil or chemicals may cause melting or cracks. Check the environment carefully before installing.
- Shall be mounted on an unwarped surface.
- A visible light cut-off type photo transistor which blocks light with frequencies of 700nm or above is used. However, the device cannot block ambient light with a wavelength of 700nm or more or sunlight. Install avoiding the disturbance light.

- Gallium arsenide (GaAs) is a substance used in the products described in this document. GaAs dust and fumes are toxic. Do not break, cut or pulverize the product, or use chemicals to dissolve them. When disposing of the products, follow the appropriate regulations. Do not dispose of the products with other industrial waste or with domestic garbage.

 The products described in this document are subject to foreign exchange and foreign trade control laws.

 The information contained herein is presented only as a guide for the applications of our products. No responsibility is assumed by TOSHIBA CORPORATION for any infringements of intellectual property or other rights of the third parties which may result from its use. No license is granted by implication or otherwise under any intellectual property or other rights of TOSHIBA CORPORATION or others.

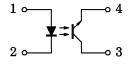
OUTLINE : TOSHIBA Unit : mm



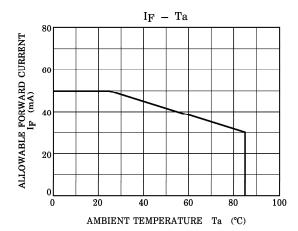
(): REFERENCE VALUE SHIFT

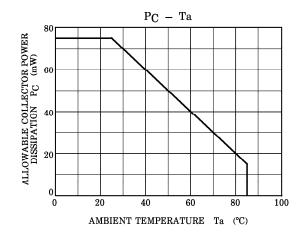
Weight: 0.4g (typ.)

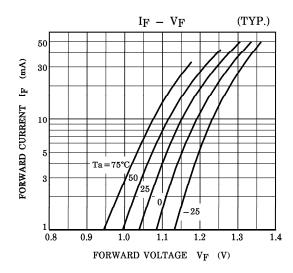
PIN CONNECTIONS

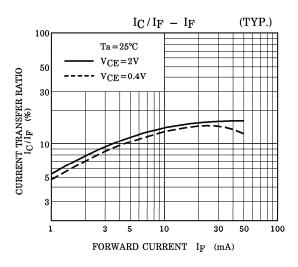


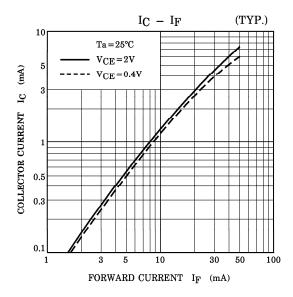
- 1. ANODE
- 2. CATHODE
- 3. COLLECTOR
- 4. EMITTTER

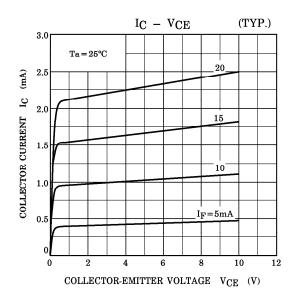


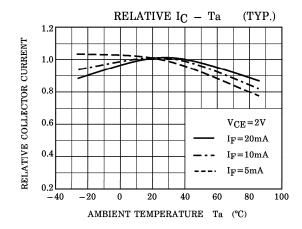


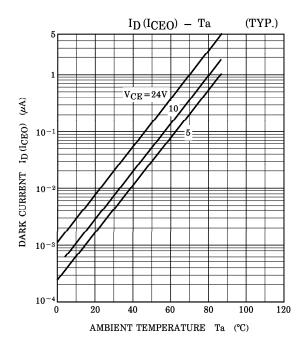


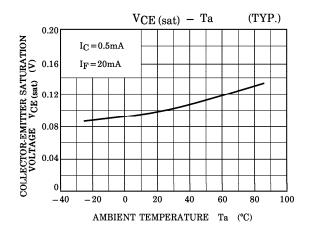




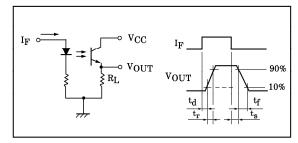


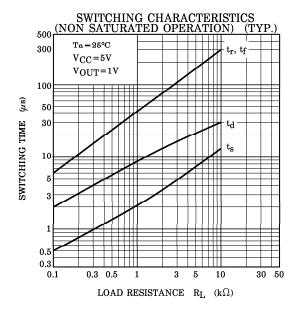


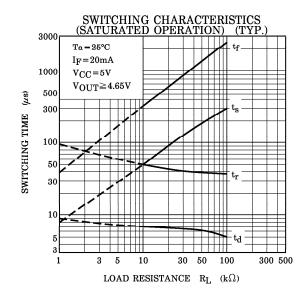


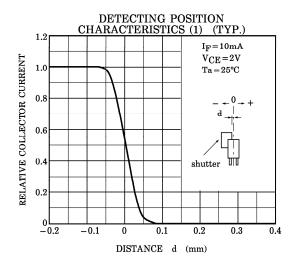


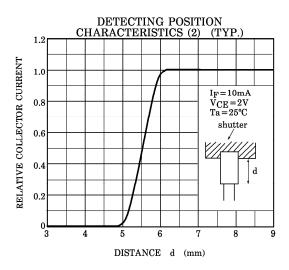
SWITCHING TIME TEST CIRCUIT











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

