

TOSHIBA PHOTOINTERRUPTER INFRARED + PHOTODARLINGTONTRANSISTOR

TLP853

TIMING SENSOR

EDGE SENSOR

POSITION AND ROTATION SPEED SENSOR

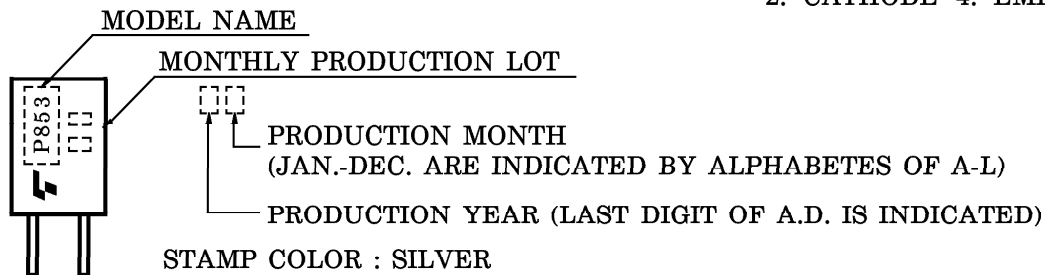
TLP853 is a photointerrupter with a wide gap.

- Resolution : Slit width = 0.5mm
- Wide detecting gap : 5mm
- High current transfer ratio : $I_C / I_F = 20\%$ (min)
- The detector side is of visible light cut type.
- Material of the package : Polycarbonate

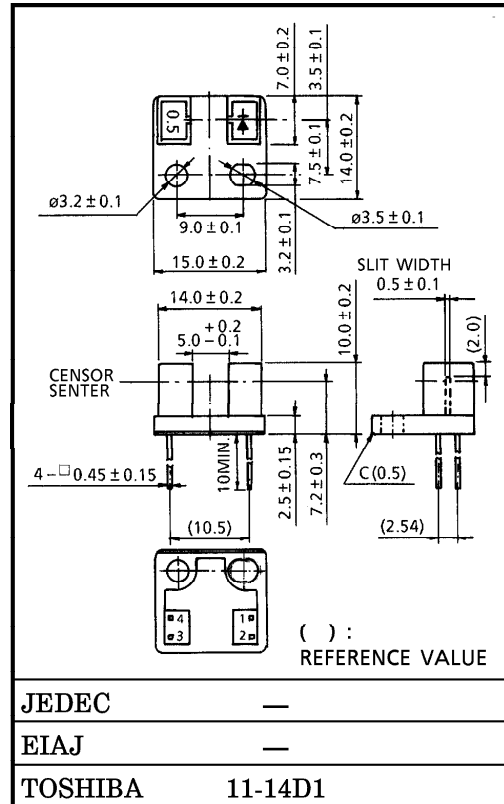
MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	RATING	UNIT
LED	Forward Current	I_F	50	mA
	Forward Current Derating (Ta > 25°C)	$\Delta I_F / ^\circ C$	-0.33	mA / °C
	Reverse Voltage	V_R	5	V
DETECTOR	Collector-Emitter Voltage	V_{CEO}	30	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	50	mA
Operating Temperature Range		T_{opr}	-25~85	°C
Storage Temperature Range		T_{stg}	-40~100	°C

PRODUCT INDICATION

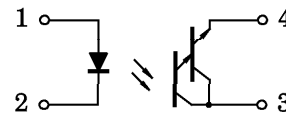


Unit in mm



Weight : 0.98g (typ.)

PIN CONNECTION



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

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● 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.

● 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.

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● The information contained herein is subject to change without notice.

OPTO-ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
LED	Forward Voltage	V _F	I _F = 10mA	1.00	1.15	1.30	V
	Reverse Current	I _R	V _R = 5V	—	—	10	μA
	Peak Emission Wavelength	λ _P	I _F = 10mA	—	940	—	nm
DETECTOR	Dark Current	I _D (I _{CEO})	V _{CE} = 16V, I _F = 0	—	—	0.25	μA
	Peak Sensitivity Wavelength	λ _P		—	870	—	nm
COUPLED	Current Transfer Ratio	I _C / I _F	V _{CE} = 2V, I _F = 10mA	20	100	—	%
	Collector-Emitter Saturation Voltage	V _{CE} (sat)	I _F = 10mA, I _C = 1mA	—	0.85	1.2	V
	Rise Time	t _r	V _{CC} = 5V, I _C = 10mA	—	80	—	μs
	Fall Time	t _f	R _L = 100Ω	—	70	—	

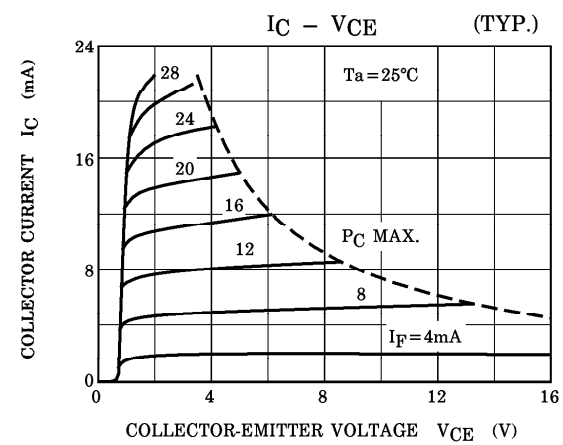
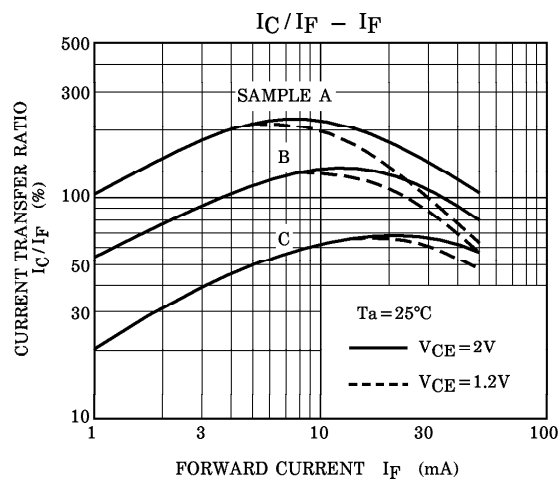
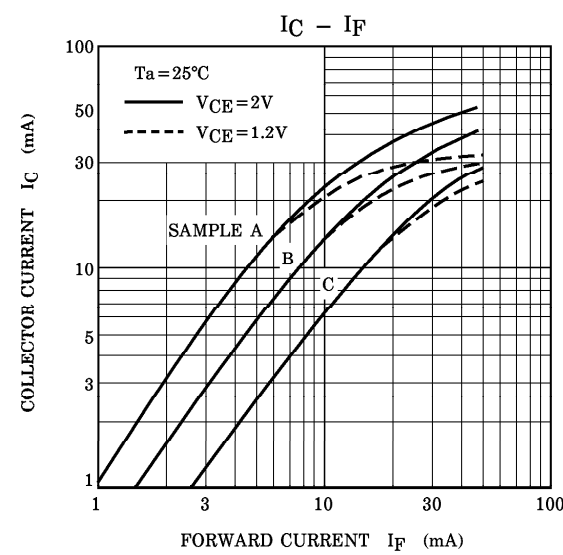
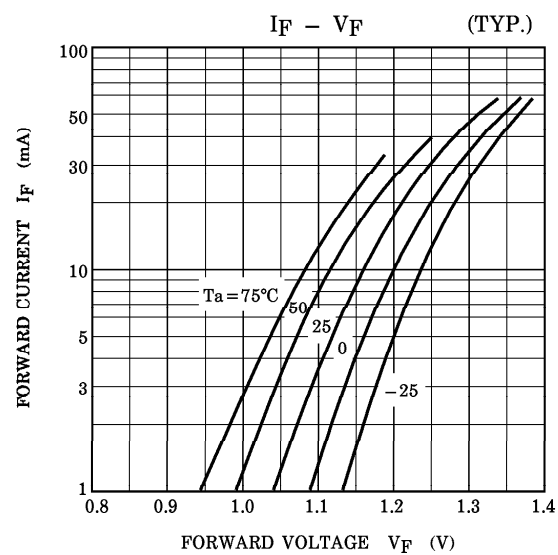
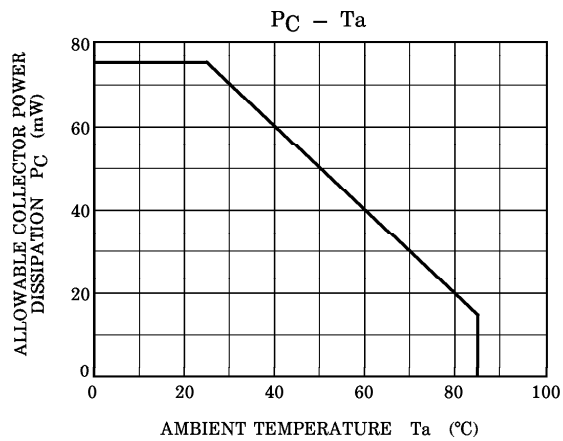
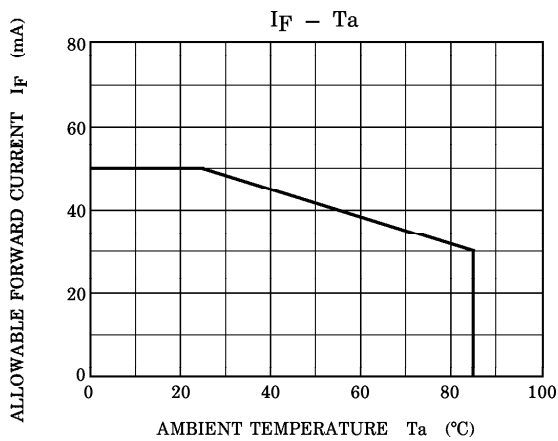
PRECAUTION

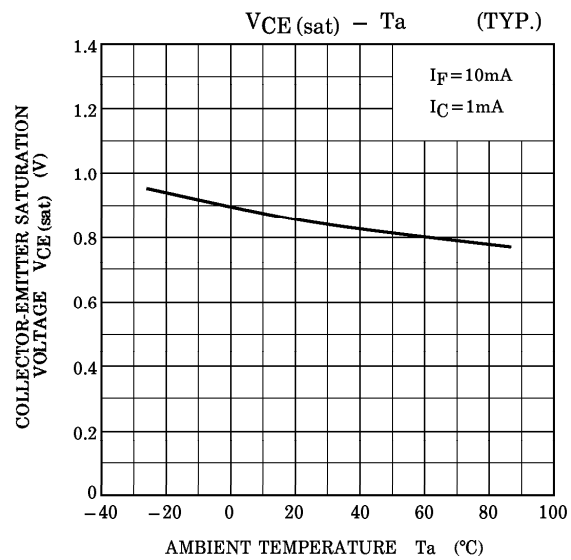
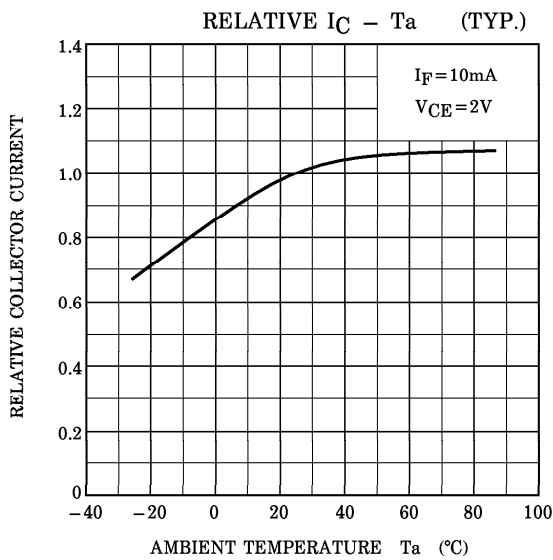
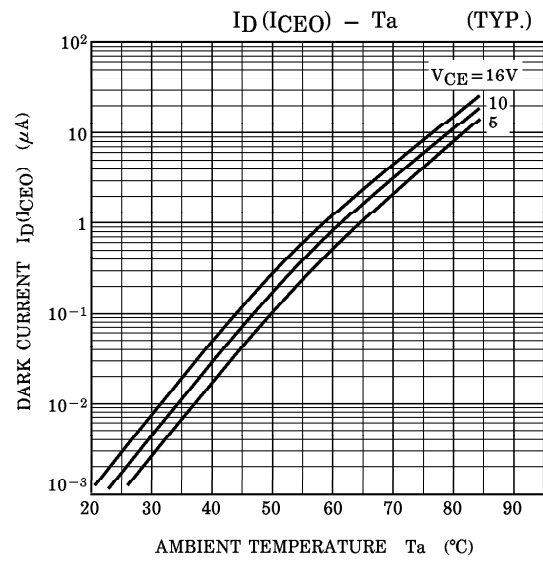
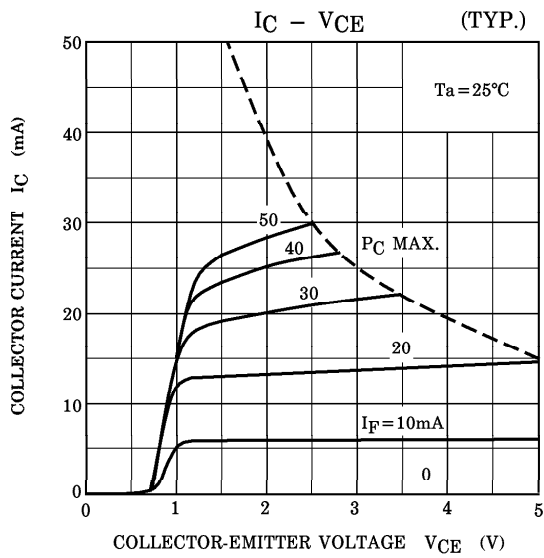
Please be careful of the followings.

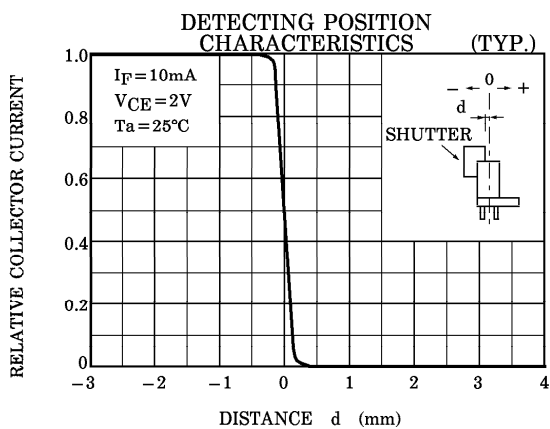
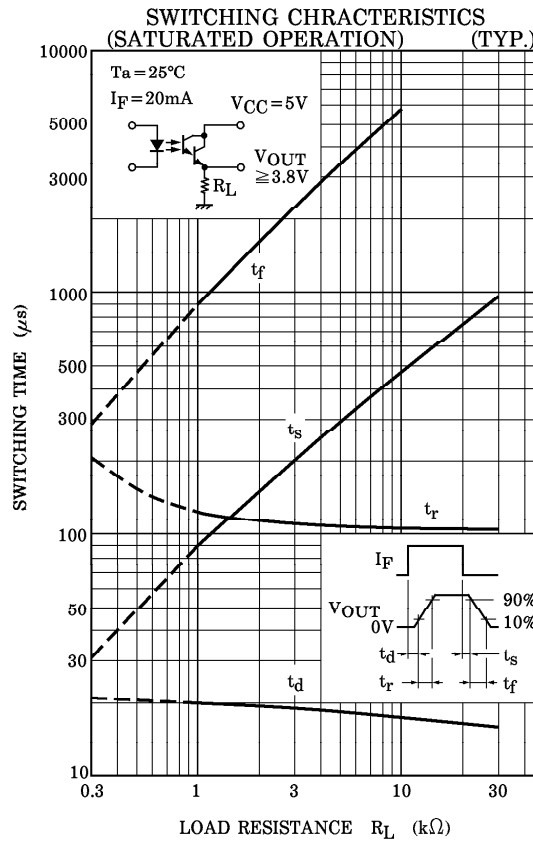
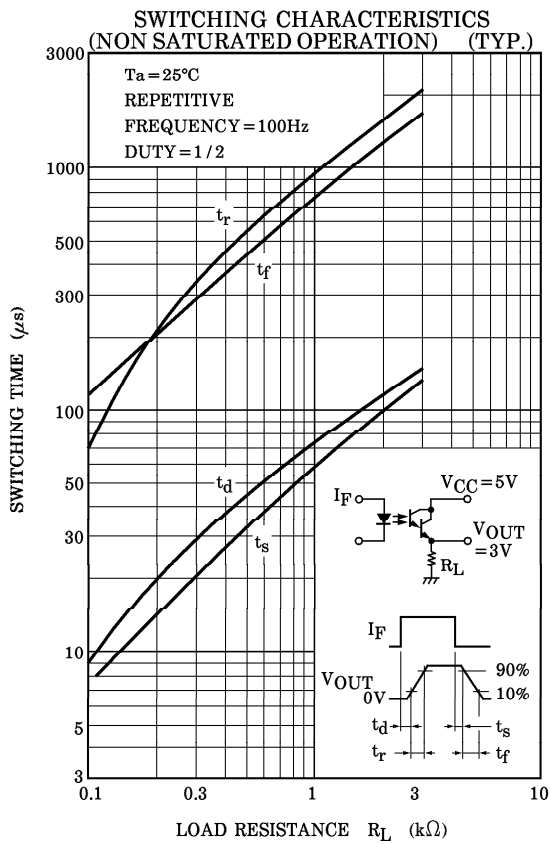
- Soldering temperature : 260°C max Soldering time : 5s max
(Soldering portion of lead : above 1.5mm from the body of the device)
- If chemical are used for cleaning, the soldered surface only shall be cleaned with chemicals avoiding the whole cleaning of the package.
- The container is made of polycarbonate. Polycarbonate is usually stable with acid, alcohol, and aliphatic hydrocarbons however, with peroxochemicals (such as benzene, toluene, and acetone), alkali, aromatic hydrocarbons, or chloric hydrocarbons, polycarbonate becomes cracked, swollen, or melted. Please take care when choosing a packaging material by referencing the table below.
<Chemicals to avoid with polycarbonate>

	PHENOMENON	CHEMICALS
A	Little deterioration but staining	<ul style="list-style-type: none"> nitric acid (low concentration), hydrogen peroxide, chlorine
B	Cracked, crazed, or swollen	<ul style="list-style-type: none"> acetic acid (70% or more) gasoline methyl ethyl ketone, ethyl acetate, butyl acetate ethyl methacrylate, ethyl ether, MEK acetone, m-amino alcohol, carbon tetrachloride carbon disulfide, trichloroethylene, cresol thinners, oil of turpentine triethanolamine, TCP, TBP
C	Melted { } : Used as solvent.	<ul style="list-style-type: none"> concentrated sulfuric acid benzene styrene, acrylonitrile, vinyl acetate ethylenediamine, diethylenediamine {chloroform, methyl chloride, tetrachloromethane, dioxane, 1, 2-dichloroethane}
D	Decomposed	<ul style="list-style-type: none"> ammonia water other alkali

- TLP853 shall be mounted on an unwarped surface.
- Screw shall be tightened to clamping torque of 0.59N·m.







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.

