

TOSHIBA PHOTOINTERRUPTER INFRARED + PHOTODARLINGTONTRANSISTOR

TLP853

TIMING SENSOR  
EDGE SENSOR  
POSITION AND ROTATION SPEED SENSOR

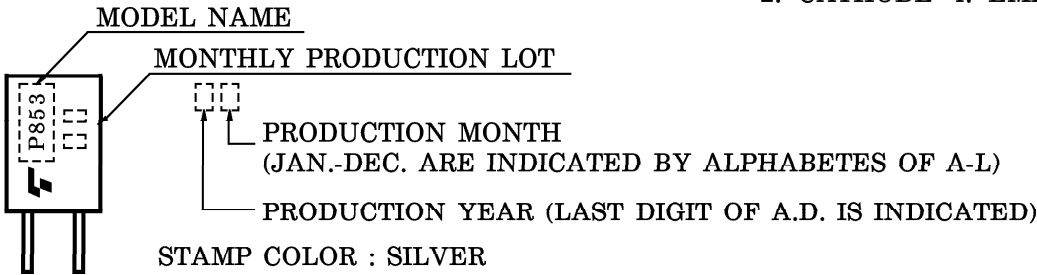
TLP853 is a photointerrupter with a wide gap.

- 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

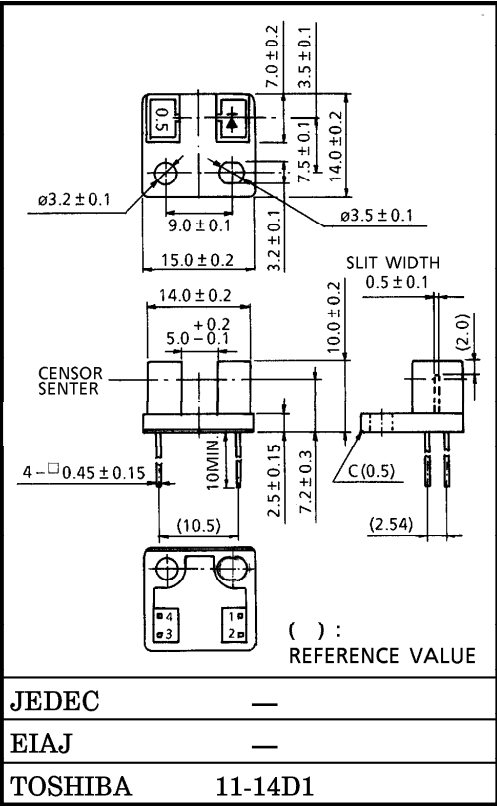
MAXIMUM RATINGS (Ta = 25°C)

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

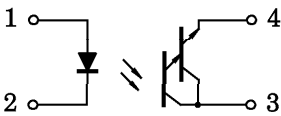


Unit in mm



Weight : 0.98g (typ.)

PIN CONNECTION



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

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## 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	$I_D$ ( $I_{CEO}$ )	$V_{CE} = 16\text{V}$ , $I_F = 0$	—	—	0.25	$\mu\text{A}$
	Peak Sensitivity Wavelength	$\lambda_P$		—	870	—	nm
COUPLED	Current Transfer Ratio	$I_C / I_F$	$V_{CE} = 2\text{V}$ , $I_F = 10\text{mA}$	20	100	—	%
	Collector-Emitter Saturation Voltage	$V_{CE}(\text{sat})$	$I_F = 10\text{mA}$ , $I_C = 1\text{mA}$	—	0.85	1.2	V
	Rise Time	$t_r$	$V_{CC} = 5\text{V}$ , $I_C = 10\text{mA}$	—	80	—	$\mu\text{s}$
	Fall Time	$t_f$	$R_L = 100\Omega$	—	70	—	

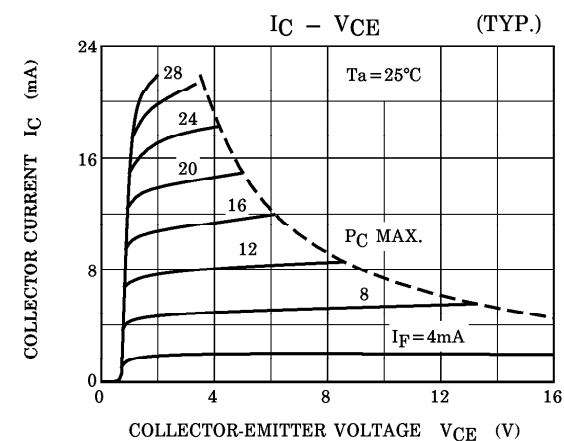
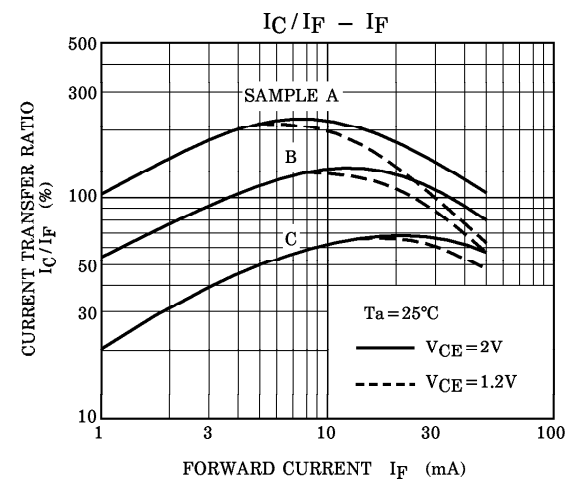
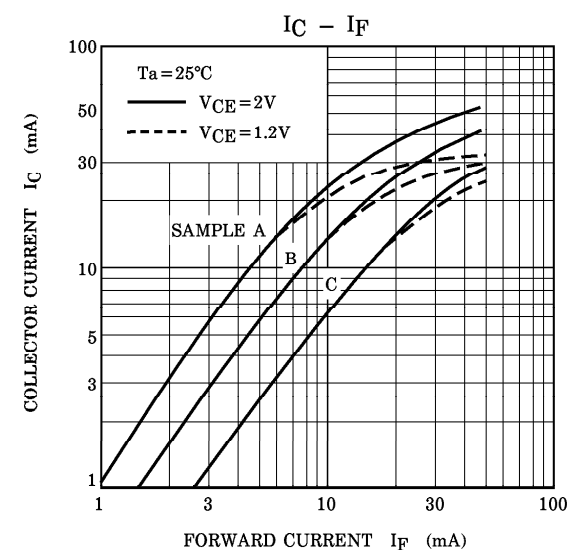
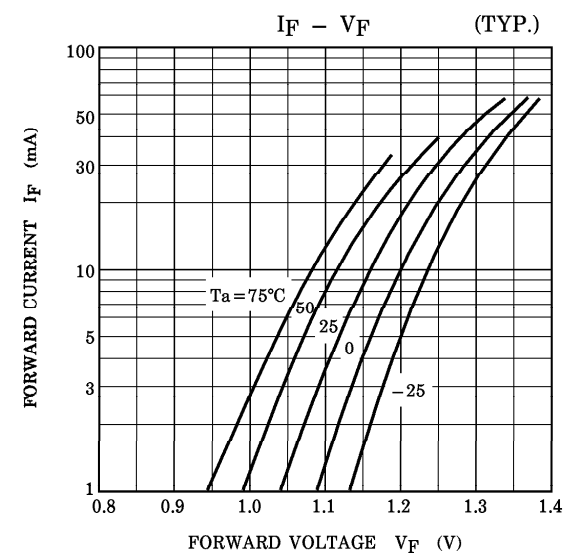
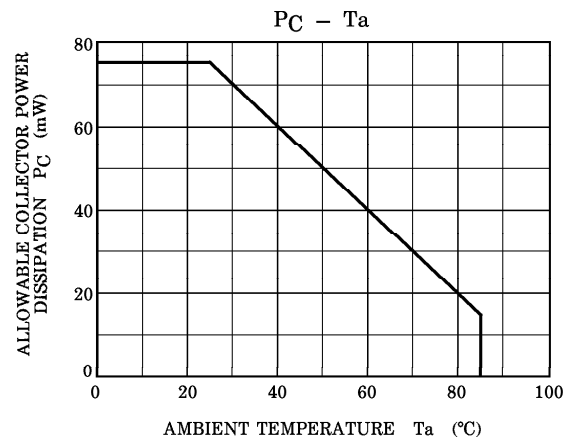
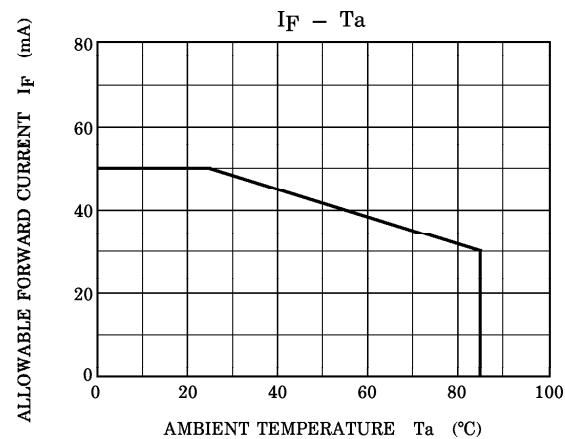
## PRECAUTION

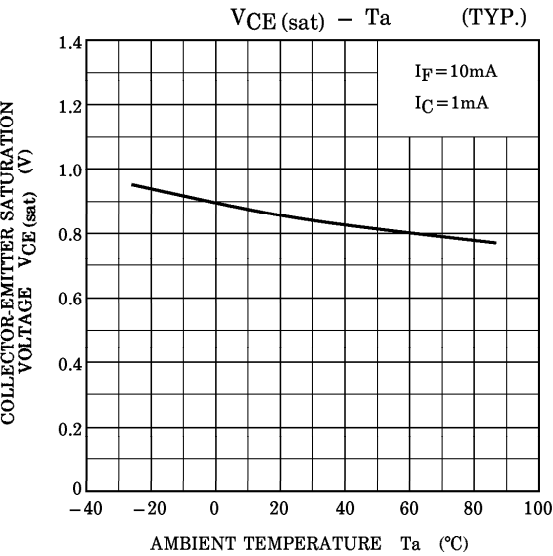
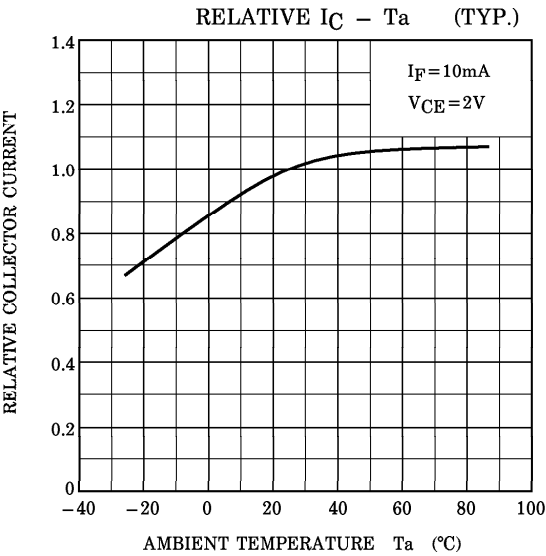
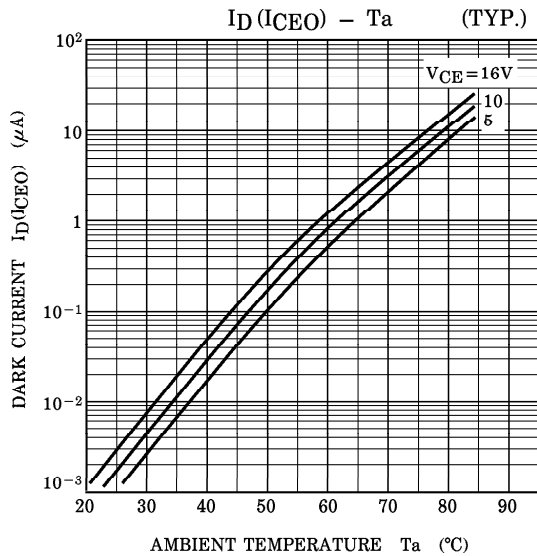
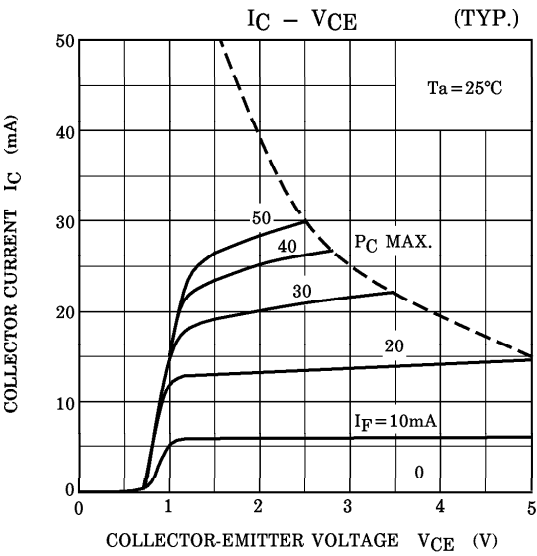
Please be careful of the followings.

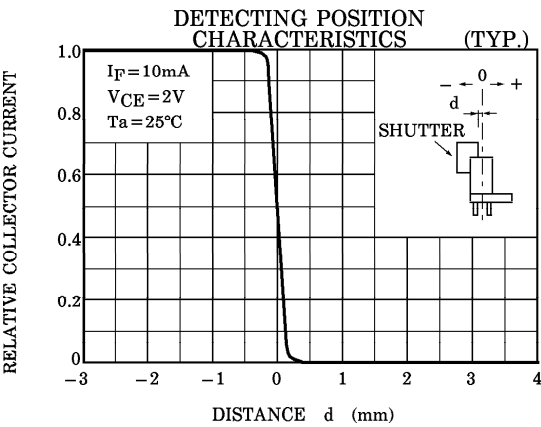
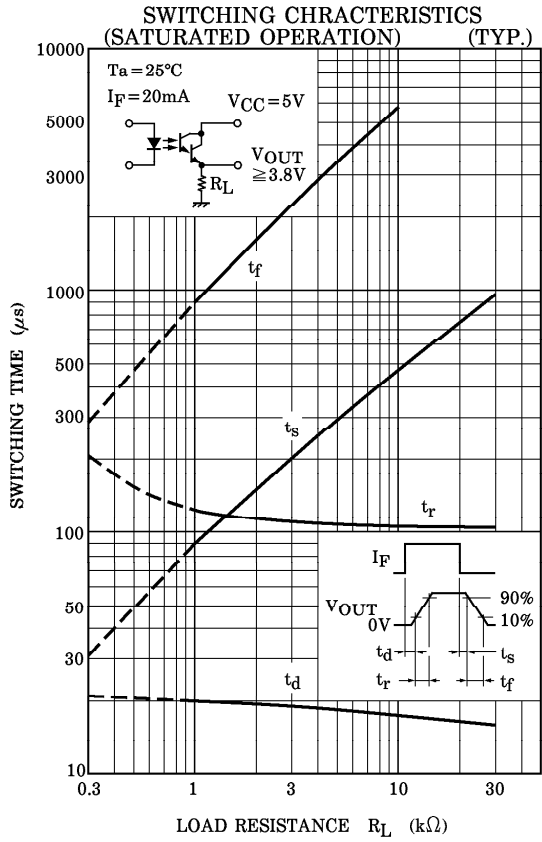
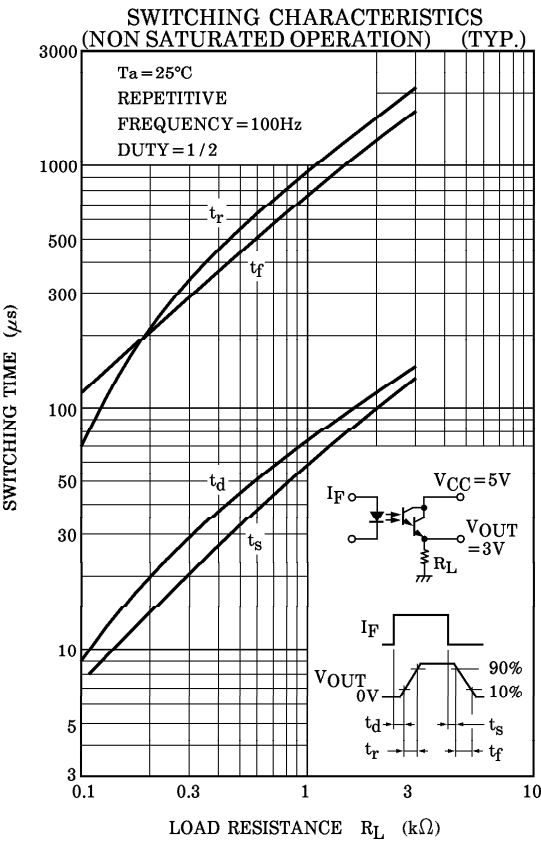
- Soldering temperature : 260°C max Soldering time : 5s max  
(Soldering portion of lead : above 1.5mm from the body of the device)
- If chemical are used for cleaning, the soldered surface only shall be cleaned with chemicals avoiding the whole cleaning of the package.
- The container is made of polycarbonate. 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"> <li>nitric acid (low concentration), hydrogen peroxide, chlorine</li> </ul>
B	Cracked, crazed, or swollen	<ul style="list-style-type: none"> <li>acetic acid (70% or more)</li> <li>gasoline</li> <li>methyl ethyl ketone, ethyl acetate, butyl acetate</li> <li>ethyl methacrylate, ethyl ether, MEK</li> <li>acetone, m-amino alcohol, carbon tetrachloride</li> <li>carbon disulfide, trichloroethylene, cresol</li> <li>thinners, oil of turpentine</li> <li>triethanolamine, TCP, TBP</li> </ul>
C	Melted { } : Used as solvent.	<ul style="list-style-type: none"> <li>concentrated sulfuric acid</li> <li>benzene</li> <li>styrene, acrylonitrile, vinyl acetate</li> <li>ethylenediamine, diethylenediamine</li> <li>{chloroform, methyl chloride, tetrachloromethane, dioxane, 1, 2-dichloroethane}</li> </ul>
D	Decomposed	<ul style="list-style-type: none"> <li>ammonia water</li> <li>other alkali</li> </ul>

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

