TLP850

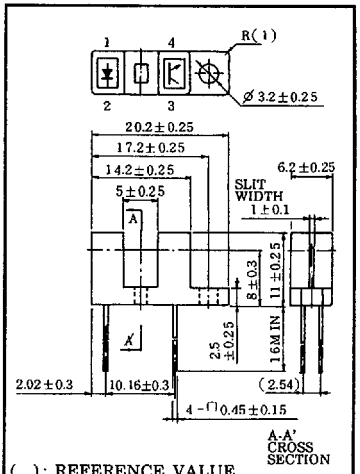
(TLP850)

TIMING DETECTION OF AUTOMATIC CONTROLLER AND COPYING MACHINE.
EDGE SENSOR

TLP850 is a photo interrupter with a wide detecting gap and high current transfer ratio (I_C / I_F).

- Detection gap : 5mm
- Detection slit width : 1mm
- High current transfer ratio : I_C / I_F=40% (MIN.)
- Scarcely affected by disturbance light of short wavelength of fluorescent lamp, etc. by use of visible light cut filter resin.
- Material of the package : Norly1

Unit in mm



( ): REFERENCE VALUE

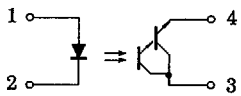
JEDEC	—
EIAJ	—
TOSHIBA	11-20B1

Weight : 0.79g (TYP.)

MAXIMUM RATINGS (Ta = 25°C)

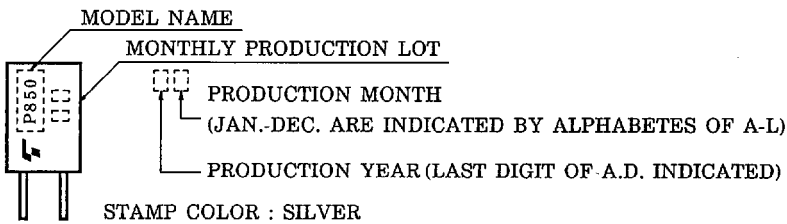
CHARACTERISTIC		SYMBOL	RATING	UNIT
LED	Forward Current	I_R	50	mA
	Forward Current Derating (Ta>25°C)	ΔI_F / °C	−0.33	mA / °C
	Reverse Voltage	V_R	5	V
DETECTOR	Collector-Emitter Voltage	V_{CEO}	30	V
	Emitter Collector Voltage	V_{ECO}	5	V
	Collector Power Dissipation	P_C	75	mA
	Collector Power Dissipation Derating (Ta>25°C)	ΔP_C / °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

PIN CONNECTION



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

PRODUCT INDICATION



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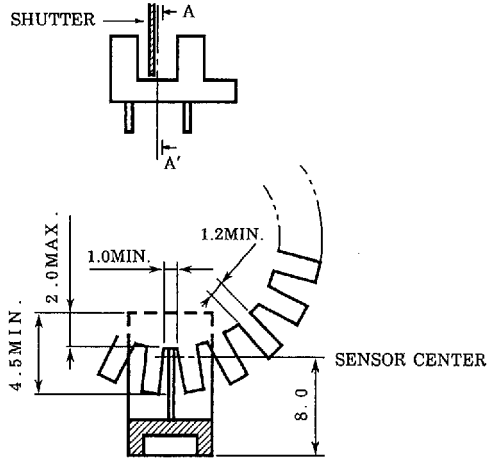
OPTO-ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
LED	Forward Voltage	V_F	I_F=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	40	200	—	%
	Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	I_F=10mA, I_C=2mA	—	0.9	1.2	V
	Rise Time	t_r	V_{CC}=5V, I_C=10mA R_L=100Ω	—	80	—	μs
	Fall Time	t_f		—	70	—	μs

DESIGN SLIT FOR ROTATING LIGHT BLOCKING BOARD.

Design the pitch between slits taking the following into consideration:
release time, light block time, and switching time of photo interrupter when the disk is rotating.



UNIT IN mm

A–A' CROSS SECTION

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PRECAUTION

Please be careful of the followings.

1. Soldering temperature : 260°C MAX. Soldering time : 5s MAX.
   (Soldering portion of lead : above 1.5mm from the body of the device)
2. If chemical are used for cleaning, the soldered surface only shall be cleaned with chemicals avoiding the whole cleaning of the package.
3. The package may be dissolved or cracked by oil or chemicals as it uses norlyl.
4. TLP850 shall be mounted on an unwarped surface.
5. Screw shall be tightened to clamping torque of 0.59N·m.

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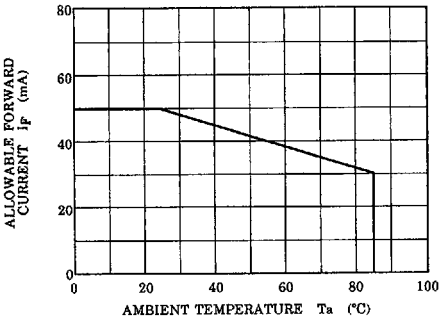
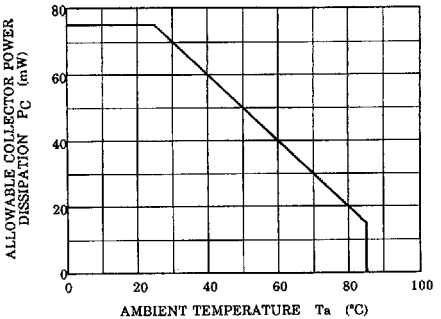
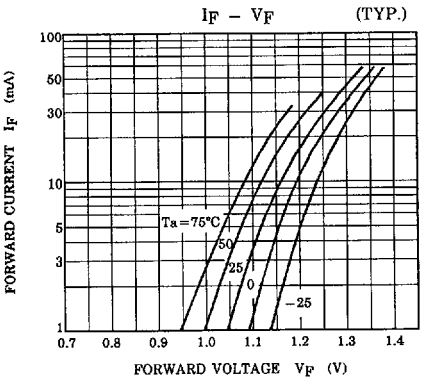
I_F – Ta



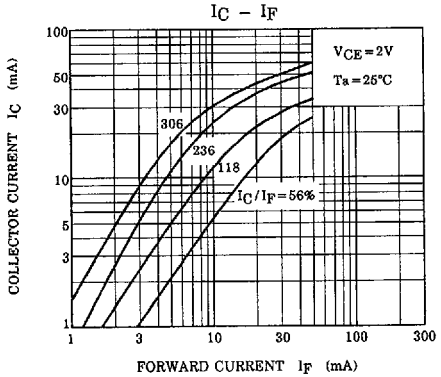
P_C – Ta



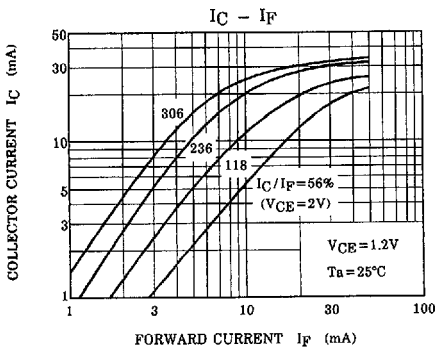
I_F – V_F (TYP.)



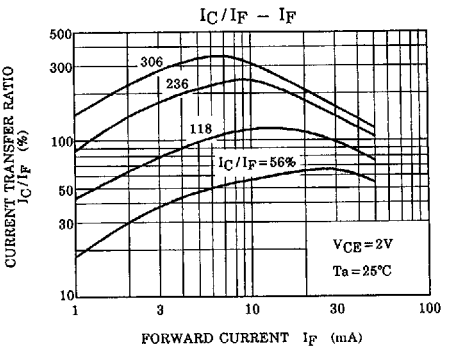
I_C – I_F



I_C – I_F



I_C/I_F – I_F



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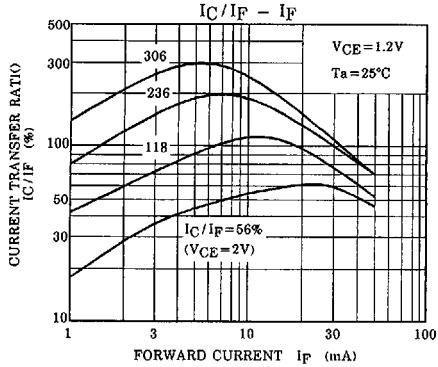
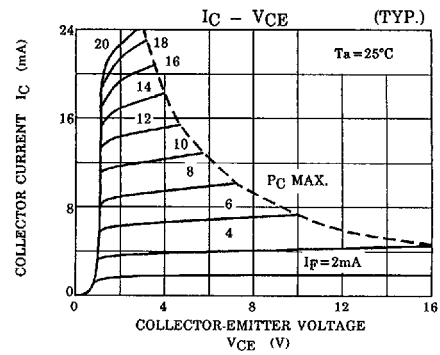
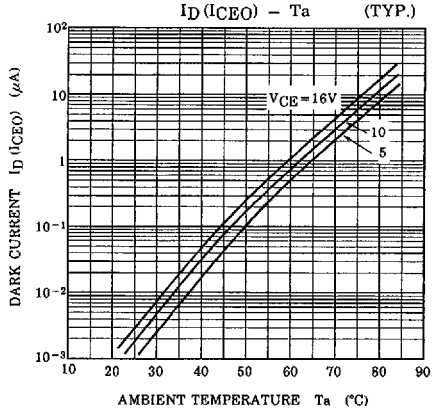
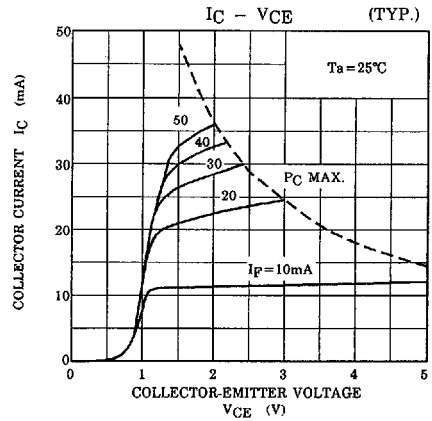
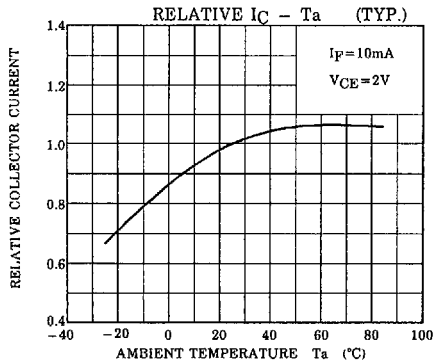
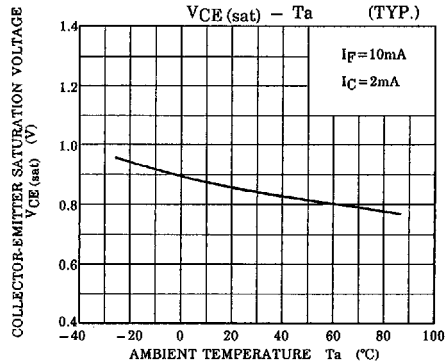

I_C / I_F – I_F
V_{CE} = 1.2V
Ta = 25°C
306
236
118
I_C / I_F = 56%
(V_{CE} = 2V)
CURRENT TRANSFER RATIO
I_C / I_F (%)
FORWARD CURRENT I_F (mA)


I_C – V_{CE} (TYP.)
Ta = 25°C
20
18
16
14
12
10
8
6
4
P_C MAX.
I_F = 2mA
COLLECTOR CURRENT I_C (mA)
COLLECTOR-EMITTER VOLTAGE
V_{CE} (V)


I_D (I_{CEO}) – Ta (TYP.)
V_{CE} = 16V
10
5
DARK CURRENT I_D (I_{CEO}) (μA)
AMBIENT TEMPERATURE Ta (°C)


I_C – V_{CE} (TYP.)
Ta = 25°C
50
40
30
20
P_C MAX.
I_F = 10mA
COLLECTOR CURRENT I_C (mA)
COLLECTOR-EMITTER VOLTAGE
V_{CE} (V)


RELATIVE I_C – Ta (TYP.)
I_F = 10mA
V_{CE} = 2V
RELATIVE COLLECTOR CURRENT
AMBIENT TEMPERATURE Ta (°C)


V_{CE} (sat) – Ta (TYP.)
I_F = 10mA
I_C = 2mA
COLLECTOR-EMITTER SATURATION VOLTAGE
V_{CE} (sat) (V)
AMBIENT TEMPERATURE Ta (°C)

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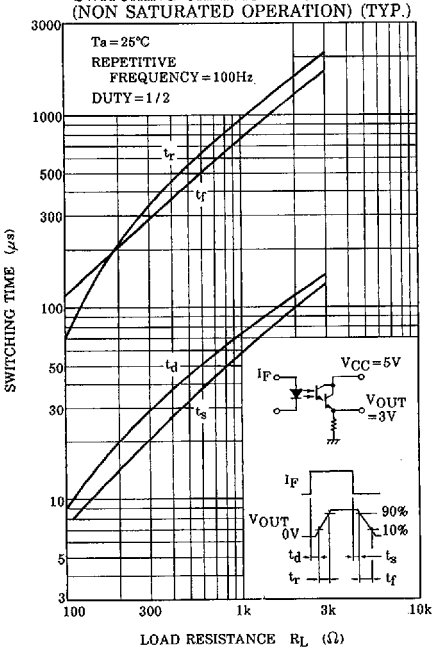
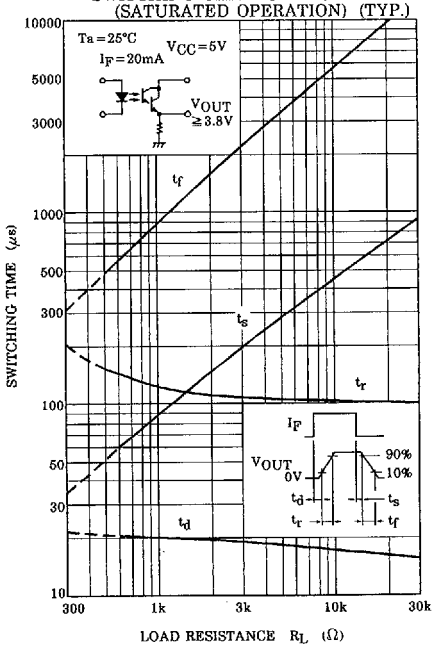
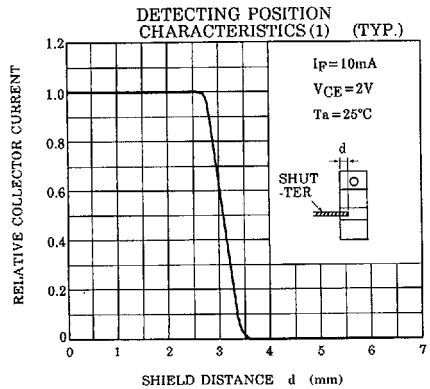
SWITCHING CHARACTERISTICS
(NON SATURATED OPERATION) (TYP.)



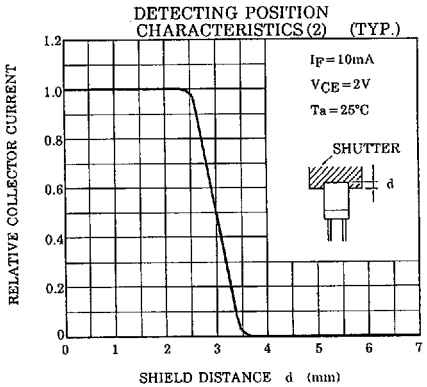
SWITCHING CHARACTERISTICS
(SATURATED OPERATION) (TYP.)



DETECTING POSITION
CHARACTERISTICS (1) (TYP.)



DETECTING POSITION
CHARACTERISTICS (2) (TYP.)



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