

TOSHIBA PHOTOINTERRUPTER INFRARED + PHOTODARLINGTONTRANSISTOR

TLP507A

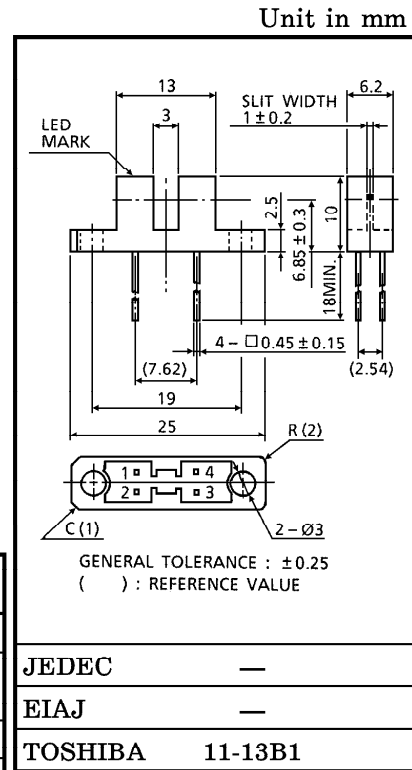
OPTO-ELECTRONIC SWITCH
 AUTOMATIC CONTROL UNIT
 POSITION AND ROTATIONAL SPEED SENSOR

TLP507A is a high current transfer ratio (I_C / I_F) type photo-interrupter.

- Gap : 3mm
- Resolution : Slit width 1mm
- High current transfer ratio : $I_C / I_F = 30\%$ (Min.)
- Dark current : $I_D = 0.25 \mu A$ (Max.)
- Material of the package : Polycarbonate

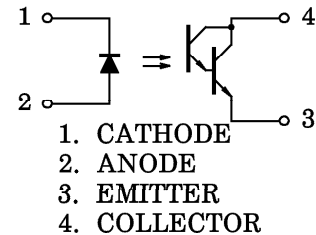
MAXIMUM RATINGS ($T_a = 25^\circ C$)

CHARACTERISTIC		SYMBOL	RATING	UNIT
LED	Forward Current	I_F	50	mA
	Forward Current Derating ($T_a > 25^\circ C$)	$\Delta I_F / ^\circ C$	-0.33	mA / $^\circ C$
	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 ($T_a > 25^\circ C$)	$\Delta P_C / ^\circ C$	-1	mW / $^\circ C$
	Collector Current	I_C	50	mA
Operating Temperature Range		T_{opr}	-25~85	$^\circ C$
Storage Temperature Range		T_{stg}	-30~100	$^\circ C$

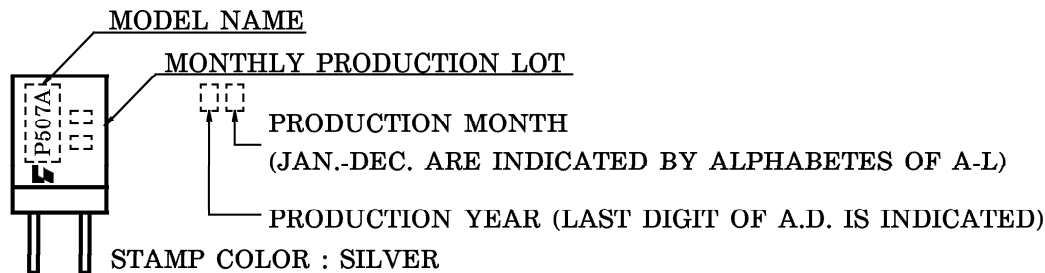


Weight : 0.83g (Typ.)

PIN CONNECTION



PRODUCT INDICATION



961001EBC2

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- 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	—	—	800	—	nm
COUPLED	Current Transfer Ratio	I _C / I _F	V _{CE} = 2V, I _F = 10mA	30	—	440	%
	Rise Time	t _r	V _{CC} = 5V, I _C = 10mA	—	200	—	μA
	Fall Time	t _f	R _L = 100Ω	—	200	—	

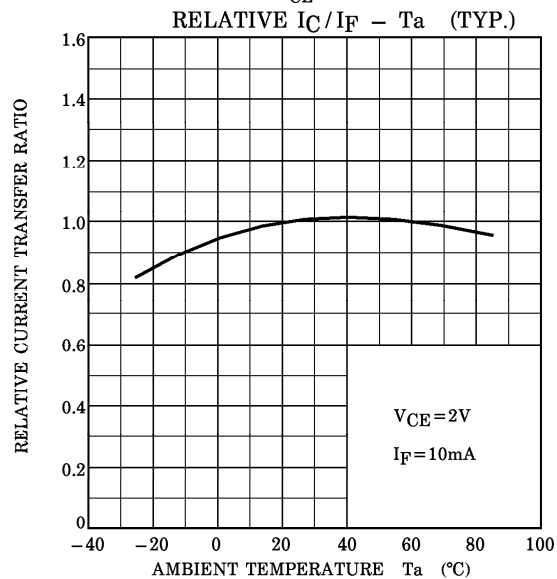
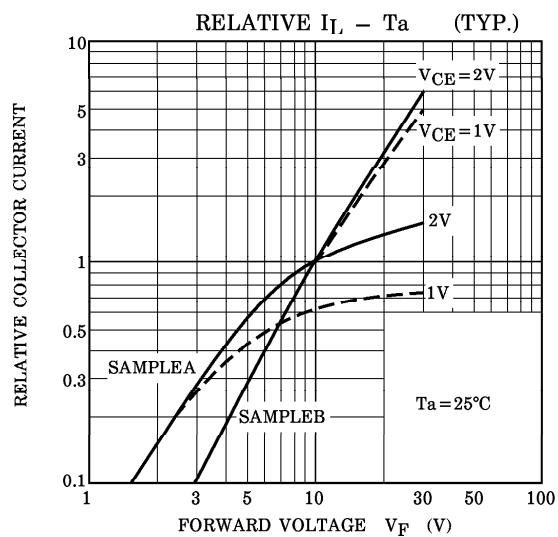
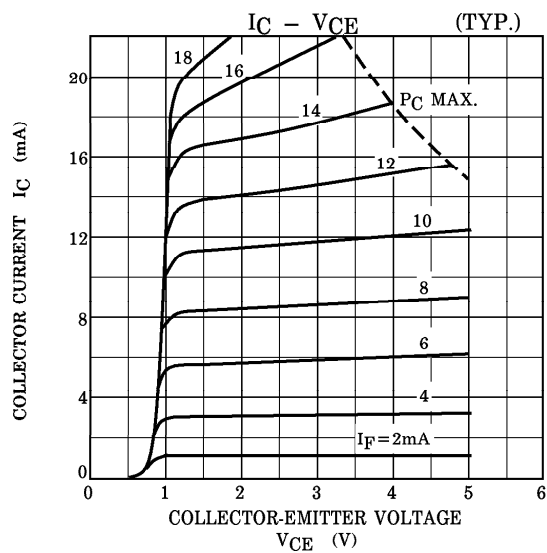
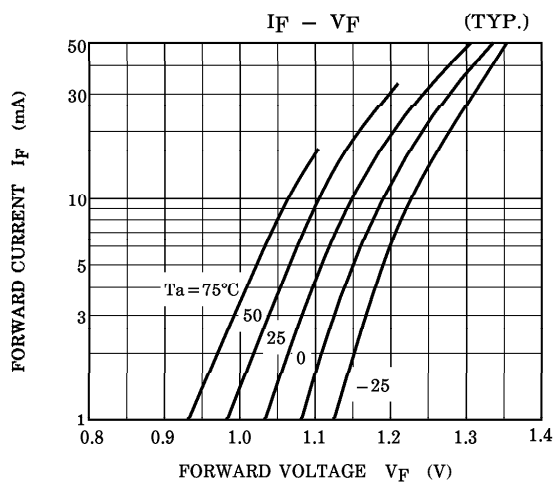
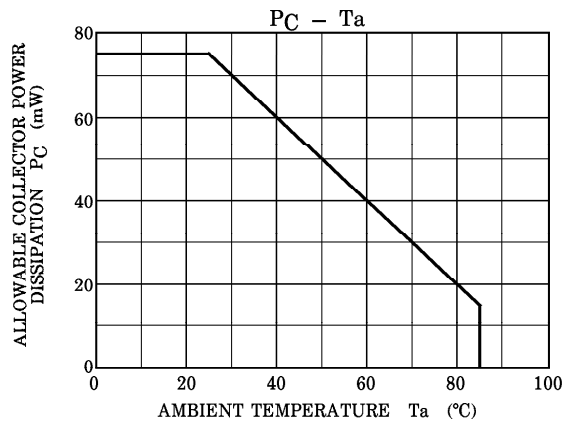
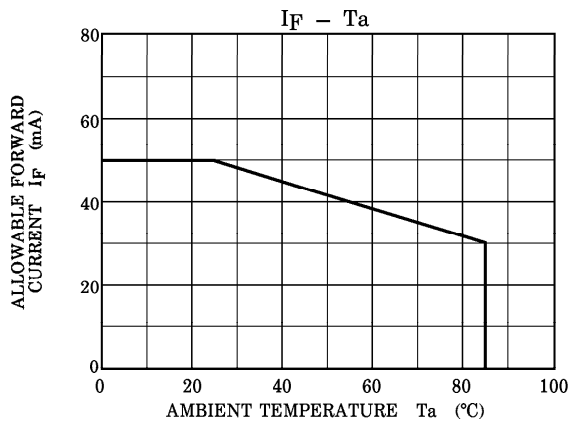
PRECAUTION

Please be careful of the followings.

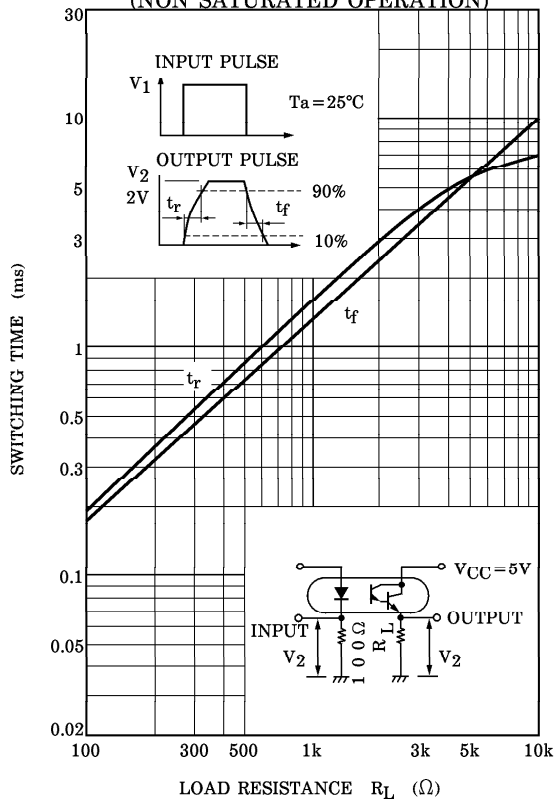
- Soldering temperature : 260°C MAX. Soldering time : 5s MAX.
(Soldering portion of lead : above 1.5mm from the body of the device)
- If chemical are used for cleaning, the soldered surface only shall be cleaned with chemicals avoiding the whole cleaning of the package.
- TLP507A shall be mounted on an unwarped surface.
- Screw shall be tightenend to clamping torque of 0.59N·m.
- The container is made of polycarbonate. Polycarbonate is usually stable with acid, alcohol, and aliphatic hydrocarbons however, with pectochemicals (such as benzene, toluene, and acetone), alkali, aromatic hydrocarbons, or chloric hydrocarbons, polycarbonate becomes cracked, swollen, or melted. Please take care when chosing a packaging material by referencing the table below.

<Chemicals to avoid with polycarbonate>

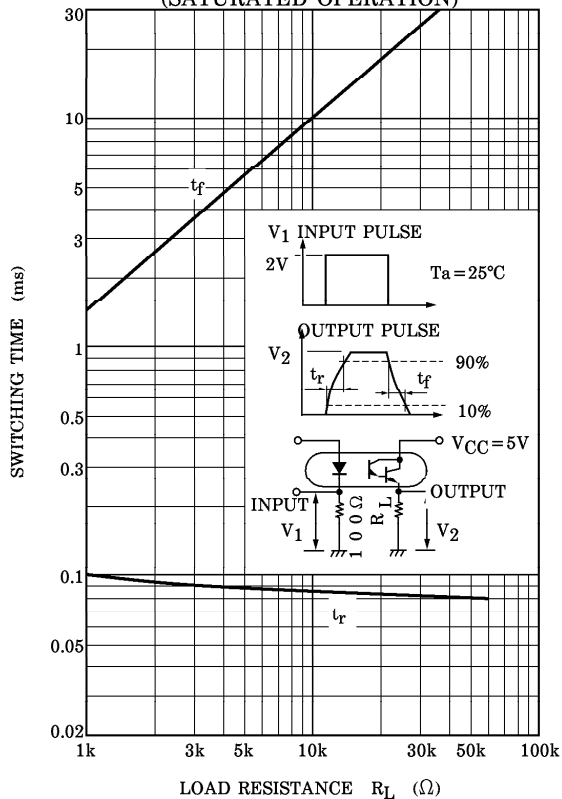
	PHENOMENON	CHEMICALS
A	Little deterioration but staining	<ul style="list-style-type: none"> nitric acid (low concentration), hydrogen peroxide, chlorine
B	Cracked, crazed, or swollen	<ul style="list-style-type: none"> acetic acid (70% or more) gasoline methyl ethyl ketone, ehtyl acetate, butyl acetate 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



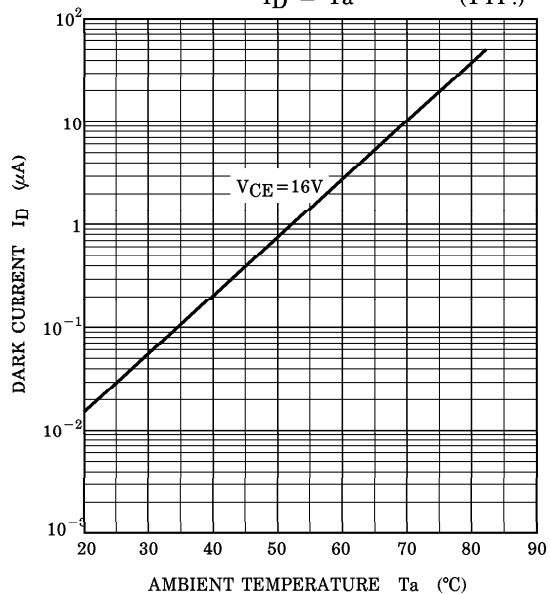
SWITCHING CHARACTERISTICS (NON SATURATED OPERATION)



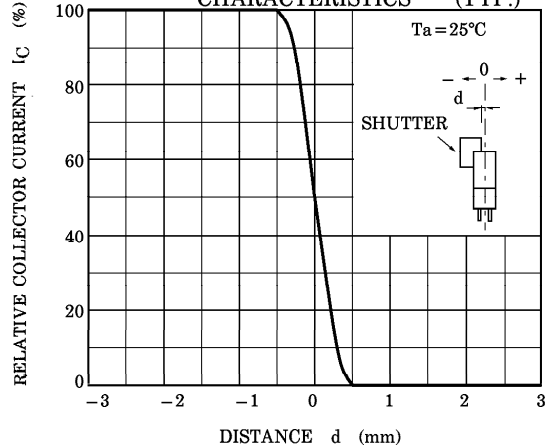
SWITCHING CHARACTERISTICS (SATURATED OPERATION)



$I_D - T_a$ (TYP.)



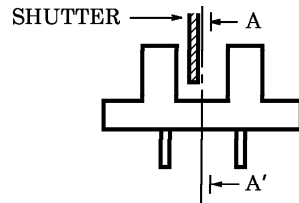
DETECTING POSITION CHARACTERISTICS (TYP.)



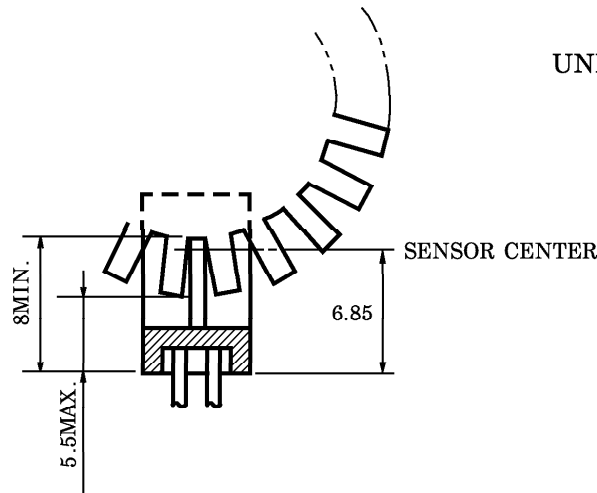
POSITIONING OF SHUTTER AND DEVICE

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.



UNIT IN mm



A - A' CROSS SECTION