

TOSHIBA PHOTOINTERRUPTER INFRARED LED + PHOTOTRANSISTOR

TLP824, TLP825

VCR, COMPACT DISK PLAYER
FLOPPY DISK DRIVE, FACSIMILE, PRINTER
VENDING MACHINE, TICKETING MACHINE
FOR VARIOUS POSITION DETECTION

The TLP824 and TLP825 are photointerrupters with a high radiant power GaAs infrared LED and a Si photo-transistor combined.

- Small package
- PWB direct mounting type : TLP824
- Side mounting type : TLP825
- Gap : 3mm
- Resolution : Slit width 0.5mm
- High current transfer ratio : $I_C / I_F = 6\%$ (min) at $I_F = 10\text{mA}$
- 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)	$\Delta I_F / ^\circ\text{C}$	-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	P_C	75	mW
	Collector Power Dissipation Derating (Ta > 25°C)	$\Delta P_C / ^\circ\text{C}$	-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
Soldering Temperature (5s.)		T_{sol}	260	°C

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RECOMMENDED OPERATING CONDITIONS

CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT
Supply Voltage	V_{CC}	—	5	24	V
Forward Current	I_F	—	10	20	mA
Operating Temperature	T_{opr}	-10	—	75	°C

OPTO-ELECTRICAL CHARACTERISTICS ($T_a = 25^\circ\text{C}$)

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	μA
	Peak Emission Wavelength	λ_P	$I_F = 10\text{mA}$	—	940	—	nm
DETECTOR	Dark Current	$I_D (I_{CEO})$	$V_{CE} = 24\text{V}, I_F = 0$	—	—	0.1	μA
	Peak Sensitivity Wavelength	λ_P		—	870	—	nm
COUPLED	Current Transfer Ratio	I_C / I_F	$V_{CE} = 2\text{V}, I_F = 10\text{mA}$	6	—	90	%
	Collector-Emitter Saturation Voltage	$V_{CE} (\text{sat})$	$I_F = 20\text{mA}, I_C = 0.6\text{mA}$	—	0.1	0.4	V
	Rise Time	t_r	$V_{CC} = 5\text{V}, I_C = 1\text{mA}$ $R_L = 1\text{k}\Omega$	—	15	50	μs
	Fall Time	t_f		—	15	50	

PRECAUTION

Please be careful of the followings.

1. If chemical are used for cleaning, the soldered surface only shall be cleaned with chemicals avoiding the whole cleaning of the package.
2. 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.

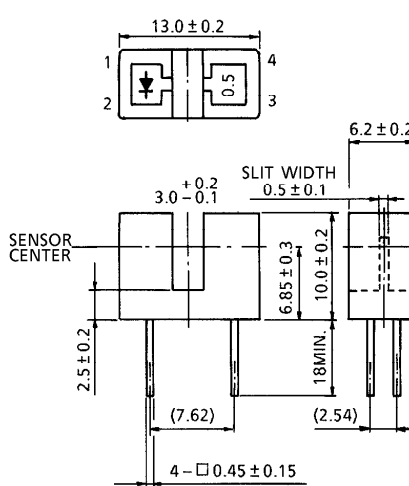
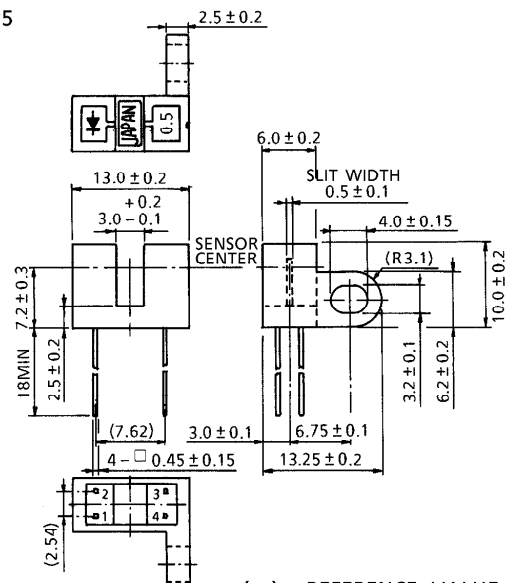
<Chemicals to avoid with polycarbonate>

	PHENOMENON	CHEMICALS
A	Little deterioration but staining	• nitric acid (low concentration), hydrogen peroxide, chlorine
B	Cracked, crazed, or swollen	• 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.	• concentrated sulfuric acid • benzene • styrene, acrylonitrile, vinyl acetate • ethylenediamine, diethylenediamine • {chloroform, methyl chloride, tetrachloromethane, dioxane, 1, 2-dichloroethane}
D	Decomposed	• ammonia water • other alkali

3. TLP824, TLP825 shall be mounted on unwarped surface.
4. Screw shall be tightened to clamping torque of 0.59N·m. (TLP825)

OUTLINE DRAWINGS

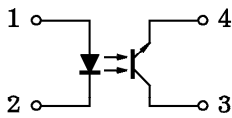
Unit in mm

TLP824  () : REFERENCE VALUE <table><tr><td>JEDEC</td><td>—</td></tr><tr><td>EIAJ</td><td>—</td></tr><tr><td>TOSHIBA</td><td>11-13K1</td></tr></table>	JEDEC	—	EIAJ	—	TOSHIBA	11-13K1	TLP825  () : REFERENCE VALUE <table><tr><td>JEDEC</td><td>—</td></tr><tr><td>EIAJ</td><td>—</td></tr><tr><td>TOSHIBA</td><td>11-13M1</td></tr></table>	JEDEC	—	EIAJ	—	TOSHIBA	11-13M1
JEDEC	—												
EIAJ	—												
TOSHIBA	11-13K1												
JEDEC	—												
EIAJ	—												
TOSHIBA	11-13M1												

Weight : 0.81g (typ.)

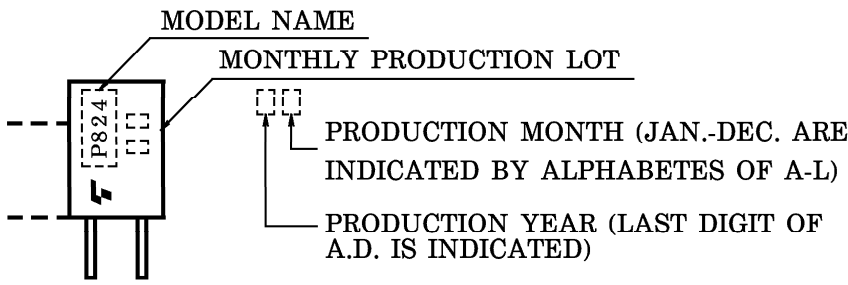
Weight : 0.82g (typ.)

PIN CONNECTION



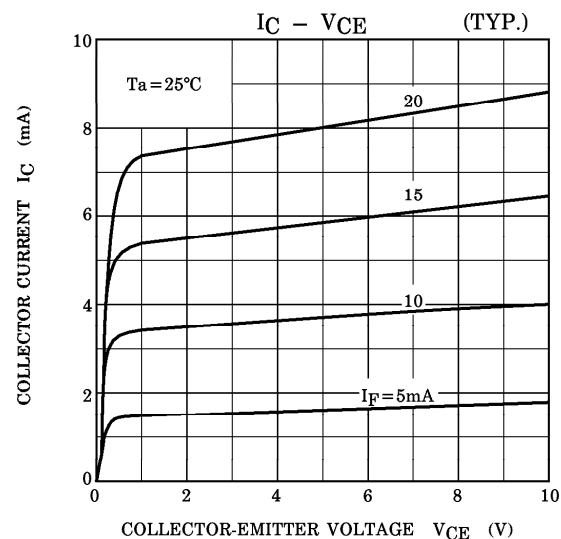
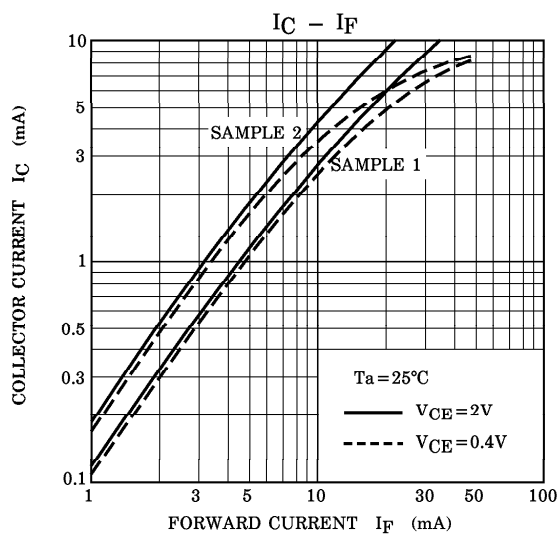
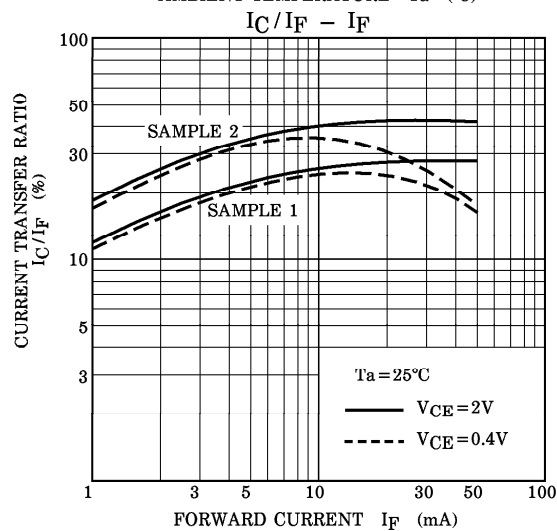
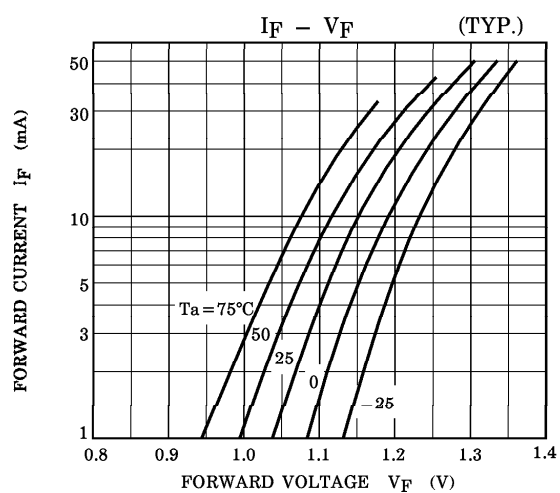
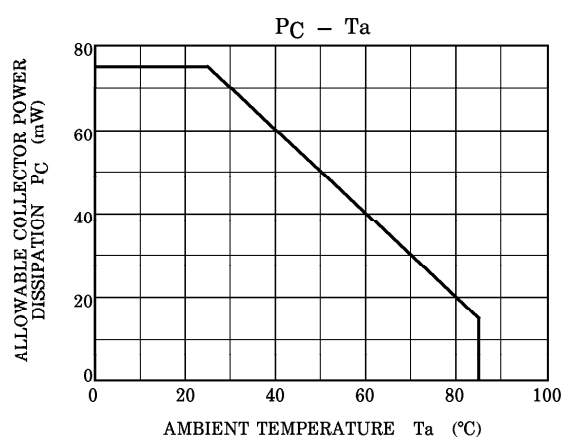
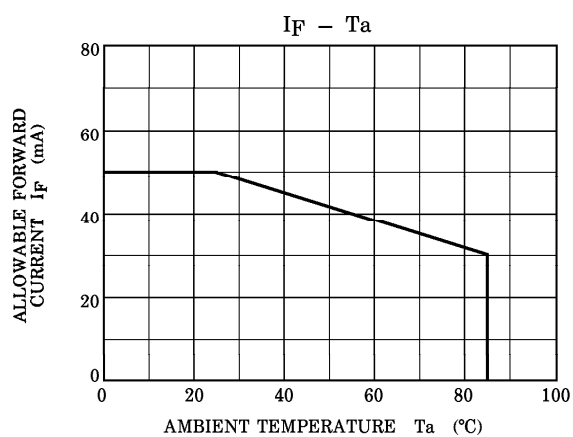
- 1. ANODE
- 2. CATHODE
- 3. COLLECTOR
- 4. EMITTER

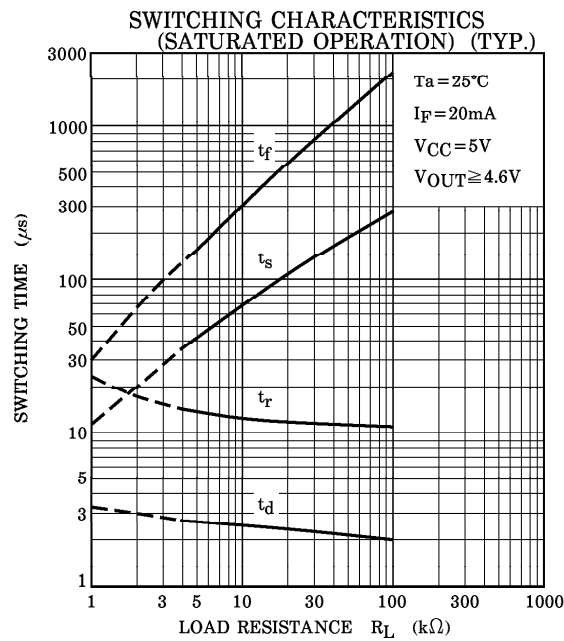
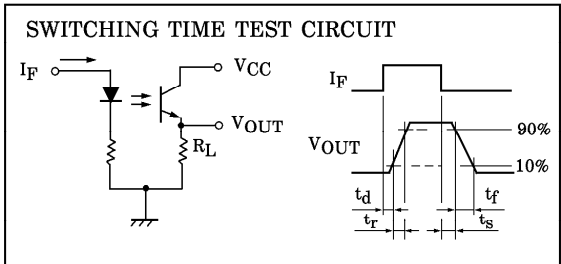
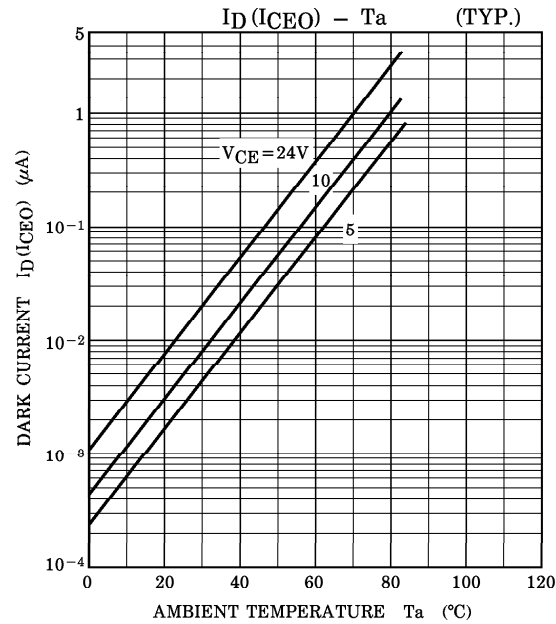
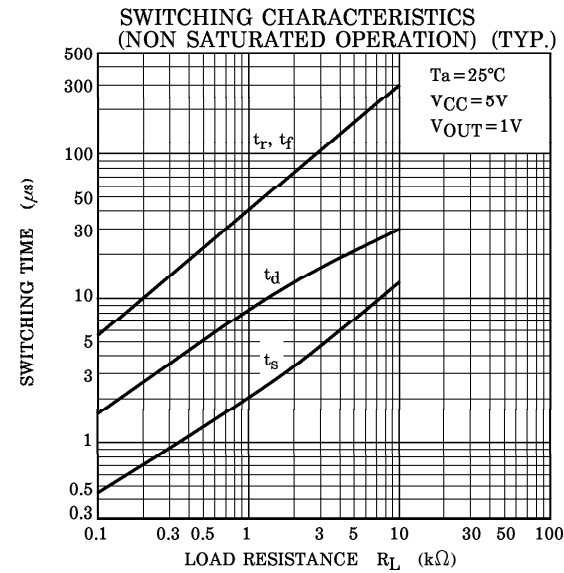
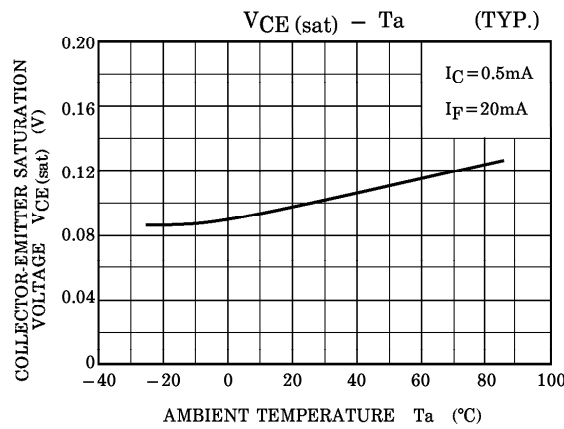
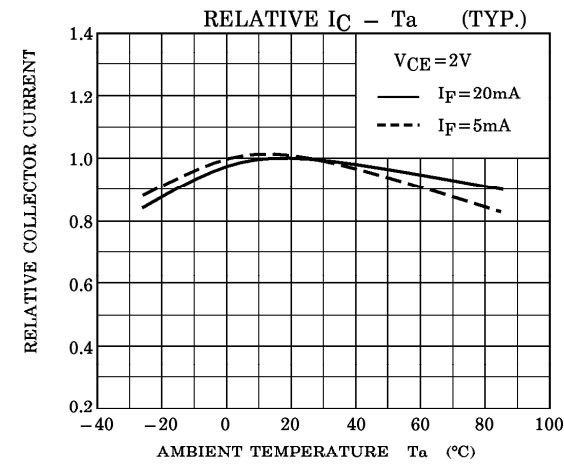
PRODUCT INDICATION

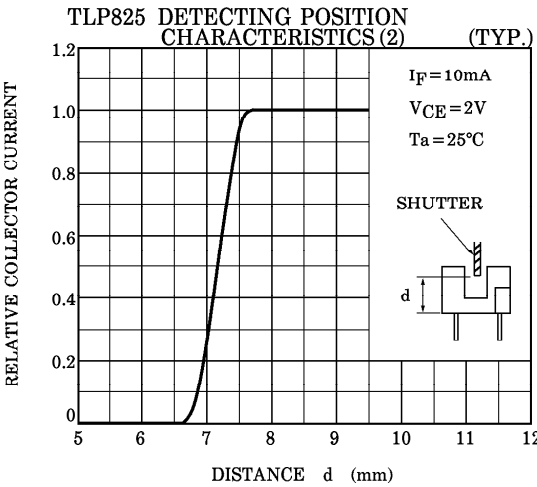
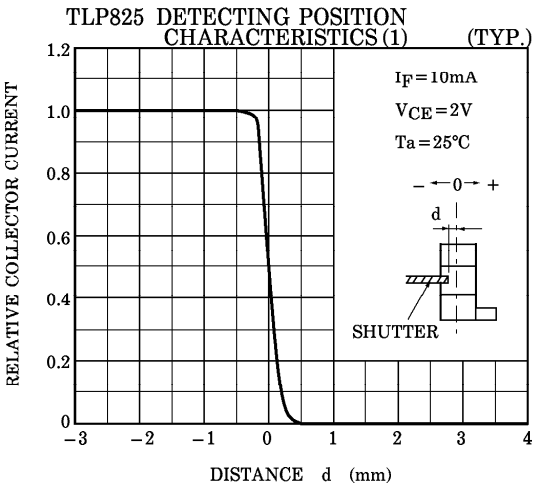
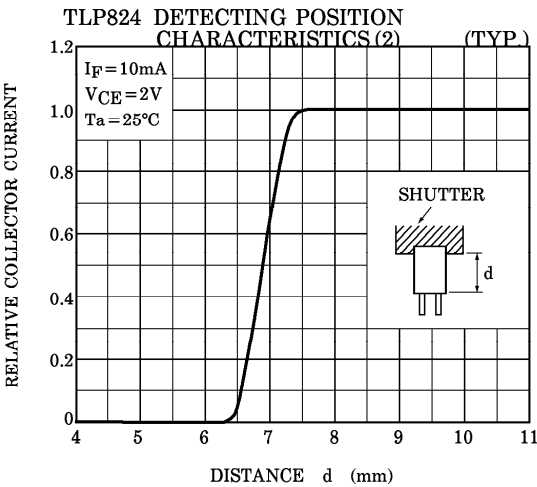
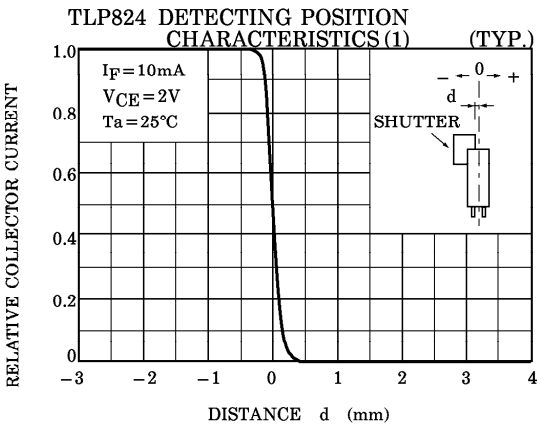


ABBREVIATION	TYPE
P824	TLP824
P825	TLP825

STAMP COLOR : SILVER





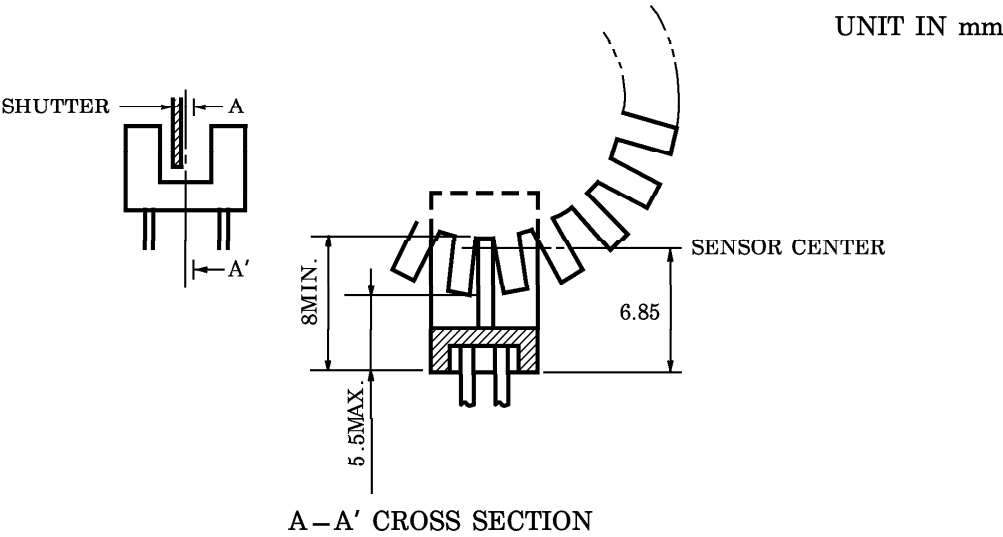


POSITIONING OF SHUTTER AND DEVICE

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.

TLP824



TLP825

