

TOSHIBA PHOTOINTERRUPTER INFRARED LED + PHOTOTRANSISTOR

TLP1240(C5)

COPIER, PAGE PRINTIR, FACSIMILE
 FAN-HEATER, AIR CONDITIONER
 TERMINAL EQUIPMENT IN BANKING FACILITIES
 GAME MACHINE

TLP1240 (C5) is a compact photointerrupter with attached connector which uses a high-radiant power GaAs infrared LED and a Si phototransistor. It is optimum as a paper carrier location sensor for copiers and page printers. Operating temperature is up to 95°C. Thus the device can be used for high-temperature applications like paper-out sensors or air direction for air conditioner louvers. Open collector outputs are enabled using a phototransistor. TLP1240 (C5) is a photointerrupter in highly reliable package which eliminates the need for printed circuit board and soldering.

- Small package
- Mountable by one touch (Snap-in mounting type)
- Mountable to boards in 2 kinds of thickness (1.0 mm, 1.2 mm)
- Gap : 5 mm
- Resolution : Slit width 0.5 mm
- Large temperature range : $T_{opr} = -25\sim 95^{\circ}\text{C}$, $T_{stg} = -40\sim 100^{\circ}\text{C}$
- High current transfer ratio : $I_C / I_F = 5\%$ (min)
- Connectors : Incorporated in mold package (compatible with AMP (Japan), Ltd. made CT connector)
- Material of the case : Body Polycarbonate (UL94V-2)
 : Connector ... Polybutylene terephthalate (UL94V-0)

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

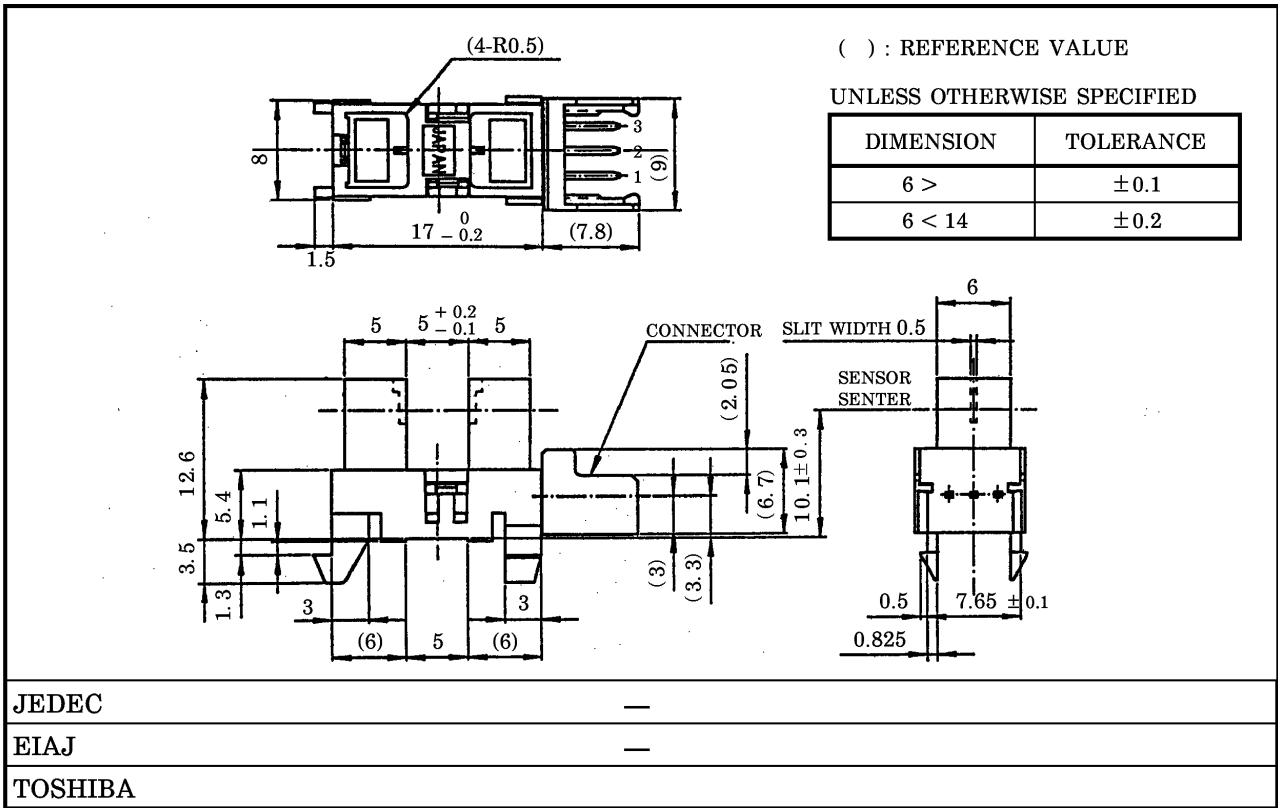
CHARACTERISTIC	SYMBOL	RATING	UNIT
Forward Current	I_F	50	mA
Forward Current Derating	$\Delta I_F / ^{\circ}\text{C}$	-0.33	mA / °C
		-2	
Reverse Voltage	V_R	5	V
Collector-Emitter Voltage	V_{CEO}	35	V
Emitter-Collector Voltage	V_{ECO}	5	V
Collector Power Dissipation	P_C	75	mW
Collector Power Dissipation Derating ($T_a > 25^{\circ}\text{C}$)	$\Delta P_C / ^{\circ}\text{C}$	-1	mW / °C
Collector Current	I_C	50	mA
Operating Temperature Range	T_{opr}	-25~95	°C
Storage Temperature Range	T_{stg}	-40~100	°C

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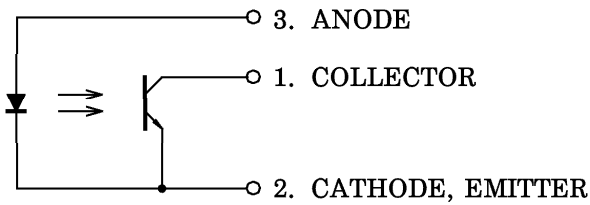
OUTLINE

UNIT IN : mm

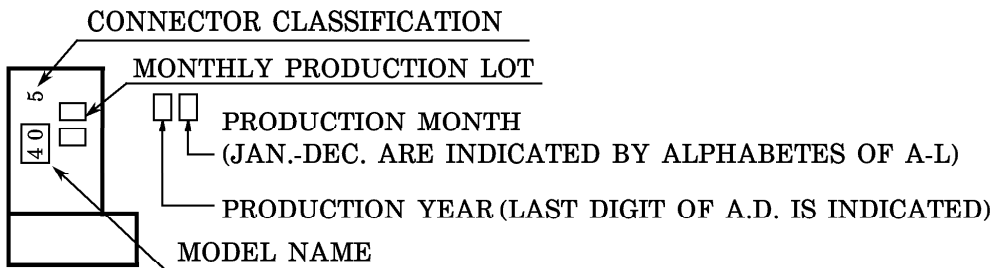


PIN CONNECTION

Weight : 1.4 g (typ.)



PRODUCT INDICATION

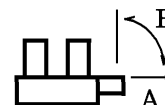


OPTO-ELECTRICAL CHARACTERISTICS (Ta = 25°C)

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	μA
	Peak Emission Wavelength	λ_P	$I_F = 10 \text{ mA}$	—	940	—	nm
DETECTOR	Dark Current	I_D	$V_{CE} = 24 \text{ V}, I_F = 0$	—	0.001	0.1	μA
	Peak Sensitivity Wavelength	λ_P	—	—	870	—	nm
COUPLED	Current Transfer Ratio	I_C / I_F	$V_{CE} = 2 \text{ V}, I_F = 10 \text{ mA}$	5	—	100	%
	Collector-Emitter Saturation Voltage	$V_{CE}(\text{sat})$	$I_F = 20 \text{ mA}, I_C = 0.5 \text{ mA}$	—	0.1	0.35	V
	Rise Time	t_r	$V_{CC} = 5 \text{ V}, I_C = 1 \text{ mA}$	—	15	50	μs
	Fall Time	t_f	$R_L = 1 \text{ k}\Omega$	—	15	50	

TERMINAL STRENGTH (Ta = 25°C)

CHARACTERISTIC	TEST CONDITION		LIMIT
PULL	DIRECTION	A	NO DEFECT OF ELECTRICAL CHARACTERISTICS
	WEIGHT	19.6 N	
	TIME	5 s / ONCE	
BEND	DIRECTION	B	
	WEIGHT	9.8 N	
	TIME	5 s / THRICE	



PRECAUTION

1. When installing, avoid to work by holding the connector by hand. Always, install by holding the main body of the element while assuring the mounting board is not warped or twisted. The connectors shall be inserted or pulled out at normal temperature.
2. It is recommended to mount this product by inserting from the sheet metal pressed side.
3. Do not solder the lead or printed circuit board to the connector. Connect the connector to the recommended connector correctly.
4. Do not use flux for cleaning.
5. A visible light cut-off type photo transistor which blocks light with frequencies of 700 nm or above is used. However, the device cannot block ambient light with a wavelength of 700 nm or more or sunlight. Install avoiding the disturbance light.

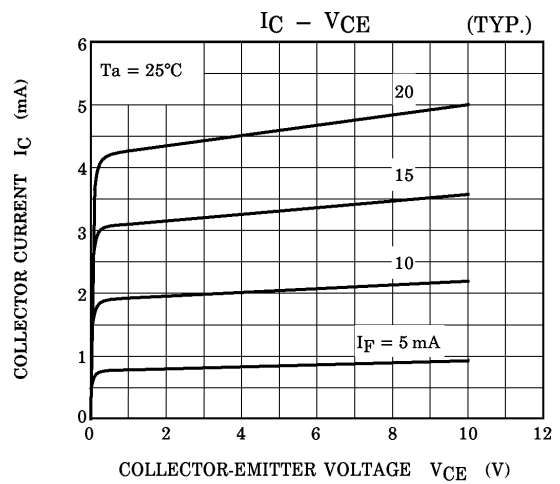
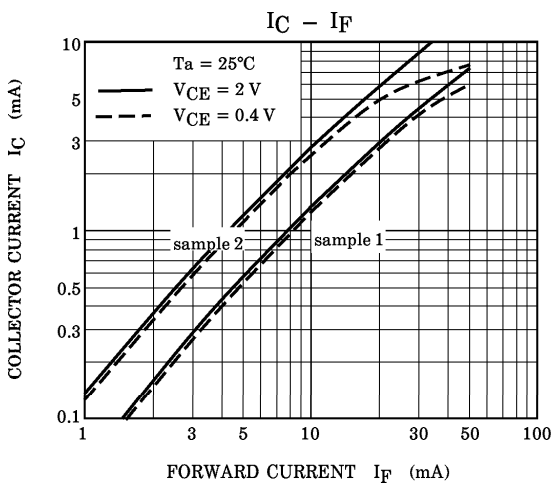
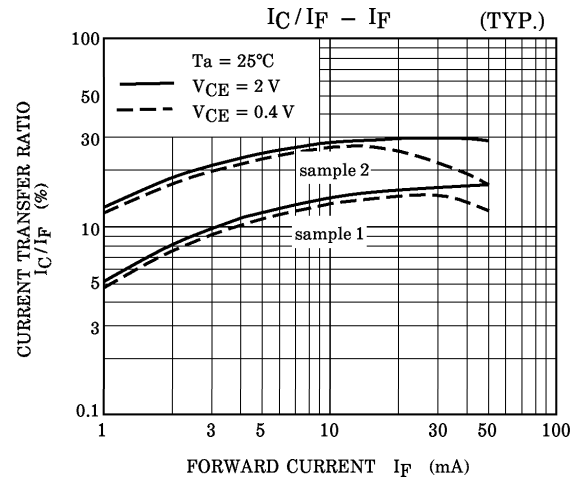
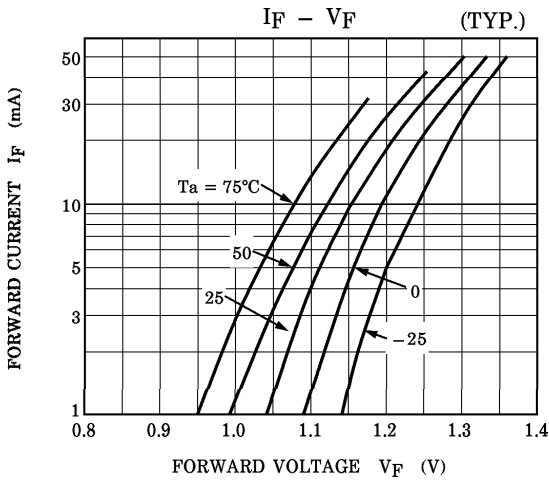
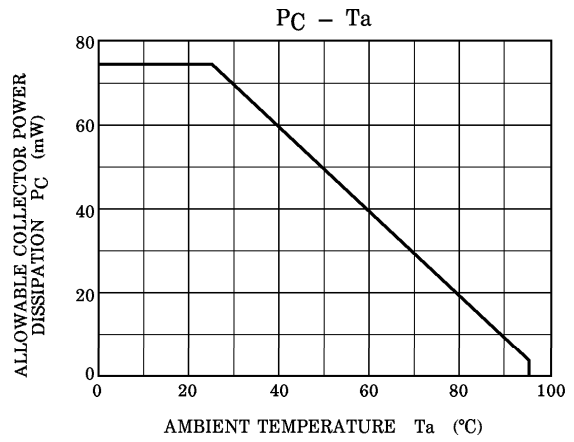
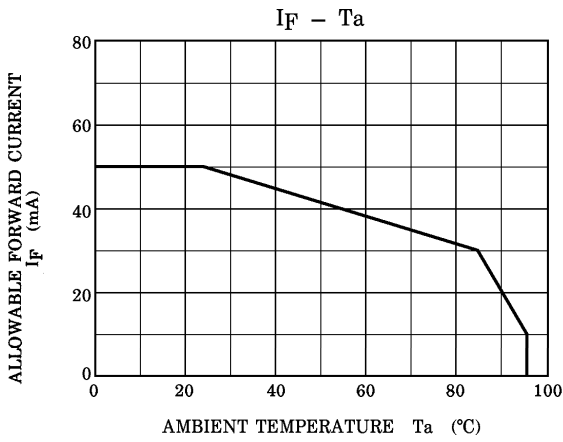
RECOMMENDABLE MATCHED CONNECTOR

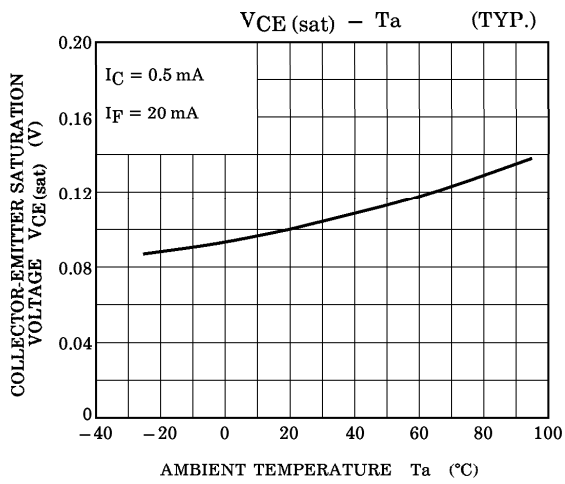
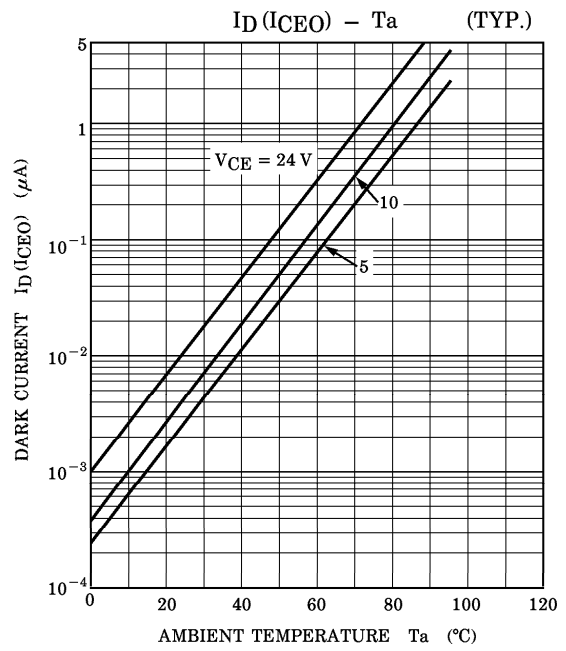
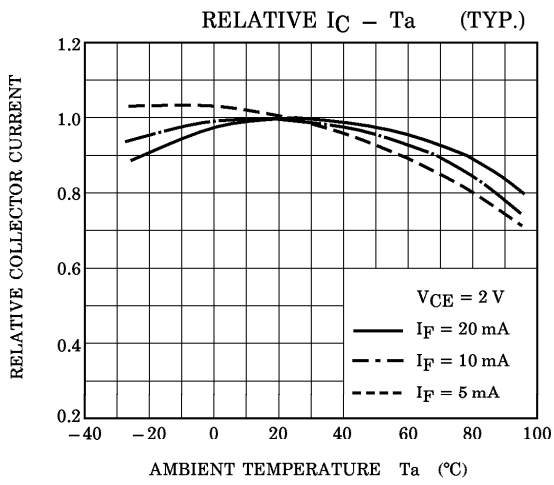
AMP (Japan), Ltd. made CT connector

HOUSING-TERMINAL EN BLOCK TYPE	TYPE No.	TERMINAL MATERIAL	AWG SIZE	INSULATION DIAMETER
	173977-3	PHOSPHOR BRONZE	AWG 26~28	0.85~1.05 mm

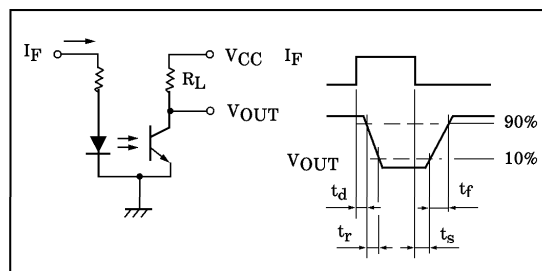
For details of the matched connectors, please refer to the connector maker.

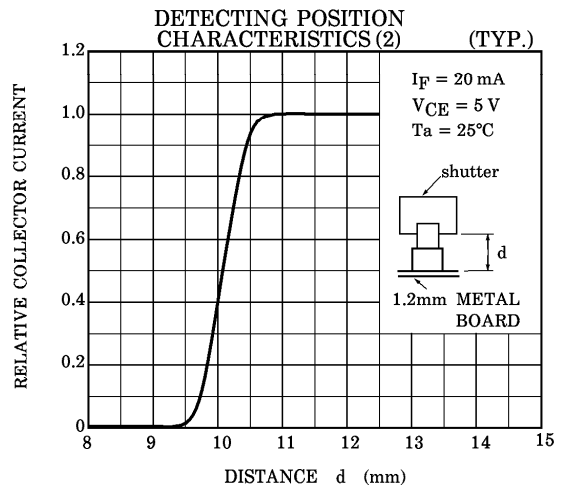
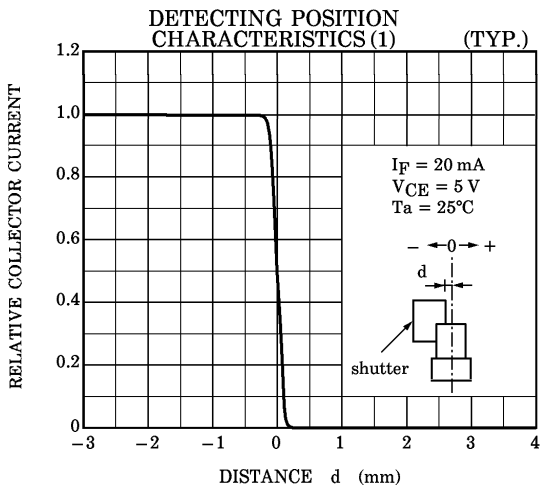
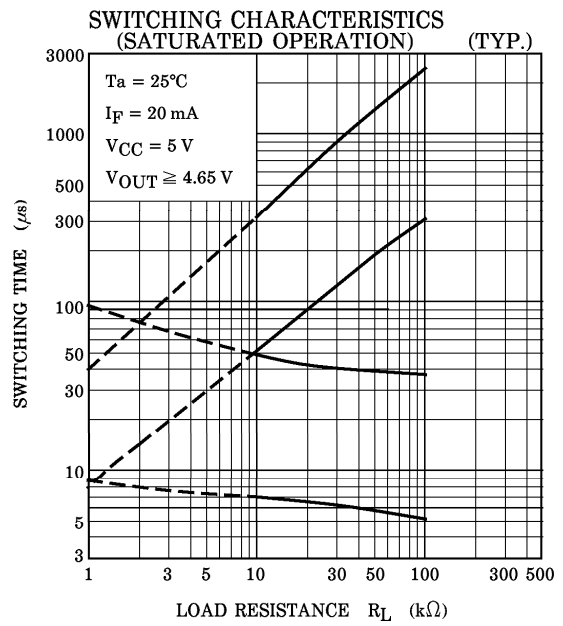
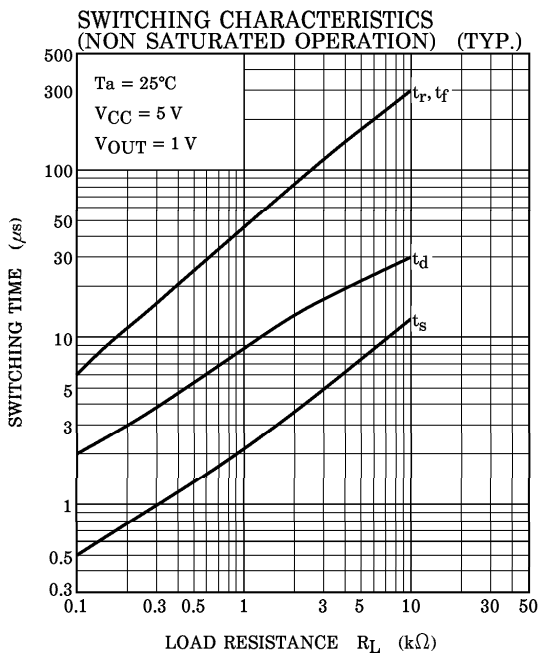
Note that the device cannot be connected to a MT crimp receptacle type connector housing.





SWITCHING TIME TEST CIRCUIT

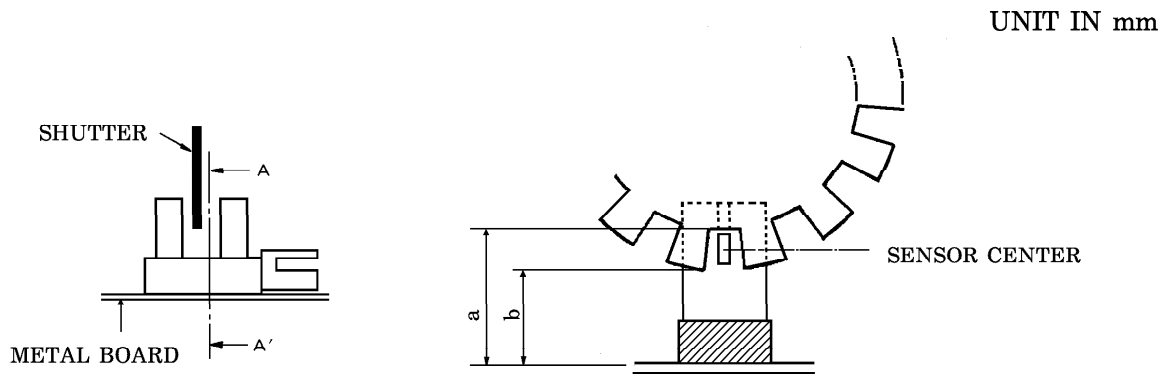




POSITIONING OF SHUTTER AND DEVICE

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.



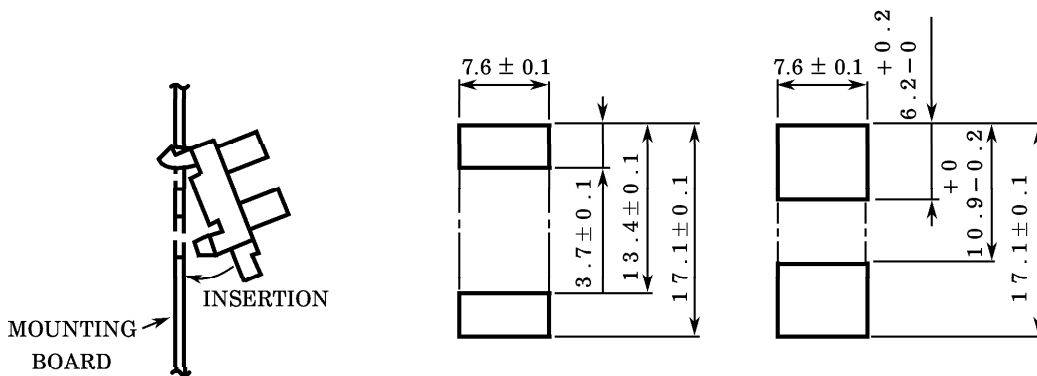
UNIT IN mm

Unit : mm

A-A' CROSS SECTION

METAL BOARD THICKNESS	a SIZE	b SIZE
1.0	11.9 MIN.	9.4 MAX.
1.2	11.7 MIN.	9.2 MAX.

RECOMMENDED MOUNTING HOLE



MOUNTING AWAY

FOR THICKNESS

1.0 mm

FOR THICKNESS

1.2 mm