

TOSHIBA PHOTOREFLECTIVE SENSORS INFRARED LED + PHOTODARLINGTON TRANSISTOR

TLP907, TLP907 (LB)

DETECTION OF START AND END MARKS ON VIDEO
AND AUDIO TAPE

DETECTION OF VCR REEL ROTATION

DETECTION OF INDEX WRITE-PROTECT AND
PRESENCE OF DISK FOR FLOPPY DISK DRIVE

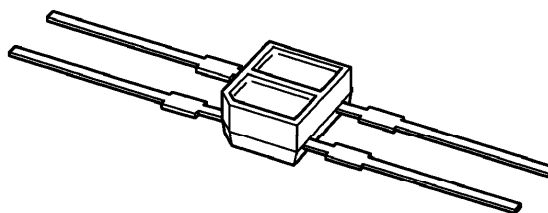
TIMING DETECTION IN ELECTRONIC PRINTERS AND
TYPEWRITERS

READING OF CAMERA FILM INFORMATION (DX
CODE)

- Very small package : 2.6 mm × 3.4 mm
(height 1.5 mm)

TLP907 : Flat-lead type
TLP907 (LB) : Small DIP
- Short detection distance : Optimum distance
0.5 mm~1.5 mm
- High sensitivity : $I_C = 3 \text{ mA}$ (typ.)
- Protected from external light by black mold
package.

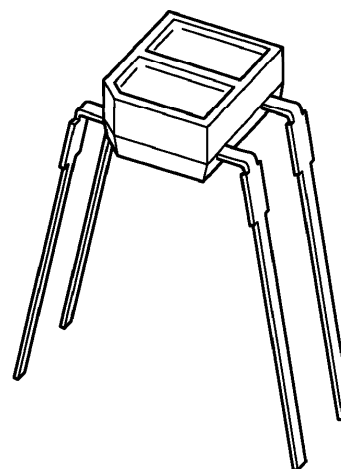
TLP907



TOSHIBA

11-4B1

TLP907 (LB)



TOSHIBA

11-4B101

Weight : 0.05 g (typ.)

MAXIMUM RATINGS (Ta = 25°C)

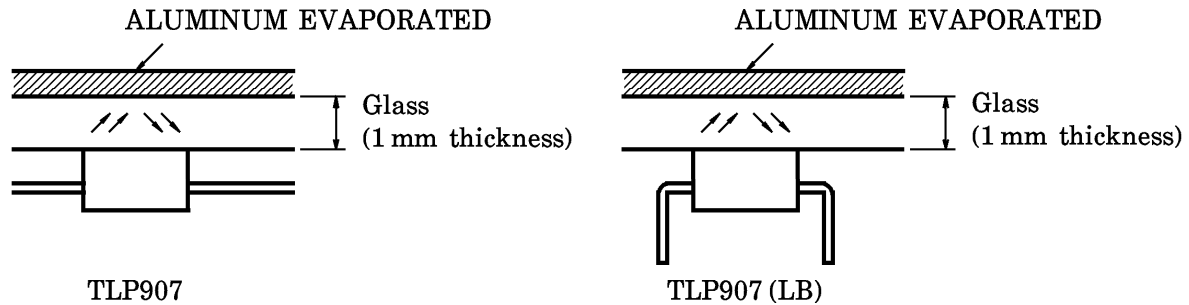
CHARACTERISTIC		SYMBOL	RATING	UNIT
LED	Forward Current	I _F	50	mA
	Forward Current Derating (Ta > 25°C)	ΔI _F / °C	-0.67	mA / °C
	Pulse Forward Current (Note 1)	I _{FP}	400	mA
	Reverse Voltage	V _R	5	V
DETECTOR	Collector-Emitter Voltage	V _{CEO}	30	V
	Emitter-Collector Voltage	V _{ECO}	5	V
	Collector Power Dissipation	P _C	50	mW
	Collector Power Dissipation Derating (Ta > 25°C)	ΔP _C / °C	-0.67	mW / °C
	Collector Current	I _C	20	mA
Operating Temperature Range		T _{opr}	-25~85	°C
Storage Temperature Range		T _{stg}	-30~10	°C

(Note 1) : Pulse width ≤ 100 μs, Repetitive frequency = 100 Hz

OPTICAL AND ELECTRICAL CHARACTERISTICS (Ta = 25°C)

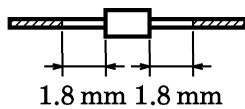
CHARACTERISTIC		SYMBOL	TEST CONDITION	Min	Typ.	Max	UNIT
LED	Forward Voltage	V _F	I _F = 10 mA	1.00	1.15	1.30	V
	Reverse Current	I _R	V _R = 5 V	—	—	10	μA
	Peak Emission Wavelength	λ _P	I _F = 4 mA	—	940	—	nm
DETECTOR	Dark Current	I _D (I _{CEO})	V _{CE} = 16 V, I _F = 0	—	—	0.25	μA
	Peak Sensitivity Wavelength	λ _P	—	—	900	—	nm
COUPLED	Current Current	I _C	V _{CE} = 2 V, I _F = 4 mA	TLP907	0.5	3	15
				TLP907 (R)	0.5	—	1.9
				TLP907 (O)	1.45	—	5.4
				TLP907 (Y)	4.5	—	15
				TLP907 (LB)	0.5	3	15
				TLP907 (R, LB)	0.5	—	1.9
				TLP907 (O, LB)	1.45	—	5.4
				TLP907 (Y, LB)	4.5	—	15
	Leakage Current	I _{LEAK}	V _{CE} = 2 V, I _F = 4 mA without reflector	—	—	0.25	μA
	Collector-Emitter Saturation Voltage	V _{CE} (sat)	I _F = 4 mA, I _C = 0.25 mA	—	0.85	1.2	V
	Rise Time	t _r	V _{CC} = 5 V, I _C = 10 mA, R _L = 100 Ω	—	100	—	μs
	Fall Time	t _f		—	100	—	

(Note 2) : Collector current test method

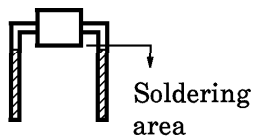


PRECAUTIONS

- Soldering temperature : 260°C max Soldering time : 3 s max



TLP907



TLP907 (LB)

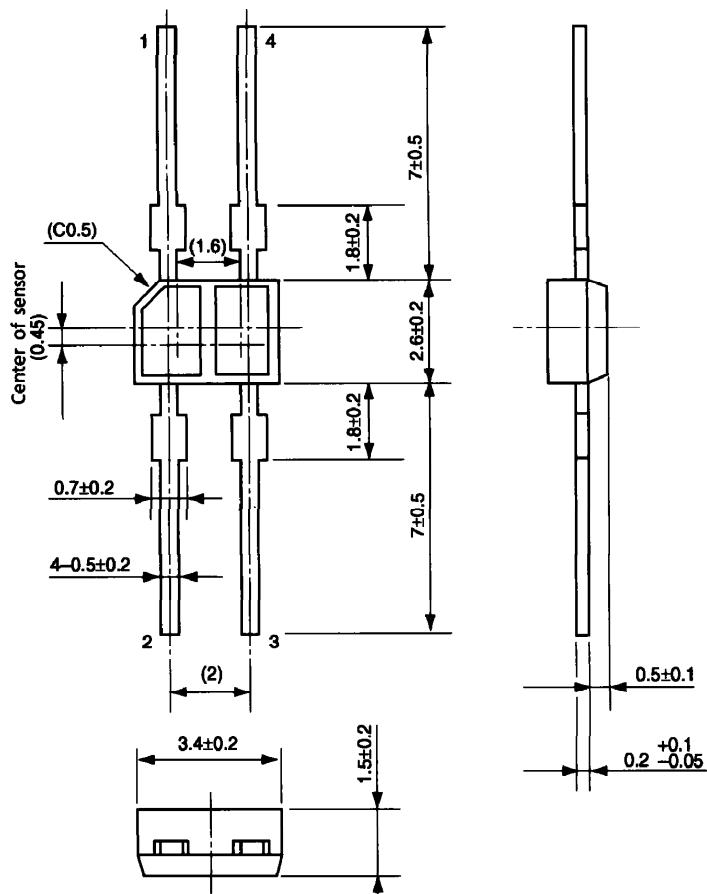
The diagonally shaded part in the diagrams on the left represent the soldering area.

- When forming the leads, be careful not to apply stress to the main body of the device (the resin part). Soldering must be performed after the leads have been formed.
- Collector current falls over time due to the current which flows in the infrared LED.
When designing a circuit, take into account this change in conversion efficiency over time.
The ratio fluctuation in collector current to fluctuation in infrared LED optical output is 1 : 1.

$$\frac{I_C(t)}{I_C(0)} = \frac{P_O(t)}{P_O(0)}$$

PACKAGE DIMENSIONS 11-4B1

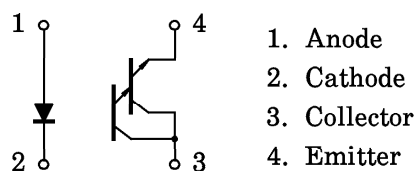
Unit : mm



() : Reference value

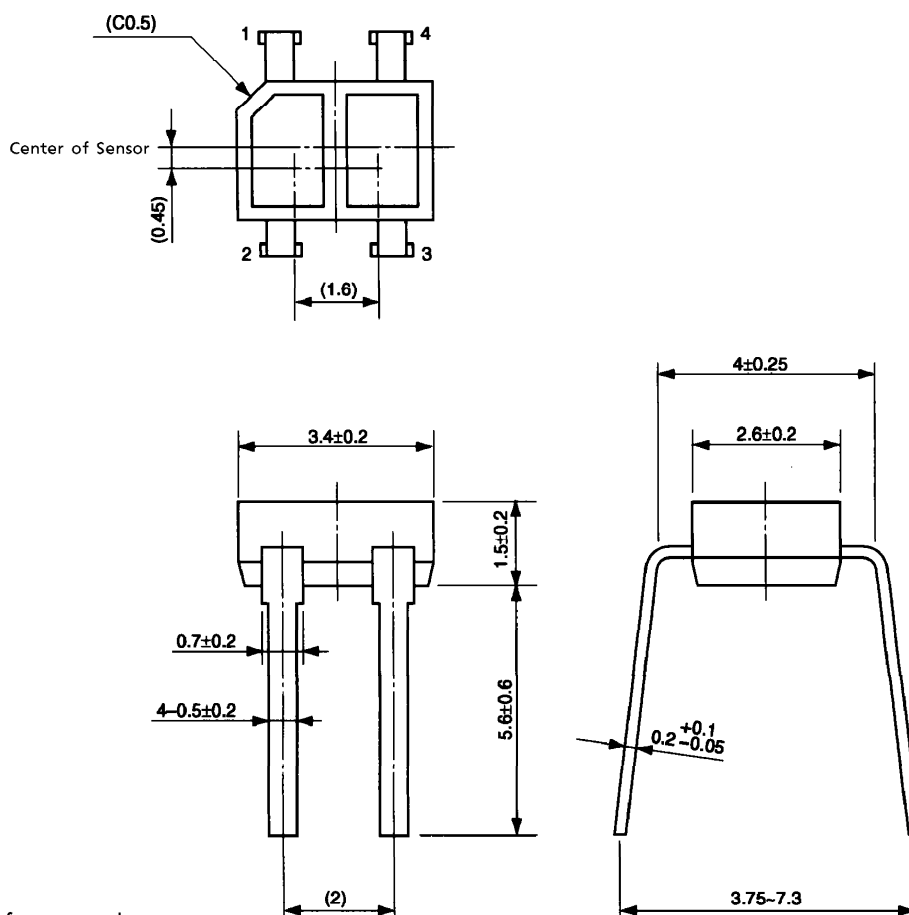
Weight : 0.05 g (typ.)

PIN CONNECTION



PACKAGE DIMENSIONS 11-4B101

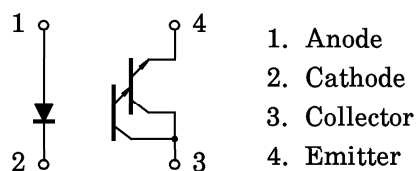
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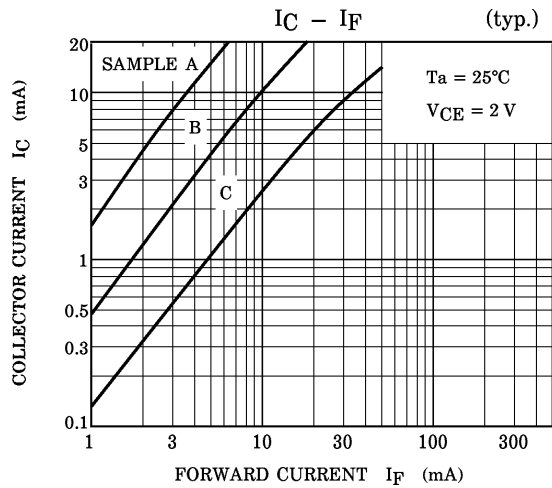
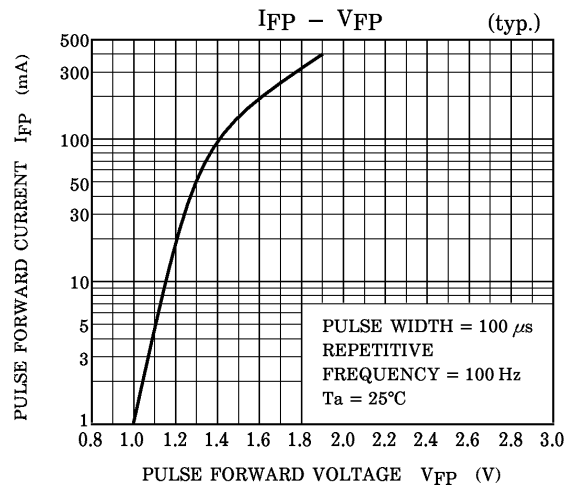
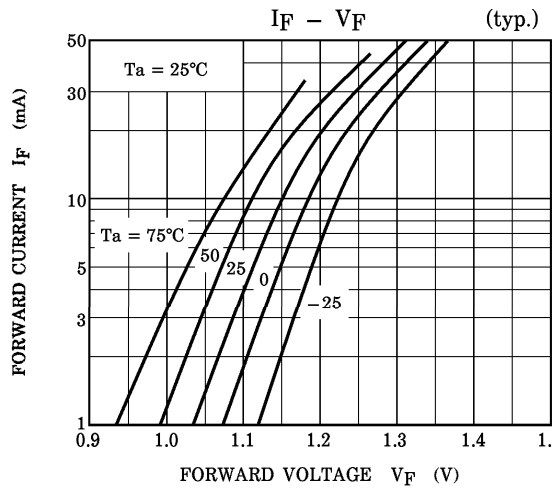
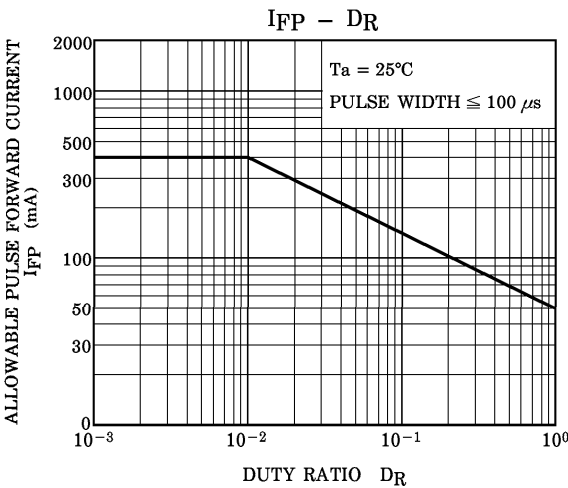
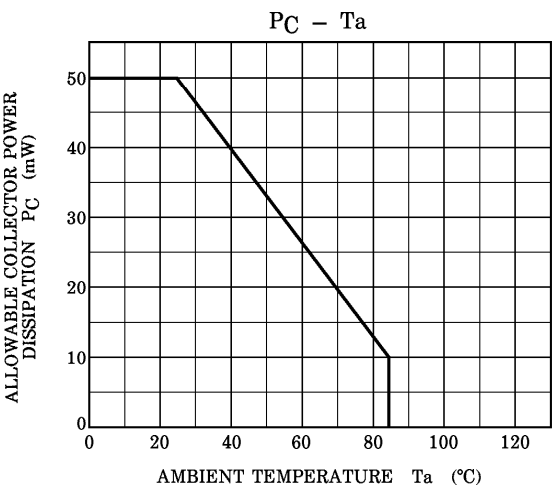
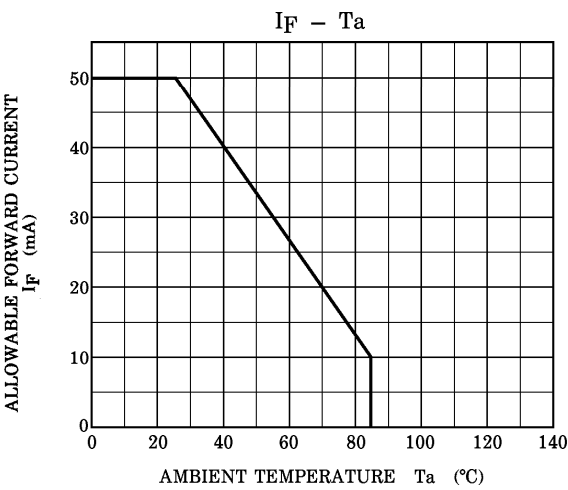


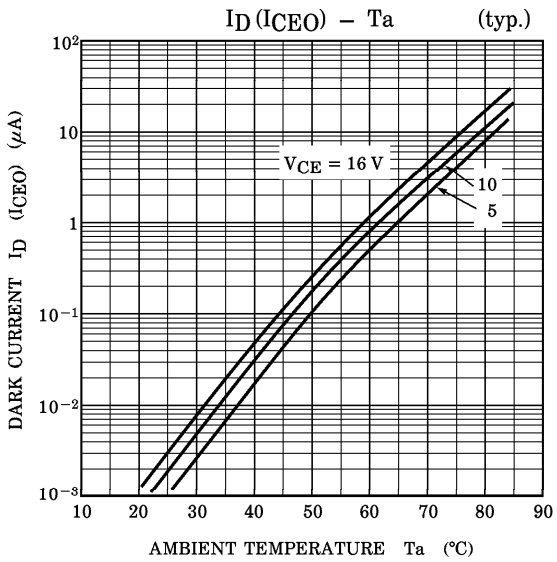
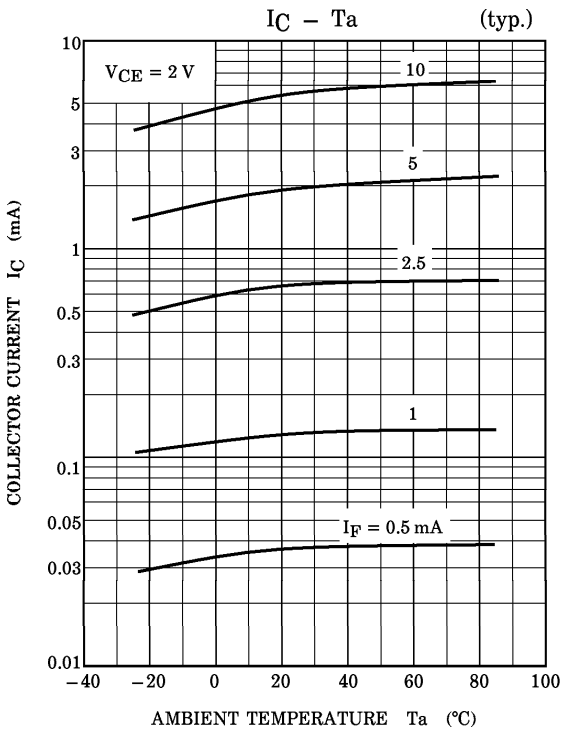
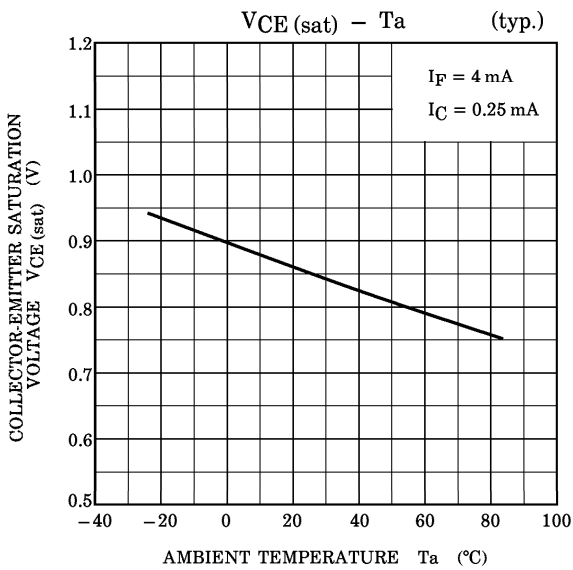
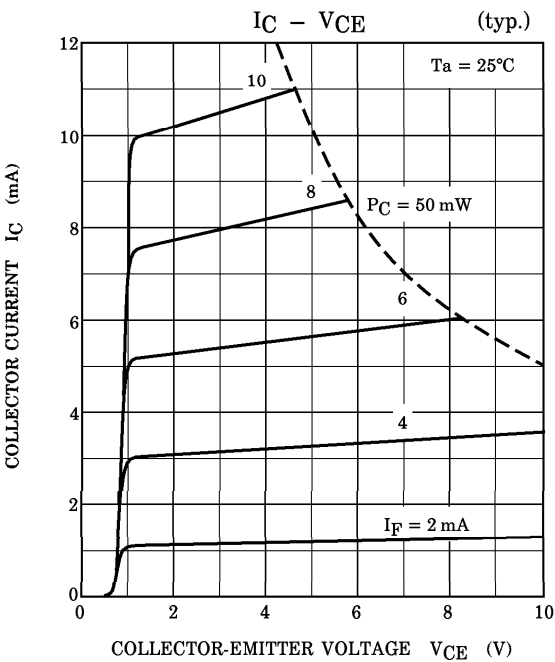
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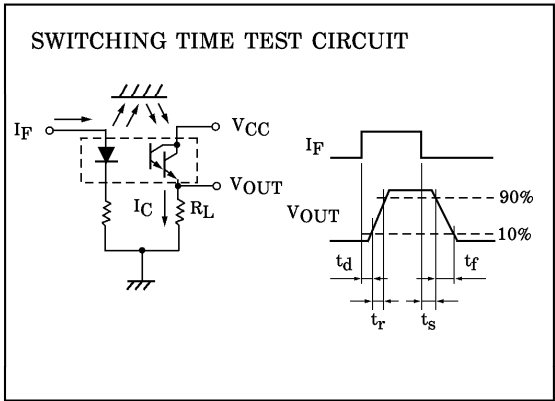
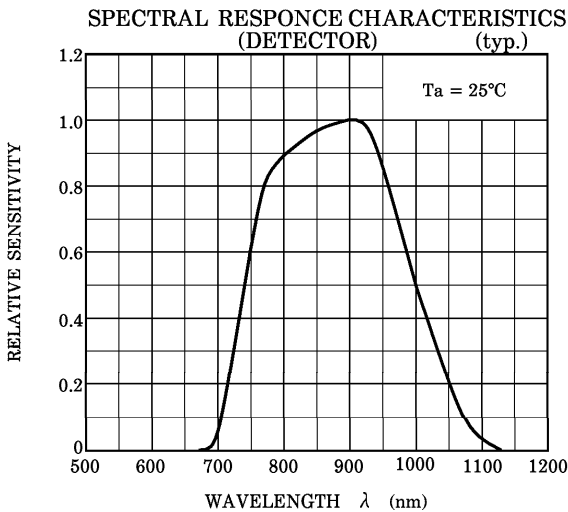
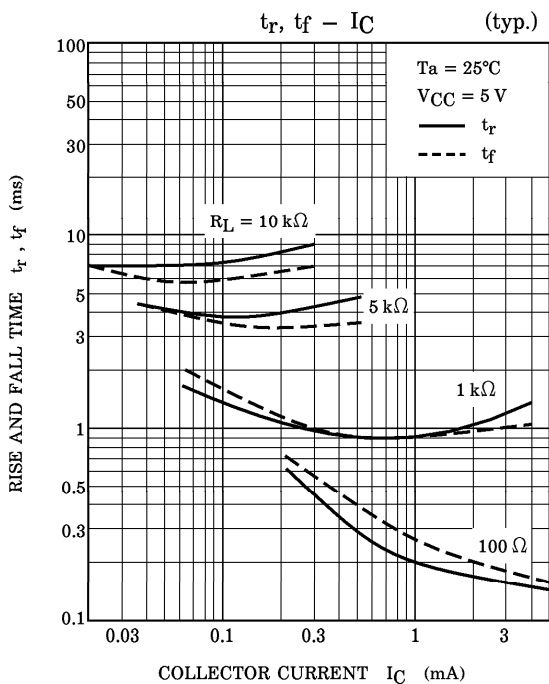
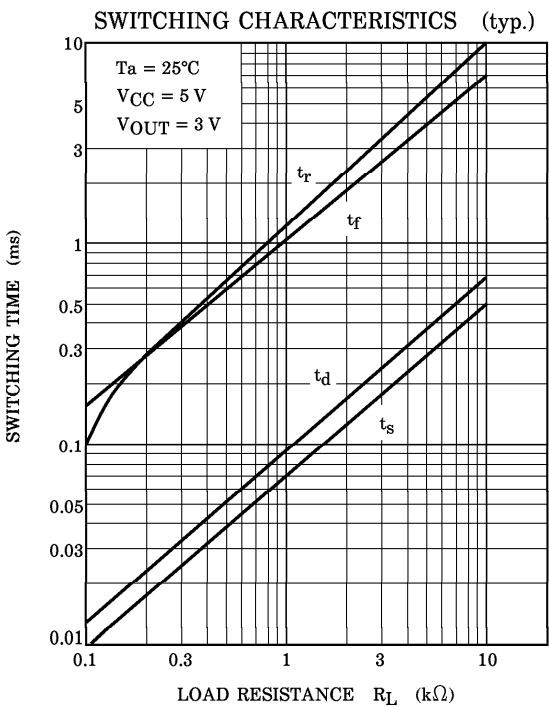
Weight : 0.05 g (typ.)

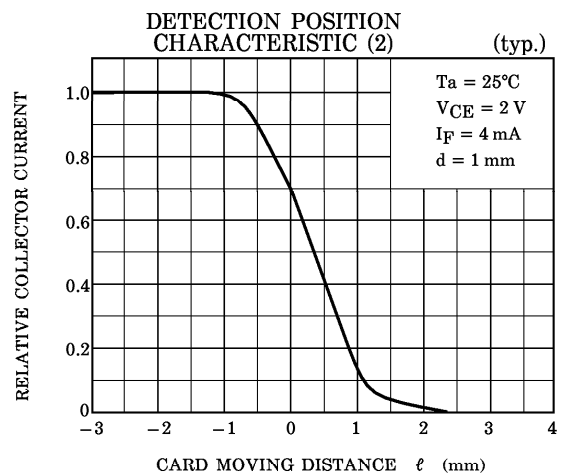
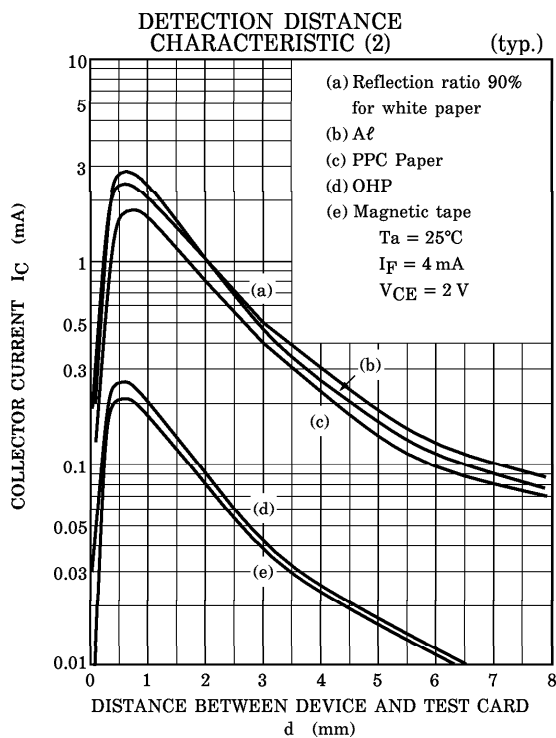
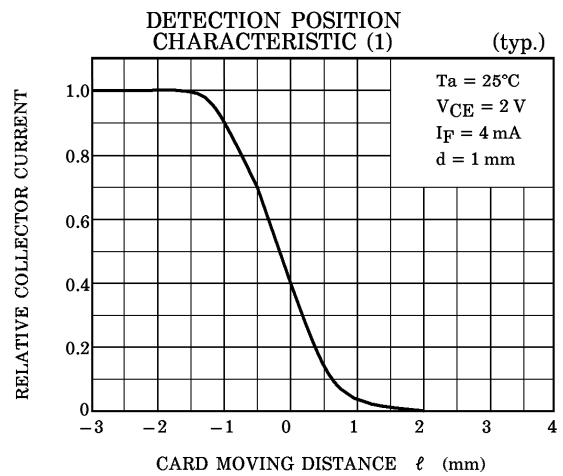
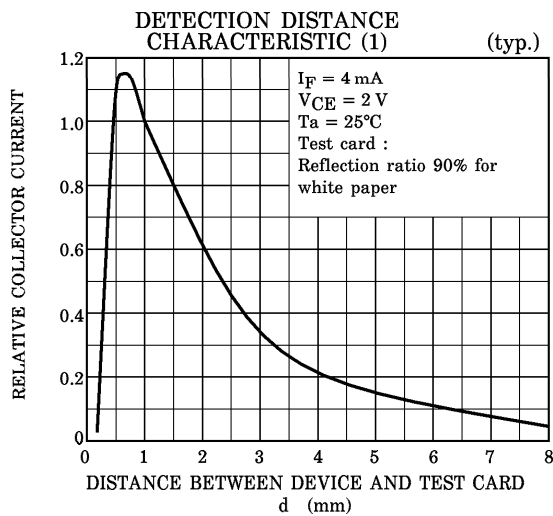
PIN CONNECTION





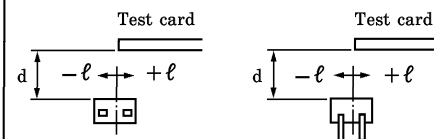




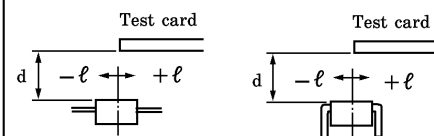


TEST CONDITIONS FOR DETECTION POSITION CHARACTERISTICS

DETECTION POSITION (1)



DETECTION POSITION (2)



Test card : Reflection ratio 90%
for white paper (kodak neutral test card)

RESTRICTIONS ON PRODUCT USE

000707EAC

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