

TOSHIBA PHOTOREFLECTIVE SENSORS INFRARED LED + PHOTODARLINGTON TRANSISTOR

# TLP907, TLP907 (LB)

DETECTION OF START AND END MARKS ON VIDEO AND AUDIO TAPE

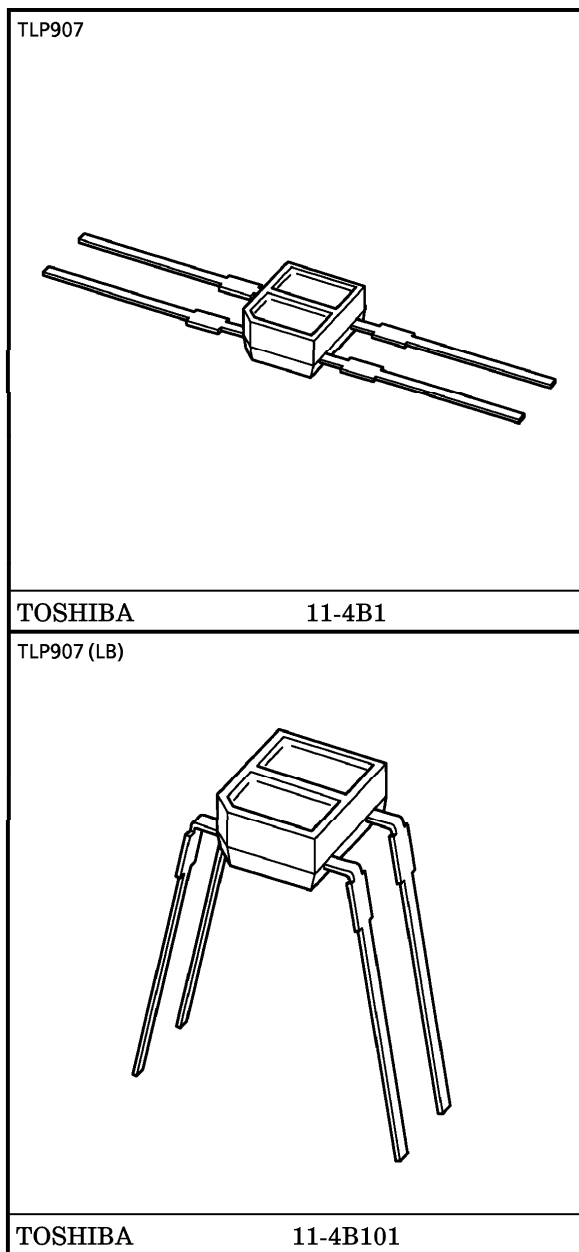
DETECTION OF VCR REEL ROTATION

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.



Weight : 0.05 g (typ.)

## MAXIMUM RATINGS (Ta = 25°C)

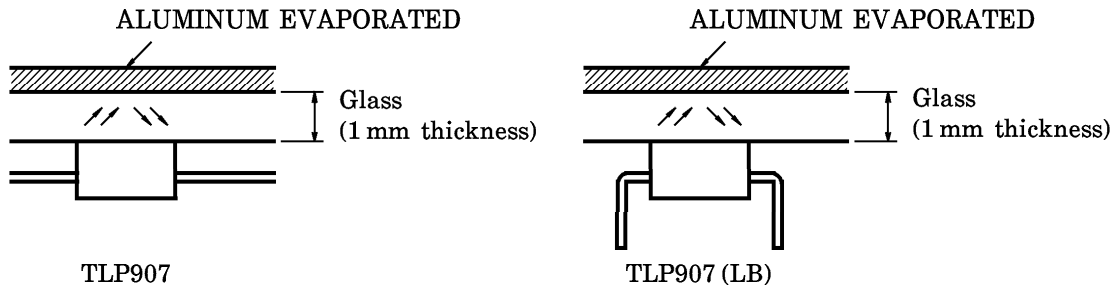
CHARACTERISTIC		SYMBOL	RATING	UNIT
LED	Forward Current	$I_F$	50	mA
	Forward Current Derating (Ta > 25°C)	$\Delta I_F / ^\circ\text{C}$	-0.67	mA / °C
	Pulse Forward Current (Note 1)	$I_{FP}$	400	mA
	Reverse Voltage	$V_R$	5	V
DETECTOR	Collector-Emitter Voltage	$V_{CEO}$	30	V
	Emitter-Collector Voltage	$V_{ECO}$	5	V
	Collector Power Dissipation	$P_C$	50	mW
	Collector Power Dissipation Derating (Ta > 25°C)	$\Delta P_C / ^\circ\text{C}$	-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  $\leq 100 \mu\text{s}$ , Repetitive frequency = 100 Hz

## OPTICAL AND ELECTRICAL CHARACTERISTICS (Ta = 25°C)

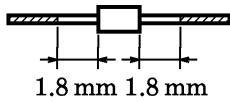
CHARACTERISTIC		SYMBOL	TEST CONDITION	Min	Typ.	Max	UNIT	
LED	Forward Voltage	$V_F$	$I_F = 10 \text{ mA}$	1.00	1.15	1.30	V	
	Reverse Current	$I_R$	$V_R = 5 \text{ V}$	—	—	10	$\mu\text{A}$	
	Peak Emission Wavelength	$\lambda_P$	$I_F = 4 \text{ mA}$	—	940	—	nm	
DETECTOR	Dark Current	$I_D (I_{CEO})$	$V_{CE} = 16 \text{ V}, I_F = 0$	—	—	0.25	$\mu\text{A}$	
	Peak Sensitivity Wavelength	$\lambda_P$	—	—	900	—	nm	
COUPLED	Current Current	$I_C$	$V_{CE} = 2 \text{ V}, I_F = 4 \text{ mA}$	TLP907	0.5	3	15	mA
				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	$I_{LEAK}$	$V_{CE} = 2 \text{ V}, I_F = 4 \text{ mA}$ without reflector	—	—	0.25	$\mu\text{A}$	
	Collector-Emitter Saturation Voltage	$V_{CE}(\text{sat})$	$I_F = 4 \text{ mA}, I_C = 0.25 \text{ mA}$	—	0.85	1.2	V	
Rise Time	$t_r$	$V_{CC} = 5 \text{ V}, I_C = 10 \text{ mA}, R_L = 100 \Omega$	—	100	—	$\mu\text{s}$		
Fall Time	$t_f$		—	100	—			

(Note 2) : Collector current test method

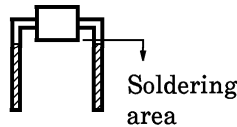


**PRECAUTIONS**

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



TLP907



TLP907 (LB)

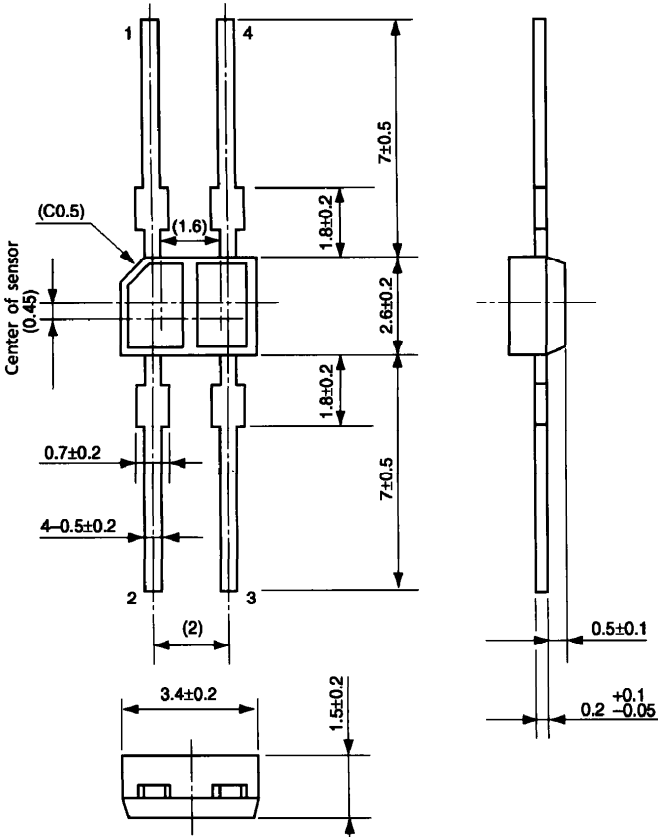
The diagonally shaded part in the diagrams on the left represent the soldering area.

- 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

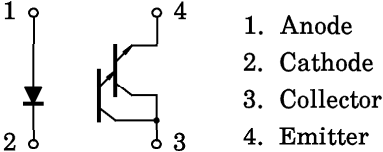
Unit : mm



( ) : Reference value

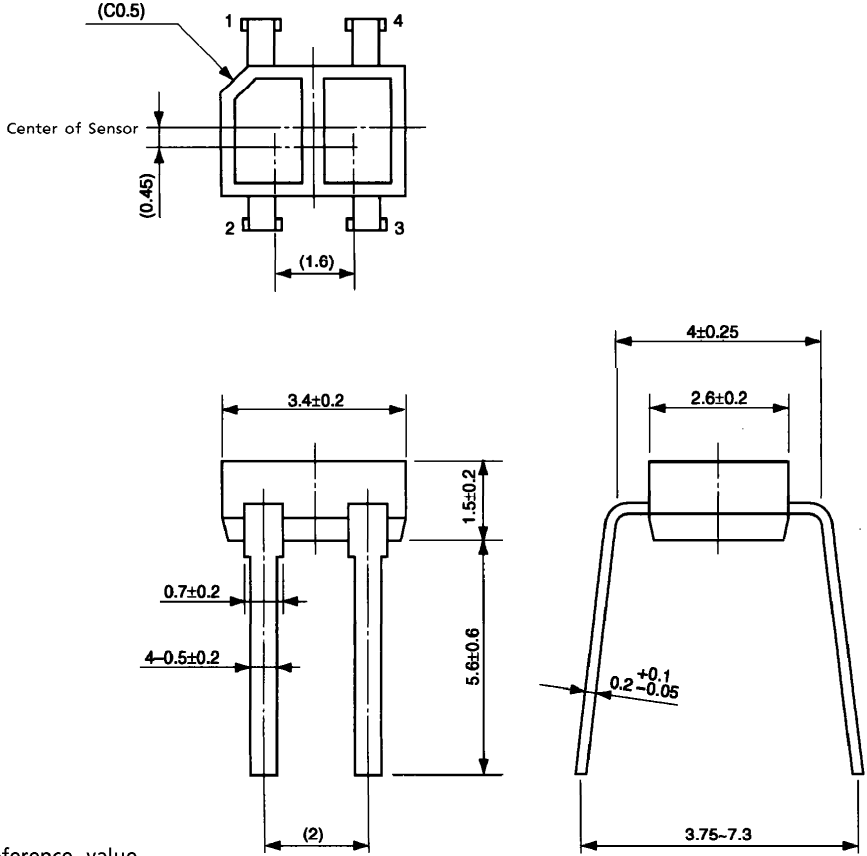
Weight : 0.05 g (typ.)

PIN CONNECTION



**PACKAGE DIMENSIONS**  
11-4B101

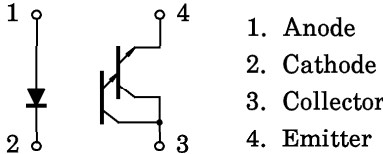
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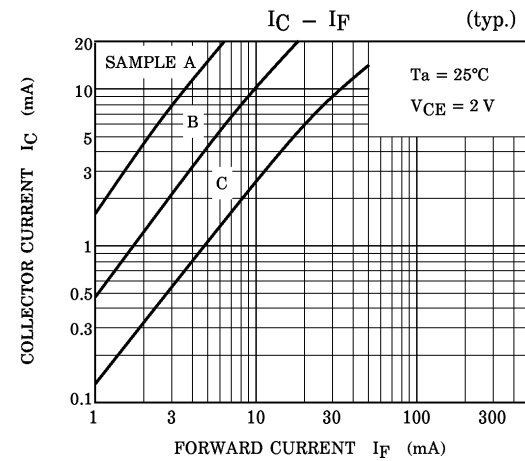
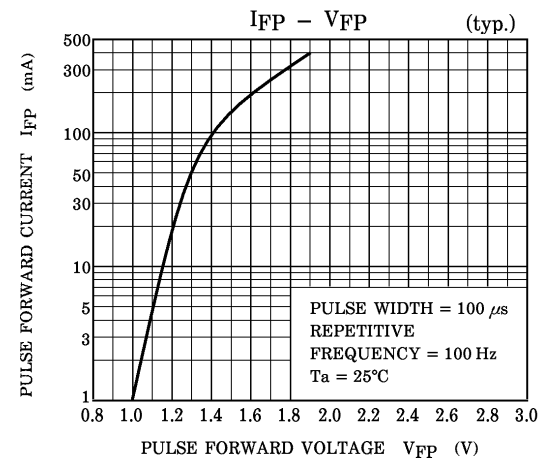
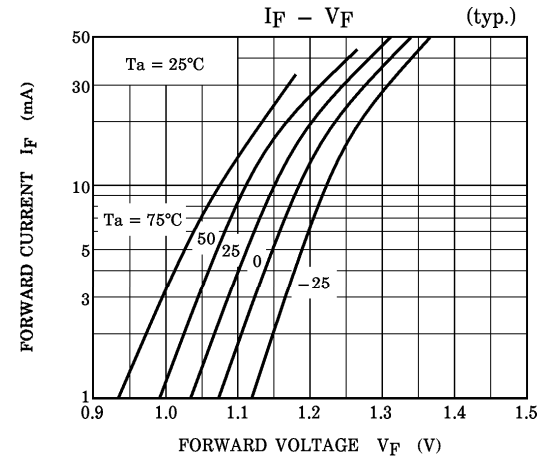
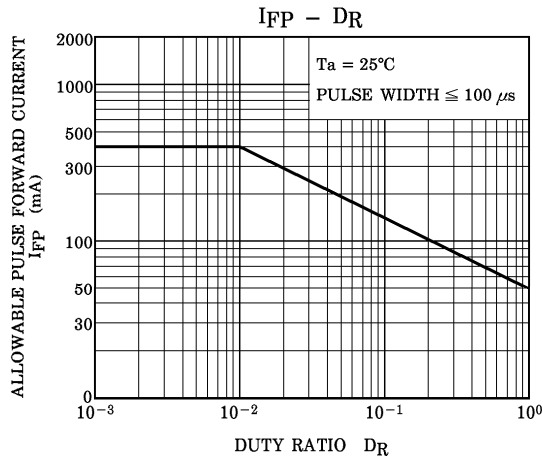
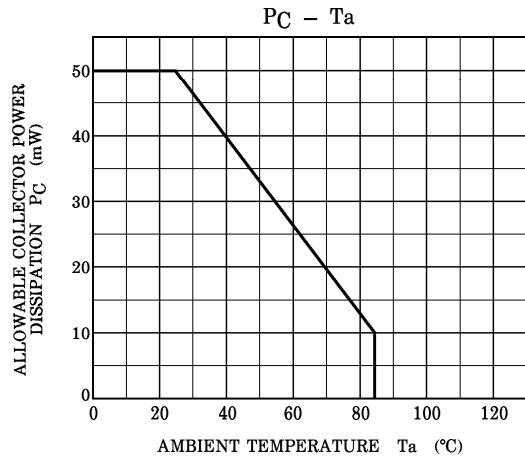
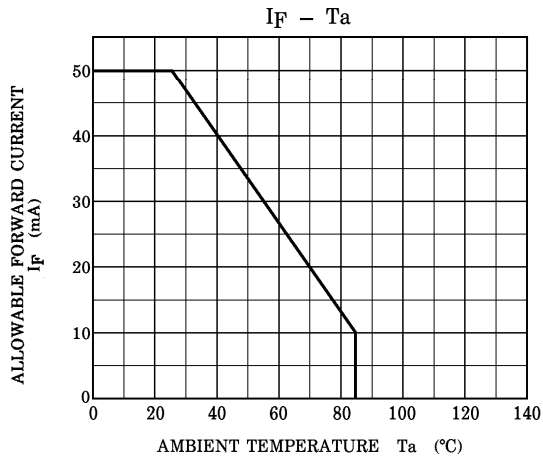


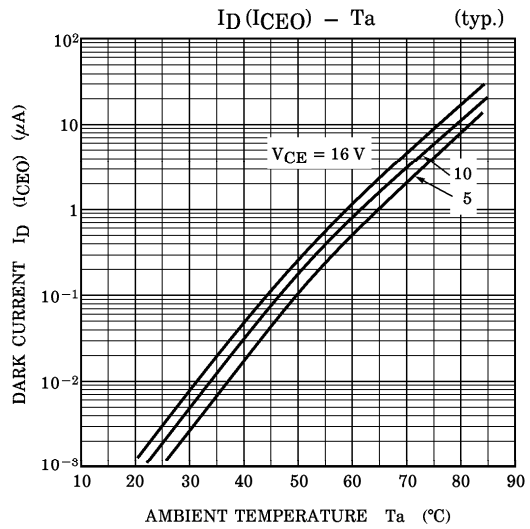
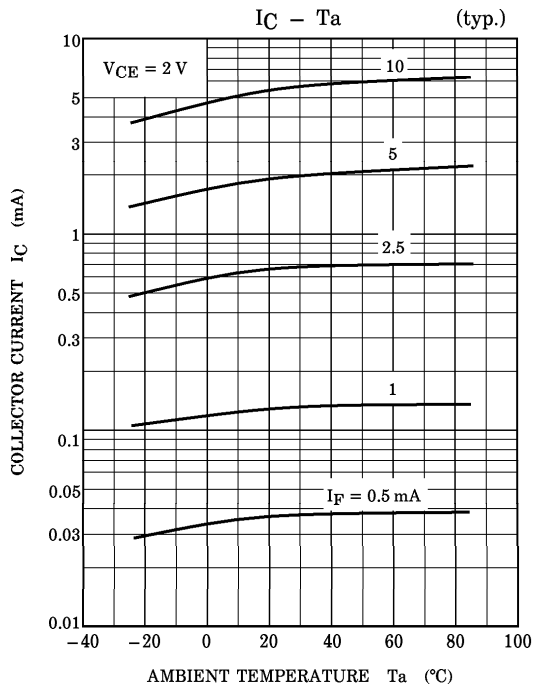
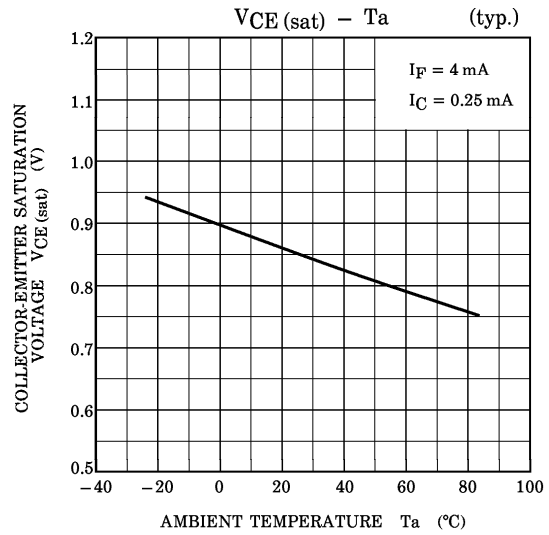
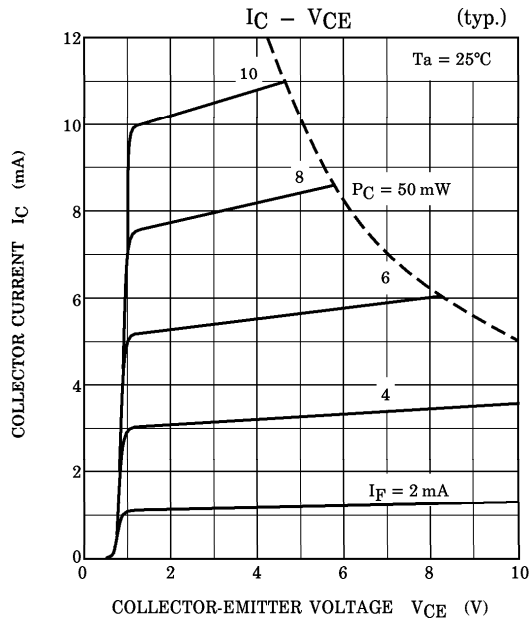
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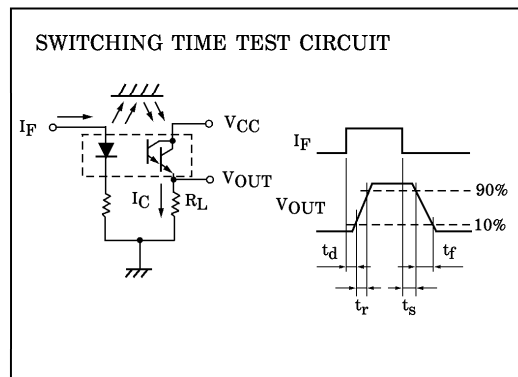
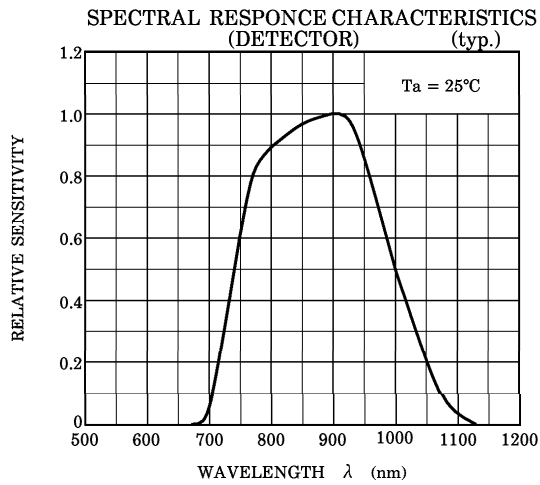
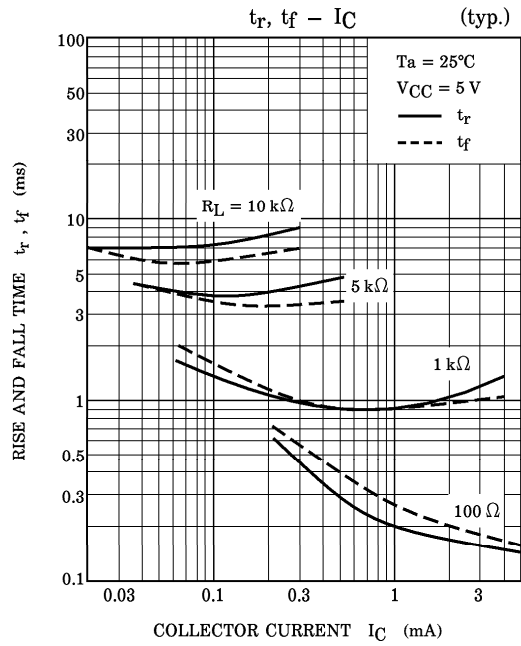
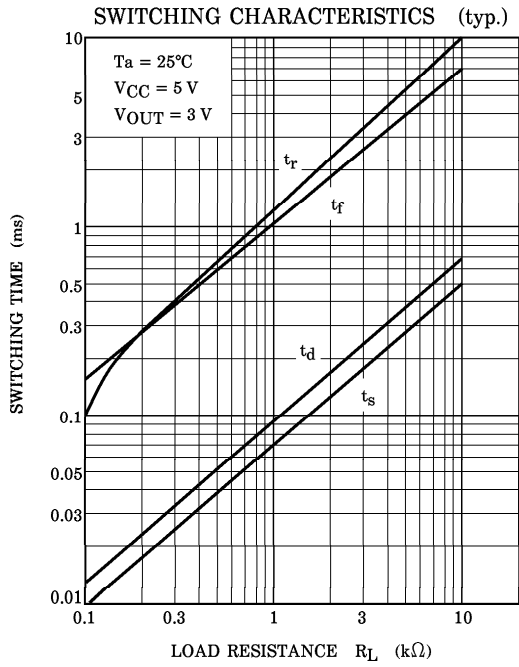
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**PIN CONNECTION**

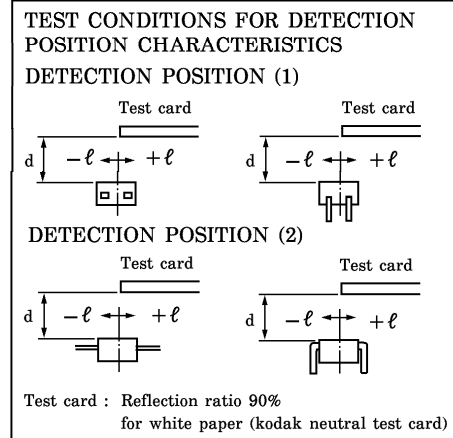
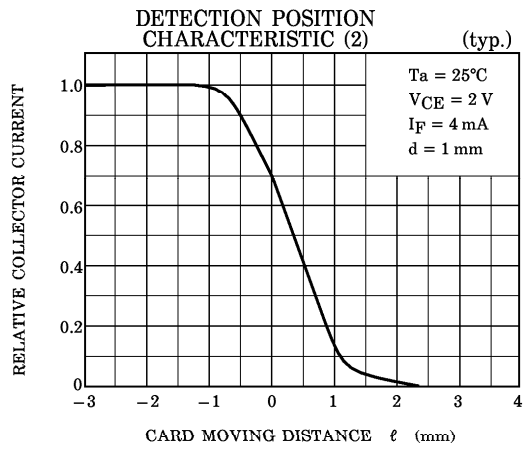
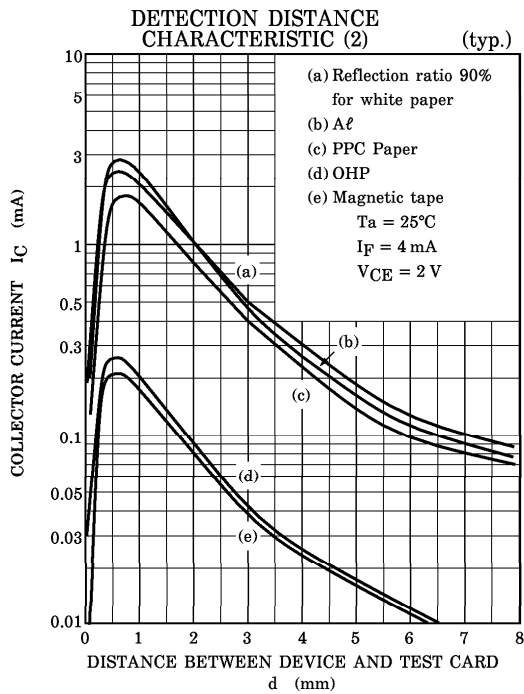
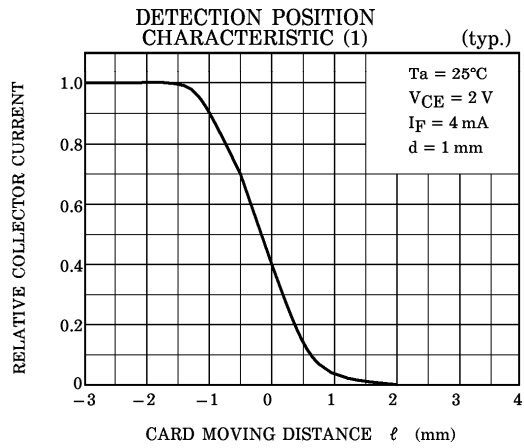
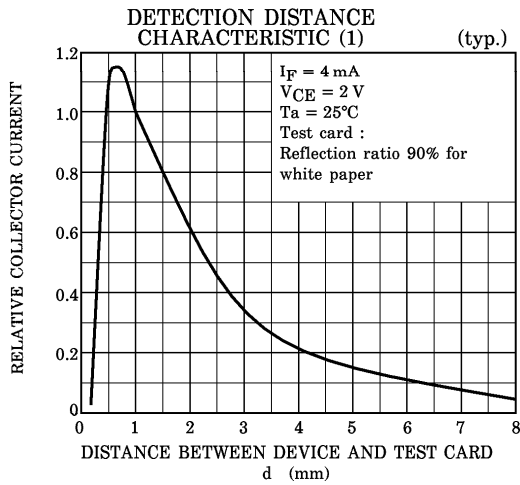












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