

TOSHIBA PHOTOREFLECTIVE SENSORS INFRARED LED + PHOTODARLINGTON TRANSISTOR

TLP907, TLP907 (LB)

DETECTION OF START AND END MARKS ON VIDEO AND AUDIO TAPE

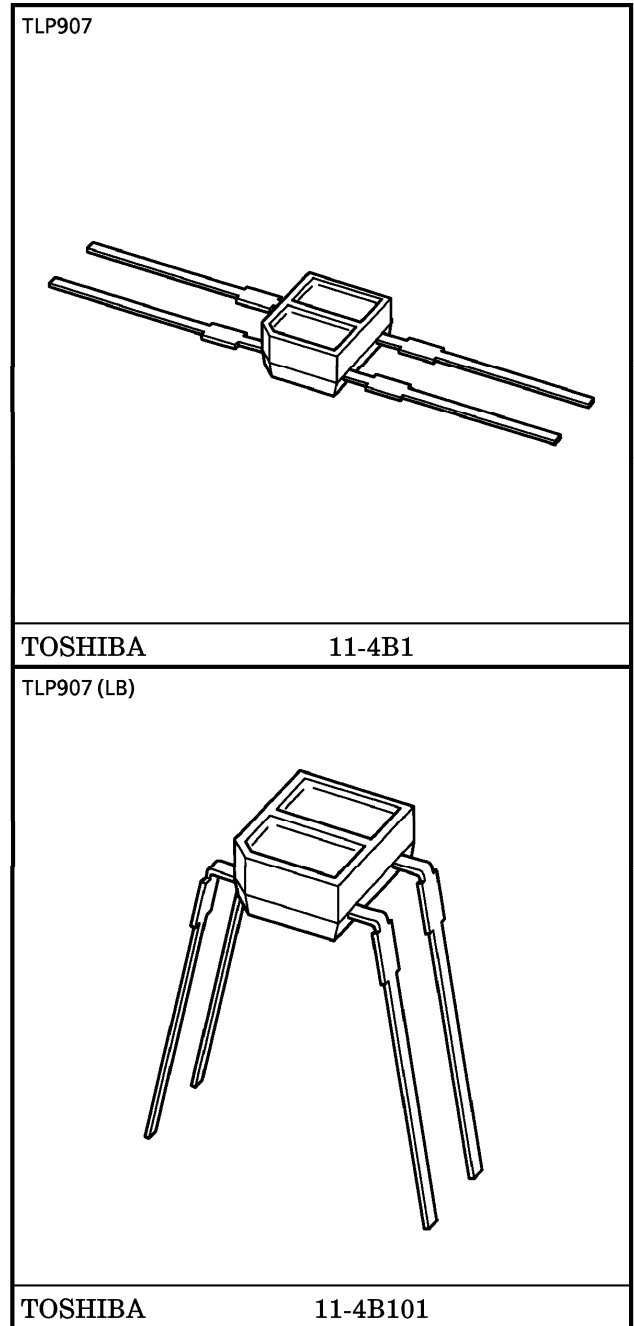
DETECTION OF VCR REEL ROTATION

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)

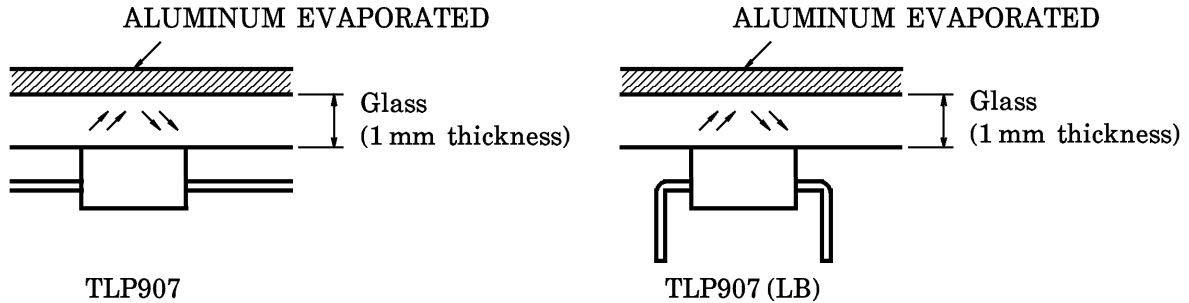
CHARACTERISTIC		SYMBOL	RATING	UNIT
LED	Forward Current	I _F	50	mA
	Forward Current Derating (Ta > 25°C)	ΔI _F /°C	-0.67	mA/°C
	Pulse Forward Current (Note 1)	I _{FP}	400	mA
	Reverse Voltage	V _R	5	V
DETECTOR	Collector-Emitter Voltage	V _{CEO}	30	V
	Emitter-Collector Voltage	V _{ECO}	5	V
	Collector Power 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)

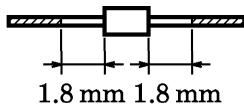
CHARACTERISTIC		SYMBOL	TEST CONDITION	Min	Typ.	Max	UNIT	
LED	Forward Voltage	V _F	I _F = 10 mA	1.00	1.15	1.30	V	
	Reverse Current	I _R	V _R = 5 V	—	—	10	μA	
	Peak Emission Wavelength	λ _P	I _F = 4 mA	—	940	—	nm	
DETECTOR	Dark Current	I _D (I _{CEO})	V _{CE} = 16 V, I _F = 0	—	—	0.25	μA	
	Peak Sensitivity Wavelength	λ _P	—	—	900	—	nm	
COUPLED	Current Current	I _C	V _{CE} = 2 V, I _F = 4 mA	TLP907	0.5	3	15	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 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

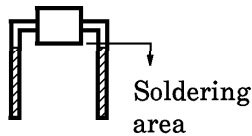


PRECAUTIONS

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



TLP907



TLP907 (LB)

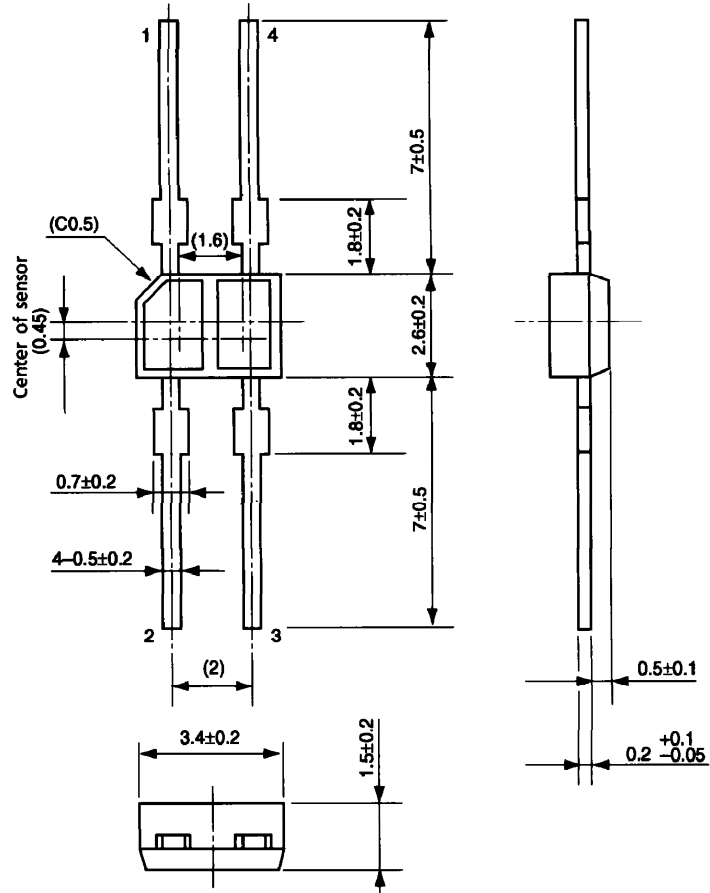
The diagonally shaded part in the diagrams on the left represent the soldering area.

- 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

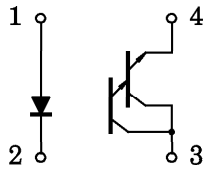
Unit : mm



() : Reference value

Weight : 0.05 g (typ.)

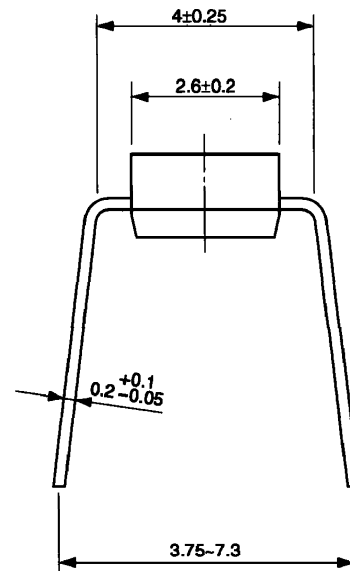
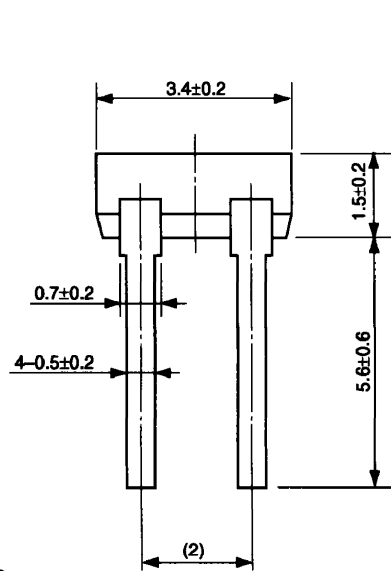
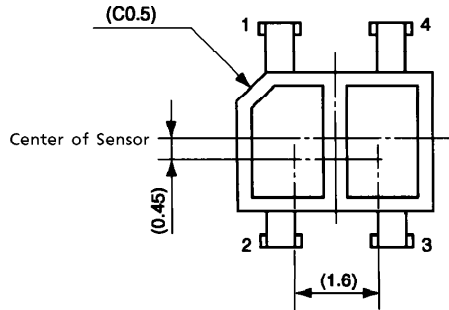
PIN CONNECTION



- 1. Anode
- 2. Cathode
- 3. Collector
- 4. Emitter

PACKAGE DIMENSIONS
11-4B101

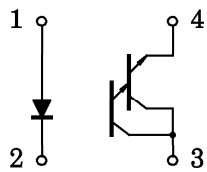
Unit : mm



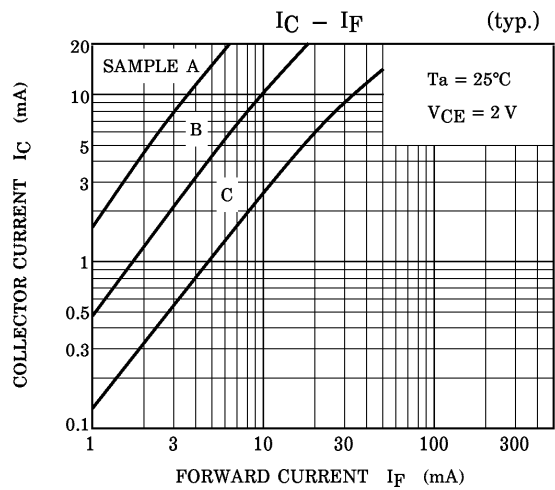
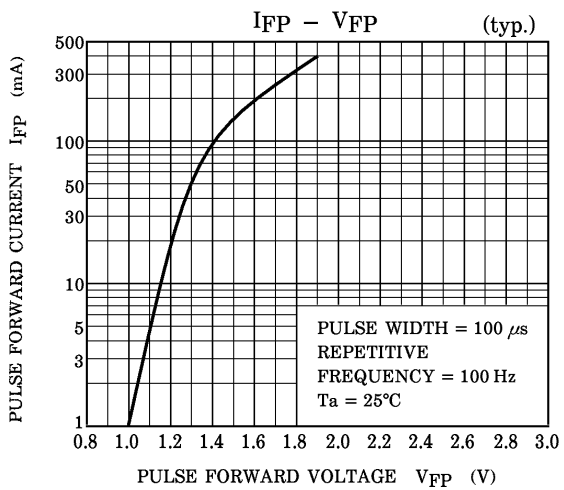
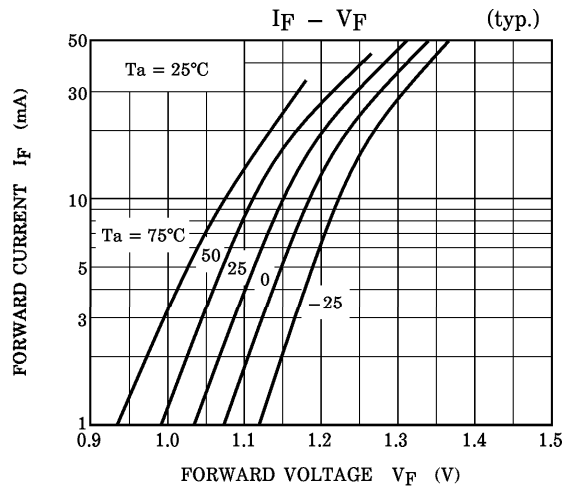
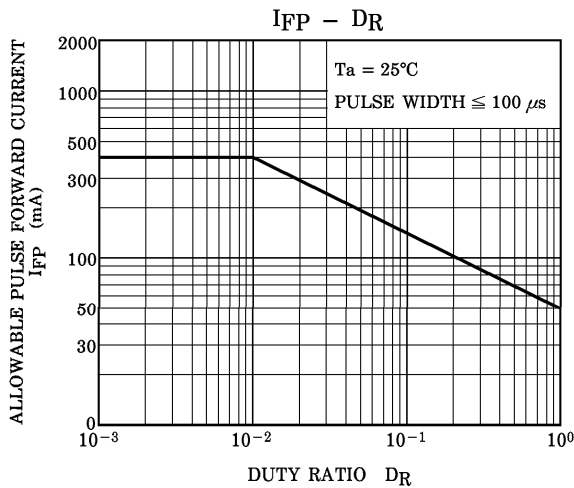
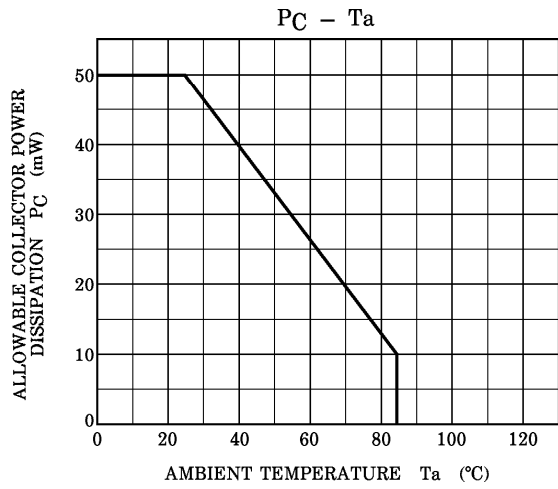
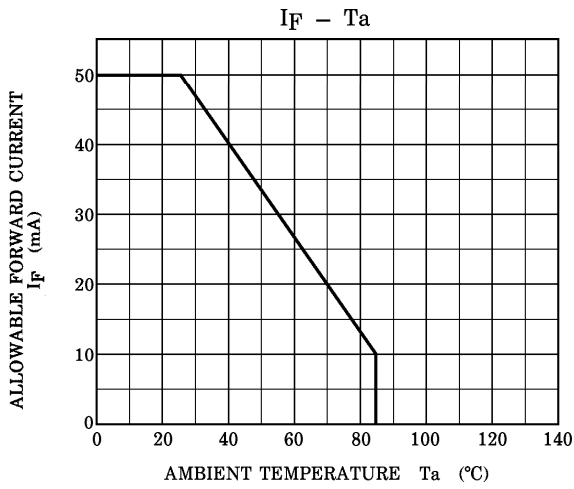
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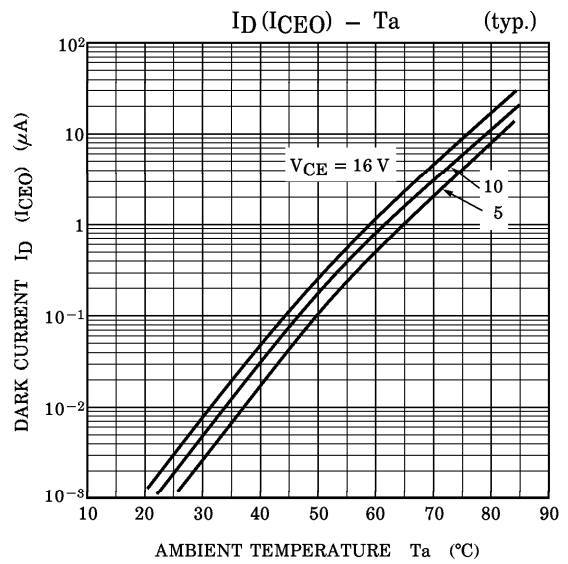
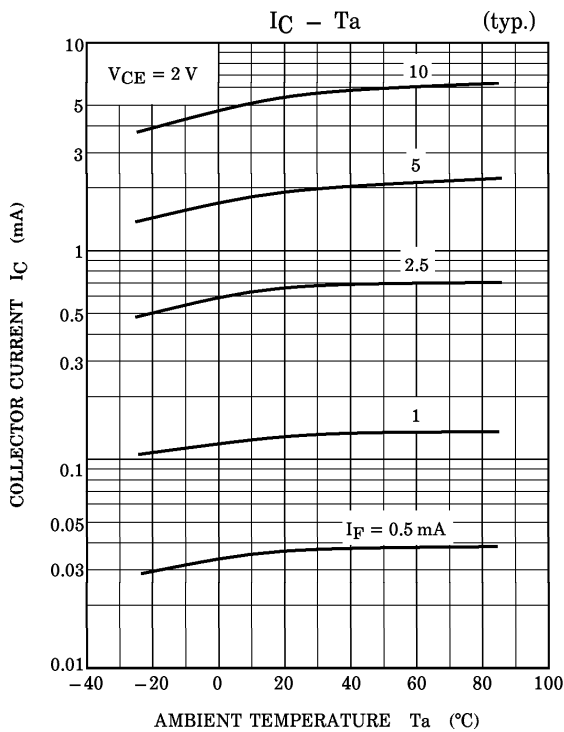
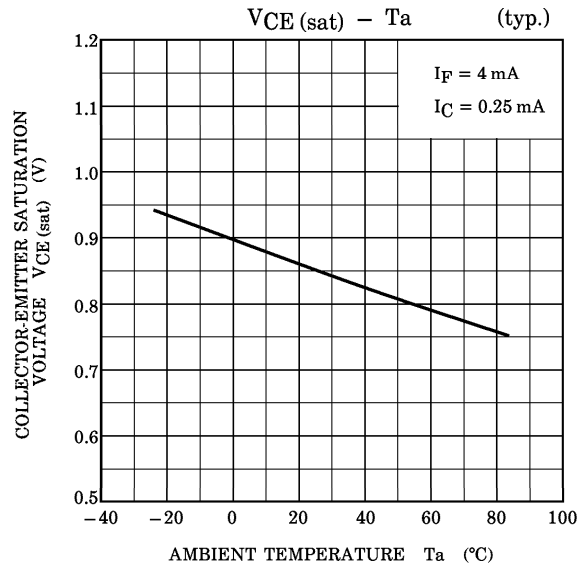
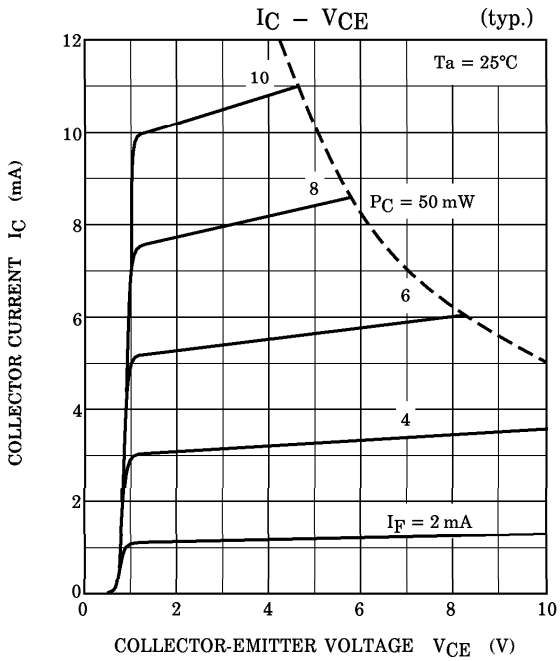
Weight : 0.05 g (typ.)

PIN CONNECTION

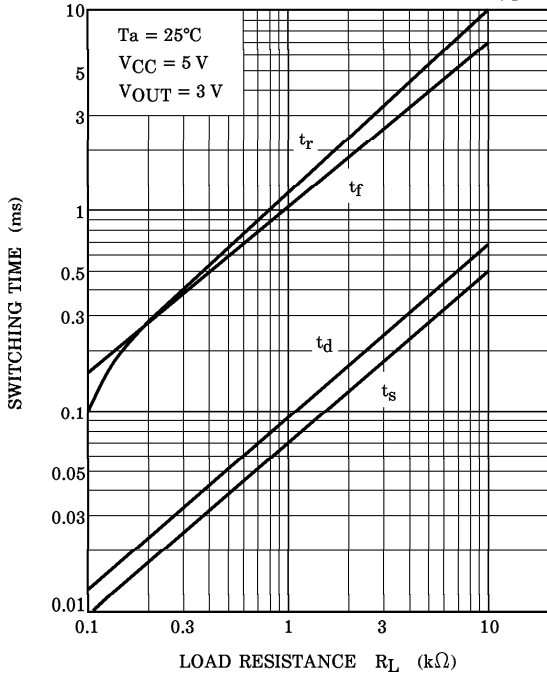


- 1. Anode
- 2. Cathode
- 3. Collector
- 4. Emitter

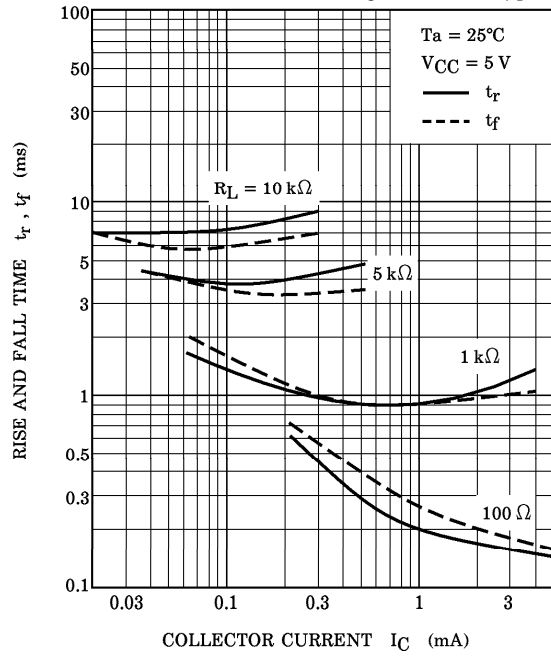




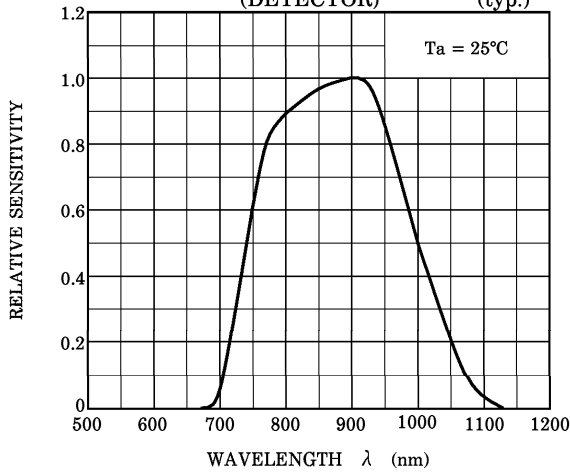
SWITCHING CHARACTERISTICS (typ.)



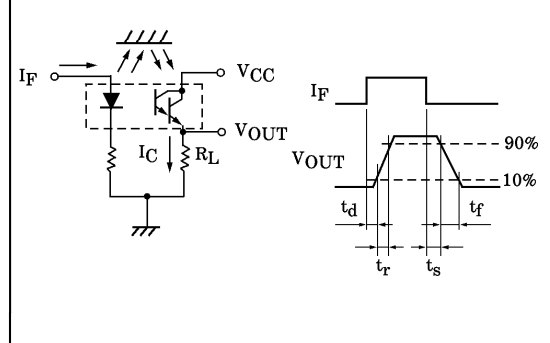
$t_r, t_f - I_C$ (typ.)

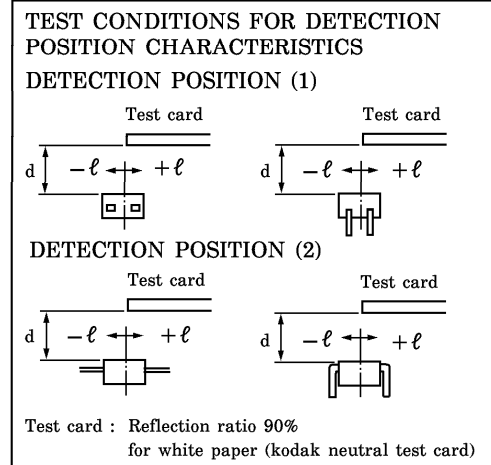
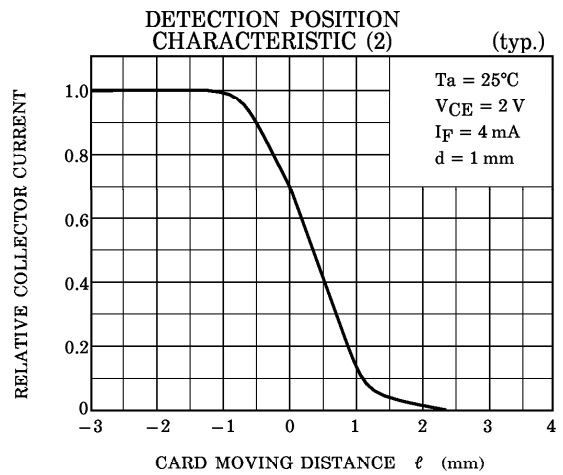
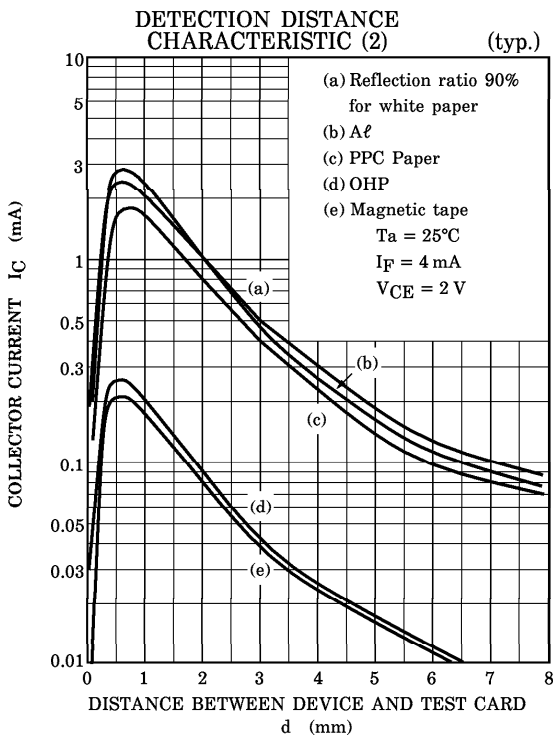
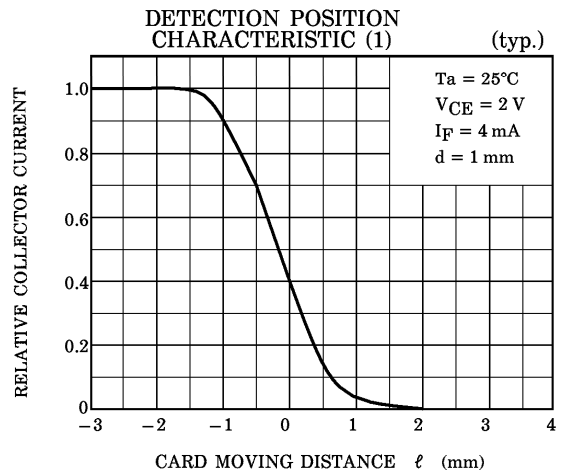
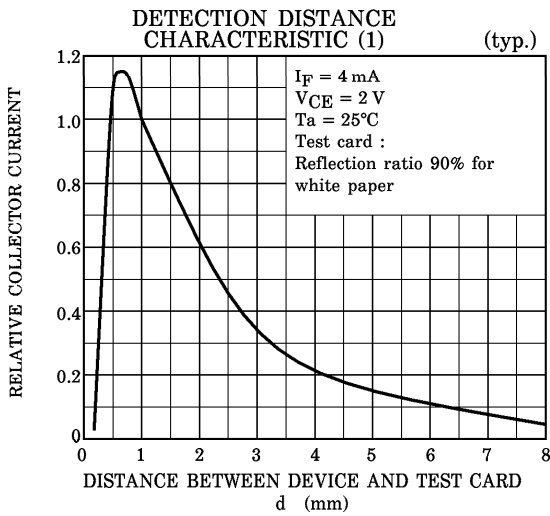


SPECTRAL RESPONSE CHARACTERISTICS (DETECTOR) (typ.)



SWITCHING TIME TEST CIRCUIT





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