

**TOSHIBA**

**TLP908, TLP908(LB)**

TOSHIBA PHOTOREFLECTIVE SENSORS INFRARED LED + PHOTOTRANSISTOR

# TLP908, TLP908(LB)

DETECTION OF START AND END MARKS ON VCR AND AUDIO TAPE

DETECTION OF VCR REEL ROTATION

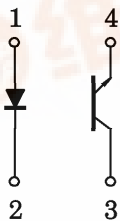
DETECTION OF INDEX WRITE-PROTECT AND PRESENCE OF DISK IN FLOPPY DISK DRIVE

TIMING DETECTION IN ELECTRONIC PRINTERS AND TYPEWRITERS

READING OF CAMERA FILM INFORMATION (DX CODES)

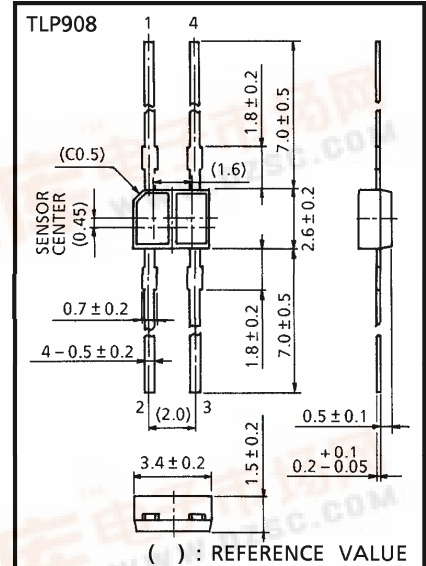
- Very small package : 2.6 × 3.4 mm (height 1.5 mm)  
 TLP908 : Flat lead type  
 TLP908 (LB) : Small DIP type
- Short detection distance : Optimum distance 0.5 mm~1.5 mm
- High sensitivity :  $t_r, t_f = 10 \mu s$  (typ.)
- Black mold package impermeable to visible light

**PIN CONNECTION**

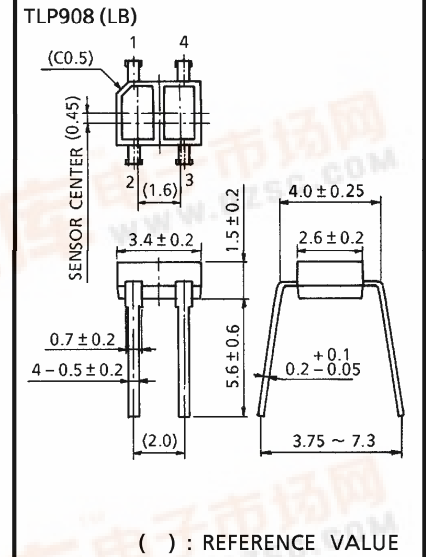


1. ANODE
2. CATHODE
3. COLLECTOR
4. EMITTER

Unit : mm



JEDEC	—
JEITA	—
TOSHIBA	11-4B1



JEDEC	—
JEITA	—
TOSHIBA	11-4B101

Weight : 0.05g (typ.)

MAXIMUM RATINGS (Ta = 25°C)

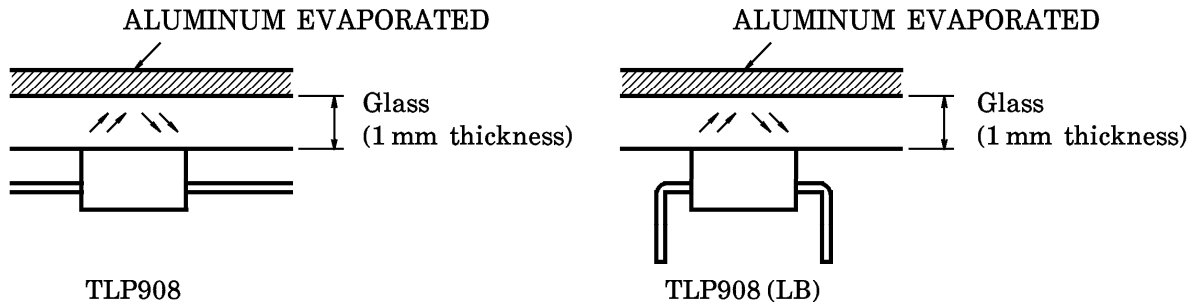
CHARACTERISTIC		SYMBOL	RATING	UNIT
LED	Forward Current	$I_F$	50	mA
	Forward Current Derating (Ta > 25°C)	$\Delta I_F / ^\circ C$	-0.67	mA / °C
	Pulse Forward Current (Note 1)	$I_{FP}$	400	mA
	Reverse Voltage	$V_R$	5	V
DETECTOR	Collector-Emitter Voltage	$V_{CEO}$	30	V
	Emitter-Collector Voltage	$V_{ECO}$	5	V
	Collector Power Dissipation	$P_C$	50	mW
	Collector Power Dissipation Derating (Ta > 25°C)	$\Delta P_C / ^\circ C$	-0.67	mW / °C
	Collector Current	$I_C$	20	mA
Operating Temperature Range		$T_{opr}$	-25~85	°C
Storage Temperature Range		$T_{stg}$	-30~100	°C

(Note 1) : Pulse width  $\leq 100 \mu s$ , Repetitive frequency = 100 Hz

OPTICAL AND ELECTRICAL CHARACTERISTICS (Ta = 25°C)

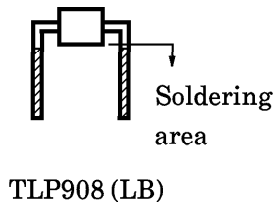
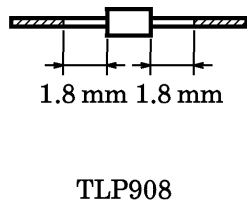
CHARACTERISTIC		SYMBOL	TEST CONDITION	Min	Typ.	Max	UNIT	
LED	Forward Voltage	$V_F$	$I_F = 10 \text{ mA}$	1.00	1.15	1.30	V	
	Reverse Current	$I_R$	$V_R = 5 \text{ V}$	—	—	10	$\mu A$	
	Peak Emission Wavelength	$\lambda_P$	$I_F = 10 \text{ mA}$	—	940	—	nm	
DETECTOR	Dark Current	$I_D (I_{CEO})$	$V_{CE} = 10 \text{ V}, I_F = 0$	—	—	0.1	$\mu A$	
	Peak Sensitivity Wavelength	$\lambda_P$	—	—	900	—	nm	
COUPLED	Current Current	$I_C$	$V_{CE} = 5 \text{ V}, I_F = 10 \text{ mA}$	TLP908	50	—	750	$\mu A$
				TLP908 (R)	50	—	150	
				TLP908 (O)	110	—	330	
				TLP908 (LB)	50	—	750	
				TLP908 (R, LB)	50	—	150	
				TLP908 (O, LB)	110	—	330	
	Leakage Current	$I_{LEAK}$	$V_{CE} = 5 \text{ V}, I_F = 10 \text{ mA}$ No reflecting substance exists.	—	—	0.1	$\mu A$	
Collector-Emitter Saturation Voltage	$V_{CE} (sat)$	$I_F = 10 \text{ mA}, I_C = 25 \mu A$	—	0.15	0.4	V		
Rise Time	$t_r$	$V_{CC} = 10 \text{ V}, I_C = 1 \text{ mA}, R_L = 1 \text{ k}\Omega$	—	10	—	$\mu s$		
Fall Time	$t_f$		—	10	—			

(Note 2) : Collector current test method



**PRECAUTIONS**

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

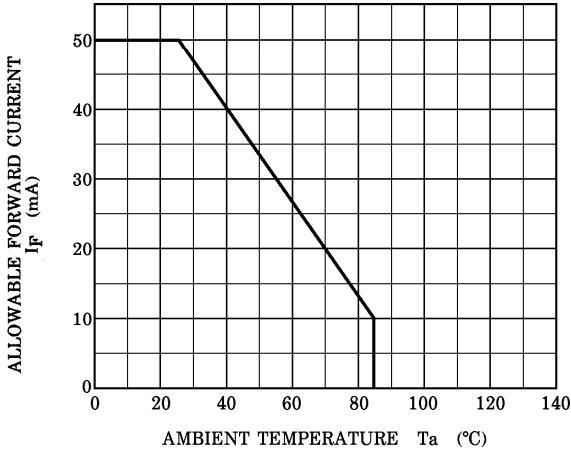


The diagonally shaded part in the diagrams on the left represent the soldering area.

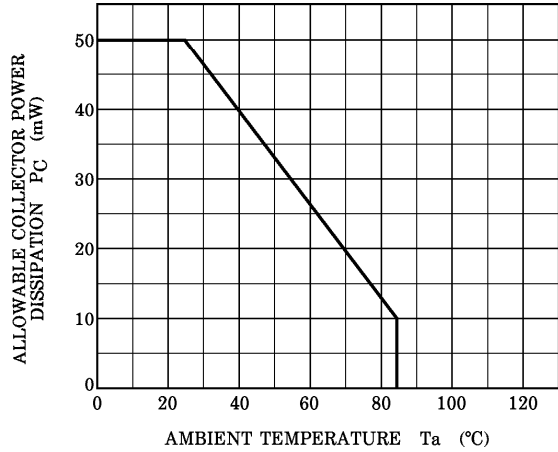
- When forming the leads, be careful not to apply stress to the main body of the device (the resin part). Soldering must be performed after the leads have been formed.
- The collector current increases over time due to current flowing in the infrared LED. The design of circuits which incorporate the device must take into account the change in collector current over time. The change in collector current is equal to the reciprocal of the change in LED infrared optical output.

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

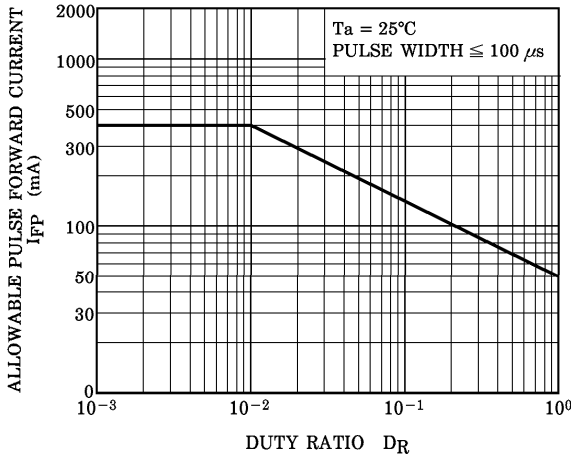
$I_F - T_a$



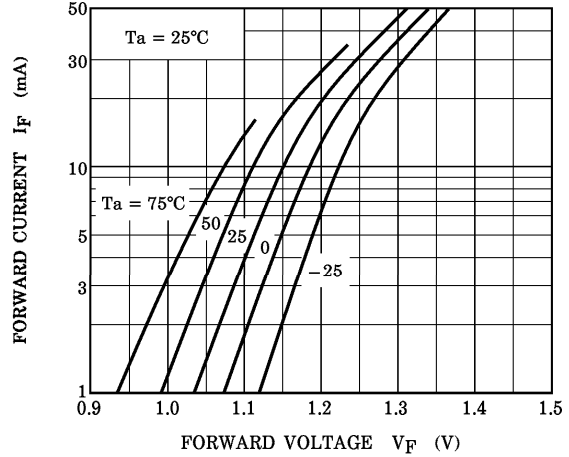
$P_C - T_a$



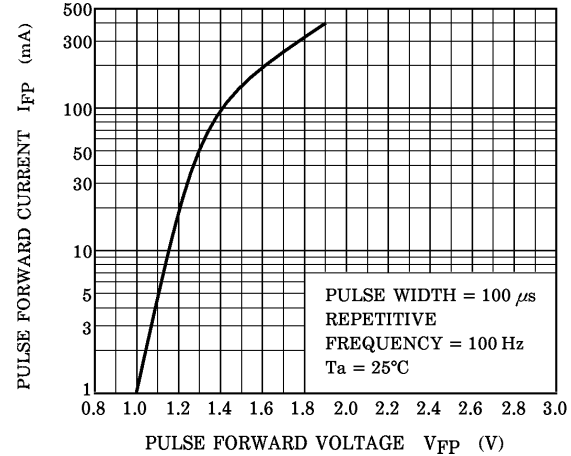
$I_{FP} - D_R$



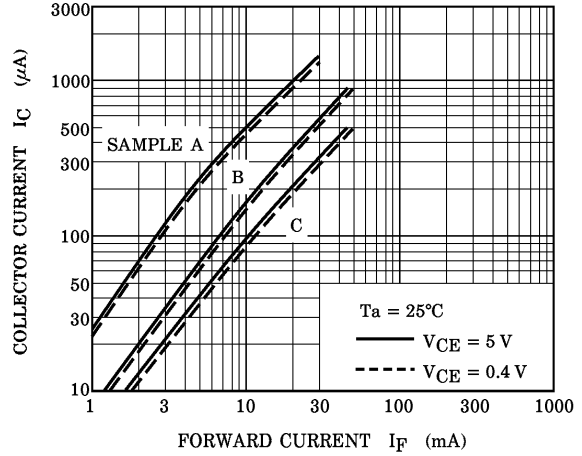
$I_F - V_F$  (typ.)

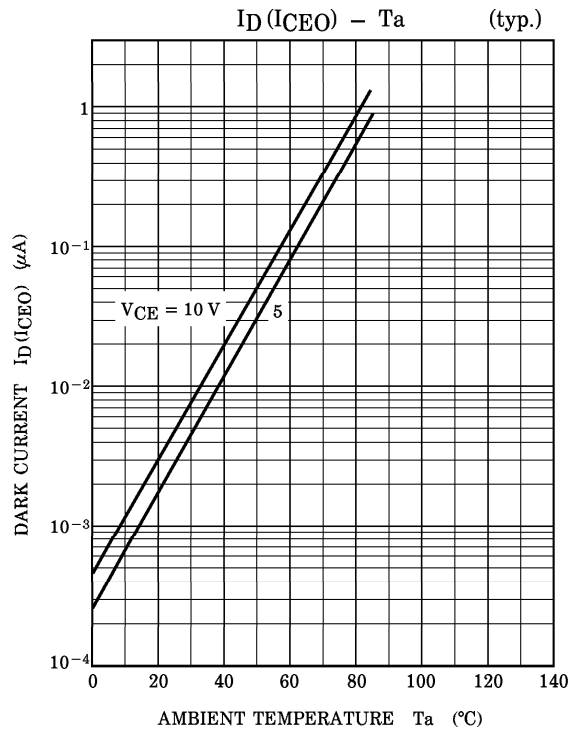
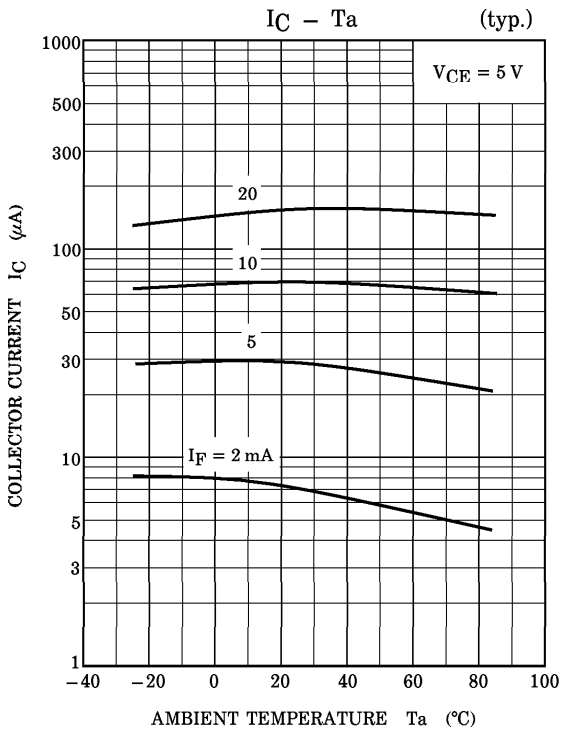
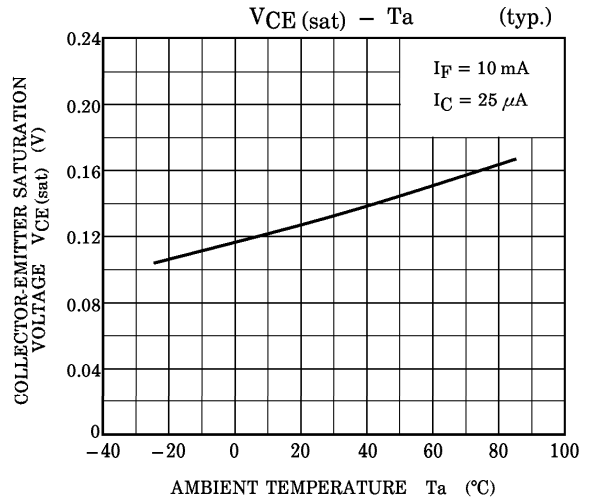
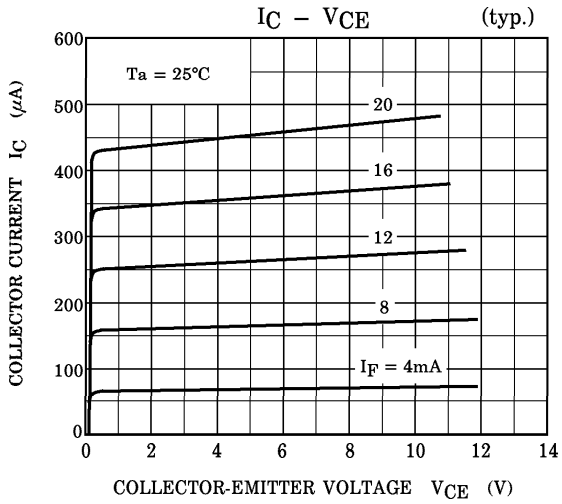


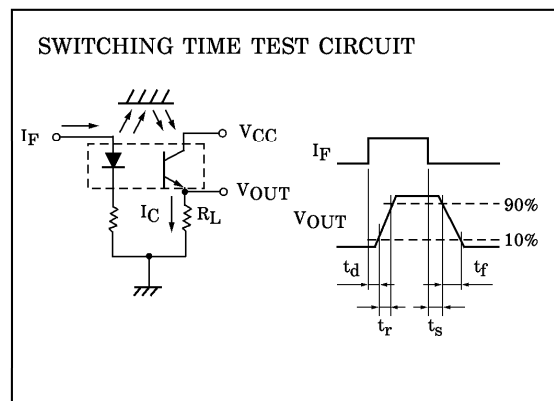
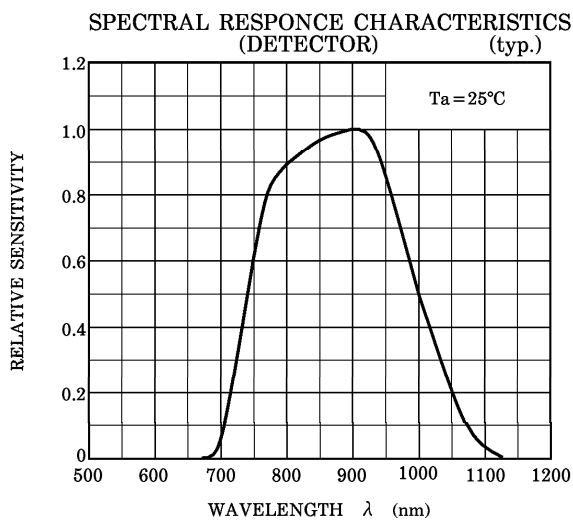
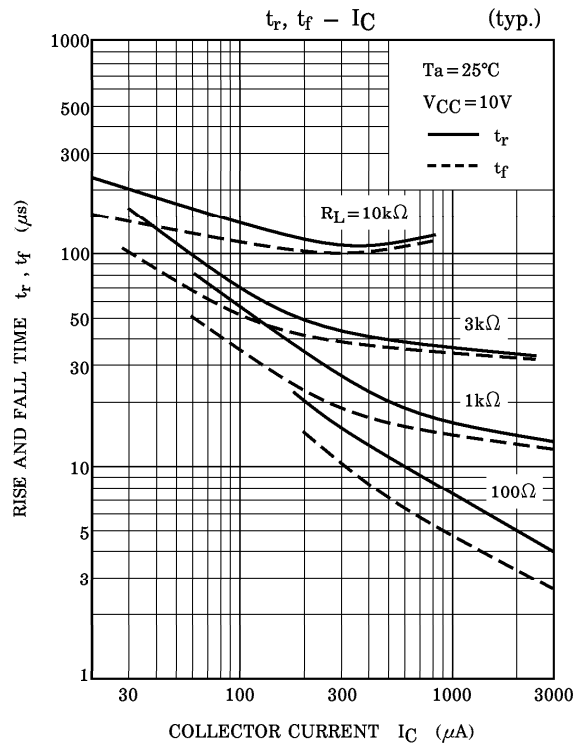
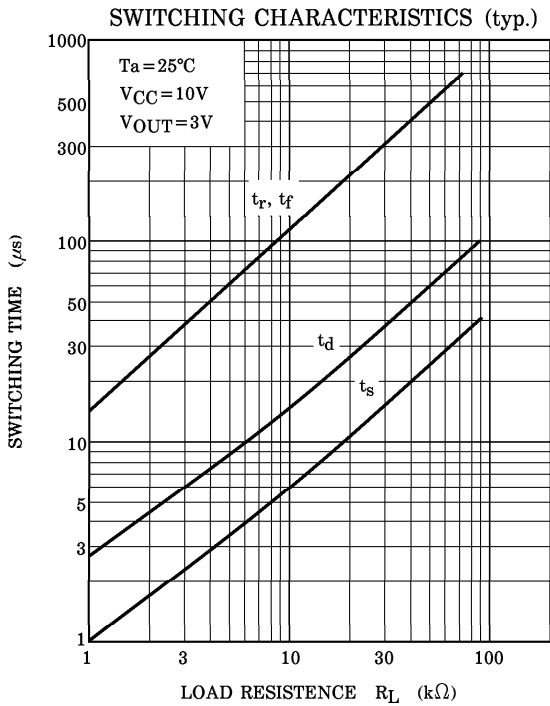
$I_{FP} - V_{FP}$  (typ.)

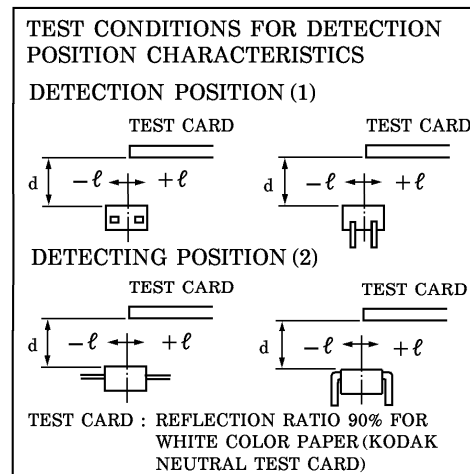
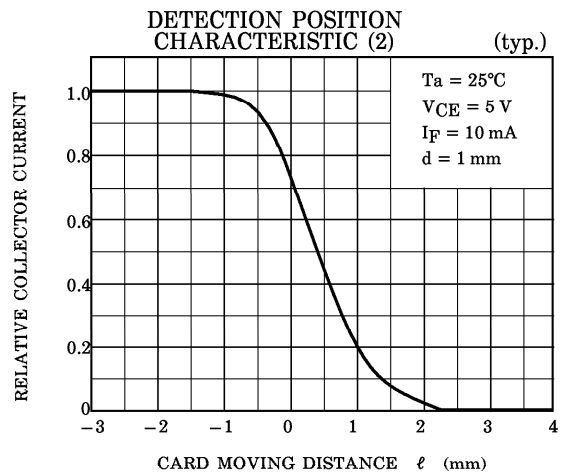
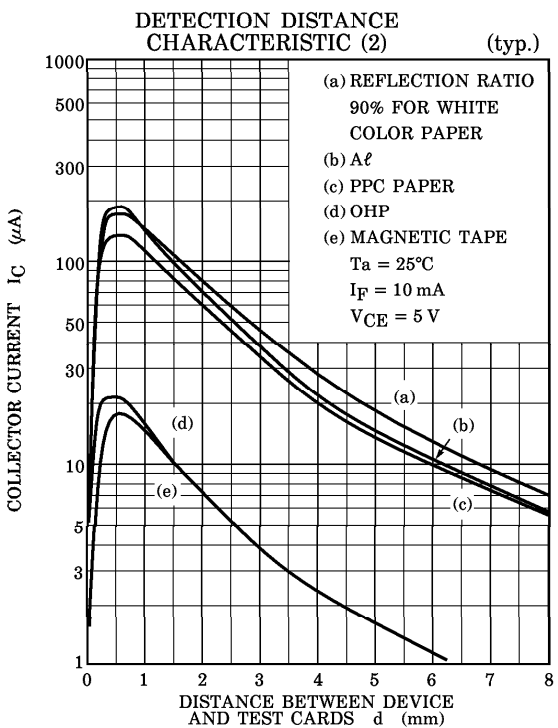
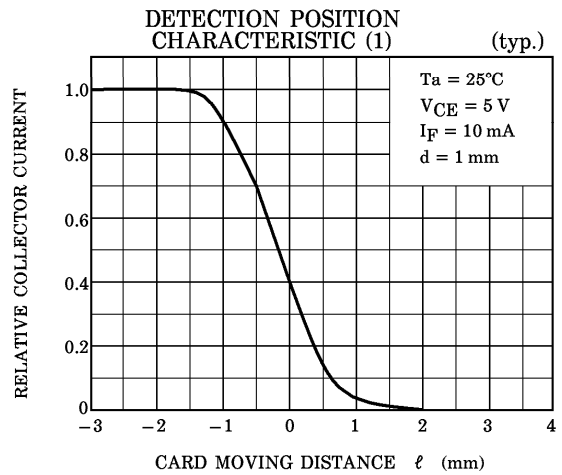
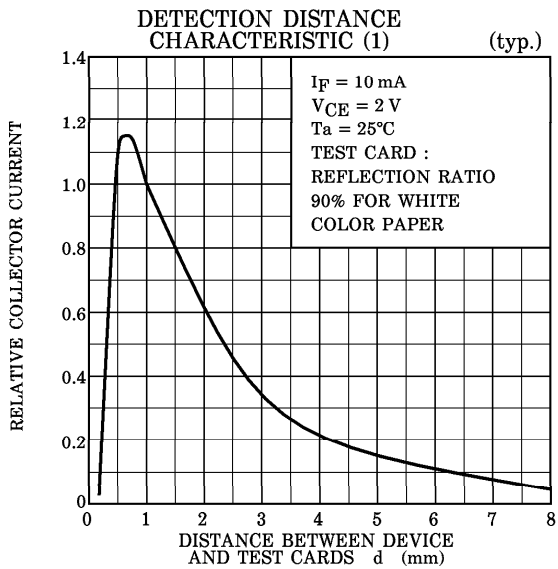


$I_C - I_F$  (typ.)









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