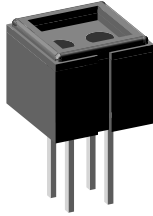
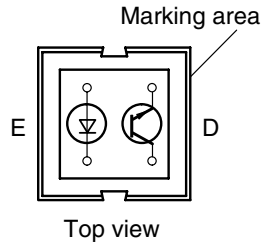


Reflective Optical Sensor with Transistor Output



19158



DESCRIPTION

The CNY70 is a reflective sensor that includes an infrared emitter and phototransistor in a leaded package which blocks visible light.

FEATURES

- Package type: leaded
- Detector type: phototransistor
- Dimensions (L x W x H in mm): 7 x 7 x 6
- Peak operating distance: < 0.5 mm
- Operating range within > 20 % relative collector current: 0 mm to 5 mm
- Typical output current under test: $I_C = 1$ mA
- Lead (Pb)-free soldering released
- Compliant to RoHS directive 2002/95/EC and in accordance to WEEE 2002/96/EC
- Emitter wavelength: 950 nm
- Daylight blocking filter


RoHS
COMPLIANT

APPLICATIONS

- Optoelectronic scanning and switching devices i.e., index sensing, coded disk scanning etc. (optoelectronic encoder assemblies).

PRODUCT SUMMARY

PART NUMBER	DISTANCE FOR MAXIMUM CTR _{rel} ⁽¹⁾ (mm)	DISTANCE RANGE FOR RELATIVE I _{out} > 20 % (mm)	TYPICAL OUTPUT CURRENT UNDER TEST ⁽²⁾ (mA)	DAYLIGHT BLOCKING FILTER INTEGRATED
CNY70	0	0 to 5	1	Yes

Notes

⁽¹⁾ CTR: current transfere ratio, I_{out}/I_{in}

⁽²⁾ Conditions like in table basic characteristics/sensors

ORDERING INFORMATION

ORDERING CODE	PACKAGING	VOLUME ⁽¹⁾	REMARKS
CNY70	Tube	MOQ: 4000 pcs, 80 pcs/tube	-

Note

⁽¹⁾ MOQ: minimum order quantity

ABSOLUTE MAXIMUM RATINGS⁽¹⁾

PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
COUPLER				
Total power dissipation	$T_{amb} \leq 25$ °C	P_{tot}	200	mW
Ambient temperature range		T_{amb}	- 40 to + 85	°C
Storage temperature range		T_{stg}	- 40 to + 100	°C
Soldering temperature	Distance to case 2 mm, $t \leq 5$ s	T_{sd}	260	°C
INPUT (EMITTER)				
Reverse voltage		V_R	5	V
Forward current		I_F	50	mA
Forward surge current	$t_p \leq 10$ μ s	I_{FSM}	3	A
Power dissipation	$T_{amb} \leq 25$ °C	P_V	100	mW
Junction temperature		T_j	100	°C

ABSOLUTE MAXIMUM RATINGS (1)				
PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
OUTPUT (DETECTOR)				
Collector emitter voltage		V_{CEO}	32	V
Emitter collector voltage		V_{ECO}	7	V
Collector current		I_C	50	mA
Power dissipation	$T_{amb} \leq 25^\circ\text{C}$	P_V	100	mW
Junction temperature		T_j	100	$^\circ\text{C}$

Note

(1) $T_{amb} = 25^\circ\text{C}$, unless otherwise specified

ABSOLUTE MAXIMUM RATINGS

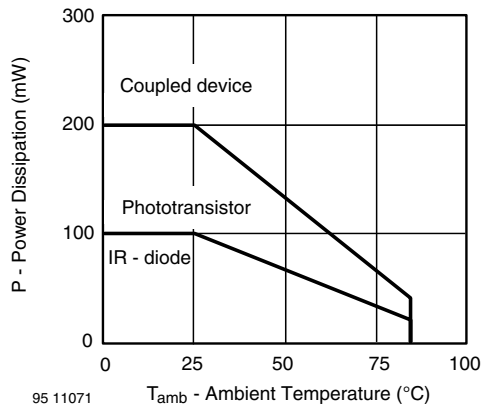
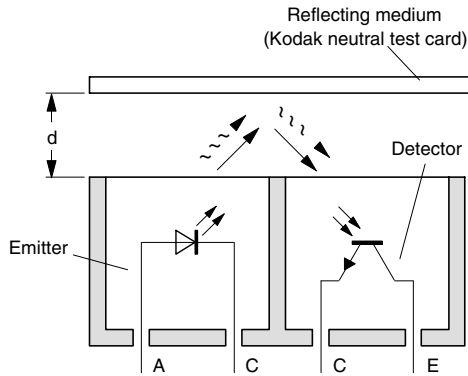


Fig. 1 - Power Dissipation vs. Ambient Temperature

BASIC CHARACTERISTICS (1)						
PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
COUPLER						
Collector current	$V_{CE} = 5\text{ V}$, $I_F = 20\text{ mA}$, $d = 0.3\text{ mm}$ (figure 1)	I_C (2)	0.3	1.0		mA
Cross talk current	$V_{CE} = 5\text{ V}$, $I_F = 20\text{ mA}$, (figure 2)	I_{CX} (3)			600	nA
Collector emitter saturation voltage	$I_F = 20\text{ mA}$, $I_C = 0.1\text{ mA}$, $d = 0.3\text{ mm}$ (figure 1)	V_{CEsat} (2)			0.3	V
INPUT (EMITTER)						
Forward voltage	$I_F = 50\text{ mA}$	V_F		1.25	1.6	V
Radiant intensity	$I_F = 50\text{ mA}$, $t_p = 20\text{ ms}$	I_e			7.5	mW/sr
Peak wavelength	$I_F = 100\text{ mA}$	λ_P	940			nm
Virtual source diameter	Method: 63 % encircled energy	d		1.2		mm
OUTPUT (DETECTOR)						
Collector emitter voltage	$I_C = 1\text{ mA}$	V_{CEO}	32			V
Emitter collector voltage	$I_E = 100\ \mu\text{A}$	V_{ECO}	5			V
Collector dark current	$V_{CE} = 20\text{ V}$, $I_F = 0\text{ A}$, $E = 0\text{ lx}$	I_{CEO}			200	nA

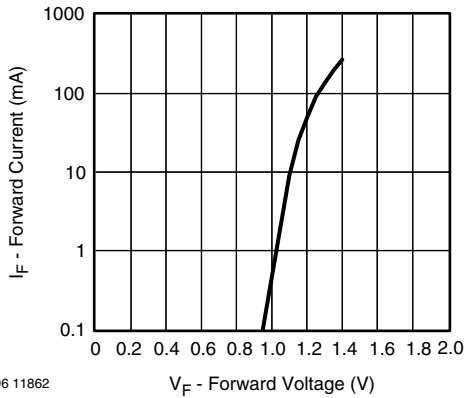
Notes

- (1) $T_{amb} = 25^\circ\text{C}$, unless otherwise specified
- (2) Measured with the "Kodak neutral test card", white side with 90 % diffuse reflectance
- (3) Measured without reflecting medium



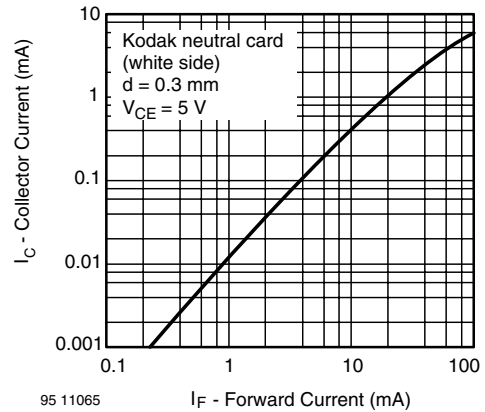
95 10808

Fig. 2 - Pulse diagram

BASIC CHARACTERISTICS
 $T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified


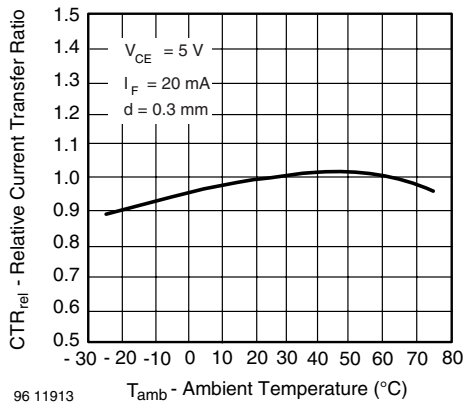
96 11862

Fig. 3 - Forward Current vs. Forward Voltage



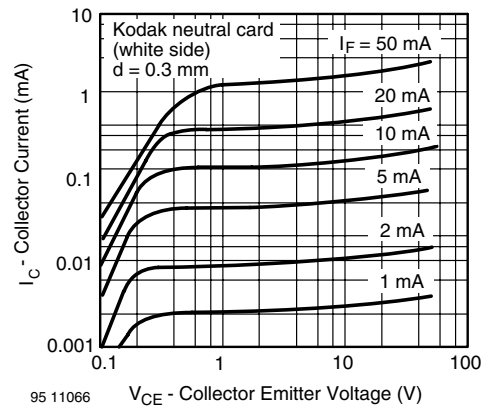
95 11065

Fig. 5 - Collector Current vs. Forward Current



96 11913

Fig. 4 - Relative Current Transfer Ratio vs. Ambient Temperature



95 11066

Fig. 6 - Collector Current vs. Collector Emitter Voltage

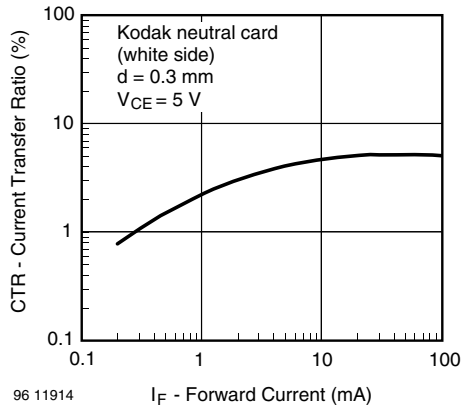


Fig. 7 - Current Transfer Ratio vs. Forward Current

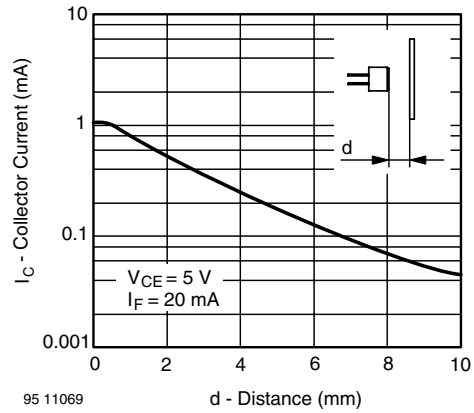


Fig. 9 - Collector Current vs. Distance

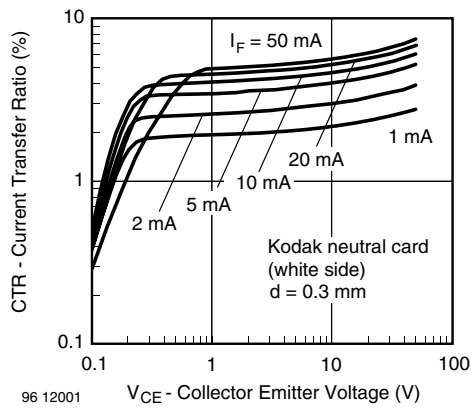


Fig. 8 - Current Transfer Ratio vs. Collector Emitter Voltage

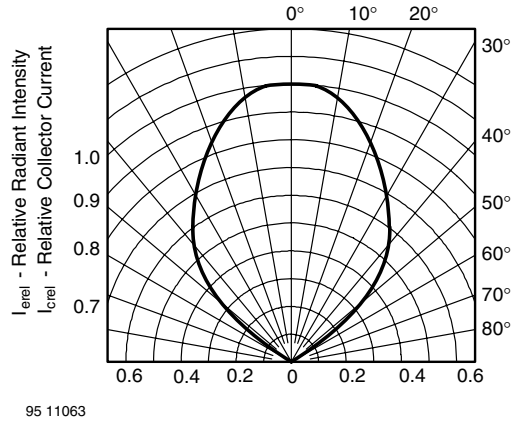


Fig. 10 - Relative Radiant Intensity/Collector Current vs. Angular Displacement

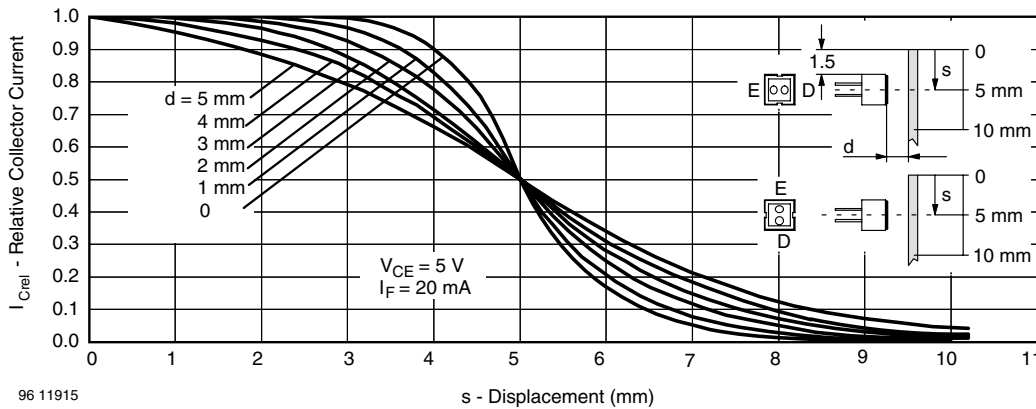
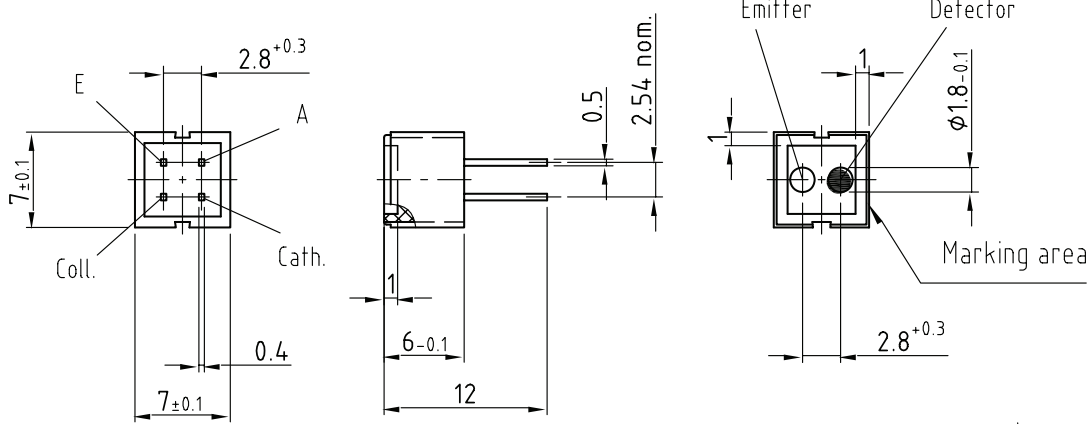
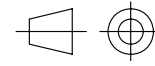


Fig. 11 - Relative Collector Current vs. Displacement

PACKAGE DIMENSIONS in millimeters


weight: ca. 0.70g

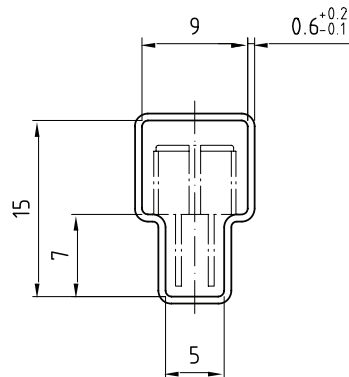


technical drawings according to DIN specifications

Drawing-No.: 6.544-5062.01-4

Issue: 6; 03.05.06

95 11345

TUBE DIMENSIONS in millimeters

 With rubber stopper
 Tolerance: ± 0.5 mm
 Length: 575 ± 1 mm

Drawing-No.: 9.700-5097.01-4

Issue: 1; 25.02.00

20291



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