To our customers,

Old Company Name in Catalogs and Other Documents

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Renesas Electronics website: http://www.renesas.com

April 1st, 2010
Renesas Electronics Corporation

Issued by: Renesas Electronics Corporation (http://www.renesas.com)

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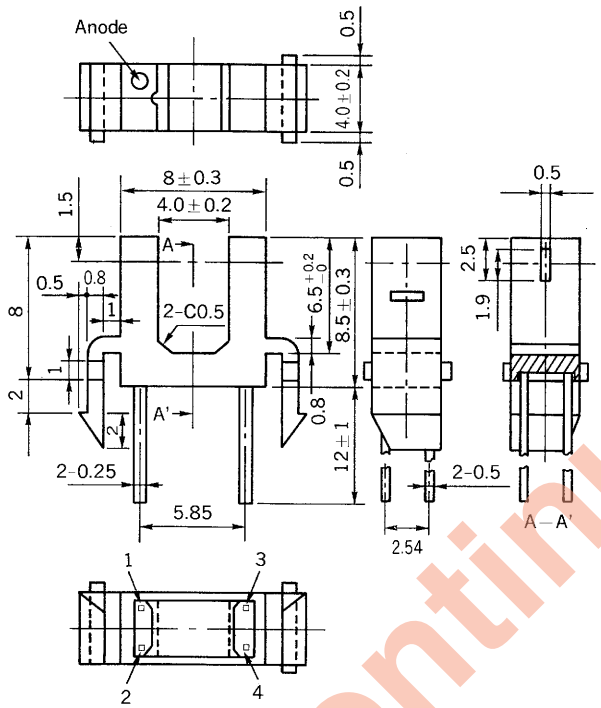
RENESAS

PHOTO INTERRUPTER
PS4703

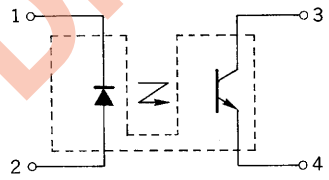
SNAP-IN TYPE
PHOTO INTERRUPTER

PACKAGE DIMENSIONS (Unit: mm)



Unless otherwise specified, the dimensions represent standard values.

TERMINAL CONNECTION
(Bottom View)



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

DESCRIPTION

The PS4703 is a photo interrupter comprising a small internal device (infrared LED and Si photo transistor) and a housing case.

FEATURES

- Snap-in type
- High resolution
  (slit width on receiving side : 0.5 mm)
- High speed response
  (t_r = 9 μs, t_f = 12 μs TYP.)

QUALITY GRADE

Standard

Please refer to "Quality grade on NEC Semiconductor Devices" (Document number IEI-1209) published by NEC Corporation to know the specification of quality grade on the devices and its recommended applications.

APPLICATIONS

- PPC, Facsimile, printer

Document No. LC–2313
(O.D.No. LC–7704)
Date Published October 1992 M
Printed in Japan

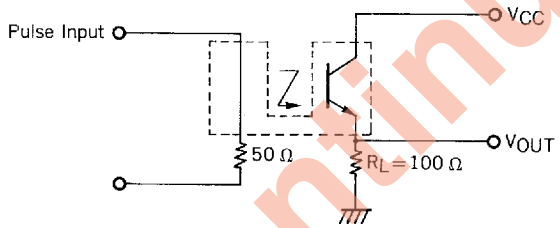
ABSOLUTE MAXIMUM RATINGS (T_a = 25 °C)

PARAMETER		SYMBOL	RATING	UNIT
Diode	Reverse Voltage	V_R	6	V
	Forward Current	I_F	50	mA
	Power Dissipation	P_D	75	mW
Transistor	Collector to Emitter Voltage	V_{CEO}	35	V
	Collector Current	I_C	25	mA
	Power Dissipation	P_C	75	mW
Operating Temperature		T_{opt}	−30 to +85	°C
Storage Temperature		T_{stg}	−40 to +100	°C

ELECTRICAL CHARACTERISTICS (T_a = 25 °C)

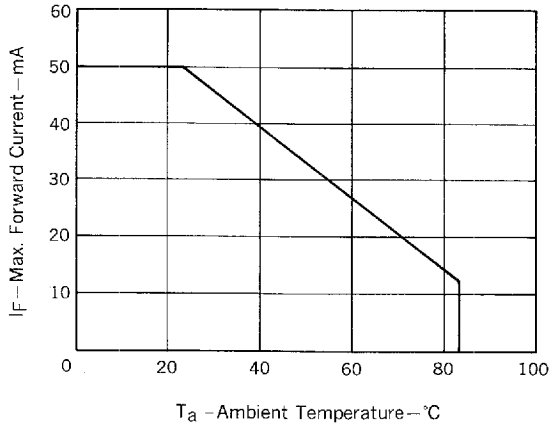
PARAMETER		SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
Diode	Forward Voltage	V_F		1.2	1.4	V	I_F = 10 mA
	Reverse Current	I_R			10	μA	V_R = 5V
	Junction Capacitance	C_t		30		pF	V = 0, f = 1 MHz
Transistor	Collector to Emitter Dark Current	I_{CEO}			100	nA	V_{CE} = 10 V, L = 0 lx
Coupled	Output Current	I_C	130			μA	I_F = 10 mA, V_{CE} = 0.6 V
	Collector Saturation Voltage	$V_{CE(sat)}$			0.4	V	I_F = 10 mA, I_C = 100 μA
	Rise Time *	t_r		9		μs	V_{cc} = 5V, I_C = 500 μA, R_L = 100 Ω
	Fall Time *	t_f		12		μs	

* Test Circuit for Switching Time

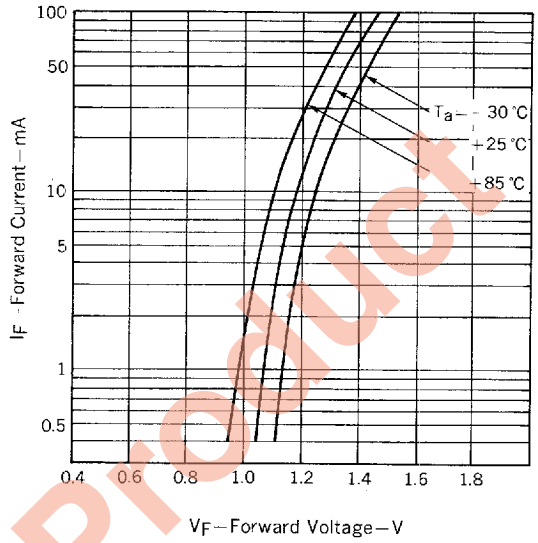


TYPICAL CHARACTERISTICS (T_a = 25 °C)

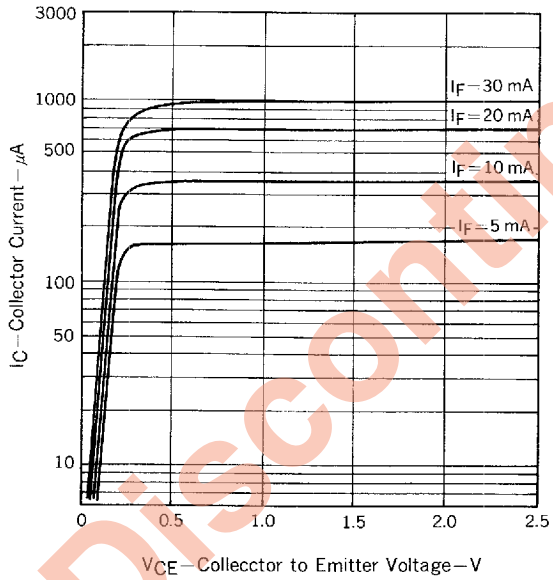
MAX. FORWARD CURRENT vs.
AMBIENT TEMPERATURE



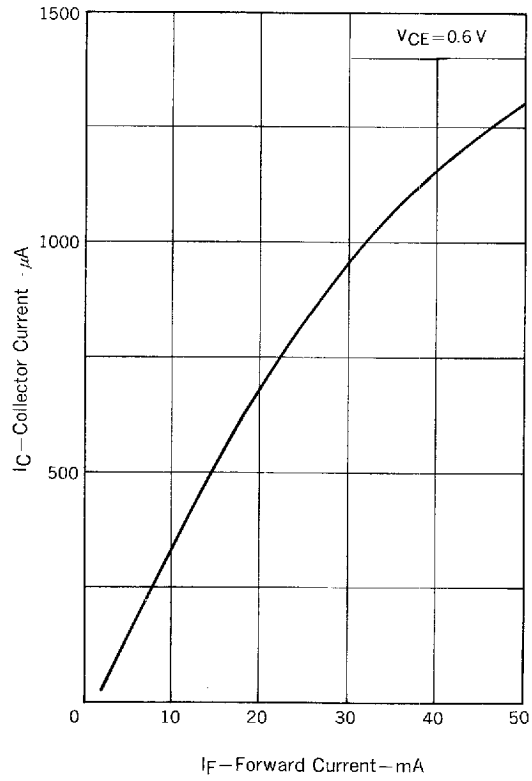
FORWARD CURRENT vs.
FORWARD VOLTAGE



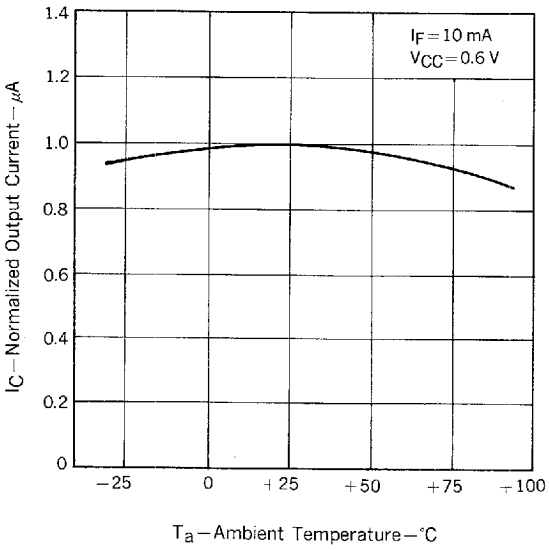
COLLECTOR CURRENT vs.
COLLECTOR TO EMITTER VOLTAGE



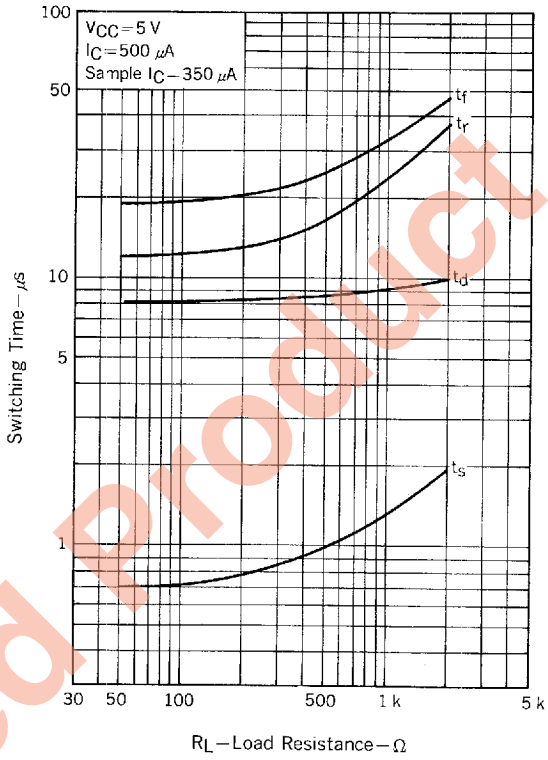
COLLECTOR CURRENT vs.
FORWARD CURRENT



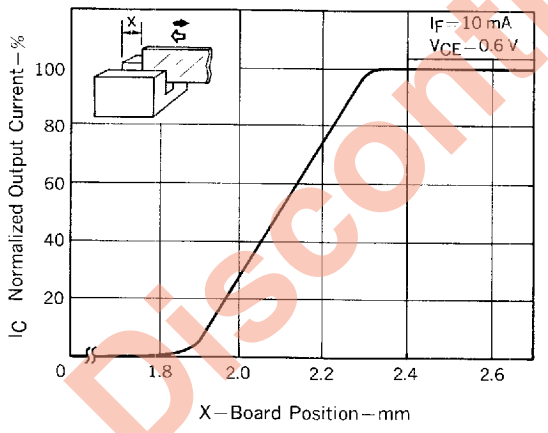
NORMALIZED OUTPUT CURRENT vs. AMBIENT TEMPERATURE



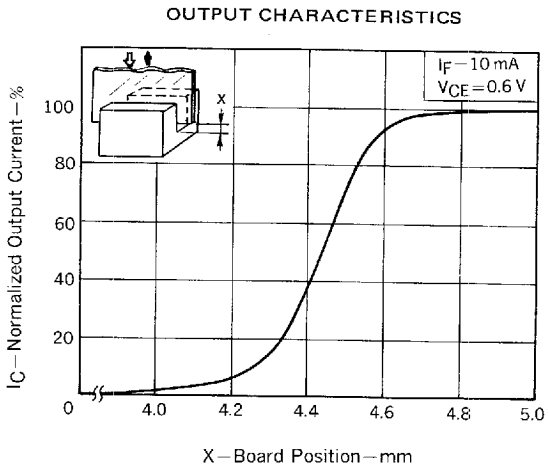
SWITCHING TIME vs. LOAD RESISTANCE



OUTPUT CHARACTERISTICS



OUTPUT CHARACTERISTICS



HANDLING PRECAUTIONS:

- Soldering

Photo Interrupter has generally a little less mechanical and thermal strength than other resin-molded semiconductor devices as they have less additives. Therefore please note on the following points.

(a) Soldering of leads should be made at the point 2 mm or more from the root of the case at 260 °C and within 5 s.

(b) Please keep the package temperature less than 100 °C.

(c) If the temperature of the molded portion rises in addition to the residual stress between the leads, the possibility that open or short circuit occurs due to the deformation or destruction of the resin will increase.

- On cleaning the device:

(a) Cleaning with unsuitable solvent may impair the resin of the package and the following solvents should be used at the temperature of less than 45 °C and for less than 3 minutes of immersion time.

Ethanol, Methanol, Isopropyl-alcohol

(b) Ultrasonic cleaning will add some stress on devices. The degree of the stress differs depending on the oscillation output power, the size of the PCB and the mounting methods of the devices, therefore it should be confirmed by making an experiment at actual conditions that the cleaning does not have any problem on the devices.

[MEMO]

M4 92.6