

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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— NEPOC SERIES —

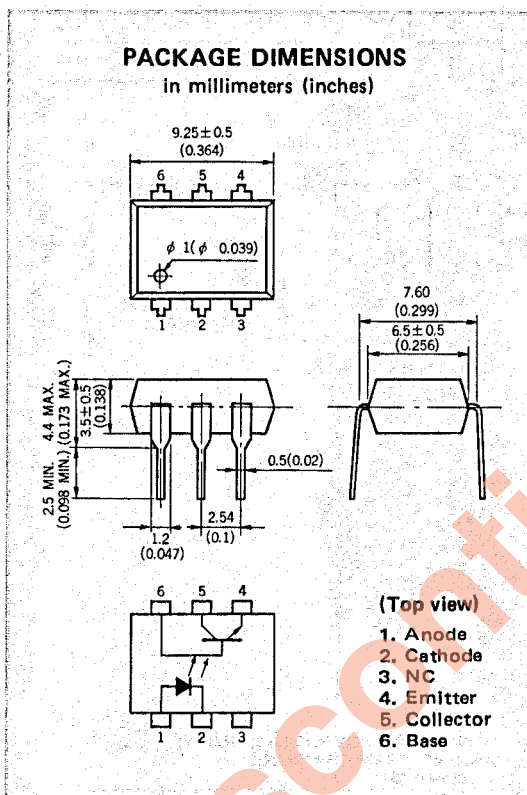
DESCRIPTION

The PS2010 is an optically coupled isorator containing a GaAs light emitting diode and an NPN silicon photo transistor.

PS2010 all rank : MCT2, H11A2 ~ H11A5, 4N25 ~ 4N28

PS2010 K rank : H11A1

Compatible with MCT2, H11A1~H11A5 and 4N25~4N28



FEATURES

- High isolation voltage 2 000 V_{AC}, 2 500 V_{DC}
- High transfer ratio 20 % MIN.
- High speed switching $t_r, t_f = 4 \mu s$ TYP.
- Economical, compact, Dual In-Line Plastic Package

APPLICATIONS

- Interface circuit for various instrumentations, control equipments.
- Chopper circuits.
- Computer and peripheral manufactures.
- Pulse transformer.
- Data communication equipment.

ABSOLUTE MAXIMUM RATINGS (T_a = 25 °C)

Diode

Reverse Voltage	V _R	5.0	V
Forward Current (DC)	I _F	80	mA
Power Dissipation	P _D	150	mW
Peak Forward Current (300 μs, 2 % duty cycle)	I _{F(peak)}	3	A

Transistor

Collector to Emitter Voltage	V _{CEO}	30	V
Collector to Base Voltage	V _{CBO}	70	V
Emitter to Collector Voltage	V _{ECO}	7	V
Collector Current	I _C	100	mA
Power Dissipation	P _C	150	mW
Isolation Voltage*1	BV	2500	V _{DC}
Isolation Voltage*1	BV	2000	V _{AC}
Storage Temperature	T _{stg}	-55 to +150	°C
Operating Temperature	T _{opt}	-55 to +100	°C
Lead Temperature (Soldering 10 s)		260	°C
Total Power Dissipation	P _T	250	mW

ELECTRICAL CHARACTERISTICS (Ta=25 °C)

CHARACTERISTIC		SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
Diode	Forward Voltage	V _F		1.1	1.4	V	I _F = 10 mA
	Forward Voltage	V _F		1.2	1.5	V	I _F = 50 mA
	Reverse Current	I _R			10	μA	V _R = 5 V
	Junction Capacitance	C		50		pF	V = 0, f = 1.0 MHz
Transistor	Collector to Emitter Dark Current	I _{CEO}			50	nA	V _{CE} = 10 V, I _F = 0
	DC Current Gain	h _{FE}		700			I _C = 2 mA, V _{CE} = 5.0 V
	Collector to Emitter Breakdown Voltage	BV _{CEO}	30	60		V	I _C = 1 mA, I _B = 0
	Collector to Base Breakdown Voltage	BV _{CBO}	70	120		V	I _C = 100 μA, I _E = 0
	Emitter to Collector Breakdown Voltage	BV _{ECO}	7	9		V	I _E = 100 μA, I _B = 0
Coupled	Current Transfer Ratio *1	CTR(I _C /I _F)	20			%	I _F = 10 mA, V _{CE} = 5.0 V
	Collector Saturation Voltage	V _{CE(sat)}			0.3	V	I _F = 10 mA, I _C = 2.0 mA
	Isolation Resistance	R ₁₋₂	10 ¹¹			Ω	V _{in-out} = 1.0 kV
	Isolation Capacitance	C ₁₋₂		0.8		pF	V = 0, f = 1.0 MHz
	Rise Time *3	t _r		4		μs	V _{CC} = 5.0 V, I _F = 20 mA, R _L = 100 Ω
	Fall Time *3	t _f		4		μs	V _{CC} = 5.0 V, I _F = 20 mA, R _L = 100 Ω

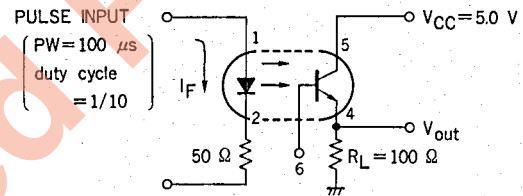
*1 Measuring Condition:

DC or AC voltage for 1 minute at Ta=25 °c,
RH=60 %
Between input (pin No. 1, 2 and No. 3 Common)
and output (pin No. 4,5 and No. 6 Common)

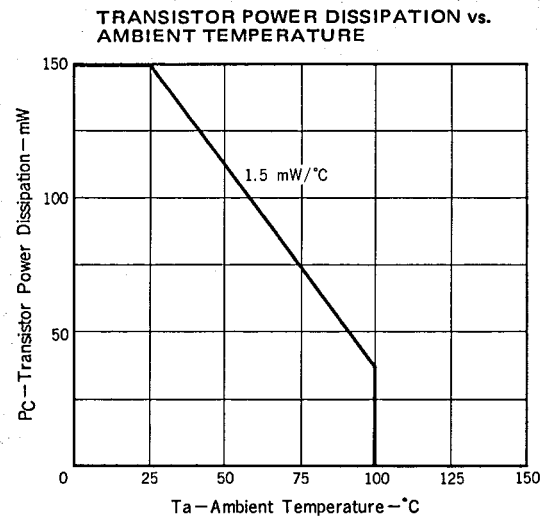
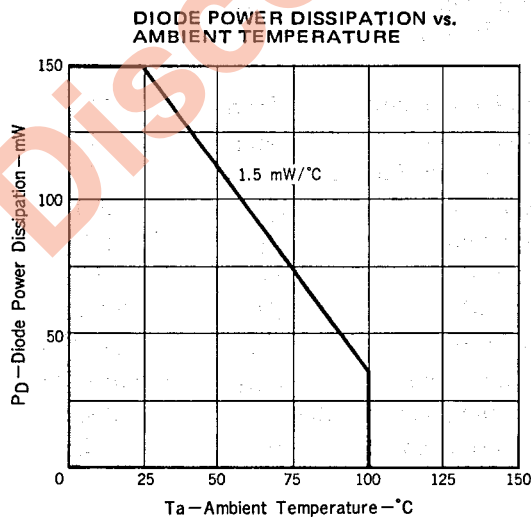
*2 CTR rank

- PS2010 K : 80 % ~
- PS2010 L : 50 % ~
- PS2010 M : 20 % ~

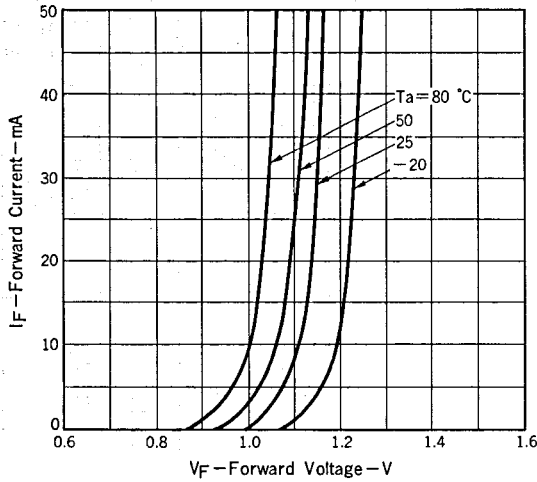
*3 Test Circuit for Switching Time



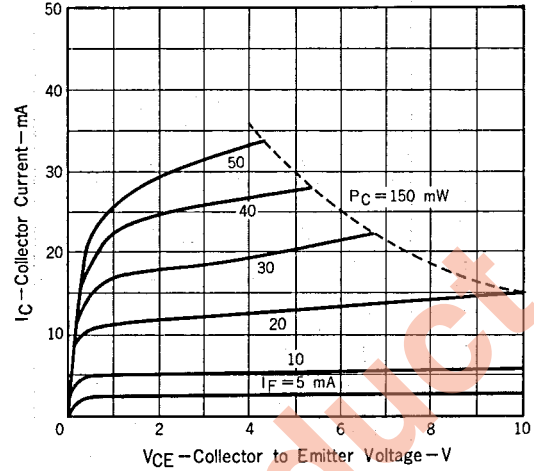
TYPICAL CHARACTERISTICS (Ta=25 °C)



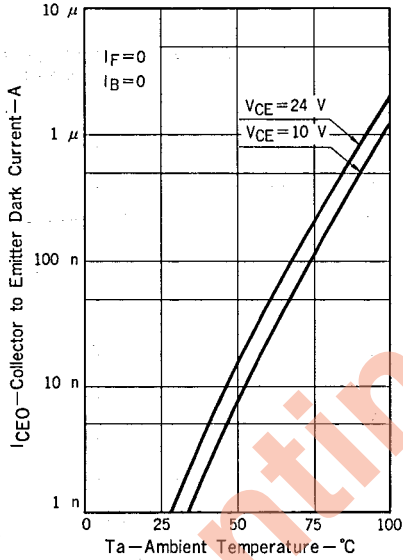
FORWARD CURRENT vs. FORWARD VOLTAGE



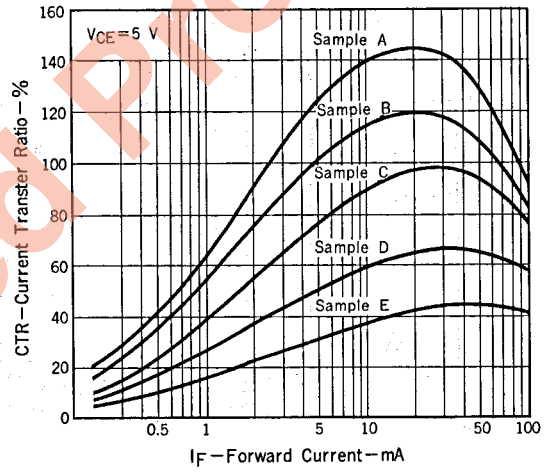
COLLECTOR CURRENT vs. COLLECTOR TO EMITTER VOLTAGE



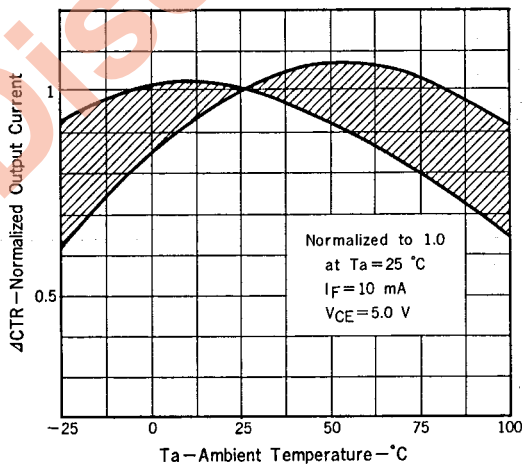
COLLECTOR TO EMITTER DARK CURRENT vs. AMBIENT TEMPERATURE



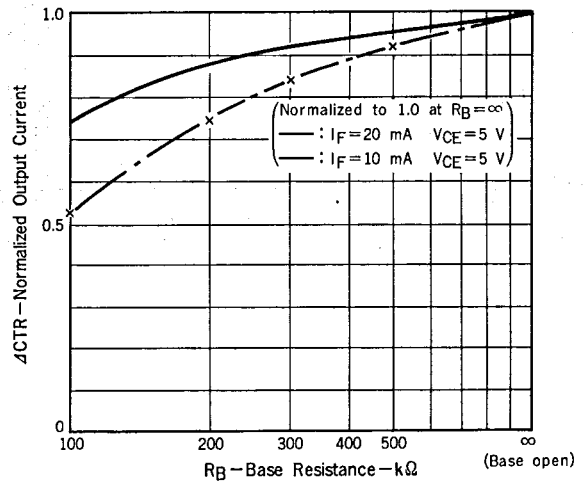
CURRENT TRANSFER RATIO vs. FORWARD CURRENT



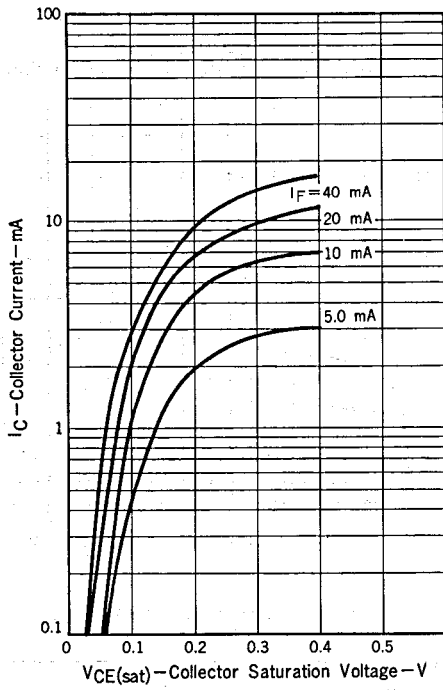
NORMALIZED OUTPUT CURRENT vs. AMBIENT TEMPERATURE



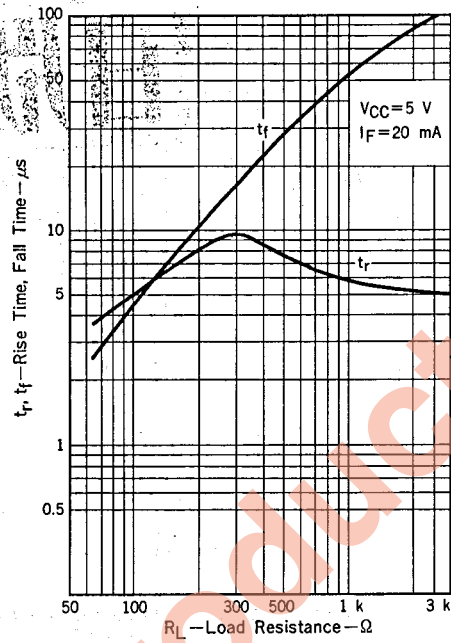
NORMALIZED OUTPUT CURRENT vs. BASE RESISTANCE



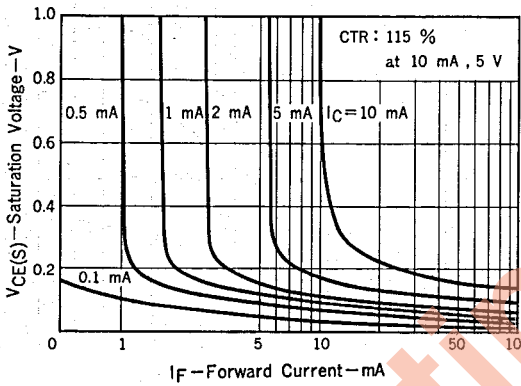
COLLECTOR CURRENT vs. COLLECTOR SATURATION VOLTAGE



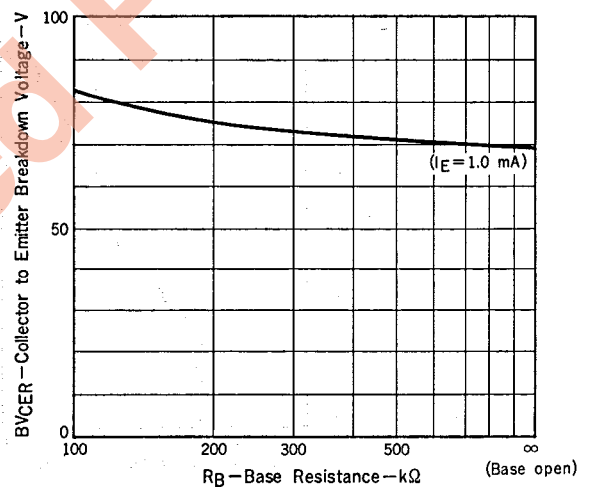
SWITCHING TIME vs. LOAD RESISTANCE



SATURATION VOLTAGE vs. FORWARD CURRENT



COLLECTOR TO EMITTER BREAKDOWN VOLTAGE vs. BASE RESISTANCE



FREQUENCY RESPONSE

