High Reliability Photocoupler

● Features

1. High current transfer ratio (Vceo : 300V MIN)

   (CTR : MIN.600 at I_F=1mA, Vce=2V)

2. High isolation voltage between input and output (Viso : 5000Vrms).

3. Compact dual-in-line package.

● Applications

1. System appliances, measuring instruments.

2. Industrial robots.

3. Copiers, automatic vending machines.

4. Signal transmission between circuits of different potentials and impedances.

5. Telephone sets.

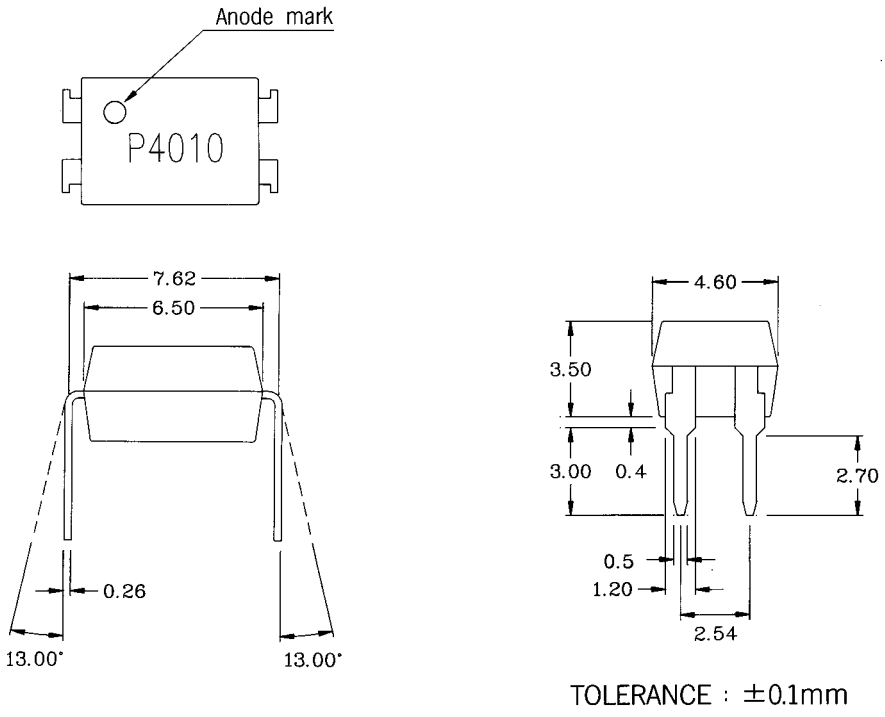
6. Copiers, facsimiles.

7. Interface with various power supply circuits, power distribution boards.

8. Numerical control machines.

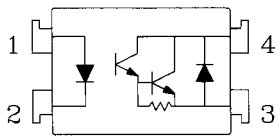
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1. OUTSIDE DIMENSION : UNIT (mm)



TOLERANCE : ±0.1mm

2. SCHEMATIC : TOP VIEW



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

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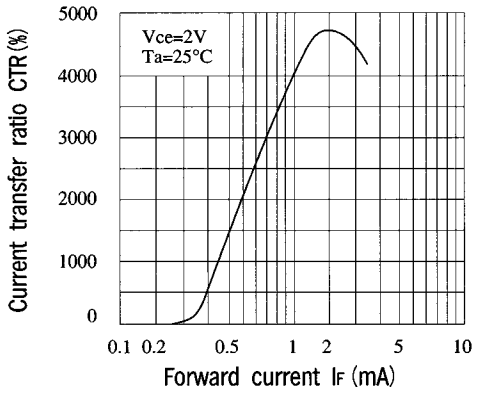
● Absolute Maximum Ratings (Ta=25℃)

Parameter		Symbol	Rating	Unit
Input	Forward current	I_F	50	mA
	Peak forward current	I_{FM}	1	A
	Reverse voltage	V_E	6	V
	Power dissipation	P	70	mW
Output	Collector-emitter voltage	V_{CEO}	300	V
	Emitter-collector voltage	V_{ECO}	0.1	V
	Collector current	I_C	150	mA
	Collector power dissipation	P_C	200	mW
Total power dissipation		P_{tot}	200	mW
Isolation voltage 1 minute		V_{iso}	5000	Vrms
Operating temperature		T_{opr}	-30 to +100	℃
Storage temperature		T_{stg}	-55 to +125	℃
Soldering temperature 10 seconds		T_{sol}	260	℃

● Electro-optical Characteristics (Ta=25℃)

Parameter		Symbol	Conditions	MIN	TYP	MAX	Unit
Input	Forward voltage	V_F	I_F=20mA	-	1.2	1.4	V
	Peak forward voltage	V_{FM}	I_{FM}=0.5A	-	-	3.5	V
	Reverse current	I_R	V_R=4V	-	-	10	μA
	Terminal capacitance	C_t	V=0, f=1kHz	-	30	-	pF
Output	Collector dark current	I_{CEO}	V_{CE}=200V I_F=0	-	-	10^{-6}	A
Transfer characteristics	Current transfer ratio	CTR	I_F=1mA, V_{CE}=2V	600	-	9000	%
	Collector-emitter saturation voltage	$V_{CE(sat)}$	I_F=20mA, I_C=5mA	-	-	1.5	V
	Isolation resistance	R_{iso}	DC500V	$5x10^{10}$	-	-	ohm
	Floating capacitance	C_f	V=0, f=1MHz	-	0.6	1.0	pF
	Cut-off frequency	f_c	V_{CE}=5V, I_C=2mA, R_L=100ohm	-	7	-	kHz
	Response time (Rise)	t_r	V_{CE}=2V, I_C=20mA, R_L=100ohm	-	60	300	μs
	Response time (Fall)	t_f		-	50	250	μs

Fig. 1 Current Transfer Ratio vs. Forward Current



Classification table of current transfer ratio is shown below.

Model NO.	CTR(%)
P4010A	600 TO 2000
P4010B	1500 TO 4000
P4010C	3000 TO 6000
P4010D	5000 TO 9000
P4010E	600 TO 9000

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Fig. 2 Collector Power Dissipation vs. Ambient Temperature

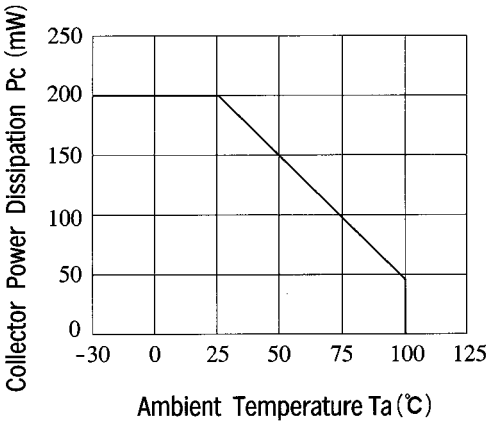


Fig. 3 Collector Dark Current vs. Ambient Temperature

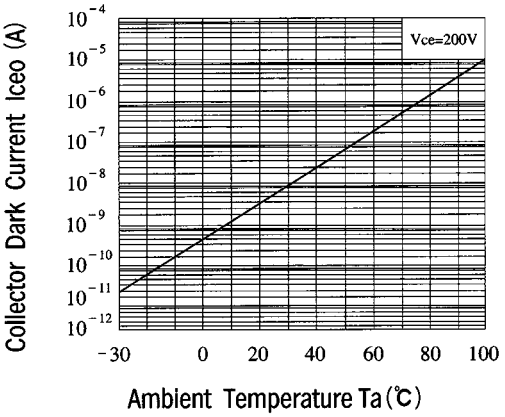


Fig. 4 Forward Current vs. Ambient Temperature

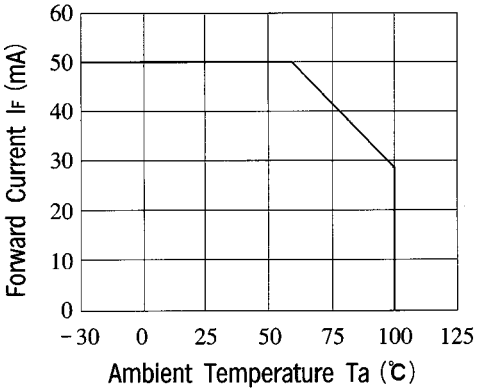


Fig. 5 Forward Current vs. Forward Voltage

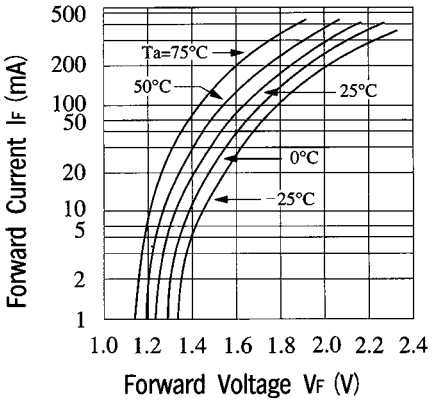


Fig. 6 Collector Current vs. Collector-emitter Voltage

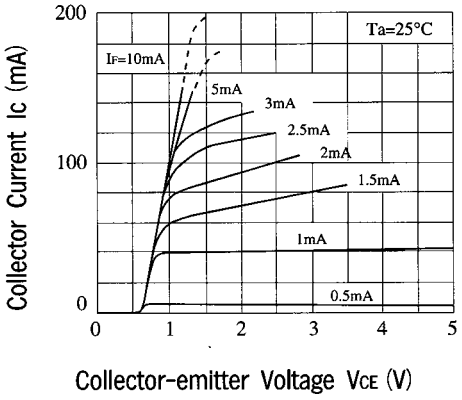
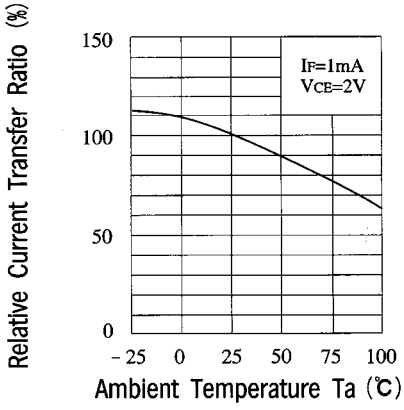


Fig. 7 Relative Current Transfer Ratio vs. Ambient Temperature



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Fig. 8 Collector-emitter Saturation Voltage vs. Forward Current

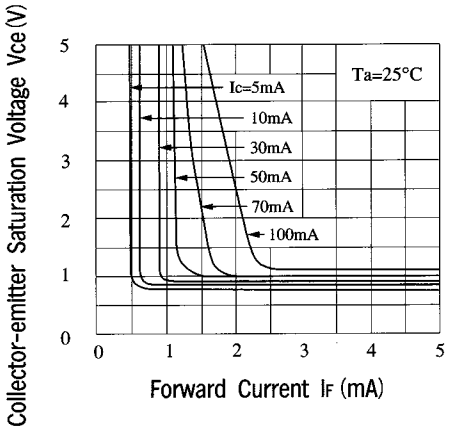
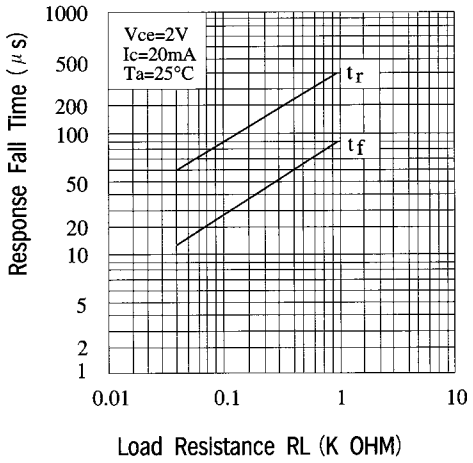


Fig. 9 Response Time vs. Load Resistance



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