

High Reliability Photocoupler

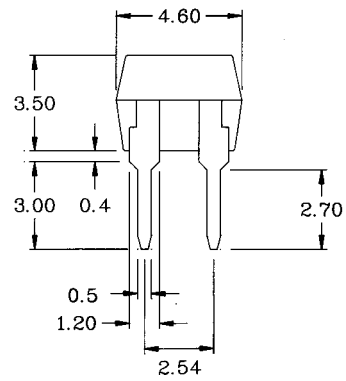
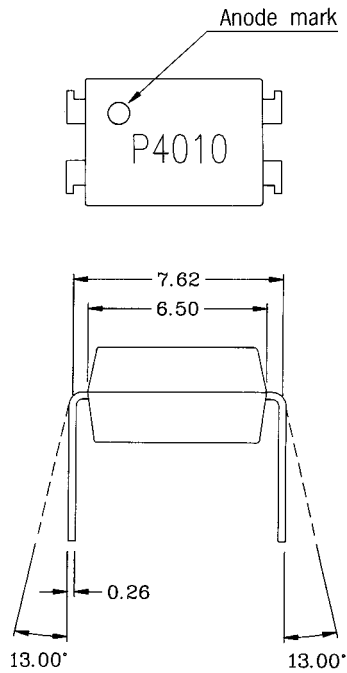
● Features

1. High current transfer ratio (V_{ceo}: 300V MIN)
(CTR: MIN.600 at I_f=1mA, V_{ce}=2V)
2. High isolation voltage between input and output (V_{iso}: 5000Vrms).
3. Compact dual-in-line package.

● Applications

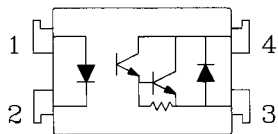
1. System appliances, measuring instruments.
2. Industrial robots.
3. Copiers, automatic vending machines.
4. Signal transmission between circuits of different potentials and impedances.
5. Telephone sets.
6. Copiers, facsimiles.
7. Interface with various power supply circuits, power distribution boards.
8. Numerical control machines.

1. OUTSIDE DIMENSION : UNIT (mm)



TOLERANCE : $\pm 0.1\text{mm}$

2. SCHEMATIC : TOP VIEW



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

● Absolute Maximum Ratings

(Ta=25°C)

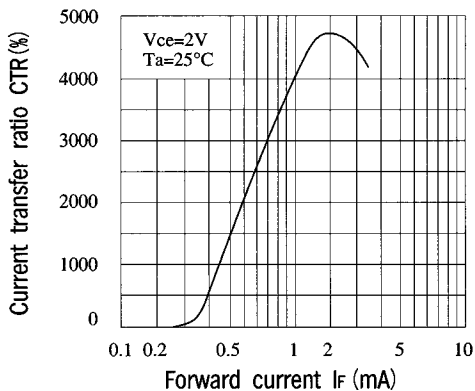
Parameter	Symbol	Rating	Unit	
Input	Forward current	If	50	mA
	Peak forward current	IfM	1	A
	Reverse voltage	VE	6	V
	Power dissipation	P	70	mW
Output	Collector-emitter voltage	VCE0	300	V
	Emitter-collector voltage	VECO	0.1	V
	Collector current	Ic	150	mA
	Collector power dissipation	Pc	200	mW
Total power dissipation	Ptot	200	mW	
Isolation voltage 1 minute	Viso	5000	Vrms	
Operating temperature	Topr	-30 to +100	°C	
Storage temperature	Tstg	-55 to +125	°C	
Soldering temperature 10 seconds	Tsol	260	°C	

● Electro-optical Characteristics

(Ta=25°C)

Parameter	Symbol	Conditions	MIN	TYP	MAX	Unit
Input	Forward voltage	Vf If=20mA	-	1.2	1.4	V
	Peak forward voltage	VfM IfM=0.5A	-	-	3.5	V
	Reverse current	Ir Vr=4V	-	-	10	μA
	Terminal capacitance	Ct V=0, f=1kHz	-	30	-	pF
Output	Collector dark current	IcEO VCE=200V If=0	-	-	10 ⁻⁶	A
Transfer characteristics	Current transfer ratio	CTR If=1mA, VCE=2V	600	-	9000	%
	Collector-emitter saturation voltage	VCE(sat) If=20mA, Ic=5mA	-	-	1.5	V
	Isolation resistance	Riso DC500V	5x10 ¹⁰	-	-	ohm
	Floating capacitance	Cf V=0, f=1MHz	-	0.6	1.0	pF
	Cut-off frequency	fc VCE=5V, Ic=2mA, RL=100ohm	-	7	-	kHz
	Response time (Rise)	tr VCE=2V, Ic=20mA, RL=100ohm	-	60	300	μs
	Response time (Fall)	tf VCE=2V, Ic=20mA, RL=100ohm	-	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

Fig. 2 Collector Power Dissipation vs. Ambient Temperature

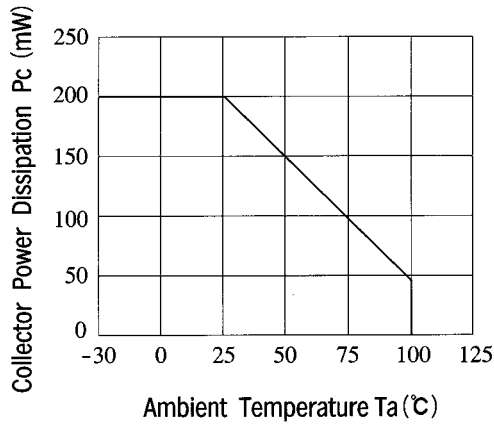


Fig. 3 Collector Dark Current vs. Ambient Temperature

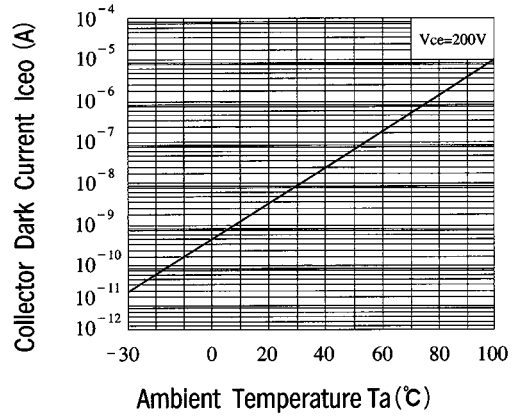


Fig. 4 Forward Current vs. Ambient Temperature

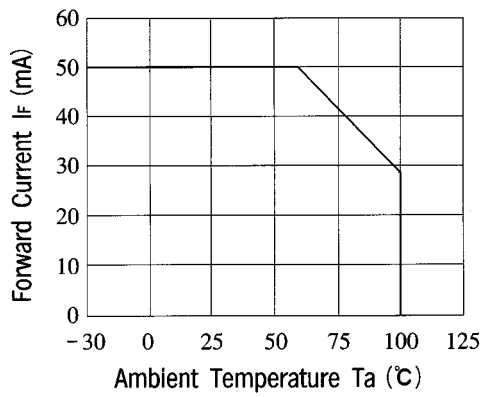


Fig. 5 Forward Current vs. Forward Voltage

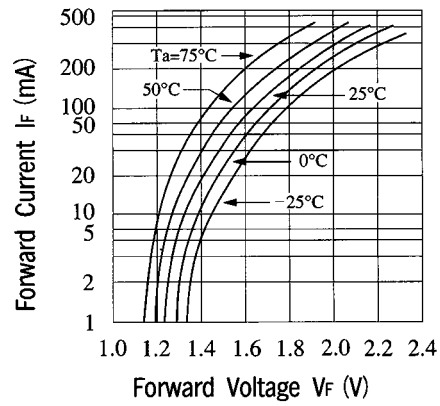


Fig. 6 Collector Current vs. Collector-emitter Voltage

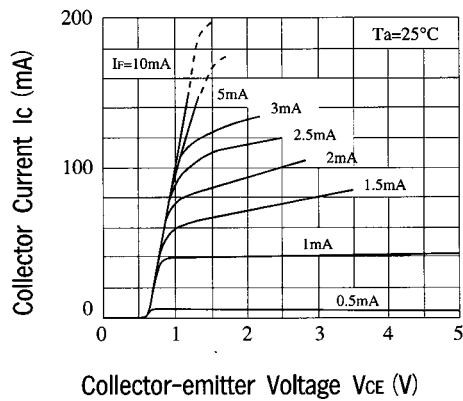


Fig. 7 Relative Current Transfer Ratio vs. Ambient Temperature

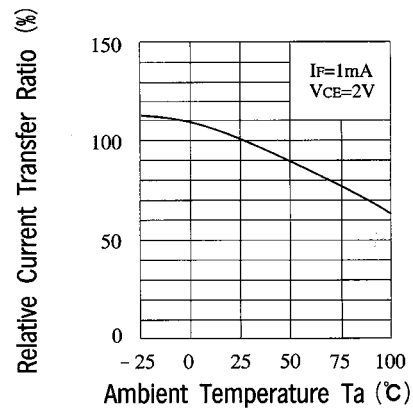


Fig. 8 Collector-emitter Saturation Voltage vs. Forward Current

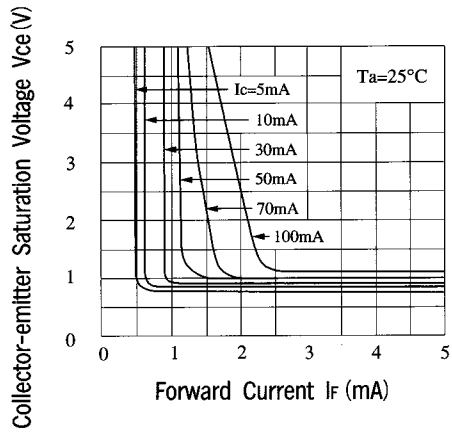


Fig. 9 Response Time vs. Load Resistance

