

High Reliability Photocoupler

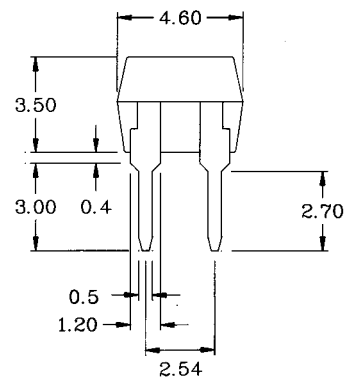
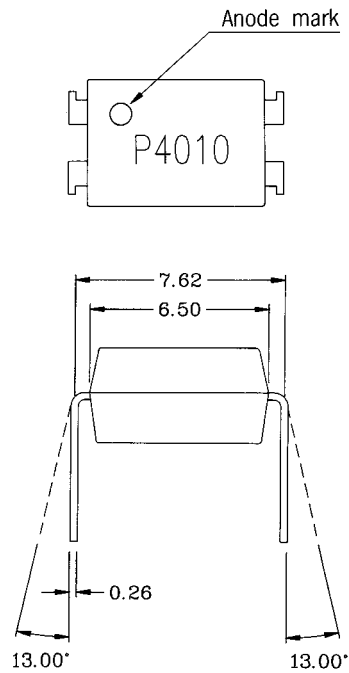
● Features

1. High current transfer ratio ($V_{ce0} : 300V \text{ MIN}$)
(CTR: MIN.600 at $I_f=1mA$, $V_{ce}=2V$)
2. High isolation voltage between input and output ($V_{iso} : 5000V_{rms}$).
3. Compact dual-in-line package.

● Applications

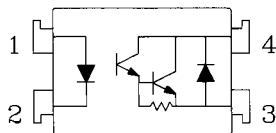
1. System appliances, measuring instruments.
2. Industrial robots.
3. Copiers, automatic vending machines.
4. Signal transmission between circuits of different potentials and impedances.
5. Telephone sets.
6. Copiers, facsimiles.
7. Interface with various power supply circuits, power distribution boards.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

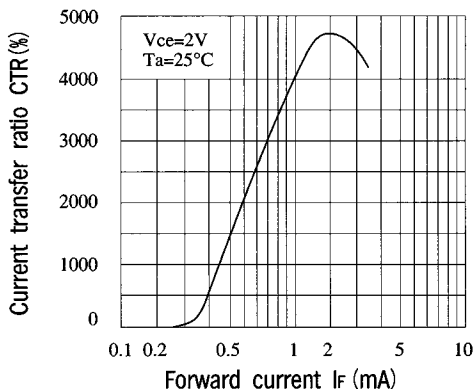
	Parameter	Symbol	Rating	Unit
Input	Forward current	I _F	50	mA
	Peak forward current	I _{FM}	1	A
	Reverse voltage	V _E	6	V
	Power dissipation	P	70	mW
Output	Collector-emitter voltage	V _{CEO}	300	V
	Emitter-collector voltage	V _{ECO}	0.1	V
	Collector current	I _c	150	mA
	Collector power dissipation	P _c	200	mW
Total power dissipation		P _{tot}	200	mW
Isolation voltage 1 minute		V _{iso}	5000	V _{rms}
Operating temperature		T _{opr}	-30 to +100	°C
Storage temperature		T _{stg}	-55 to +125	°C
Soldering temperature 10 seconds		T _{sol}	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	μ A
	Terminal capacitance	Ct V=0, f=1kHz	-	30	-	pF
Output	Collector dark current	ICE0 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	μ s
	Response time (Fall)	tf	-	50	250	μ s

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

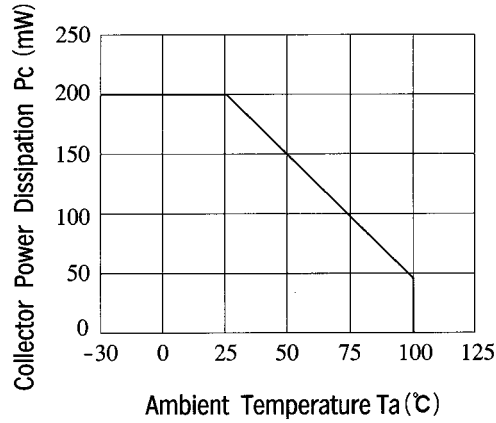


Fig. 3 Collector Dark Current vs. Ambient Temperature

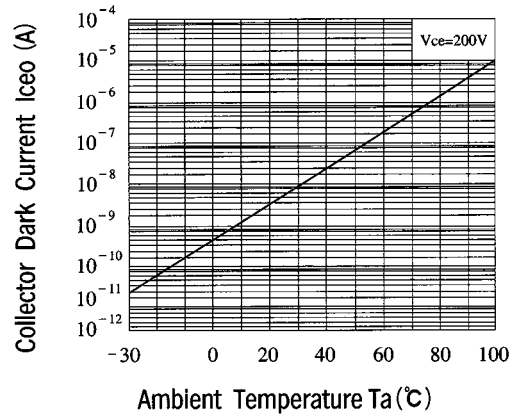


Fig. 4 Forward Current vs. Ambient Temperature

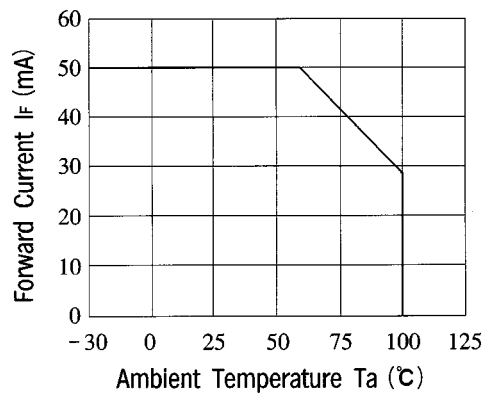


Fig. 5 Forward Current vs. Forward Voltage

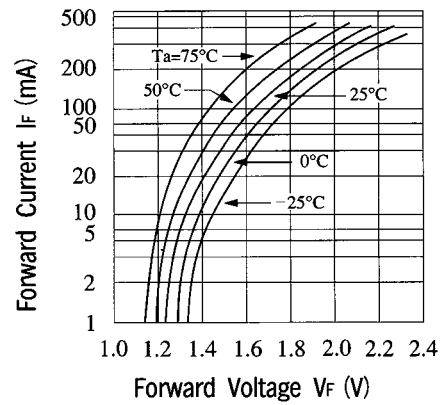


Fig. 6 Collector Current vs. Collector-emitter Voltage

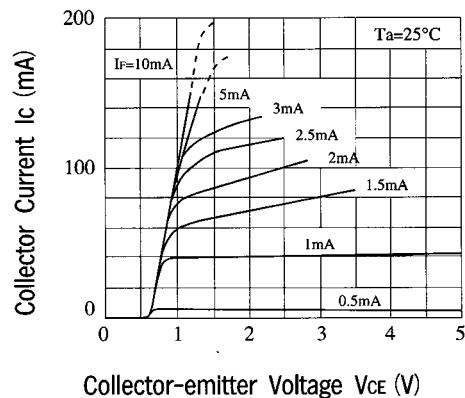


Fig. 7 Relative Current Transfer Ratio vs. Ambient Temperature

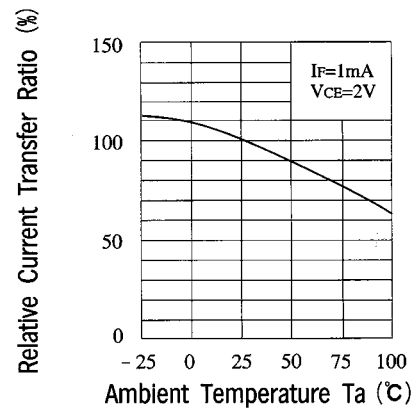


Fig. 8 Collector-emitter Saturation Voltage vs. Forward Current

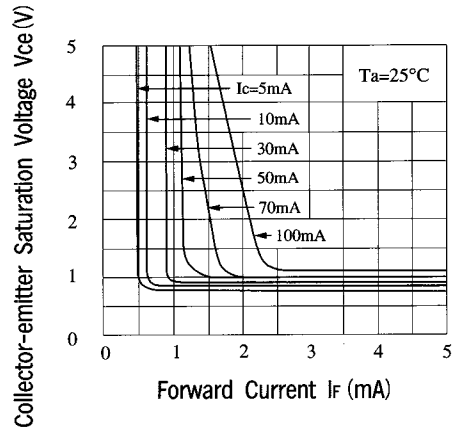


Fig. 9 Response Time vs. Load Resistance

