P3020

HIGH RELIABILITY PHOTOCOUPLER

● Features

1. Current transfer ratio

   CTR: MIN.60 at I_F=±1mA Vce=5V

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

3. Compact dual-in-line package.

4. AC input.

● Applications

1. Programmable Controller Applications for Low Input Photocouplers and High Vceo Photocouplers.

2. Telephone sets, telephone exchangers.

3. System appliances. ● Limit Switches ● Sensors ● Thermostats ● Transdusers etc.

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

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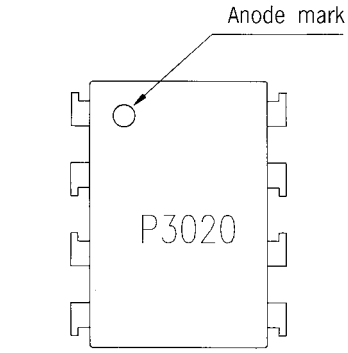
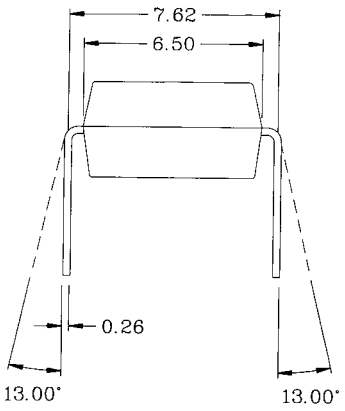
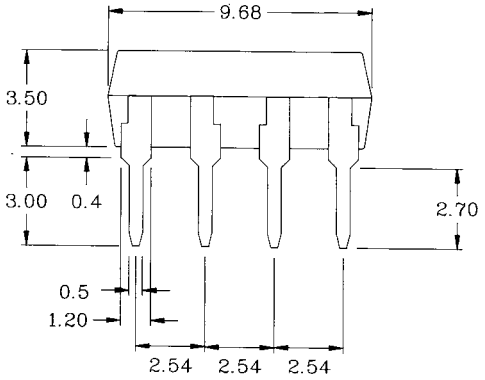
1. OUTSIDE DIMENSION : UNIT (mm)

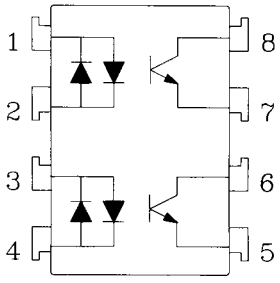


TOLERANCE : ±0.1mm





2. SCHEMATIC : TOP VIEW



1,2. Anode, Cathode
3,4. Anode, Cathode
5,7. Emitter
6,8. Collector

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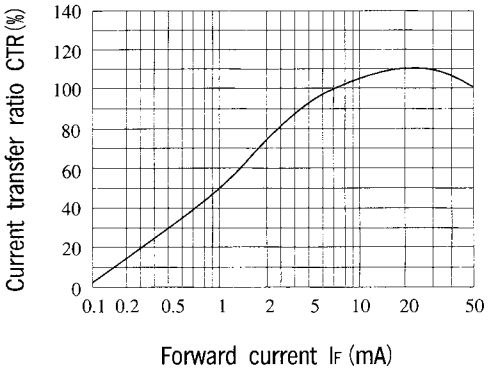
● Absolute Maximum Ratings (Ta=25℃)

Parameter		Symbol	Rating	Unit
Input	Forward current	I_F	±50	mA
	Peak forward current	I_{FM}	±1	A
	Power dissipation	P_D	70	mW
Output	Collector-emitter voltage	V_{CEO}	60	V
	Emitter-collector voltage	V_{ECO}	6	V
	Collector current	I_C	50	mA
	Collector power dissipation	P_C	150	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
	Terminal capacitance	C_t	V=0, f=1kHz	-	30	-	pF
Output	Collector dark current	I_{CEO}	V_{CE}=20V I_F=0	-	-	10^{-7}	A
Transfer characteristics	Current transfer ratio	CTR	I_F=±1mA, V_{CE}=5V	60	-	600	%
	Collector-emitter saturation voltage	$V_{CE(sat)}$	I_F=±20mA, I_C=1mA	-	0.1	0.3	V
	Isolation resistance	R_{iso}	DC500V	$5x10^{10}$	10^{11}	-	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	-	80	-	kHz
	Response time (Rise)	t_r	V_{CE}=2V, I_C=2mA, R_L=100ohm	-	5	20	μs
	Response time (Fall)	t_f		-	4	20	μs

Fig. 1 Current Transfer Ratio vs. Forward Current



Classification table of current transfer ratio is shown below.

Model NO.	Rank mark	CTR (%)
P3020	A	60 TO 600
P3020	B	60 TO 300

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Fig. 2 Collector Power Dissipation vs. Ambient Temperature

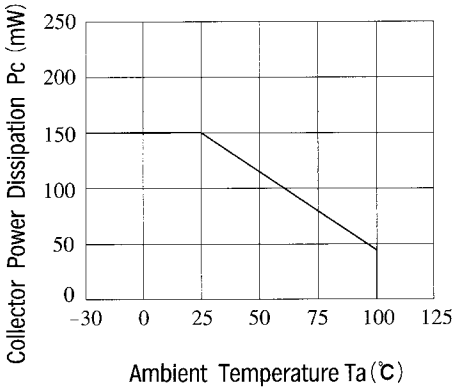

Fig. 3 Collector Dark Current vs. Ambient Temperature

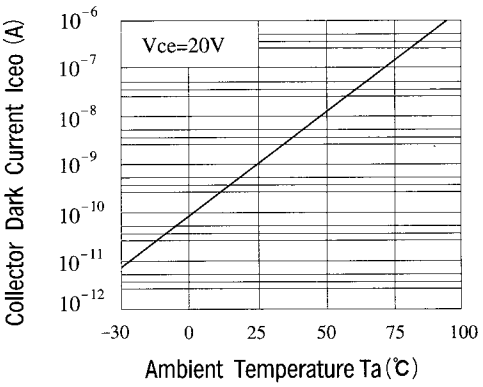

Fig. 4 Forward Current vs. Ambient Temperature

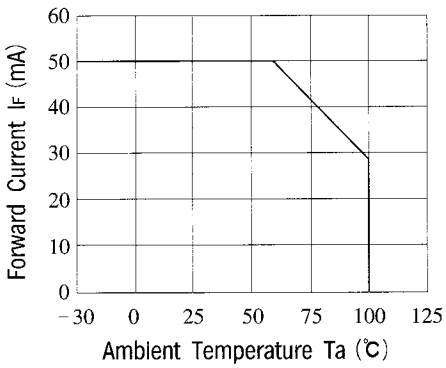

Fig. 5 Forward Current vs. Forward Voltage

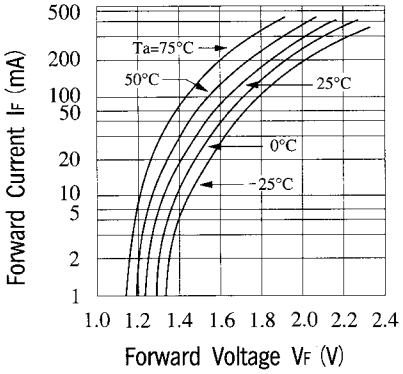

Fig. 6 Collector Current vs. Collector-emitter Voltage

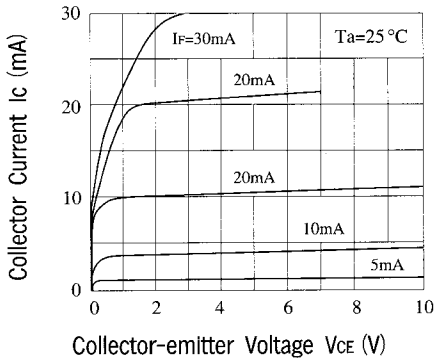

Fig. 7 Relative Current Transfer Ratio vs. Ambient Temperature

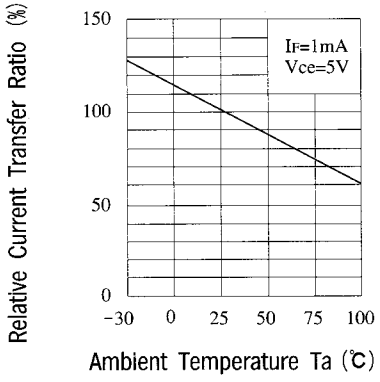

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Fig. 8 Collector-emitter Saturation Voltage vs. Ambient Temperature

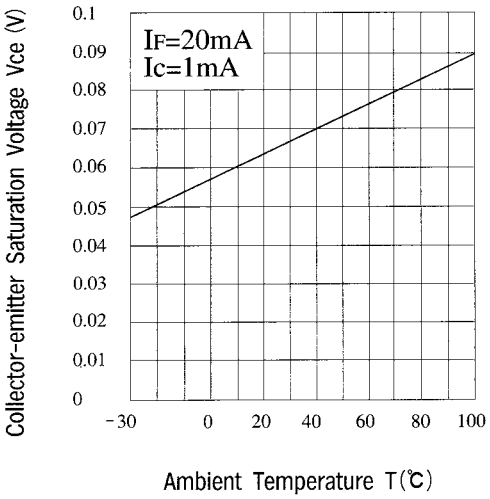


Fig. 9 Collector-emitter Saturation Voltage vs. Forward Current

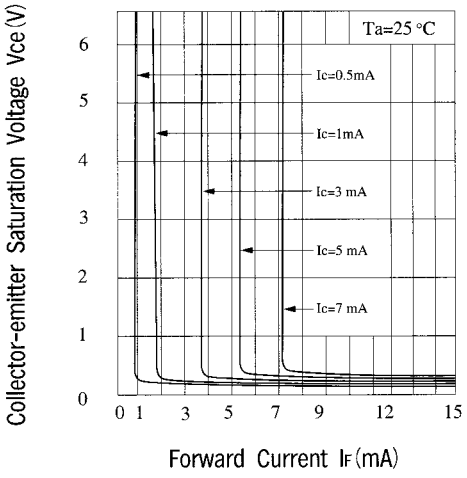


Fig. 10 Response Time vs. Load Resistance

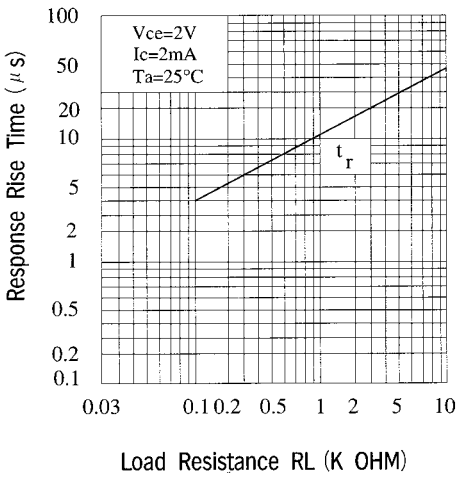
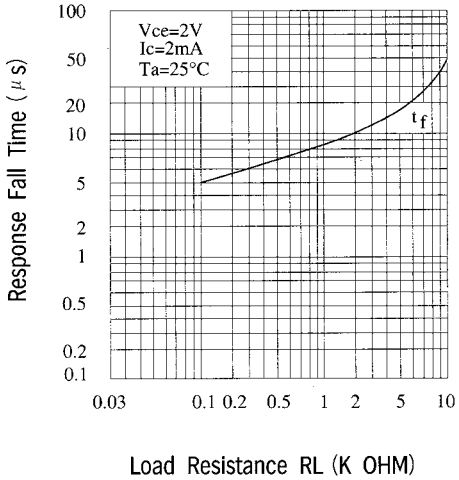


Fig. 11 Response Time vs. Load Resistance



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