

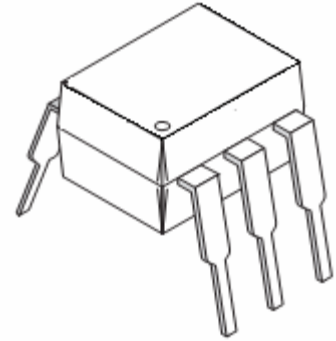
## High Reliability Photo Coupler

### Features

- High current transfer ratio ( $V_{CEO}$ : 300V MIN)  
(CTR: MIN.600% at  $I_F=1\text{mA}$ ,  $V_{ce}=2\text{V}$ )
- High isolation voltage between input and output  
(Viso: 5000Vrms)
- Compact dual-in-line package
- Available package: DIP / SMD / H

### Applications

- System appliances, measuring instruments
- Industrial robots
- Copies, automatic vending machines
- Signal transmission between circuits of different potentials and impedances
- Telephone sets
- Copiers, facsimiles
- Interface with various power supply circuits, power distribution boards
- Numerical control machines



QRCTA16P



### Absolute Maximum Ratings (Ta=25°C)

Parameter		Symbol	Rating	Unit
Input	Forward Current	<b>IF</b>	50	mA
	Peak forward current	<b>IFM</b>	1	A
	Reverse voltage	<b>VR</b>	6	A
	Power dissipation	<b>PD</b>	70	mW
Output	Collector-emitter voltage	<b>VCEO</b>	300	V
	Collector-base voltage	<b>VCBO</b>	300	V
	Emitter-base voltage	<b>VEBO</b>	6	V
	Collector current	<b>IC</b>	150	mA
	Collector power dissipation	<b>PC</b>	200	mW
Total power dissipation		<b>Ptot</b>	200	mW
Isolation voltage 1 minute		<b>Viso</b>	5000	Vrms
Operating Temperature		<b>Topr</b>	-30 ~ +100	°C
Storage Temperature		<b>Tstg</b>	-55 ~ +125	°C
Soldering temperature 10 second		<b>Tsol</b>	260	°C

### Electro-Optical Characteristics (Ta=25°C)

Parameter		Symbol	Min.	Typ.	Max.	Unit	Condition
Input	Forward Voltage	<b>VF</b>	----	1.2	1.4	V	IF =20mA
	Peak forward voltage	<b>VFM</b>	----	----	3.5	V	IFM =0.5A
	Reverse current	<b>IR</b>	----	----	10	uA	VR =4V
	Terminal capacitance	<b>Ct</b>	----	30	----	pF	V =0, f =1kHz
Output	Collector dark current	<b>ICEO</b>	----	----	1	uA	VCE =200V, IF =0
Transfer Characteristics	Current transfer ratio	<b>CTR</b>	600	----	9000	%	IF =1mA, VCE =2V
	Collector-emitter saturation voltage	<b>VCE(sat)</b>	----	----	1.5	V	IF =20mA, IC =5mA
	Isolation resistance	<b>Riso</b>	5x10 <sup>10</sup>	----	----	ohm	DC500V
	Floating capacitance	<b>Cf</b>	----	0.6	1.0	pF	V =0, f =1MHz
	Cut-off frequency	<b>fc</b>	----	7	----	kHz	VCC=5V, IC =2mA, RL=100ohm
	Response time (Rise)	<b>tr</b>	----	60	300	us	VCE=2V, IC =20mA RL=100ohm
Response time (Fall)	<b>tf</b>	----	50	250	us		

### Typical Electro-Optical Characteristics Curves

Fig.1 Current Transfer Ratio vs. Forward Current

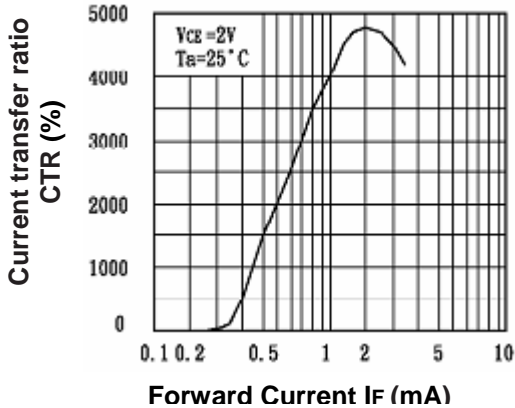


Fig.2 Collector Power Dissipation vs. Ambient Temperature

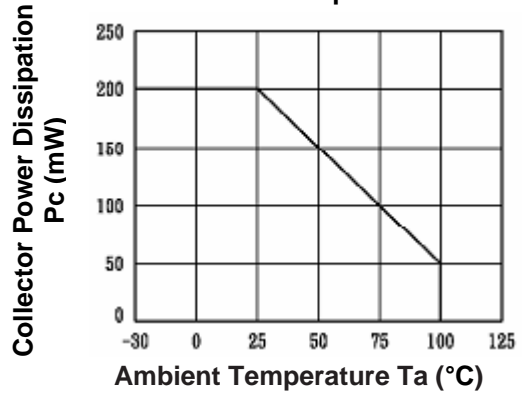


Fig.3 Collector Dark Current vs. Ambient Temperature

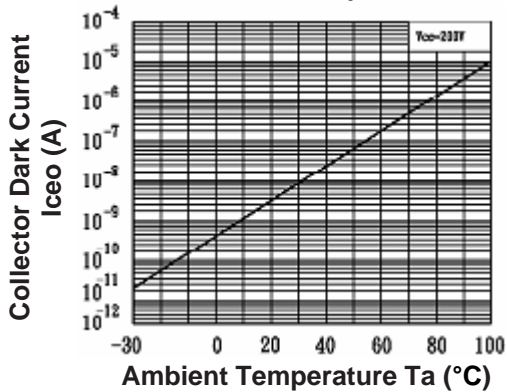


Fig.4 Forward Current vs. Ambient Temperature

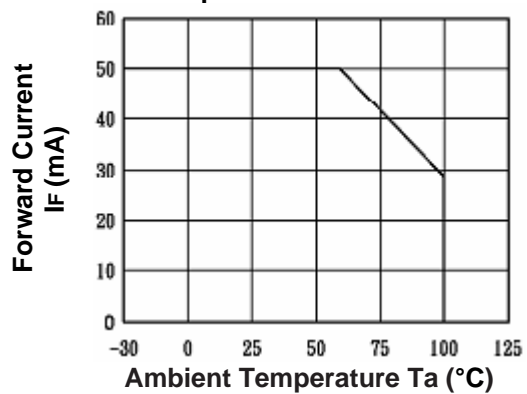


Fig.5 Forward Current vs. Forward Voltage

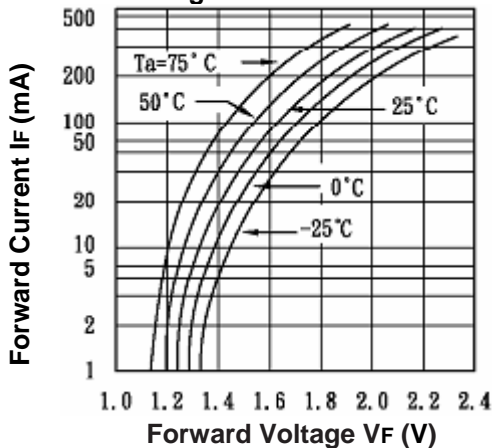
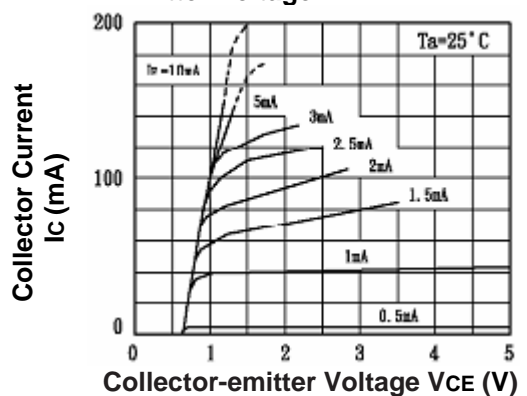
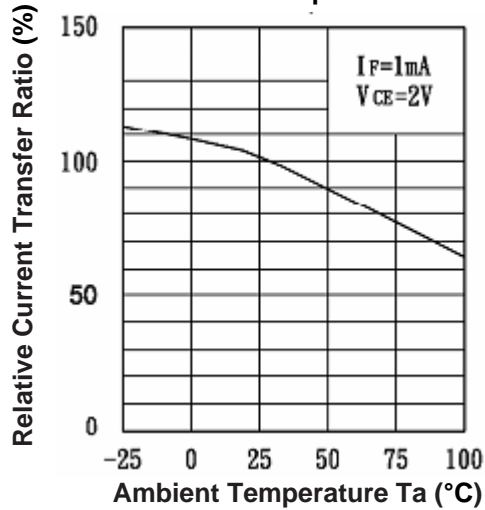


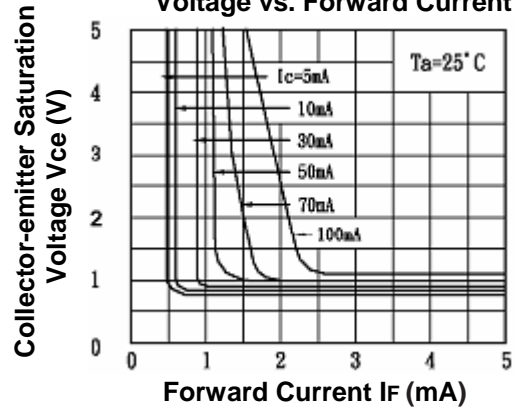
Fig.6 Collector Current vs. Collector Emitter Voltage



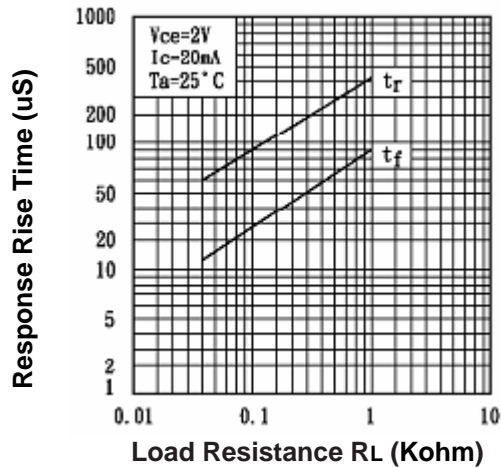
**Fig.7 Relative Current Transfer Ratio vs. Ambient Temperature**



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



**Fig.9 Response Time vs. Load Resistance**

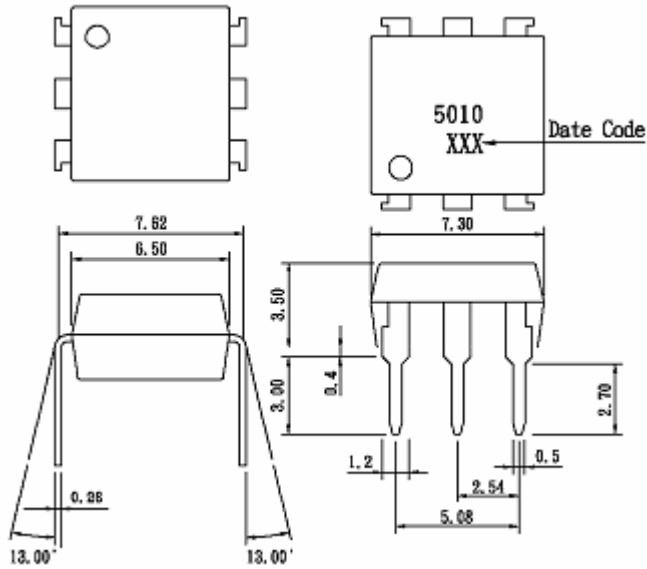


Classification table of current transfer ratio is shown below.

Model No.	Rank mark	CTR (%)
*KP5010	A	600 to 2000
KP5010	B	1500 to 4000
KP5010	C	3000 to 6000
*KP5010	D	5000 to 9000
KP5010	E	60 to 9000

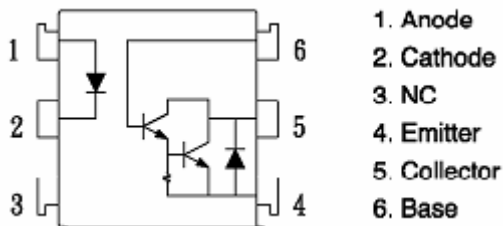
\*SPECIAL OPTION

### Package Dimensions (In mm)



- Note:**
1. Dimensions are in millimeters
  2. Tolerances unless dimensions  $\pm 0.2\text{mm}$

### Schematic: Top View



1. Anode
2. Cathode
3. NC
4. Emitter
5. Collector
6. Base

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