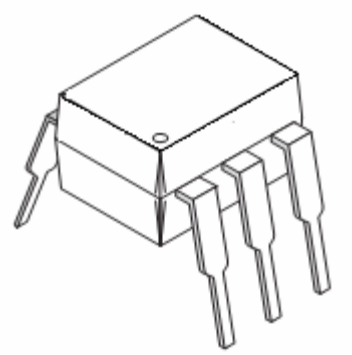
High Reliability Photo Coupler

Features



QRCTA16P

- Current transfer ratio
  (CTR: MIN.60% at IF=±1mA, Vce=5V)
- High isolation voltage between input and output
  (Viso: 5000Vrms)
- Compact dual-in-line package
- Ac input
- Available package: DIP / SMD / H

Applications

- Programmable Controller Applications for Low Input Photocouplers and High Vceo Photocouplers.
- Telephone sets, telephone exchangers
- System appliances, Limit Switches, Sensors, Thermostats and Transdusers etc.
- Signal transmission between circuits of different potentials and impedances

Absolute Maximum Ratings (Ta=25°C)

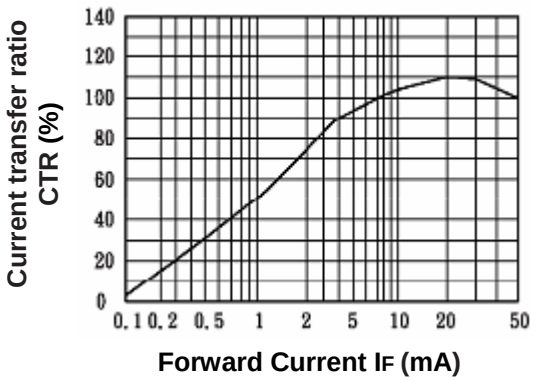
Parameter		Symbol	Rating	Unit
Input	Forward Current	I_F	±50	mA
	Peak forward current	I_{FM}	±1	A
	Power dissipation	P_D	70	mW
Output	Collector-emitter voltage	V_{CEO}	60	V
	Emitter-collector voltage	V_{ECO}	6	V
	Collector-base voltage	V_{CBO}	60	V
	Emitter-base voltage	V_{EBO}	6	V
	Collector current	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 ~ +100	°C
Storage Temperature		T_{stg}	-55 ~ +125	°C
Soldering temperature 10 second		T_{sol}	260	°C

Electro-Optical Characteristics (Ta=25°C)

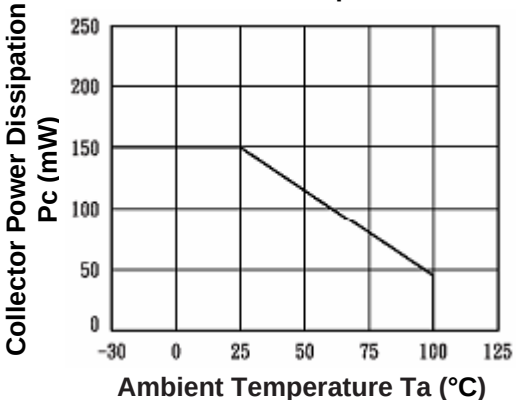
Parameter		Symbol	Min.	Typ.	Max.	Unit	Condition
Input	Forward Voltage	V_F	----	1.2	1.4	V	I_F =±20mA
	Peak forward voltage	V_{FM}	----	----	3.5	V	I_{FM} =±0.5A
	Terminal capacitance	Ct	----	30	----	pF	V =0, f =1kHz
Output	Collector dark current	I_{CEO}	----	----	0.1	uA	V_{CE} =20V, I_F=0
Transfer Charactertics	Current transfer ratio	CTR	60	----	600	%	I_F =±1mA, V_{CE} =5V
	Collector-emitter saturation voltage	$V_{CE(sat)}$	----	0.1	0.3	V	I_F =±20mA, I_C =1mA
	Isolation resistance	Riso	$5x10^{10}$	10^{11}	----	ohm	DC500V
	Floating capacitance	Cf	----	0.6	1.0	pF	V =0, f =1kHz
	Cut-off frequency	fC	----	80	----	kHz	V_{CC}=5V,I_C =2mA, R_L=100ohm
	Response time (Rise)	tr	----	5	20	us	V_{CE}=2V,I_C =2mA, R_L=100ohm
	Response time (Fall)	tf	----	4	20	us	

Typical Electro-Optical Characteristics Curves

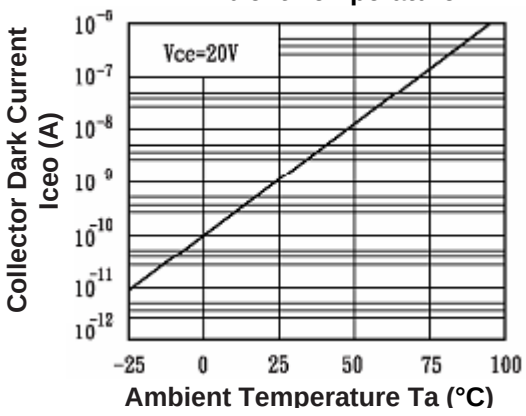
Flg.1 Current Transfer Ratio vs. Forward Current



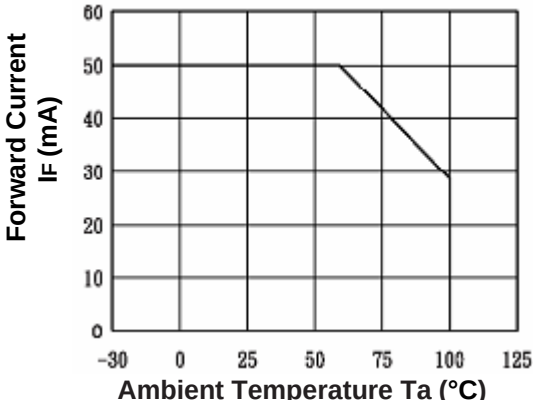
Flg.2 Collector Power Dissipation vs. Ambient Temperature



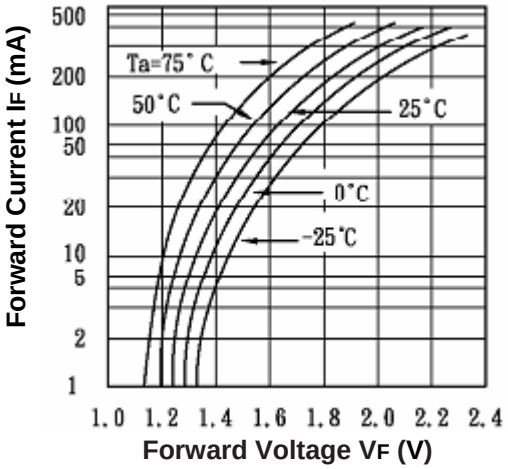
Flg.3 Collector Dark Current vs. Ambient Temperature



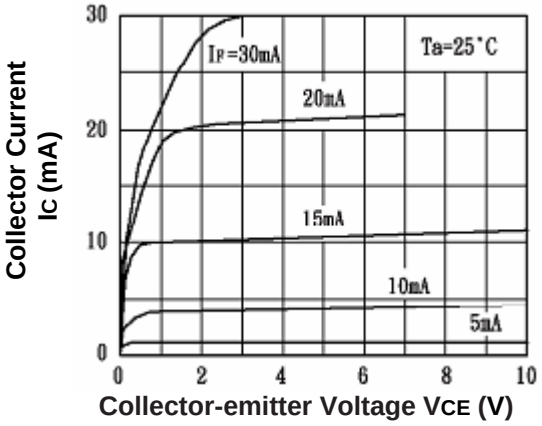
Flg.4 Forward Current vs. Ambient Temperature



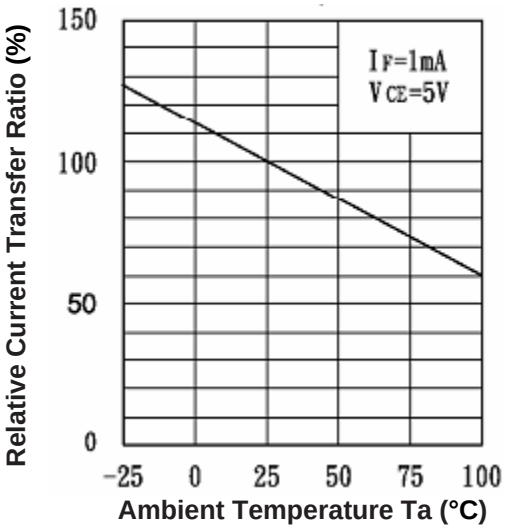
Flg.5 Forward Current vs. Forward Voltage



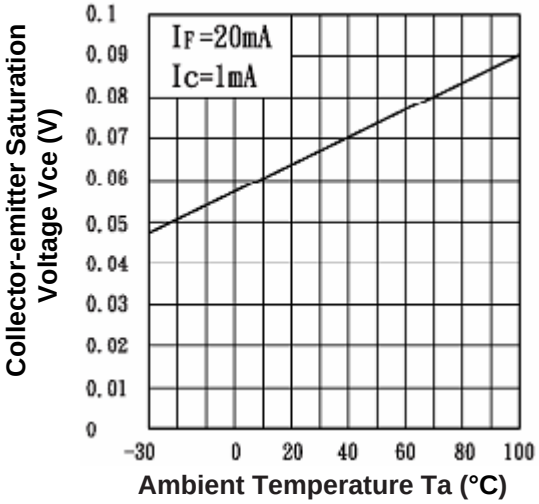
Flg.6 Collector Current vs. Collector Emitter Voltage



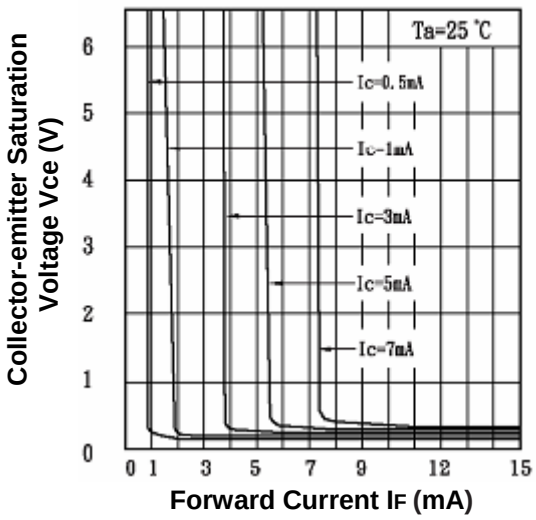
Flg.7 Relative Current Transfer Ratio vs. Ambient Temperature



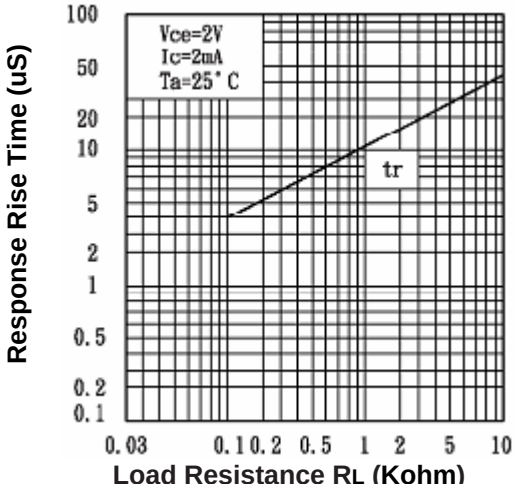
Flg.8 Collector-emitter Saturation Voltage vs. Ambient Temperature



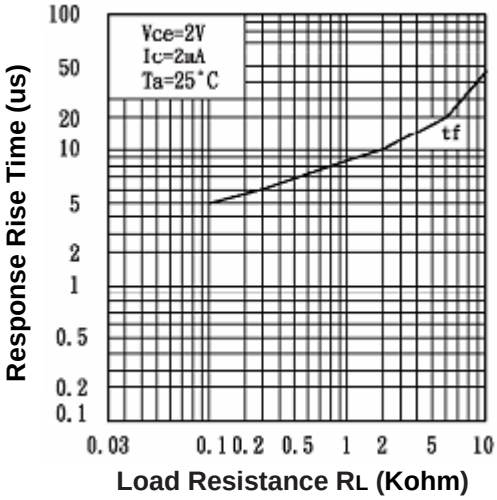
Flg.9 Collector-emitter Saturation Voltage vs. Forward Curretn



Flg.10 Response Time vs. Load Resistance



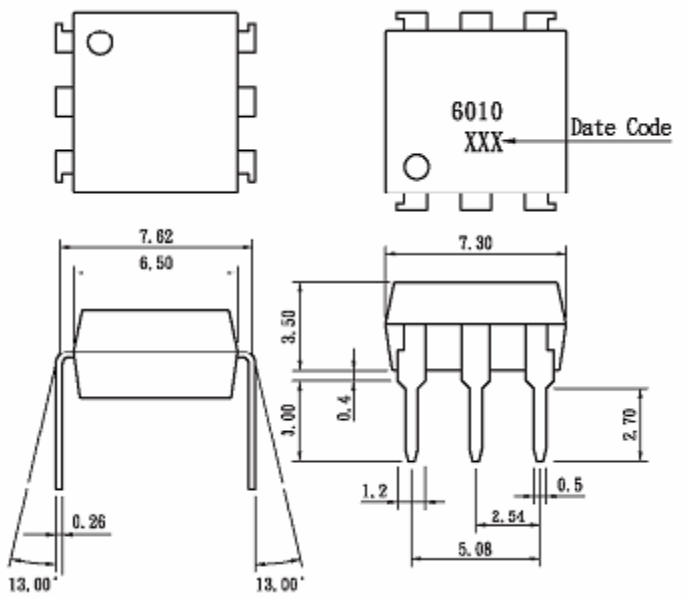
Flg.11 Response Time vs. Load Resistance



Classification table of current transfer ratio is shown below.

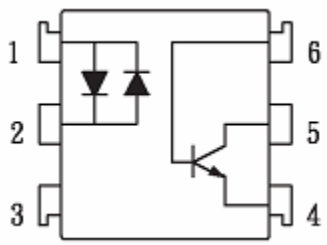
Model No.	Rank mark	CTR (%)
KP6010	A	60 to 600
KP6010	B	60 to 300

Package Dimensions (In mm)



Note: 1. Dimensions are in millimeters
2. Tolerances unless dimensions ± 0.2mm

Schematic: Top View



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

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