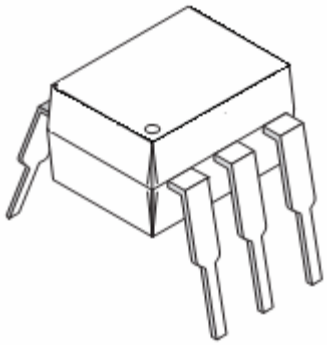
# High Reliability Photo Coupler

## Features



QRCTA16P

RoHS Compliant

- High current transfer ratio
  (CTR: MIN.500% at IF=1mA, Vce=2V)
- High isolation voltage between input and output
  (Viso: 5000Vrms)
- Compact dual-in-line package

## 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

## Absolute Maximum Ratings (Ta=25°C)

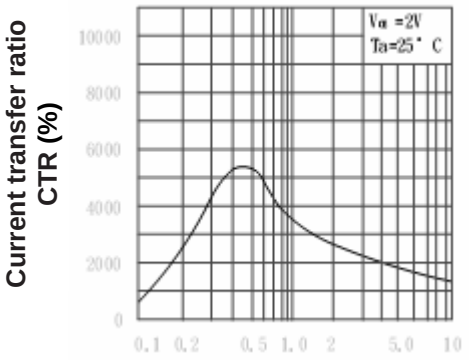
| Parameter | | Symbol | Rating | Unit |
|---|---|---|---|---|
| Input | Forward Current | $I_F$ | 50 | mA |
| | Peak forward current | $I_{FM}$ | 1 | A |
| | Reverse voltage | $V_R$ | 6 | A |
| | Power dissipation | $P_D$ | 70 | mW |
| Output | Collector-emitter voltage | $V_{CEO}$ | 30 | V |
| | Collector-base voltage | $V_{CBO}$ | 30 | V |
| | Emitter-base voltage | $V_{EBO}$ | 6 | 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 | Vrms |
| Operating Temperature | | $T_{opr}$ | -55 ~ +115 | °C |
| Storage Temperature | | $T_{stg}$ | -55 ~ +125 | °C |
| Soldering temperature 10 second | | $T_{sol}$ | 260 | °C |

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

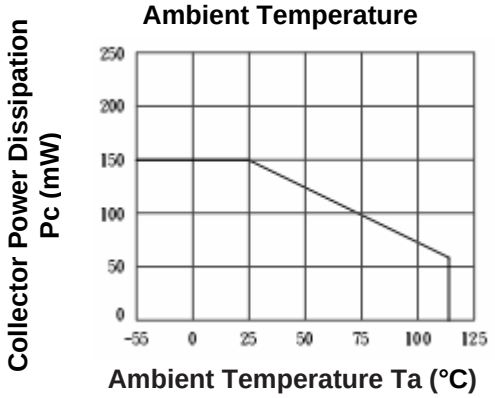
| Parameter | | Symbol | Min. | Typ. | Max. | Unit | Condition |
|---|---|---|---|---|---|---|---|
| Input | Forward Voltage | $V_F$ | ---- | 1.2 | 1.4 | V | $I_F$ =10mA |
| | Peak forward voltage | $V_{FM}$ | ---- | ---- | 3.5 | V | $I_{FM}$ =0.5A |
| | Reverse current | $I_R$ | ---- | ---- | 10 | uA | $V_R$ =4V |
| | Terminal capacitance | Ct | ---- | 30 | ---- | pF | V =0, f =1kHz |
| Output | Collector dark current | $I_{CEO}$ | ---- | ---- | 0.1 | uA | $V_{CE}$ =10V, $I_F$ =0 |
| Transfer Charactertics | Current transfer ratio | CTR | 500 | 4000 | ---- | % | $I_F$ =1mA, $V_{CE}$ =2V |
| | Collector-emitter saturation voltage | $V_{CE(sat)}$ | ---- | ---- | 1.0 | V | $I_F$ =8mA, $I_C$ =2mA |
| | Isolation resistance | Riso | $5x10^{10}$ | ---- | ---- | ohm | DC500V |
| | Floating capacitance | Cf | ---- | 0.6 | 1.0 | pF | V =0, f =1MHz |
| | Cut-off frequency | fC | ---- | 7 | ---- | kHz | $V_{CC}$=5V,$I_C$ =2mA, RL=100ohm |
| | Response time (Rise) | tr | ---- | 5 | 40 | us | $V_{CE}$=10V,$I_C$ =50mA RL=100ohm |
| | Response time (Fall) | tf | ---- | 60 | 100 | us | |

## Typical Electro-Optical Characteristics Curves

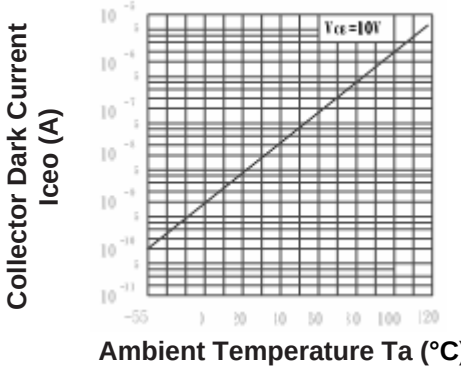
**Flg.1 Current Transfer Ratio vs. Forward Current**



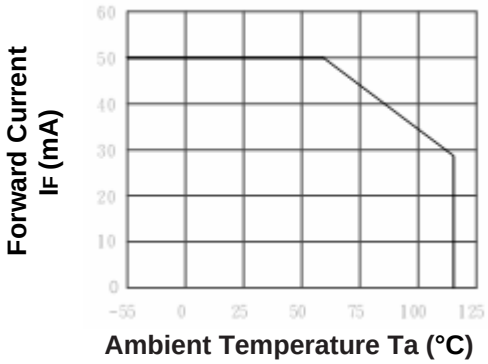

**Flg.2 Collector Power Dissipation vs. Ambient Temperature**



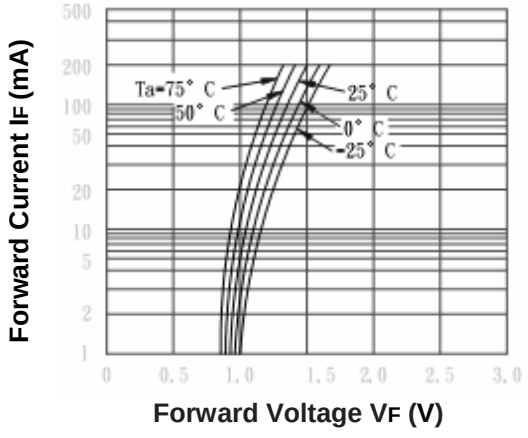

**Flg.3 Collector Dark Current vs. Ambient Temperature**



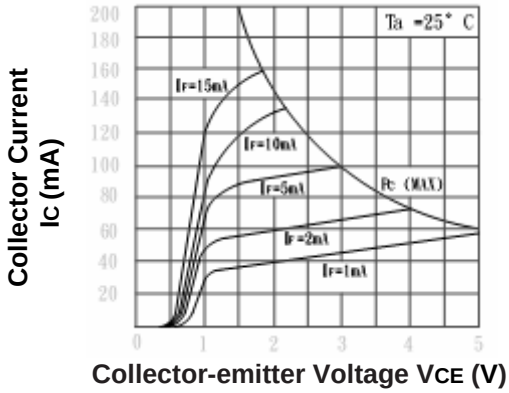

**Flg.4 Forward Current vs. Ambient Temperature**



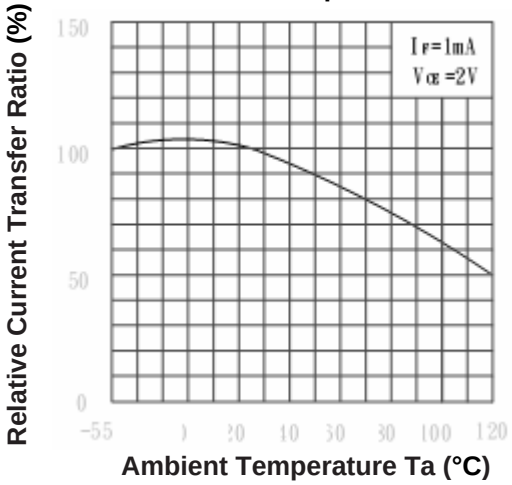

**Flg.5 Forward Current vs. Forward Voltage**



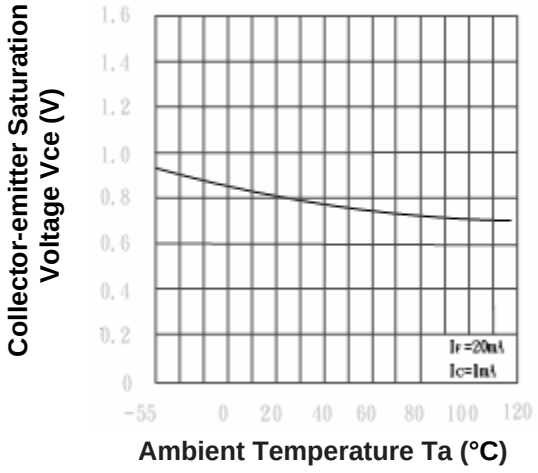

**Flg.6 Collector Current vs. Collector Emitter Voltage**



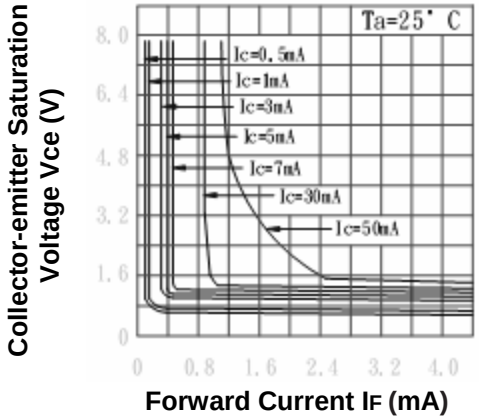
**Flg.7 Relative Current Transfer Ratio vs. Ambient Temperature**



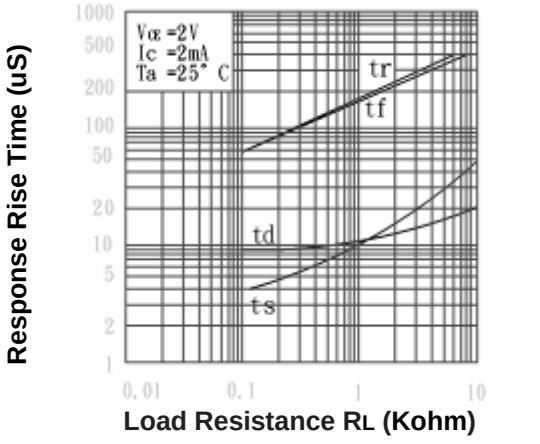

**Flg.8 Collector-emitter Saturation Voltage vs. Ambient Temperature**



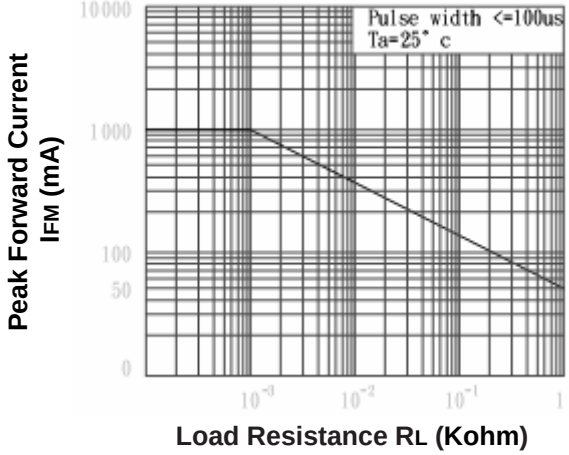

**Flg.9 Collector-emitter Saturation Voltage vs. Forward Current**



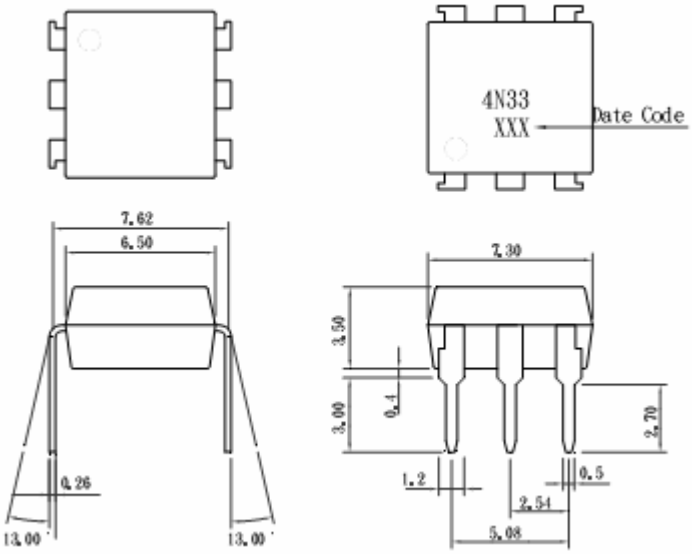

**Flg.10 Response Time vs. Load Resistance**




**Flg.11 Peak Forward Current vs. Duty Ratio**

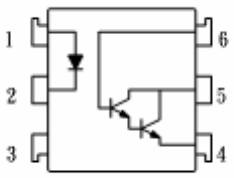


## Package Dimensions (In mm)




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

## Schematic: Top View




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

## How to contact us

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