

PC815 Series

High Sensitivity, High Density Mounting Type Photocoupler

- * Lead forming type (I type) and taping reel type (P type) are also available. (PC815I/PC815P)
- ** TÜV (VDE0884) approved type is also available as an option.

■ Features

1. High current transfer ratio
(CTR: MIN. 600% at $I_F = 1\text{mA}$, $V_{CE} = 2\text{V}$)
2. High isolation voltage between input and output
($V_{iso} : 5\ 000V_{rms}$)
3. Compact dual-in-line package

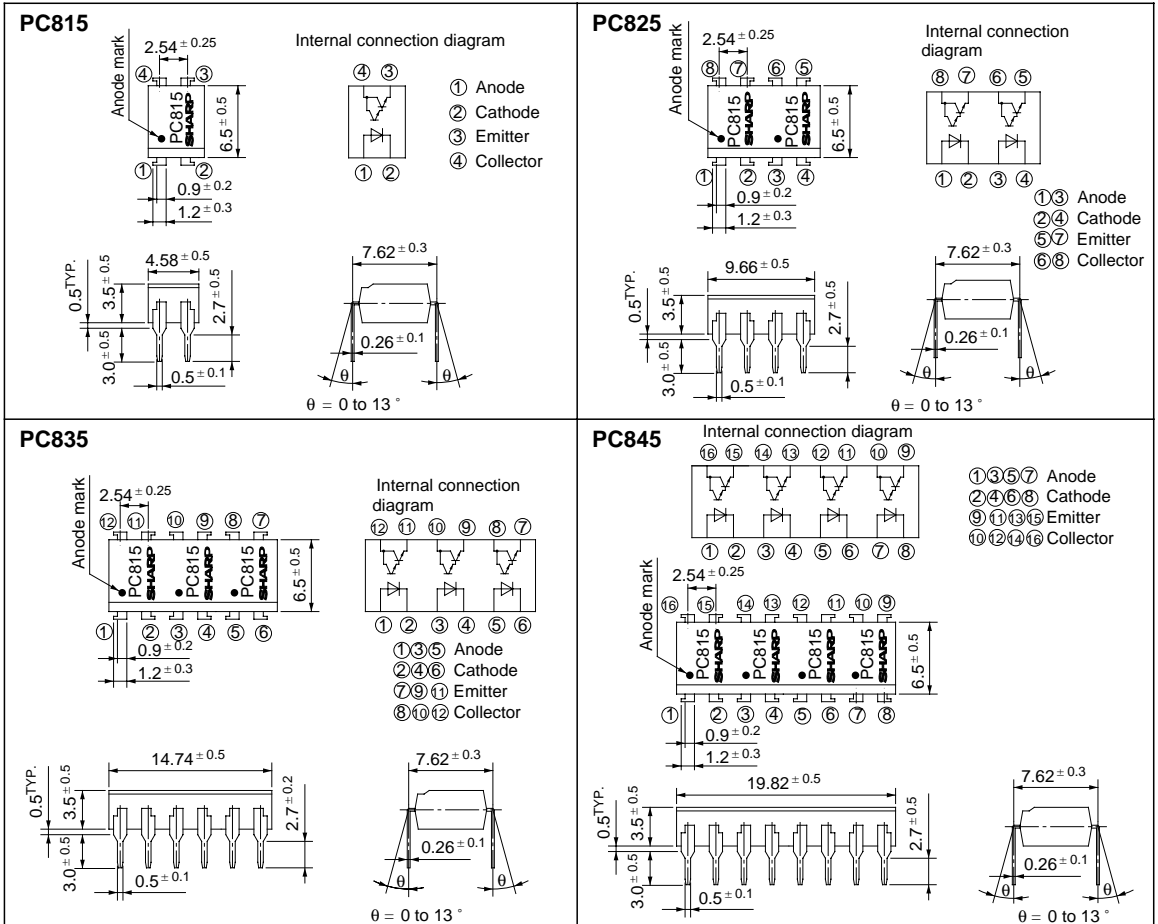
| | |
|-------------------------------|-------------------------------|
| PC815 : 1-channel type | PC825 : 2-channel type |
| PC835 : 3-channel type | PC845 : 4-channel type |
4. Recognized by UL file No. E64380

■ Applications

1. System appliances, measuring instruments
2. Industrial robots
3. Copiers, automatic vending machines
4. Signal transmission between circuits of different potentials and impedances

■ Outline Dimensions

(Unit : mm)



Absolute Maximum Ratings

(Ta = 25°C)

| Parameter | | Symbol | Rating | Unit |
|--------------------------|-----------------------------|-------------------|---------------|------------------|
| Input | Forward current | I _F | 50 | mA |
| | *1 Peak forward current | I _{FM} | 1 | A |
| | Reverse voltage | V _R | 6 | V |
| | Power dissipation | P | 70 | mW |
| Output | Collector-emitter voltage | V _{CEO} | 35 | V |
| | Emitter-collector voltage | V _{ECCO} | 6 | V |
| | Collector current | I _C | 80 | mA |
| | Collector power dissipation | P _C | 150 | mW |
| Total power dissipation | | P _{tot} | 200 | mW |
| *2 Isolation voltage | | V _{iso} | 5 000 | V _{rms} |
| Operating temperature | | T _{opr} | - 30 to + 100 | °C |
| Storage temperature | | T _{stg} | - 55 to + 125 | °C |
| *3 Soldering temperature | | T _{sol} | 260 | °C |

*1 Pulse width ≤ 100 μs, Duty ratio : 0.001

*2 40 to 60% RH, AC for 1 minute

*3 For 10 seconds

Electro-optical Characteristics

(Ta = 25°C)

| 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 | - | - | 3.0 | V | |
| | Reverse current | I _R | V _R = 4V | - | - | 10 | μA | |
| | Terminal capacitance | C _t | V = 0, f = 1kHz | - | 30 | 250 | pF | |
| Output | Collector dark current | I _{CEO} | V _{CE} = 10V, I _F = 0 | - | - | 10 ⁻⁶ | A | |
| | Current transfer ratio | CTR | I _F = 1mA, V _{CE} = 2V | 600 | - | 7 500 | % | |
| Transfer characteristics | Collector-emitter saturation voltage | | V _{CE(sat)} | I _F = 20mA, I _C = 5mA | - | 0.8 | 1.0 | V |
| | Isolation resistance | | R _{ISO} | DC500V, 40 to 60% RH | 5 x 10 ¹⁰ | 10 ¹¹ | - | Ω |
| | Floating capacitance | | C _f | V = 0, f = 1MHz | - | 0.6 | 1.0 | pF |
| | Cut-off frequency | | f _c | V _{CE} = 2V, I _C = 2mA, R _L = 100Ω | 1 | 6 | - | kHz |
| | Response time | Rise time | t _r | V _{CE} = 2V, I _C = 10mA, R _L = 100Ω | - | 60 | 300 | μs |
| Fall time | | t _f | - | | 53 | 250 | μs | |

Fig. 1 Forward Current vs. Ambient Temperature

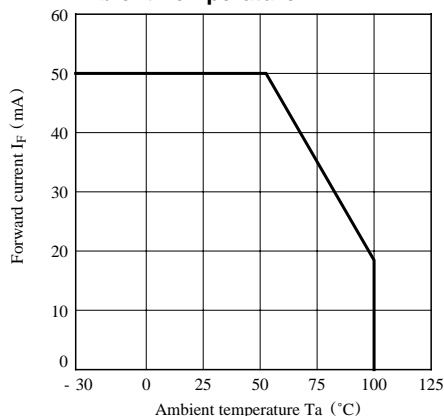


Fig. 2 Collector Power Dissipation vs. Ambient Temperature

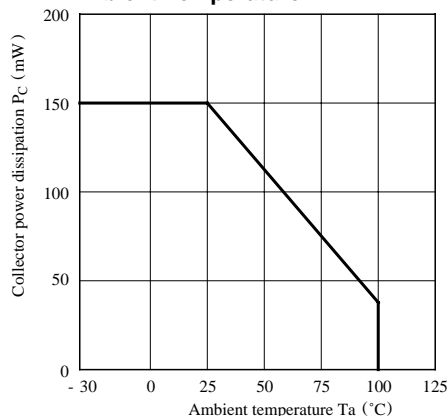


Fig. 3 Peak Forward Current vs. Duty Ratio

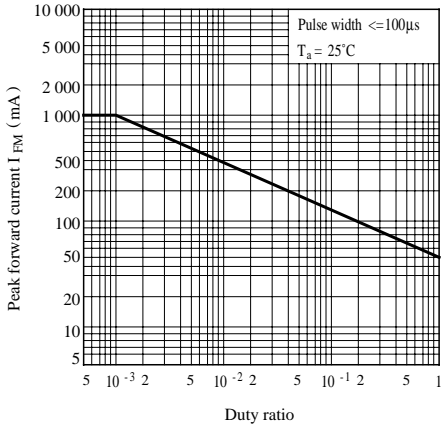


Fig. 4 Forward Current vs. Forward Voltage

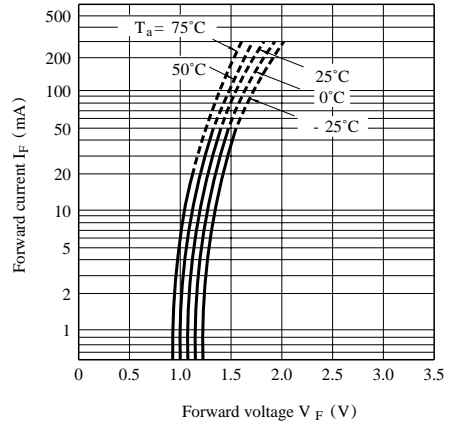


Fig. 5 Current Transfer Ratio vs. Forward Current

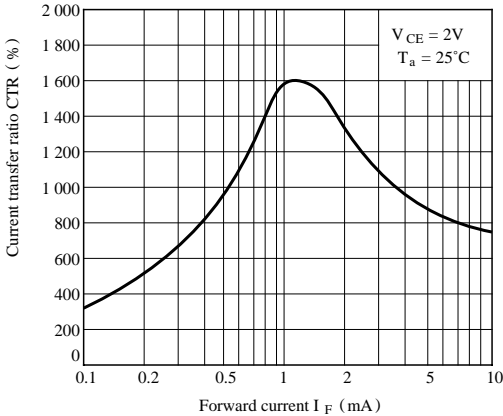


Fig. 6 Collector Current vs. Collector-emitter Voltage

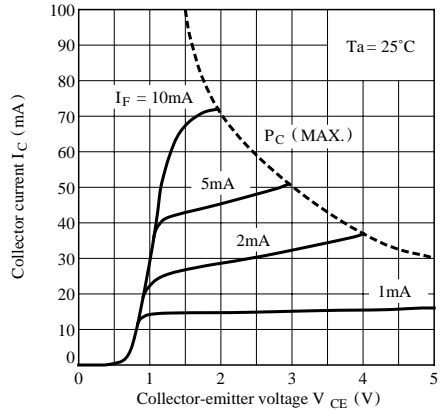


Fig. 7 Relative Current Transfer Ratio vs. Ambient Temperature

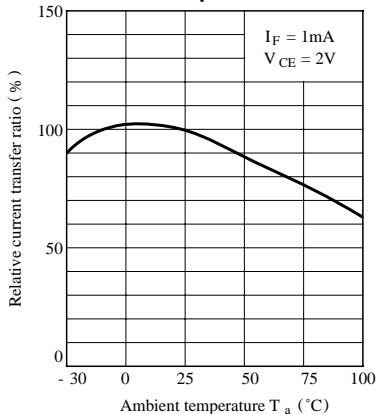


Fig. 8 Collector-emitter Saturation Voltage vs. Ambient Temperature

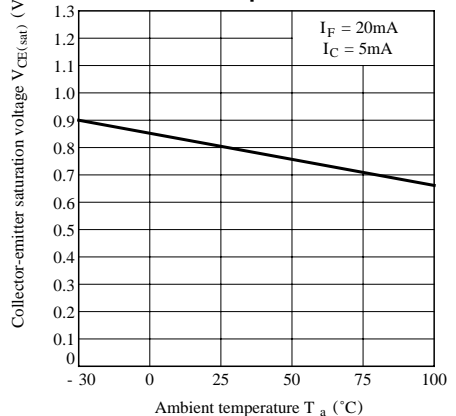


Fig. 9 Collector Dark Current vs. Ambient Temperature

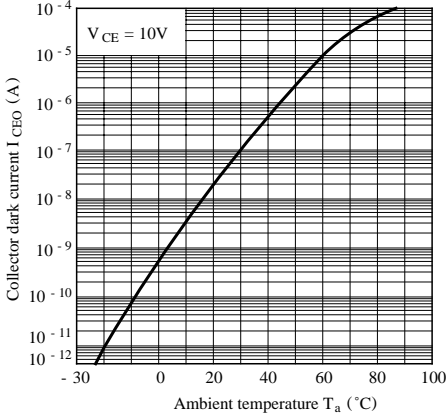


Fig.10 Response Time vs. Load Resistance

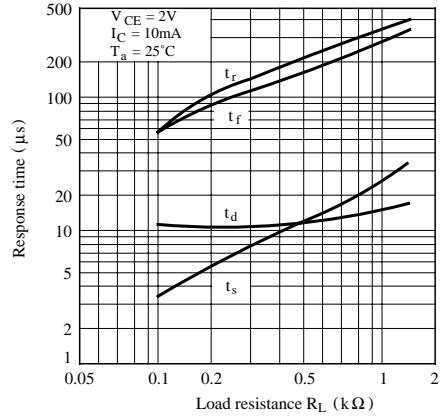
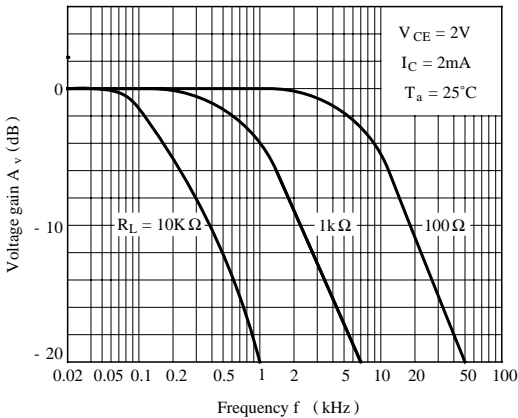


Fig.11 Frequency Response



Test Circuit for Response Time

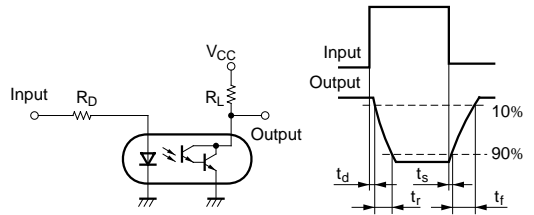
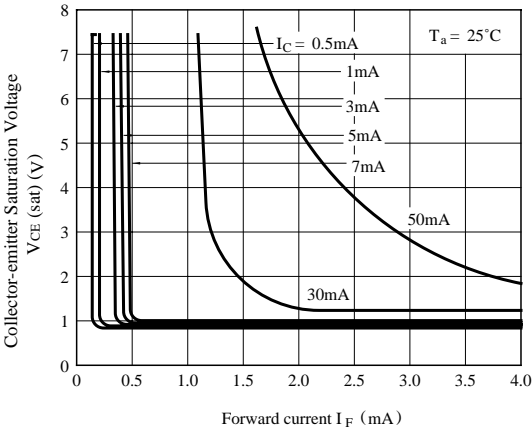
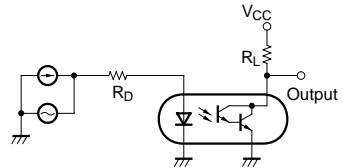


Fig.12 Collector-emitter Saturation Voltage vs. Forward Current



Test Circuit for Frequency Response



● Please refer to the chapter
“Precautions for Use”