

PC817 Series

High Density Mounting Type Photocoupler

* Lead forming type (I type) and taping reel type (P type) are also available. (PC817I/PC817P)
 ** TÜV (VDE0884) approved type is also available as an option.

■ Features

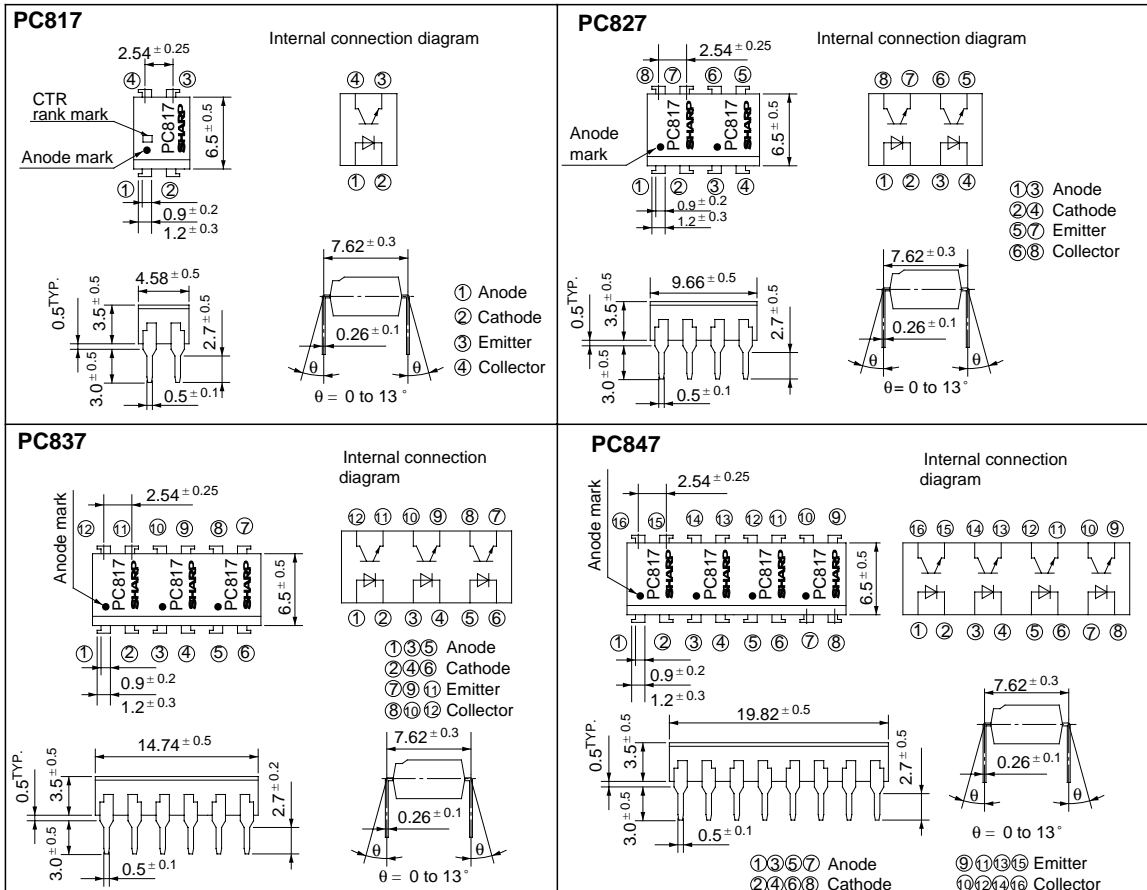
1. Current transfer ratio
 (CTR: MIN. 50% at $I_F = 5\text{mA}$, $V_{CE} = 5\text{V}$)
2. High isolation voltage between input and output ($V_{iso} : 5000\text{V}_{rms}$)
3. Compact dual-in-line package
PC817 : 1-channel type
PC827 : 2-channel type
PC837 : 3-channel type
PC847 : 4-channel type
4. Recognized by UL, file No. E64380

■ Applications

1. Computer terminals
2. System appliances, measuring instruments
3. Registers, copiers, automatic vending machines
4. Electric home appliances, such as fan heaters, etc.
5. Signal transmission between circuits of different potentials and impedances

■ Outline Dimensions

(Unit : mm)



* In the absence of confirmation by device specification sheets, SHARP takes no responsibility for any defects that occur in equipment using any of SHARP's devices, shown in catalogs, data books, etc. Contact SHARP in order to obtain the latest version of the device specification sheets before using any SHARP's device."

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_{ECO} | 6 | V |
| | Collector current | I_C | 50 | 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 $\leq 100\mu s$, 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 | $I_F = 20\text{mA}$ | - | 1.2 | 1.4 | V |
| | Peak forward voltage | V_{FM} | $I_{FM} = 0.5\text{A}$ | - | - | 3.0 | V |
| | Reverse current | I_R | $V_R = 4\text{V}$ | - | - | 10 | μA |
| | Terminal capacitance | C_t | $V = 0, f = 1\text{kHz}$ | - | 30 | 250 | pF |
| Output | Collector dark current | I_{CEO} | $V_{CE} = 20\text{V}$ | - | - | 10^{-7} | A |
| Transfer characteristics | *4 Current transfer ratio | CTR | $I_F = 5\text{mA}, V_{CE} = 5\text{V}$ | 50 | - | 600 | % |
| | Collector-emitter saturation voltage | $V_{CE(sat)}$ | $I_F = 20\text{mA}, I_C = 1\text{mA}$ | - | 0.1 | 0.2 | V |
| | Isolation resistance | R_{iso} | DC500V, 40 to 60% RH | 5×10^{10} | 10^{11} | - | Ω |
| | Floating capacitance | C_f | $V = 0, f = 1\text{MHz}$ | - | 0.6 | 1.0 | pF |
| | Cut-off frequency | f_c | $V_{CE} = 5\text{V}, I_C = 2\text{mA}, R_L = 100\Omega, - 3\text{dB}$ | - | 80 | - | kHz |
| | Response time | Rise time | t_r | $V_{CE} = 2\text{V}, I_C = 2\text{mA}, R_L = 100\Omega$ | - | 4 | 18 |
| Fall time | | t_f | - | | 3 | 18 | μs |

*4 Classification table of current transfer ratio is shown below.

| Model No. | Rank mark | CTR (%) |
|-----------|-----------------------|------------|
| PC817A | A | 80 to 160 |
| PC817B | B | 130 to 260 |
| PC817C | C | 200 to 400 |
| PC817D | D | 300 to 600 |
| PC8*7AB | A or B | 80 to 260 |
| PC8*7BC | B or C | 130 to 400 |
| PC8*7CD | C or D | 200 to 600 |
| PC8*7AC | A, B or C | 80 to 400 |
| PC8*7BD | B, C or D | 130 to 600 |
| PC8*7AD | A, B, C or D | 80 to 600 |
| PC8*7 | A, B, C, D or No mark | 50 to 600 |

* : 1 or 2 or 3 or 4

Fig. 1 Forward Current vs. Ambient Temperature

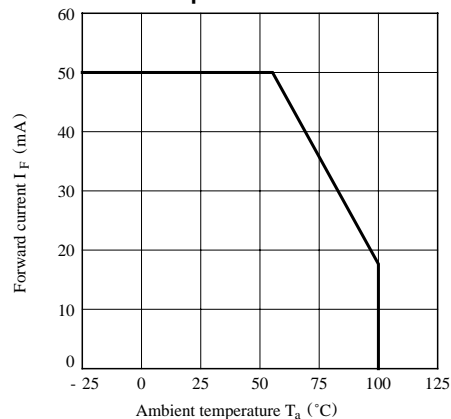


Fig. 2 Collector Power Dissipation vs. Ambient Temperature

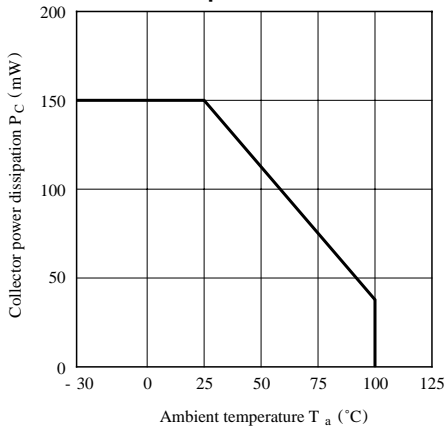


Fig. 3 Peak Forward Current vs. Duty Ratio

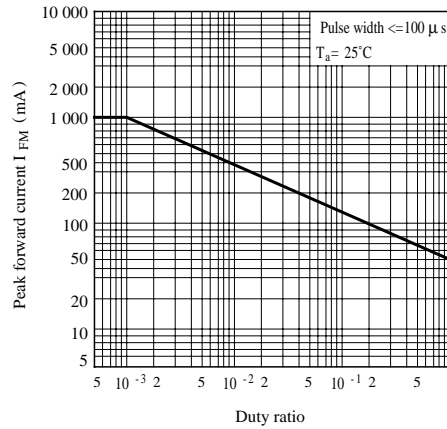


Fig. 4 Current Transfer Ratio vs. Forward Current

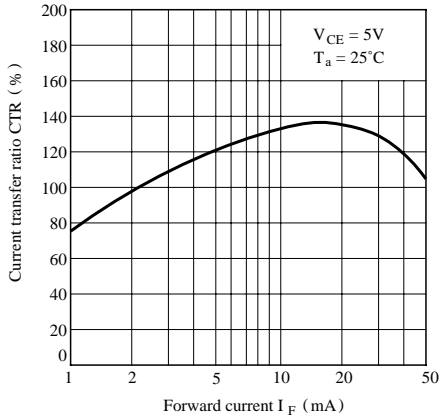


Fig. 5 Forward Current vs. Forward Voltage

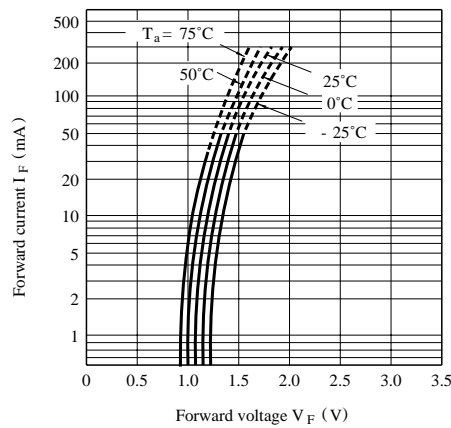


Fig. 6 Collector Current vs. Collector-emitter Voltage

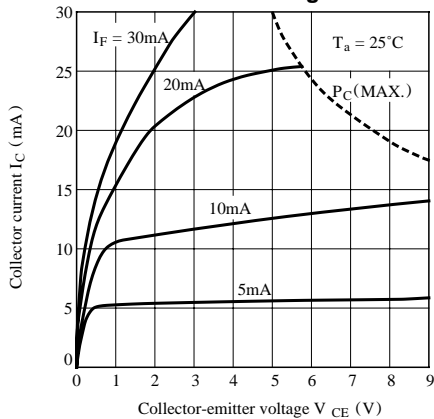


Fig. 7 Relative Current Transfer Ratio vs. Ambient Temperature

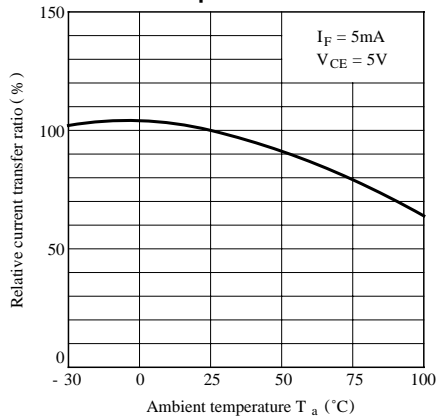


Fig. 8 Collector-emitter Saturation Voltage vs. Ambient Temperature

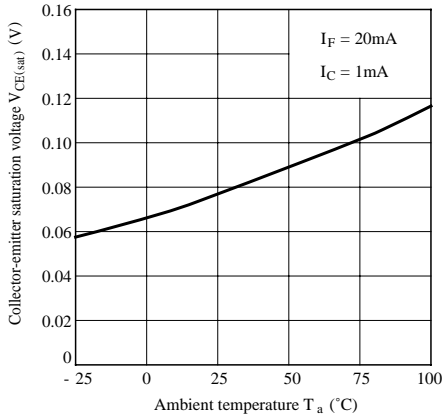


Fig. 9 Collector Dark Current vs. Ambient Temperature

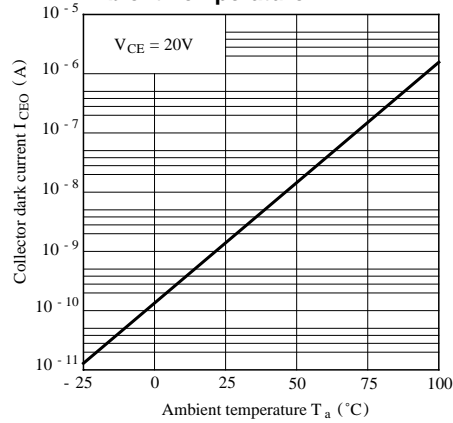


Fig.10 Response Time vs. Load Resistance

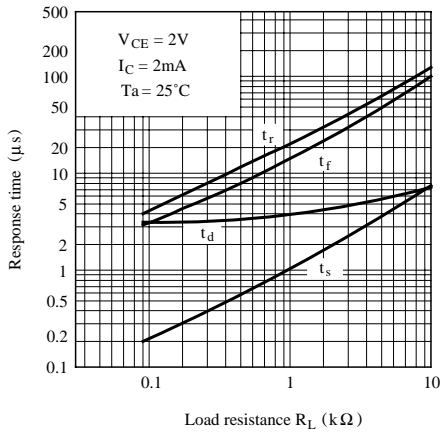
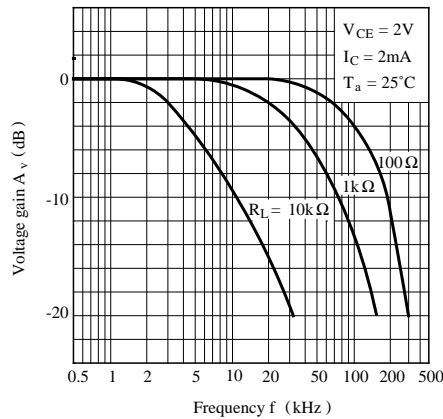
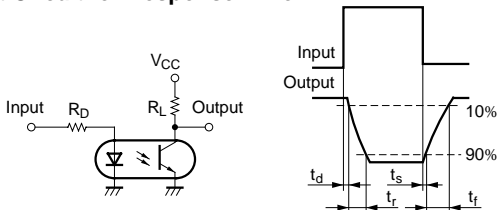


Fig.11 Frequency Response



Test Circuit for Response Time



Test Circuit for Frequency Response

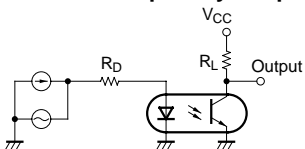


Fig.12 Collector-emitter Saturation Voltage vs. Forward Current

