

PC452

Compact Surface Mount, High Collector emitter Voltage Type Photocoupler

■ Features

1. Mini-flat package
2. High collector-emitter voltage
(V_{CEO} : 300V)
3. High current transfer ratio
(CTR : MIN. 1 000% at $I_F = 1\text{mA}$, $V_{CE} = 2\text{V}$)
4. High isolation voltage between input and output
(Viso : 3 750 V_{rms})

■ Applications

1. Telephone sets
2. Copiers, facsimiles
3. Interfaces with various power supply circuits, power distribution boards
4. Hybrid substrates which require high density mounting

■ Package Specifications

| Model No. | Package specifications | Diameter of reel | Tape width |
|-----------|----------------------------------|------------------|------------|
| PC452 | Taping package (Net : 3 000pcs.) | ϕ 370mm | 12mm |
| PC452T | Taping package (Net : 750pcs.) | ϕ 178mm | 12mm |
| PC452Z | Sleeve package (Net : 100pcs.) | - | - |

■ Absolute Maximum Ratings

(Ta=25°C)

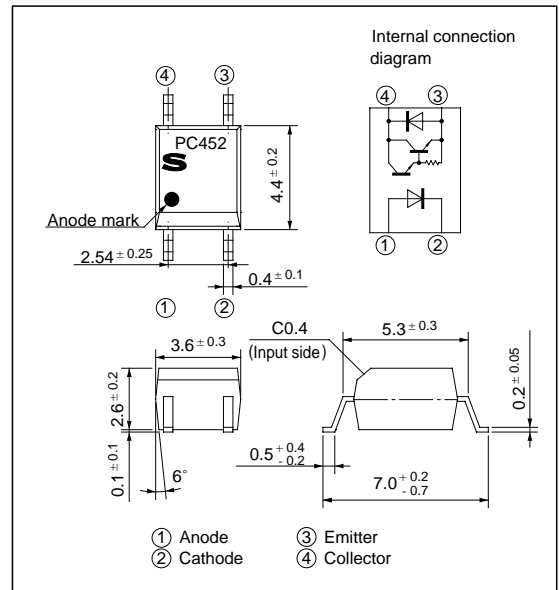
| Parameter | | Symbol | Rating | Unit |
|--------------------------|---------------------------------------|-----------|---------------|-----------|
| Input | Forward current | I_F | 50 | mA |
| | Reverse voltage | V_R | 6 | V |
| | Power dissipation | P | 70 | mW |
| Output | Collector-emitter voltage | V_{CEO} | 300 | V |
| | Collector current (forward direction) | I_C | 150 | mA |
| | Emitter-collector voltage | V_{ECO} | 0.1 | V |
| | Collector power dissipation | P_C | 150 | mW |
| Total power dissipation | | P_{tot} | 170 | mW |
| *1 Isolation voltage | | V_{iso} | 3 750 | V_{rms} |
| Operating temperature | | T_{opr} | - 30 to + 100 | °C |
| Storage temperature | | T_{stg} | - 40 to + 125 | °C |
| *2 Soldering temperature | | T_{sol} | 260 | °C |

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

*2 10 seconds or less, 0.2mm or more from the root of lead.

■ Outline Dimensions

(Unit : mm)



Electro-optical Characteristics

(Ta = 25°C)

| Parameter | | Symbol | Conditions | MIN. | TYP. | MAX. | Unit |
|--------------------------|--------------------------------------|---------------|---|--|-----------|--------------------|---------------|
| Input | Forward voltage | V_F | $I_F = 10\text{mA}$ | - | 1.2 | 1.4 | 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-emitter breakdown voltage | BV_{CEO} | $I_F = 0,$ $I_C = 0.1\text{mA}$ | 300 | - | - | V |
| | Collector dark current | I_{CEO} | $V_{CE} = 200\text{V}, I_F = 0$ | - | - | 2×10^{-7} | A |
| Transfer characteristics | Collector current | I_C | $I_F = 1\text{mA}, V_{CE} = 2\text{V}$ | 10 | - | - | mA |
| | Collector-emitter saturation voltage | $V_{CE(sat)}$ | $I_F = 20\text{mA}$ $I_C = 100\text{mA}$ | - | - | 1.2 | 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 | $V_{CE} = 2\text{V}, I_C = 20\text{mA}$ $R_L = 100\Omega, -3\text{dB}$ | 1 | 7 | - | kHz |
| | Response time | Rise time | t_r | $V_{CE} = 2\text{V}, I_C = 20\text{mA}$ $R_L = 100\Omega$ | - | 100 | 300 |
| Fall time | | t_f | - | | 20 | 100 | μs |

Fig. 1 Forward Current vs. Ambient Temperature

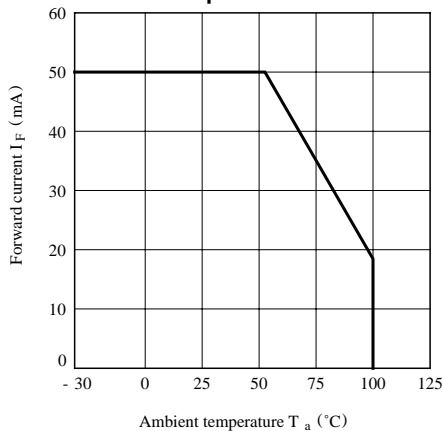


Fig. 2 Collector Power Dissipation vs. Ambient Temperature

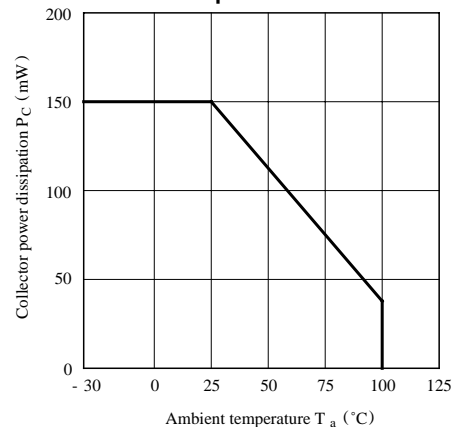


Fig. 3 Peak Forward Current vs. Duty Ratio

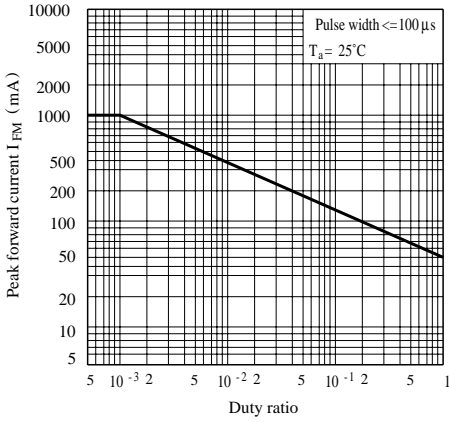


Fig. 4 Forward Current vs. Forward Voltage

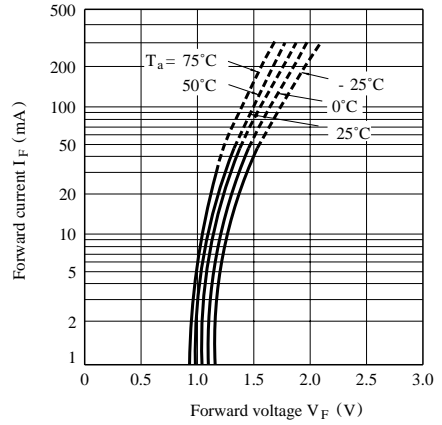


Fig. 5 Current Transfer Ratio vs. Forward Current

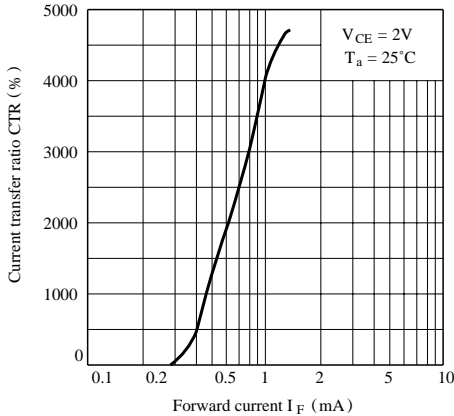


Fig. 6 Collector Current vs. Collector-emitter Voltage

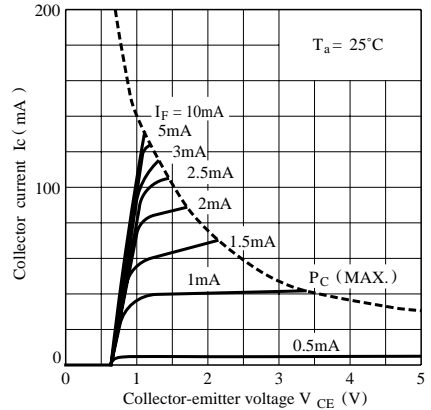


Fig. 7 Relative Current Transfer Ratio vs. Ambient Temperature

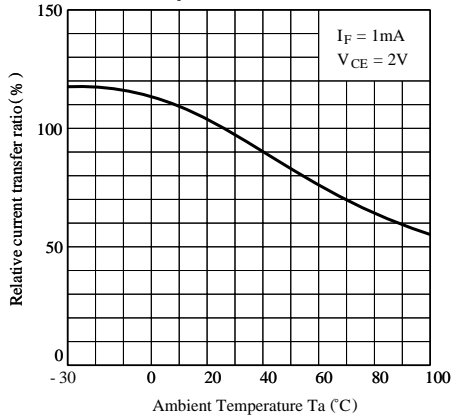


Fig. 8 Collector-emitter Saturation Voltage vs. Ambient Temperature

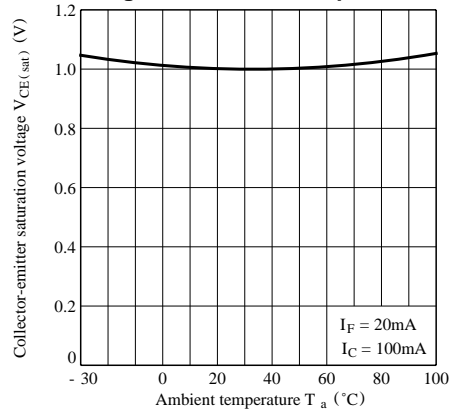


Fig. 9 Collector Dark Current vs. Ambient Temperature

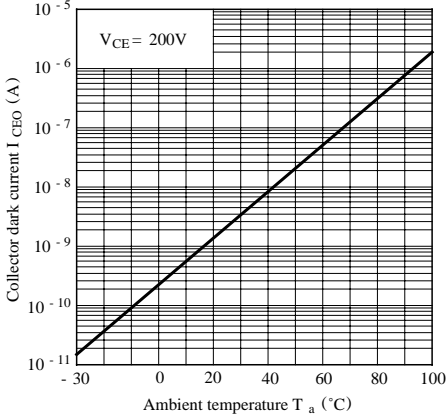


Fig.10 Response Time vs. Load Resistance

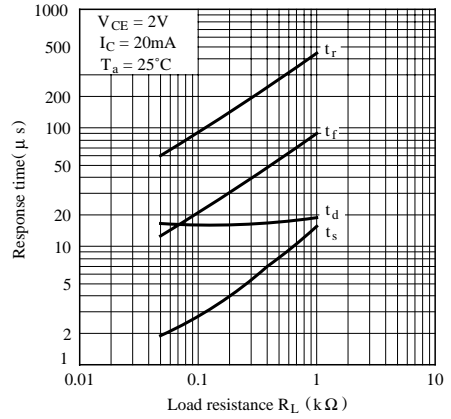


Fig.11 Frequency Response

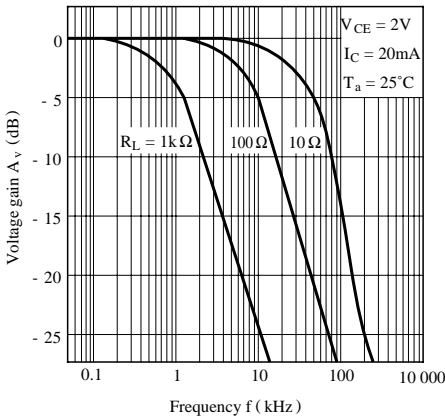
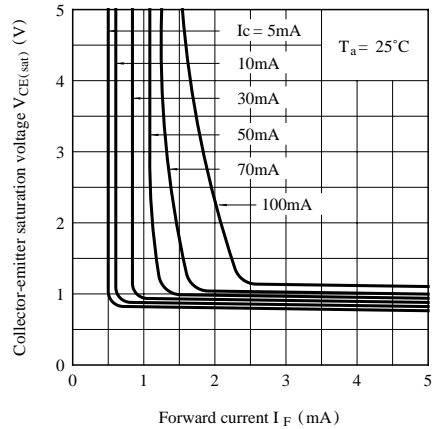


Fig.12 Collector-emitter Saturation Voltage vs. Forward Current



● Please refer to the chapter “Precautions for Use.”