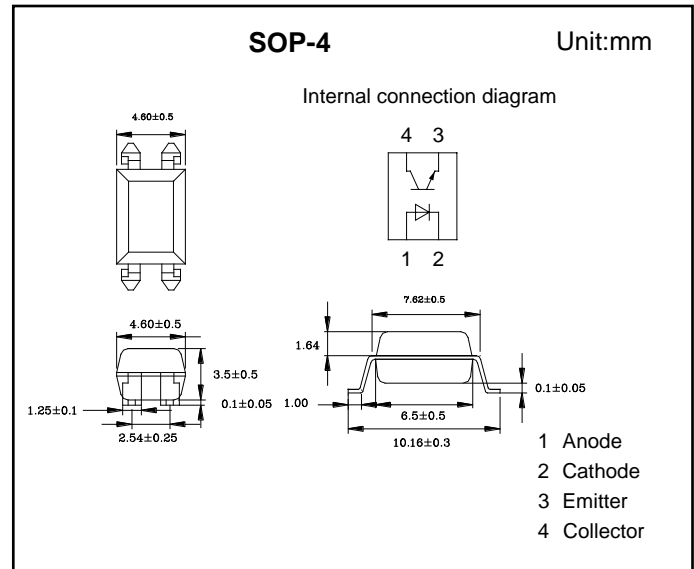


High Density Mounting Type Photocoupler PC817 Series

■ Features

- Current transfer ratio
(CTR: MIN. 50% at $I_F = 5\text{mA}$, $V_{CE} = 5\text{V}$)
- High isolation voltage between input and output



■ Absolute Maximum Ratings $T_a = 25^\circ\text{C}$

| Parameter | Symbol | Rating | Unit |
|-------------------------------------|-----------|------------|------------------|
| Input Reverse voltage | V_R | 6 | V |
| Collector - Emitter Output Voltage | V_{CEO} | 35 | |
| Emitter-Collector Output Voltage | V_{ECO} | 6 | |
| Isolation Voltage | V_{ISO} | 5000 | V_{rms} |
| Input Forward Current | I_F | 50 | mA |
| Input Peak Forward Current (Note.1) | I_{FM} | 1 | A |
| Collector Current - Continuous | I_C | 50 | mA |
| Input Power Dissipation | P | 70 | mW |
| Collector Output Power dissipation | P_C | 150 | |
| Total Power Dissipation | P_{tot} | 200 | |
| Junction Temperature | T_J | 125 | $^\circ\text{C}$ |
| Soldering temperature | T_{sol} | 260 | |
| Operating Temperature | T_{opr} | -30 to 100 | |
| Storage Temperature Range | T_{stg} | -55 to 125 | |

Note.1:Pulse width $\leq 100\text{ms}$, Duty ratio : 0.001

■ Electrical Characteristics Ta = 25°C

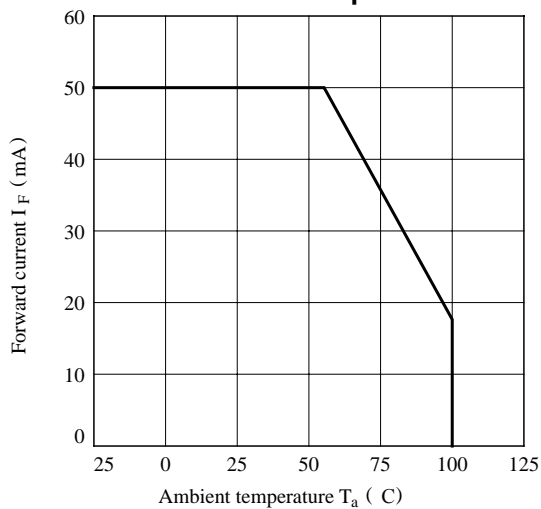
| Parameter | Symbol | Test Conditions | Min | Typ | Max | Unit |
|--------------------------------------|----------------------|---|----------------------|------------------|-----|------|
| Input Forward Voltage | V _F | I _F = 20 mA | | | 1.4 | V |
| Input Peak Forward Voltage | V _{FM} | I _{FM} = 500 mA | | | 3 | |
| Input Reverse Current | I _R | V _R = 4 V | | | 10 | uA |
| Collector- emitter cut-off current | I _{CEO} | V _{CE} = 20 V , I _E = 0 | | | 10 | |
| Collector-emitter saturation voltage | V _{CE(sat)} | I _F = 20mA, I _C = 1mA | | 0.1 | 0.2 | V |
| Isolation resistance | R _{ISO} | DC 500V, 40 to 60% RH | 5 x 10 ¹⁰ | 10 ¹¹ | | Ω |
| Current Transfer Ratio | CTR | V _{CE} = 5V, I _F = 5mA | 50 | | 600 | % |
| Rise time | t _r | V _{CE} = 2V, I _C = 2mA, R _L = 100Ω | | 4 | 18 | uS |
| Fall time | t _f | | | 3 | 18 | |
| Input Terminal Capacitance | C _i | V = 0V, f = 1KHz | | 30 | 250 | pF |
| Floating Capacitance | C _f | | | 0.6 | 1 | |
| Cut-off frequency | f _c | V _{CE} = 5V, I _C = 2mA, R _L = 100Ω | | 80 | | KHz |

■ Classification of CTR(%)

| Type | PC817A | PC817B | PC817C | PC817D | PC817 |
|-------|--------|---------|---------|---------|--------|
| Range | 80-160 | 130-260 | 200-400 | 300-600 | 50-600 |

■ Typical Characteristics

Fig. 1 Forward Current vs. Ambient Temperature



■ Typical Characteristics

Fig. 2 Collector Power Dissipation vs. Ambient Temperature

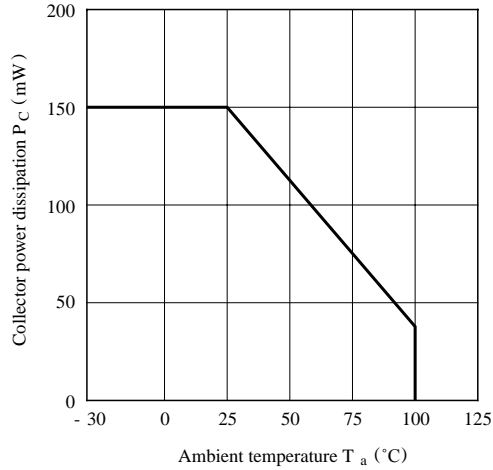


Fig. 3 Peak Forward Current vs. Duty Ratio

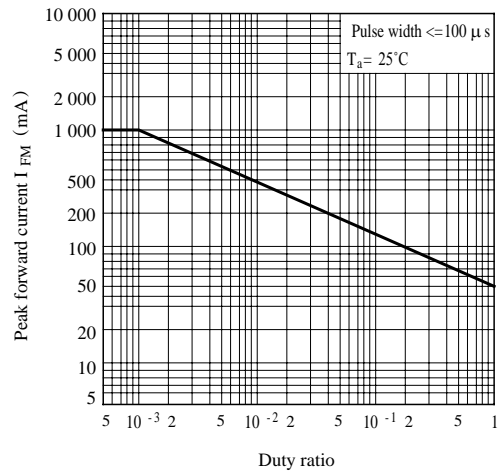


Fig. 4 Current Transfer Ratio vs. Forward Current

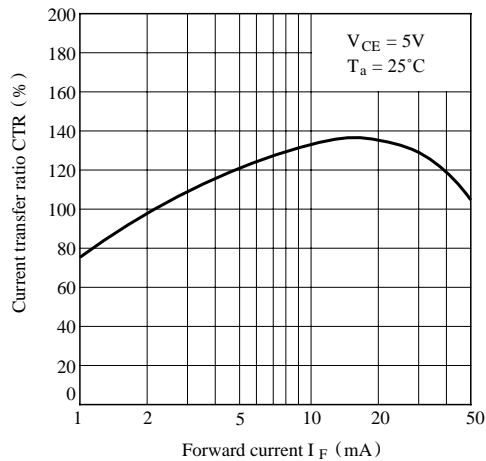


Fig. 5 Forward Current vs. Forward Voltage

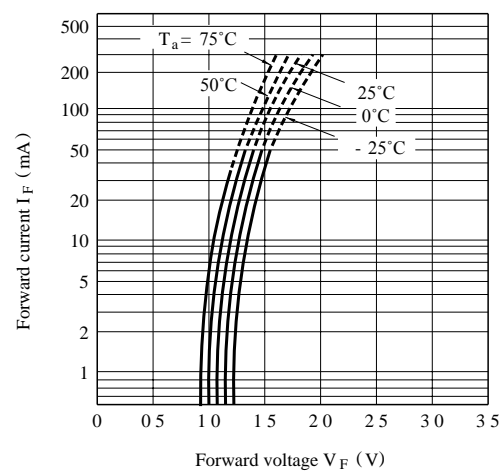


Fig. 6 Collector Current vs. Collector-emitter Voltage

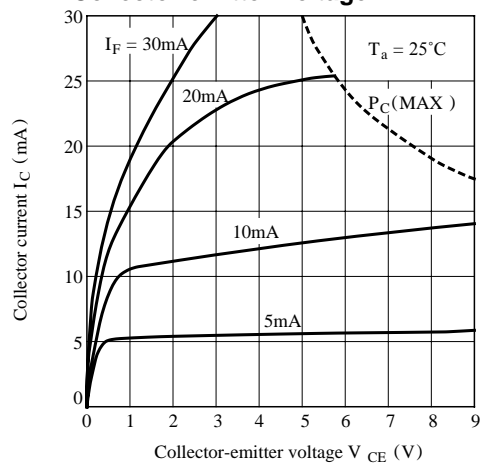


Fig. 7 Relative Current Transfer Ratio vs. Ambient Temperature

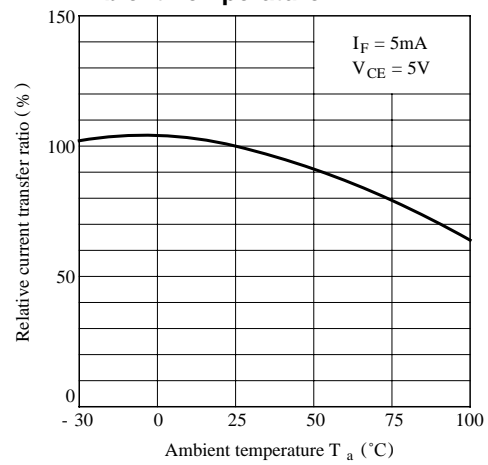


Fig. 8 Collector-emitter Saturation Voltage vs. Ambient Temperature

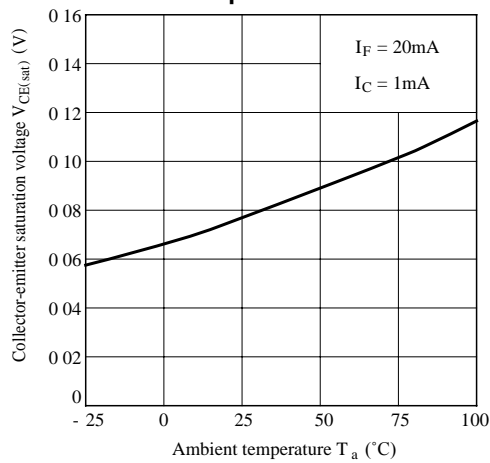


Fig. 9 Collector Dark Current vs. Ambient Temperature

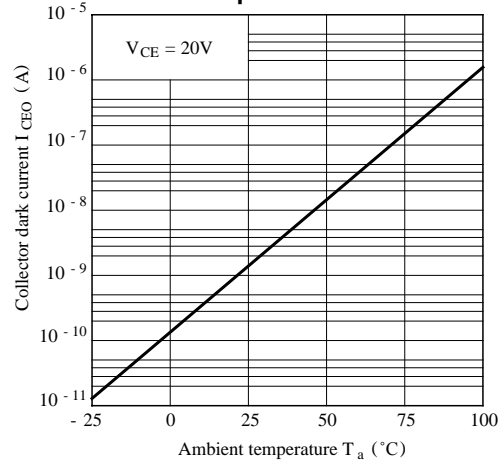


Fig.10 Response Time vs. Load Resistance

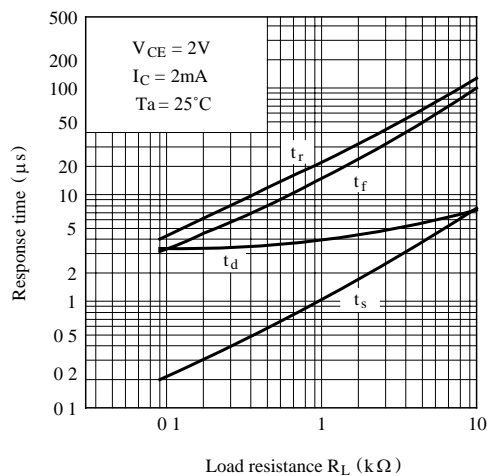
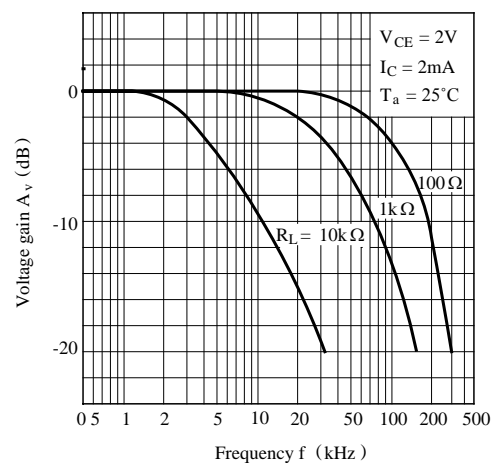
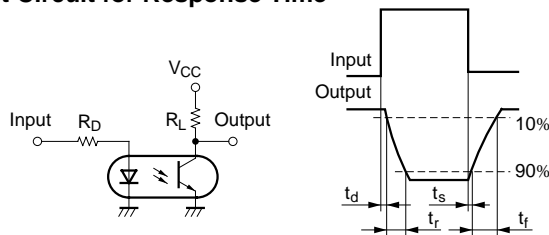


Fig.11 Frequency Response



Test Circuit for Response Time



Test Circuit for Frequency Response

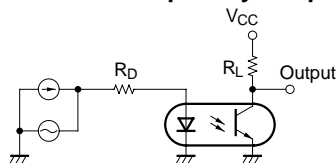


Fig.12 Collector-emitter Saturation Voltage vs. Forward Current

