

T-41-83

PC4N25V/PC4N26V PC4N27V/PC4N28V

General Purpose Type Photocoupler

※ Lead forming type (I type) is also available. (PC4N25VI/PC4N26VI/PC4N27VI/PC4N28VI) (Page 482)

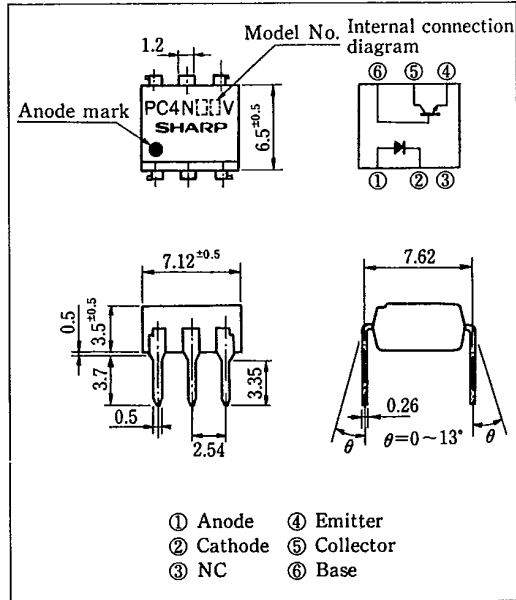
■ Features

1. Response time
 t_r : TYP. $3\mu s$ at $V_{CE}=10V$, $I_C=2mA$, $R_L=100\Omega$
2. UL recognized, file No. E64380
TUV approved (PC4N25V: No. R40182,
PC4N26V/27V: No. R40183)

■ Applications

1. I/O interfaces for computers
2. System appliances, measuring instruments
3. Signal transmission between circuits of different potentials and impedances

■ Outline Dimensions (Unit : mm)



■ Absolute Maximum Ratings

($T_a=25^\circ C$)

| Parameter | | Symbol | Rating | Unit |
|-------------------------|-----------------------------|-----------|------------|------------|
| Input | Forward current | I_F | 80 | mA |
| | *1Peak forward current | I_{FM} | 3 | A |
| | Reverse voltage | V_R | 6 | V |
| | Power dissipation | P | 150 | mW |
| Output | Collector-emitter voltage | V_{CEO} | 30 | V |
| | Emitter-collector voltage | V_{ECO} | 7 | V |
| | Collector-base voltage | V_{CBO} | 70 | V |
| | Collector current | I_C | 100 | mA |
| | Collector power dissipation | P_C | 150 | mW |
| Total power dissipation | | P_{tot} | 250 | mW |
| *2Isolation voltage | PC4N25V | V_{iso} | 2500 | Vrms |
| | PC4N26V,27V | | 1,500 | |
| | PC4N28V | | 500 | |
| Operating temperature | | T_{opr} | -55 ~ +100 | $^\circ C$ |
| Storage temperature | | T_{stg} | -55 ~ +150 | $^\circ C$ |
| *3Soldering temperature | | T_{sol} | 260 | $^\circ C$ |

*1 Pulse width $\leq 1\mu s$, Duty ratio = 0.001 *3 For 10 seconds
*2 RH = 40 ~ 60%, AC for 1 minute

■ Electro-optical Characteristics

T-41-83

($T_a=25^\circ\text{C}$)

| Parameter | | Symbol | Conditions | MIN. | TYP. | MAX. | Unit |
|----------------------------------|--|--------------------------------|--|-----------------|-----------|--------------------|---------------|
| Input | Forward voltage | V_F | $I_F=10\text{mA}$ | — | 1.2 | 1.5 | V |
| | Reverse current | I_R | $V_R=4\text{V}$ | — | — | 10 | μA |
| | Terminal capacitance | C_t | $V=0, f=1\text{kHz}$ | — | 50 | — | pF |
| Output | Collector dark current | I_{CEO} | $V_{CE}=10\text{V}$ | — | — | 5×10^{-8} | A |
| | $I_F=0$ | | — | — | 10^{-7} | | |
| | Collector-emitter breakdown voltage | BV_{CEO} | $I_C=0.1\text{mA}, I_F=0$ | 30 | — | — | V |
| | Emitter-collector breakdown voltage | BV_{ECO} | $I_E=10\mu\text{A}, I_F=0$ | 7 | — | — | V |
| Collector-base breakdown voltage | BV_{CBO} | $I_C=0.1\text{mA}, I_F=0$ | 70 | — | — | V | |
| Transfer characteristics | Current transfer ratio | CTR | $I_F=10\text{mA}, V_{CE}=10\text{V}$ | 20 | — | — | % |
| | PC4N25V,26V PC4N27V,28V | | Pulse test : input width=300 μs , duty ratio ≤ 0.02 | 10 | — | — | |
| | Collector-emitter saturation voltage | $V_{CE(sat)}$ | $I_F=50\text{mA}, I_C=2\text{mA}$ | — | 0.1 | 0.5 | V |
| | Isolation resistance | R_{ISO} | DC500V, RH=40~60% | 5×10^9 | 10^{11} | — | Ω |
| | Floating capacitance | C_f | $V=0, f=1\text{MHz}$ | — | 1.0 | — | PF |
| | Response time (Rise) | t_r | $V_{CE}=10\text{V}, I_C=2\text{mA}$ | — | 3 | — | μs |
| Response time (Fall) | t_f | $R_F=100\Omega, R_{BE}=\infty$ | — | 3 | — | μs | |

Fig. 1 Forward Current vs. Ambient Temperature

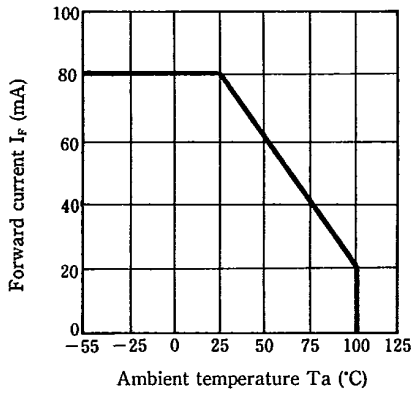


Fig. 2 Collector Power Dissipation vs. Ambient Temperature

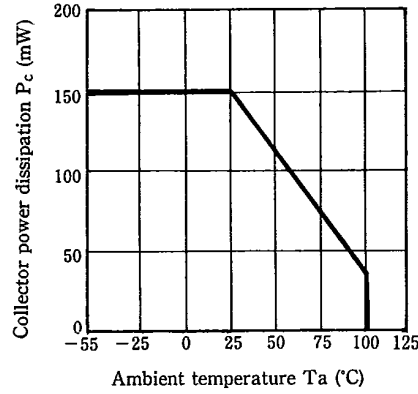


Fig. 3 Forward Current vs. Forward Voltage

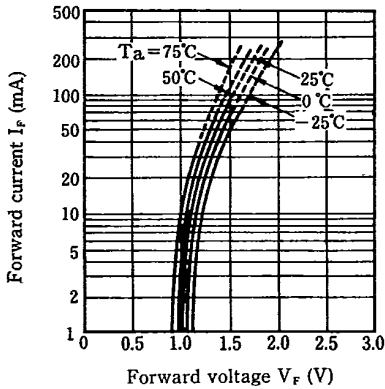
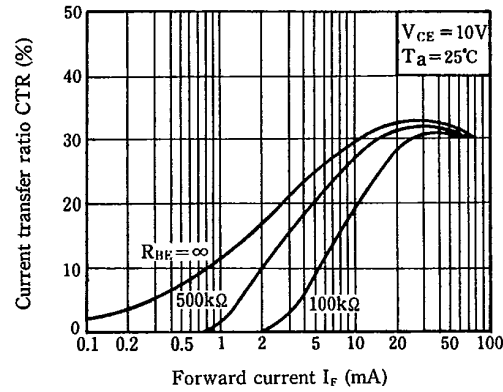


Fig. 4 Current Transfer Ratio vs. Forward Current



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Fig. 5 Collector Current vs. Collector-emitter Voltage

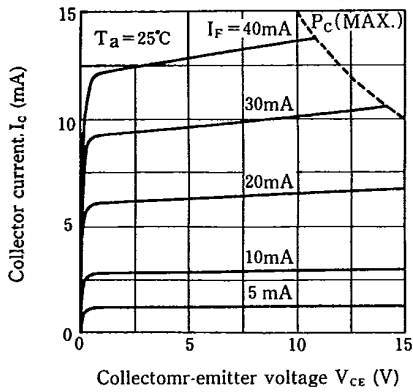


Fig. 6 Relative Current Transfer Ratio vs. Ambient Temperature

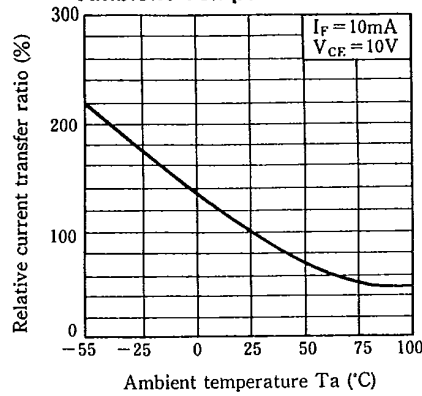


Fig. 7 Collector-emitter Saturation Voltage vs. Ambient Temperature

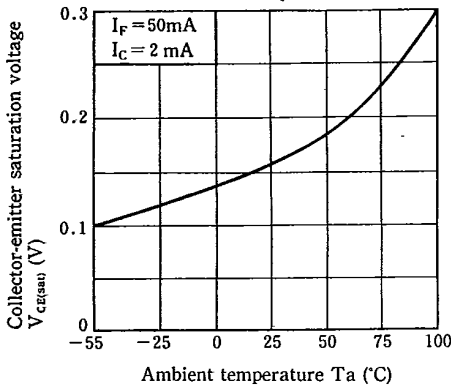


Fig. 8 Collector Dark Current vs. Ambient Temperature

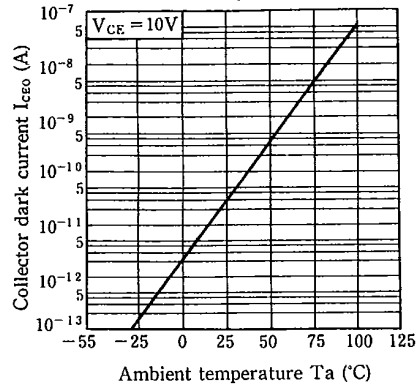


Fig. 9 Response Time vs. Load Resistance

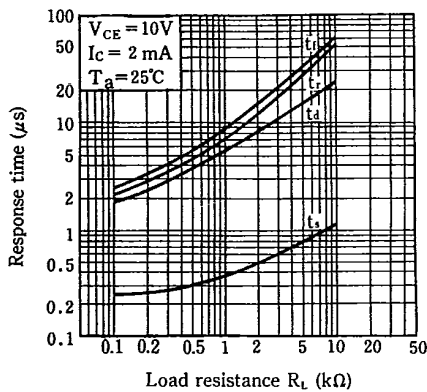


Fig. 10 Frequency Response

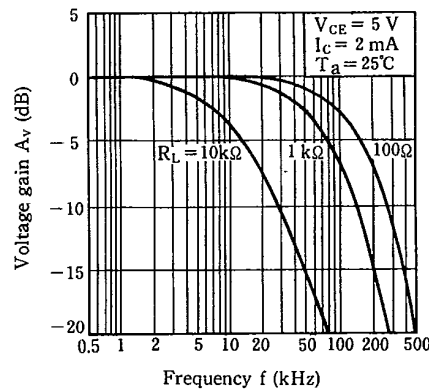
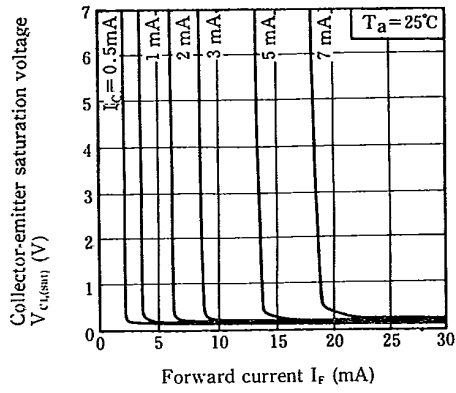
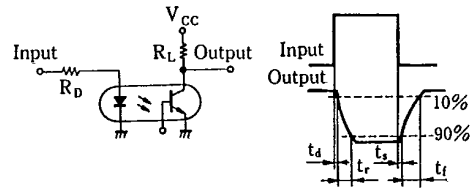


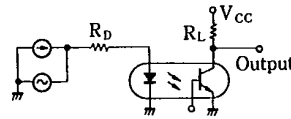
Fig. 11 Collector-emitter Saturation Voltage vs. Forward Current



Test Circuit for Response Time



Test Circuit for Frequency Response



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