

PC367

Low Input Current Type Photocoupler

■ Features

1. Low input current type ($I_F=0.5\text{mA}$)
2. High resistance to noise due to high common mode rejection voltage (CMR:MIN. $10\text{kV}/\mu\text{s}$)
3. Mini-flat package
4. Isolation voltage (Viso: $3\ 750\text{Vrms}$)
5. Recognized by UL, file No. 64380

■ Applications

1. Programmable controllers
2. Facsimiles
3. Telephones

■ Rank Table

| Model No. | Rank mark | I_c (mA) | Conditions |
|-----------|-----------------|-------------|--|
| PC367NT | A, B or no mark | 0.5 to 2.5 | $I_F=0.5\text{mA}$ $V_{CE}=5\text{V}$ $T_a=25^\circ\text{C}$ |
| PC367N1T | A | 0.75 to 1.5 | |
| PC367N2T | B | 1.0 to 2.0 | |

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

| | Parameter | Symbol | Rating | Unit |
|--------------------------|-----------------------------|-----------|-------------------|------------------|
| Input | Forward current | I_F | 10 | mA |
| | *1 Peak forward current | I_{FM} | 200 | mA |
| | Reverse voltage | V_R | 6 | V |
| | Power dissipation | P | 15 | mW |
| Output | Collector-emitter voltage | V_{CEO} | 70 | 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} | 170 | mW |
| | Operating temperature | T_{opr} | -30 to +100 | $^\circ\text{C}$ |
| | Storage temperature | T_{stg} | -40 to +125 | $^\circ\text{C}$ |
| *2 Isolation voltage | V_{iso} | 3.75 | kV_{rms} | |
| *3 Soldering temperature | T_{sol} | 260 | $^\circ\text{C}$ | |

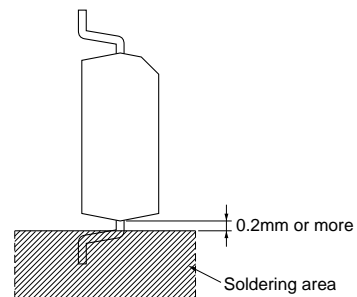
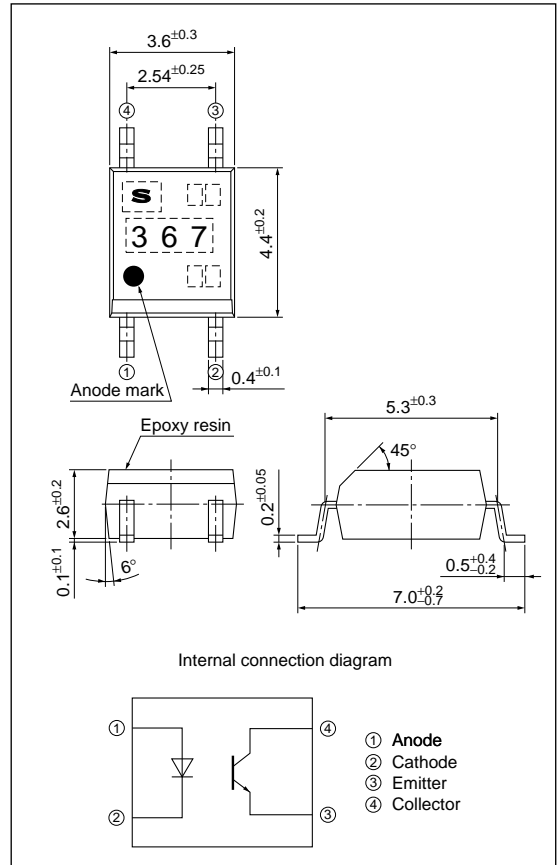
*1 Pulse width $\leq 100\mu\text{s}$, Duty ratio = 0.001

*2 40 to 60% RH, AC for 1 minute, $f=60\text{Hz}$

*3 For 10 seconds

■ 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 dark current | I_{CEO} | $V_{CE}=50\text{V}, I_F=0$ | - | - | 100 | nA | |
| | Collector-emitter breakdown voltage | BV_{CEO} | $I_C=0.1\text{mA}, I_F=0$ | 70 | - | - | V | |
| | Emitter-collector breakdown voltage | BV_{ECO} | $I_E=10\mu\text{A}, I_F=0$ | 6 | - | - | V | |
| Transfer characteristics | Collector current | I_C | $I_F=0.5\text{mA}, V_{CE}=5\text{V}$ | 0.5 | - | 2.5 | mA | |
| | Collector-emitter saturation voltage | $V_{CE(sat)}$ | $I_F=10\text{mA}, I_C=1\text{mA}$ | - | - | 0.2 | V | |
| | Isolation resistance | R_{ISO} | DC500V 40 to 60%RH | 5×10^{10} | 1×10^{11} | - | Ω | |
| | Floating capacitance | C_f | $V=0, f=1\text{MHz}$ | - | 0.6 | 1.0 | pF | |
| | Response time | Rise time | t_r | $V_{CE}=2\text{V}, I_C=2\text{mA}, R_L=100\Omega$ | - | 4 | 18 | μs |
| | | Fall time | t_f | | - | 3 | 18 | μs |
| *4 Common mode rejection voltage | | CMR | $T_a=25^\circ\text{C}, R_L=470\Omega, V_{CM}=1.5\text{kV (peak)}, I_F=0\text{mA}, V_{CC}=9\text{V}, V_{np}=100\text{mV}$ | 10 | - | - | kV/ μs | |

*4 Refer to Fig.1

Fig.1 Test Circuit for Common Mode Rejection Voltage

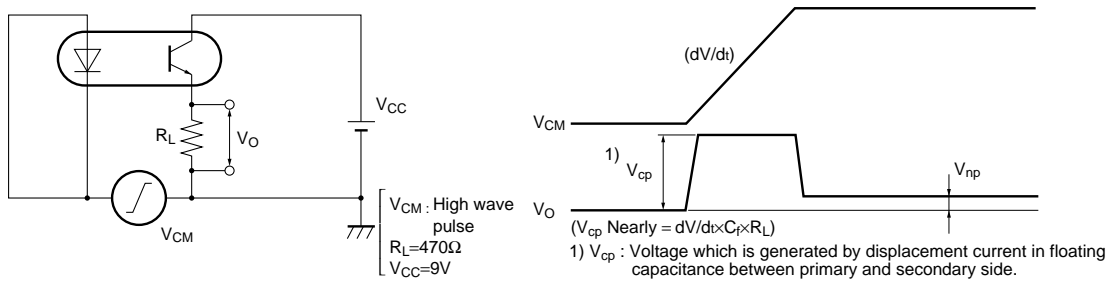


Fig.2 Forward Current vs. Ambient Temperature

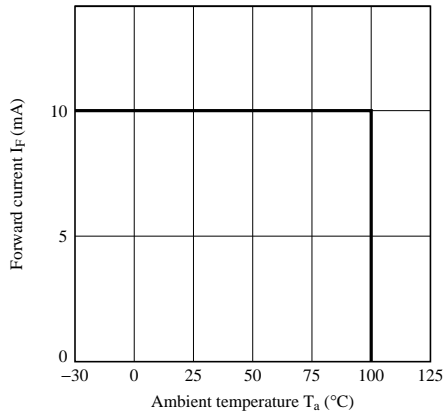


Fig.3 Diode Power Dissipation vs. Ambient Temperature

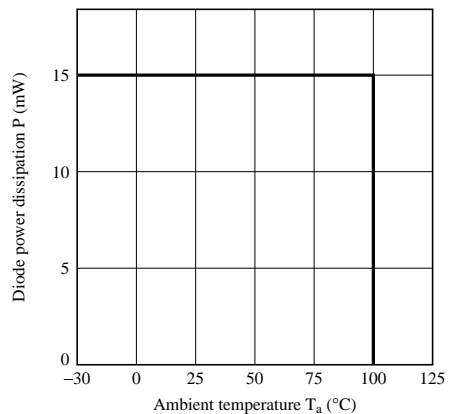


Fig.4 Collector Power Dissipation vs. Ambient Temperature

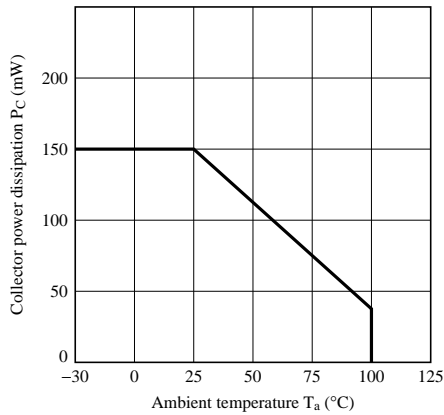


Fig.5 Total Power Dissipation vs. Ambient Temperature

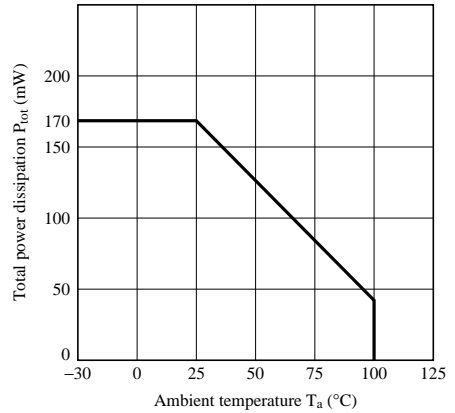


Fig.6 Peak Forward Current vs. Duty Ratio

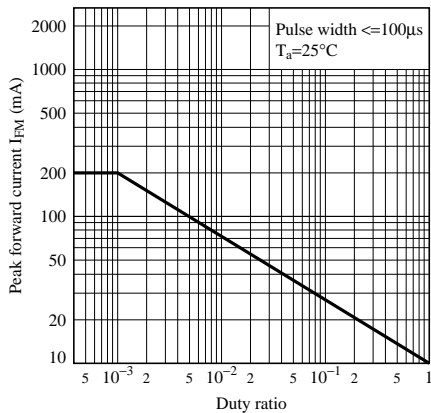


Fig.7 Forward Current vs. Forward Voltage

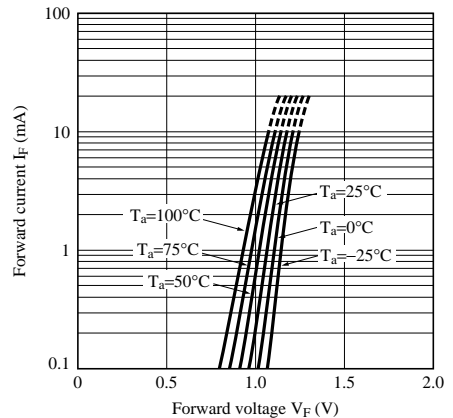


Fig.8 Current Transfer Ratio vs. Forward Current

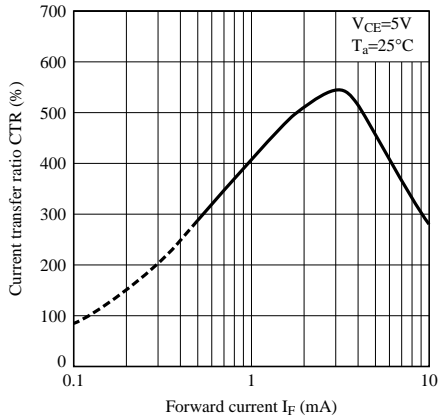


Fig.9 Collector Current vs. Collector-emitter Voltage

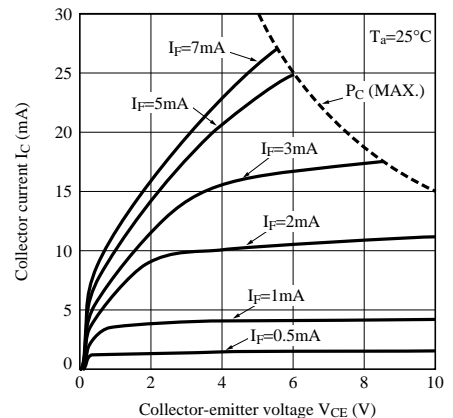


Fig.10 Relative Current Transfer Ratio vs. Ambient Temperature

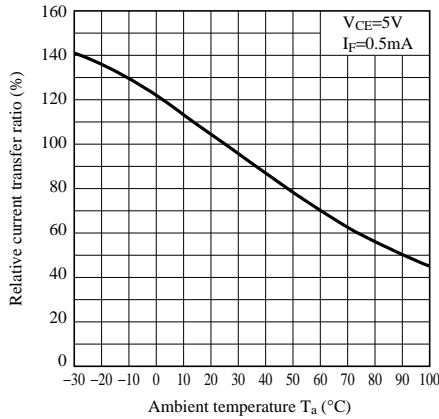


Fig.11 Collector - emitter Saturation Voltage vs. Ambient Temperature

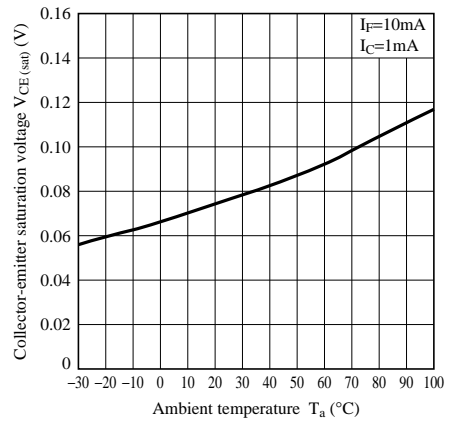


Fig.12 Collector Dark Current vs. Ambient Temperature

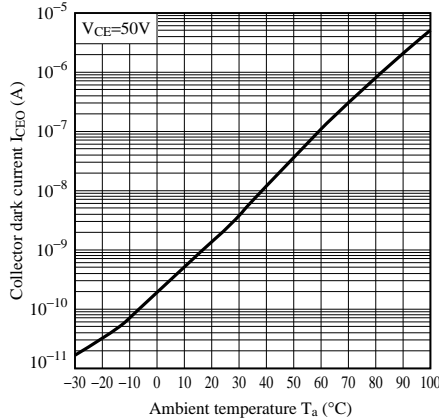


Fig.13 Response Time vs. Load Resistance

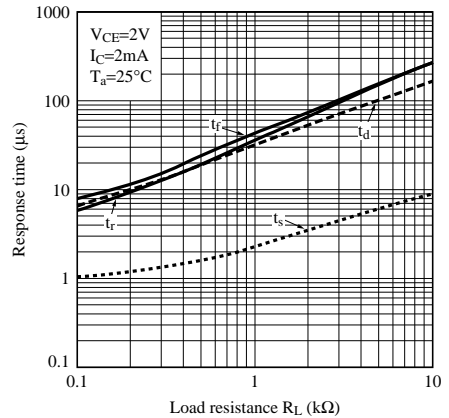


Fig.14 Response Time vs. Load Resistance (Saturation)

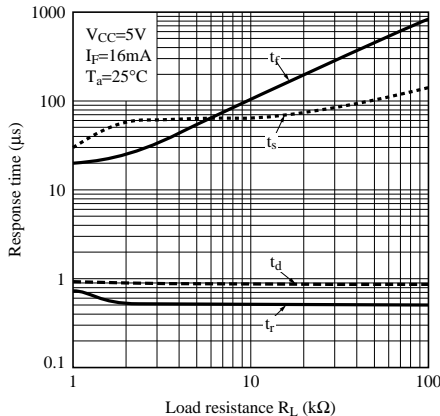


Fig.15 Test Circuit for Response Time

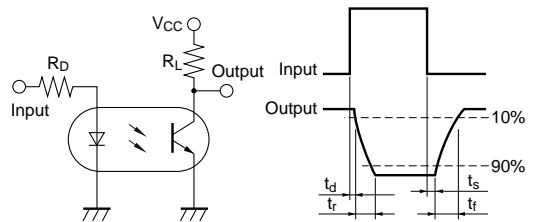


Fig.16 Voltage Gain vs Frequency

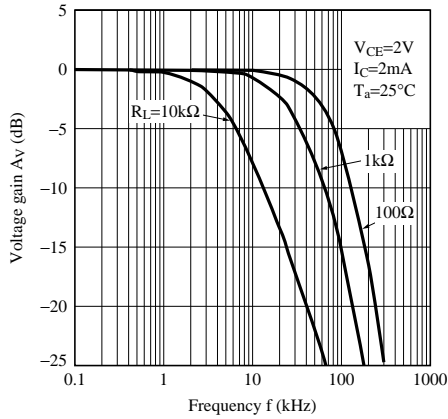


Fig.17 Collector-emitter Saturation Voltage vs. Forward Current

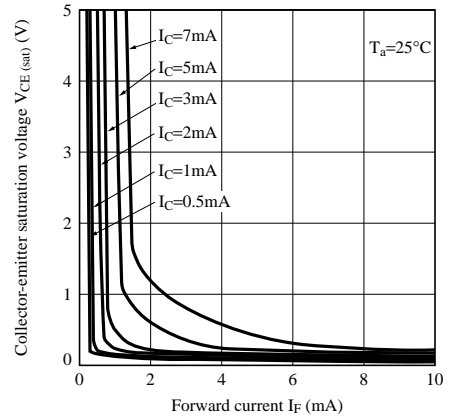


Fig.18 Reflow Soldering

Only one time soldering is recommended within the temperature profile shown below.

