

PC352

Opaque*, Mini-flat Package, High Resistance to Noise Type Photocoupler

■ Features

1. Opaque type, mini-flat package
PC352 (1-channel)
 2. High resistance to noise due to high common mode rejection voltage (V_{CM} : TYP. 1.5kV)
 3. Subminiature type
(The volume is smaller than that of our conventional DIP type by as far as 30%.)
 4. Isolation voltage between input and output
PC352••• $V_{iso}(rms)$: 3.75kV
 5. Recognized by UL, file No. E64380
- * Employs double transfer mold technology

■ Applications

1. Programmable controllers

■ Package Specifications

| Model No. | Package specification |
|----------------|--|
| PC352N | Taping reel diameter 370mm (3 000 pcs) |
| PC352NT | Taping reel diameter 178mm (750 pcs) |

■ Absolute Maximum Ratings

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

| | Parameter | Symbol | Rating | Unit |
|--------|------------------------------|----------------|-------------|-------------|
| Input | *1 Forward current | I_F | 50 | mA |
| | *2 Peak forward current | I_{FM} | 1 | A |
| | Reverse voltage | V_R | 6 | V |
| | *1 Power dissipation | P | 70 | mW |
| Output | *1 Collector-emitter voltage | V_{CEO} | 35 | V |
| | Emitter-collector voltage | V_{ECO} | 6 | V |
| | Collector current | I_C | 50 | mA |
| | *1 Collector dissipation | P_C | 150 | mW |
| | *1 Total power dissipation | P_{tot} | 170 | mW |
| | Operating temperature | T_{opr} | -30 to +100 | $^{\circ}C$ |
| | Storage temperature | T_{stg} | -40 to +125 | $^{\circ}C$ |
| | *3 Isolation voltage | $V_{iso}(rms)$ | 3.75 | kV |
| | *4 Soldering temperature | T_{SOL} | 260 | $^{\circ}C$ |

*1 The derating factors of absolute maximum ratings due to ambient temperature are shown in Fig.2 to 5

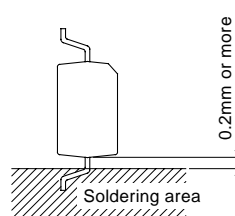
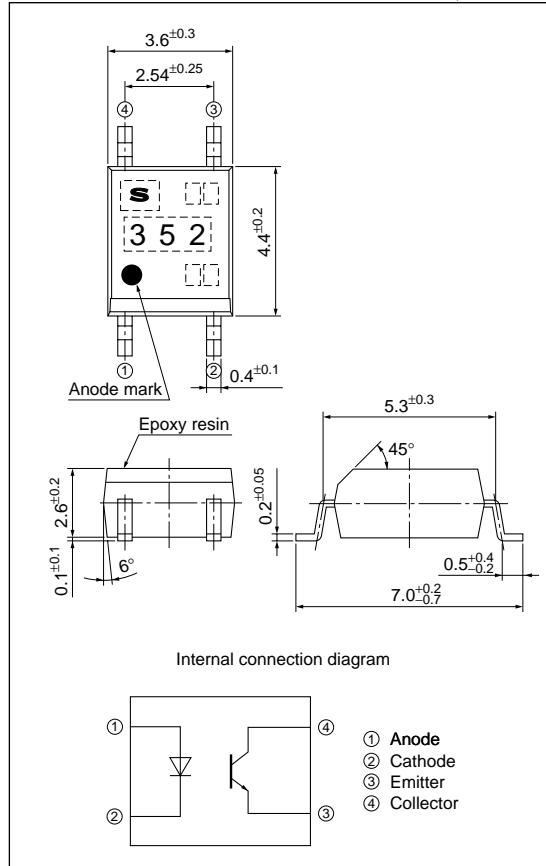
*2 Pulse width \leq 100 μ s, Duty ratio:0.01, Refer to Fig.6

*3 AC for 1min., 40 to 60% RH, f=60Hz

*4 For 10s

■ Outline Dimensions

(Unit : mm)



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■ 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 | |
| | Reverse current | I_R | $V_R=4\text{V}$ | - | - | 10 | μA | |
| | Terminal capacitance | C_t | $V=0, f=1\text{kHz}$ | - | 30 | 200 | pF | |
| Output | Collector dark current | I_{CEO} | $V_{CE}=20\text{V}, I_F=0$ | - | - | 100 | nA | |
| | Collector-emitter breakdown voltage | BV_{CEO} | $I_C=0.1\text{mA}, I_F=0$ | 35 | - | - | V | |
| | Emitter-collector breakdown voltage | BV_{ECO} | $I_E=10\mu\text{A}, I_F=0$ | 6 | - | - | V | |
| Transfer characteristics | Collector current | I_C | $I_F=5\text{mA}, V_{CE}=5\text{V}$ | 4.5 | - | 24 | mA | |
| | 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} | 1×10^{11} | - | Ω | |
| | Floating capacitance | C_f | $V=0, f=1\text{MHz}$ | - | 0.6 | 1.0 | pF | |
| | Cut-off frequency | f_c | $V_{CE}=5\text{V}, I_C=2\text{mA}$ $R_L=100\Omega, -3\text{dB}$ | 15 | 80 | - | | |
| | 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 | | - | 5 | 20 | μs |
| *5 Common mode rejection voltage | | CMR | $I_F=0, R_L=470\Omega$ $V_{np}=100\text{mV}$ $V_{CM}=1.5\text{kV(peak)}$ | 10 | - | - | kV/ μs | |

*5 Refer to Fig.1

Fig.1 Test Circuit for Common Mode Rejection Voltage

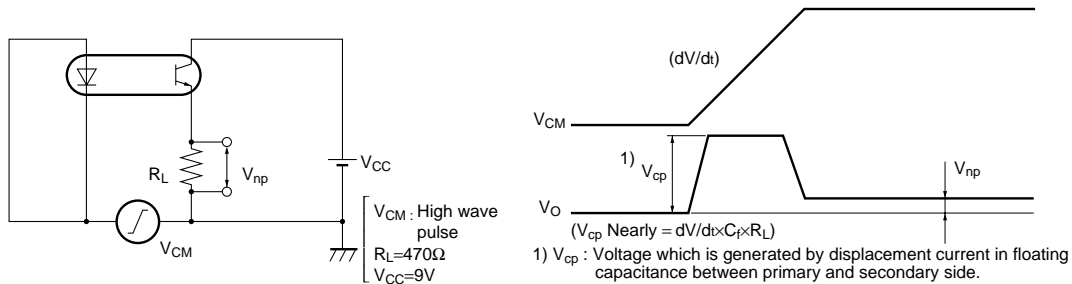


Fig.2 Forward Current vs. Ambient Temperature

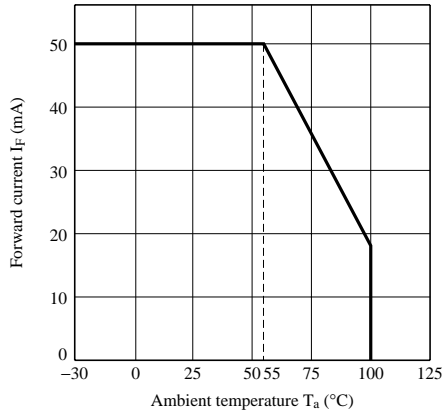


Fig.3 Diode Power Dissipation vs. Ambient Temperature

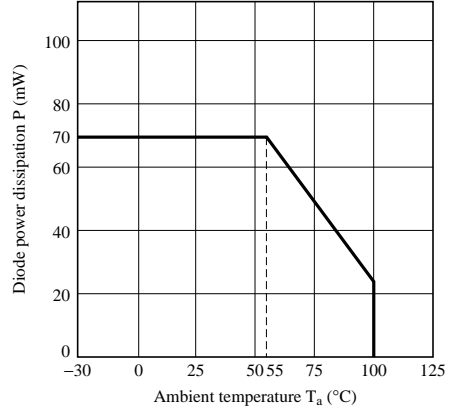


Fig.4 Collector Power Dissipation vs. Ambient Temperature

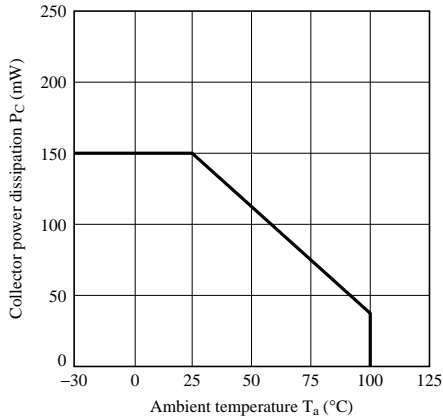


Fig.5 Total Power Dissipation vs. Ambient Temperature

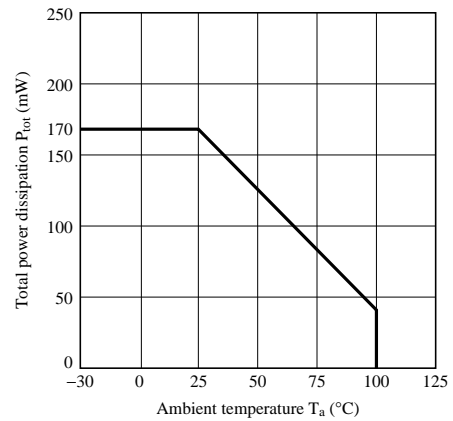


Fig.6 Peak Forward Current vs. Duty Ratio

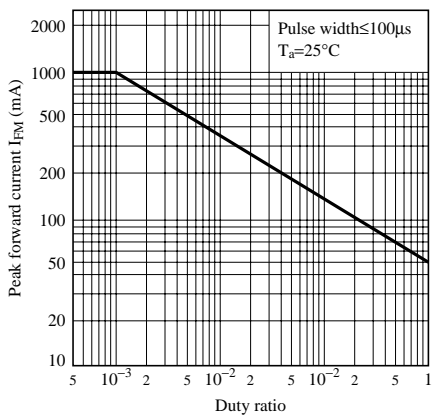


Fig.7 Forward Current vs. Forward Voltage

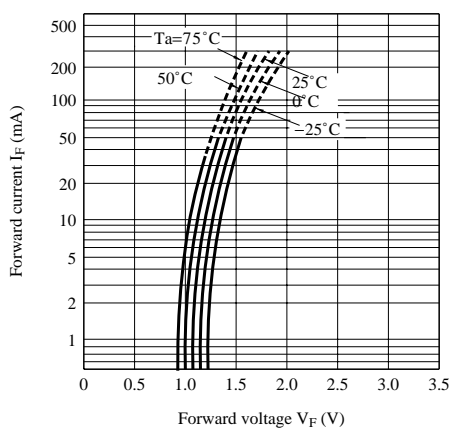


Fig.8 Current Transfer Ratio vs. Forward Current

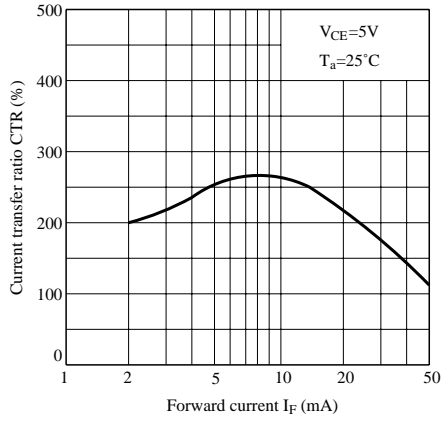


Fig.9 Collector Current vs. Collector-emitter Voltage

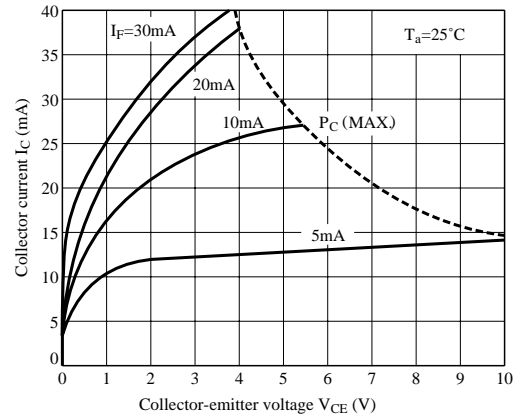


Fig.10 Relative Current Transfer Ratio vs. Ambient Temperature

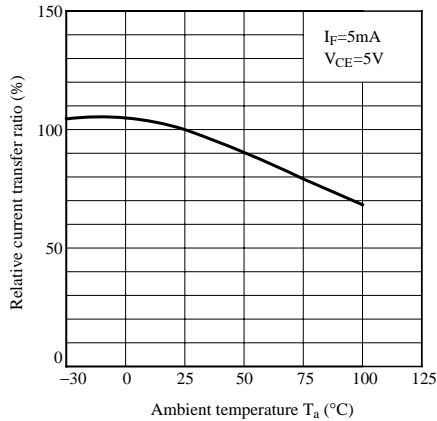


Fig.11 Collector-emitter Saturation Voltage vs. Ambient Temperature

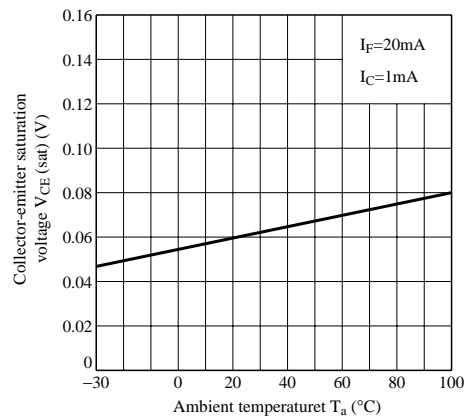


Fig.12 Collector Dark Current vs. Ambient Temperature

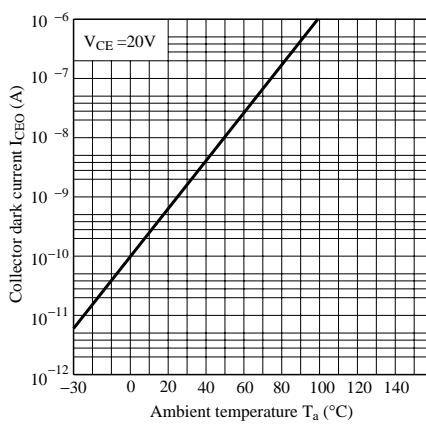


Fig.13 Response Time vs. Load Resistance

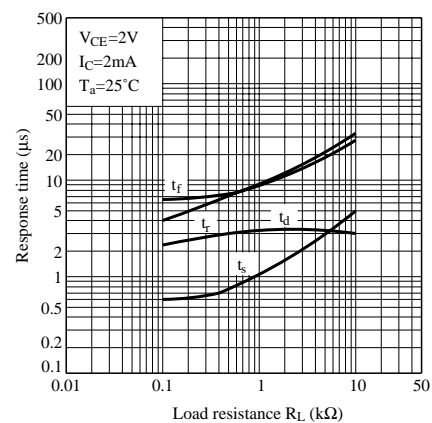


Fig.14 Test Circuit for Response Time

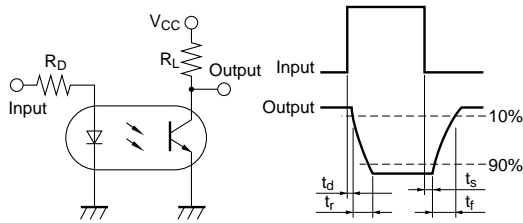


Fig.15 Voltage Gain vs Frequency

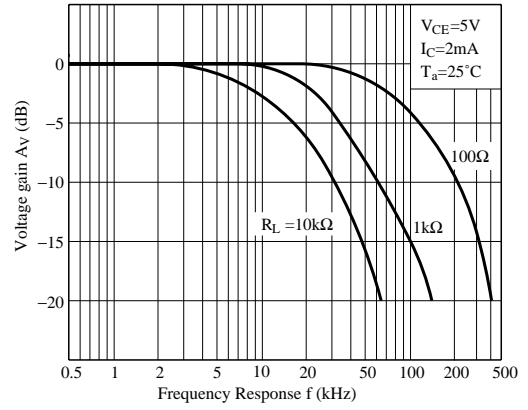


Fig.16 Collector-emitter Saturation Voltage vs. Forward Current

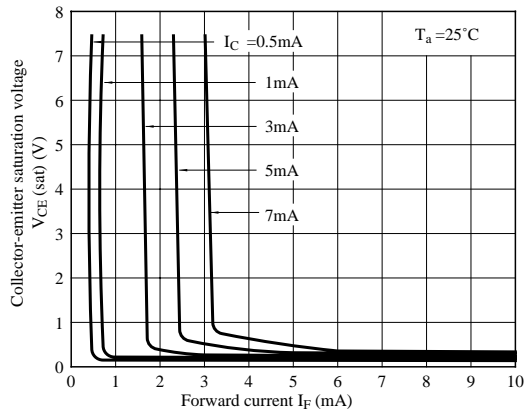
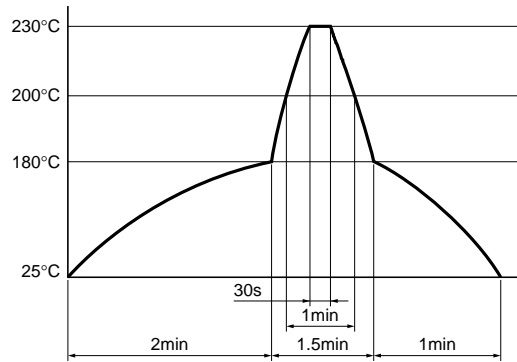


Fig.17 Reflow Soldering

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



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