# PC354NT

Opaque*, Mini-flat Package,
AC Input Type **Photocoupler**

## ■ Features

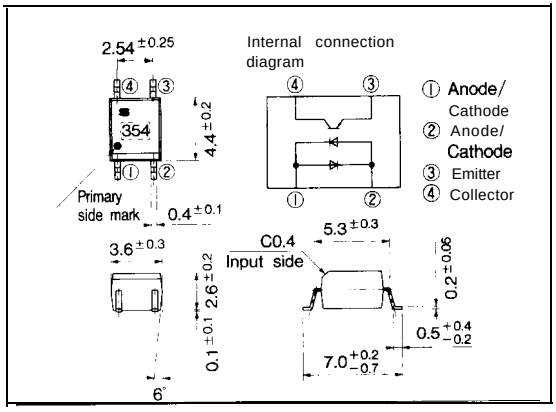
1. AC inputs
2. Opaque type, mini-flat package
   **PC354NT** (l-channel)
3. Subminiature type
   (The volume is smaller than that of our conventional DIP type by as far as 30%.)
4. Isolation voltage between input and output
   **PC354NT** ··· $V_{iso}$ :3 750$V_{rms}$

* Employs double transfer mold technology

## ■ Applications

1. Hybrid substrates that require high density mounting.
2. Programmable controllers

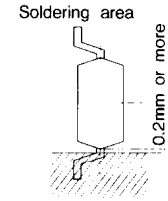
## ■ Outline Dimensions (Unit : mm)




6 Photocouplers

## ■ Absolute Maximum Ratings (Ta=25℃)

| | Parameter | Symbol | Rating | Unit |
|---|---|---|---|---|
| Input | Forward current | $I_F$ | ±50 | mA |
| | *1 Peak forward current | $I_{FM}$ | ±1 | A |
| | Power dissipation | P | 70 | mW |
| Output | Collector-emitter voltage | $V_{CEO}$ | 35 | 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 |
| | *2 Isolation voltage | $V_{iso}$ | 3 750 | $V_{rms}$ |
| | Operating temperature | $T_{opr}$ | −30 to +100 | ℃ |
| | Storage temperature | $T_{stg}$ | −40 to +125 | ℃ |
| | *3 Soldering temperature | $T_{sol}$ | 260 | ℃ |




*1 Pulse width ≤100 μs, Duty ratio 0.001
*2 40 to 60%RH, AC for 1 minute
*3 For 10 senconds

Classification of current transfer ratio (CTR)

| Model No. | Rank mark | CTR (%) |
|---|---|---|
| PC354N1T | A | 50 to 150 |
| PC354NT | A or No mark | 20 to 400 |

※ Conditions : $I_F$=1mA, $V_{CE}$ 5V, Ta=25℃

## ■ Electro-optical Characteristics (Ta=25°C)

| | Parameter | | Symbol | Conditions | MIN. | TYP. | MAX. | Unit |
|---|---|---|---|---|---|---|---|---|
| Input | Forward voltage | | $V_F$ | $I_F$=±20mA | − | 1.2 | 1.4 | v |
| | Terminal capacitance | | $C_t$ | V=O, f=1kHz | | 30 | 250- | pF |
| output | Collector dark current | | $I_{CEO}$ | $V_{CE}$=20V, $I_F$=O | − | | $10^{-7}$ | A |
| | Collector -emitter breakdown voltage | | $BV_{CEO}$ | $I_C$=0.1mA, $I_F$=0 | 35 | | − | V |
| | Emitter -collector breakdown voltage | | $BV_{ECO}$ | $I_E$=10 μA, $I_F$=0 | 6 | − | − | v |
| Transfer characteristics | Current transfer ratio | | CTR | $I_F$=± lmA, $V_{CE}$=5V | 20 | | 400 | % |
| | Collector -emitter saturation voltage | | $V_{CE(sat)}$ | $I_F$=±20mA, $I_C$=1mA | | 0.1 | 0.2 | v |
| | Isolation resistance | | $R_{ISO}$ | DC500V, 40 to 60%RH | $5\times10^{10}$ | $10^{11}$ | · | Ω |
| | Floating capacitance | | $C_f$ | V=0, f=1MHz | − | 0.6 | 1.0 | pF |
| | Response time | Rise time | $t_r$ | $V_{CE}$=2V, $I_C$=2mA | | .4 | 18 | μs |
| | | Fall time | $t_f$ | $R_L$=100Ω | | 3 | 18 | μs |

**Fig. 1 Forward Current vs. Ambient Temperature**

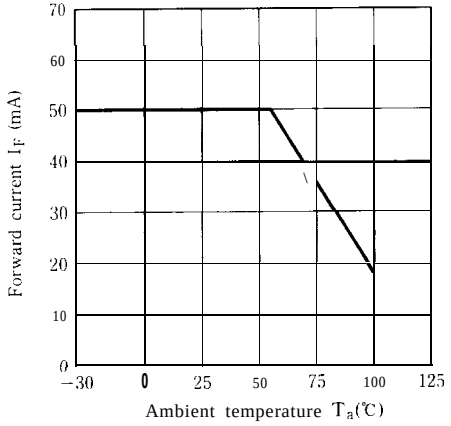



**Fig. 2 Diode Power Dissipation vs. Ambient Temperature**

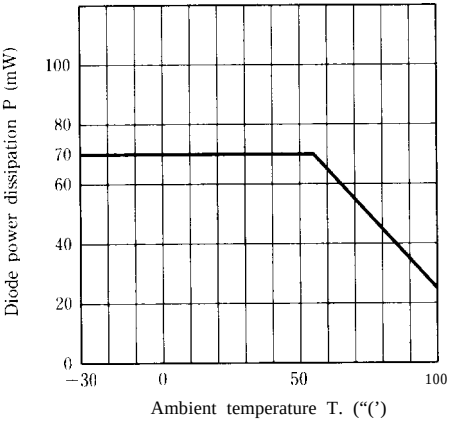



**Fig. 3 Collector Power Dissipation vs. Ambient Temperature**

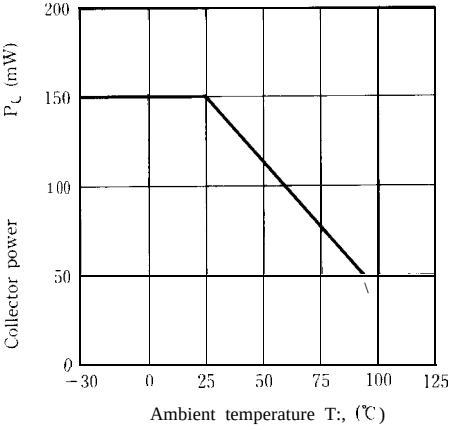



**Fig. 4 Total Power Dissipation vs. Ambient Temperature**

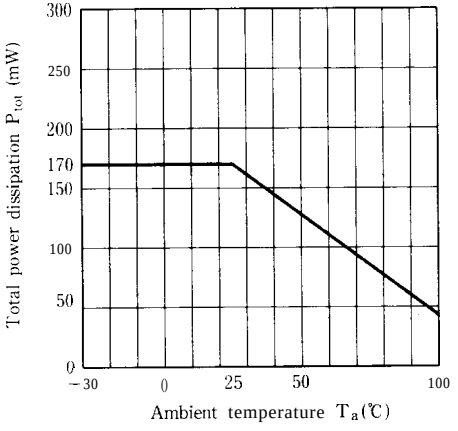



**Fig. 5 Peak Forward Current vs. Duty Ratio**

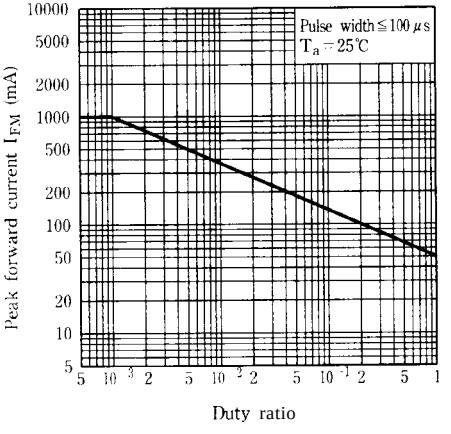
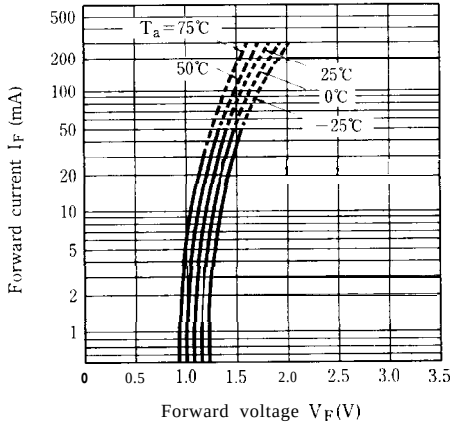



Fig. 6 Forward **Current vs. Forward Voltage**




6

Photocouplers

**Fig. 7 Current Transfer Ratio vs. Forward Current**

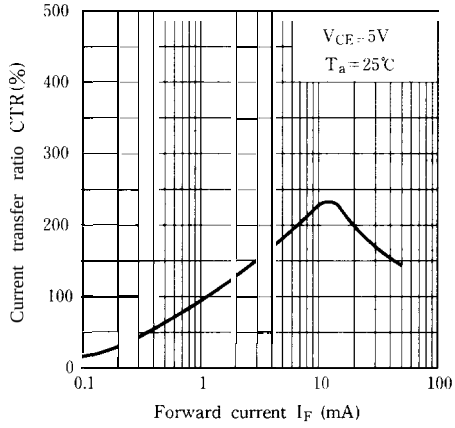



**Fig. 8 Collector Current vs. Collector emitter Voltage**

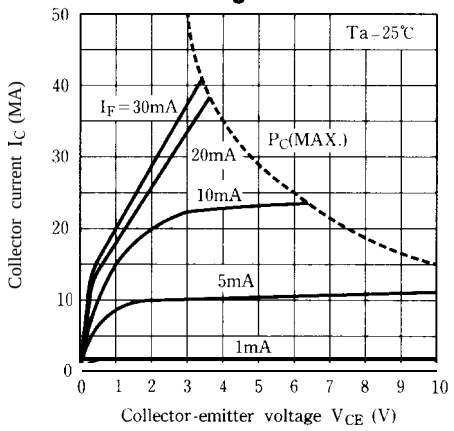



**Fig. 9 Relative Current Transfer Ratio vs. Ambient Temperature**

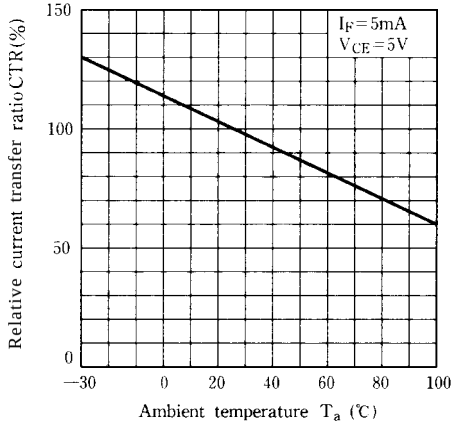



**Fig.10 Collector-emitter Saturation Voltage vs. Ambient Temperature**

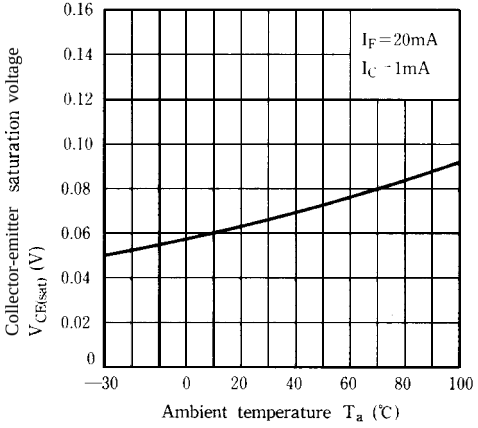



**Fig.11 Collector Dark Current vs. Ambient Temperature**

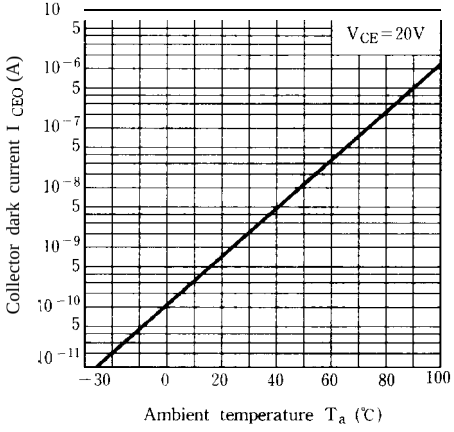
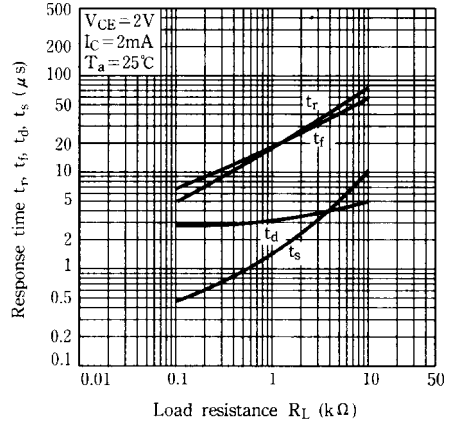



**Fig.12 Response Time vs. Load Resistance**



**Test Circuit For Response Time**

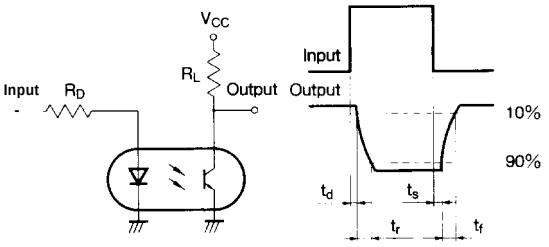
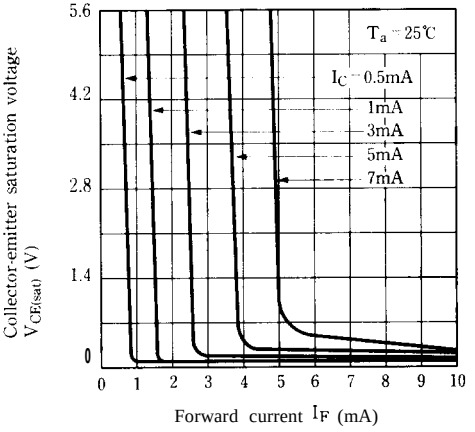
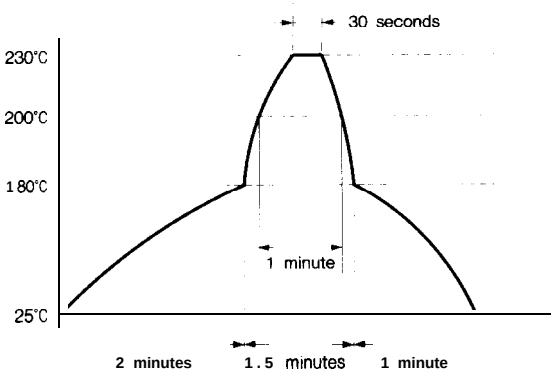



**Fig.13 Collector-emitter Saturation Voltage vs. Forward Current**




## ■ Temperature **Profile of Soldering** Reflow




(1) One time soldering reflow is recommended within the condition of temperature and time profile shown below.

(2) When using another soldering method such as infrared ray lamp, the temperature may rise partially in the mold of the device. Keep the temperature on the package of the device within the condition of above (l).

. Please refer to the chapter "Precautions for Use" .(Page 78 to 93)