

# PC450T11 Datasheet

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|                              |  |
|------------------------------|--|
| DiGi Electronics Part Number | PC450T11-DG  |
| Manufacturer                 | <a href="#">Sharp Microelectronics</a>                   |
| Manufacturer Product Number  | PC450T11   |
| Description                  | OPTOISOLATOR 3.75KV TRANS 4SMD                           |
| Detailed Description         | Optoisolator Transistor Output 3750Vrms 1 Channel 14-SMD |

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## Purchase and inquiry

Manufacturer Product Number:

PC450T11

Series:

-

Number of Channels:

1

Current Transfer Ratio (Min):

1500% @ 5mA

Turn On / Turn Off Time (Typ):

-

Input Type:

DC

Voltage - Output (Max):

40V

Voltage - Forward (Vf) (Typ):

1.2V

Vce Saturation (Max):

500mV

Mounting Type:

Surface Mount

Supplier Device Package:

4-SMD

Manufacturer:

Sharp Microelectronics

Product Status:

Obsolete

Voltage - Isolation:

3750Vrms

Current Transfer Ratio (Max):

-

Rise / Fall Time (Typ):

50µs, 30µs

Output Type:

Transistor

Current - Output / Channel:

150mA

Current - DC Forward (If) (Max):

50 mA

Operating Temperature:

-30°C ~ 100°C

Package / Case:

4-SMD, Gull Wing

## Environmental & Export classification

RoHS Status:

RoHS non-compliant

ECCN:

EAR99

Moisture Sensitivity Level (MSL):

1 (Unlimited)

HTSUS:

8541.49.8000

# PC450T11

## Photocoupler with Built-in Breakdown Diode for Surge Voltage Absorption

### ■ Features

1. Built-in breakdown diode for absorption of surge voltage
2. High current transfer ratio  
(CTR: MIN. 1500% at  $I_F = 5\text{mA}$ )
3. Mini-flat package
4. Applicable to soldering reflow
5. Available tape-packaged products

### ■ Applications

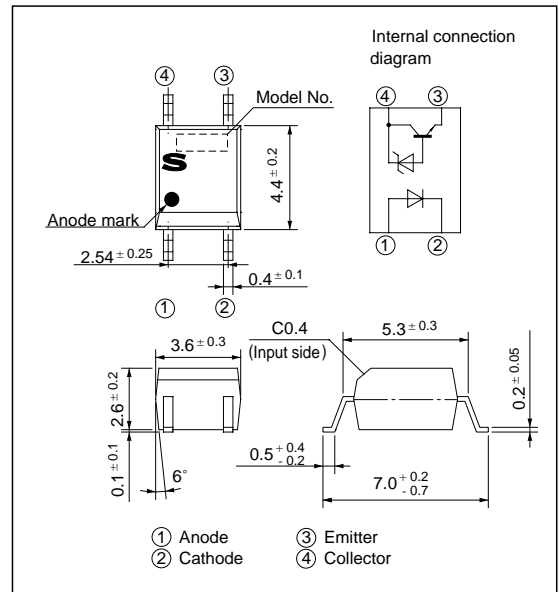
1. Programmable controllers

### ■ Package Specifications

| Model No. | Package Specification           |
|-----------|---------------------------------|
| PC450T11  | Taping diameter 178mm(750pcs. ) |

### ■ Outline Dimensions

( Unit : mm )



### ■ Absolute Maximum Ratings

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

| Parameter                |                             | Symbol    | Rating        | Unit              |
|--------------------------|-----------------------------|-----------|---------------|-------------------|
| Input                    | Forward current             | $I_F$     | 50            | mA                |
|                          | *1 Peak forward current     | $I_{FM}$  | 1             | A                 |
|                          | Reverse voltage             | $V_R$     | 6             | V                 |
|                          | Power dissipation           | $P$       | 70            | mW                |
| Output                   | Emitter-collector voltage   | $V_{ECO}$ | 6             | V                 |
|                          | *2 Surge endurance          | $E_{sj}$  | 20            | mJ                |
|                          | Collector current           | $I_C$     | 150           | mA                |
|                          | Collector power dissipation | $P_C$     | 150           | mW                |
|                          | Total power dissipation     | $P_{tot}$ | 170           | mW                |
| *3 Isolation voltage     |                             | $V_{iso}$ | 3.75          | kV <sub>rms</sub> |
| Operating temperature    |                             | $T_{opr}$ | - 30 to + 100 | °C                |
| Storage temperature      |                             | $T_{stg}$ | - 40 to + 125 | °C                |
| *4 Soldering temperature |                             | $T_{sol}$ | 260           | °C                |

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

\*2  $E_{sj} = 40\text{V} (V_{CEO}) \times 100\text{mA} (I_C) \times 10\text{ms} \times 1/2$

\*3 AC for 1 min., 40 to 60% RH,  $f = 60\text{Hz}$

\*4 For 10 seconds

## Electro-optical Characteristics

(T<sub>a</sub> = 25°C)

| Parameter                |                                      | Symbol               | Conditions                                      | MIN.                                       | TYP.             | MAX. | Unit |    |
|--------------------------|--------------------------------------|----------------------|---|--|------------------|------|------|----|
| Input                    | Forward voltage                      | V <sub>F</sub>       | I <sub>F</sub> = 20mA                           | -  | 1.2              | 1.4  | V    |    |
|                          | Reverse current                      | I <sub>R</sub>       | V <sub>R</sub> = 4V                             | -  | -                | 10   | μA   |    |
|                          | Terminal capacitance                 | C <sub>t</sub>       | V = 0, f = 1kHz                                 | -  | 30               | 250  | pF   |    |
| Output                   | Collector dark current               | I <sub>CEO</sub>     | V <sub>CE</sub> = 20V, I <sub>F</sub> = 0       | -  | -                | 5    | μA   |    |
|                          | Collector-emitter breakdown voltage  | BV <sub>CEO</sub>    | I <sub>F</sub> = 0<br>I <sub>C</sub> = 0.1mA    | 40   | -                | 60   | V    |    |
|                          | Emitter-collector breakdown voltage  | BV <sub>ECO</sub>    | I <sub>E</sub> = 10 μA, I <sub>F</sub> = 0      | 6  | -                | -    | V    |    |
|                          | Collector current                    | I <sub>C</sub>       | V <sub>CE</sub> = 2V, I <sub>F</sub> = 5mA      | 75   | -                | -    | mA   |    |
| Transfer characteristics | Collector-emitter saturation voltage | V <sub>CE(sat)</sub> | I <sub>F</sub> = 10mA<br>I <sub>C</sub> = 100mA | -  | -                | 0.5  | V    |    |
|                          | Isolation resistance                 | R <sub>ISO</sub>     | DC500V, 40 to 60% RH                            | 5 × 10 <sup>10</sup>                       | 10 <sup>11</sup> | -    | Ω    |    |
|                          | Floating capacitance                 | C <sub>f</sub>       | V = 0, f = 1MHz                                 | -  | 0.6              | 1.0  | pF   |    |
|                          | Response time                        | Rise time            | t <sub>r</sub>                                  | V <sub>CE</sub> = 2V, I <sub>C</sub> = 2mA | -                | 50   | -    | μs |
|                          |                                      | Fall time            | t <sub>f</sub>                                  | R <sub>L</sub> = 100Ω                      | -                | 30   | -    | μs |

Fig. 1 Forward Current vs. Ambient Temperature

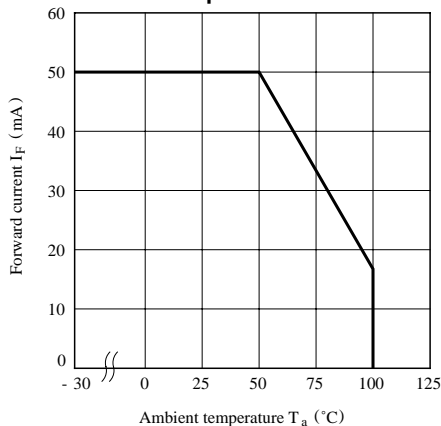
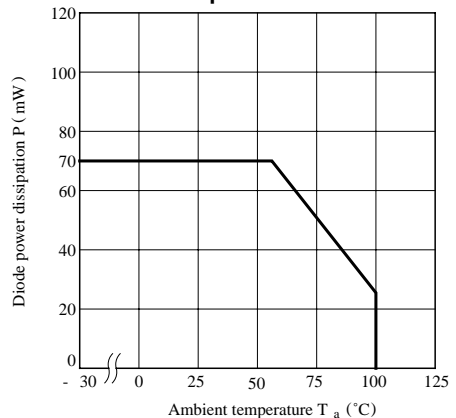
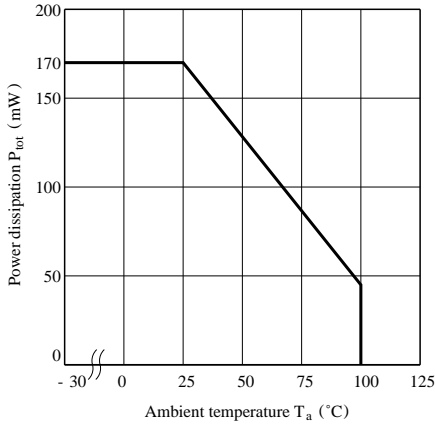


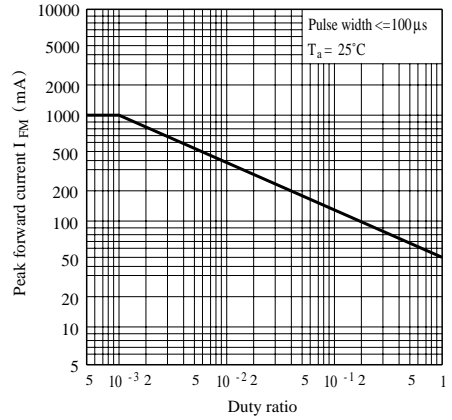
Fig. 2 Diode Power Dissipation vs. Ambient Temperature



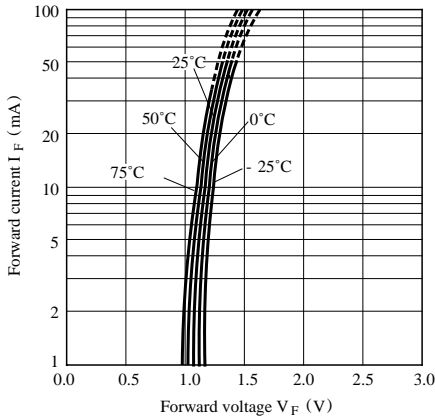
**Fig. 3 Power Dissipation vs. Ambient Temperature**



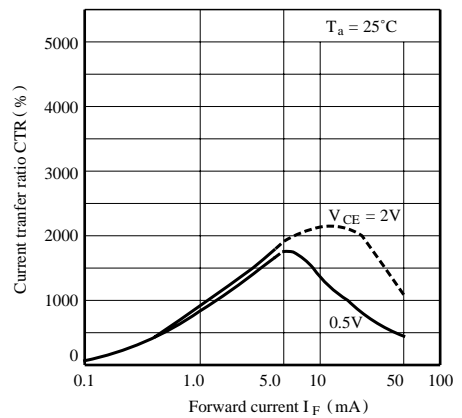
**Fig. 4 Peak Forward Current vs. Duty Ratio**



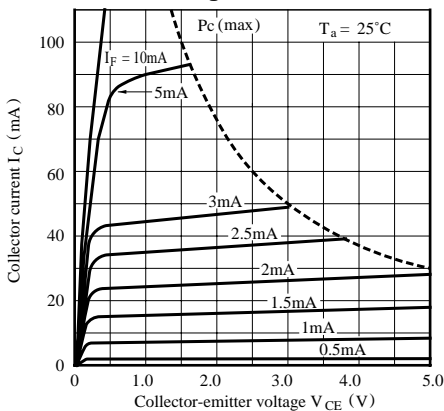
**Fig. 5 Forward Current vs. Forward Voltage**



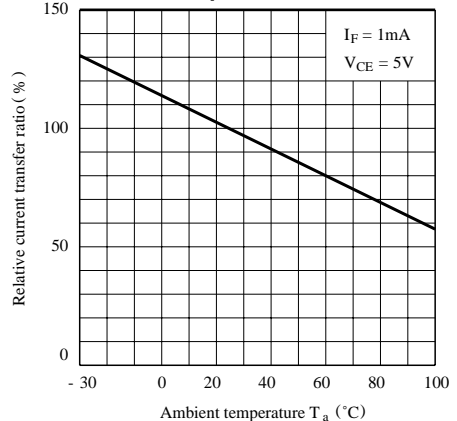
**Fig. 6 Current Transfer Ratio vs. Forward Current**



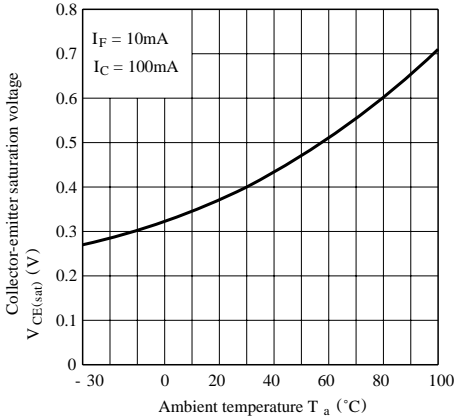
**Fig. 7 Collector Current vs. Collector-emitter Voltage**



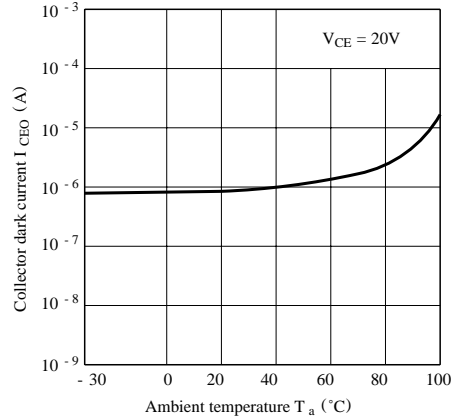
**Fig. 8 Relative Current Transfer Ratio vs. Ambient Temperature**



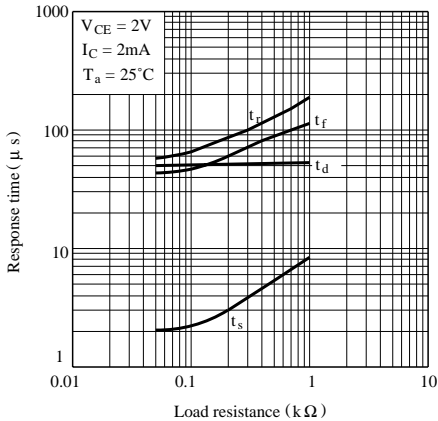
**Fig.9 Collector-emitter Saturation Voltage vs. Ambient Temperature**



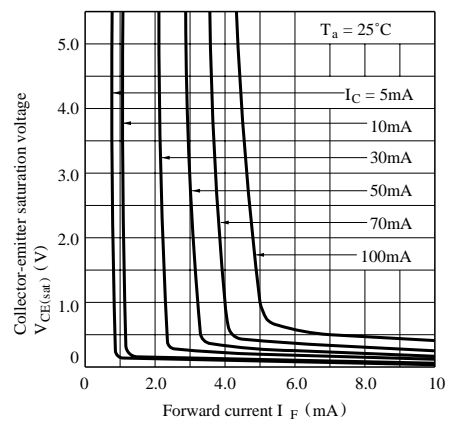
**Fig.10 Collector Dark Current vs. Ambient Temperature**



**Fig.11 Response Time vs. Load Resistance**



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



●Please refer to the chapter “Precautions for Use.”

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