

PC3H7/PC3Q67Q

Mini-flat Package, General Purpose Half Pitch Photocoupler

■ Features

1. Mini-flat package
2. Half pitch type (lead pitch : 1.27mm)
3. Isolation voltage (Viso : 2 500Vrms)
4. Applicable to infrared ray reflow (230°C, for MAX. 30s)
5. High reliability
6. Taping package **PC3H7** (1ch) **PC3Q67Q** (4ch)
7. Recognized by UL, file No. E64380
Approved by VDE, No.5922UG

■ Applications

1. Programmable controllers

■ Package Specifications

| Model No. | Taping specifications |
|----------------|--|
| PC3H7 | Taping reel diameter 330mm (3 000pcs.) |
| PC3Q67Q | Taping reel diameter 330mm (1 000pcs.) |

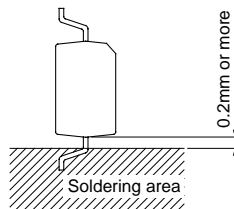
■ Absolute Maximum Ratings (Ta=25°C)

| | Parameter | Symbol | Rating | Unit |
|--------|-----------------------------|--------|-------------|-------|
| Input | Forward current | IF | 50 | mA |
| | *1Peak forward current | IFM | 1 | A |
| | Reverse voltage | VR | 6 | V |
| Output | Power dissipation | P | 70 | mW |
| | Collector-emitter voltage | VCE0 | 70 | V |
| | PC3H7 | VCE0 | 35 | V |
| | PC3Q67Q | VCE0 | 35 | V |
| | Emitter-collector voltage | VECO | 6 | V |
| | Collector current | IC | 50 | mA |
| | Collector power dissipation | PC | 150 | mW |
| | Total power dissipation | Ptot | 170 | mW |
| | *2Isolation voltage | Viso | 2.5 | kVrms |
| | Operating temperature | Topr | -30 to +100 | °C |
| | Storage temperature | Tstg | -40 to +125 | °C |
| | *3Soldering temperature | Tsol | 260 | °C |

*1 Pulse width<=100μs, Duty ratio : 0.001

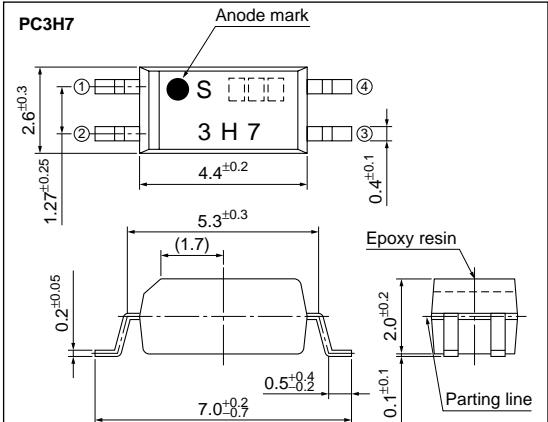
*2 AC for 1min, 40 to 60%RH, f=60Hz

*3 For 10s



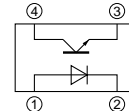
■ Outline Dimensions

(Unit : mm)



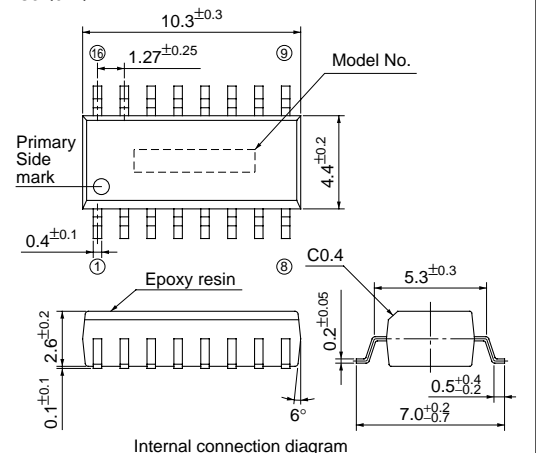
※ () : Reference dimensions

Internal connection diagram

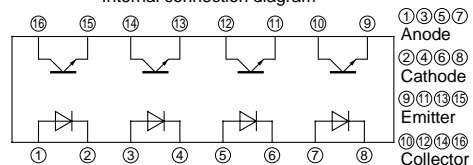


- ① Anode
- ② Cathode
- ③ Emitter
- ④ Collector

PC3Q67Q



Internal connection diagram



- ①③⑤⑦ Anode
- ②④⑥⑧ Cathode
- ⑨⑪⑬⑮ Emitter
- ⑩⑫⑭⑯ Collector

Electro-optical Characteristics

(T_a=25°C)

| Parameter | | Symbol | Conditions | MIN. | TYP. | MAX. | Unit | |
|--------------------------|--------------------------------------|----------------------|---|--|--------------------|------|------|----|
| Input | Forward voltage | V _F | I _F =20mA | – | 1.2 | 1.4 | V | |
| | Reverse current | I _R | V _R =4V | – | – | 10 | μA | |
| | Terminal capacitance | C _t | V=0, f=1kHz | – | 30 | 250 | pF | |
| Output | Collector dark current | PC3H7 | I _{CEO} | V _{CE} =50V, I _F =0 | – | – | 100 | nA |
| | | PC3Q67Q | I _{CEO} | V _{CE} =20V, I _F =0 | – | – | 100 | nA |
| | Collector-emitter breakdown voltage | PC3H7 | BV _{CEO} | I _C =0.1mA, I _F =0 | 70 | – | – | V |
| | | PC3Q67Q | BV _{CEO} | I _C =0.1mA, I _F =0 | 35 | – | – | V |
| | Emitter-collector breakdown voltage | BV _{ECO} | I _E =10μA, I _F =0 | 6 | – | – | V | |
| Transfer characteristics | Collector current | PC3H7 | I _C | I _F =1mA, V _{CE} =5V | 0.2 | – | 4 | mA |
| | | PC3Q67Q | I _C | I _F =5mA, V _{CE} =5V | 2.5 | 5 | 30 | mA |
| | 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 | 5×10 ¹⁰ | 1×10 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 R _L =100Ω | – | 4 | 18 | μs |
| Fall time | | t _f | | – | 3 | 18 | μs | |

Fig.1 Forward Current vs. Ambient Temperature

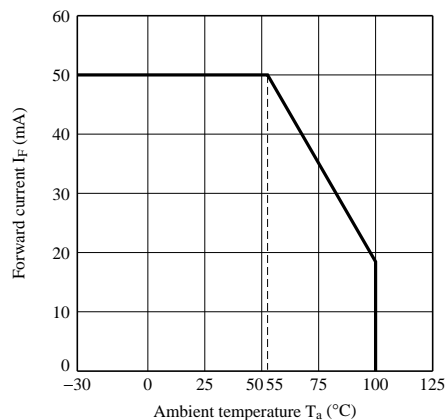


Fig.2 Diode Power Dissipation vs. Ambient Temperature

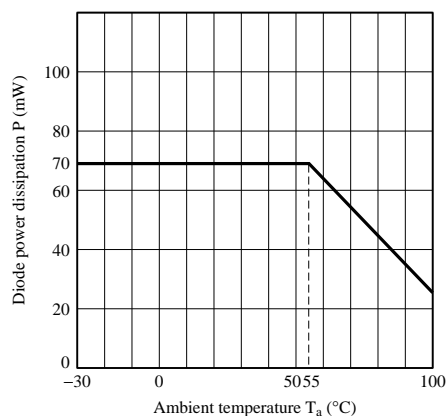


Fig.3 Collector Power Dissipation vs. Ambient Temperature

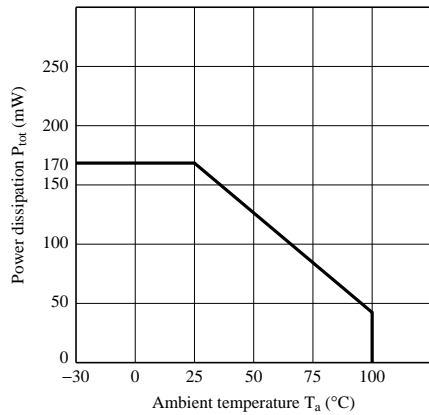


Fig.4 Total Power Dissipation vs. Ambient Temperature

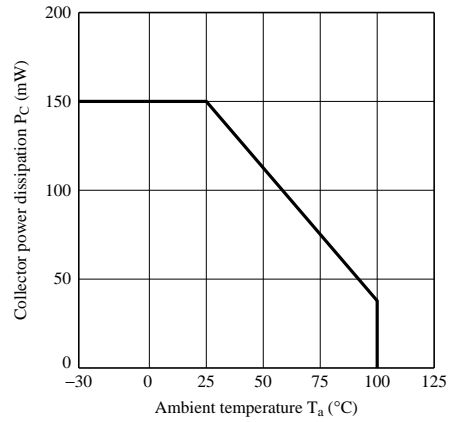


Fig.5 Peak Forward Current vs. Duty Ratio

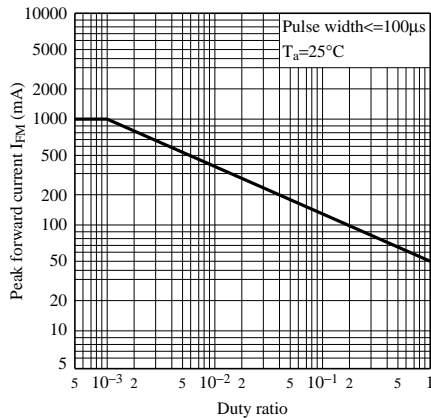


Fig.6 Forward Current vs. Forward Voltage

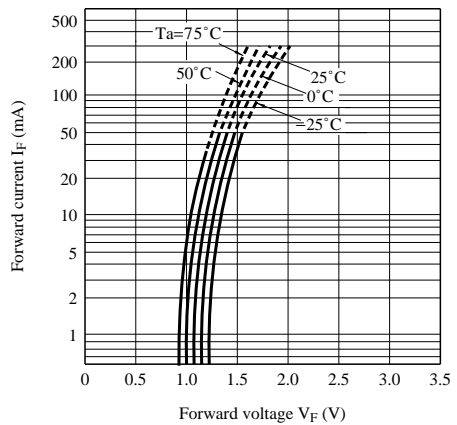


Fig.7 Current Transfer Ratio vs. Forward Current

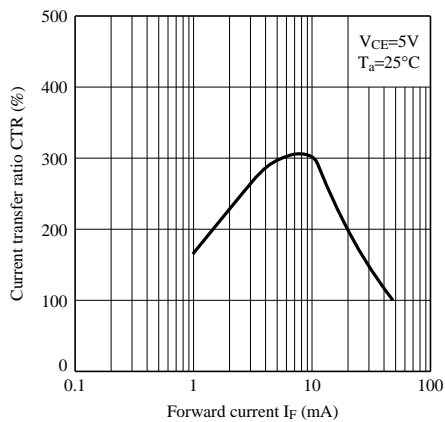


Fig.8 Collector Current vs. Collector-emitter Voltage

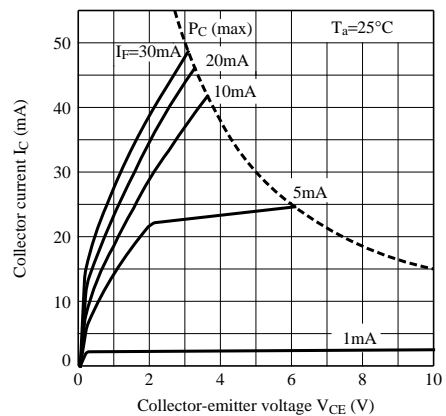


Fig.9 Relative Current Transfer Ratio vs. Ambient Temperature

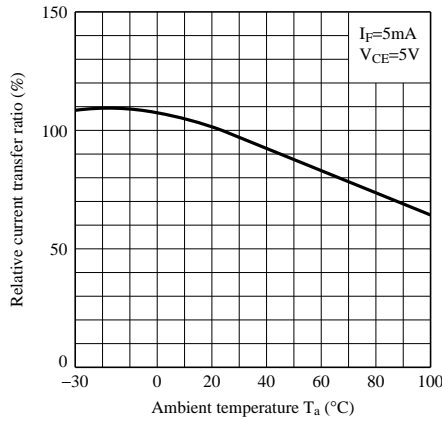


Fig.10 Collector-emitter Saturation Voltage vs. Ambient Temperature

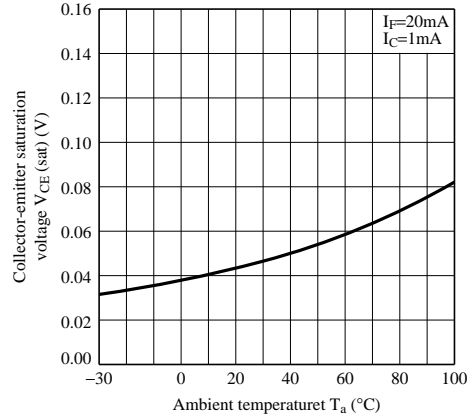


Fig.11 Collector Dark Current vs. Ambient Temperature

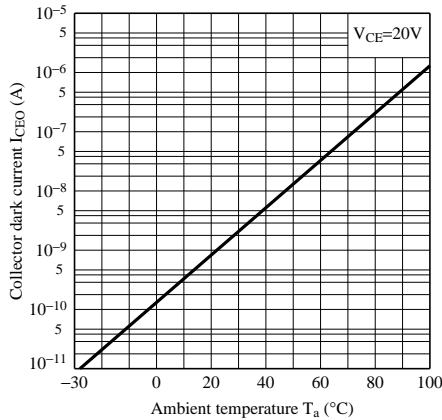


Fig.12 Response Time vs. Load Resistance

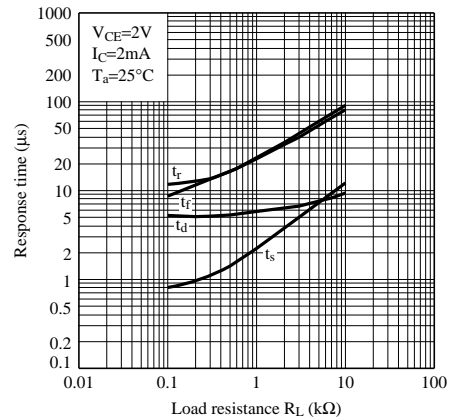


Fig.13 Test Circuit for Response Time

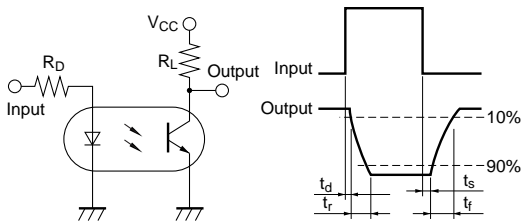


Fig.14 Collector-emitter Saturation Voltage vs. Forward Current

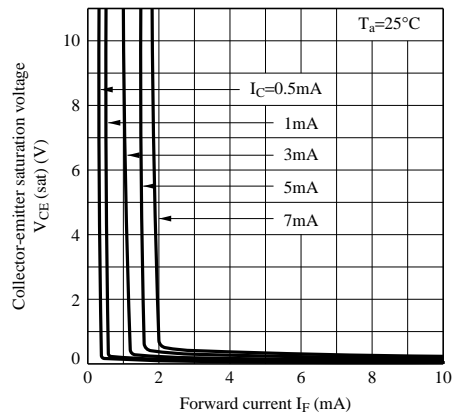
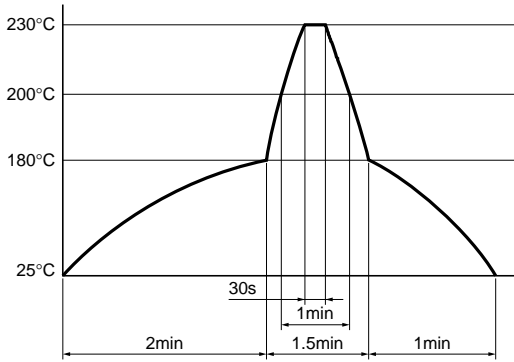


Fig.15 Reflow Soldering

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



■ Precautions for Use

Please refer to the chapter "Precautions for Use".