# PC3H7/PC3Q67Q

## Mini-falt 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

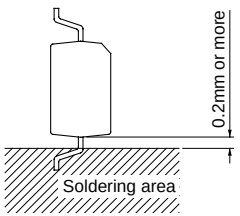
### ■ Package Specifications

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

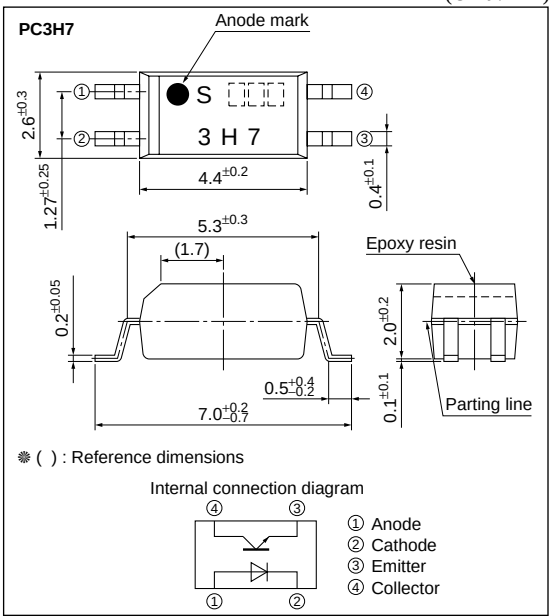
### ■ Absolute Maximum Ratings (Ta=25˚C)

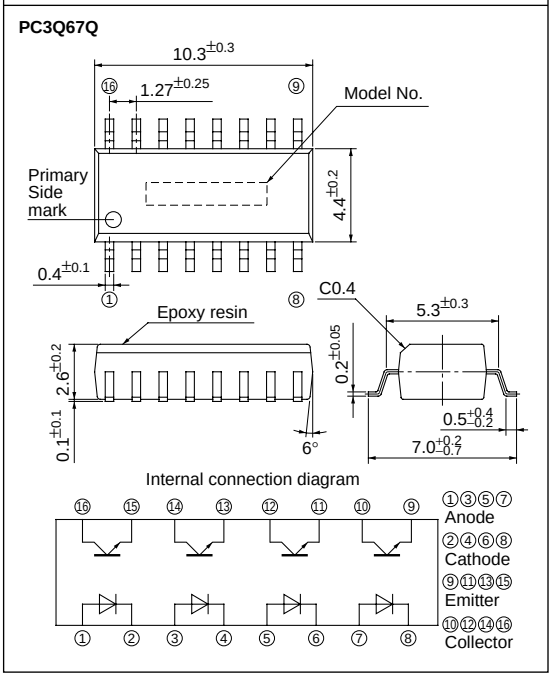
| | Parameter | | Symbol | Rating | Unit |
|---|---|---|---|---|---|
| Input | Forward current | | $I_F$ | 50 | mA |
| | *1Peak forward current | | $I_{FM}$ | 1 | A |
| | Reverse voltage | | $V_R$ | 6 | V |
| | Power dissipation | | P | 70 | mW |
| Output | Collector-emitter voltage | **PC3H7** | $V_{CEO}$ | 70 | V |
| | | **PC3Q67Q** | $V_{CEO}$ | 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 |
| | *2Isolation voltage | | $V_{iso}$ | 2.5 | $kV_{rms}$ |
| | Operating temperature | | $T_{opr}$ | −30 to +100 | ˚C |
| | Storage temperature | | $T_{stg}$ | −40 to +125 | ˚C |
| | *3Soldering temperature | | $T_{sol}$ | 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)



## ■ 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 |
| | 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<br>$I_C$=1mA | – | 0.1 | 0.2 | V |
| | Isolation resistance | | $R_{ISO}$ | DC500V<br>40 to 60%RH | $5\times10^{10}$ | $1\times10^{11}$ | – | Ω |
| | Floating capacitance | | $C_f$ | V=0, f=1MHz | – | 0.6 | 1.0 | pF |
| | Response time | Rise time | $t_r$ | $V_{CE}$=2V<br>$I_C$=2mA<br>$R_L$=100Ω | – | 4 | 18 | μs |
| | | Fall time | $t_f$ | | – | 3 | 18 | μs |

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

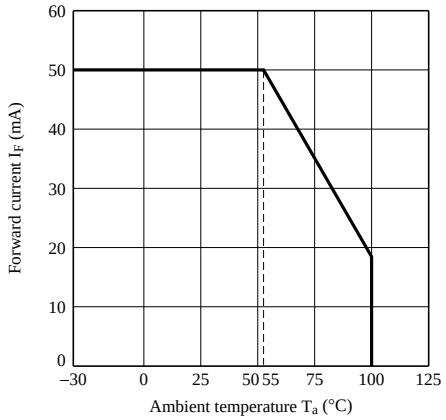
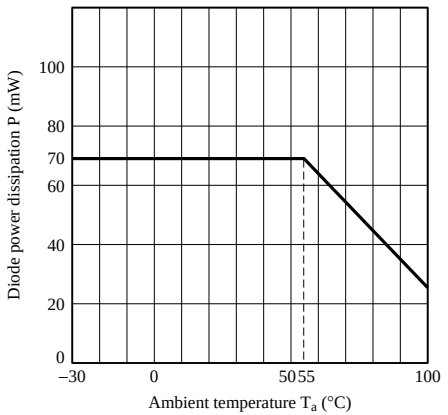
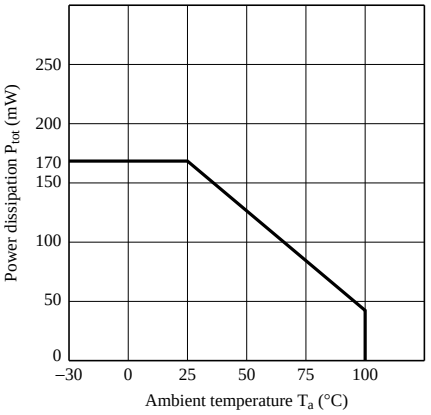


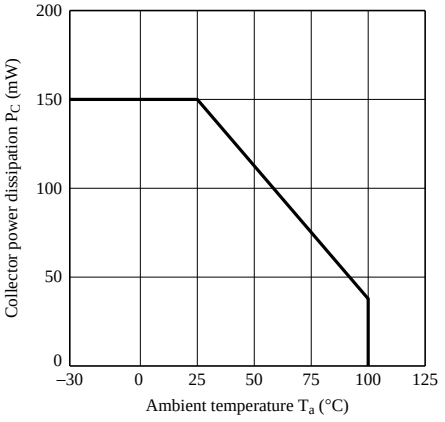

**Fig.2 Diode Power Dissipation vs. Ambient Temperature**



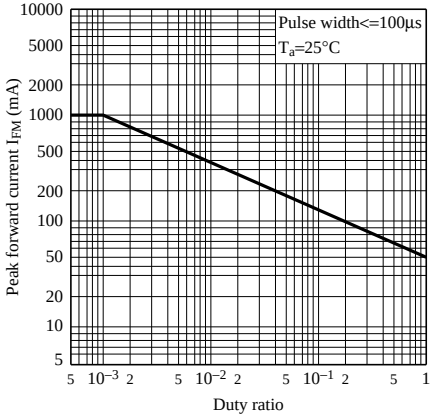
## Fig.3 Collector Power Dissipation vs. Ambient Temperature



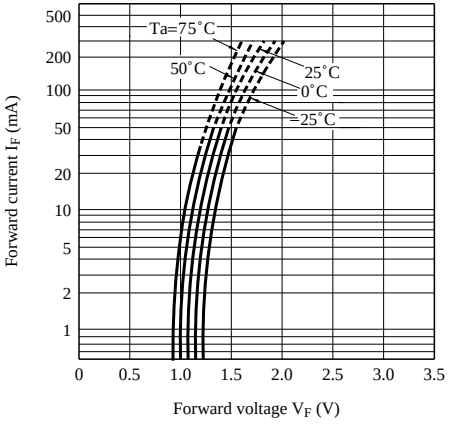

## Fig.4 Total Power Dissipation vs. Ambient Temperature



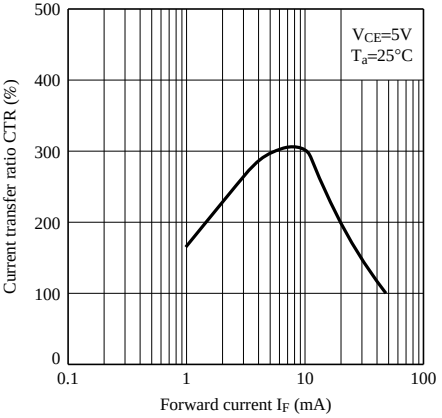

## Fig.5 Peak Forward Current vs. Duty Ratio



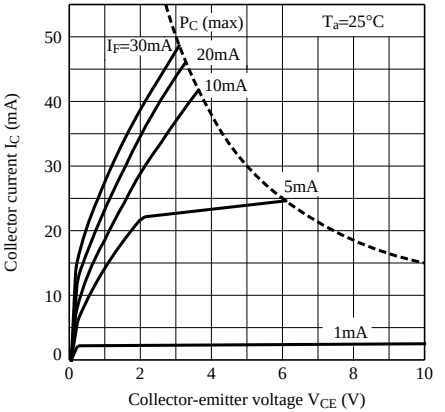

## Fig.6 Forward Current vs. Forward Voltage



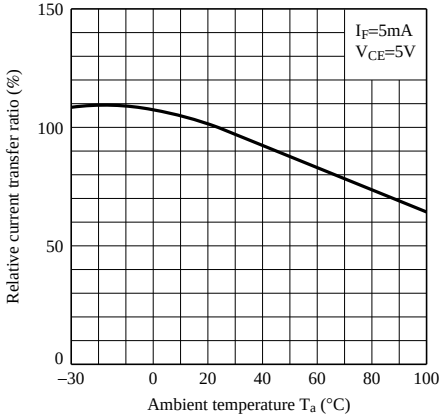

## Fig.7 Current Transfer Ratio vs. Forward Current



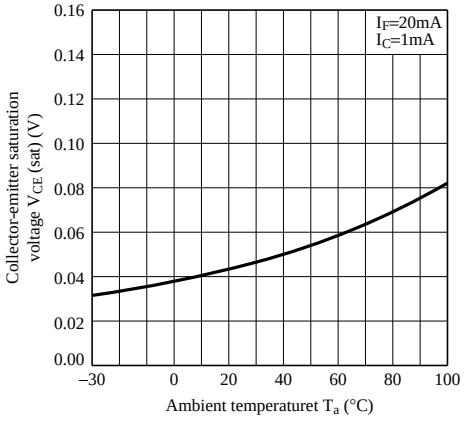

## Fig.8 Collector Current vs. Collector-emitter Voltage



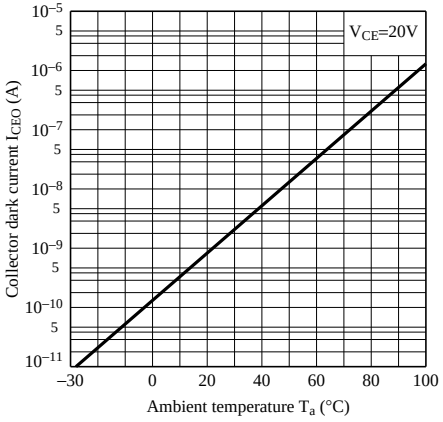
## Fig.9 Relative Current Transfer Ratio vs. Ambient Temperature



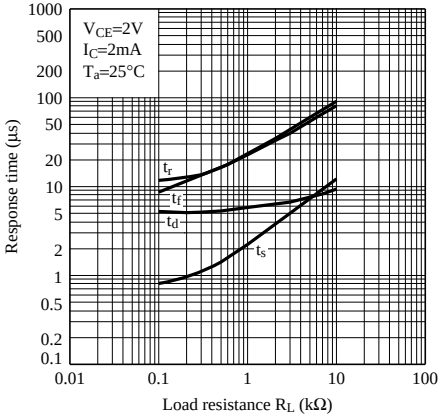

## Fig.10 Collector-emitter Saturation Voltage vs. Ambient Temperature



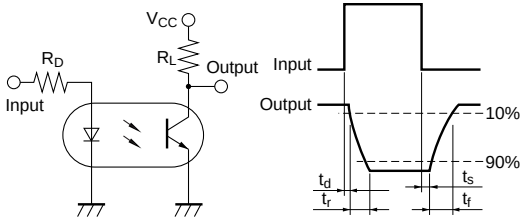

## Fig.11 Collector Dark Current vs. Ambient Temperature



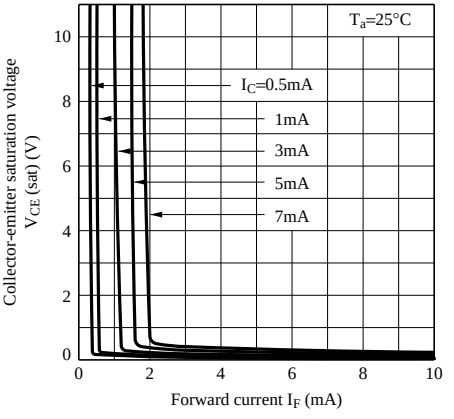

## Fig.12 Response Time vs. Load Resistance




## Fig.13 Test Circuit for Response Time

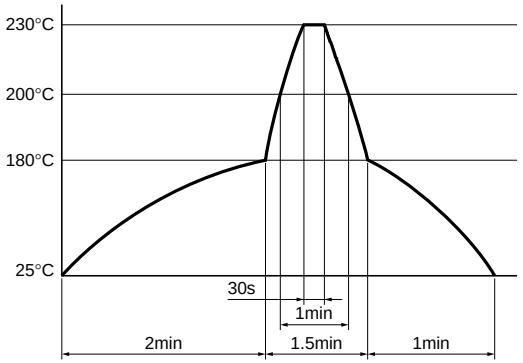



## Fig.14 Collector-emitter Saturation Voltage vs. Forward Current



## 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".

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