

# 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
<b>PC3H7</b>	Taping reel diameter 330mm (3 000pcs.)
<b>PC3Q67Q</b>	Taping reel diameter 330mm (1 000pcs.)

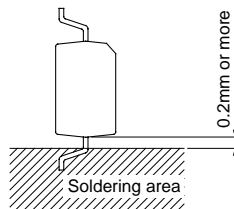
### ■ Absolute Maximum Ratings (Ta=25°C)

	Parameter	Symbol	Rating	Unit
Input	Forward current	$I_F$	50	mA
	*1Peak forward current	$I_{FM}$	1	A
	Reverse voltage	$V_R$	6	V
Output	Power dissipation	P	70	mW
	Collector-emitter voltage	$V_{CEO}$	70	V
	<b>PC3H7</b>	$V_{CEO}$	35	V
	<b>PC3Q67Q</b>	$V_{ECO}$	6	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 <sub>rms</sub>
	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

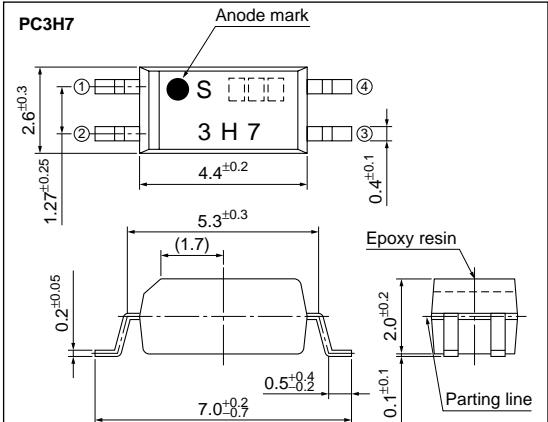
\*2 AC for 1min, 40 to 60%RH, f=60Hz

\*3 For 10s



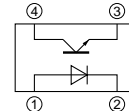
### ■ Outline Dimensions

(Unit : mm)



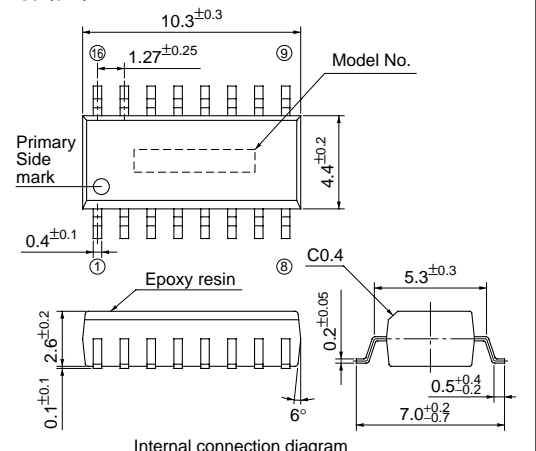
※ ( ) : Reference dimensions

Internal connection diagram

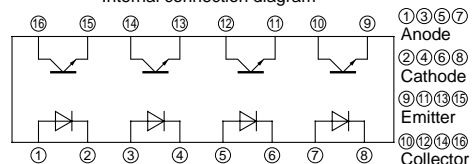


- ① Anode
- ② Cathode
- ③ Emitter
- ④ Collector

### PC3Q67Q



Internal connection diagram



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

## Electro-optical Characteristics

(T<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	PC3H7	I <sub>CEO</sub>	V <sub>CE</sub> =50V, I <sub>F</sub> =0	–	–	100	nA
		PC3Q67Q	I <sub>CEO</sub>	V <sub>CE</sub> =20V, I <sub>F</sub> =0	–	–	100	nA
	Collector-emitter breakdown voltage	PC3H7	BV <sub>CEO</sub>	I <sub>C</sub> =0.1mA, I <sub>F</sub> =0	70	–	–	V
		PC3Q67Q	BV <sub>CEO</sub>	I <sub>C</sub> =0.1mA, I <sub>F</sub> =0	35	–	–	V
	Emitter-collector breakdown voltage	BV <sub>ECO</sub>	I <sub>E</sub> =10μA, I <sub>F</sub> =0	6	–	–	V	
Transfer characteristics	Collector current	PC3H7	I <sub>C</sub>	I <sub>F</sub> =1mA, V <sub>CE</sub> =5V	0.2	–	4	mA
		PC3Q67Q	I <sub>C</sub>	I <sub>F</sub> =5mA, V <sub>CE</sub> =5V	2.5	5	30	mA
	Collector-emitter saturation voltage	V <sub>CE(sat)</sub>	I <sub>F</sub> =20mA I <sub>C</sub> =1mA	–	0.1	0.2	V	
	Isolation resistance	R <sub>ISO</sub>	DC500V 40 to 60%RH	5×10 <sup>10</sup>	1×10 <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 R <sub>L</sub> =100Ω	–	4	18	μs
Fall time		t <sub>f</sub>		–	3	18	μs	

Fig.1 Forward Current vs. Ambient Temperature

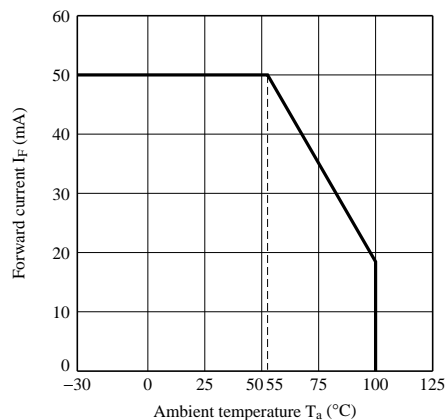
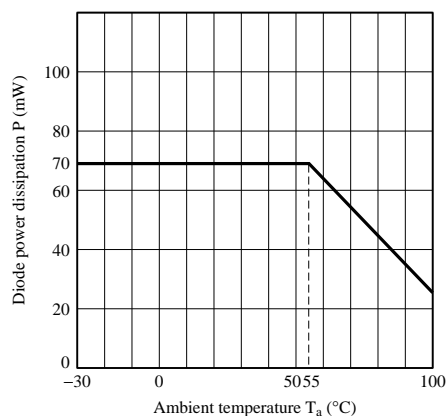
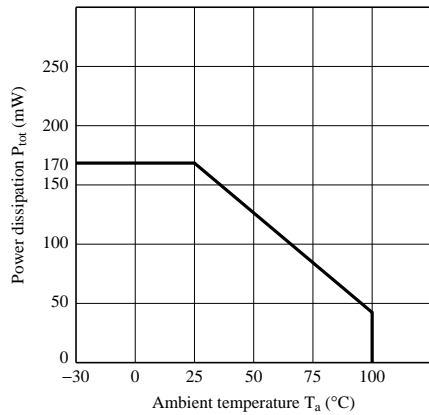


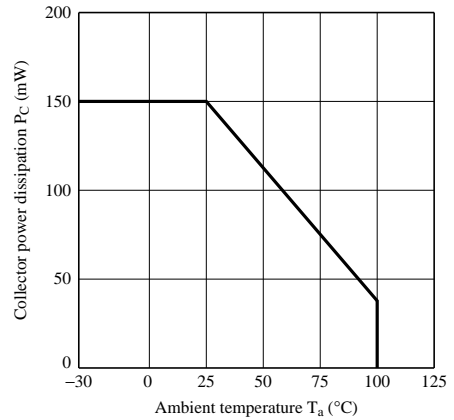
Fig.2 Diode Power Dissipation vs. Ambient Temperature



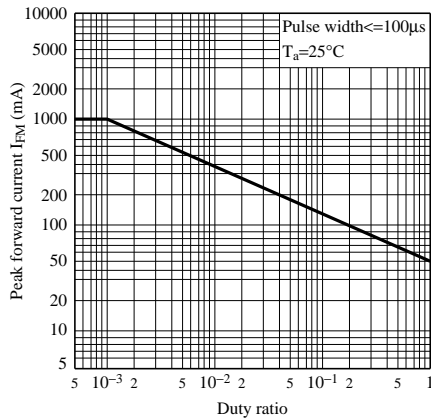
**Fig.3 Collector Power Dissipation vs. Ambient Temperature**



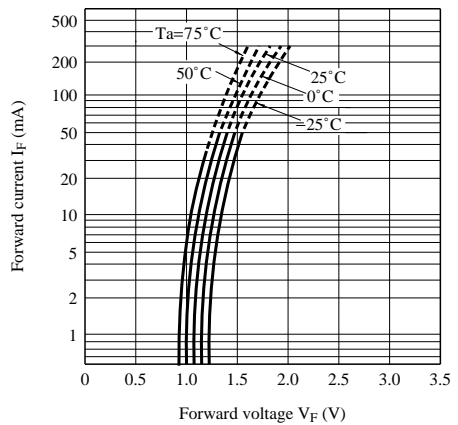
**Fig.4 Total Power Dissipation vs. Ambient Temperature**



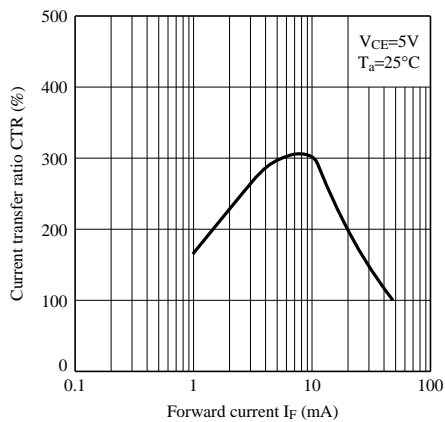
**Fig.5 Peak Forward Current vs. Duty Ratio**



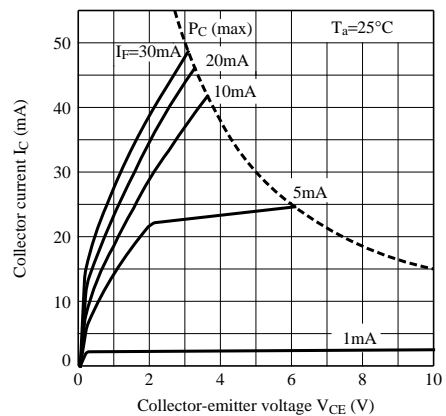
**Fig.6 Forward Current vs. Forward Voltage**



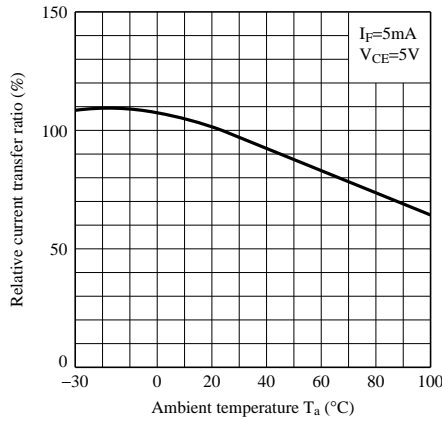
**Fig.7 Current Transfer Ratio vs. Forward Current**



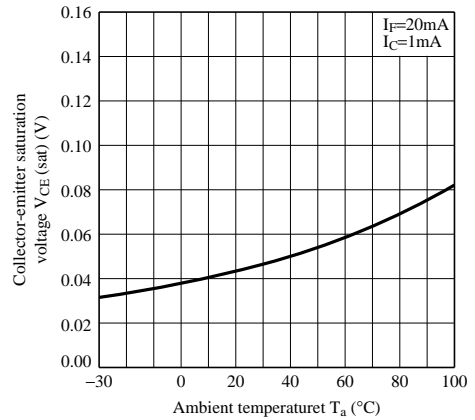
**Fig.8 Collector Current vs. Collector-emitter Voltage**



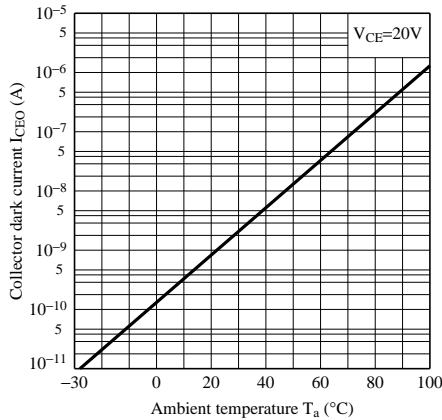
**Fig.9 Relative Current Transfer Ratio vs. Ambient Temperature**



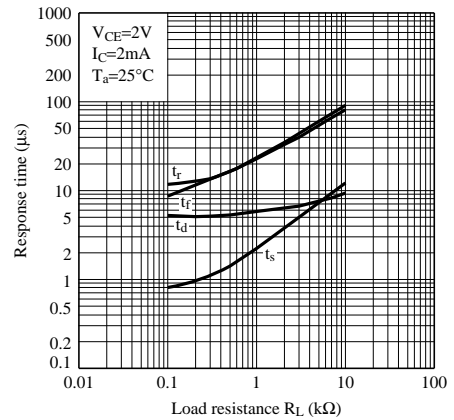
**Fig.10 Collector-emitter Saturation Voltage vs. Ambient Temperature**



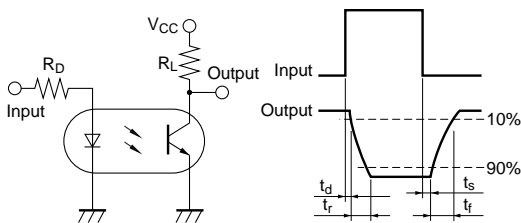
**Fig.11 Collector Dark Current vs. Ambient Temperature**



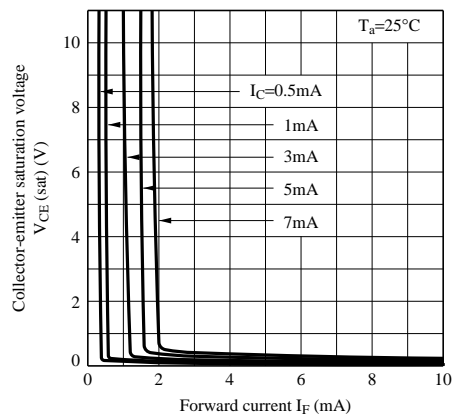
**Fig.12 Response Time vs. Load Resistance**



**Fig.13 Test Circuit for Response Time**

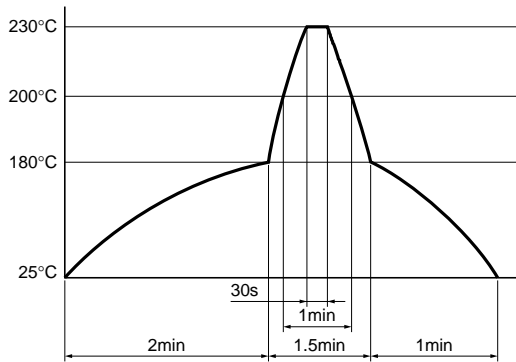


**Fig.14 Collector-emitter Saturation Voltage vs. Forward Current**



## 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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