

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.)

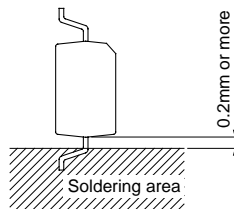
■ Absolute Maximum Ratings (Ta=25°C)

	Parameter	Symbol	Rating	Unit
Input	Forward current	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
	PC3H7	V_{CEO}	35	V
	PC3Q67Q	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 _{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

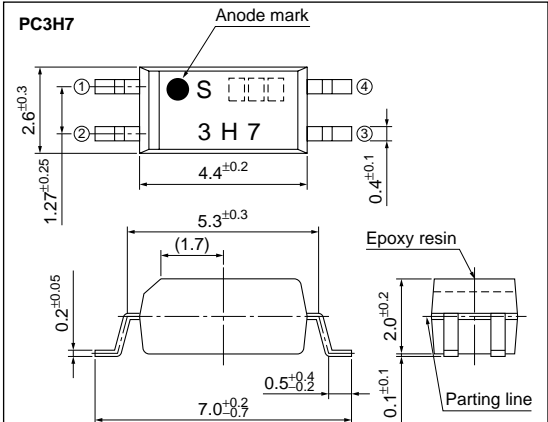
*2 AC for 1min, 40 to 60%RH, f=60Hz

*3 For 10s



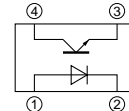
■ Outline Dimensions

(Unit : mm)



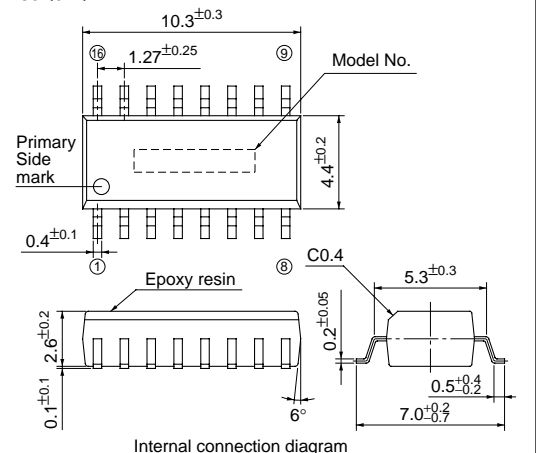
※ () : Reference dimensions

Internal connection diagram

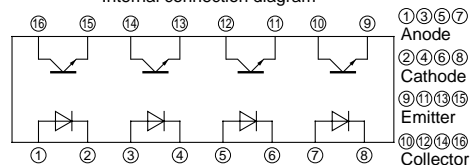


- ① Anode
- ② Cathode
- ③ Emitter
- ④ Collector

PC3Q67Q



Internal connection diagram



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

Electro-optical Characteristics

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

Parameter		Symbol	Conditions	MIN.	TYP.	MAX.	Unit	
Input	Forward voltage	V_F	$I_F=20\text{mA}$	–	1.2	1.4	V	
	Reverse current	I_R	$V_R=4\text{V}$	–	–	10	μA	
	Terminal capacitance	C_t	$V=0, f=1\text{kHz}$	–	30	250	pF	
Output	Collector dark current	PC3H7	I_{CEO}	$V_{CE}=50\text{V}, I_F=0$	–	–	100	nA
		PC3Q67Q	I_{CEO}	$V_{CE}=20\text{V}, I_F=0$	–	–	100	nA
	Collector-emitter breakdown voltage	PC3H7	BV_{CEO}	$I_C=0.1\text{mA}, I_F=0$	70	–	–	V
		PC3Q67Q	BV_{CEO}	$I_C=0.1\text{mA}, I_F=0$	35	–	–	V
	Emitter-collector breakdown voltage	BV_{ECO}		$I_E=10\mu\text{A}, I_F=0$	6	–	–	V
Transfer characteristics	Collector current	PC3H7	I_C	$I_F=1\text{mA}, V_{CE}=5\text{V}$	0.2	–	4	mA
		PC3Q67Q	I_C	$I_F=5\text{mA}, V_{CE}=5\text{V}$	2.5	5	30	mA
	Collector-emitter saturation voltage	$V_{CE(sat)}$		$I_F=20\text{mA}$ $I_C=1\text{mA}$	–	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		$V=0, f=1\text{MHz}$	–	0.6	1.0	pF
	Response time	Rise time	t_r		$V_{CE}=2\text{V}$ $I_C=2\text{mA}$ $R_L=100\Omega$	–	4	18
Fall time		t_f			–	3	18	μs

Fig.1 Forward Current vs. Ambient Temperature

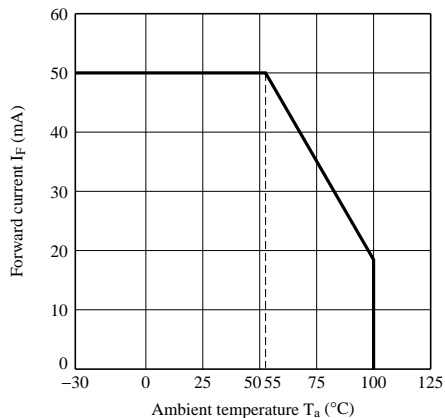


Fig.2 Diode Power Dissipation vs. Ambient Temperature

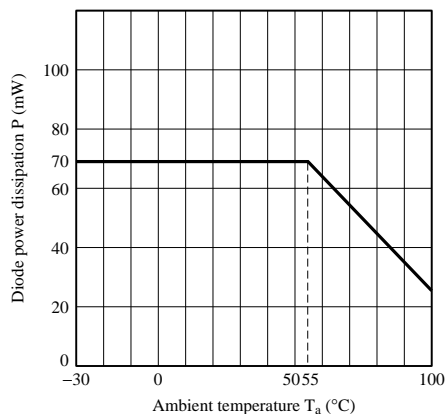


Fig.3 Collector Power Dissipation vs. Ambient Temperature

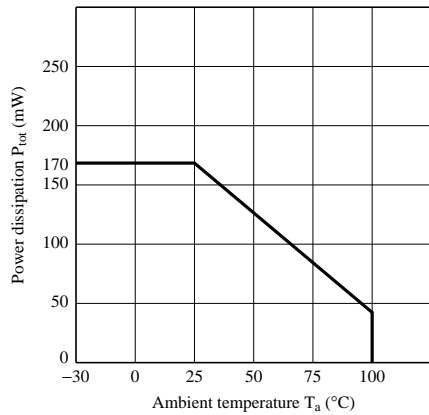


Fig.4 Total Power Dissipation vs. Ambient Temperature

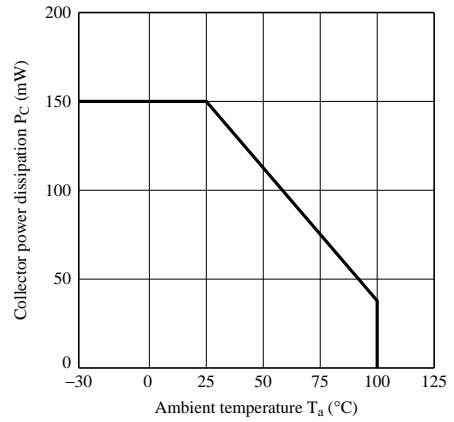


Fig.5 Peak Forward Current vs. Duty Ratio

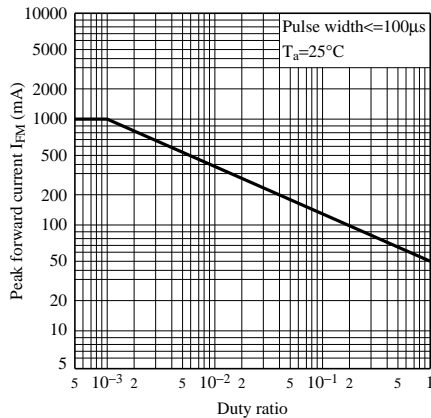


Fig.6 Forward Current vs. Forward Voltage

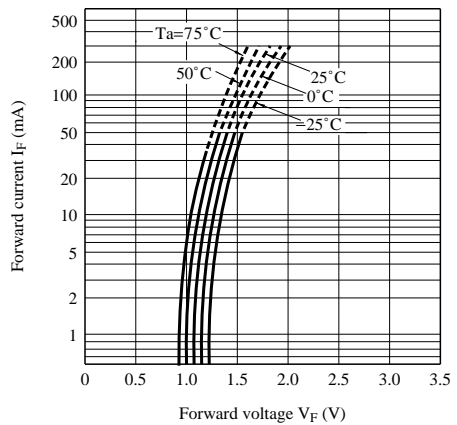


Fig.7 Current Transfer Ratio vs. Forward Current

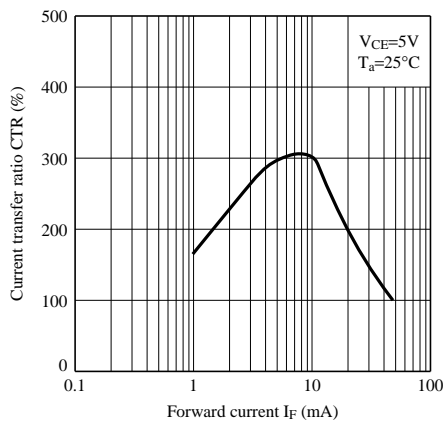


Fig.8 Collector Current vs. Collector-emitter Voltage

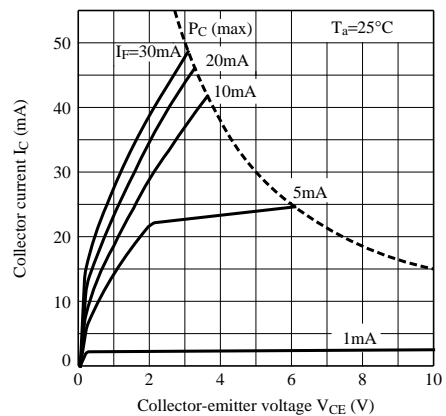


Fig.9 Relative Current Transfer Ratio vs. Ambient Temperature

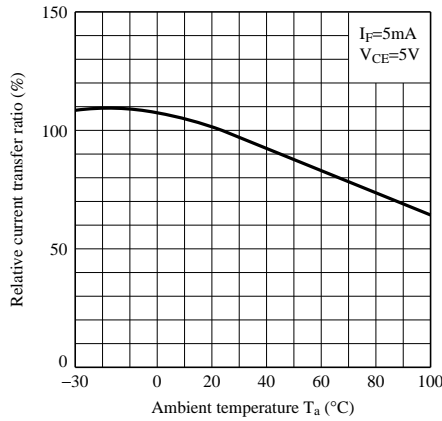


Fig.10 Collector-emitter Saturation Voltage vs. Ambient Temperature

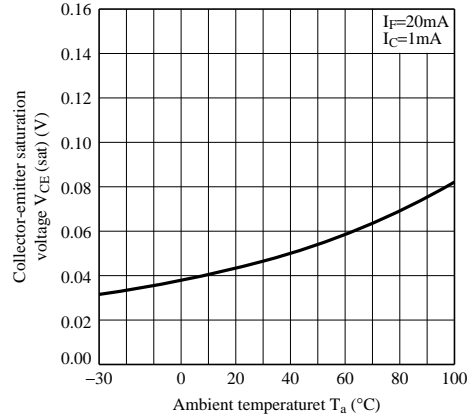


Fig.11 Collector Dark Current vs. Ambient Temperature

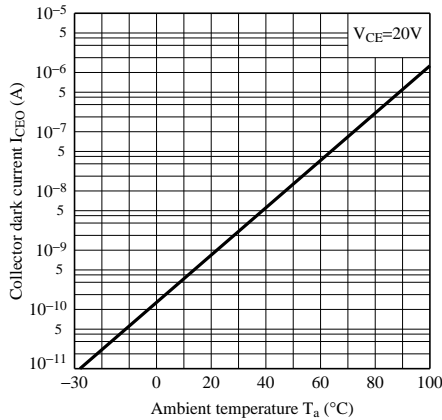


Fig.12 Response Time vs. Load Resistance

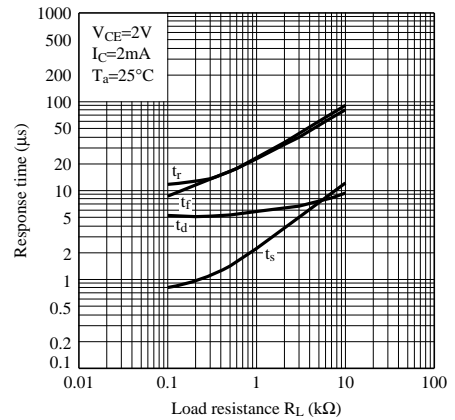


Fig.13 Test Circuit for Response Time

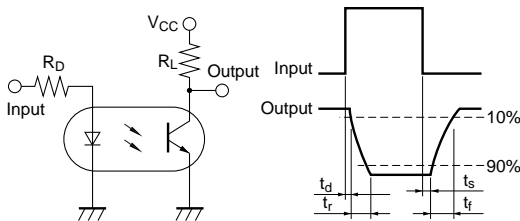


Fig.14 Collector-emitter Saturation Voltage vs. Forward Current

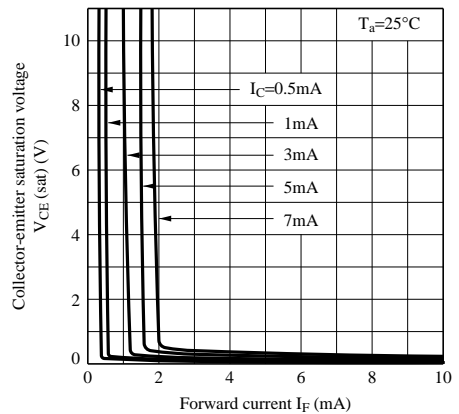
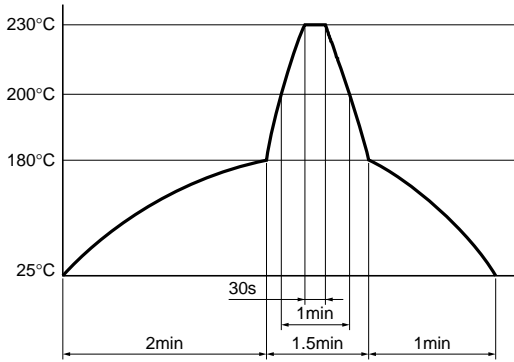


Fig.15 Reflow Soldering

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



■ Precautions for Use

Please refer to the chapter "Precautions for Use".