

PC3H71x NIP Series PC3Q71x NIP Series

■ Features

1. Low input current type ($I_F=0.5\text{mA}$)
2. High resistance to noise due to high common rejection voltage (CMR:MIN. $10\text{kV}/\mu\text{s}$)
3. Mini-flat package
4. Isolation voltage (Viso: 2.5kVrms)
5. Recognized by UL, file No. E64380

■ Applications

1. Programmable controllers
2. Facsimiles
3. Telephones

■ Rank Table

Model No.	Rank mark	Ic (mA)	Conditions
PC3H710NIP	A, B or no mark	0.5 to 3.5	$I_F=0.5\text{mA}$ $V_{CE}=5\text{V}$ $T_a=25^\circ\text{C}$
PC3H711NIP	A	0.7 to 1.75	
PC3H712NIP	B	1.0 to 2.5	
PC3H715NIP	A or B	0.7 to 2.5	

Model No.	Rank mark	Ic (mA)	Conditions
PC3Q710NIP	A or no mark	0.5 to 3.0	$I_F=0.5\text{mA}$ $V_{CE}=5\text{V}$ $T_a=25^\circ\text{C}$
PC3Q711NIP	A	1.0 to 2.5	

■ Absolute Maximum Ratings ($T_a=25^\circ\text{C}$)

	Parameter	Symbol	Rating	Unit
Input	Forward current	I_F	10	mA
	*1 Peak forward current	I_{FM}	200	mA
	Reverse voltage	V_R	6	V
	Power dissipation	P	15	mW
Output	Collector-emitter voltage	V_{CEO}	70	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
	Operating temperature	T_{opr}	-30 to +100	$^\circ\text{C}$
	Storage temperature	T_{stg}	-40 to +125	$^\circ\text{C}$
	*2 Isolation voltage	V_{iso}	2.5	kV_{rms}
	*3 Soldering temperature	T_{sol}	260	$^\circ\text{C}$

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

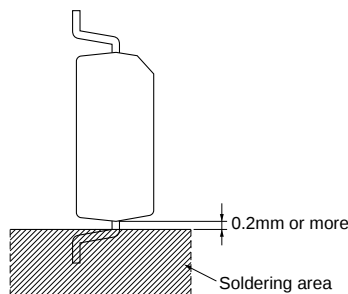
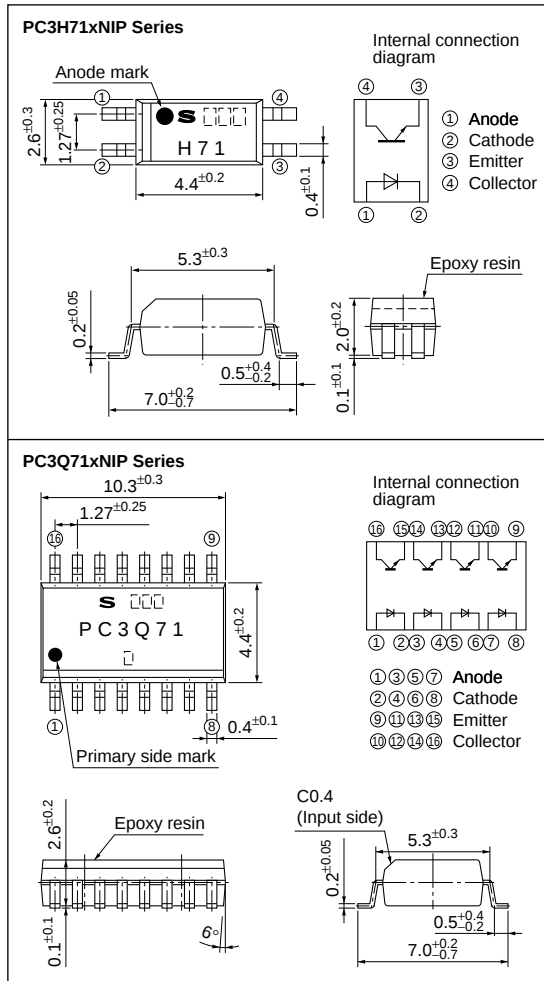
*2 40 to 60%RH, AC for 1 minute, $f=60\text{Hz}$

*3 For 10s

Low Input Current Type Photocoupler

■ Outline Dimensions

(Unit : mm)



■ Electro-optical Characteristics

(Ta=25°C)

Parameter			Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Input	Forward voltage		V _F	I _F =10mA	—	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		I _{CEO}	V _{CE} =50V, I _F =0	—	—	100	nA
	Collector-emitter breakdown voltage		BV _{CEO}	I _C =0.1mA, I _F =0	70	—	—	V
	Emitter-collector breakdown voltage		BV _{ECO}	I _E =10μA, I _F =0	6	—	—	V
Transfer characteristics	Collector current	PC3H71xNIP Series	I _C	I _F =0.5mA, V _{CE} =5V	0.5	—	3.5	mA
		PC3Q71xNIP Series					3.0	
	Collector-emitter saturation voltage		V _{CE (sat)}	I _F =10mA, I _C =1mA	—	—	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	tr	V _{CE} =2V, I _C =2mA, R _L =100Ω	—	4	18	μs
		Fall time	tf		—	3	18	μs
	*1 Common mode rejection voltage		CMR	Ta=25°C, RL=470Ω, VCM=1.5kV (peak), IF=0mA, VCC=9V, Vnp=100mV		10	—	—

*1 Refer to Fig.1.

Fig.1 Test Circuit for Common Mode Rejection Voltage

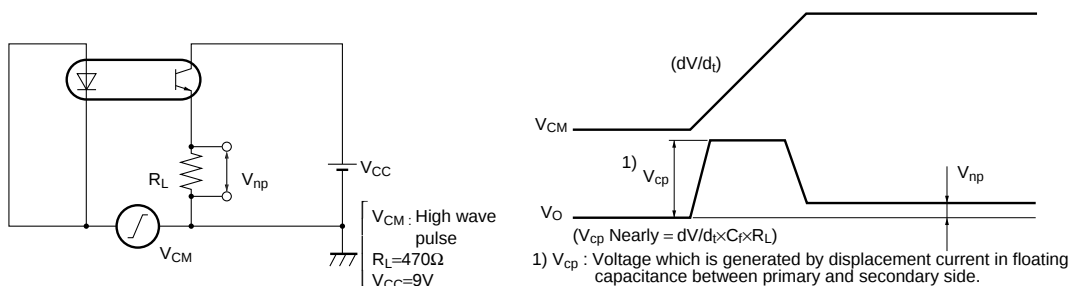


Fig.2 Forward Current vs. Ambient Temperature

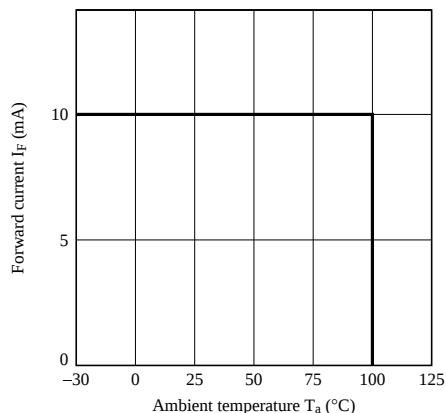


Fig.3 Diode Power Dissipation vs. Ambient Temperature

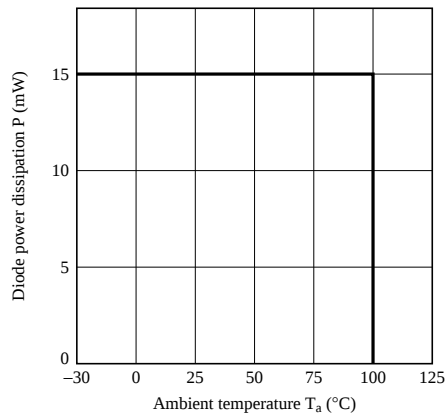


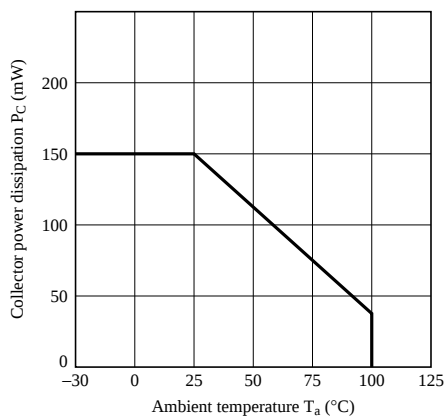
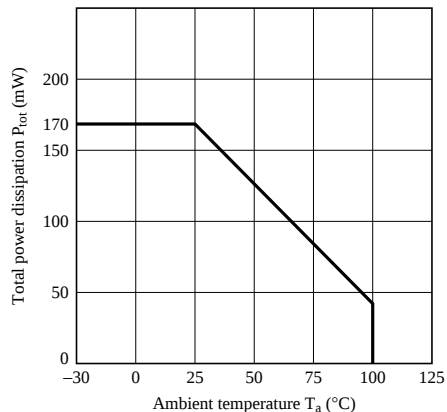
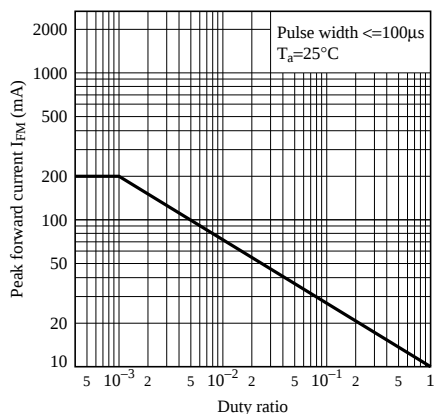
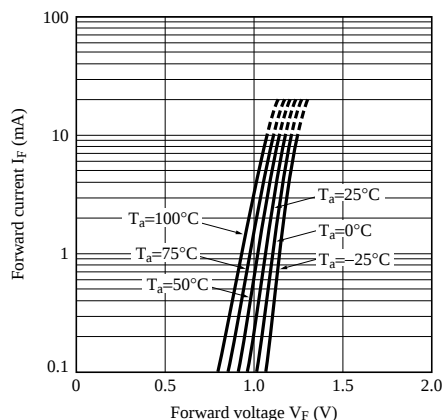
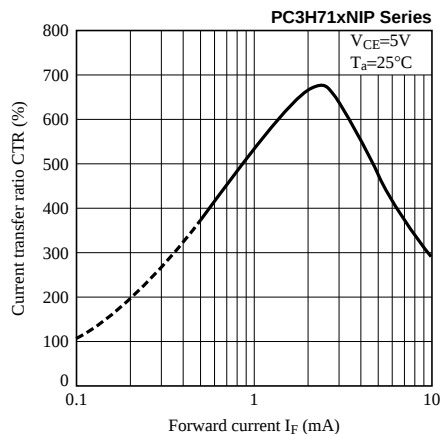
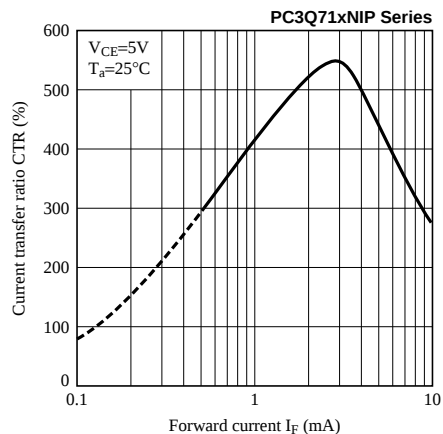
Fig.4 Collector Power Dissipation vs. Ambient Temperature**Fig.5 Total Power Dissipation vs. Ambient Temperature****Fig.6 Peak Forward Current vs. Duty Ratio****Fig.7 Forward Current vs. Forward Voltage****Fig.8 Current Transfer Ratio vs. Forward Current****Fig.9 Current Transfer Ratio vs. Forward Current**

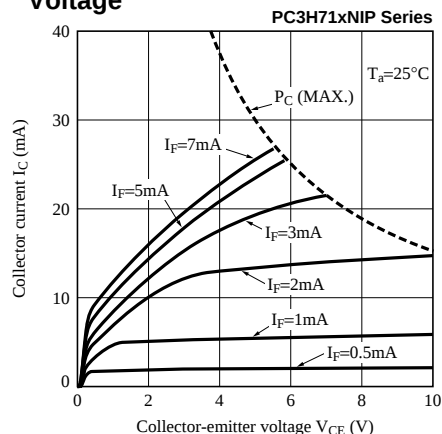
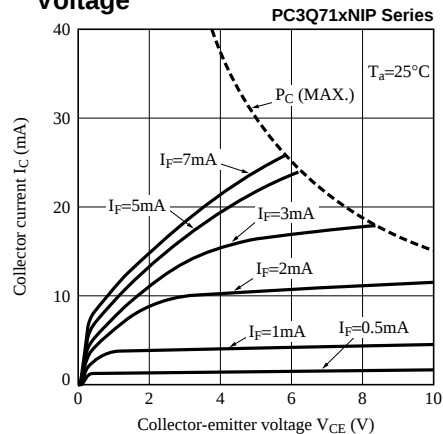
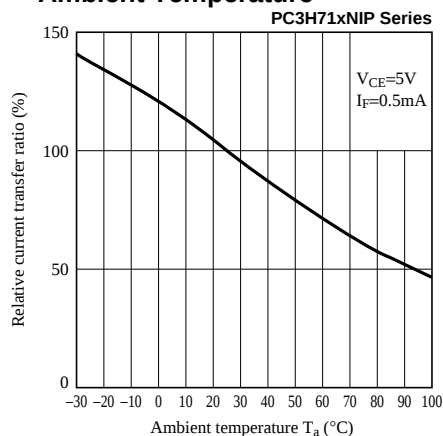
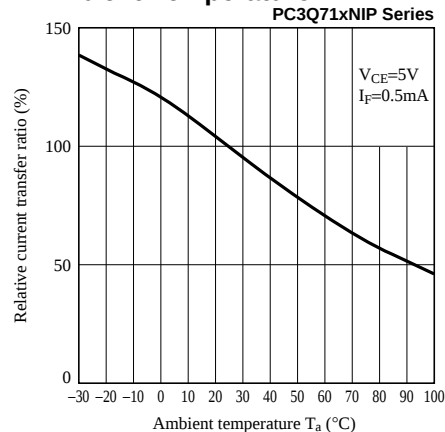
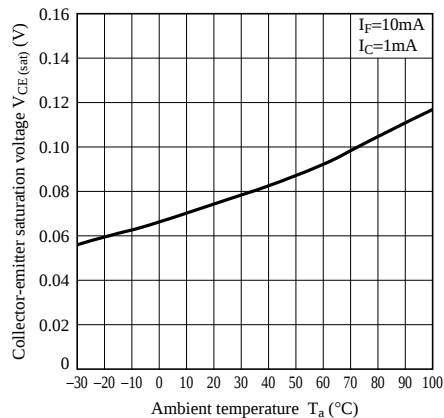
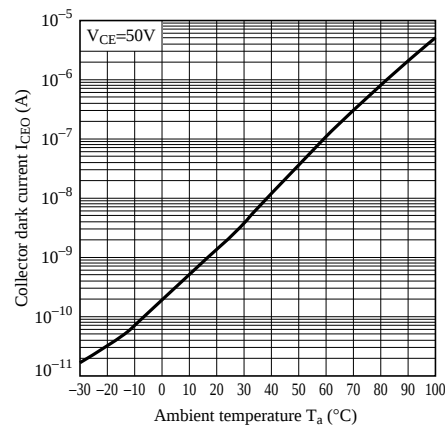
Fig.10 Collector Current vs. Collector-emitter Voltage**Fig.11 Collector Current vs. Collector-emitter Voltage****Fig.12 Relative Current Transfer Ratio vs. Ambient Temperature****Fig.13 Relative Current Transfer Ratio vs. Ambient Temperature****Fig.14 Collector - emitter Saturation Voltage vs. Ambient Temperature****Fig.15 Collector Dark Current vs. Ambient Temperature**

Fig.16 Response Time vs. Load Resistance

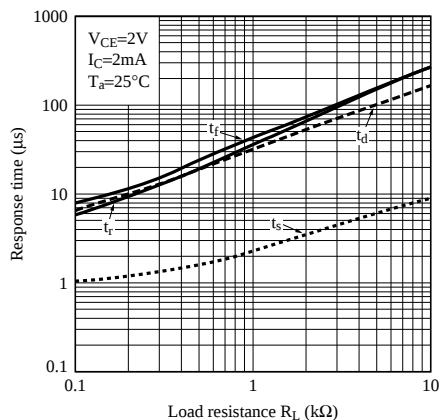


Fig.17 Response Time vs. Load Resistance (Saturation)

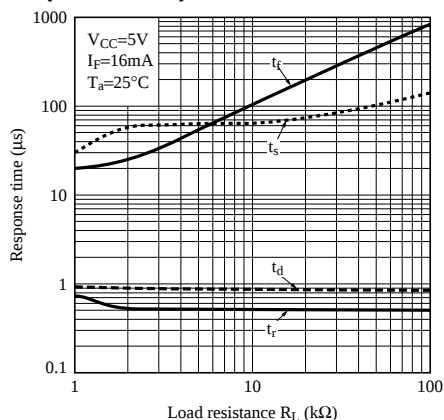


Fig.18 Test Circuit for Response Time

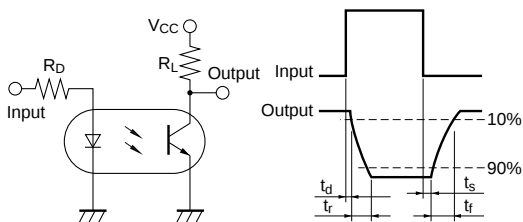


Fig.19 Voltage Gain vs Frequency

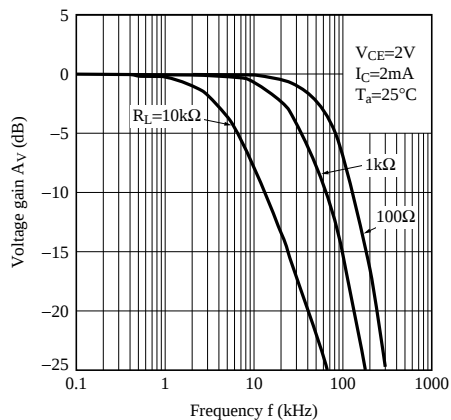


Fig.20 Collector-emitter Saturation Voltage vs. Forward Current

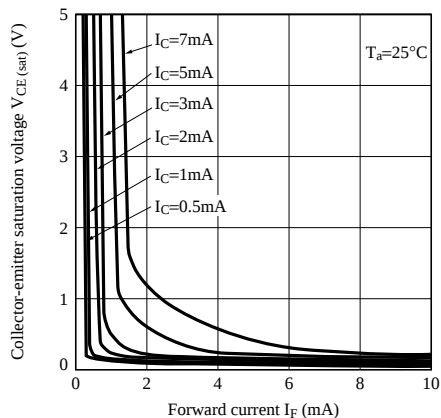


Fig.21 Reflow Soldering

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

