PC3H71x NIP Series
PC3Q71x NIP Series

Low Input Current Type Photocoupler

■ Features

1. Low input current type(I_F=0.5mA)
2. High resistance to noise due to high common rejection voltage (CMR:MIN. 10kV/μs)
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=0.5mA, V_{CE}=5V, T_a=25°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=0.5mA, V_{CE}=5V, T_a=25°C
PC3Q711NIP	A	1.0 to 2.5	

■ Absolute Maximum Ratings

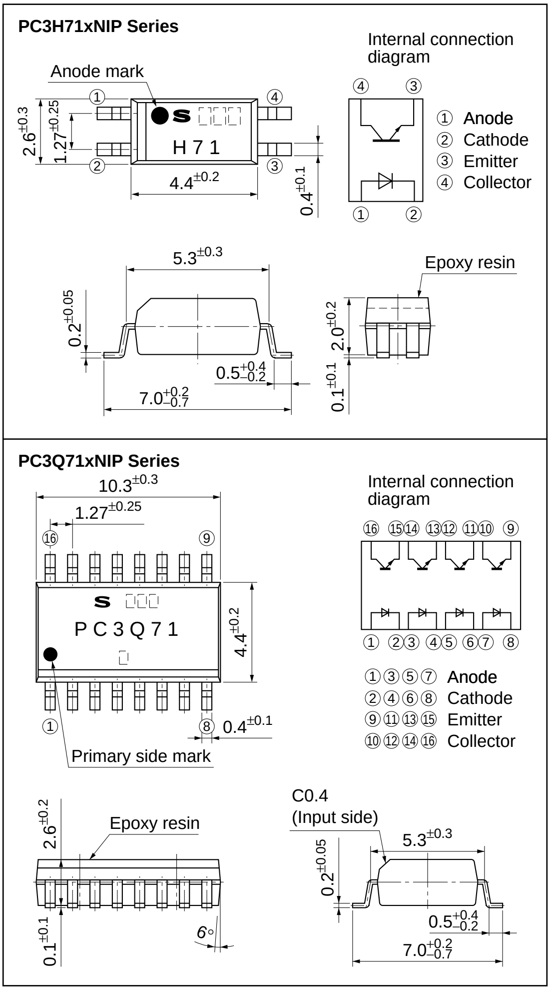
(Ta=25°C)

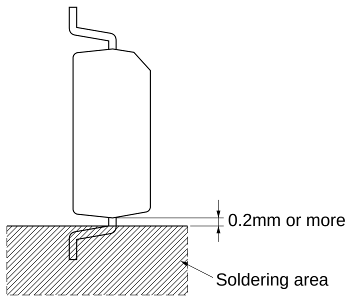
	Parameter	Symbol	Rating	Unit
Input	Forward current	I_F	10	mA
	*1 Peak forward current	I_{FM}	200	mA
	Reverse voltage	V_R	6	V
	Power dissipation	P	15	mW
Output	Collector-emitter voltage	V_{CEO}	70	V
	Emitter-collector voltage	V_{ECO}	6	V
	Collector current	I_C	50	mA
	Collector power dissipation	P_C	150	mW
	Total power dissipation	P_{tot}	170	mW
	Operating temperature	T_{opr}	−30 to +100	°C
	Storage temperature	T_{stg}	−40 to +125	°C
	*2 Isolation voltage	V_{iso}	2.5	kV_{rms}
	*3 Soldering temperature	T_{sol}	260	°C

*1 Pulse width<=100μs, Duty ratio=0.001
*2 40 to 60%RH, AC for 1 minute, 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=10mA	–	1.2	1.4	V
Input	Reverse current		I_R	V_R=4V	–	–	10	μA
Input	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
Output	Collector-emitter breakdown voltage		BV_{CEO}	I_C=0.1mA, I_F=0	70	–	–	V
Output	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
Transfer characteristics	Collector current	PC3Q71xNIP Series	I_C	I_F=0.5mA, V_{CE}=5V	0.5	–	3.0	mA
Transfer characteristics	Collector-emitter saturation voltage		$V_{CE (sat)}$	I_F=10mA, I_C=1mA	–	–	0.2	V
Transfer characteristics	Isolation resistance		R_{ISO}	DC500V 40 to 60%RH	5×10^{10}	1×10^{11}	–	Ω
Transfer characteristics	Floating capacitance		C_f	V=0, f=1MHz	–	0.6	1.0	pF
Transfer characteristics	Response time	Rise time	tr	V_{CE}=2V, I_C=2mA, R_L=100Ω	–	4	18	μs
Transfer characteristics	Response time	Fall time	tf	V_{CE}=2V, I_C=2mA, R_L=100Ω	–	3	18	μs
Transfer characteristics	*1 Common mode rejection voltage		CMR	Ta=25°C, R_L=470Ω, V_{CM}=1.5kV (peak), I_F=0mA, V_{CC}=9V, Vnp=100mV	10	–	–	kV/μs

*1 Refer to Fig.1.

Fig.1 Test Circuit for Common Mode Rejection Voltage

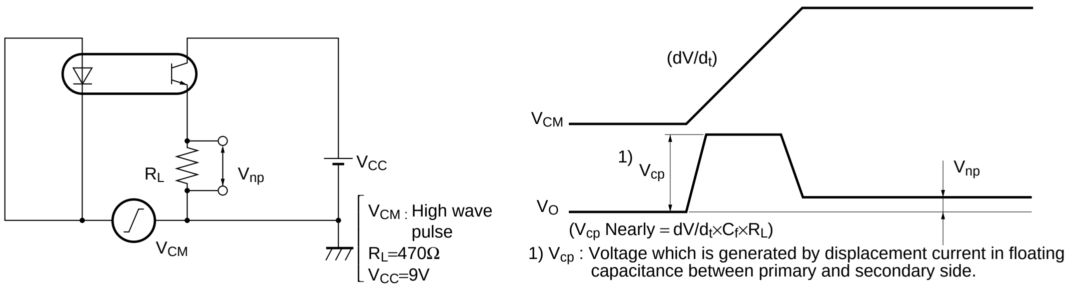


Fig.2 Forward Current vs. Ambient Temperature

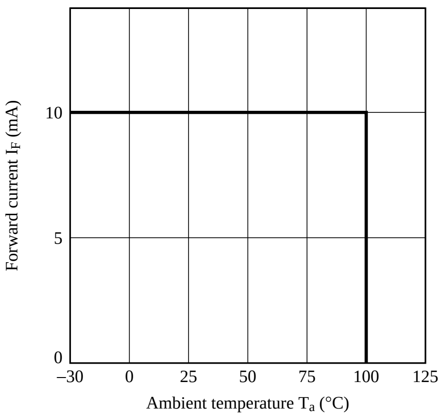


Fig.3 Diode Power Dissipation vs. Ambient Temperature

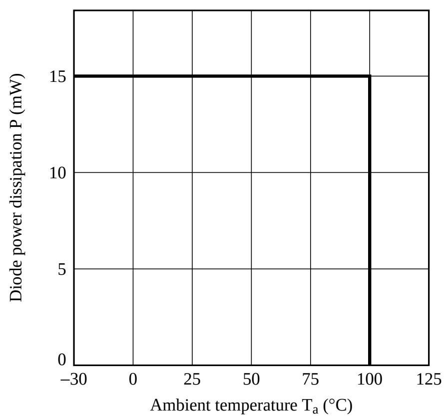


Fig.4 Collector Power Dissipation vs. Ambient Temperature

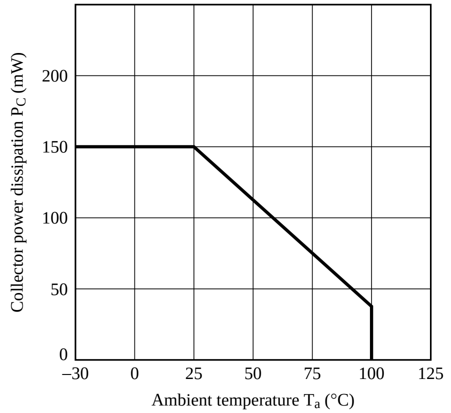


Fig.5 Total Power Dissipation vs. Ambient Temperature

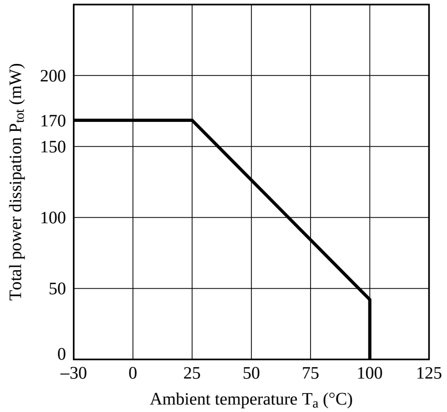


Fig.6 Peak Forward Current vs. Duty Ratio

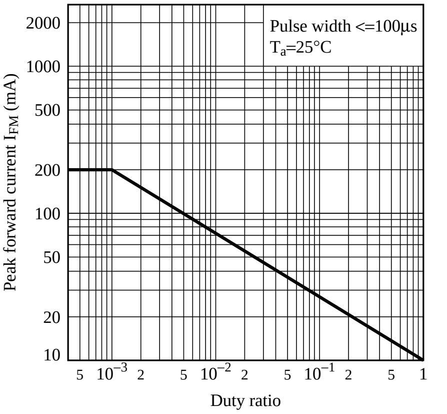


Fig.7 Forward Current vs. Forward Voltage

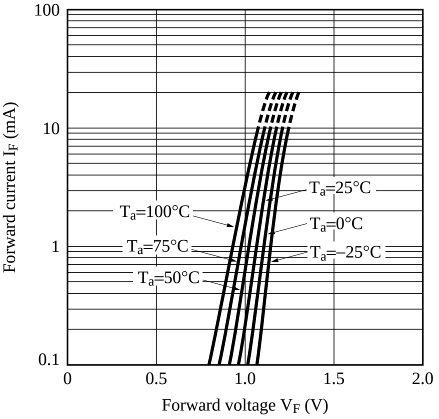


Fig.8 Current Transfer Ratio vs. Forward Current

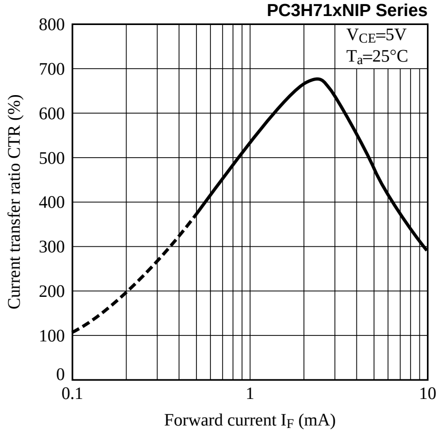


Fig.9 Current Transfer Ratio vs. Forward Current

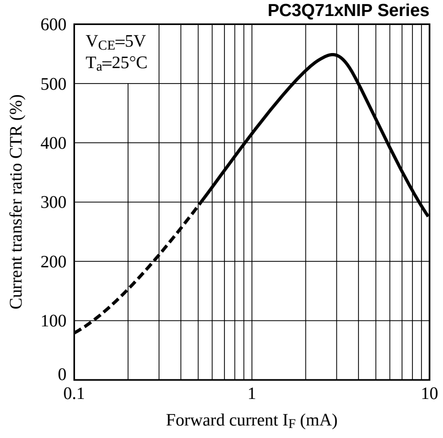


Fig.10 Collector Current vs. Collector-emitter Voltage

PC3H71xNIP Series

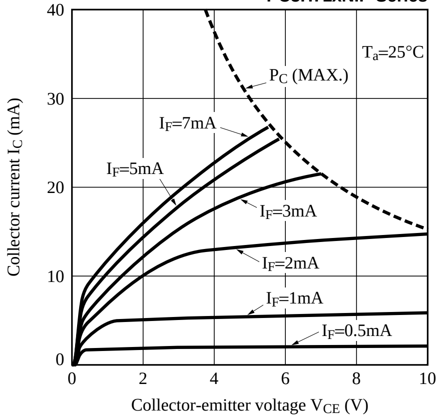


Fig.11 Collector Current vs. Collector-emitter Voltage

PC3Q71xNIP Series

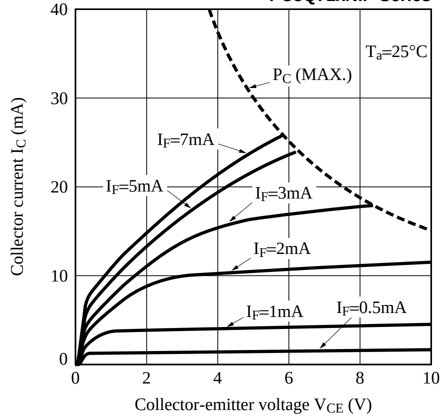


Fig.12 Relative Current Transfer Ratio vs. Ambient Temperature

PC3H71xNIP Series

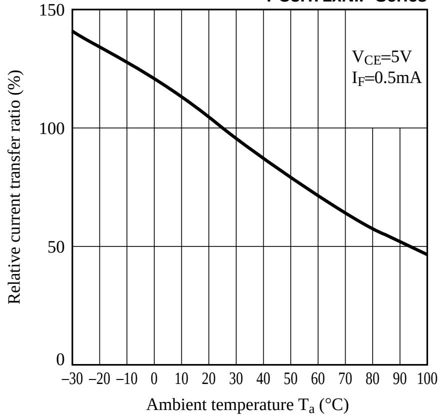


Fig.13 Relative Current Transfer Ratio vs. Ambient Temperature

PC3Q71xNIP Series

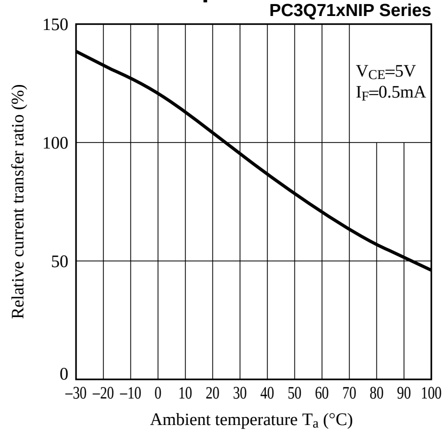


Fig.14 Collector - emitter Saturation Voltage vs. Ambient Temperature

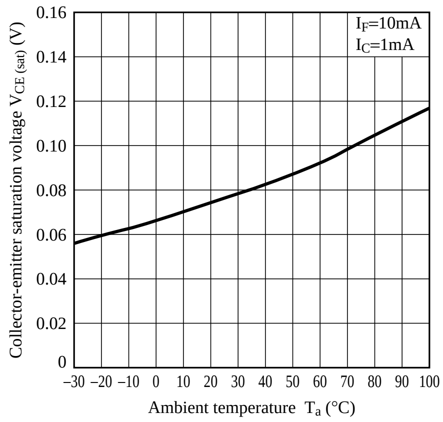


Fig.15 Collector Dark Current vs. Ambient Temperature

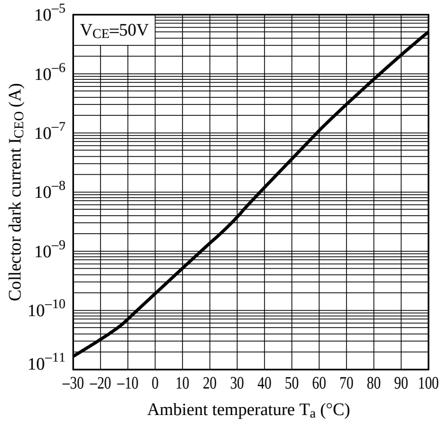


Fig.16 Response Time vs. Load Resistance

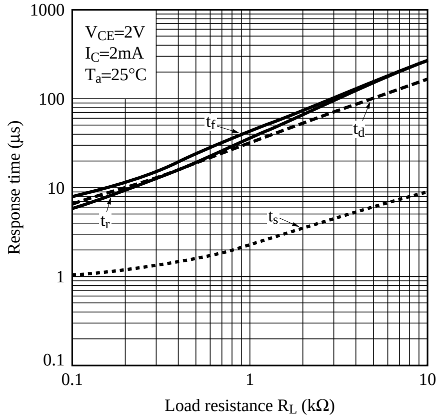


Fig.17 Response Time vs. Load Resistance (Saturation)

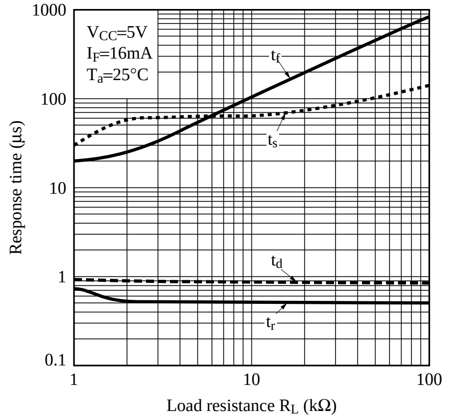


Fig.18 Test Circuit for Response Time

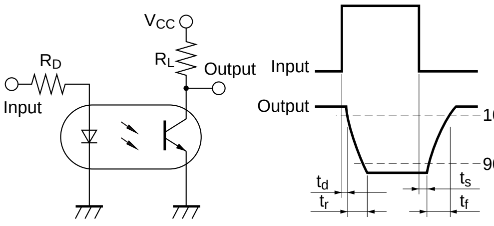


Fig.19 Voltage Gain vs Frequency

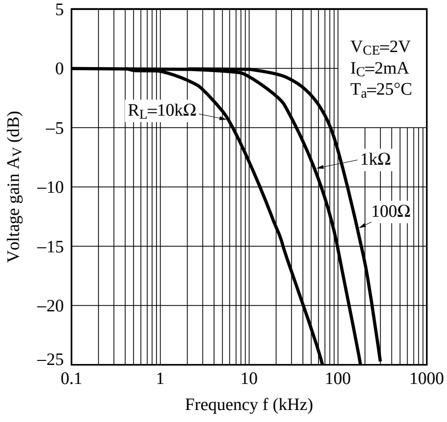


Fig.20 Collector-emitter Saturation Voltage vs. Forward Current

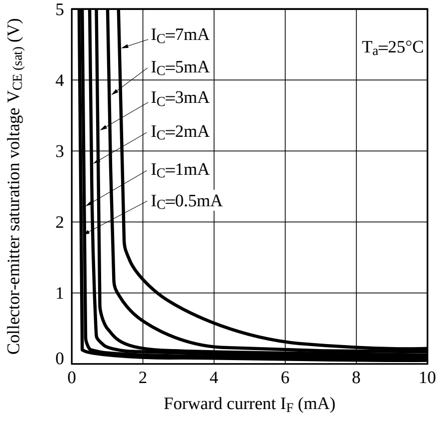
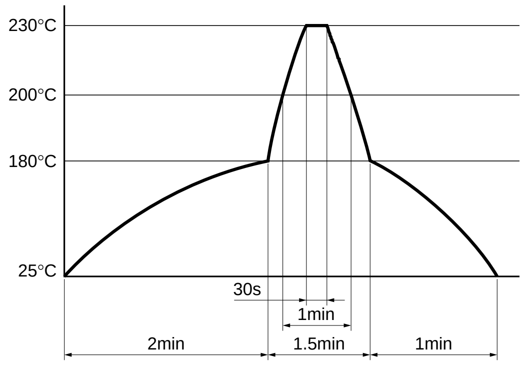


Fig.21 Reflow Soldering

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



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