

PC814X

AC Input Photocoupler

* Lead forming type (I type) and taping reel type (P type) are also available. (PC814XI/PC814XP)

■ Features

1. AC input
2. High isolation voltage between input and output ($V_{iso(rms)}$:5kV)
3. Compact dual-in-line package
4. Current transfer ratio
CTR:MIN. 20% at $I_F=\pm 1\text{mA}$, $V_{CE}=5\text{V}$
5. Recognized by UL, file No. E64380 (model No **PC814**)

■ Applications

1. Programmable controllers
2. Telephones
3. Facsimiles

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

	Parameter	Symbol	Rating	Unit
Input	Forward current	I_F	± 50	mA
	*1 Peak forward current	I_{FM}	± 1	A
	Power dissipation	P	70	mW
Output	Collector-emitter voltage	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}	200	mW
	*2 Isolation voltage	$V_{iso(rms)}$	5	kV
	Operating temperature	T_{opr}	-30 to +100	$^\circ\text{C}$
	Storage temperature	T_{stg}	-55 to +125	$^\circ\text{C}$
	*3 Soldering temperature	T_{sol}	260	$^\circ\text{C}$

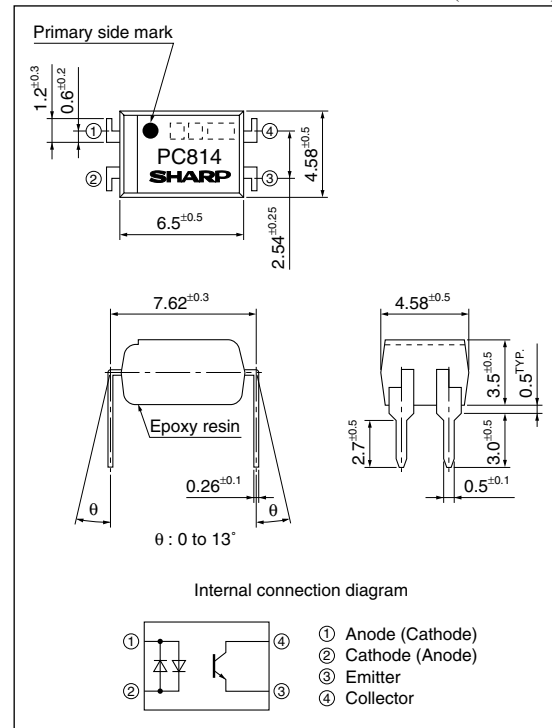
*1 Pulse widths $\leq 100\mu\text{s}$, Duty ratio:0.001

*2 40 to 60%RH, AC for 1 minute

*3 For 10s

■ Outline Dimensions

(Unit : mm)



■ Electro-optical Characteristics

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

Parameter		Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Input	Forward voltage	V_F	$I_F=\pm 20\text{mA}$	-	1.2	1.4	V
	Peak forward voltage	V_{FM}	$I_{FM}=\pm 0.5\text{V}$	-	-	3.0	V
	Terminal capacitance	C_t	$V=0, f=1\text{kHz}$	-	50	250	pF
Output	Collector dark current	I_{CEO}	$V_{CE}=20\text{V}, I_F=0$	-	-	100	nA
Transfer characteristics	Collector current	I_C	$I_F=\pm 1\text{mA}, V_{CE}=5\text{V}$	0.2	-	3.0	mA
	Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_F=\pm 20\text{mA}, I_C=1\text{mA}$	-	0.1	0.2	V
	Isolation resistance	R_{ISO}	DC500V, 40 to 60%RH	5×10^{10}	10^{11}	-	Ω
	Floating capacitance	C_f	$V=0, f=1\text{MHz}$	-	0.6	1.0	pF
	Cut-off frequency	f_c	$V_{CE}=5\text{V}, I_C=2\text{mA}, R_L=100\Omega, -3\text{dB}$	15	80	-	kHz
	Response time	Rise time Fall time	t_r t_f	$V_{CE}=2\text{V}, I_C=2\text{mA}, R_L=100\Omega$		-	4 18

■ Rank Table

($I_F=\pm 1\text{mA}, V_{CE}=5\text{V}, T_a=25^{\circ}\text{C}$)

Model No.	Rank mark	I_C (mA)
PC814X	A or no mark	0.2 to 3.0
PC814X1	A	0.5 to 1.5

Fig.1 Forward Current vs. Ambient Temperature

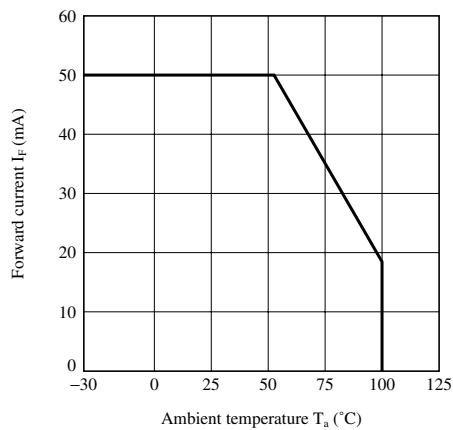


Fig.2 Collector Power Dissipation vs. Ambient Temperature

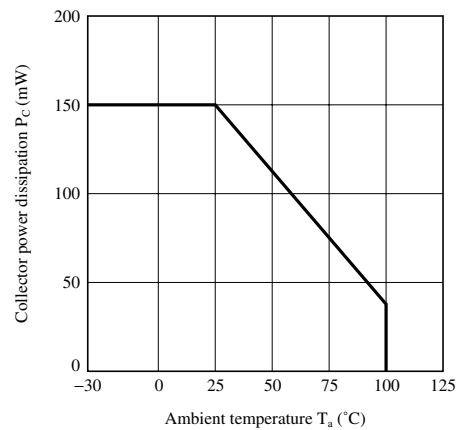


Fig.3 Peak Forward Current vs. Duty Ratio

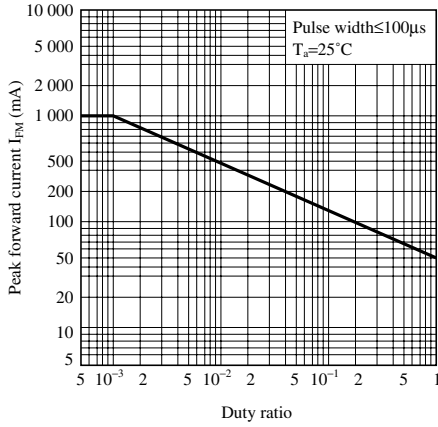


Fig.4 Forward Current vs. Forward Voltage

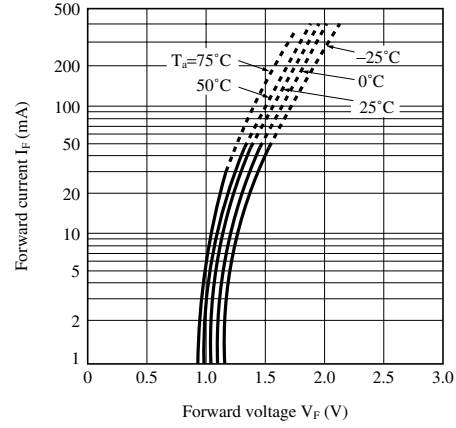


Fig.5 Current Transfer Ratio vs. Forward Current

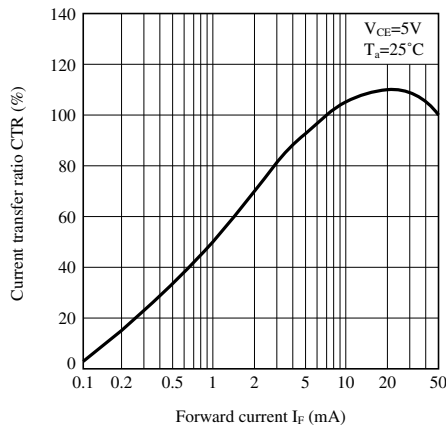


Fig.6 Collector Current vs. Collector-emitter Voltage

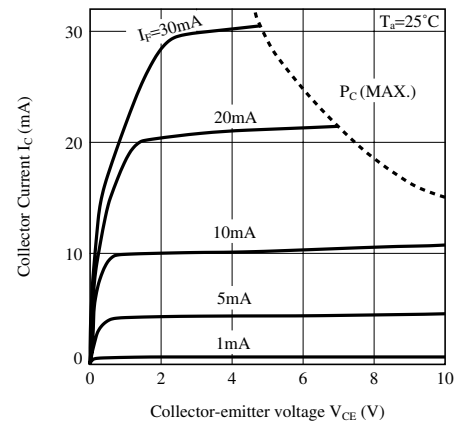


Fig.7 Relative Current Transfer Ratio vs. Ambient Temperature

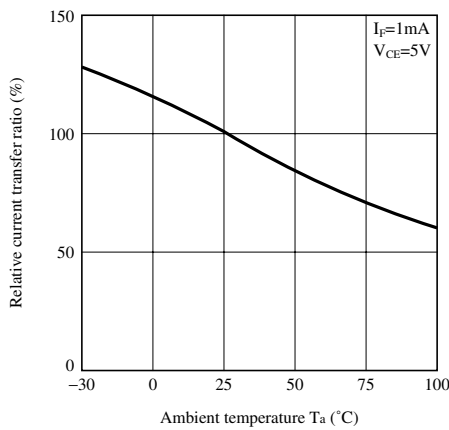


Fig.8 Collector - emitter Saturation Voltage vs. Ambient Temperature

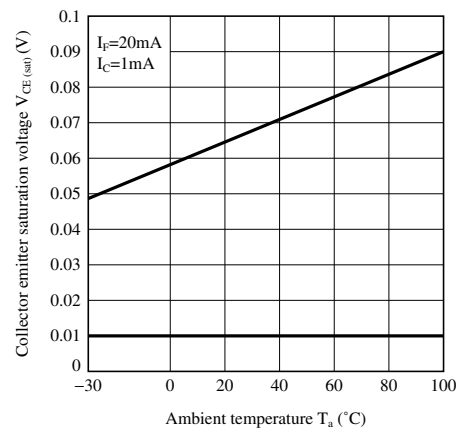


Fig.9 Collector Dark Current vs. Ambient Temperature

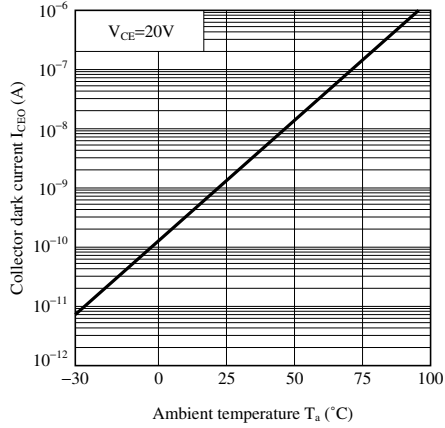


Fig.10 Collector-emitter Saturation Voltage vs. Forward Current

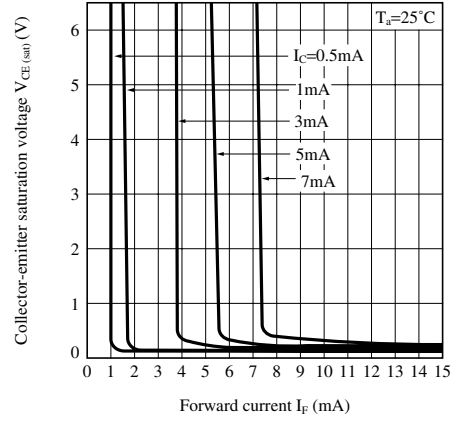
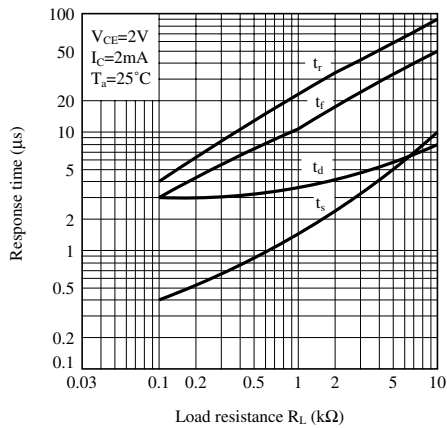


Fig.11 Response Time vs. Load Resistance



Test Circuit for Response Time

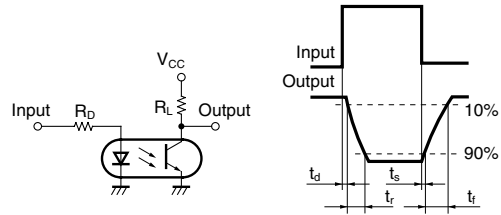
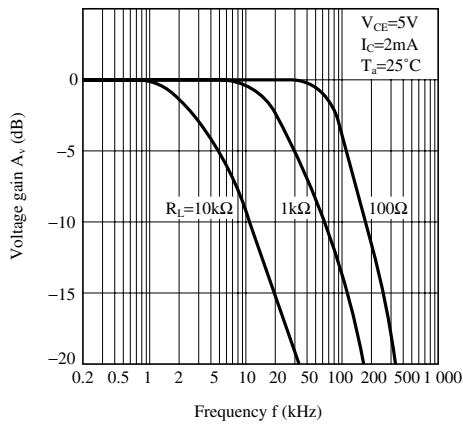
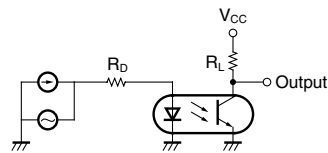


Fig.12 Frequency Response



Test Circuit for Frequency Response



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