

# PC817X

## High Density Mounting Type Photocoupler

※ Lead forming type (I type) and taping reel type (P type) are also available. (PC817XI/PC817XP)

※ TÜV (VDE0884) approved type is also available as an option. (approved name:PC817)

### ■ Features

1. Current transfer ratio (CTR:MIN. 50% at  $I_F=5\text{mA}$ ,  $V_{CE}=5\text{V}$ )
2. High isolation voltage between input and output ( $V_{\text{iso (rms)}}:5\text{kV}$ )
3. Compact dual-in-line package
4. Recognized by UL, file No. E64380 (model No. PC817)

### ■ Applications

1. OA equipment
2. Copiers
3. Home appliances

### ■ 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
	Reverse voltage	$V_R$	6	V
	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	$P_{\text{tot}}$	200	mW
	*2 Isolation voltage	$V_{\text{iso (rms)}}$	5	kV
	Operating temperature	$T_{\text{opr}}$	-30 to +100	$^\circ\text{C}$
	Storage temperature	$T_{\text{stg}}$	-55 to +125	$^\circ\text{C}$
	*3 Soldering temperature	$T_{\text{sol}}$	260	$^\circ\text{C}$

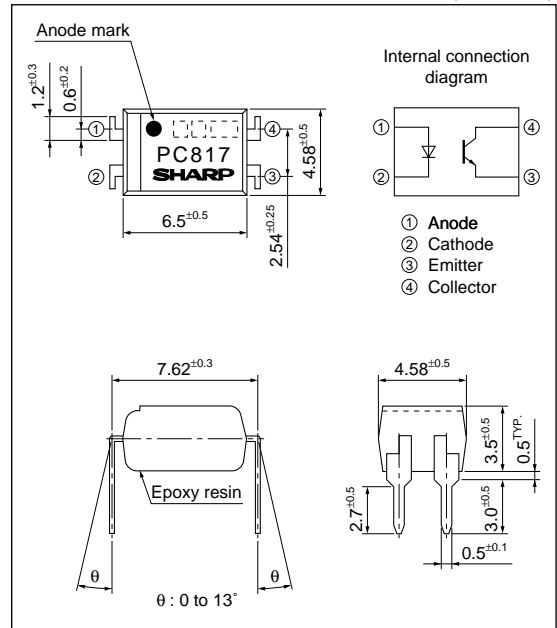
\*1 Pulse width $\leq$ 100 $\mu$ s, Duty ratio:0.001

\*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	$V_F$	$I_F=20\text{mA}$	—	1.2	1.4	V
	Peak forward voltage	$V_{FM}$	$I_{FM}=0.5\text{V}$	—	—	3.0	V
	Reverse current	$I_R$	$V_R=4\text{V}$	—	—	10	$\mu\text{A}$
	Terminal capacitance	$C_t$	$V=0, f=1\text{kHz}$	—	30	250	pF
Output	Collector dark current	$I_{CEO}$	$V_{CE}=20\text{V}, I_F=0$	—	—	100	nA
Transfer characteristics	Collector current	$I_C$	$I_F=5\text{mA}, V_{CE}=5\text{V}$	2.5	—	30.0	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	$5 \times 10^{10}$	$10^{11}$	—	$\Omega$
	Floating capacitance	$C_f$	$V=0, f=1\text{MHz}$	—	0.6	1.0	pF
	Cut-off frequency	$f_c$	$V_{CE}=5\text{V}, I_C=2\text{mA}, R_L=100\Omega, -3\text{dB}$	—	80	—	kHz
	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	$\mu\text{s}$

■ Rank Table

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

Model No.	Rank mark	$I_C$ (mA)
PC817X	A, B, C, D or no mark	2.5 to 30.0
PC817X1	A	4.0 to 8.0
PC817X2	B	6.5 to 13.0
PC817X3	C	10.0 to 20.0
PC817X4	D	15.0 to 30.0
PC817X5	A or B	4.0 to 13.0
PC817X6	B or C	6.5 to 20.0
PC817X7	C or D	10.0 to 30.0
PC817X8	A, B or C	4.0 to 20.0
PC817X9	B, C or D	6.5 to 30.0
PC817X0	A, B, C or D	4.0 to 30.0

Fig.1 Forward Current vs. Ambient Temperature

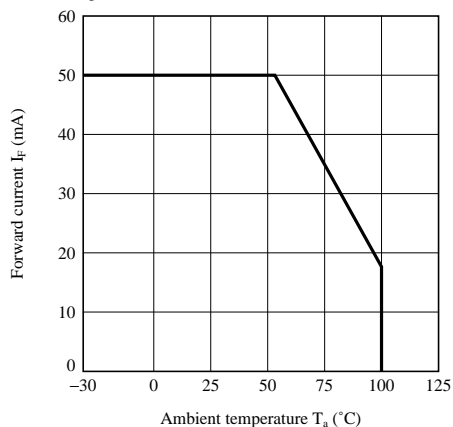
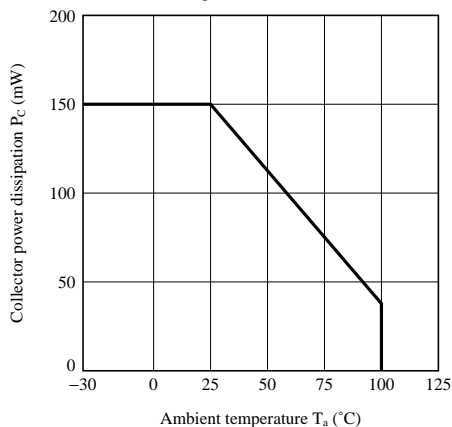
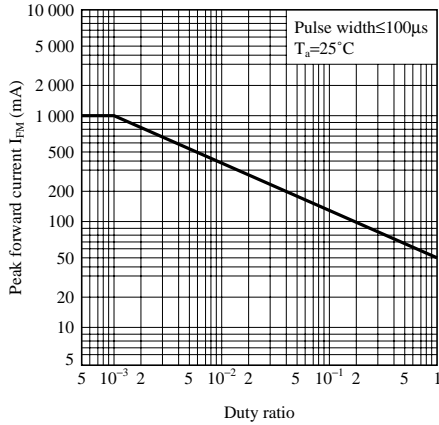


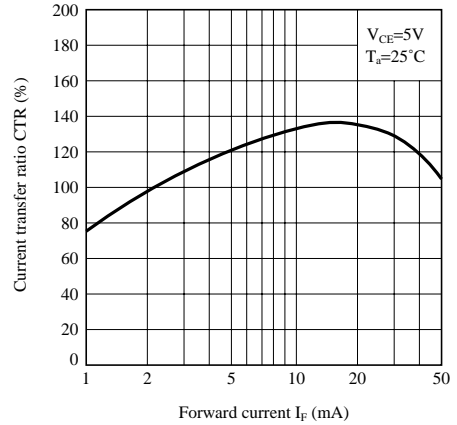
Fig.2 Collector Power Dissipation vs. Ambient Temperature



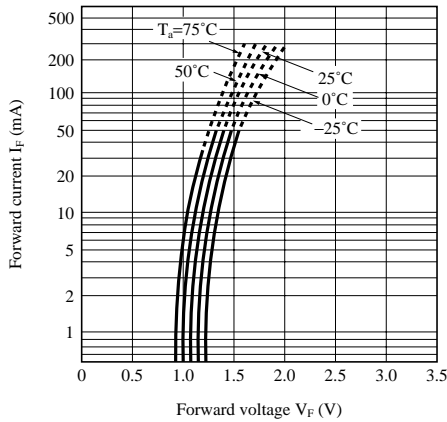
**Fig.3 Peak Forward Current vs. Duty Ratio**



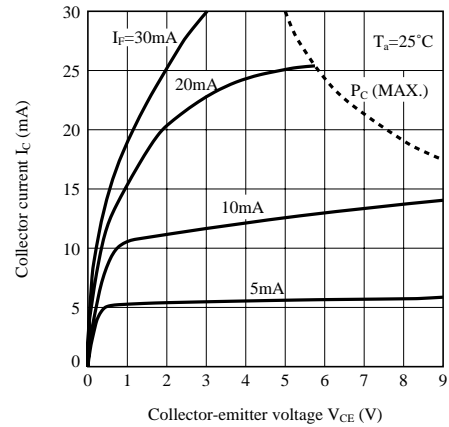
**Fig.4 Current Transfer Ratio vs. Forward Current**



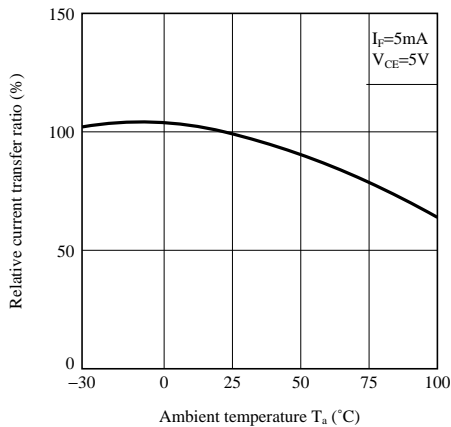
**Fig.5 Forward Current vs. Forward Voltage**



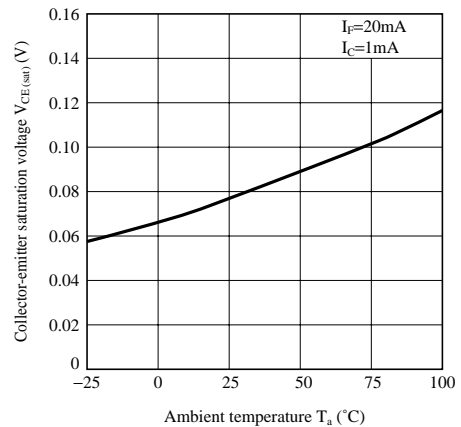
**Fig.6 Collector Current vs. Collector-emitter Voltage**



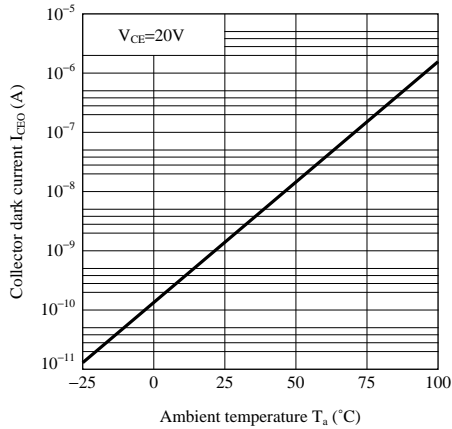
**Fig.7 Relative Current Transfer Ratio vs. Ambient Temperature**



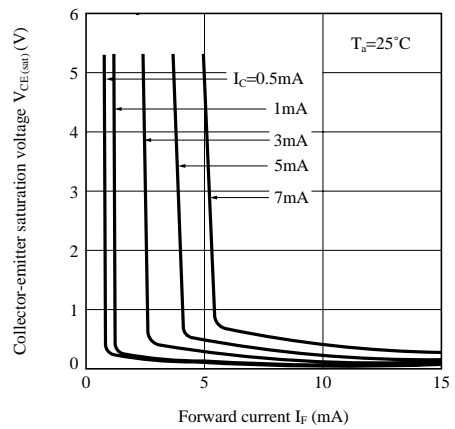
**Fig.8 Collector-emitter Saturation Voltage vs. Ambient Temperature**



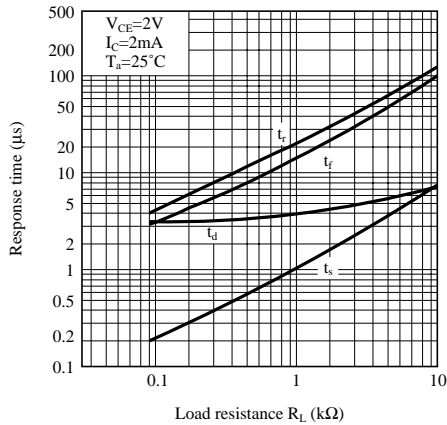
**Fig.9 Collector Dark Current vs. Ambient Temperature**



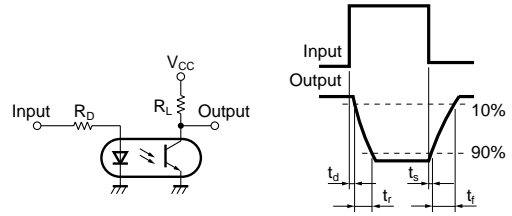
**Fig.10 Collector-emitter Saturation Voltage vs. Forward Current**



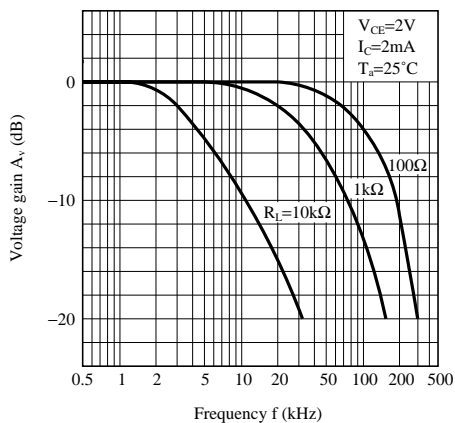
**Fig.11 Response Time vs. Load Resistance**



**Test Circuit for Response Time**



**Fig.12 Frequency Response**



**Test Circuit for Frequency Response**

