

## Overview

PC817X is a photoelectric coupler product composed by a luminous diode and a photo transistor, with the input-output isolation voltage of 5000Vrms and the typical value of the response time  $t_r$  of 4 $\mu$ s. The minimum CTR is 80% the at 2mA input current. SOP4 package is adopted for the product.

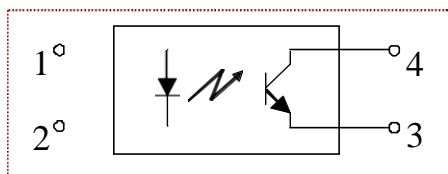
## Characteristics

- Current conversion ratio CTR (in condition of  $I_F=5mA$ ,  $V_{CE}=5V$ , CTR: MIN. 50%)
- High input-output isolation voltage (Viso=5000 Vrms)
- Collector-emitter breakdown voltage  $BV_{CEO} \geq 80V$

## Applications

- Power supply feedback circuits
- System devices and measurement instruments
- Registers, copying machines and vending machines
- Household appliances, such as fans and water heaters

## Schematic diagram of structure and package



## Absolute parameters (Ta=25°C)

Parameters		Symbols	Rated value	Units
Input	Forward current	$I_F$	50	mA
	Reverse voltage	$V_R$	6	V
	Power consumption	$P$	70	mW
Output	Collector power consumption	$P_C$	150	mW
	Collector current	$I_C$	50	mA
	Collector-emitter voltage	$V_{CEO}$	70	V
	Emitter-collector voltage	$V_{ECO}$	6	V
Total power consumption		$P_{tot}$	200	mW
Isolation voltage		$V_{iso}$	5000	Vrms
Working temperature		$T_{opr}$	-40~+100	°C
Storage temperature		$T_{stg}$	-55~+125	°C
Welding temperature		$T_{sol}$	260	°C



**Current-illumination characteristics (Ta=25°C)**

Parameters		Symbols	Conditions	Min.	Typical	Max.	Units
Input	Forward voltage	$V_F$	$I_F=20mA$	-	1.2	1.4	V
	Reverse current	$I_R$	$V_R=4V$	-	-	10	$\mu A$
	Terminal capacitor	$C_t$	$V=0, f=1kHz$	-	30	250	pF
Output	Collector dark current	$I_{CEO}$	$V_{CE} = 20V$	-	-	100	nA
	Collector-emitter breakdown voltage	$BV_{CEO}$	$I_C = 0.1 mA, I_F=0$	35	-	-	V
	Emitter-collector breakdown voltage	$BV_{ECO}$	$I_E=10\mu A, I_F=0$	6	-	-	V
Transmission Characteristics	Current conversion ratio	CTR	$I_F=5mA, V_{CE}=5V$	50	-	600	%
	Collector-emitter saturation voltage drop	$V_{CE(sat)}$	$I_F=20mA, I_C=1mA$	-	0.1	0.2	V
	Isolation resistance	$R_{iso}$	DC500 V, 40~ 60% R.H.	$5 \times 10^{10}$	$1 \times 10^{11}$	-	$\Omega$
	Floating capacitor	$C_f$	$V=0, f=1MHz$	-	0.6	1.0	pF
	Cut-off frequency	$F_c$	$V_{CE}=5V, I_C=2mA, R_L=100\Omega, -3dB$	-	80	-	kHz
	Rise time	$T_r$	$V_{CE}=2V, I_C=2mA, R_L=100\Omega$	-	4	18	$\mu s$
	Fall time	$T_f$	$V_{CE}=2V, I_C=2mA, R_L=100\Omega$	-	3	18	$\mu s$

\*  $CTR=I_C/I_F \times 100\%$

**Table of CTR Grading**

Grading	A	B	C	D	L or A or B or D
CTR	80~160	130~260	200~400	300~600	50~600

Fig.1 Forward current vs environment temperature curve

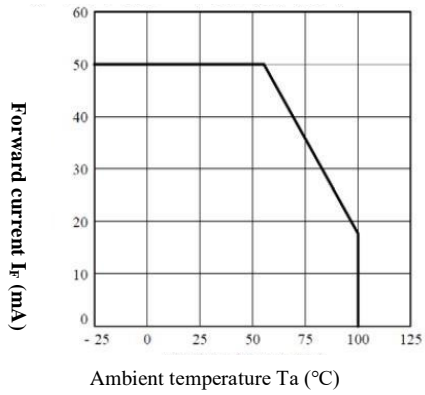


Fig.2 Collector power consumption vs environment temperature curve

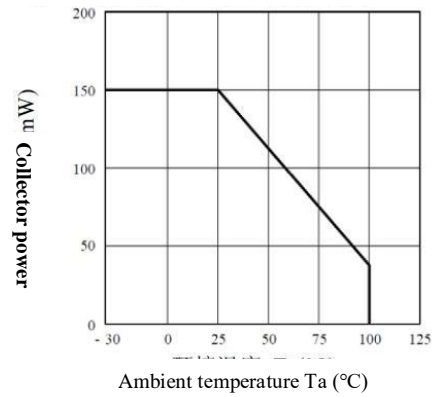


Fig.3 Forward peak current vs duty ratio curve

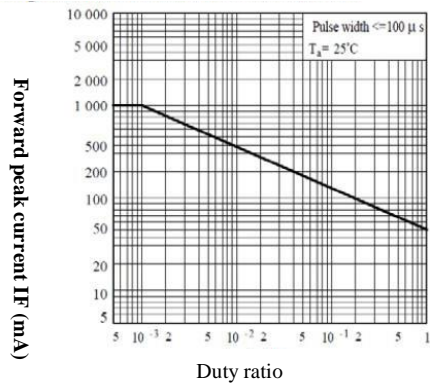


Fig.4 Current conversion ratio vs forward current curve

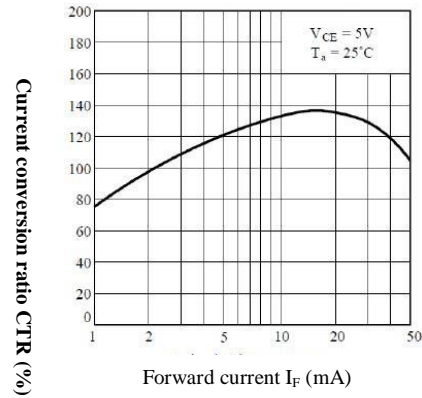


Fig.5 Forward current vs forward voltage curve

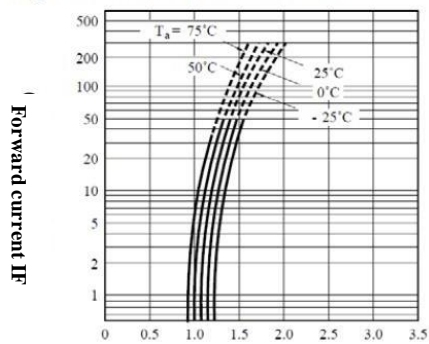
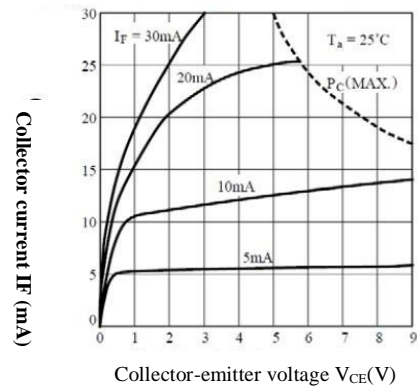
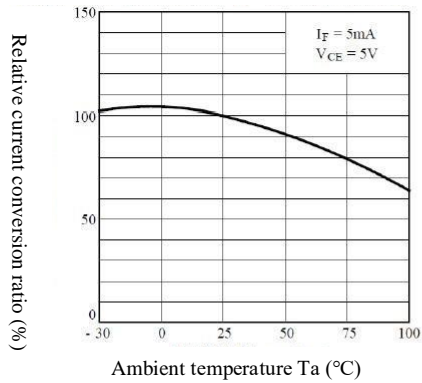


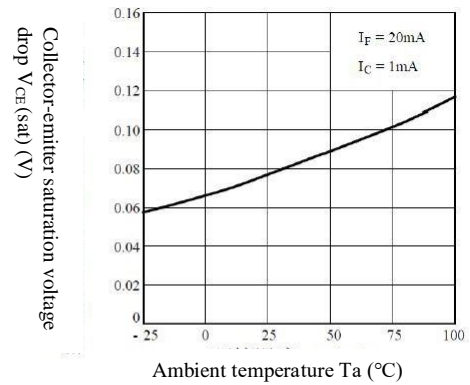
Fig.6 Collector current vs collector-emitter voltage curve



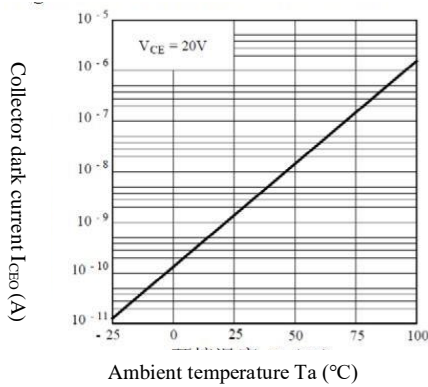
**Fig.7 Relative current conversion ratio vs environment temperature curve**



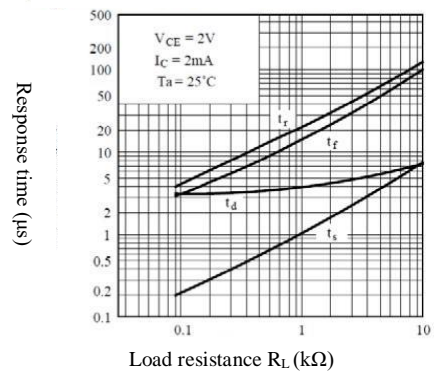
**Fig.8 Saturation voltage drop vs environment temperature curve**



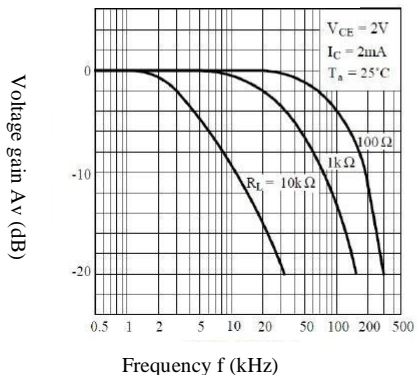
**Fig.9 Collector dark current vs environment temperature curve**



**Fig.10 Response time vs load resistance curve**



**Fig.11 Frequency response curve**



**Fig.12 Saturation voltage drop vs forward current curve**

