

Overview

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

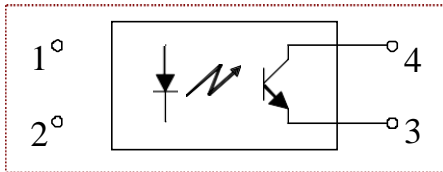
Characteristics

- 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 $BV_{CEO} \geq 80V$
- UL certification (dual-protection, No. E236324)
- VDE certification (No. 40007240)

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}	35	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	$I_F=20\text{mA}$	-	1.2	1.4	V
	Reverse current	I_R	$V_R=4\text{V}$	-	-	10	μA
	Terminal capacitor	C_t	$V=0, f=1\text{kHz}$	-	30	250	pF
Output	Collector dark current	I_{CEO}	$V_{CE}=20\text{V}$	-	-	100	nA
	Collector-emitter breakdown voltage	BV_{CEO}	$I_C=0.1\text{mA}, I_F=0$	35	-	-	V
	Emitter-collector breakdown voltage	BV_{ECO}	$I_E=10\mu\text{A}, I_F=0$	6	-	-	V
Transmission Characteristics	Current conversion ratio	CTR	$I_F=5\text{mA}, V_{CE}=5\text{V}$	50	-	600	%
	Collector-emitter saturation voltage drop	$V_{CE(sat)}$	$I_F=20\text{mA}, I_C=1\text{mA}$	-	0.1	0.2	V
	Isolation resistance	R_{ISO}	DC500 V, 40~60% R.H.	5×10^{10}	1×10^{11}	-	Ω
	Floating capacitor	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
	Rise time	T_r	$V_{CE}=2\text{V}, I_C=2\text{mA}, R_L=100\Omega$	-	4	18	μs
	Fall time	T_f	$V_{CE}=2\text{V}, I_C=2\text{mA}, R_L=100\Omega$	-	3	18	μs

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

Table of CTR Grading

Grading	L	A	B	C	D	L or A or B or C or D
CTR	50~100	80~160	130~260	200~400	300~600	50~600

Fig.1 Forward current vs environment temperature curve

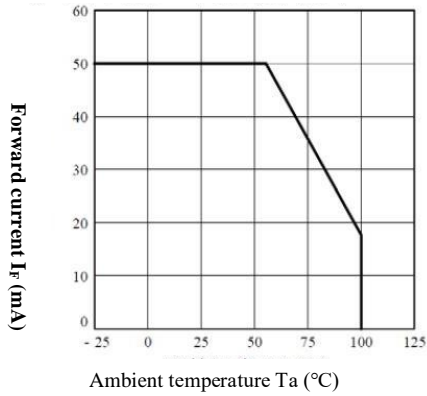


Fig.2 Collector power consumption vs environment temperature curve

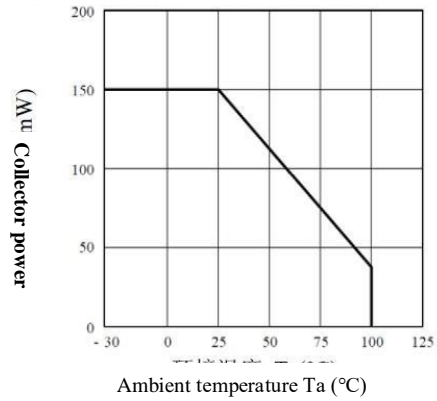


Fig.3 Forward peak current vs duty ratio curve

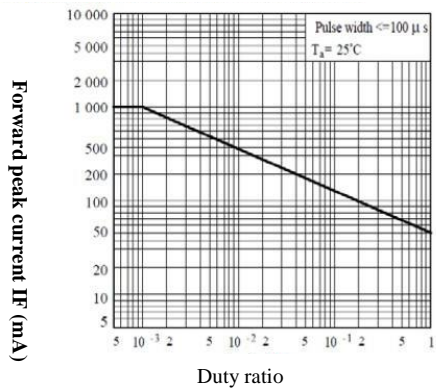


Fig.4 Current conversion ratio vs forward current curve

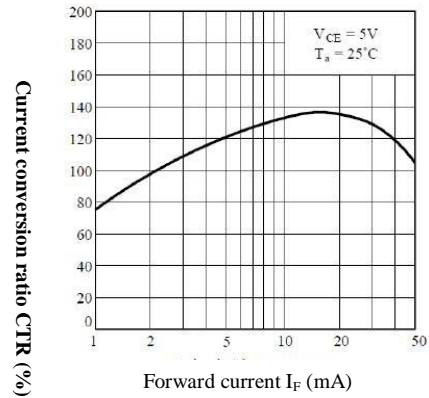


Fig.5 Forward current vs forward voltage curve

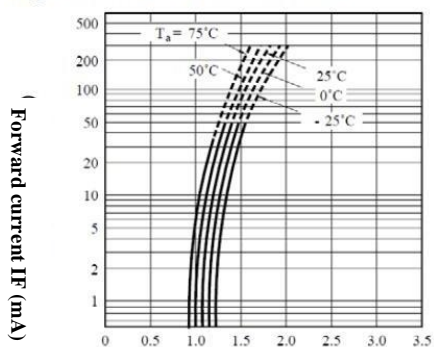


Fig.6 Collector current vs collector-emitter voltage curve

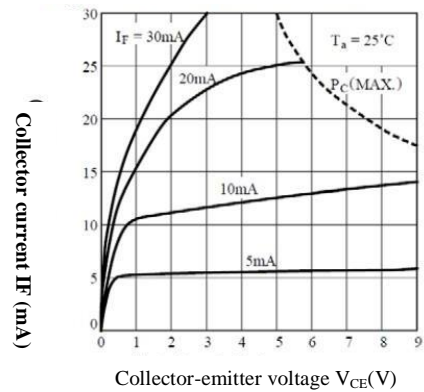


Fig.7 Relative current conversion ratio vs environment temperature curve

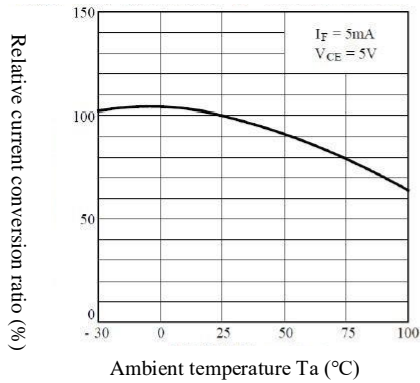


Fig.8 Saturation voltage drop vs environment temperature curve

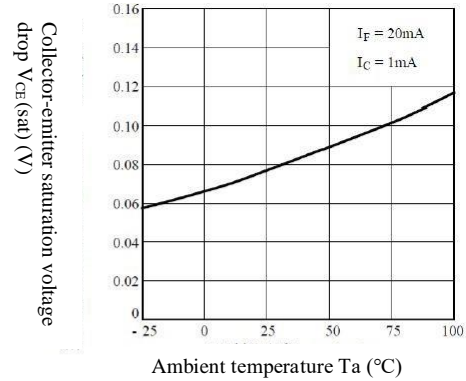


Fig.9 Collector dark current vs environment temperature curve

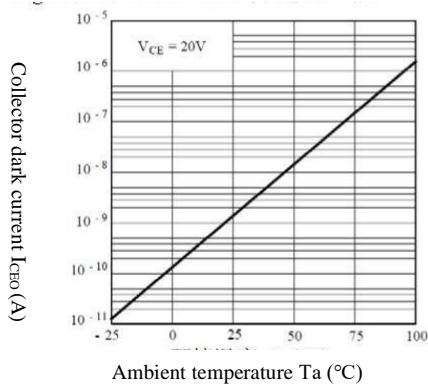


Fig.10 Response time vs load resistance curve

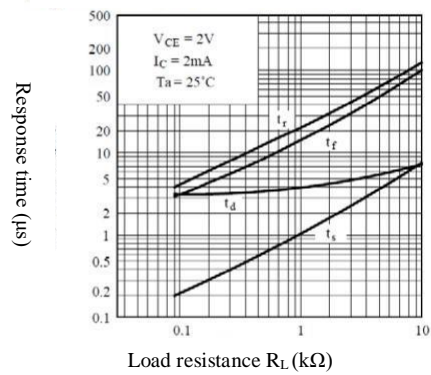


Fig.11 Frequency response curve

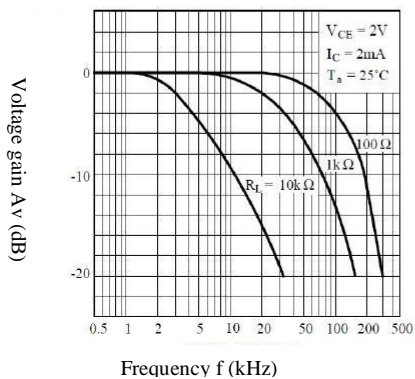


Fig.12 Saturation voltage drop vs forward current curve

