概述 Description

CYPC814 是一款由两个发光二极管和一个光电晶体管组成的光电耦合器。四引脚封装，两种材料（铜脚、铁脚；铜脚尾缀-G）两种形式（DIP、SMD）

The CYPC814 is a photoelectric coupler composed of two light-emitting diode and phototransistor. It is packaged in a 4-pin package, two materials (copper pin, iron pin; copper pin suffix -G) two forms (DIP, SMD)

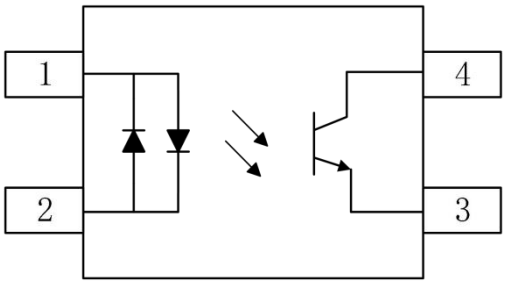
特性 Features

- 电流转换比 (CTR)范围: 20~300% （I_F =5mA ,V_{CE} =5V）
  Current transfer ratio:20~300%（I_F =5mA ,V_{CE} =5V）
- 输入-输出隔离电压 (Viso=5000 Vrms)
  High isolation voltage between input and output(VISO=5000 Vrms）
- 集电极-发射极击穿电压 BV_{CEO}≥80V
  Collector - emitter breakdown voltage BV_{CEO}≥80V
- 符合 EU REACH 和 RoHS
  Meet safety standard approval:EU REACH and RoHS

应用 Applications

- 开关电源，智能电表
  Switching power supply, intelligent meter
- 工业控制，测量仪器
  Industrial control, measuring instruments
- 办公设备， 比如复印机
  Office equipment such as copiers
- 家用电器， 比如空调、风扇、热水器等
  Household appliances: such as air conditioners, fans, water heaters, etc.

电路结构 Schematic Diagram and Package



1: ANODE
2: CATHODE
3: EMITTER
4: COLLECTOR


DIP-4


SMD-4

极限参数(Ta=25℃)Absolute Maximum Ratings (Ta=25℃)

参数 Parameter		符号 Symbol	额定值 Rating	单位 Unit
输入 Input	正向电流 Forward Current	I_F	±50	mA
	功耗 Power Dissipation	P	70	mW

	额定值降低因子(在 Ta = 100℃ 以上) Power dissipationDerating factor (above Ta = 100° C)	PDD	2.9	mW/°C
	热阻(结-环境) Thermal Resistance Junction-Ambient	RthJ-A	325	°C/W
	热阻(结-壳) Thermal Resistance Junction-Case	RthJ-C	200	°C/W
输出 output	集电极功耗 Collector Power Dissipation	PC	150	mW
	集电极电流 Collector Current	IC	50	mA
	集电极-发射极电压 Collector-Emitter Voltage	VCEO	80	V
	发射极-集电极电压 Emitter - Collector Voltage	VECO	6	V
总功耗 Total Power Dissipation		Ptot	200	mW
隔离电压 Isolation Voltage		Viso	5000	Vrms
工作温度 Operating Temperature		Topr	-55~+110	°C
储存温度 Storage Temperature		Tstg	-55~+125	°C
焊接温度 Soldering Temperature		Tsol	260 (10s)	°C

光电特性 (Ta =25℃) Electrical Characteristics (Ta = 25℃)

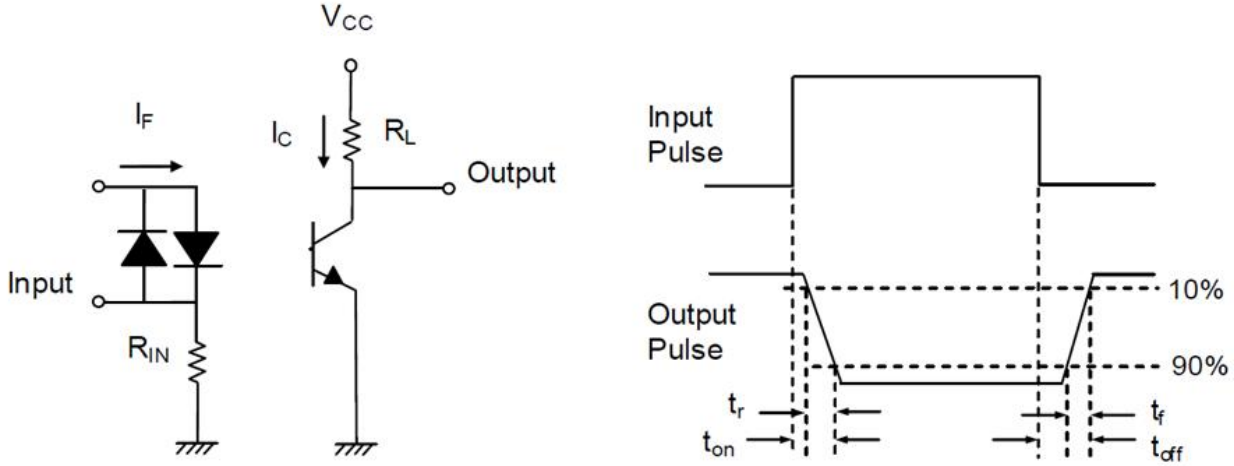
参数 Parameter		符号 Symbol	条件 Condition	最小 Min.	经典 Typ.	最大 Max.	单位 Unit
输入 Input	正向电压 Forward Voltage	VF	IF=±20mA	-	1.2	1.4	V
	终端电容 Terminal Capacitance	Ct	V=0, f= 1kHz	-	30	250	pF
输出 Output	集电极暗电流 Collector Dark Current	ICEO	VCE=20V	-	-	100	nA
	集电极-发射极击穿电压 Collector-Emitter Breakdown Voltage	BVCEO	IC=0. 1mA, IF=0	80	-	-	V
	发射极-集电极击穿电压 Emitter-Collector Breakdown Voltage	BVECO	IE= 10μA, IF=0	6	-	-	V
传输特性 Transfer Characteristics	电流转换比 Current Transfer Ratio	CTR	IF=5mA, VCE=5V	20	-	300	%
	集电极-发射极饱和压降 Collector-Emitter Saturation Voltage	VCE(sat)	IF=20mA, IC=1mA	-	0. 1	0.2	V
	隔离电阻 Isolation Resistance	RISO	DC500V, 40~60%R.H.	$5x10^{10}$	$1x10^{11}$	-	Ω
	隔离电容 Isolation capacitance	Cf	V=0, f= 1MHz	-	0.6	1.0	pF
	截止频率 Cut-off Frequency	Fc	VCE=5V, IC=2mA, RL=100Ω, -3dB	-	80	-	kHz

开关时间 switching time	上升时间 Rise Time	Tr	VCE=2V, IC=2mA, RL= 100Ω	-	4	18	μs
	下降时间 Fall Time	Tf		-	3	18	μs

CTR 分级表 CTR Classification Table

型号 models	CTR 分级标准 classification	电流转换率(%)Current Transfer Ratio (IC/IF)	
		IF = ±5mA, VCE = 5V, Ta = 25° C	
		最小值 Min.	最大值 Max.
CYPC814	A	50	150
	B	100	300
	None	20	300

测试电路图 Switching Time Test Circuit & Waveforms



特性曲线 Typical Electro-Optical Characteristics Curves

Figure 1. Forward Current vs Forward Voltage

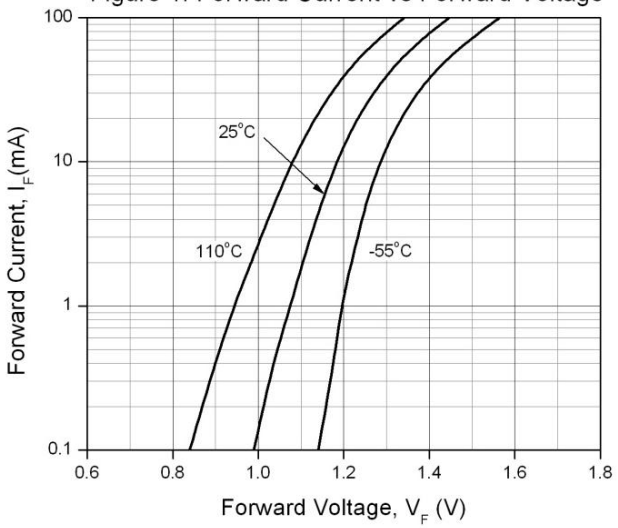


Figure 2. Normalized Current Transfer Ratio vs Forward Current

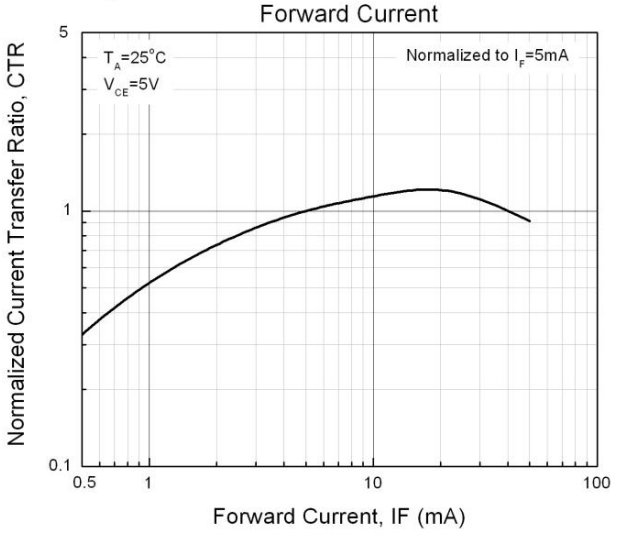


Figure 3. Current Transfer Ratio vs Ambient Temperature

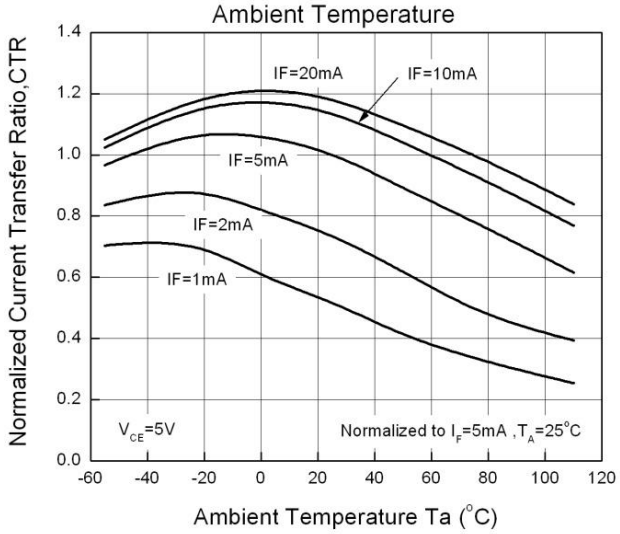


Figure 4. Dark Current vs Ambient Temperature

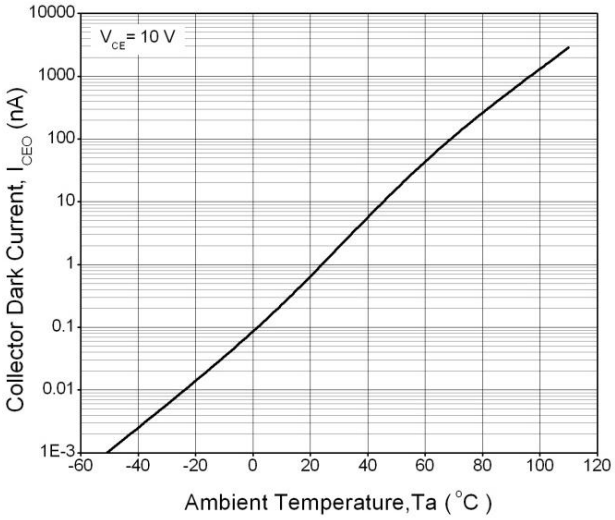


Figure 5. Collector Current vs Collector Voltage

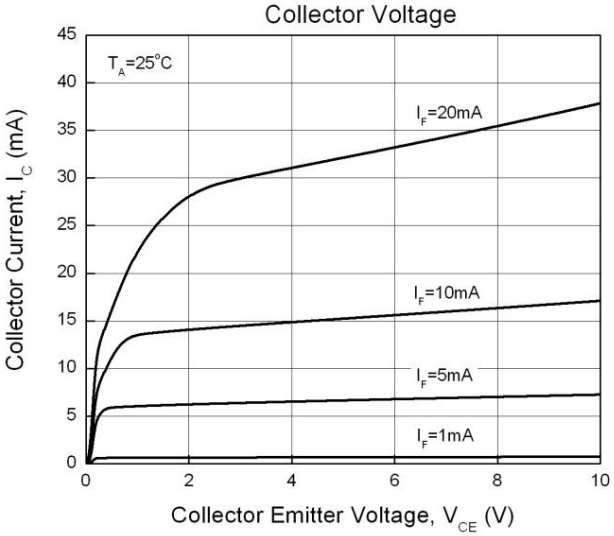


Figure 6. Collector Current vs Collector Voltage

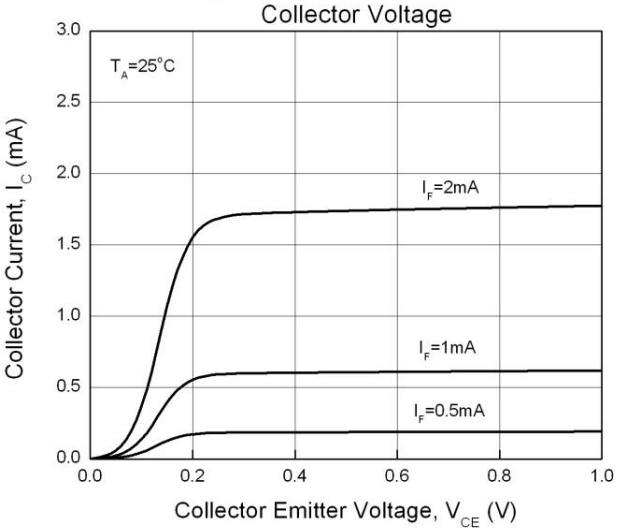


Figure 7. Collector-Emitter Saturation Voltage vs Collector Current

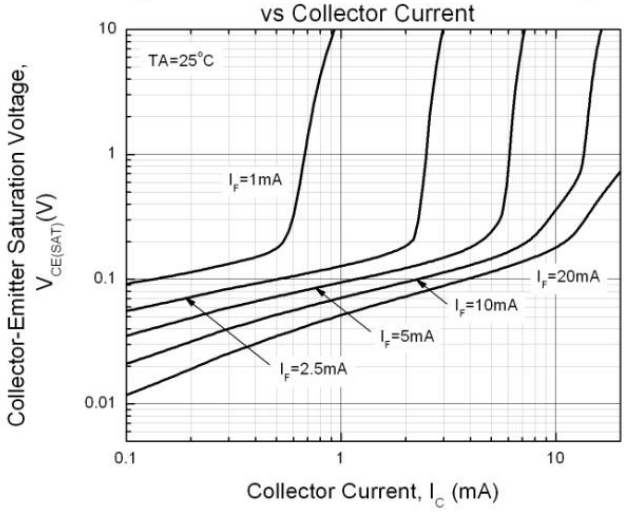
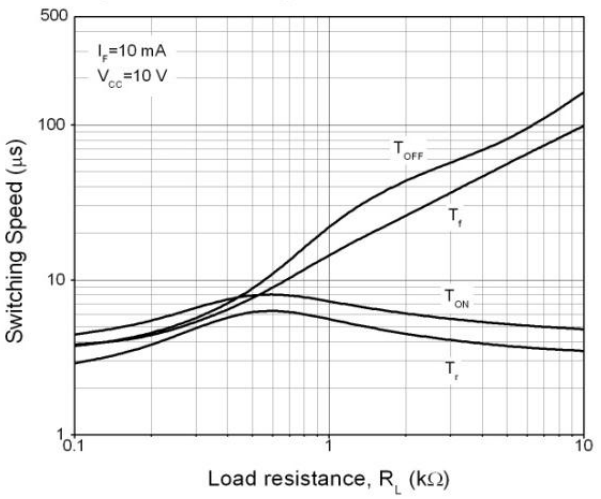


Figure 8. Switching Time vs Load Resistance



回流焊温度曲线图 TEMPERATURE PROFILE OF SOLDERING

1. 焊接注意事项

不管是使用烙铁还是回流焊，焊接温度应尽可能接近下面所示的条件。

• 回流焊时

回流焊不超过 260 ℃时须在 10 秒内完成焊接，焊接温度曲线是基于塑封体表面温度（见下图，以塑封体表面温度为基准）

回流焊只限过一至两次。

拆开包装后必须在 2 周内使用完。

1. Soldering Precautions

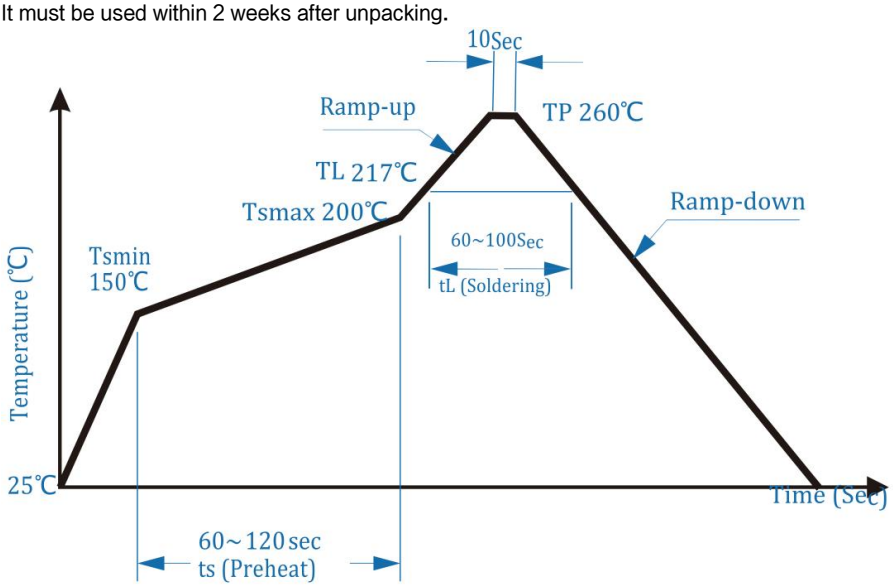
Whether using a soldering iron or reflow soldering, the soldering temperature should be as close as possible to the conditions shown below.

• When reflow soldering

Reflow soldering should be completed within 10 seconds if reflow soldering does not exceed 260 ℃. The soldering temperature profile is based on the surface temperature of the plastisol (see the chart below, based on the surface temperature of the plastisol).

Reflow soldering is limited to one or two passes.

It must be used within 2 weeks after unpacking.



• 波峰焊

建议在温度条件下进行一次性焊接。

温度：260+0/−5 ℃ 时间：10 秒。

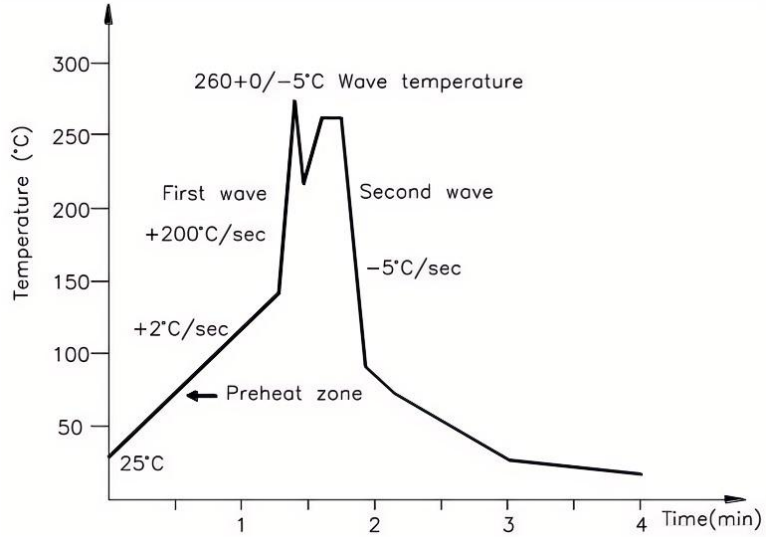
预热温度：25 至 140 ℃，预热时间： 30 至 80 秒。

•Wave soldering

It is recommended to perform one-time soldering under temperature conditions.

Temperature: 260+0/−5 ℃ Time: 10 sec.

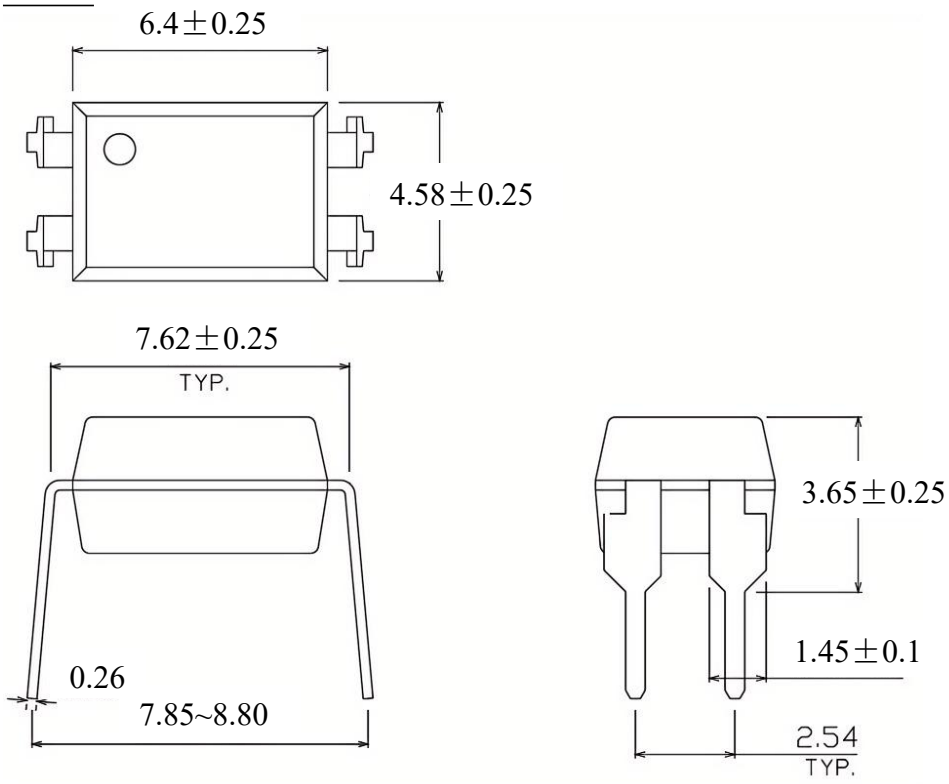
Preheat temperature: 25 to 140 ℃ Preheat time: 30 to 80 seconds.



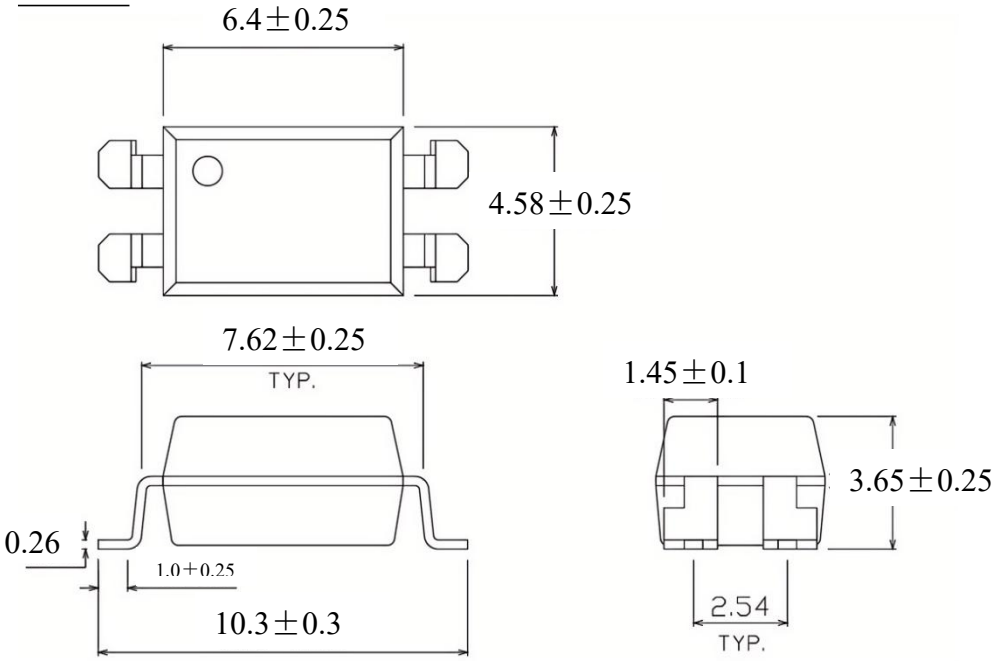
• 使用烙铁焊接
建议在温度条件下进行一次性焊接。
温度：260+0/−5 ℃；时间： 10 秒。
预热温度：25 至 140 ℃，预热时间： 30 至 80 秒。
• Soldering with a soldering iron
It is recommended to perform one−time soldering under temperature conditions.
Temperature: 260+0/−5 ℃; Time: 10 seconds.
Preheating temperature: 25 to 140 ℃; Preheating time: 30 to 80 seconds.

封装尺寸(单位:mm) Outline Dimensions

DIP-4

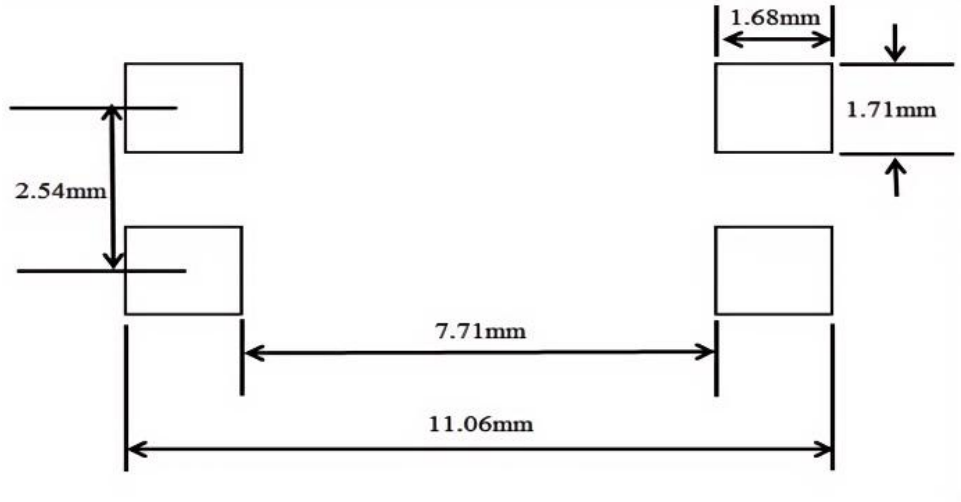


SMD-4



建议焊盘布局（单位 Unit: mm）Recommended Pad Layout

SMD-4



包装 Packing

封装形式 Package Type	包装方式 Packing Form	盘/管数量 Quantity per Reel	盒数量 Quantity per Box	箱数量 Quantity per Carton	盒规格 Box Specification	箱规格 Carton Specification	备注 Note
DIP-4	管装 Tube (500*12*11mm)	100 只/ 管 100pcs /tube	60 管/盒 60tubes/box	6 盒/箱 6boxes/ctn	526*118*75mm	540*260*255mm	
SMD-4	卷盘 Reel (ϕ330m)	2 千只/盘 2000pcs/reel	5 盘/盒 5reels/box	4 盒/箱 4boxes/ctn	350*340*108mm	458*365*350mm	首尾端空少 200mm(min.)

■ DIP-4 条管包装 Tube packaging

1) 每箱数量：36000 只 Quantity per box: 36000 pieces

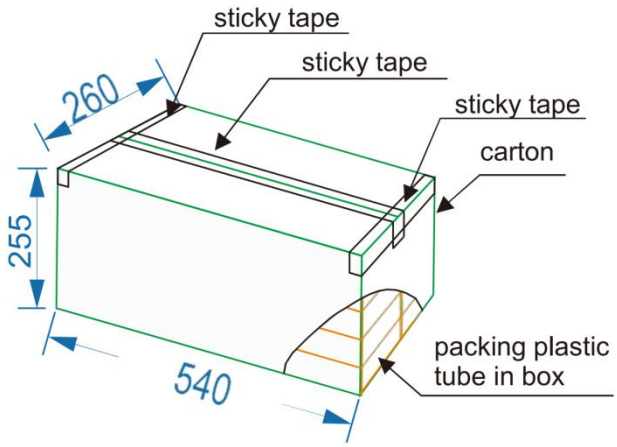
2) 内包装：Inner packaging:

i. 每条管 100 只，采用防静电条管。100 pieces per tube, using anti-static strip tubes.

ii. 管上有商标、防静电标志。There are trademarks and anti-static signs on the pipe.

iii. 每盒 60 条管。60 tubes per box.

3) 示意图：Diagram:

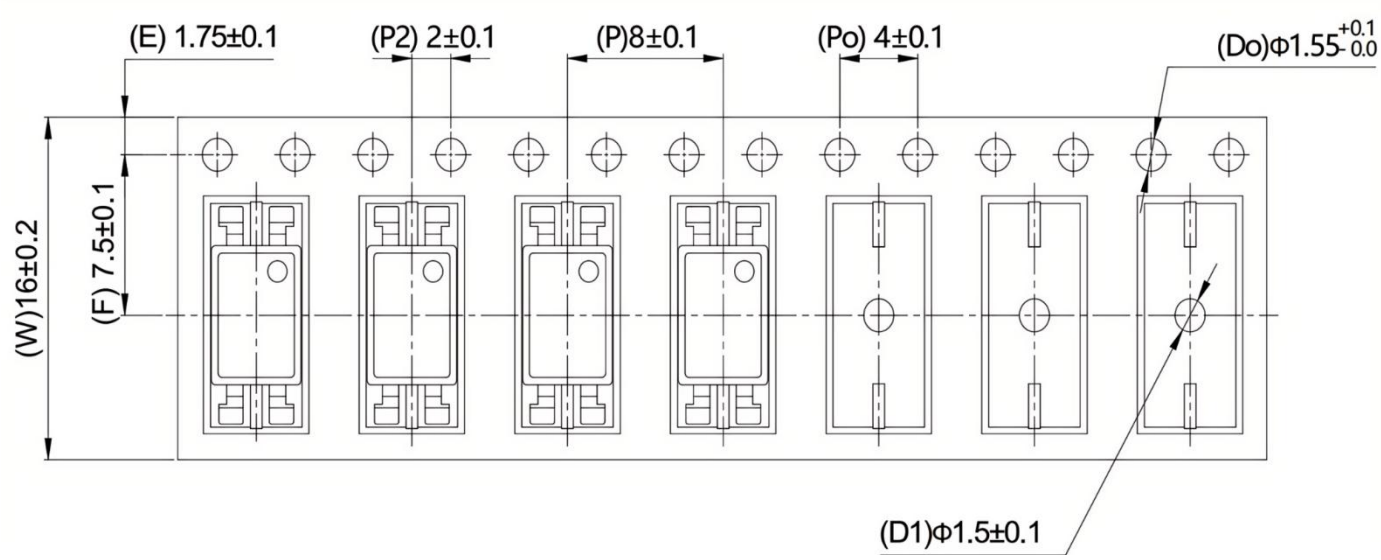


■ SMD-4 编带包装 Reel packaging

1) 每卷数量：2000 只. 每箱数量：40000 只. Quantity per roll: 2000 pieces Quantity per box: 40000 pieces

2) 内包装：每卷盘 2000 只. Inner packaging: 2000 pieces per roll

3) 示意图 Schematic diagram



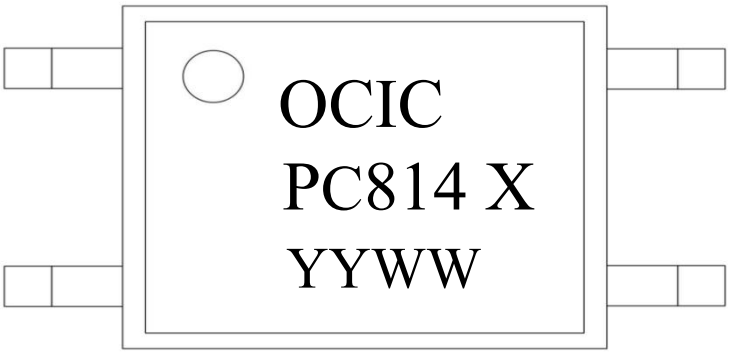
产品型号命名规则 Order Code

CY PC814 (X - W) (ZZ)

① ② ③ ④ ⑤

1. 公司代码： CY 代表公司简称
   Company code: CY stands for company abbreviation
2. 产品系列： PC814
   Product series: PC814
3. CTR 档位：X 代表分档，如 A、B; 也可为空
   CTR gear: X represents gear, such as A, B; it can also be empty
4. 包装形式：W 代表包装形式，如 TP 为卷盘包装，空为管装
   Packaging form: W represents packaging form, such as TP for reel packaging and empty for tube packaging
5. 内部补充代码：ZZ 代表内部补充代码，数字或者空白
   Internal supplementary code: ZZ represents the internal supplementary code, which can be numerical or blank

印丝 Marking Information



●印字中“OCIC”表示为品牌 LOGO
“OCIC”denotes LOGO
●印字中“PC814”表示为产品系列
“P814”denotes product series: PC814
●印字中“X”表示为产品分档，如 A、B; 也可为空
“X ”CTR gear, such as A, B; it can also be empty
●印字中“YY”代表年份：21(2021),22(2022),23(2023)...
“YY”denotes YEAR：：21(2021),22(2022),23(2023)…...
●印字中“WW”代表周期：01（第一周),02(第二周)....
“WW”denotes Week’s number.

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