

概述

CY4NXX 光电耦合器由砷化镓的红外发光二极管和光电晶体管组成，有 6 脚双列直插式和 6 脚双列贴片封装形式。

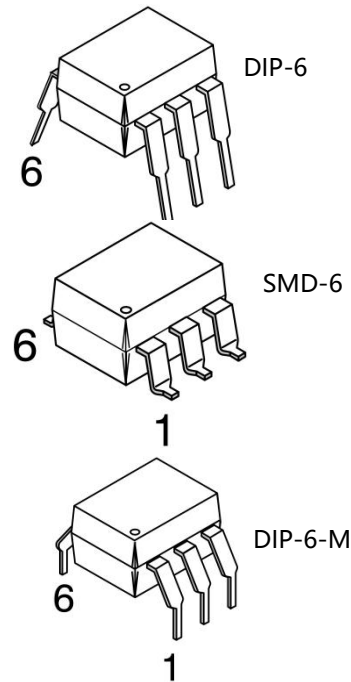
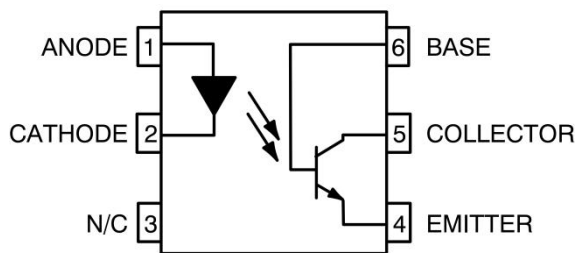
特性

- 最小电流传输比测试条件为 $I_F = 10 \text{ mA}$, $V_{CE} = 10 \text{ V}$
 10% for CY4N27 and CY4N28
 20% for CY4N25 and CY4N26
 100% for CY4N35 and CY4N36 and CY4N37

应用

- 电源稳压器
- 数字逻辑输入
- 微处理器输入

电路结构和封装



极限参数 ($T_a = 25^\circ\text{C}$)

参数		符号	额值	单位
输入	正向电流	I _F	60	mA
	反向电压	V _R	6	V
	正向峰值电流 (300 s, 2% Duty Cycle)	I _{F(pk)}	3	A
	输入功耗	P _D	120	mW
	输入功耗降额 25°C 以上		1.14	mW/°C
输出	输出功率	P _C	150	mW
	输出功率降额 25°C 以上		1.76	mW/°C
	集电极-发射极电压	V _{CEO}	30	V
	集电极-基极电压	V _{CBO}	70	V
	发射极-集电极电压	V _{ECO}	7	V
总功耗		Ptot	270	mW
总功耗降额 25°C 以上			2.94	mW/°C
工作温度		Topr	-40~+100	°C
储存温度		Tstg	-40~+125	°C
结温		T _J	-40~+125	°C
焊接温度 (10 秒)		Tsol	260	°C

电性参数 (Ta=25°C)

参数		符号	测试等条件	最小值	典型值	最大值	单位
正向电压		V_F	$I_F = 10\text{mA}$		1.2	1.5	V
反向电流		I_R	$V_R = 6\text{V}$	-	-	10	μA
集电极暗电流		I_{CEO}	$V_{CE} = 10\text{V}$	-	-	50	nA
基极暗电流		I_{CBO}	$V_{CE} = 10\text{V}$	-	-	20	nA
集电极-发射极击穿电压		BV_{CEO}	$I_C = 0.1\text{mA}, I_F = 0$	30	-	-	V
集电极-基极击穿电压		BV_{CBO}	$I_C = 0.1\text{mA}, I_F = 0$	70	-	-	V
发射极-集电极击穿电压		BV_{ECO}	$I_E = 100\mu\text{A}, I_F = 0$	7	-	-	V
电流传输比	CY4N35,CY4N36,CY4N37	CTR	$I_F = 10\text{mA}, V_{CE} = 10\text{V}$	100			%
	CY4N25,CY4N26			20			
	CY4N27,CY4N28			10			
	CY4N35,CY4N36,CY4N37		$I_F = 10\text{mA}, V_{CE} = 10\text{V}, T_A = -55^\circ\text{C}$	40	-	-	
	CY4N35,CY4N36,CY4N37		$I_F = 10\text{mA}, V_{CE} = 10\text{V}, T_A = +100^\circ\text{C}$	40	-	-	
集电极-发射极饱和电压	CY4N25,CY4N26, CY4N27,CY4N28	$V_{CE(sat)}$	$I_F = 50\text{mA}, I_C = 2\text{mA}$	-	-	0.5	V
	CY4N35,CY4N36,CY4N37		$I_F = 10\text{mA}, I_C = 0.5\text{mA}$	-	-	0.3	
隔离电阻		R_{ISO}	$V_{I-O} = \pm 500\text{VDC}, T_A = 25^\circ\text{C}$	10^{11}	-	-	Ω
隔离电压		V_{ISO}	$t = 1\text{ Minute}$	4170	-	-	V_{RMS}
隔离电容		C_{ISO}	$V_{I-O} = 0\text{V}, f = 1\text{ MHz}$	-	0.2	-	pF
集电极-发射极电容		C_{CE}	$V_{CE} = 0, f = 1\text{MHz}$	-	8	-	pF
非饱和状态开启时间	CY4N25,CY4N26, CY4N27,CY4N28	T_{ON}	$V_{CE} = 10\text{V}, I_C = 10\text{mA}, R_L = 100\Omega$	-	2	-	μs
	CY4N35,CY4N36,CY4N37		$V_{CE} = 10\text{V}, I_C = 2\text{mA}, R_L = 100\Omega$	-	2	10	
关断时间	CY4N25,CY4N26, CY4N27,CY4N28	T_{OFF}	$V_{CE} = 10\text{V}, I_C = 10\text{mA}, R_L = 100\Omega$	-	2	-	μs
	CY4N35,CY4N36,CY4N37		$V_{CE} = 10\text{V}, I_C = 2\text{mA}, R_L = 100\Omega$	-	2	10	

特性曲线

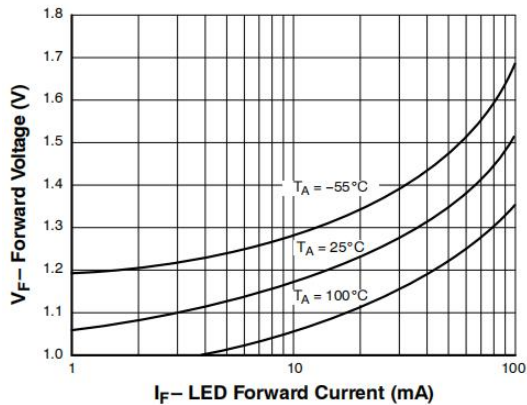


Figure 1. LED Forward Voltage vs. Forward Current

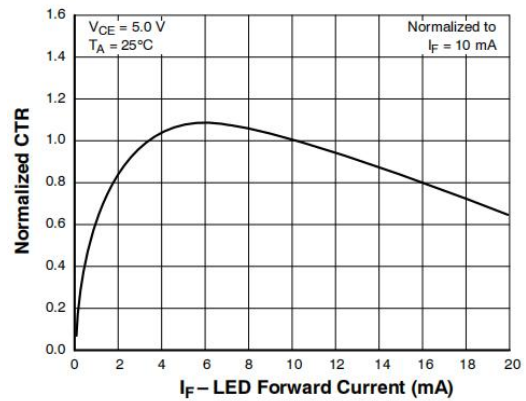


Figure 2. Normalized CTR vs. Forward Current

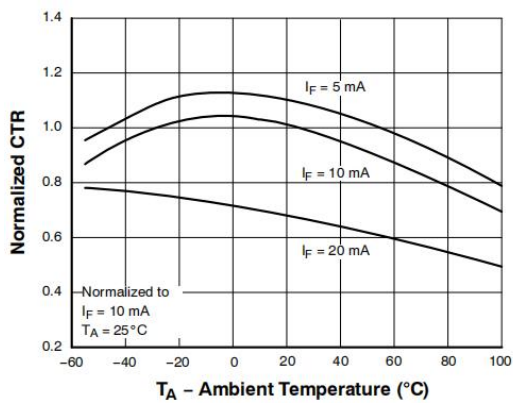


Figure 3. Normalized CTR vs. Ambient Temperature

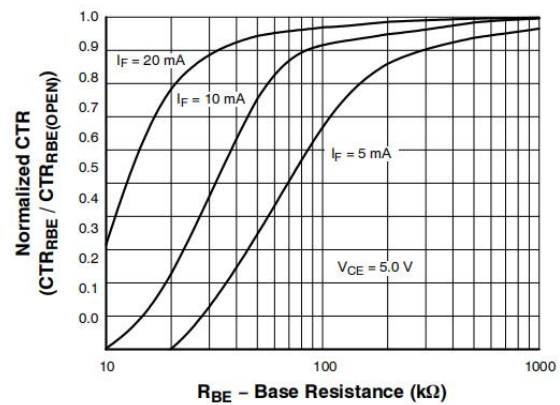


Figure 4. CTR vs. RBE (Unsaturated)

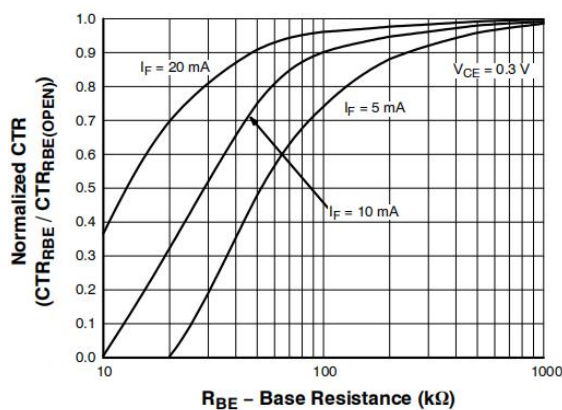


Figure 5. CTR vs. RBE (Saturated)

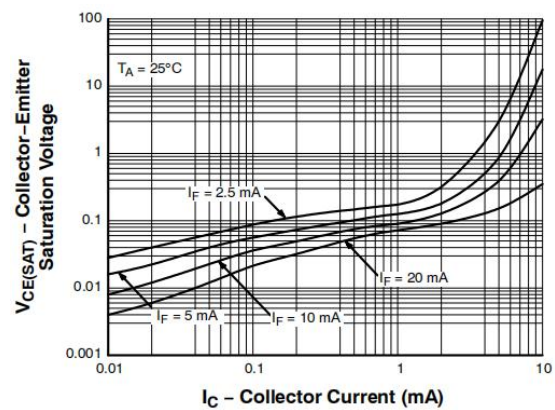


Figure 6. Collector-Emitter Saturation Voltage vs.

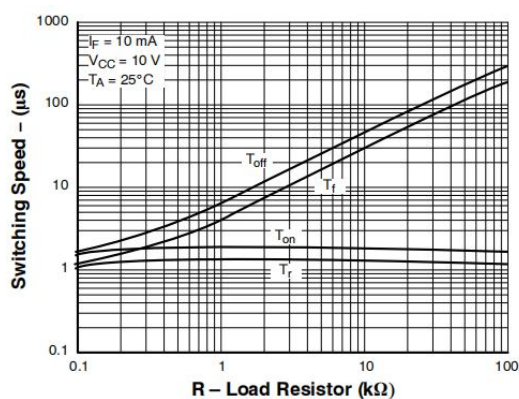


Figure 7. Switching Speed vs. Load Resistor

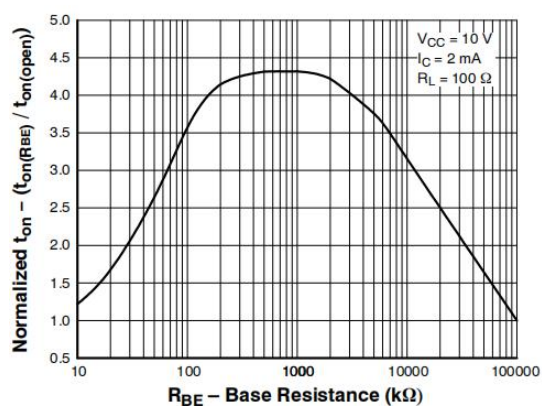


Figure 8. Normalized t_{on} vs. R_{BE}

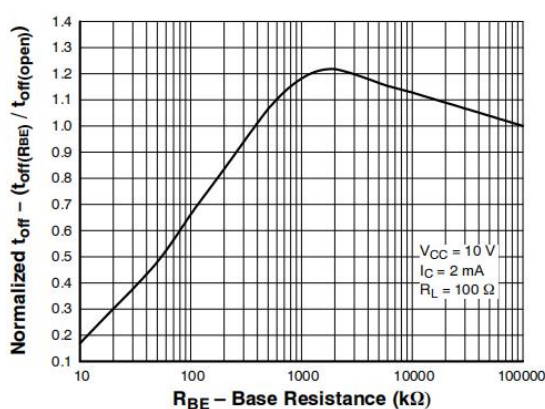


Figure 9. Normalized t_{off} vs. R_{BE}

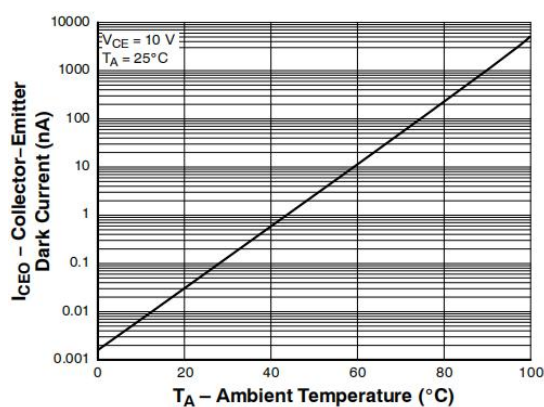


Figure 10. Dark Current vs. Ambient Temperature

开关时间测试电路和波形

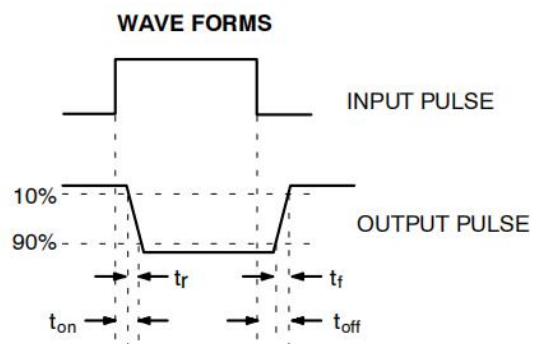
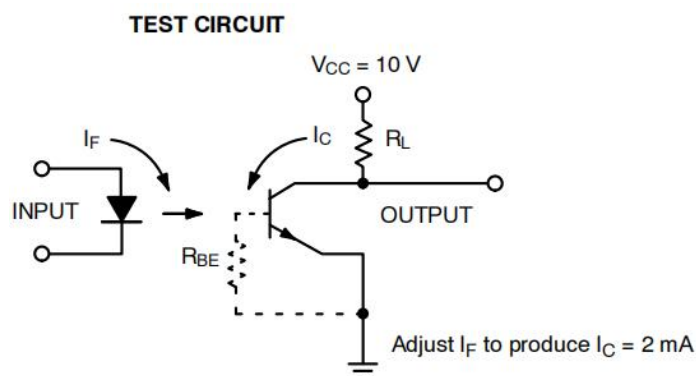
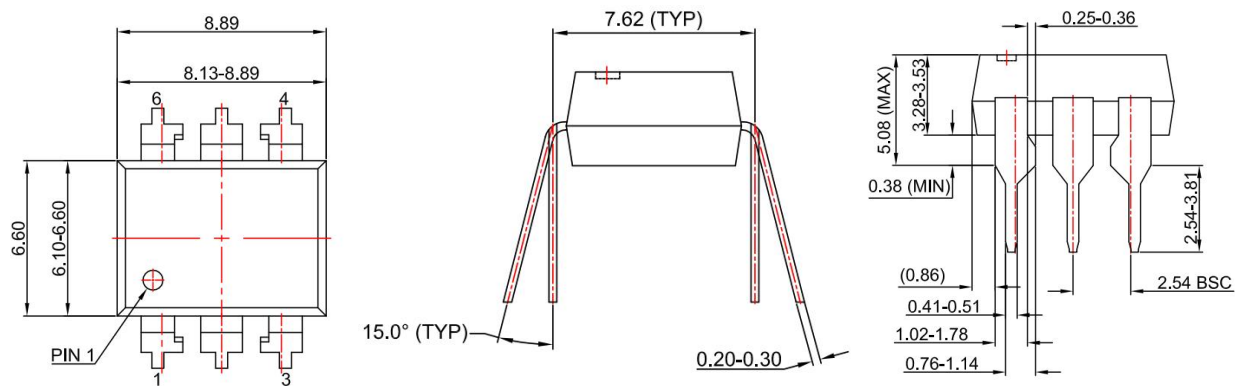


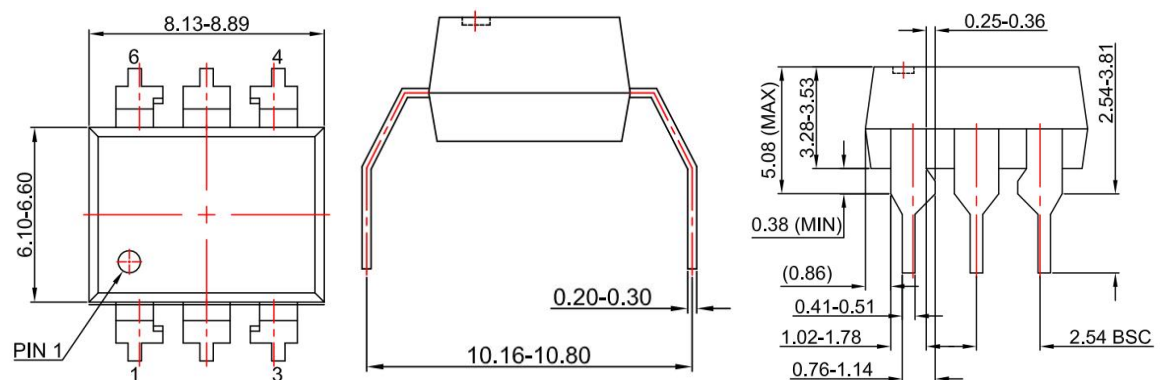
Figure 11. Switching Time Test Circuit and Waveform

外形尺寸

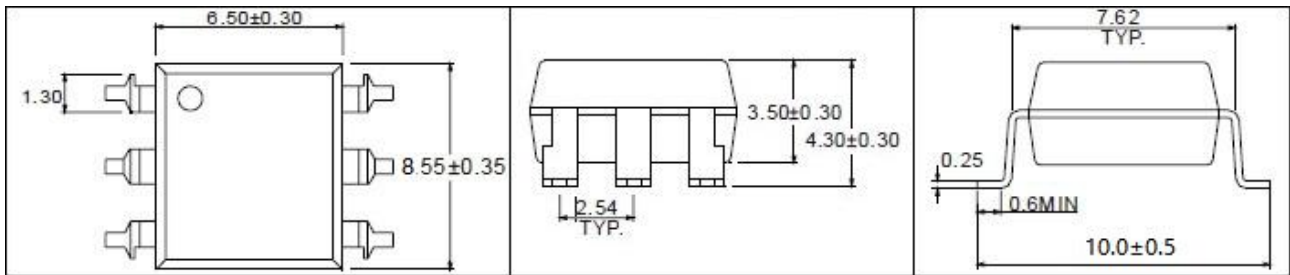
1) DIP-6



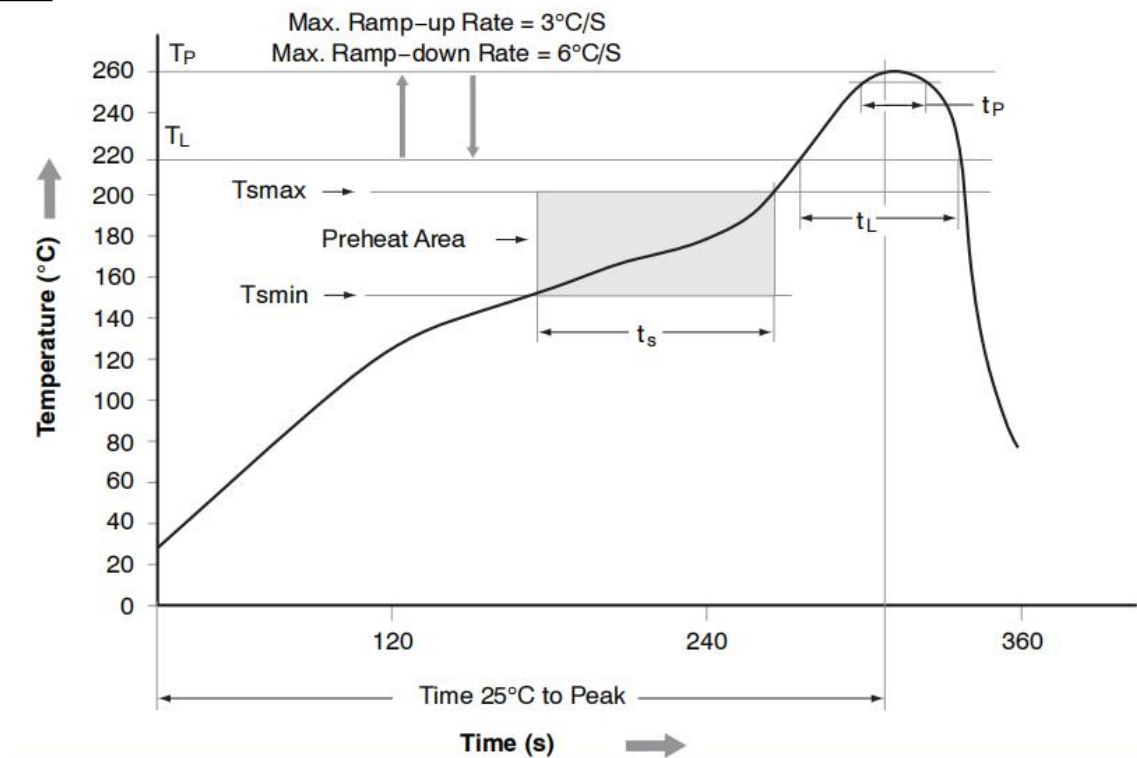
2) DIP-6-M



3) SMD-6



回流焊曲线



Profile Feature	Pb-Free Assembly Profile
Temperature Min. (T _{min})	150°C
Temperature Max. (T _{max})	200°C
Time (t _S) from (T _{min} to T _{max})	60–120 seconds
Ramp-up Rate (t _L to t _P)	3°C/second max.
Liquidous Temperature (T _L)	217°C
Time (t _L) Maintained Above (T _L)	60–150 seconds
Peak Body Package Temperature	260°C +0°C / –5°C
Time (t _P) within 5°C of 260°C	30 seconds
Ramp-down Rate (T _P to T _L)	6°C/second max.
Time 25°C to Peak Temperature	8 minutes max.

Figure 12. Reflow Profile

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