



概述

TLP521是可控制的光电耦合器件，电路之间的信号传输，使之前端与负载完全隔离，目的在于增加安全性，减小电路干扰，减化电路设计。四引脚封装，三种形式（DIP、DIP-M、SMD）

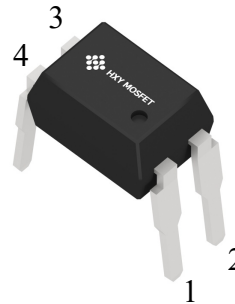
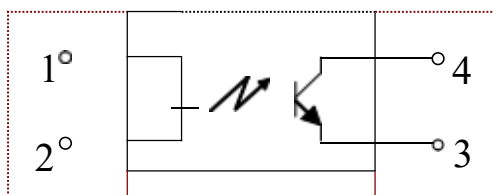
特性

- 电流转换比 (CTR)范围: 50~600% ($I_F=5\text{mA}$, $V_{CE}=5\text{V}$)
- 输入-输出隔离电压 ($V_{iso}=5000\text{ Vrms}$)
- 集电极-发射极击穿电压 $BV_{CEO}\geq 80\text{V}$

应用

- 开关电源，智能电表
- 工业控制，测量仪器
- 办公设备，比如复印机
- 家用电器，比如空调、风扇、热水器等

结构原理图



绝对最大额定值 ($T_a=25^{\circ}\text{C}$)

参数		符号	额定值	单位
输入	正向电流	I_F	50	mA
	反向电压	V_R	6	V
	功耗	P	70	mW
输出	集电极功耗	P_C	150	mW
	集电极电流	I_C	50	mA
	集电极-发射极电压	V_{CEO}	80	V
	发射极-集电极电压	V_{ECO}	7	V
总功耗		P_{tot}	200	mW
隔离电压		V_{iso}	5000	V_{rms}
工作温度		T_{opr}	$0^{\circ}\sim+70^{\circ}$	$^{\circ}\text{C}$
储存温度		T_{stg}	$-55^{\circ}\sim+125^{\circ}$	$^{\circ}\text{C}$
焊接温度		T_{sol}	260	$^{\circ}\text{C}$



光电特性 (Ta=25°C)

参数		符号	条件	最小	额定	最大	单位
输入	正向电压	V_{F1}	$I_F=10\text{mA}$	1.0	-	1.3	V
	正向电压	V_{F2}	$I_F=20\text{mA}$	1.1	-	1.4	V
	反向电流	I_R	$V_R=5\text{V}$	-	-	10	μA
	终端电容	C_t	$V=0, f=1\text{kHz}$	-	30	250	pF
输出	集电极暗电流	I_{CEO}	$V_{CE}=50\text{V}$	-	-	100	nA
	集电极-发射极击穿电压	BV_{CEO}	$I_C=0.1\text{mA}, I_F=0$	80	-	-	V
	发射极-集电极击穿电压	BV_{ECO}	$I_E=10\mu\text{A}, I_F=0$	7	-	-	V
传输特性	电流转换比	CTR	$I_F=5\text{mA}, V_{CE}=5\text{V}$	130	-	600	%
	隔离电阻	$V_{CE(sat)}$	$I_F=2\text{mA}, I_C=5\text{mA}$	-	0.25	0.8	V
	集电极-发射极饱和压降	R_{ISO}	DC500V, 40~60%R.H.	1×10^{12}	-	-	Ω
	隔离电容	C_f	$V=0, f=1\text{MHz}$	-	0.6	1.0	pF
	截止频率	F_c	$V_{CE}=5\text{V}, I_C=2\text{mA},$ $R_L=100\Omega, -3\text{dB}$	-	80	-	kHz
开关时间	上升时间	T_r	$V_{CE}=10\text{V}, I_C=2\text{mA},$ $R_L=100\Omega$	-	2	-	μs
	下降时间	T_f		-	3	-	μs
	开启时间	T_{on}		-	3	-	μs
	关断时间	T_{off}		-	3	-	μs
	开启时间	T_{on}	$R_L = 1.9 \text{ k}\Omega$ $V_{CC} = 5 \text{ V}, I_F = 16 \text{ mA}$	-	2	-	μs
	存储时间	T_s		-	15	-	μs
	关断时间	T_{off}		-	25	-	μs

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

CTR分级表

型号	分级标准	电流转换率(%) (I_C/I_F)	
		$I_F = 5\text{mA}, V_{CE} = 5\text{V}, T_a = 25^\circ\text{C}$	
		Min	Max
TLP521	TLP521	50	600
	TLP521Y	50	150
	TLP521GR	100	300
	TLP521BL	200	600
	TLP521GB	100	600



测试电路与典型特性

Fig.1 测试线路图

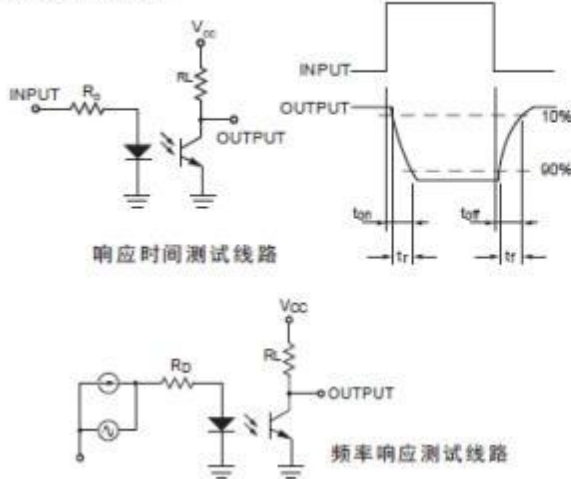


Fig.2 电流转换比 vs 正向电流曲线图

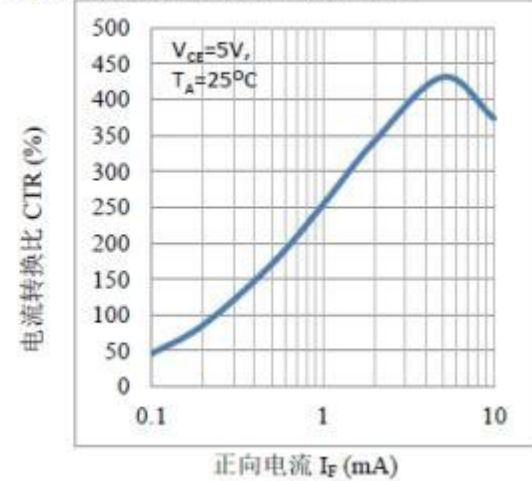


Fig.3 正向电流 vs 正向电压曲线图

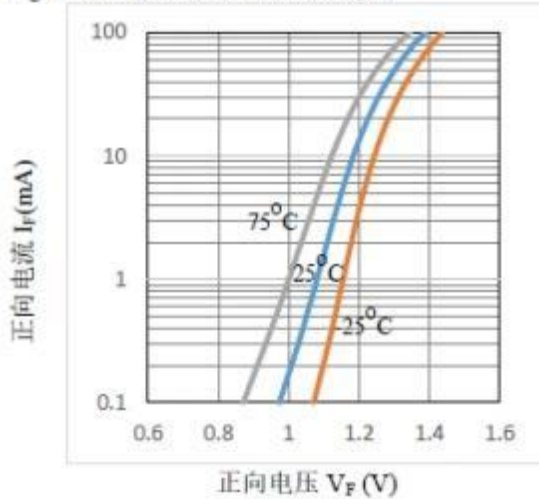


Fig.4 集电极电流 vs 集-发电压曲线图

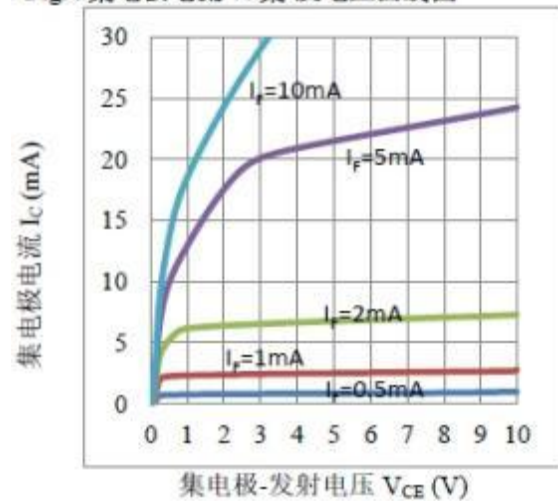


Fig.5 相对电流转换比 vs 环境温度曲线图

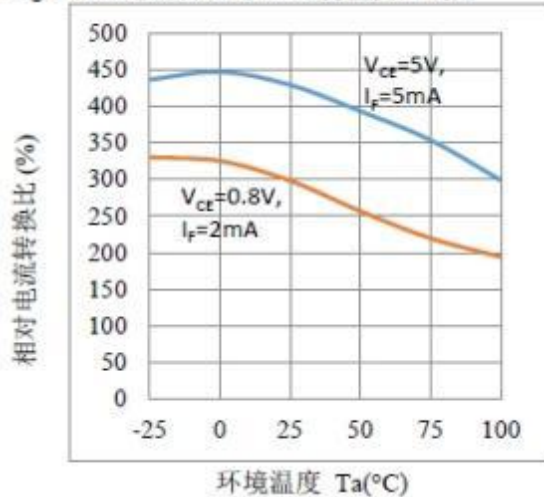


Fig.6 饱和压降 vs 环境温度曲线图

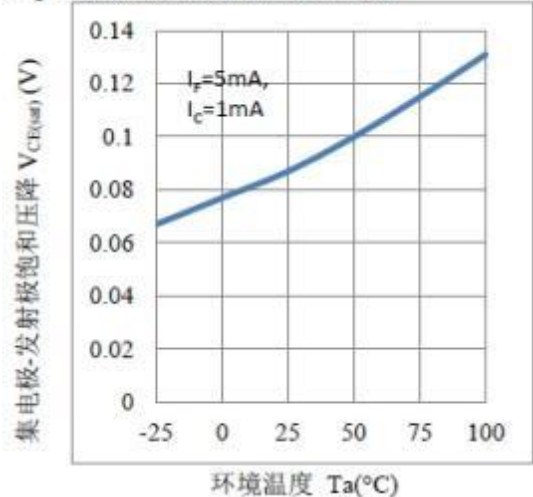




Fig.7 集电极暗电流 vs 环境温度曲线图

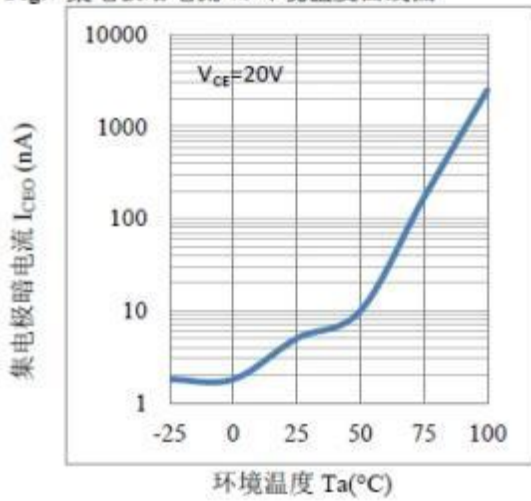


Fig.8 响应时间 vs 负载电阻曲线图

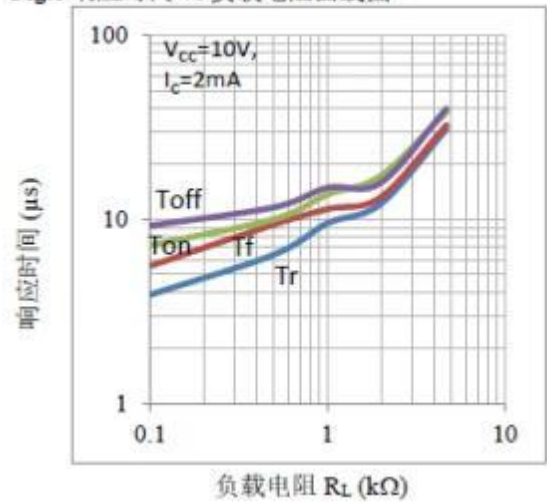


Fig.9 频率响应曲线图

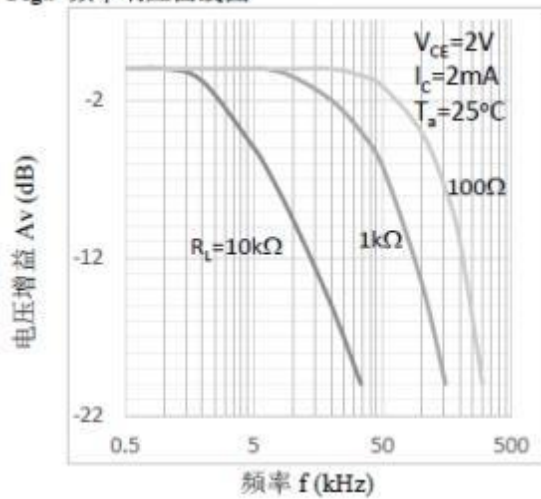
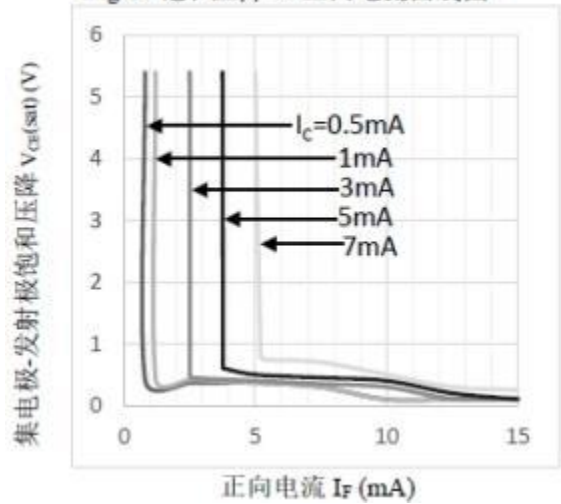


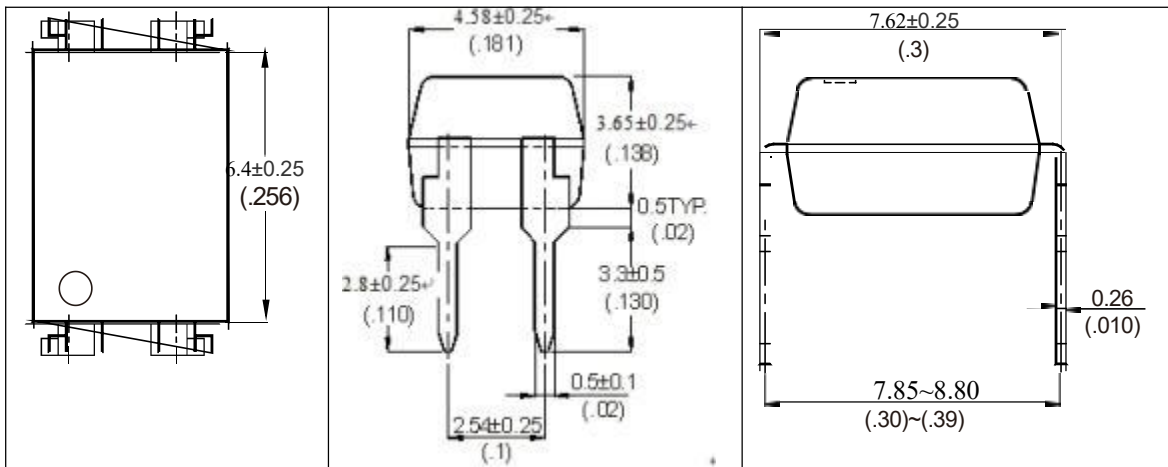
Fig.10 饱和压降 vs 正向电流曲线图



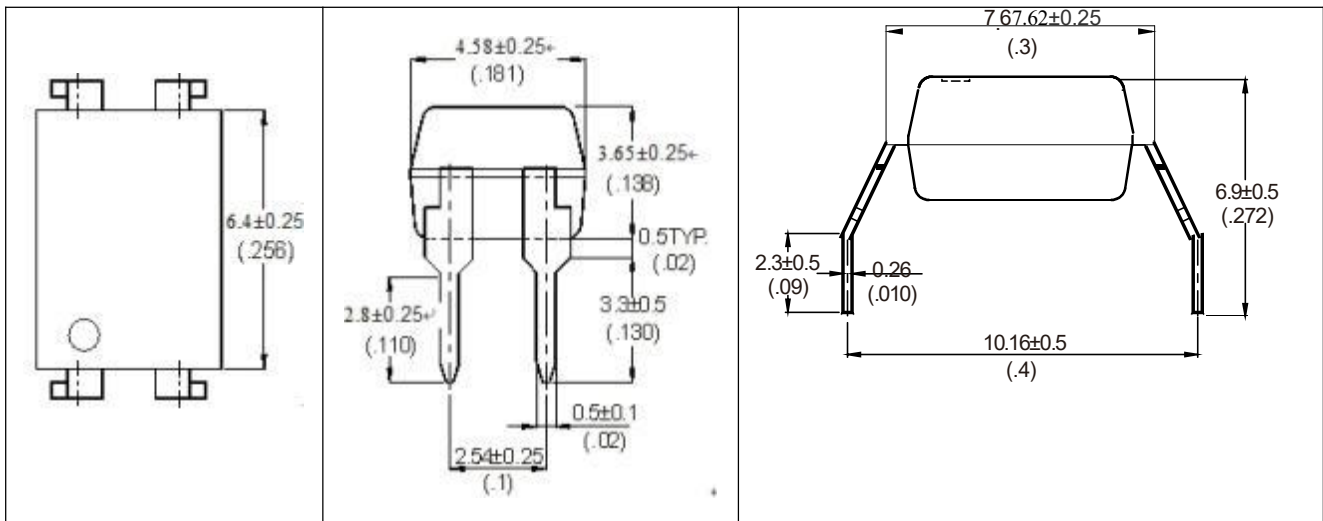


外形尺寸

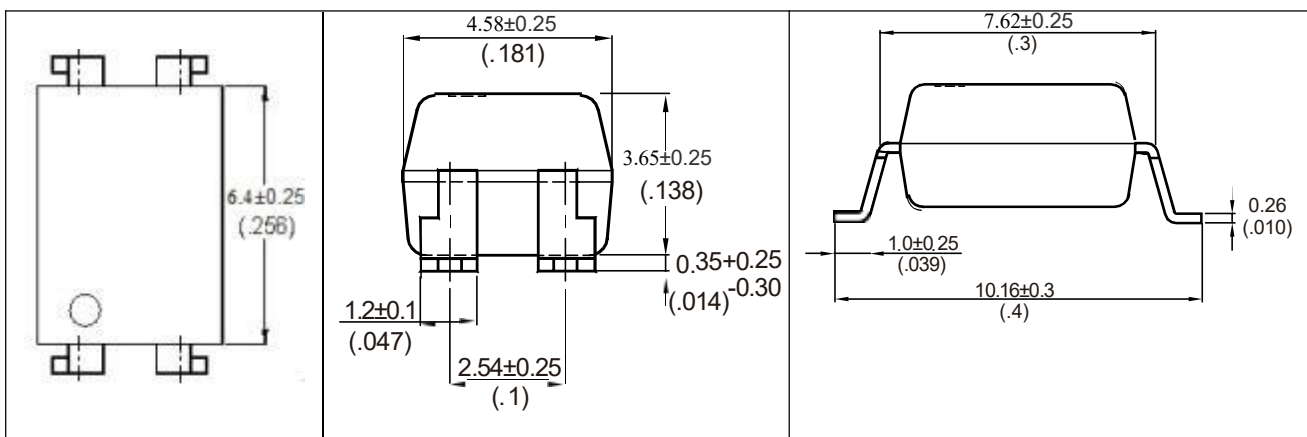
Unit: mm (inch)



4-pin DIP



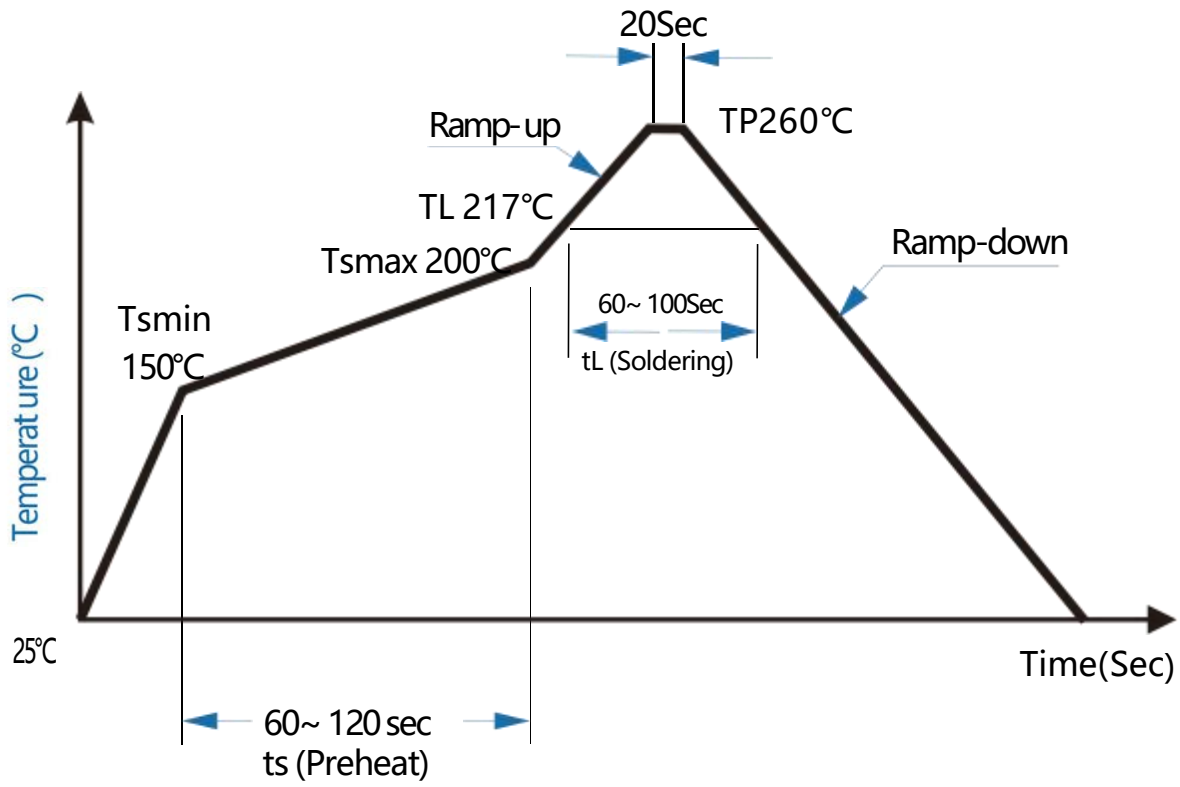
4-pin DIP (M Type)



4-pin SMD



回流焊温度曲线图





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