



## 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）

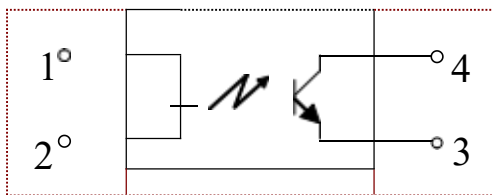
## 特性

- 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 ( $V_{iso}=5000\text{V}_{rms}$ )
- 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		$T_{opr}$	$0\sim+70$	$^\circ\text{C}$
储存温度		$T_{stg}$	$-55\sim+125$	$^\circ\text{C}$
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	$\mu\text{A}$
	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.	$1 \times 10^{12}$	-	-	$\Omega$
	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	-	$\mu\text{s}$
	下降时间	$T_f$		-	3	-	$\mu\text{s}$
	开启时间	$T_{on}$		-	3	-	$\mu\text{s}$
	关断时间	$T_{off}$		-	3	-	$\mu\text{s}$
	开启时间	$T_{on}$	$R_L = 1.9 \text{ k}\Omega$ $V_{CC} = 5 \text{ V}, I_F = 16 \text{ mA}$	-	2	-	$\mu\text{s}$
	存储时间	$T_s$		-	15	-	$\mu\text{s}$
	关断时间	$T_{off}$		-	25	-	$\mu\text{s}$

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

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

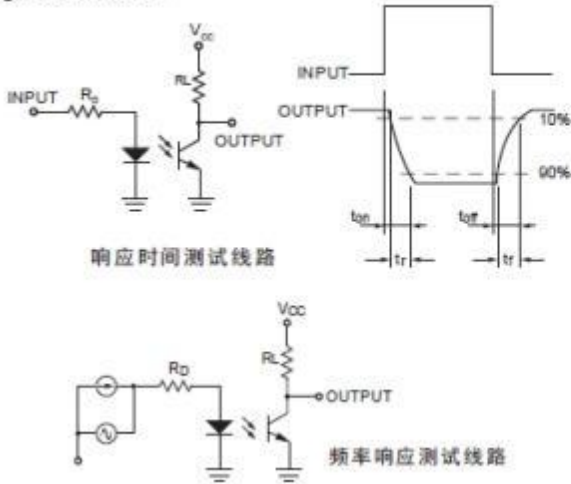


Fig.2 电流转换比 vs 正向电流曲线图

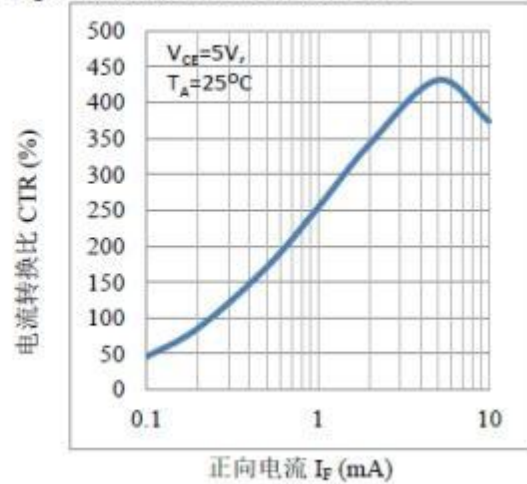


Fig.3 正向电流 vs 正向电压曲线图

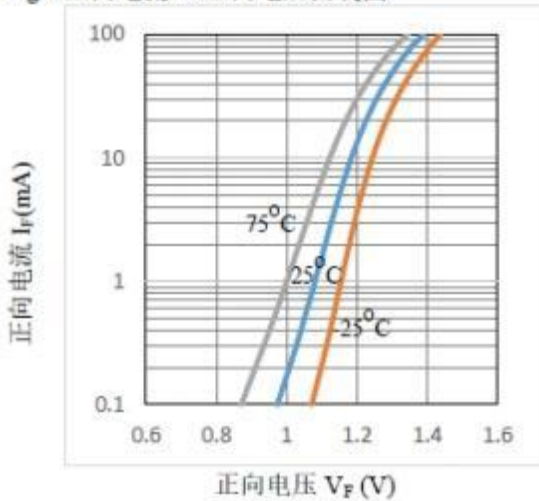


Fig.4 集电极电流 vs 集-发电压曲线图

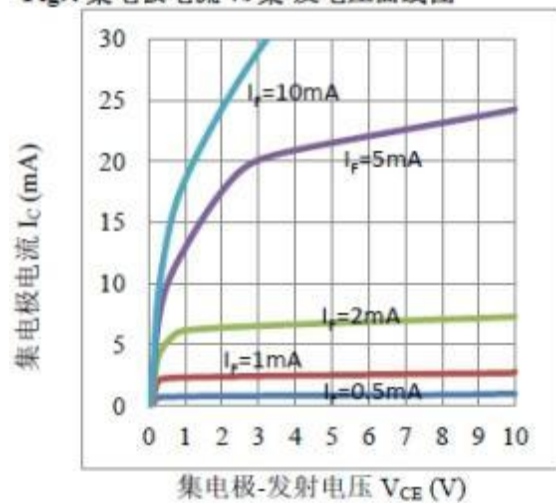


Fig.5 相对电流转换比 vs 环境温度曲线图

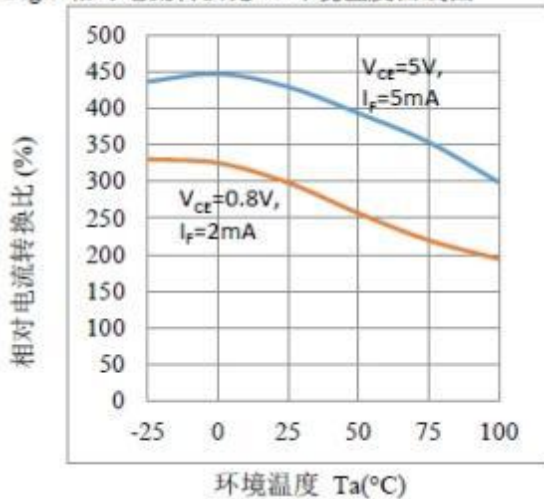


Fig.6 饱和压降 vs 环境温度曲线图

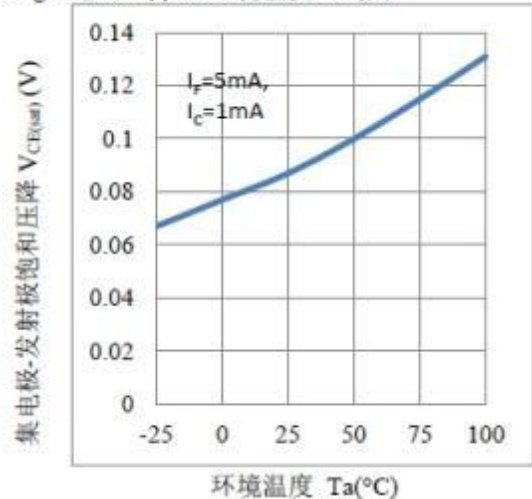




Fig.7 集电极暗电流 vs 环境温度曲线图

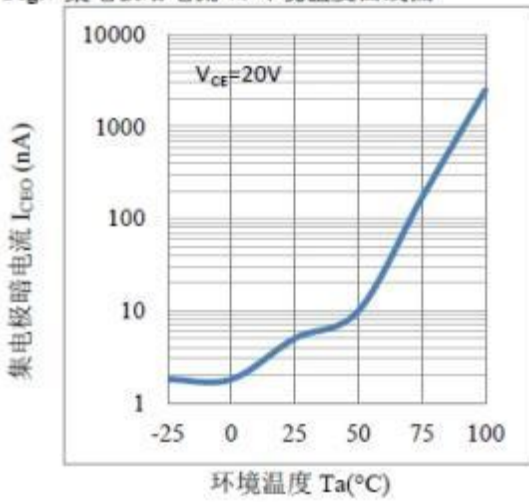


Fig.8 响应时间 vs 负载电阻曲线图

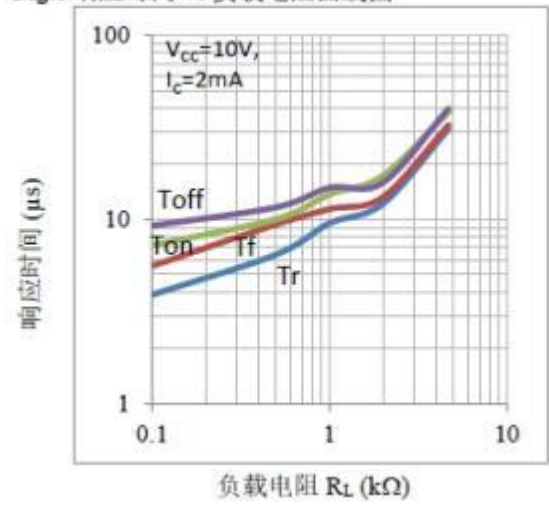


Fig.9 频率响应曲线图

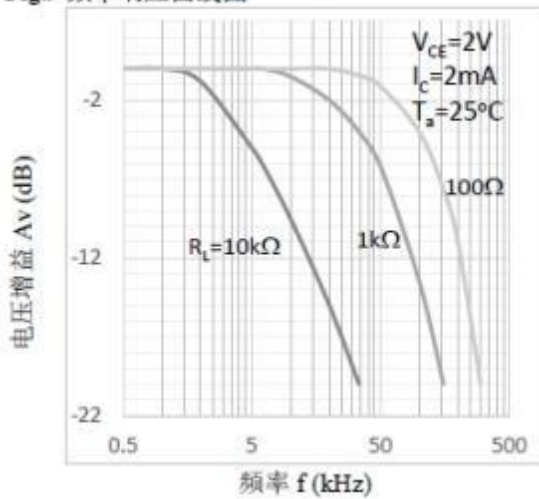
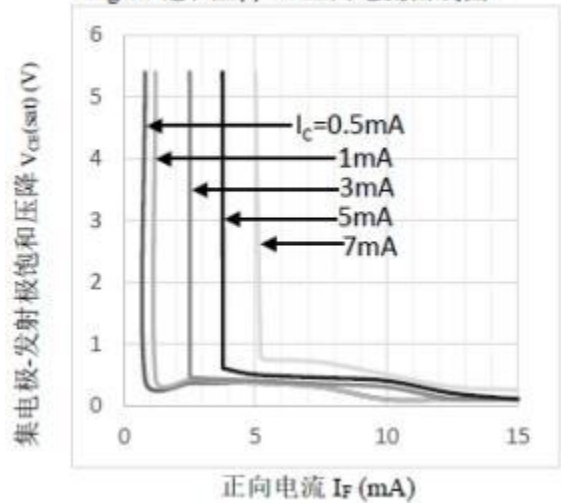


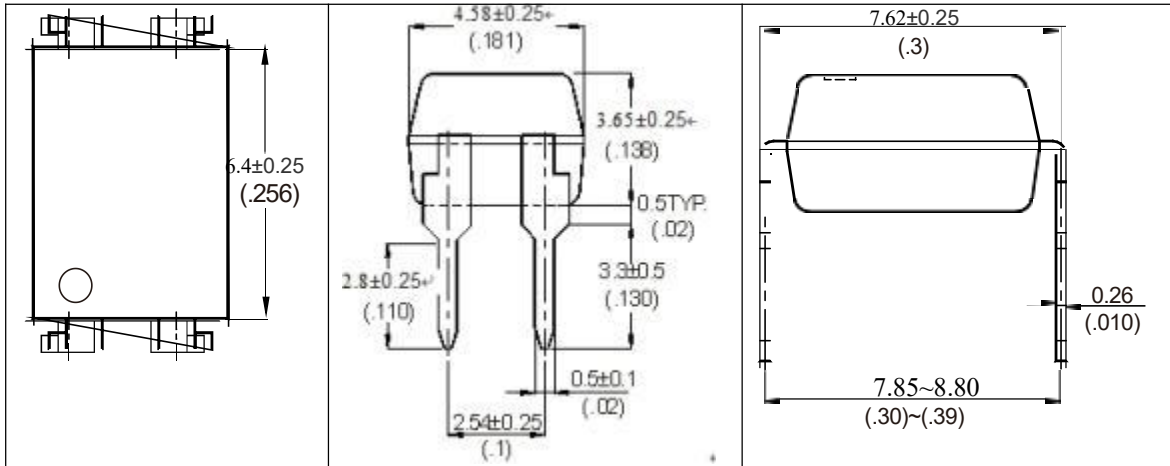
Fig.10 饱和压降 vs 正向电流曲线图



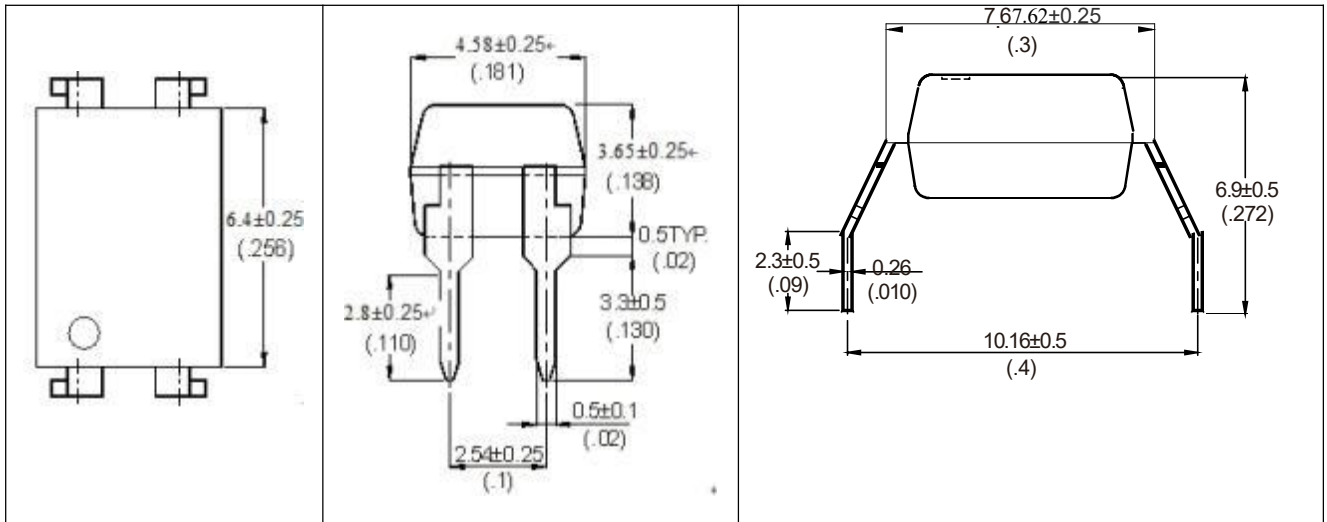


外形尺寸

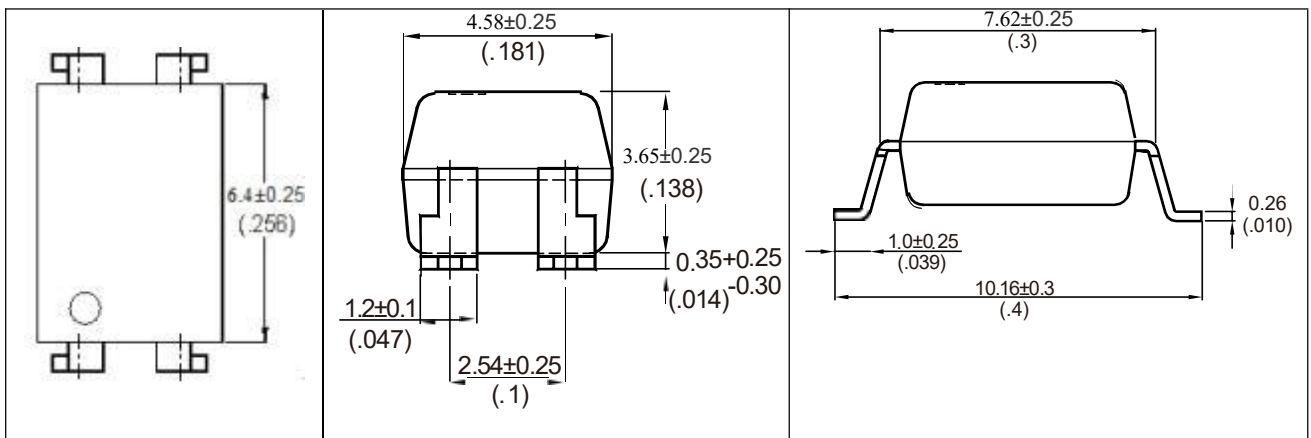
Unit: mm (inch)



4-pin DIP



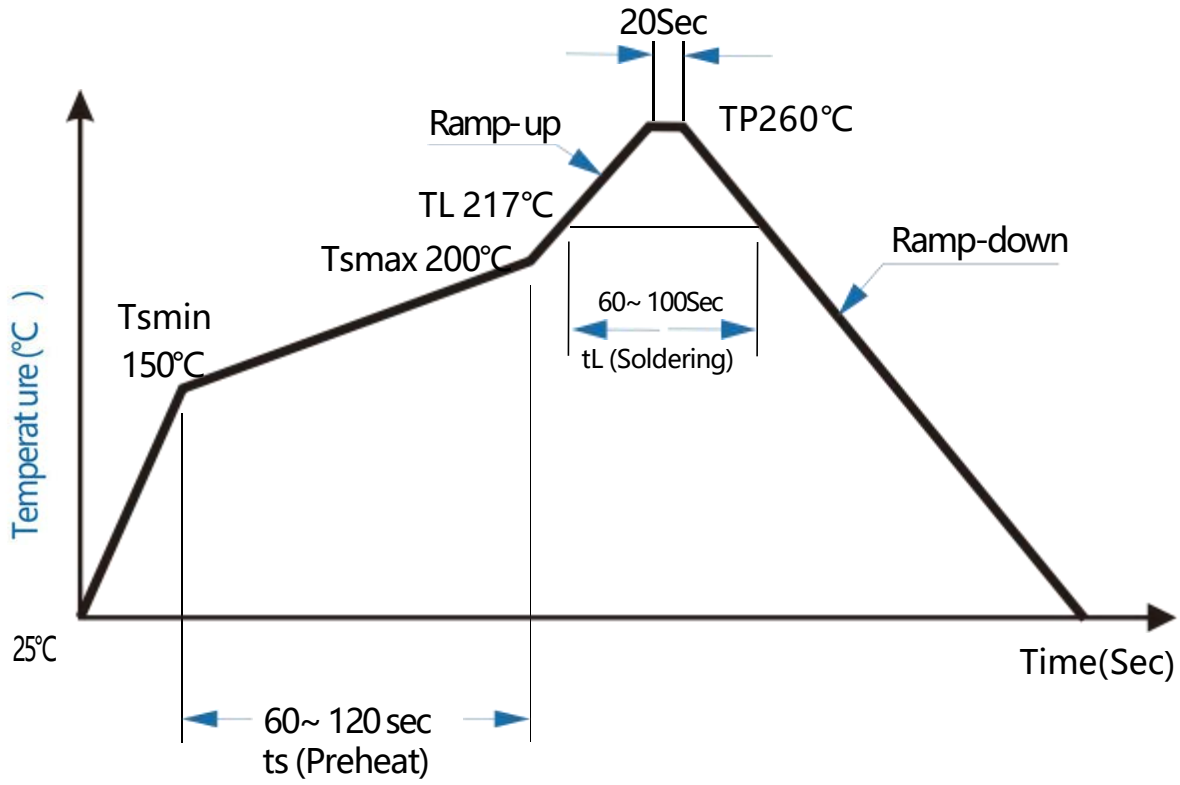
4-pin DIP (M Type)



4-pin SMD



回流焊温度曲线图





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