



概述

HPS2501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，两种形式（DIP、SMD）

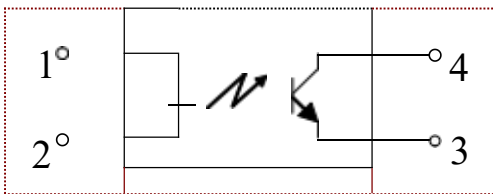
特性

- 电流转换比 (CTR)范围: 80~600% ($I_F = 5\text{mA}$, $V_{CE} = 5\text{V}$)
- 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_F	$I_F=20\text{mA}$		1.2	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}	$V_{CE}=70\text{V}$	-	-	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}	$I_E=0.1\text{mA}, I_F=0$	7	-	-	V
传输特性	电流转换比	CTR	$I_F=5\text{mA}, V_{CE}=5\text{V}$	80	-	600	%
	饱和压降	$V_{CE(sat)}$	$I_F=20\text{mA}, I_C=1\text{mA}$	-	0.1	0.2	V
	集电极-发射极饱和压降	R_{ISO}	DC1000V, 40~60%R.H.	1×10^{11}	-	-	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	$V_{CE}=10\text{V}, I_C=2\text{mA},$ $R_L=100\Omega$	-	4	18	μs
	下降时间	T_f		-	3	18	μs

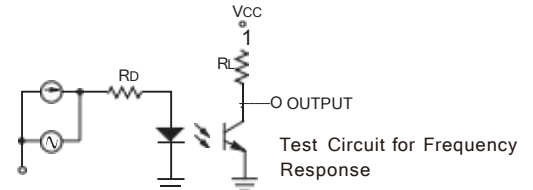
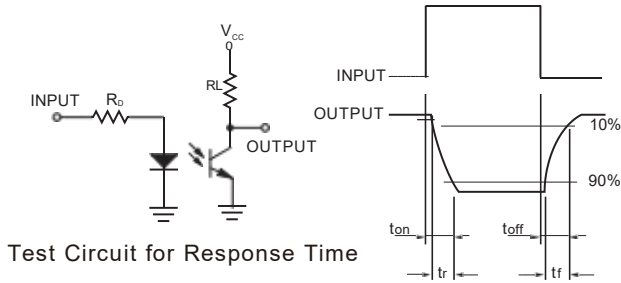
* $CTR=I_C/I_F \times 100\%$

CTR分级表

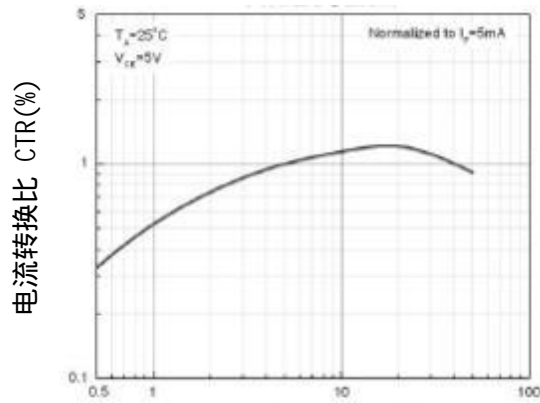
型号	分级标准	电流转换率 (%) (I_C/I_F)	
		$I_F = 5\text{mA}, V_{CE} = 5\text{V}, T_a = 25^\circ\text{C}$	
		Min	Max
HPS2501	HPS2501K-S	300	600
	HPS2501L-S	200	400
	HPS2501M-S	80	240
	HPS2501D-S	100	300
	HPS2501H-S	80	160
	HPS2501W-S	130	260
	HPS2501Q-S	100	200
	HPS2501-S	80	600



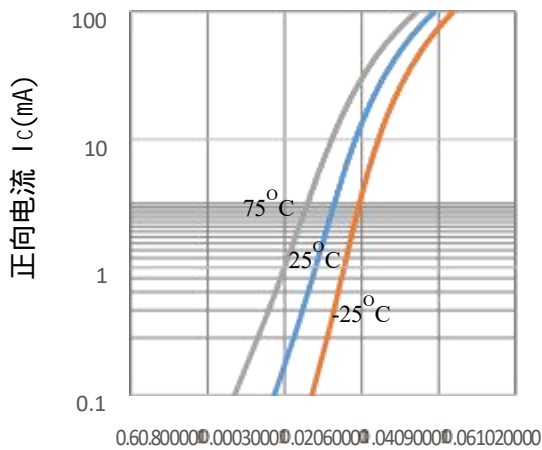
测试电路



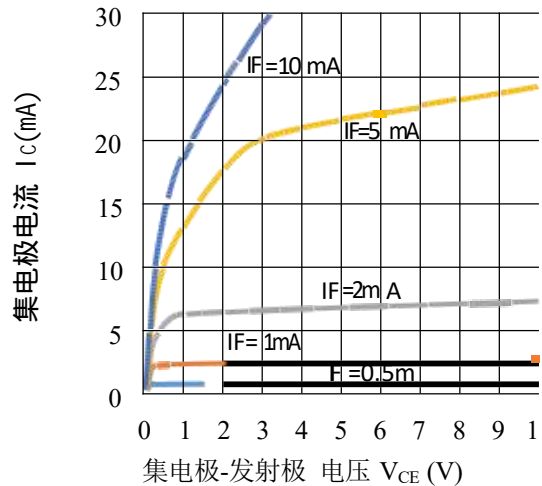
典型特性



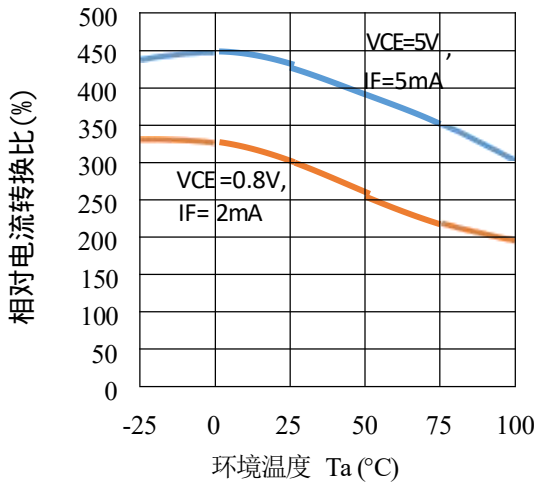
正向电流 I_F (mA)
电流转换比 VS 正向电流曲线图



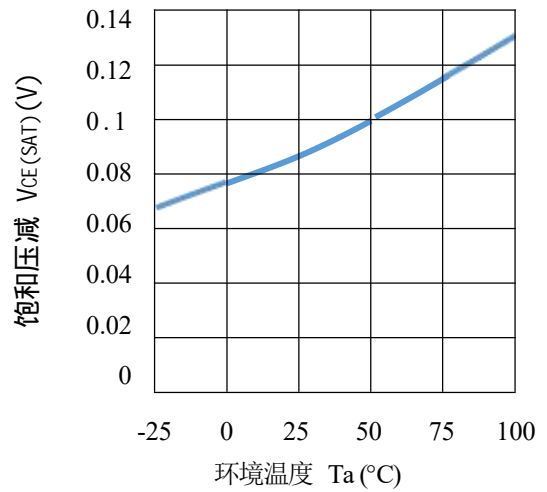
正向电压 V_F (V)
正向电流 VS 正向电压曲线图



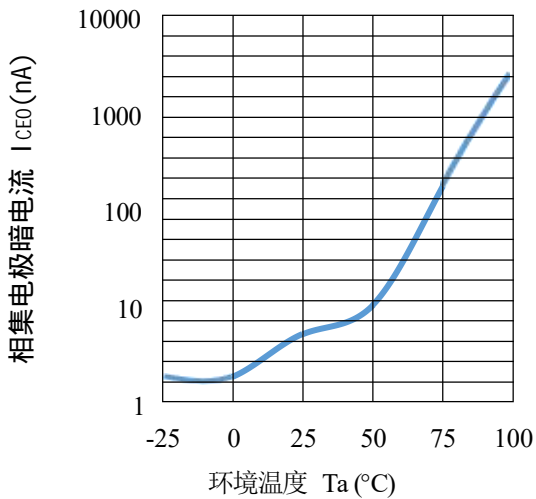
集电极电流 VS 集-发电压曲线图



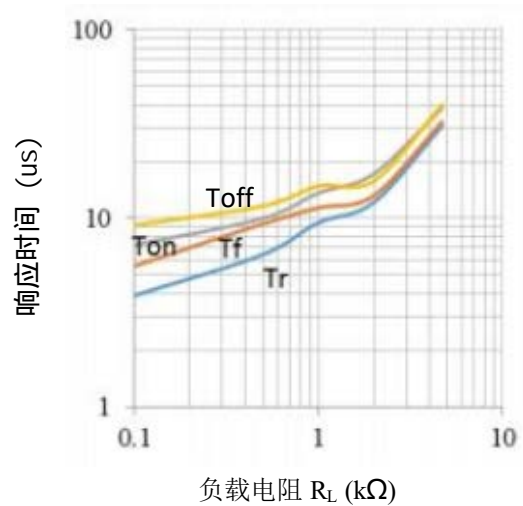
相对电流转换比 VS 环境温度曲线



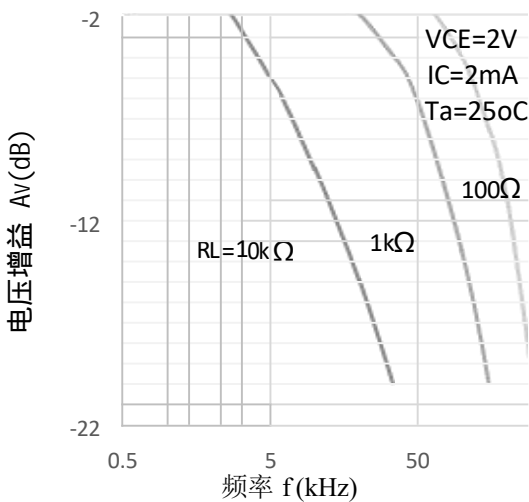
饱和压降 VS 环境温度曲线图



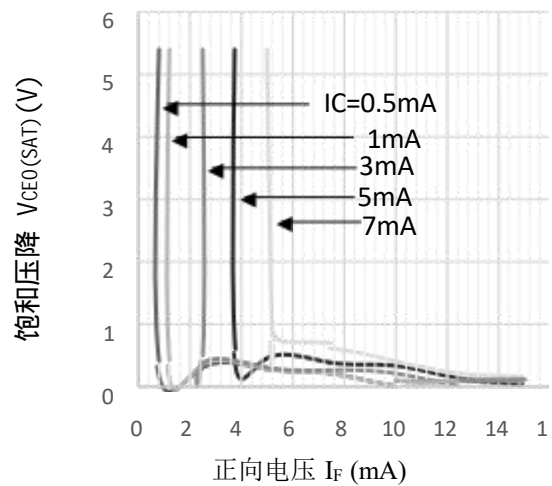
集电极暗电流 VS 环境温度曲线



响应时间 VS 负载电阻曲线图



频率响应曲线图

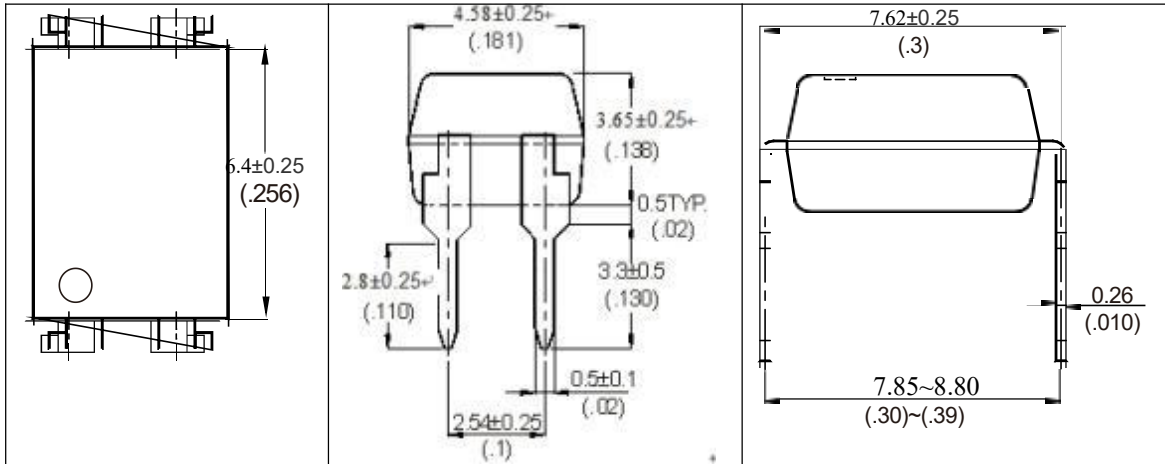


饱和压降 VS 正向电压曲线图

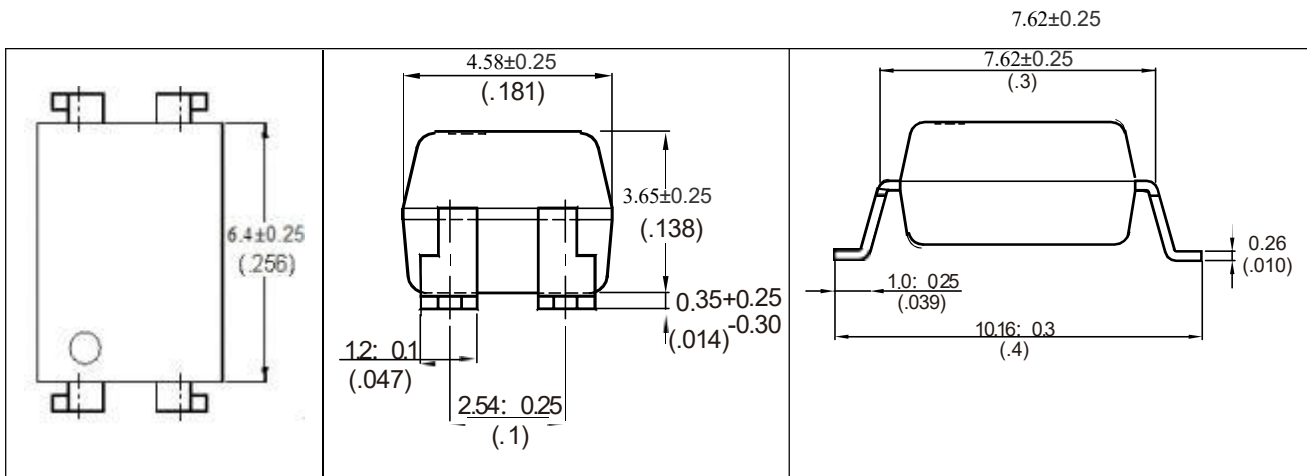


外形尺寸

Unit: mm (inch)



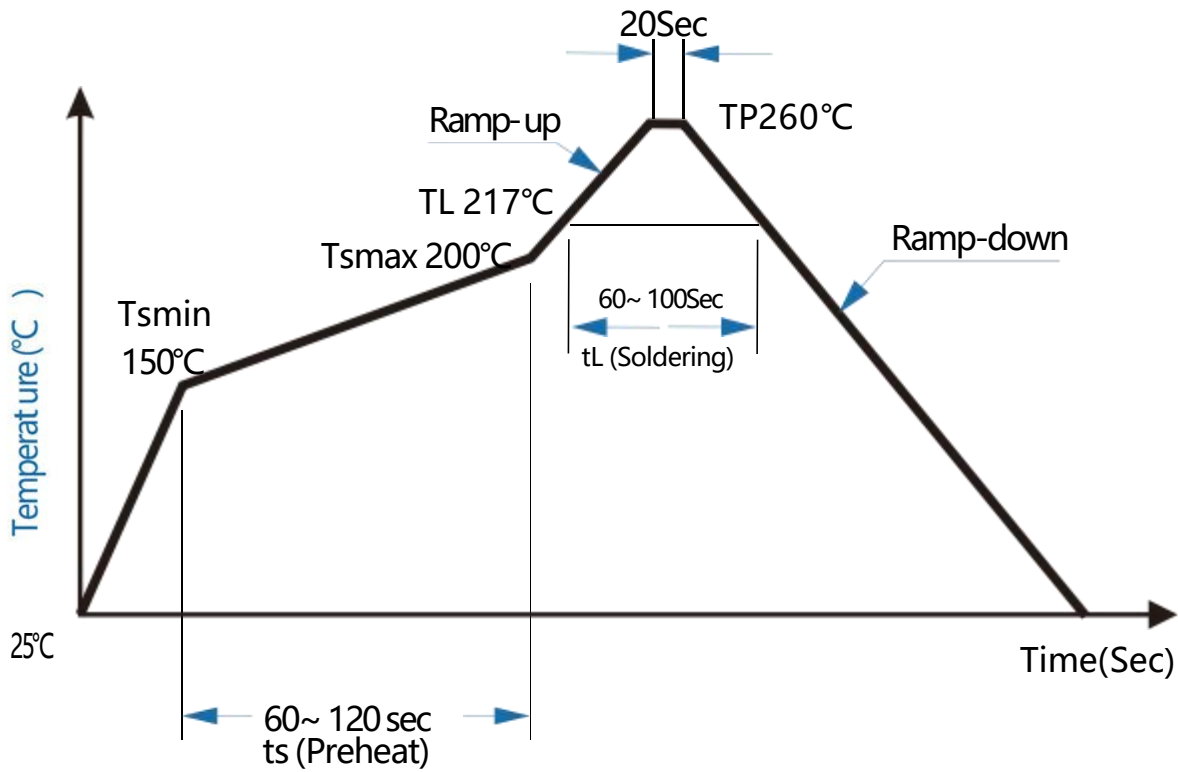
4-pin DIP



4-pin SMD



回流焊温度曲线图





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