

MSKSEMI 美森科

SEMICONDUCTOR



ESD



TVS



TSS



MOV



GDT



PLED

MPS2701-1-X

产品手册

描述

MPS2701-1-X 是一块小外形的贴片光电耦合器件，适合表面贴装生产。MPS2701-1-X 是由一个砷化镓发光二极管和一个光电晶体管组成的光电耦合器，它的体积比 DIP 小，适用于高密度表面贴装应用，如可编程控制器等。

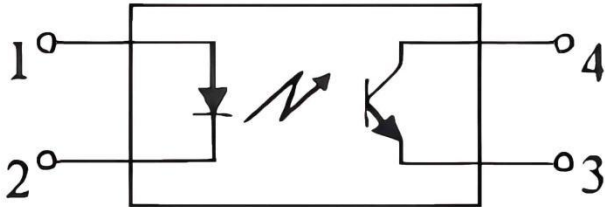
特性

- 电流转换比 (CTR)范围: 50~300% ($I_F=5mA, V_{CE}=5V$)
- 输入-输出隔离电压 ($V_{iso}=3750V_{rms}$)
- 集电极-发射极击穿电压 $BV_{CEO} \geq 80V$
- 工作温度: -55~ 110℃

应用领域

- 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

封装信息及内部引脚配置

封装	引脚配置
	
SOP-4	

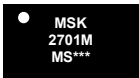
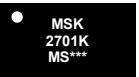
订单信息

型号	封装	最小包装
MPS2701-1-X	SOP-4	3000

极限参数 (Ta=25℃)

参数		符号	额定值	单位
输入	正向电流	I_F	50	mA
	正向脉冲电流	I_{FP}	1	A
	反向电压	V_R	6	V
	功耗降额	$\Delta P/\text{℃}$	0.8	mW/℃
	功耗	P_D	80	mW/ch
	结温	T_j	125	℃
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	80	V
	发射极-集电极电压	V	7	V
	结温	T_j	125	℃
总功耗		P_{tot}	200	mW
隔离电压		V_{iso}	3750	V_{rms}
工作温度		T_{opr}	-55~+110	℃
储存温度		T_{stg}	-55~+150	℃
焊接温度		T_{sol}	260(10s)	℃

CTR 分级表

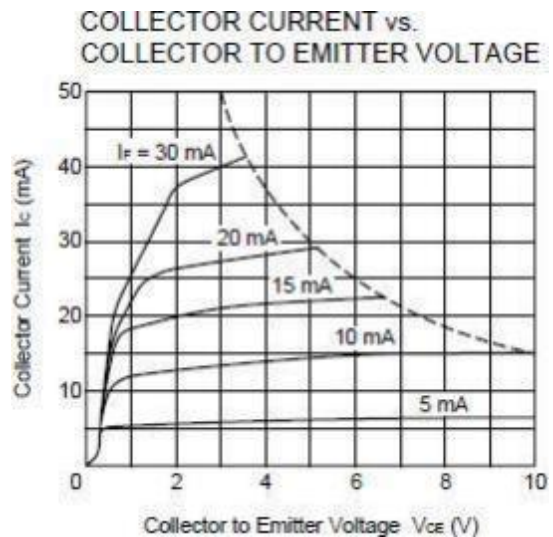
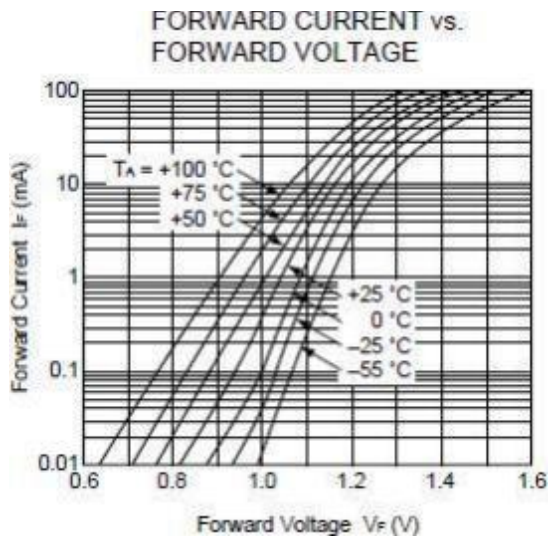
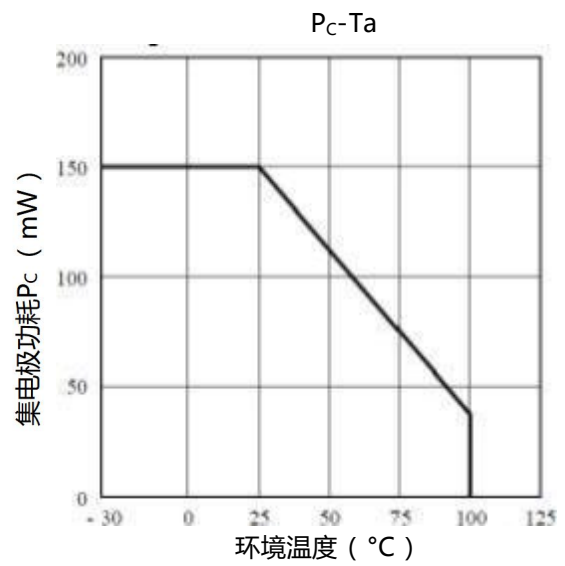
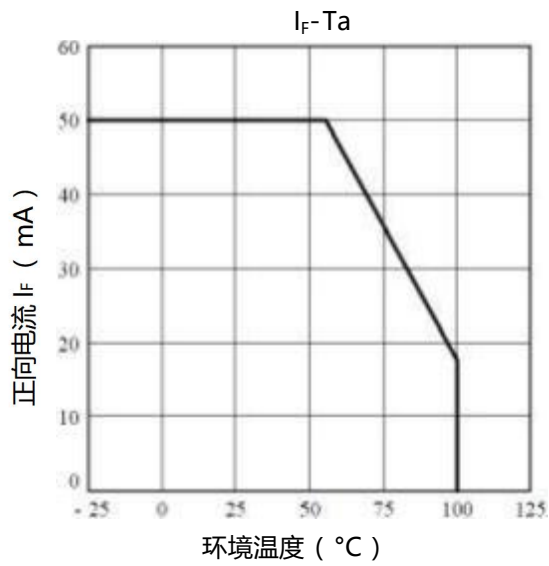
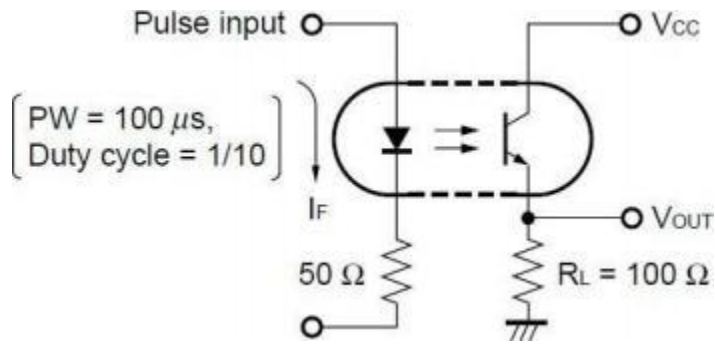
型号	管体标记	分级标准	电流转换率(%)(I_C/I_F)		
			$I_F = 5\text{mA}, V_{CE} = 5\text{V}, T_a = 25\text{℃}$		
			Min	Type	Max
MPS2701-1-M		M	50	-	150
MPS2701-1-P		P	150	-	300
MPS2701-1-L		L	200	-	350
MPS2701-1-K		K	300	-	450
MPS2701-1-LK		LK	400	-	600

光电特性 Ta=25℃

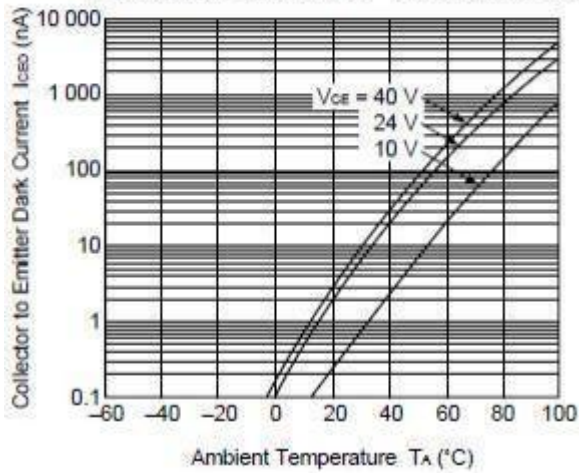
Parameter		Symbol	Condition	Min.	Typ.	Max.	Unit
输入	正向电压	V_F	$I_F=5\text{ mA}$		1.1	1.4	V
	反向电流	I_R	$V_R=5\text{ V}$			5	μA
	输入端电容	C_{in}	$V=0, f=1\text{ MHz}$	-	30		pF
输出	集电极暗电流	I_{CEO}	$V_{CE}=70\text{ V}$			100	nA
	集电极-发射极击穿电压	BV_{CEO}	$I_C=0.1\text{ mA}, I_F=0$	80			V
	发射极-集电极击穿电压	BV_{ECO}	$I_E=0.1\text{ mA}, I_F=0$	7			V
传输特性	电流转换比	CTR	$I_F=5\text{ mA}, V_{CE}=5\text{ V}$	50	100	300	%
	集电极-发射极饱和压降	$V_{CE(sat)}$	$I_F=10\text{ mA}, I_C=2\text{ mA}$			0.3	V
	隔离电阻	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
	集电极-发射极电容	C_{CE}	$V=0, f=1\text{ MHz}$		10		pF
	输入-输出电容	C_s	$V=0, f=1\text{ MHz}$		0.8		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	$V_{CE}=5\text{ V}, I_C=2\text{ mA},$ $R_L=100\Omega$	-	3		μs
	下降时间	T_f			5		μs

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

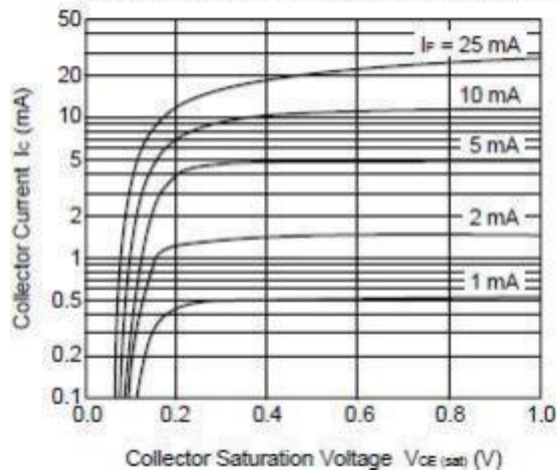
测试电路



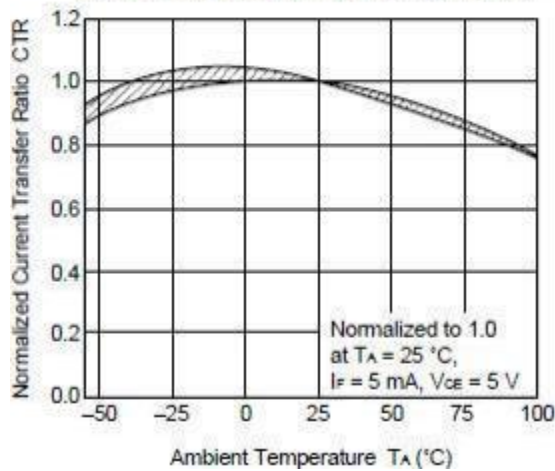
COLLECTOR TO EMITTER DARK CURRENT vs. AMBIENT TEMPERATURE



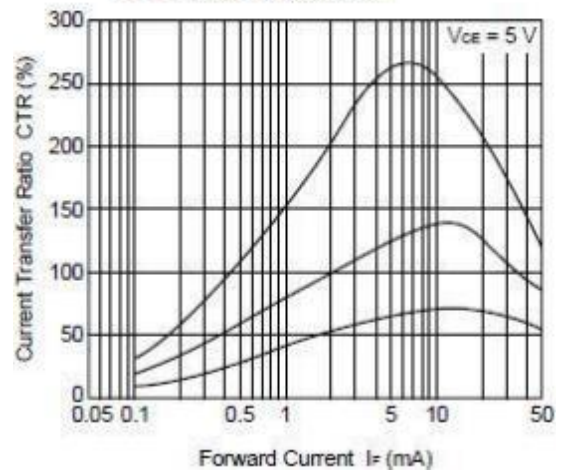
COLLECTOR CURRENT vs. COLLECTOR SATURATION VOLTAGE



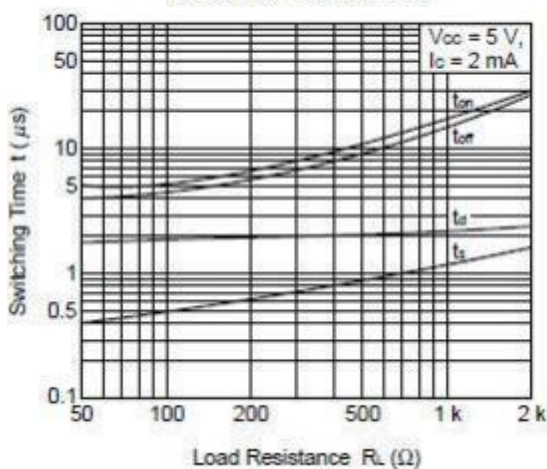
NORMALIZED CURRENT TRANSFER RATIO vs. AMBIENT TEMPERATURE



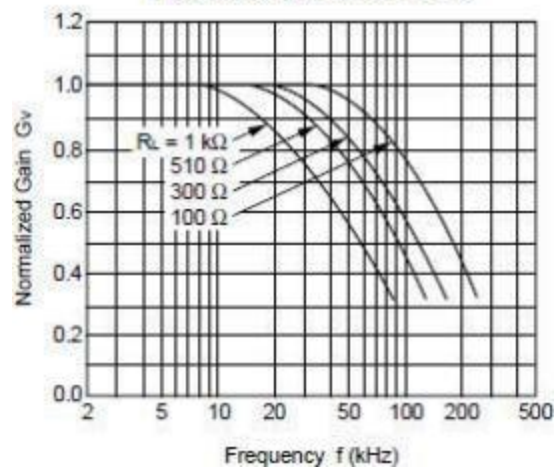
CURRENT TRANSFER RATIO vs. FORWARD CURRENT

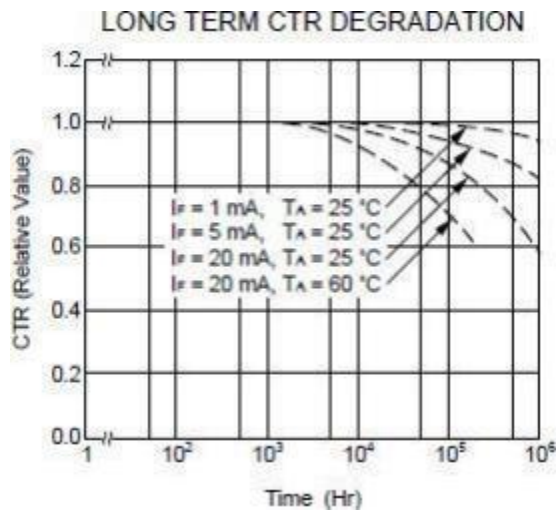
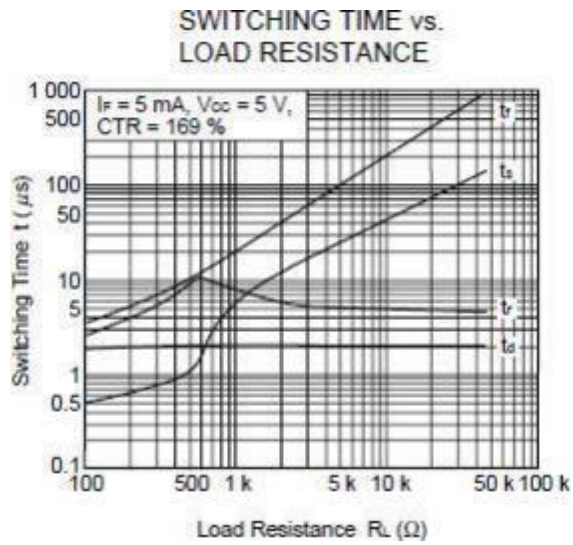


SWITCHING TIME vs. LOAD RESISTANCE

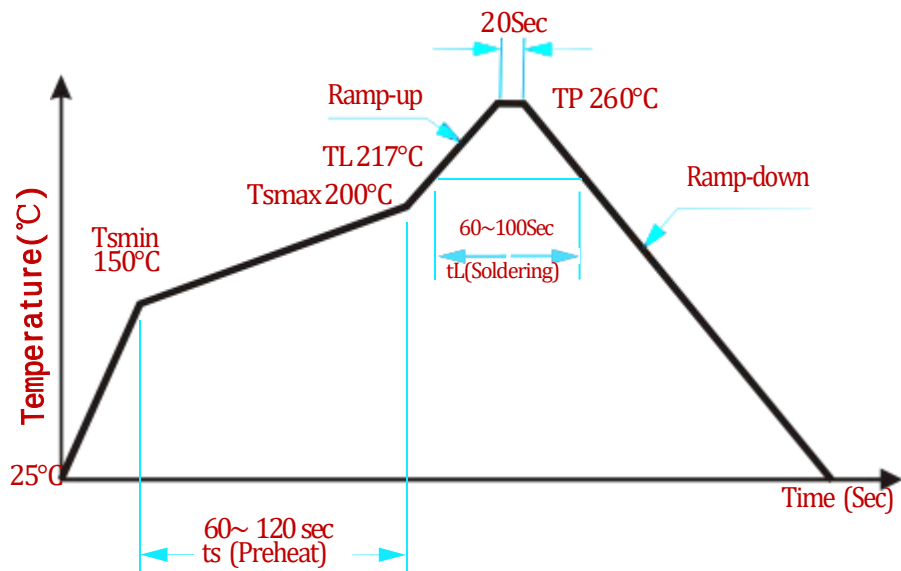


FREQUENCY RESPONSE

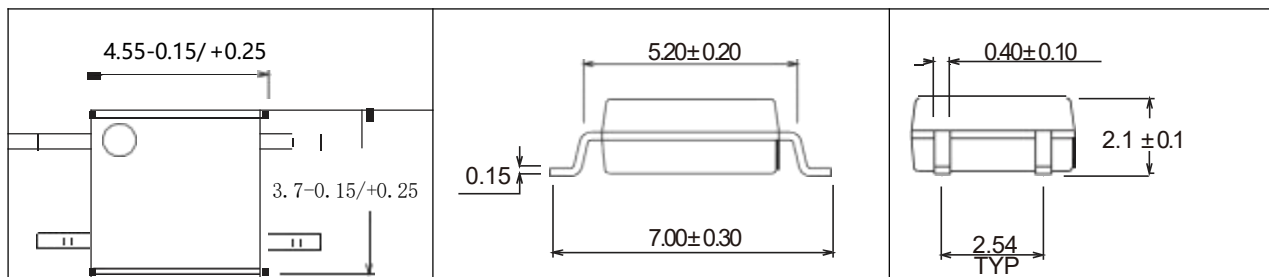




回流焊温度曲线图



外形尺寸



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