

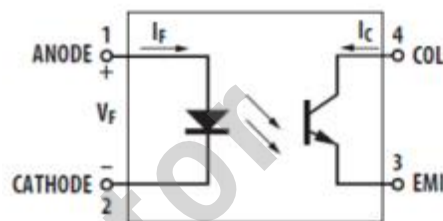
一、概述 Description

JSM816D产品由一个红外发光二极管和一个光电晶体管组成；光耦器件可实现不同电路之间的电气隔离和信号传输，产品广泛应用于电源设备上，例如手机充电器，家电产品电源供应器等。

JSM816D photocoupler consist of an infrared light-emitting diode and a phototransistor. The devices can realize electrical isolation and signal transmission between different circuits, The products are widely used in power supply equipment, such as mobile phone charger, home appliance product power supply device, etc.



Schematic



引脚排列 Pin Configuration

1. 正极 Anode
2. 负极 Cathode
3. 发射极 Emitter
4. 集电极 Collector

二、特性 Features

✦ 电流转换比(CTR: 50%-600% @ $I_F=5\text{mA}$, $V_{CE}=5\text{V}$)

Current transfer ratio (CTR: 50%-600% @ $I_F=5\text{mA}$, $V_{CE}=5\text{V}$)

✦ 输入-输出隔离电压: ($V_{ISO}=5,000\text{Vrms}$)

High isolation voltage between input and output($V_{ISO}=5,000\text{Vrms}$)

✦ 爬电距离 $>7.62\text{mm}$

Creepage distance $> 7.62\text{mm}$

✦ 工作温度最高可达 $+110^\circ\text{C}$

Operating temperature up to $+110^\circ\text{C}$

✦ 集电极-发射极击穿电压 $BV_{CEO} \geq 80\text{V}$

Collector-Emitter voltage $BV_{CEO} \geq 80\text{V}$



三、电性参数 Electrical Characteristics

◆最大绝对额定值 (常温=25℃)

Absolute Maximum Ratings (Temperature=25℃)

参数名称 Parameter		符号 Symbol	数值 Rating	单位 Unit
输入 Input	正向电流 Forward Current	I_F	50	mA
	反向电压 Reverse Voltage	V_R	6	V
	功耗 Power Dissipation	P_D	70	mW
输出 Output	集电极-发射极电压 Collector-Emitter voltage	V_{CEO}	80	V
	发射极-集电极电压 Emitter-Collector voltage	V_{ECO}	6	
	集电极电流 Collector current	I_C	50	mA
	功耗 Power Dissipation	P_C	180	mW
总功率消耗 Total Power Dissipation		P_{tot}	200	mW
*1 隔离电压 *1 Isolation Voltage		V_{iso}	5,000	Vrms
工作温度 Operating Temperature		T_{opr}	-55 to + 110	℃
存贮温度 Storage Temperature		T_{stg}	-55 to + 125	
*2 焊锡温度 *2 Soldering Temperature		T_{sol}	260	

* 注:

* 1.交流测试, 时间 1 分钟, 湿度. =40~60%;

* 1.AC For 1 Minute, R.H. = 40 ~ 60%;

隔离电压测试的方法如下:

Isolation voltage shall be measured using the following method:

(1) 将产品的两端短路;

(1) Short between anode and cathode on the primary side and between collector and emitter on the secondary side;

(2) 测试隔离电压时无电流通过;

(2) The isolation voltage tester with zero-cross circuit shall be used;

(3) 测试时加正弦波形电压。

(3) The waveform of applied voltage shall be a sine wave.

*2.锡焊时间为 10 秒

*2. Soldering time is 10 seconds

✧ 电性参数 (温度=25 °C):
Electrical Characteristics (Temperature=25°C)

参数名称 Parameter	符号 Symbol	条件 Condition	最小值 Min.	典型值 Typ.	最大值 Max.	单位 Unit
输入 Input	正向电压 Forward Voltage	$I_F=20\text{mA}$	---	1.2	1.4	V
	反向电流 Reverse Current	$V_R=4\text{V}$	---	---	10	μA
	终端电容 Terminal Capacitance	$V=0, f=1\text{MHz}$	---	30	250	pF
输出 Output	集电极暗电流 Collector dark current	$V_{CE}=20\text{V}, I_F=0$	---	---	100	nA
	集电极-发射极击穿电压 Collector-Emitter breakdown voltage	$I_C=0.1\text{mA}$ $I_F=0\text{mA}$	80	---	---	V
	发射极-集电极击穿电压 Emitter-Collector breakdown voltage	$I_E=10\mu\text{A}$ $I_F=0\text{mA}$	6	---	---	V
传输特性 transfer characteristic	集电极电流 Collector Current	$I_F=5\text{mA}$	2.5	---	30	mA
	*1 电流转换比 *1 Current conversion ratio	$V_{CE}=5\text{V}$	50	---	600	%
	集电极-发射极饱和电压 Collector-Emitter Saturation Voltage	$I_F=20\text{mA}$ $I_C=1\text{mA}$	---	0.1	0.2	V
	绝缘电阻 Isolation resistance	DC500V 40~60%R.H.	1×10^{12}	---	---	Ω
	隔离电容 Floating Capacitance	$V=0, f=1\text{MHz}$	---	0.6	1	pF
	转换频率 Cut-off Frequency	$V_{CE}=5\text{V}, I_C=2\text{mA}$ $R_L=100\Omega, -3\text{dB}$	---	80	---	kHz
	上升时间 Rise time	$V_{CE}=2\text{V}, I_C=2\text{mA}$	---	4	18	μs
	下降时间 Fall time	$R_L=100\Omega$	---	3	18	μs

注: *1 电流转换比 = $I_C / I_F \times 100\%$, 公差 $\pm 3\%$ 。

*1 Current Conversion Ratio = $I_C / I_F \times 100\%$, Tolerance: $\pm 3\%$ 。

✧ 电流转换比等级表(温度=25 °C):
Rank Table of Current Transfer Ratio(Temperature=25°C)

等级标识 Grade Sign	最小.Min (%)	最大.Max (%)
L	50	100
A	80	160
B	130	260
C	200	400
D	200	600
L or A or B or C or D	50	600

四、特性曲线 Characteristics Cures

Fig.1 正向电流与环境温度特性曲线
Forward Current vs. Ambient Temperature

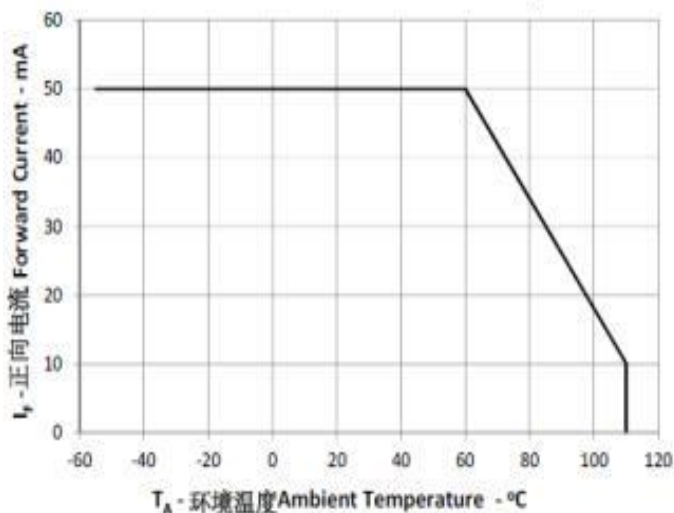


Fig.2 正向电流与正向压降特性曲线
Forward Current vs. Forward Voltage

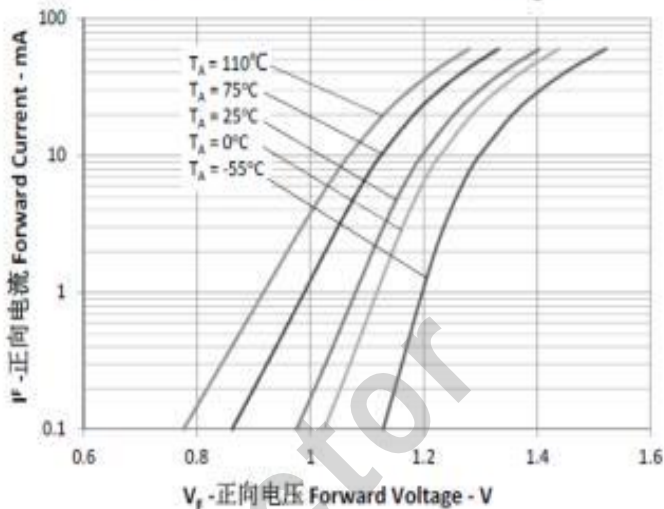


Fig.3 集电极功耗与环境温度特性曲线
Collector Power Dissipation vs. Ambient Temperature

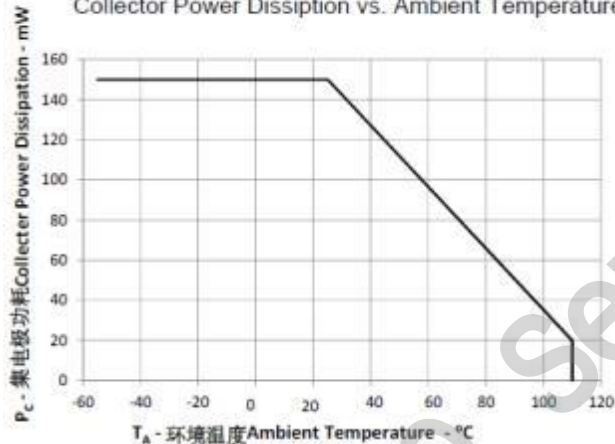


Fig.4 集电极电流与集电极-发射极电压特性曲线
Collector Current vs. Collector-emitter Voltage

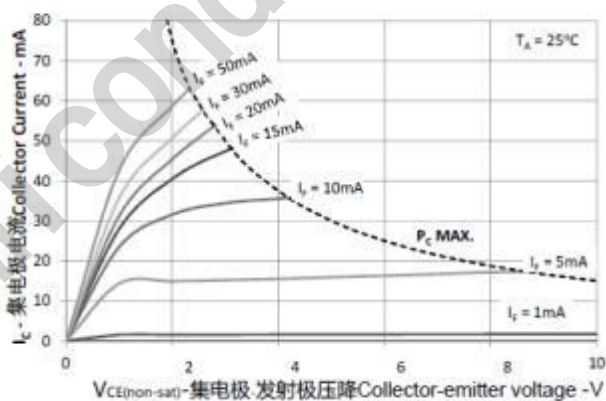


Fig.5 电流转换比与正向电流特性曲线
Current Transfer Ratio vs. Forward Current

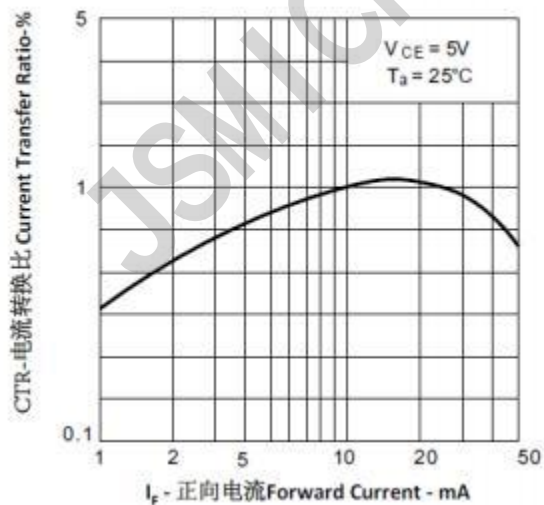


Fig.6 相对电流转换比与环境温度特性曲线
Relative Current Transfer Ratio vs. Ambient Temperature

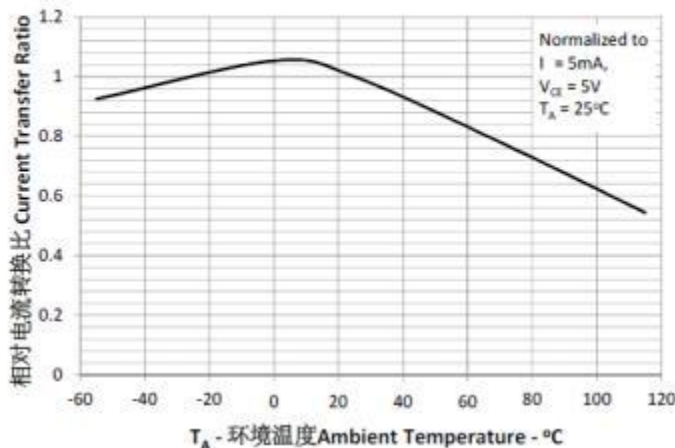


Fig.7 集电极-发射极饱和压降与环境温度特性曲线
Collector-emitter Saturation Voltage vs. Ambient Temperature

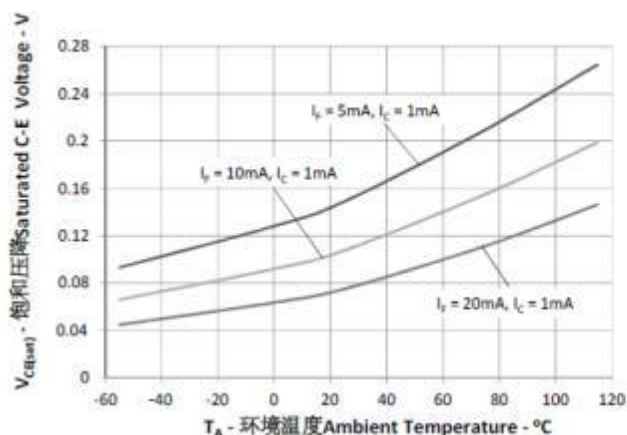


Fig.8 集电极暗电流与环境温度特性曲线
Collector Dark Current vs. Ambient Temperature

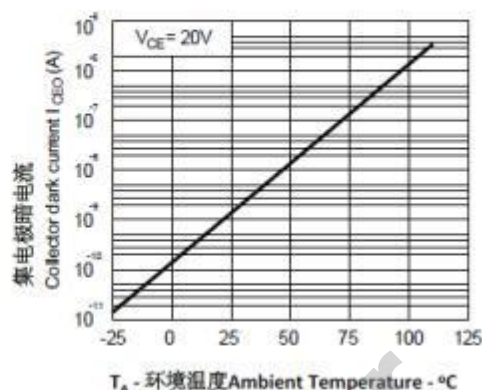


Fig.9 集电极-发射极饱和压降与正向电流特性曲线
Collector-emitter Saturation Voltage vs. Forward Current

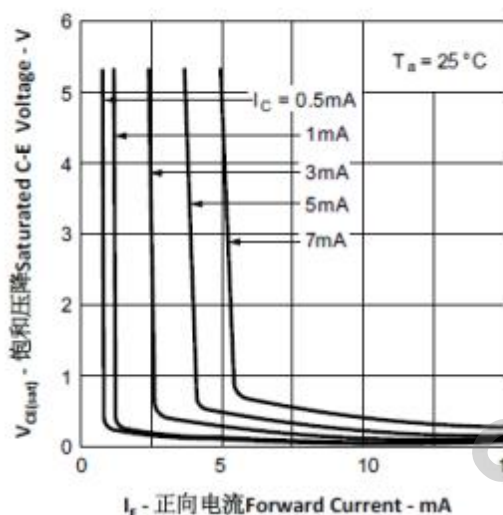


Fig.10 响应时间与负载电阻特性曲线
Response Time vs. Load Resistance

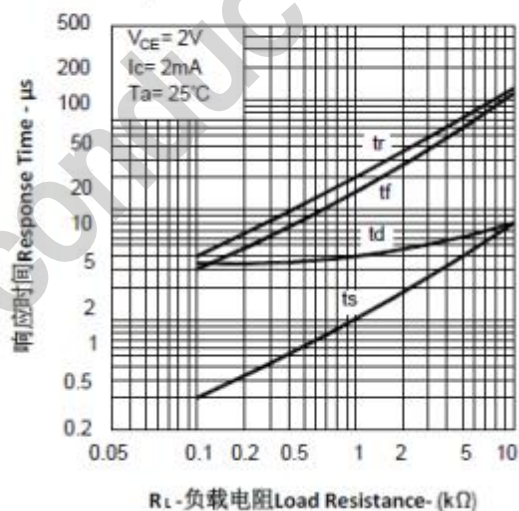
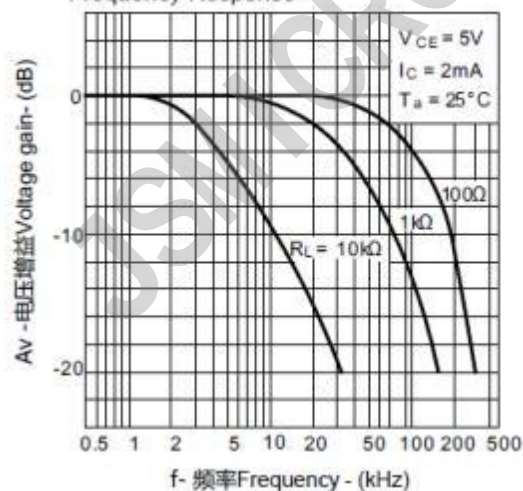
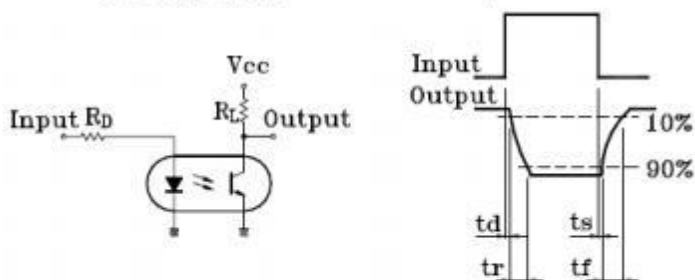


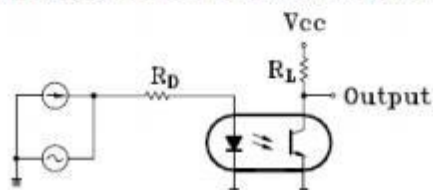
Fig.11 频率响应特性曲线
Frequency Response



响应时间测试电路 Test Circuit for Response Time

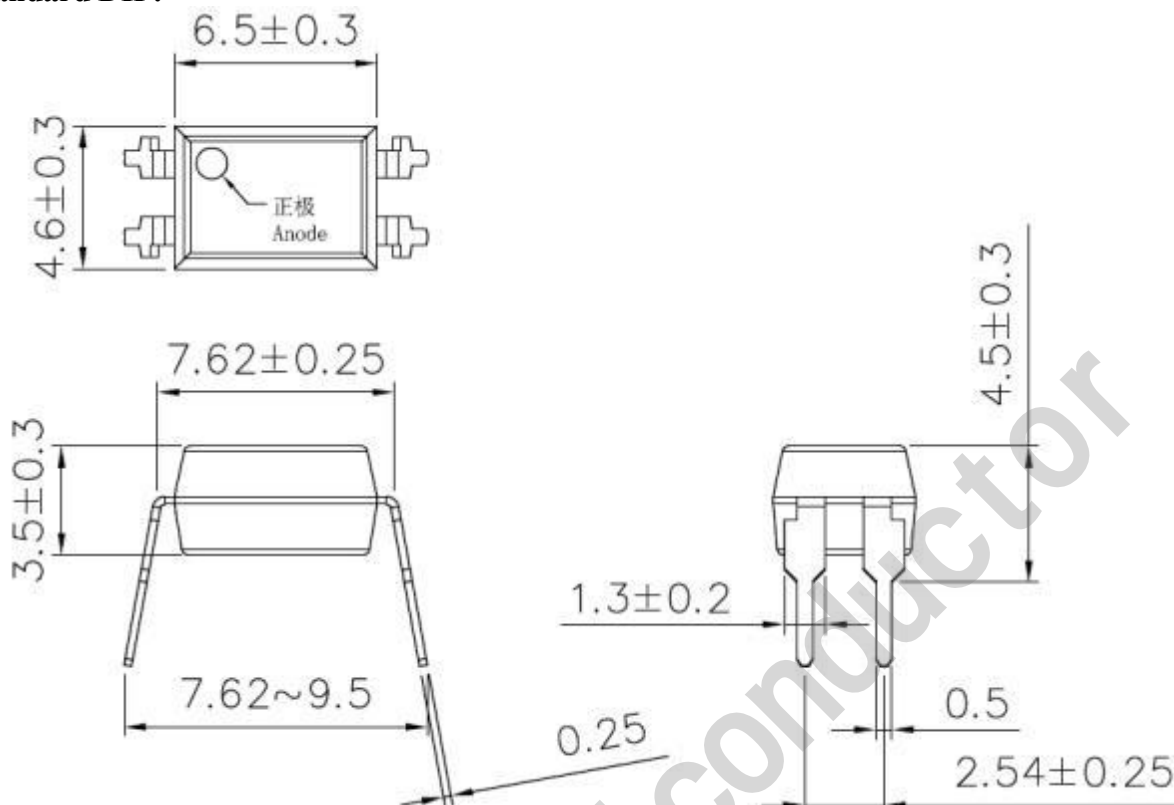


频率响应测试电路 Test Circuit for Frequency Response

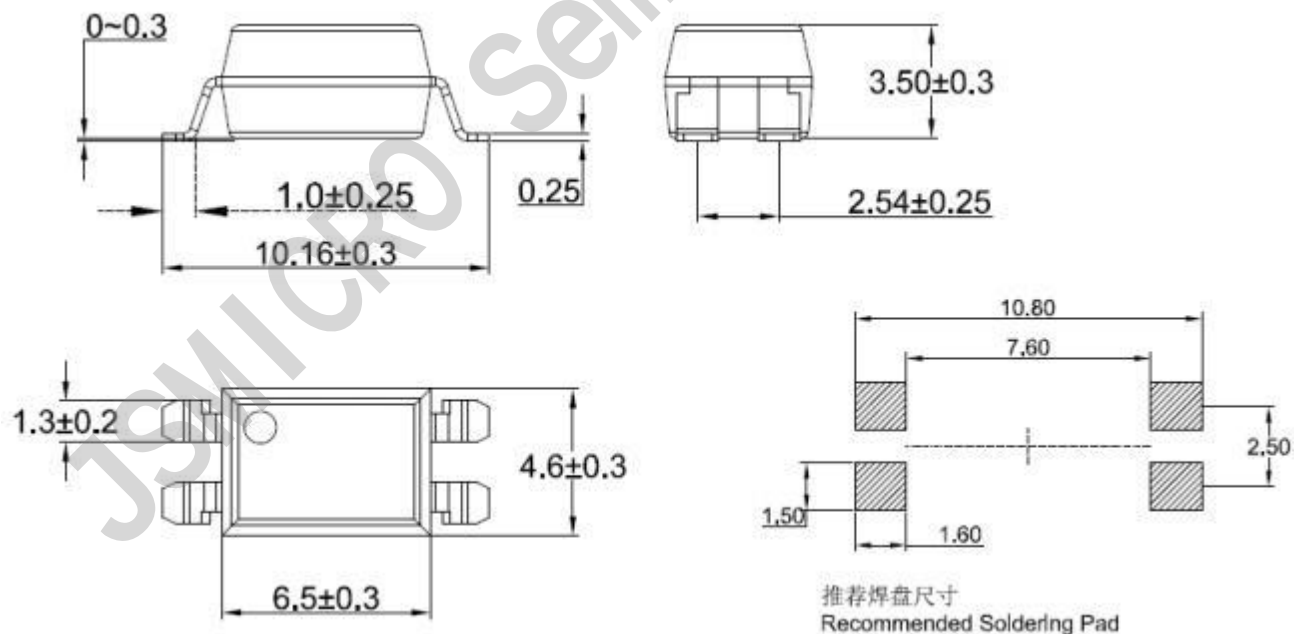


五、外形尺寸（单位： mm ） Package Dimension (Unit: mm)

Standard DIP:



SMD:



未注公差: ± 0.1 mm

The Tolerances Unless Mentioned is : ± 0.1 mm