描述 / Descriptions

SOT23-6 塑封封装双 NPN+PNP 半导体三极管。

Double silicon NPN and PNP transistor in a SOT23-6 Plastic Package.

特征 / Features

理想的低功率放大和开关。无卤产品。

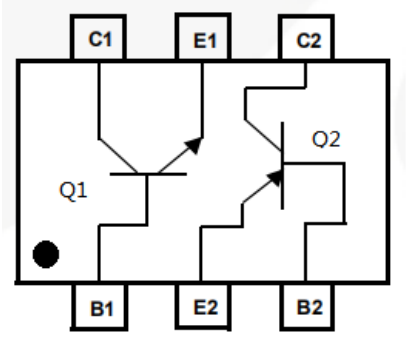
Ideal for Low Power Amplification and Switching.HF Product.

用途 / Applications

用于功率放大电路。

Power amplifier application.

内部等效电路及引脚排列 / Equivalent Circuit& Pinning



放大及印章代码 / h_{FE} Classifications & Marking

See Marking Instructions.

极限参数 / Maximum Ratings, Total Device @ T_A = 25_C unless otherwise specified

参数 Parameter	符号 Symbol	数值 Rating	单位 Unit
Total Power Dissipation	P_d	200	mW
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	625	℃/W
Operating and Storage and Temperature Range	T_j, T_{STG}	-55～150	℃

极限参数 / Absolute Maximum Ratings(Ta=25℃) (NPN，2222A)

参数 Parameter	符号 Symbol	数值 Rating	单位 Unit
Collector to Base Voltage	V_{CBO}	75	V
Collector to Emitter Voltage	V_{CEO}	40	V
Emitter to Base Voltage	V_{EBO}	6.0	V
Collector Current	I_C	600	mA

极限参数 / Absolute Maximum Ratings(Ta=25℃) (PNP，2907A)

参数 Parameter	符号 Symbol	数值 Rating	单位 Unit
Collector to Base Voltage	V_{CBO}	-60	V
Collector to Emitter Voltage	V_{CEO}	-60	V
Emitter to Base Voltage	V_{EBO}	-5.0	V
Collector Current	I_C	-600	mA

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电性能参数 / Electrical Characteristics(Ta=25℃) (NPN，2222A)

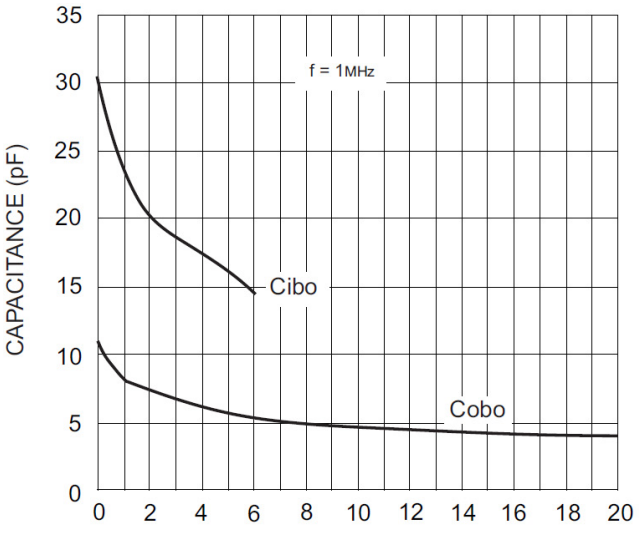
参数 Parameter	符号 Symbol	测试条件 Test Conditions	最小值 Min	典型值 Typ	最大值 Max	单位 Unit
Collector−Base Breakdown Voltage	V_{CBO}	I_C =10μA I_E=0	75			V
Collector−Emitter Breakdown Voltage	V_{CEO}	I_C =10mA I_B = 0	40			V
Emitter−Base Breakdown Voltage	V_{EBO}	I_E =10μA I_C = 0	6.0			V
Collector Cut-Off Current	I_{CEX}	V_{CE}=60V $V_{EB(off)}$=3V			10	nA
Collector Cut-Off Current	I_{CBO}	V_{CB}=60V I_E=0			0.01	μA
		V_{CB}=60V I_E=0 T_A=125℃			10	μA
Emitter Cut-Off Current	I_{EBO}	V_{EB}=3.0V I_C=0			10	nA
Base Cut-Off Current	I_{BL}	V_{CE}=60V $V_{EB(off)}$=3V			20	nA
DC Current Gain	$h_{FE(1)}$	V_{CE}=10V I_C=0.1mA	35			
	$h_{FE(2)}$	V_{CE}=10V I_C=1.0mA	50			
	$h_{FE(3)}$	V_{CE}=10V I_C=10mA	75			
	$h_{FE(4)}$	V_{CE}=10V I_C=10mA T_A=-55℃	50			
	$h_{FE(5)}$	V_{CE}=10V I_C=150mA	100		300	
	$h_{FE(6)}$	V_{CE}=1.0V I_C=150mA	35			
	$h_{FE(7)}$	V_{CE}=10V I_C=500mA	40			
Collector-Emitter Saturation Voltage	$V_{CE(sat)\ (1)}$	I_C=150mA I_B=15mA			0.3	V
	$V_{CE(sat)\ (2)}$	I_C=500mA I_B=50mA			1.0	V
Base-Emitter Saturation Voltage	$V_{BE(sat)\ (1)}$	I_C=150mA I_B=15mA	0.6		1.2	V
	$V_{BE(sat)\ (2)}$	I_C=500mA I_B=50mA			2.0	V
Transition Frequency(Note 3)	f_T	V_{CE}=20V I_C=20mA f=100MHz	300			MHz
Output Capacitance	C_{obo}	V_{CB}=10V I_E=0 f=1.0MHz			8.0	pF
Input Capacitance	C_{ibo}	V_{EB}=0.5V I_C=0 f=1.0MHz			25	
Noise Figure	NF	I_C=100μA V_{CE}=10V R_S=1.0kΩ f=1.0 kHz			4.0	dB
Turn-on Time	t_d	V_{CC}=30V I_C=150mA $V_{BE(OFF)}$=-0.5V I_{B1}=15mA			10	ns
Storage Time	t_r				25	ns
	t_s	V_{CC}=30V I_C=150mA I_{B1}=I_{B2}=15mA			225	ns
Fall Time	t_f				60	ns

电性能参数 / Electrical Characteristics(Ta=25℃) (PNP，2907A)

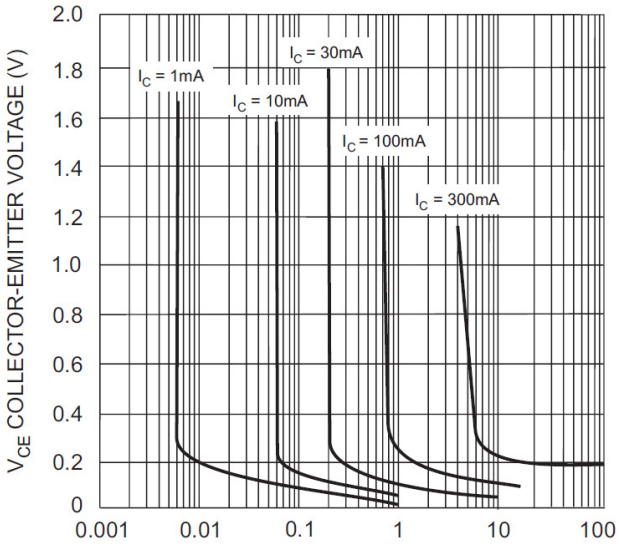
参数 Parameter	符号 Symbol	测试条件 Test Conditions	最小值 Min	典型值 Typ	最大值 Max	单位 Unit
Collector to Base Breakdown Voltage	V_{CBO}	I_C=-10μA I_E=0	-60			V
Collector to Emitter Breakdown Voltage	V_{CEO}	I_C=-10mA I_B=0	-60			V
Emitter to Base Breakdown Voltage	V_{EBO}	I_E=-10μA I_C=0	-5.0			V
Collector Cut-Off Current	I_{CBO}	V_{CB}=-50V I_E=0			-0.01	μA
	I_{CBO}	V_{CB}=-50V I_E=0 T_A=125℃			10	μA
Collector Cutoff Curren	I_{CEX}	V_{CE} = -30V, $V_{EB(OFF)}$ = -0.5V			-50	nA
Base Cutoff Current	I_{BL}	V_{CE} = -30V, $V_{EB(OFF)}$ = -0.5V			-50	nA
DC Current Gain	$h_{FE(1)}$	V_{CE}=-10V I_C=-150mA*	100		300	
	$h_{FE(2)}$	V_{CE}=-10V I_C=-500mA*	50			
	$h_{FE(3)}$	V_{CE}=-10V I_C=-10mA	100			
	$h_{FE(4)}$	V_{CE}=-10V I_C=-1.0mA	100			
	$h_{FE(5)}$	V_{CE}=-10V I_C=-0.1mA	75			
Collector-Emitter Saturation Voltage	$V_{CE(sat)\ (1)}$	I_C=-150mA I_B=-15 mA			-0.4	V
	$V_{CE(sat)\ (2)}$	I_C=-500mA I_B=-50mA			-1.6	V
Base-Emitter Saturation Voltage	$V_{BE(sat)\ (1)}$	I_C=-150mA I_B=-15 mA			-1.3	V
	$V_{BE(sat)\ (2)}$	I_C=-500mA I_B=-50mA			-2.6	V
Transition Frequency	f_T	V_{CE}=-20V I_C=-50mA f=100MHz	200			MHz
Output Capacitance	C_{obo}	V_{CB}=-10V I_E=0 f=1.0MHz			8.0	pF
Input Capacitanc	C_{ibo}	V_{EB}=-2V I_C=0 f=1.0MHz			30	
Turn–On Time	t_{on}				45	ns
Delay Time	t_d	V_{CC}=-30V I_C=-150mA I_{B1}=-15mA			10	
Rise Time	t_r				40	
Storage Time	t_s	V_{CC}=-6V I_C=-150mA I_{B1}=$I_{B1=}$-15mA			80	
Fall Time	t_r				30	
Turn–Off Time	t_{off}				100	ns

*Pulse Test: Pulse Width ≤ 300 μs, Duty Cycle ≤ 2.0%

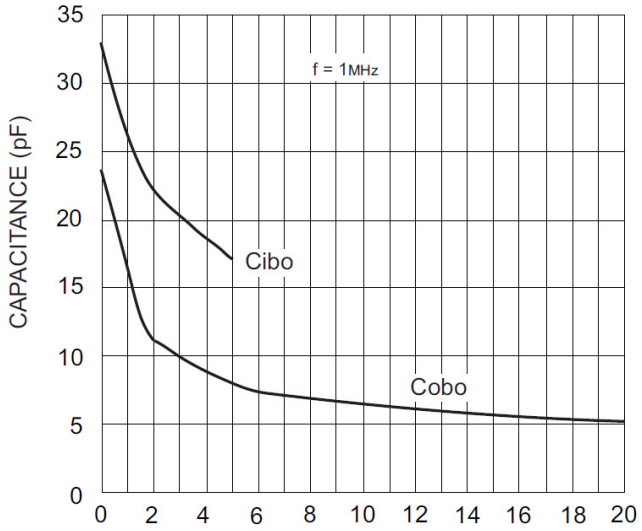
电参数曲线图 / Electrical Characteristic Curve



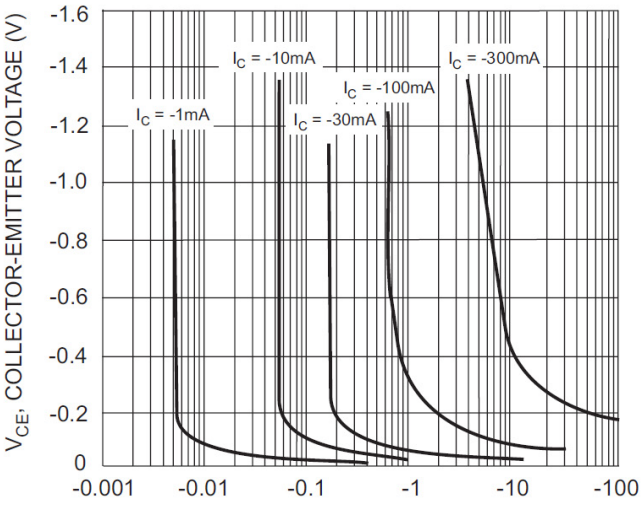
V_R, REVERSE VOLTAGE (V)
Fig. 1, Typical Capacitance Characteristics
(2222A Type - NPN)



I_B, BASE CURRENT (mA)
Fig. 2, Typical Collector Saturation Region
(2222A Type - NPN)

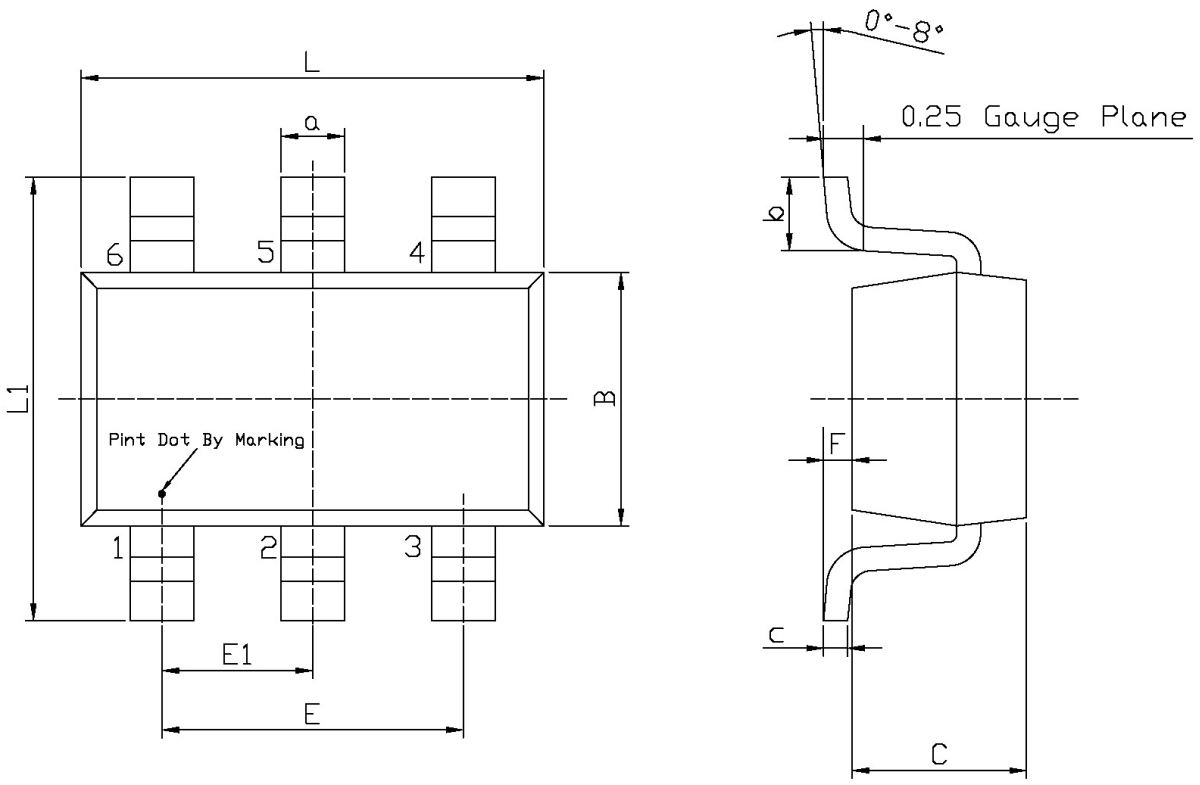


V_R, REVERSE VOLTAGE (V)
Fig. 3, Typical Capacitance Characteristics
(2907A Type - PNP)



I_B, BASE CURRENT (mA)
Fig. 4, Typical Collector Saturation Region
(2907A Type - PNP)

外形尺寸图 / Package Dimensions

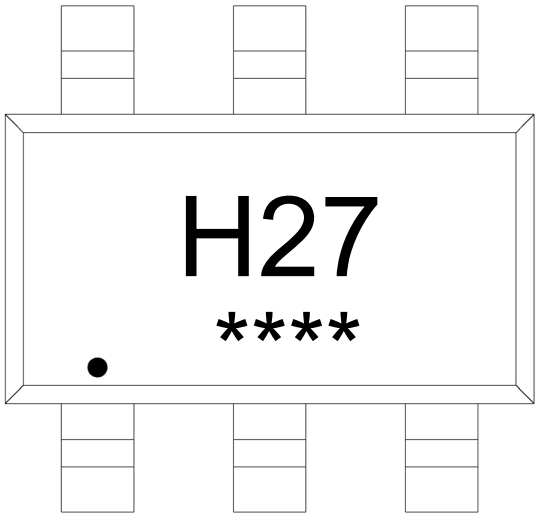


Unit: mm

Symbol	Dimensions In Millimeters		Symbol	Dimensions In Millimeters	
	Min	Max		Min	Max
L	2.82	3.02	E1	0.85	1.05
B	1.50	1.70	a	0.35	0.50
C	0.90	1.30	c	0.10	0.20
L1	2.60	3.00	b	0.35	0.55
E	1.80	2.00	F	0	0.15

SOT23-6

印章说明 / Marking Instructions



说明：

●： 为“1”脚

H27： 为型号代码

****: 为生产批号代码，随生产批号变化

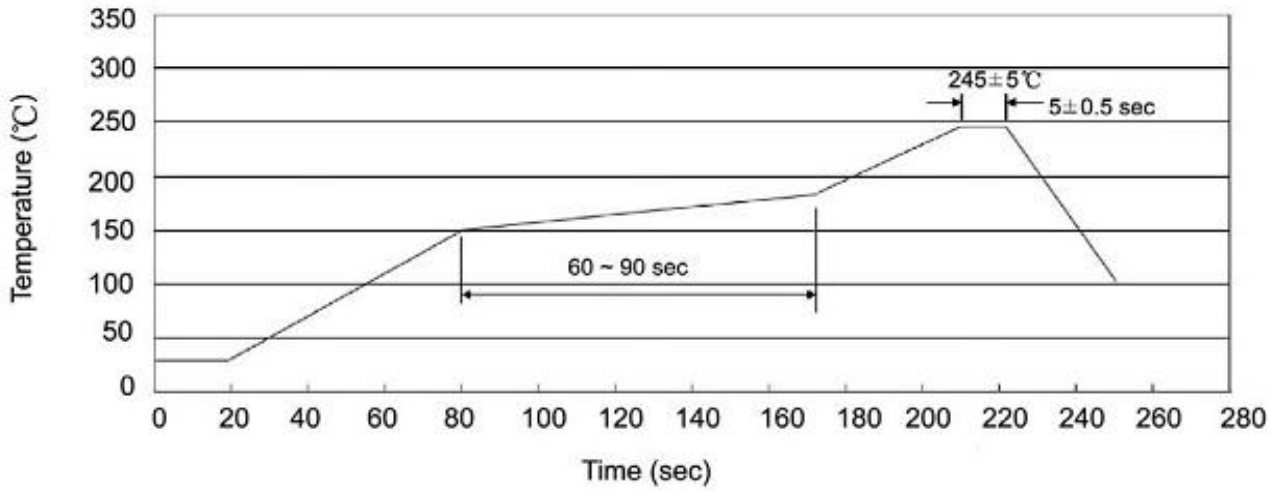
Note:

●： “1” Pin

H27： Product Type Code

****: Lot No. Code, code change with Lot No.

回流焊温度曲线图(无铅) / Temperature Profile for IR Reflow Soldering(Pb-Free)



说明：

1、预热温度 150～180℃，时间 60～90sec;

2、峰值温度 245±5℃，时间持续为 5±0.5sec;

3、焊接制程冷却速度为 2～10℃/sec.

Note:

1.Preheating:150~180℃, Time:60~90sec.

2.Peak Temp.:245±5℃, Duration:5±0.5sec.

3. Cooling Speed: 2~10℃/sec.

耐焊接热试验条件 / Resistance to Soldering Heat Test Conditions

温度：260±5℃ 时间：10±1 sec. Temp.:260±5℃ Time:10±1 sec

包装规格 / Packaging SPEC.

卷盘包装 / REEL

Package Type 封装形式	Units 包装数量					Dimension 包装尺寸 (unit: mm^3)		
	Units/Reel 只/卷盘	Reels/Inner Box 卷盘/盒	Units/Inner Box 只/盒	Inner Boxes/Outer Box 盒/箱	Units/Outer Box 只/箱	Reel	Inner Box 盒	Outer Box 箱
SOT23-5/6	3,000	10	30,000	4	120,000	7″ ×8	210×205×205	445×230×435

使用说明 / Notices