



**THE DATASHEET OF  
2N3904**



## 描述 / Descriptions

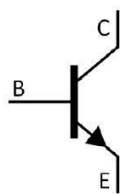
TO-92 塑封封装 NPN 半导体三极管。Silicon NPN transistor in a TO-92 Plastic Package.

## 特征 / Features 用途 / Applications

低电流, 低电压。用于一般放大。

Low current, Low voltage.  
General purpose amplifier.

## 内部等效电路 / Equivalent Circuit



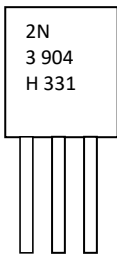
## 引脚排列 / Pinning



PIN1: Collector PIN 2: Base PIN 3: Emitter

## 放大及印章代码 / hFE Classifications & Marking

\*hFE(1)分档及打印

分 档	1					印记见下 具体内容以打印为准
H <sub>FE(1)</sub>	100~300					
打印 (简例)						
其 它 说 明	封装外形: TO-92 管脚排列: E、B、C					

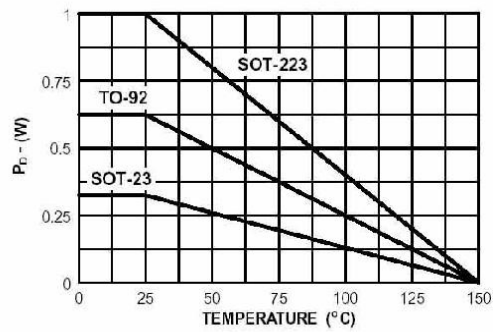
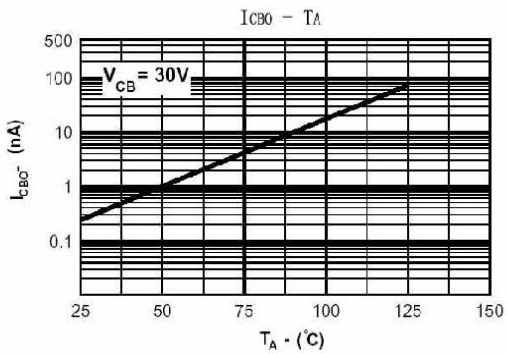
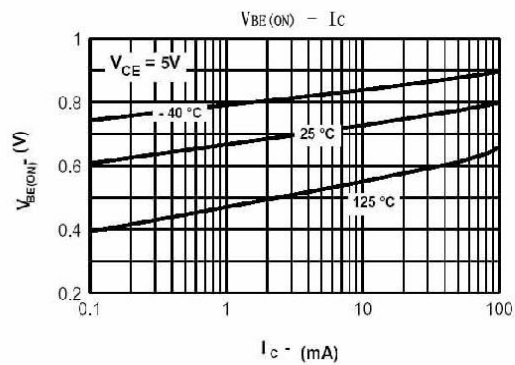
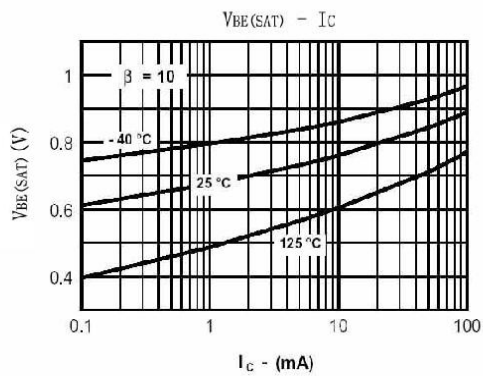
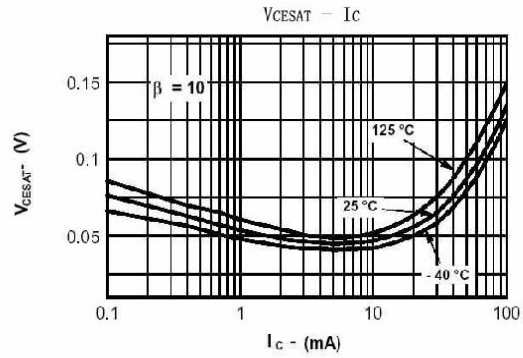
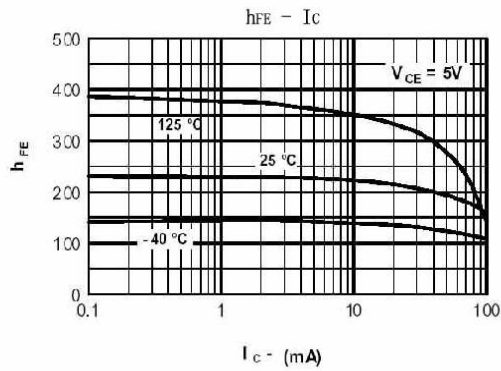
**极限参数 / Absolute Maximum Ratings(Ta=25°C)**

参数 Parameter	符号 Symbol	数值 Rating	单位 Unit
Collector to Base Voltage	V <sub>CBO</sub>	60	V
Collector to Emitter Voltage	V <sub>CEO</sub>	40	V
Emitter to Base Voltage	V <sub>EBO</sub>	6.0	V
Collector Current - Continuous	I <sub>C</sub>	200	mA
Collector Power Dissipation	P <sub>C</sub>	625	mW
Junction Temperature	T <sub>j</sub>	150	°C
Storage Temperature Range	T <sub>stg</sub>	-55~150	°C

**电性能参数 / Electrical Characteristics(Ta=25°C)**

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 <sub>CBO</sub>	I <sub>C</sub> =10μA I <sub>E</sub> =0	60			V
Collector to Emitter Breakdown Voltage	V <sub>CEO</sub>	I <sub>C</sub> =1.0mA I <sub>B</sub> =0	40			V
Emitter to Base Breakdown Voltage	V <sub>EBO</sub>	I <sub>E</sub> =10μA I <sub>C</sub> =0	6.0			V
Collector Cut-Off Current	I <sub>CBO</sub>	V <sub>CB</sub> =50V I <sub>E</sub> =0			0.05	μA
Emitter Cut-Off Current	I <sub>EBO</sub>	V <sub>EB</sub> =5.0V I <sub>C</sub> =0			0.05	μA
DC Current Gain	h <sub>FE(1)</sub>	V <sub>CE</sub> =1.0V I <sub>C</sub> =10mA	100		300	
	h <sub>FE(2)</sub>	V <sub>CE</sub> =1.0V I <sub>C</sub> =100mA	30			
Collector to Emitter Saturation Voltage	V <sub>CE(sat)</sub>	I <sub>C</sub> =50mA I <sub>B</sub> =5.0mA			0.3	V
Base to Emitter Saturation Voltage	V <sub>BE(sat)</sub>	I <sub>C</sub> =50mA I <sub>B</sub> =5.0mA			0.95	V
Current Gain Bandwidth Product	f <sub>T</sub>	I <sub>C</sub> =10mA V <sub>CE</sub> =20V f=100MHz	300			MHz
Output Capacitance	C <sub>ob</sub>	V <sub>CB</sub> =5.0V I <sub>E</sub> =0 f=1.0MHz			4.0	pF
Turn On Time	T <sub>on</sub>	V <sub>CC</sub> =3.0V V <sub>BE</sub> =0.5V I <sub>C</sub> =10mA I <sub>B1</sub> =1.0mA			0.07	μs
Turn Off Time	T <sub>off</sub>	V <sub>CC</sub> =3.0V I <sub>C</sub> =10mA I <sub>B1</sub> =-I <sub>B2</sub> =1.0mA			0.25	μs

**电参数曲线图 / Electrical Characteristic Curve**



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