

NPN高频低噪声晶体管

描述

2SC3585 是超高频低噪声晶体管，采用平面 NPN 硅外延双极型工艺。具有高功率增益、低噪声系数、大动态范围和理想的电流特性，采用 SOT-23-3L 贴片式封装，主要应用于 VHF，UHF 和 CATV 高频宽带低噪声放大器。

主要特性

高增益: $|S_{21e}|^2$ 典型值为 5.5dB
 低噪声: NF 典型值为 2.5B
 增益带宽乘积: f_T 典型值为 10GHz

@ $V_{CE}=6V$, $I_C=10mA$, $f=2GHz$
 @ $V_{CE}=6V$, $I_C=5mA$, $f=2GHz$
 @ $V_{CE}=6V$, $I_C=10mA$, $f=1GHz$

极限工作条件范围 ($T_A=25^\circ C$)

| 参数 | 符号 | 极值 | 单位 |
|------------|------|------------|----|
| 集电极基极击穿电压 | VCBO | 20 | V |
| 集电极发射极击穿电压 | VCEO | 10 | V |
| 发射极基极击穿电压 | VEBO | 1.5 | V |
| 集电极电流 | IC | 35 | mA |
| 功耗 | PC | 200 | mW |
| 结温度 | Tj | 150 | °C |
| 存储温度 | Tstg | -65 ~ +150 | °C |

HFE 档位

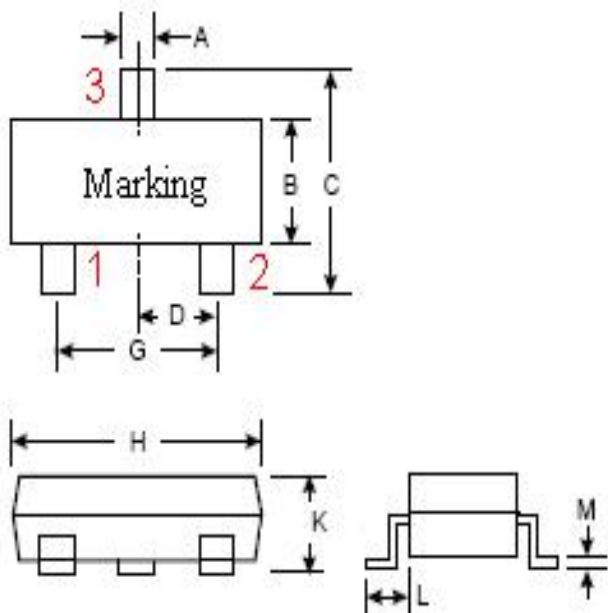
| 分档 | A | B | C | D |
|-----|--------|--------|---------|---------|
| 标号 | R43 | R44 | R45 | |
| HFE | 60-100 | 90-140 | 120-180 | 170-250 |

电学特性 (TA=25°C)

| 参数 | 符号 | 最小 | 典型 | 最大 | 单位 | 测试条件 |
|-----------|---------------------------------|----|-----|-----|-----|-----------------------|
| 集电极基极击穿电压 | VCBO | 20 | | | V | IC=1.0μA |
| 集电极基极漏电流 | ICBO | | | 0.1 | μA | VCB=10V |
| 发射极基极漏电流 | IEBO | | | 0.1 | μA | VEB=1V |
| 直流增益 | HFE | 60 | 150 | 250 | | VCE=6V,IC=10mA |
| 增益带宽乘积 | f _T | | 10 | | GHz | VCE=6V,IC=10mA |
| 输出反馈电容 | Cre | | 0.3 | 0.8 | pF | VCB=10V,IE=0mA,f=1MHz |
| 功率增益 | S _{21e} ² | | 5.5 | | dB | VCE=6V,IC=10mA,f=2GHz |
| 噪声因子 | NF | | 2.5 | 3.0 | dB | VCE=6V,IC=5mA,f=2GHz |

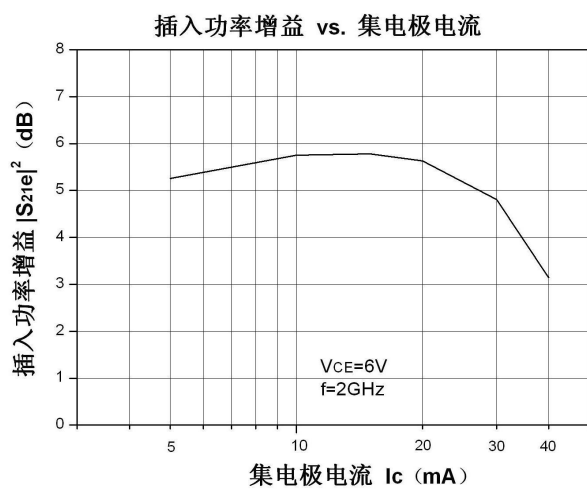
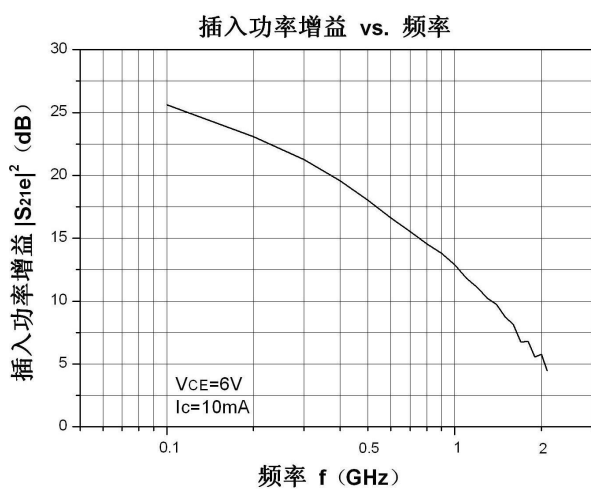
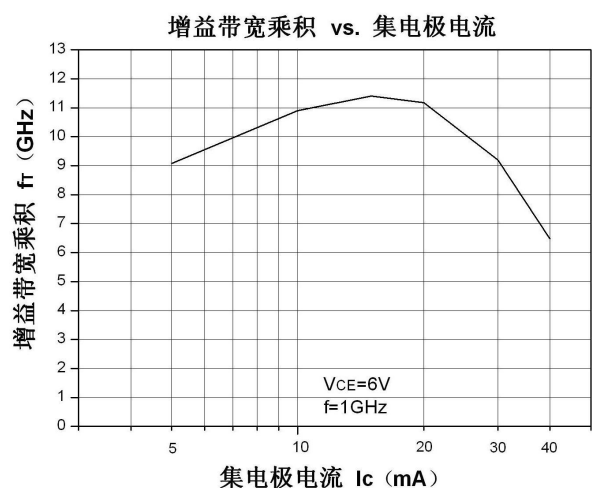
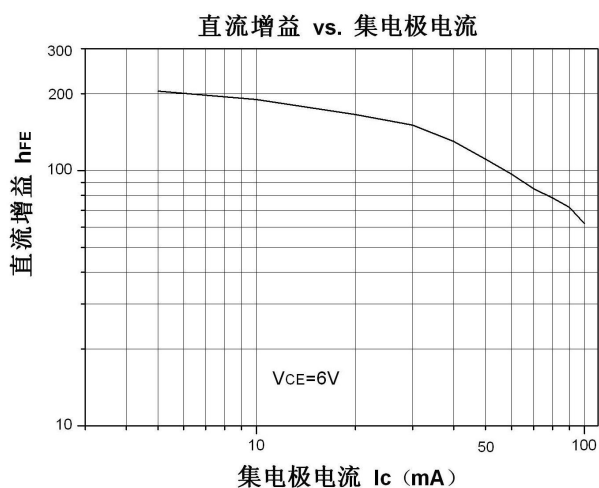
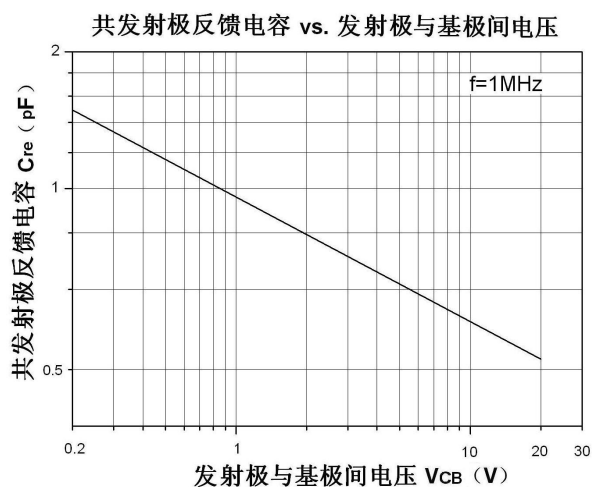
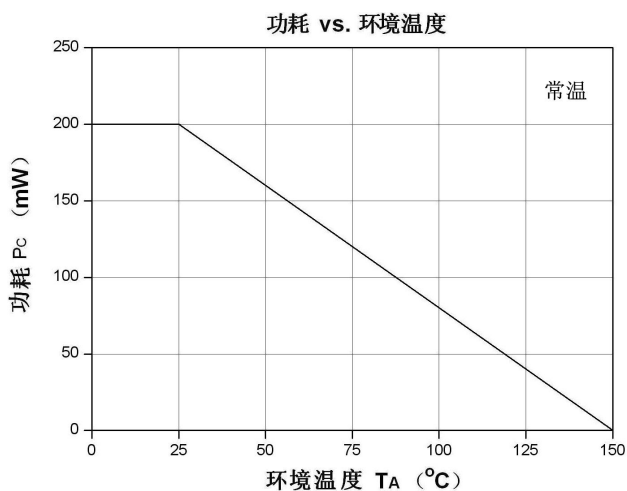
封装形式
SOT-23-3L

管脚定义：1：基极（Base） 2：发射极（Emitter） 3：集电极（Collector）

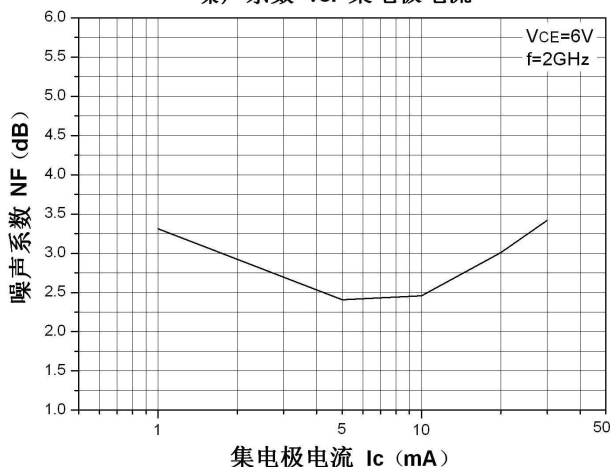


| SOT-23-3L | | |
|-----------|-------------|-------------|
| 符号 | 最小值 (mm) | 最大值 (mm) |
| A | 0.35 | 0.5 |
| B | 1.4 | 1.7 |
| C | 2.7 | 3.1 |
| D | 0.95 | |
| G | 1.7 | 2.1 |
| H | 2.7 | 3.1 |
| K | 1 | 1.3 |
| L | 0.5 | 0.85 |
| M | 0.1 | 0.35 |

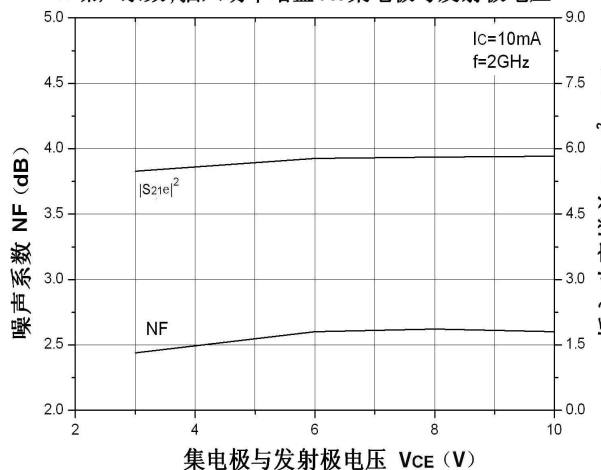
典型特性曲线 (TA = 25°C)



噪声系数 vs. 集电极电流

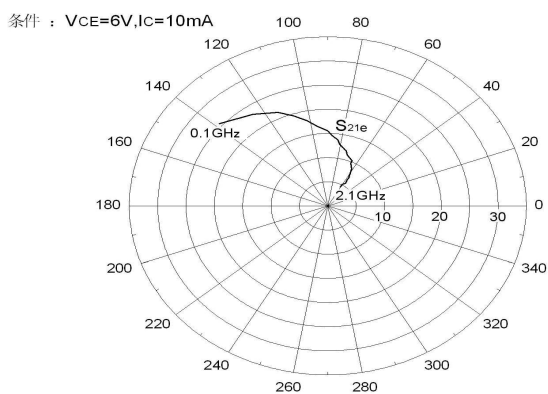


噪声系数, 插入功率增益 vs. 集电极与发射极电压

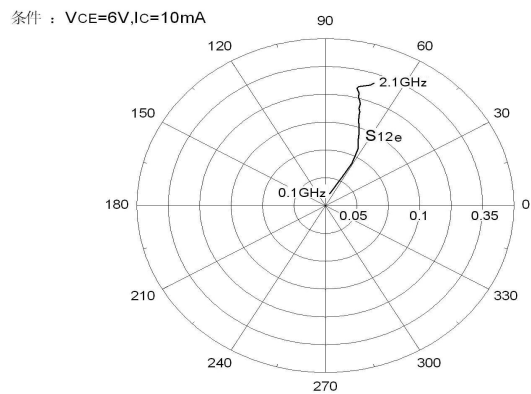


SMITH 图

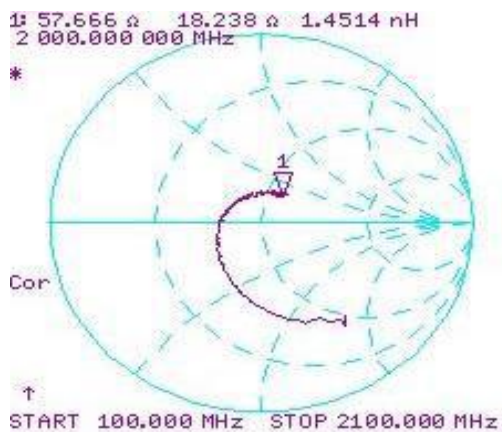
S21e -FREQUENCY



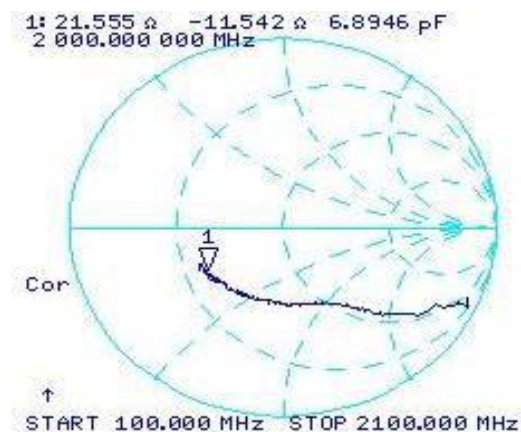
S12e -FREQUENCY



S11e -FREQUENCY



S22e -FREQUENCY



散射参数 (S-PARAMETER)

 测试条件: $V_{CE}=6V, I_c=10mA, Z_0=50\Omega$

| 测试频率 | S ₁₁ | | S ₂₁ | | S ₁₂ | | S ₂₂ | |
|------|-----------------|---------|-----------------|--------|-----------------|-------|-----------------|---------|
| | MAG | ANG | MAG | ANG | MAG | ANG | MAG | ANG |
| 0.1 | 0.606 | -51.368 | 19.070 | 138.27 | 0.023 | 70.41 | 0.908 | -22.132 |
| 0.2 | 0.518 | -77.739 | 14.243 | 124.69 | 0.034 | 70.41 | 0.727 | -40.023 |
| 0.3 | 0.394 | -99.576 | 11.550 | 114.38 | 0.048 | 70.41 | 0.586 | -48.554 |
| 0.4 | 0.324 | -117.74 | 9.522 | 108.01 | 0.057 | 70.41 | 0.510 | -53.937 |
| 0.5 | 0.280 | -132.78 | 7.968 | 101.63 | 0.067 | 70.41 | 0.474 | -58.933 |
| 0.6 | 0.248 | -147.46 | 6.768 | 96.468 | 0.078 | 70.41 | 0.443 | -63.31 |
| 0.7 | 0.219 | -161.53 | 5.979 | 90.103 | 0.089 | 70.41 | 0.434 | -68.85 |
| 0.8 | 0.203 | -173.71 | 5.342 | 86.881 | 0.096 | 70.41 | 0.418 | -73.843 |
| 0.9 | 0.189 | 174.27 | 4.910 | 80.73 | 0.106 | 70.41 | 0.415 | -79.324 |
| 1 | 0.176 | 162.27 | 4.425 | 80.638 | 0.112 | 70.41 | 0.409 | -86.129 |
| 1.1 | 0.170 | 149.78 | 3.895 | 74.155 | 0.127 | 70.41 | 0.407 | -91.361 |
| 1.2 | 0.166 | 139.57 | 3.577 | 72.048 | 0.136 | 70.41 | 0.392 | -99.5 |
| 1.3 | 0.156 | 128.37 | 3.245 | 65.426 | 0.145 | 70.41 | 0.395 | -103.49 |
| 1.4 | 0.162 | 117.71 | 3.071 | 65.638 | 0.160 | 70.41 | 0.393 | -110.83 |
| 1.5 | 0.150 | 111.08 | 2.725 | 61.089 | 0.171 | 70.41 | 0.396 | -113.86 |
| 1.6 | 0.158 | 97.675 | 2.562 | 63.587 | 0.181 | 70.41 | 0.400 | -122.82 |
| 1.7 | 0.157 | 90.954 | 2.172 | 57.097 | 0.199 | 70.41 | 0.415 | -125.46 |
| 1.8 | 0.173 | 79.571 | 2.182 | 57.936 | 0.217 | 70.41 | 0.415 | -135.65 |
| 1.9 | 0.160 | 69.719 | 1.898 | 56.337 | 0.225 | 70.41 | 0.408 | -136.44 |
| 2 | 0.181 | 58.602 | 1.940 | 60.143 | 0.245 | 70.41 | 0.428 | -148.92 |

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