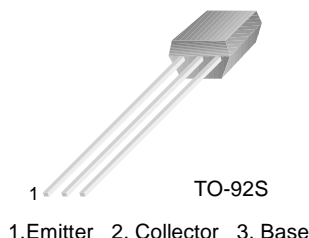


KSC2786

KSC2786

TV PIF Amplifier, FM Tuner RF Amplifier, Mixer, Oscillator

- High Current Gain Bandwidth Product : $f_T=600\text{MHz}$ (TYP)
- High Power Gain : $G_{PE}=22\text{dB}$ at $f=100\text{MHz}$



NPN Epitaxial Silicon Transistor

Absolute Maximum Ratings $T_a=25^\circ\text{C}$ unless otherwise noted

| Symbol | Parameter | Value | Units |
|-----------|-----------------------------|-----------|------------------|
| V_{CBO} | Collector-Base Voltage | 30 | V |
| V_{CEO} | Collector-Emitter Voltage | 20 | V |
| V_{EBO} | Emitter-Base Voltage | 4 | V |
| I_C | Collector Current | 20 | mA |
| P_C | Collector Power Dissipation | 250 | mW |
| T_J | Junction Temperature | 150 | $^\circ\text{C}$ |
| T_{STG} | Storage Temperature | -55 ~ 150 | $^\circ\text{C}$ |

Electrical Characteristics $T_a=25^\circ\text{C}$ unless otherwise noted

| Symbol | Parameter | Test Condition | Min. | Typ. | Max. | Units |
|----------------------|--------------------------------------|---|------|------|------|---------------|
| BV_{CBO} | Collector-Base Breakdown Voltage | $I_C=10\mu\text{A}, I_E=0$ | 30 | | | V |
| BV_{CEO} | Collector-Emitter Breakdown Voltage | $I_C=5\text{mA}, I_B=0$ | 20 | | | V |
| BV_{EBO} | Emitter-Base Breakdown Voltage | $I_E=10\mu\text{A}, I_C=0$ | 4 | | | V |
| I_{CBO} | Collector Cut-off Current | $V_{CB}=30\text{V}, I_E=0$ | | | 0.1 | μA |
| I_{EBO} | Emitter Cut-off Current | $V_{EB}=4\text{V}, I_C=0$ | | | 0.1 | μA |
| h_{FE} | DC Current Gain | $V_{CE}=6\text{V}, I_C=1\text{mA}$ | 40 | | 240 | |
| $V_{BE}(\text{on})$ | Base-Emitter On Voltage | $V_{CE}=6\text{V}, I_C=1\text{mA}$ | | 0.72 | | V |
| $V_{CE}(\text{sat})$ | Collector-Emitter Saturation Voltage | $I_C=10\text{mA}, I_B=1\text{mA}$ | | 0.1 | 0.3 | V |
| f_T | Current Gain Bandwidth Product | $V_{CE}=6\text{V}, I_C=1\text{mA}$ | 400 | 600 | | MHz |
| C_{ob} | Output Capacitance | $V_{CB}=6\text{V}, I_E=0, f=1\text{MHz}$ | | 1.2 | | pF |
| $C_{c-rbb'}$ | Collector-Base Time Constant | $V_{CE}=6\text{V}, I_C=1\text{mA}$ $f=31.9\text{MHz}$ | | 12 | 15 | ps |
| NF | Noise Figure | $V_{CE}=6\text{V}, I_C=1\text{mA}$ $R_S=50\Omega, f=100\text{MHz}$ | | 3.0 | 5.0 | dB |
| G_{PE} | Power Gain | $V_{CE}=6\text{V}, I_C=1\text{mA}$ $f=100\text{MHz}$ | 18 | 22 | | dB |

h_{FE} Classification

| Classification | R | O | Y |
|----------------|---------|----------|-----------|
| h_{FE} | 40 ~ 80 | 70 ~ 140 | 120 ~ 240 |

Typical Characteristics

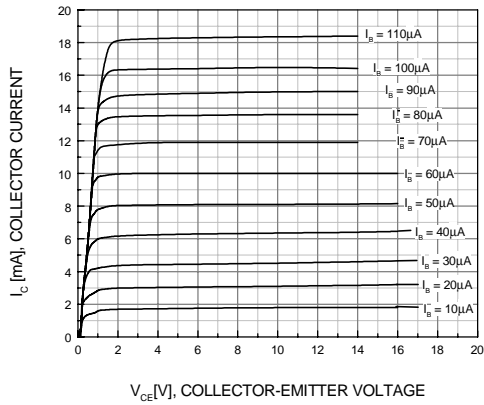


Figure 1. Static Characteristics

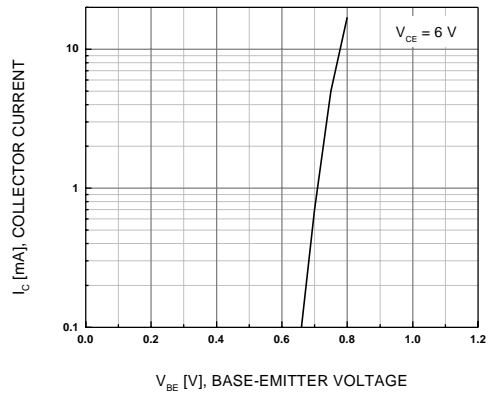


Figure 2. Base-Emitter On Voltage

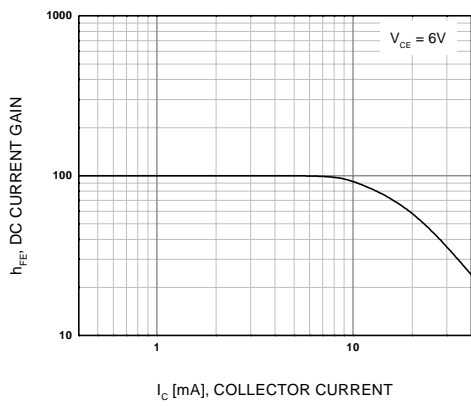


Figure 3. DC Current Gain

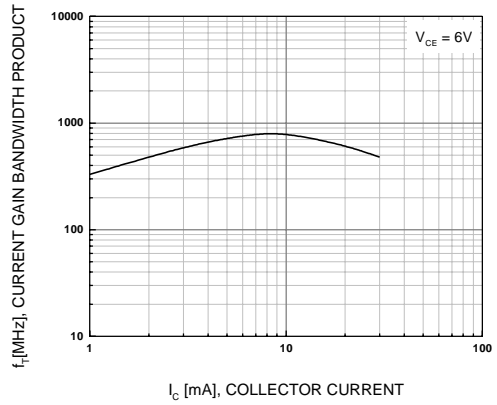


Figure 4. $f_T - I_C$

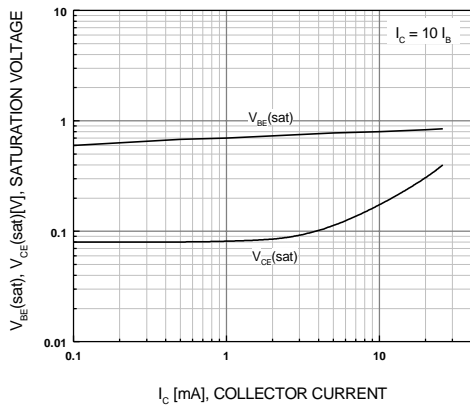


Figure 5. Saturation Voltage

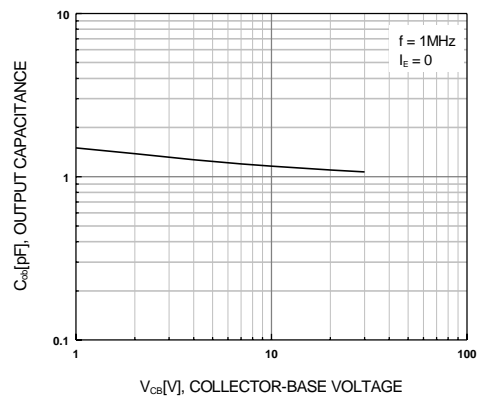


Figure 6. Output Capacitance

Typical Characteristics (Continued)

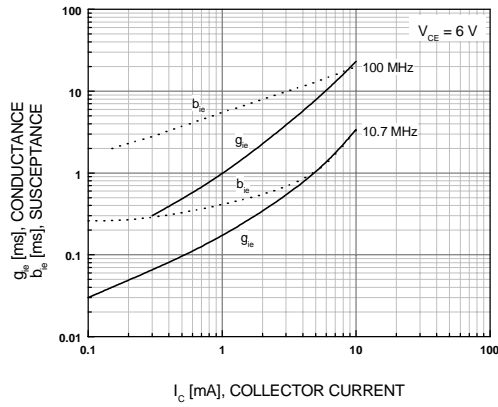


Figure 7. yie - f

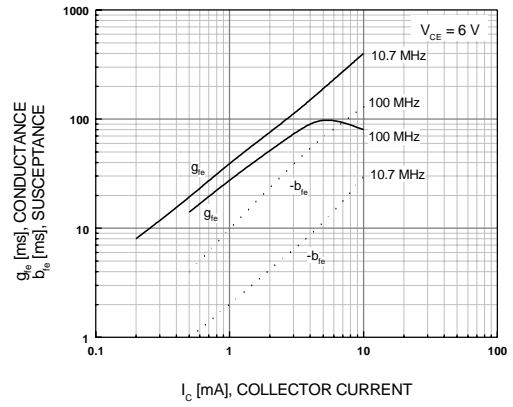


Figure 8. yfe - f

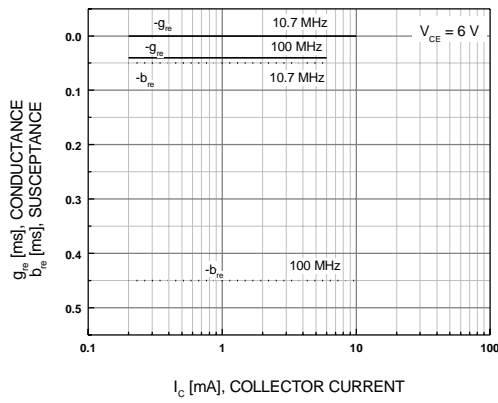


Figure 9. yre - f

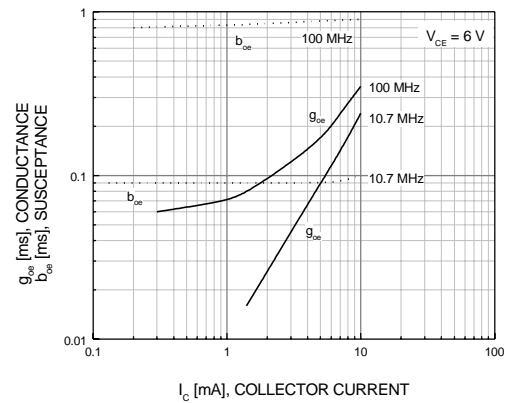


Figure 10. yoe - f

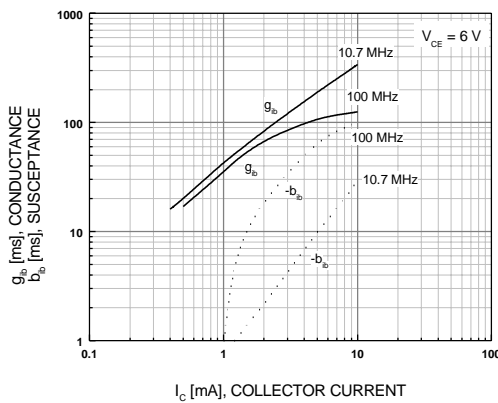


Figure 11. yib - f

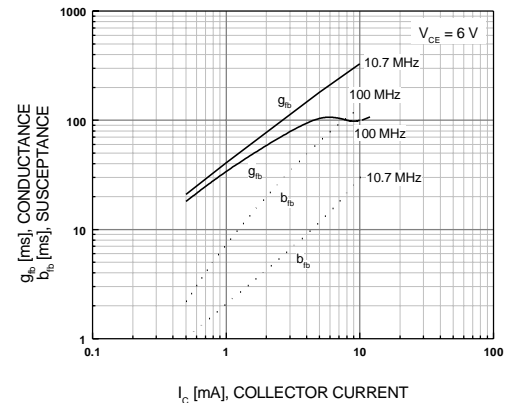


Figure 12. yfb - f

Typical Characteristics (Continued)

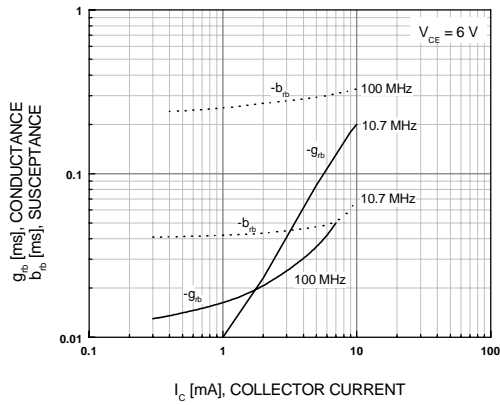


Figure 13. yrb - f

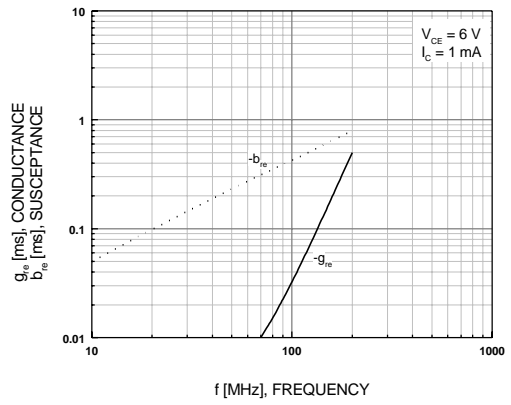


Figure 14. yre - f

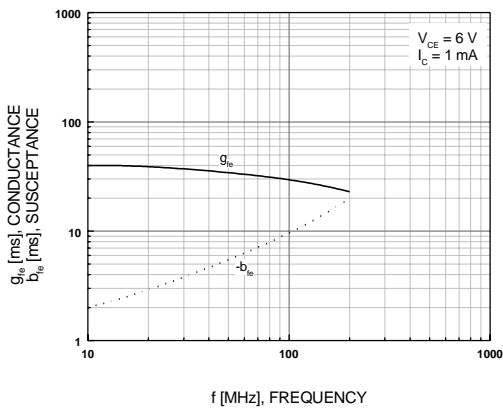


Figure 15. yfe - f

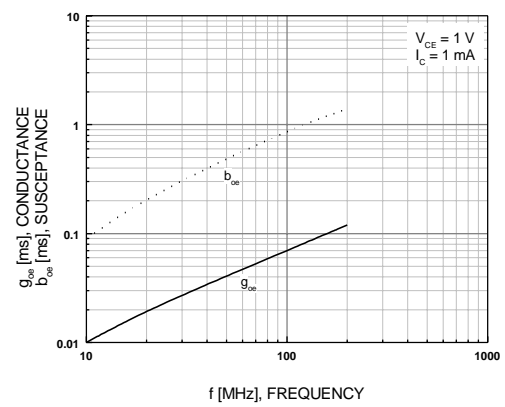


Figure 16. yoe - f

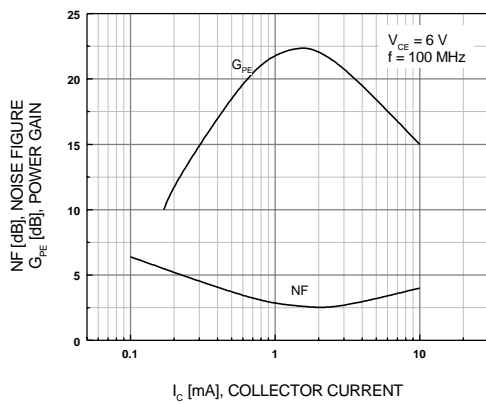


Figure 17. Power Gain & NF

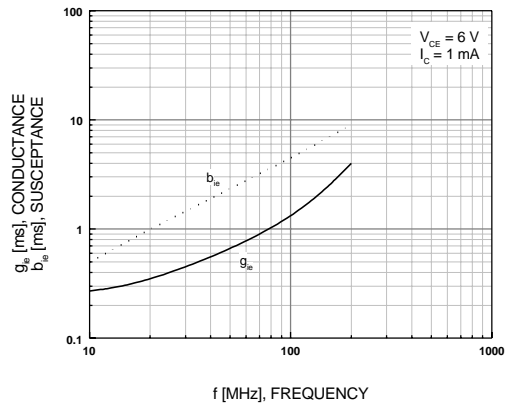
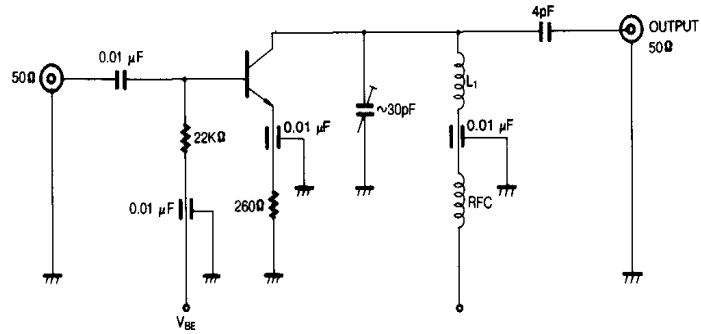


Figure 18. yie - f

Typical Characteristics (Continued)

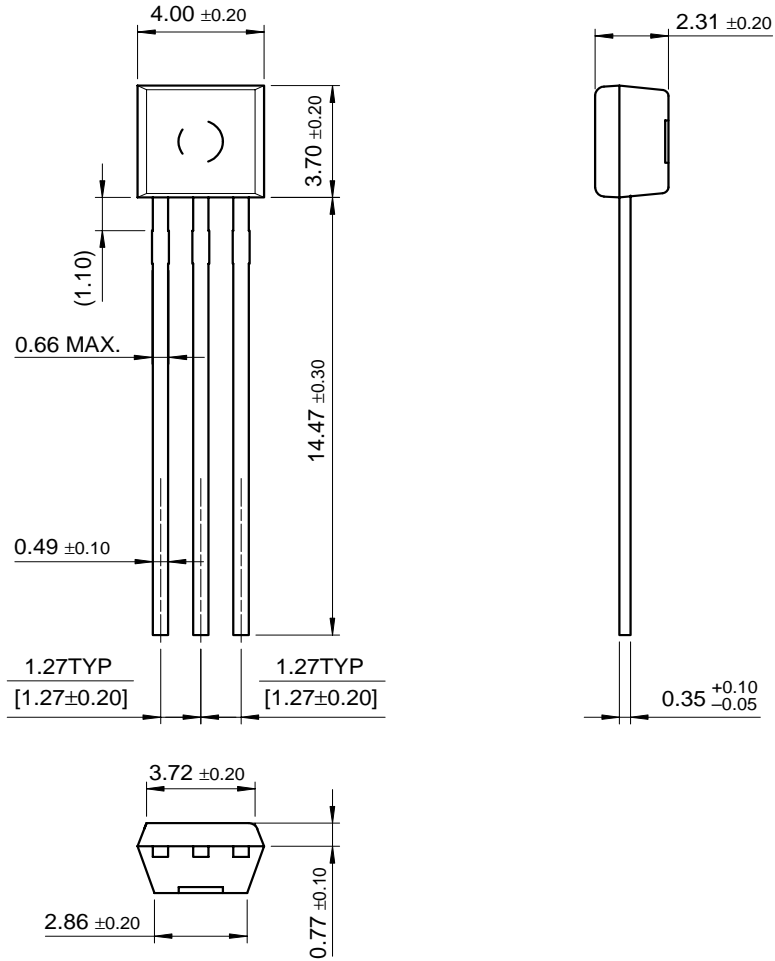
KSC2786

100MHz G_{pe} , NF TEST CIRCUIT



Package Dimensions

TO-92S



Dimensions in Millimeters

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