



**THE DATASHEET OF  
KSC27570MTF**

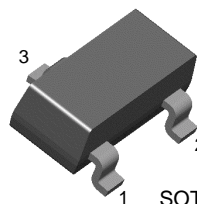


# KSC2757

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## Mixer Oscillator for VHF Tuner

- High Current Gain Bandwidth Product :  $f_T=1100\text{MHz}$  (TYP)



1. Base 2. Emitter 3. Collector

## 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   | 15         | V                |
| $V_{EBO}$ | Emitter-Base Voltage        | 5          | V                |
| $I_C$     | Collector Current           | 50         | mA               |
| $P_C$     | Collector Power Dissipation | 150        | mW               |
| $T_J$     | Junction Temperature        | 150        | $^\circ\text{C}$ |
| $T_{STG}$ | Storage Temperature         | -55 ~ +150 | $^\circ\text{C}$ |

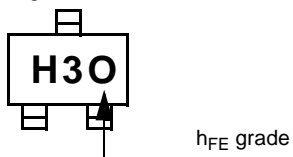
### Electrical Characteristics $T_a=25^\circ\text{C}$ unless otherwise noted

| Symbol               | Parameter                            | Test Condition  | Min. | Typ. | Max. | Units         |
|----------------------|--------------------------------------|---|------|------|------|---------------|
| $I_{CBO}$            | Collector Cut-off Current            | $V_{CB}=12\text{V}, I_E=0$                                |      |      | 0.1  | $\mu\text{A}$ |
| $h_{FE}$             | DC Current Gain                      | $V_{CE}=10\text{V}, I_C=5\text{mA}$                       | 60   | 120  | 240  |               |
| $V_{CE}(\text{sat})$ | Collector-Emitter Saturation Voltage | $I_C=10\text{mA}, I_B=1\text{mA}$                         |      |      | 0.5  | V             |
| $f_T$                | Current Gain Bandwidth Product       | $V_{CE}=10\text{V}, I_C=5\text{mA}$                       | 800  | 1100 |      | MHz           |
| $C_{ob}$             | Output Capacitance                   | $V_{CB}=10\text{V}, I_E=0, f=1\text{MHz}$                 |      |      | 1.5  | pF            |
| $C_{c-rbb'}$         | Noise Figure                         | $V_{CE}=10\text{V}, I_C=5\text{mA}$<br>$f=31.9\text{MHz}$ |      | 10   | 1.5  | ps            |

### $h_{FE}$ Classification

| Classification | R        | O        | Y         |
|----------------|----------|----------|-----------|
| $h_{FE}$       | 60 ~ 120 | 90 ~ 180 | 120 ~ 240 |

Marking



# Typical Characteristics

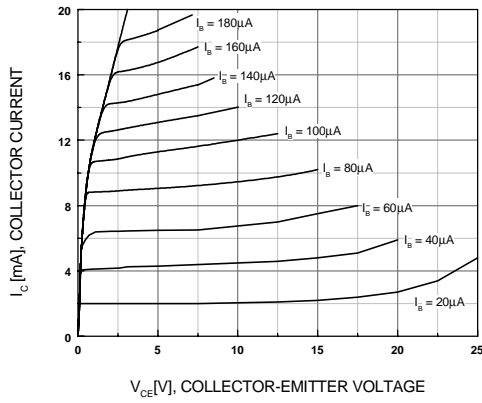


Figure 1. Static Characteristics

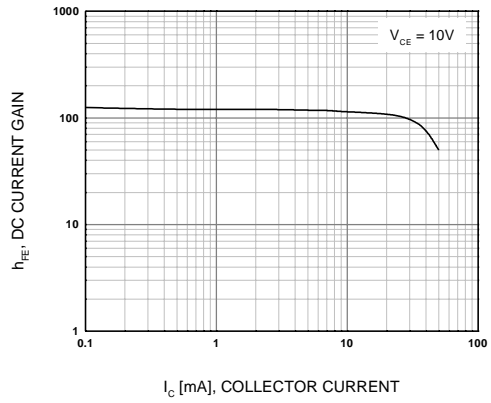


Figure 2. DC Current Gain

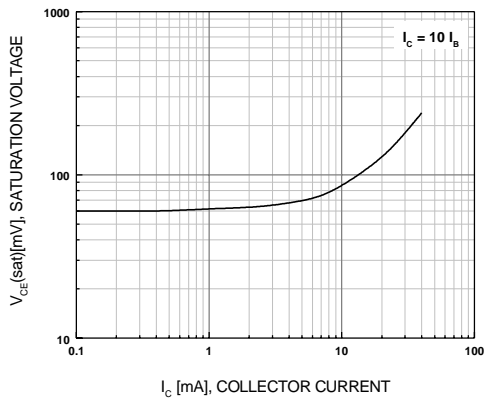


Figure 3. Collector-Emitter Saturation Voltage

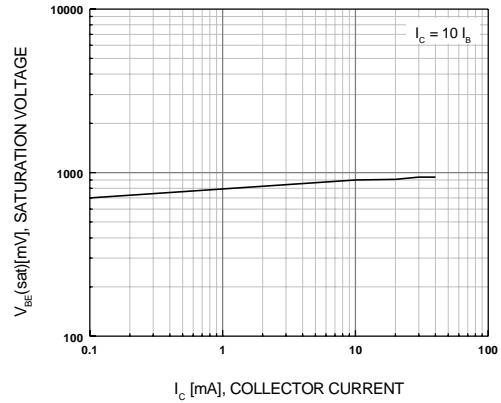


Figure 4. Base-Emitter Saturation Voltage

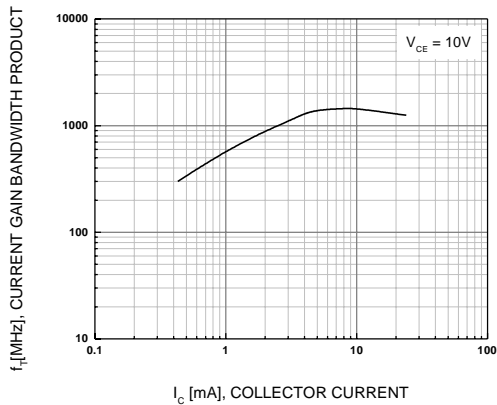


Figure 5.  $f_T - I_C$

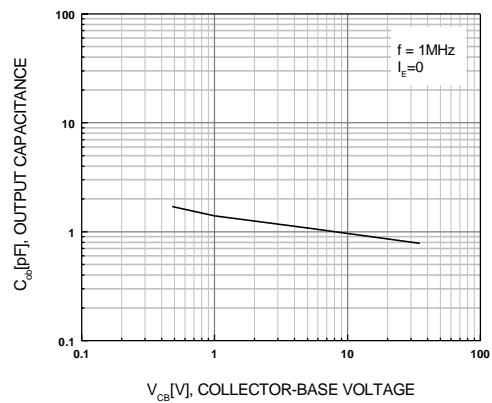


Figure 6. Output Capacitance

# Typical Characteristics (Continued)

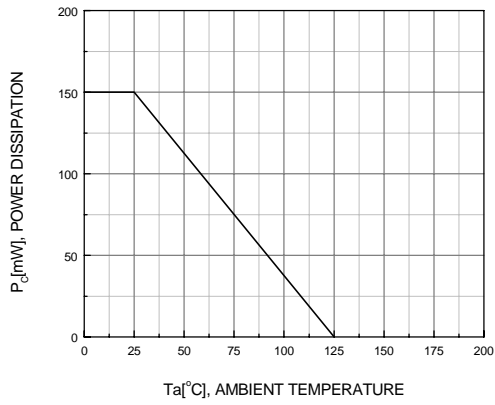


Figure 7. Power Derating

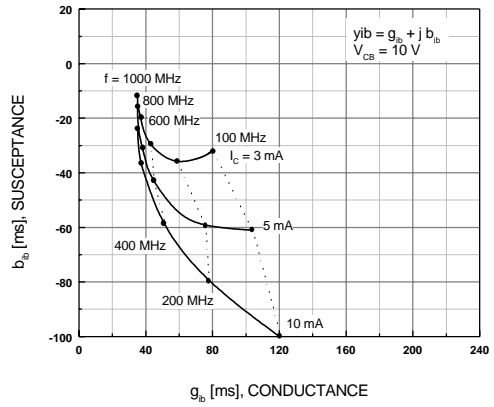


Figure 8.  $y_{ib} - f$

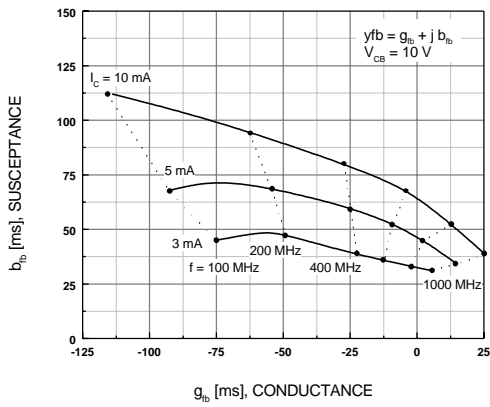


Figure 9.  $y_{fb} - f$

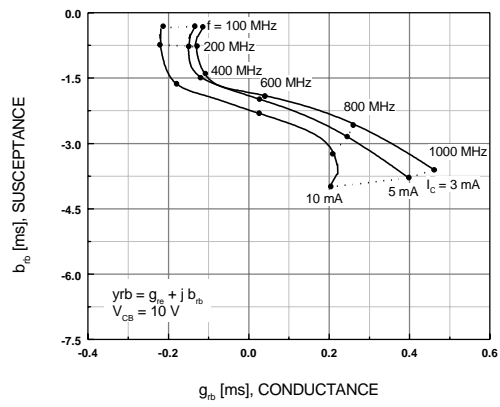


Figure 10.  $y_{rb} - f$

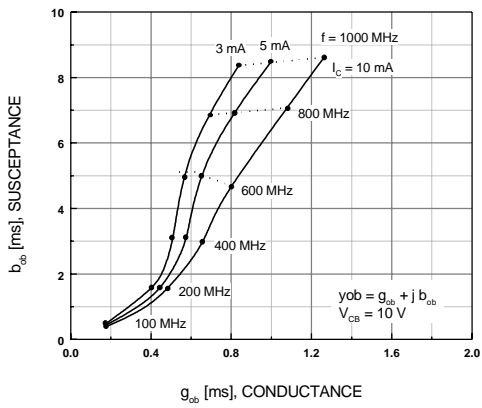
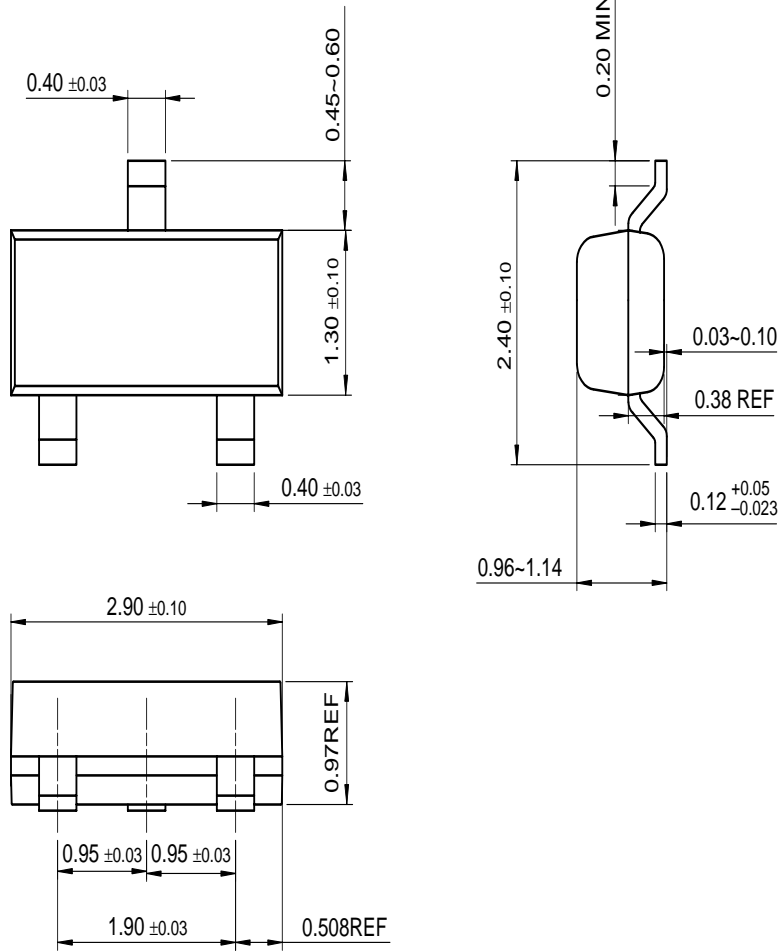


Figure 11.  $y_{ob} - f$

# Package Dimensions

## SOT-23



Dimensions in Millimeters

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