

NPN Epitaxial Silicon Transistor

KSP10

Features

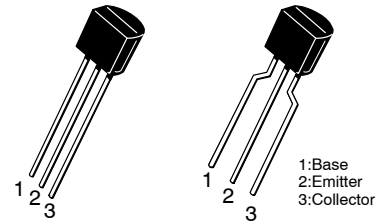
- VHF/UHF Transistor
- These Devices are Pb-Free, Halogen Free/BFR Free and are RoHS Compliant

ABSOLUTE MAXIMUM RATINGS

Values are at $T_A = 25^\circ\text{C}$ unless otherwise noted.

| Symbol | Parameter | Value | Unit |
|---------------|--|------------|---------------------------|
| V_{CBO} | Collector-Base Voltage | 30 | V |
| V_{CEO} | Collector-Emitter Voltage | 25 | V |
| V_{EBO} | Emitter-Base Voltage | 3.0 | V |
| PC | Collector Power Dissipation ($T_A = 25^\circ\text{C}$) | 350 | mW |
| | Derate above 25°C | 2.8 | mW/ $^\circ\text{C}$ |
| PC | Collector Power Dissipation ($T_C = 25^\circ\text{C}$) | 1.0 | W |
| | Derate above 25°C | 8.0 | W/ $^\circ\text{C}$ |
| T_J | Junction Temperature | 150 | $^\circ\text{C}$ |
| T_{STG} | Storage Temperature | -55 to 150 | $^\circ\text{C}$ |
| $R_{th(j-c)}$ | Thermal Resistance, Junction to Case | 125 | $^\circ\text{C}/\text{W}$ |
| $R_{th(j-a)}$ | Thermal Resistance, Junction to Ambient | 357 | $^\circ\text{C}/\text{W}$ |

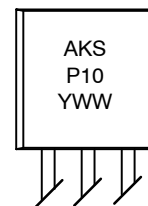
Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.



TO-92-3
CASE 135AN

TO-92 LF
CASE 135AR

MARKING DIAGRAM



A = Assembly Code
 KSP10 = Device Code
 Y = Year
 WW = Work Week

ORDERING INFORMATION

| Device | Package | Shipping |
|---------|-------------------------|---------------------|
| KSP10BU | TO-92 3 (Pb-Free) | 10000 / Bulk Bag |
| KSP10TA | TO-92 3 LF (Pb-Free) | 2000 / Fan-Fold |

KSP10

ELECTRICAL CHARACTERISTICS (Values are at $T_A = 25^\circ\text{C}$ unless otherwise noted.)

| Symbol | Parameter | Conditions | Min | Max | Unit |
|---------------|--------------------------------------|---|------|------|------|
| BV_{CBO} | Collector-Base Breakdown Voltage | $I_C = 100 \mu\text{A}, I_E = 0$ | 30 | - | V |
| BV_{CEO} | Collector-Emitter Breakdown Voltage | $I_C = 1 \text{ mA}, I_B = 0$ | 25 | - | V |
| BV_{EBO} | Emitter-Base Breakdown Voltage | $I_E = 10 \mu\text{A}, I_C = 0$ | 3.0 | - | V |
| I_{CBO} | Collector Cut-Off Current | $V_{CB} = 25 \text{ V}, I_E = 0$ | - | 100 | nA |
| I_{EBO} | Emitter Cut-Off Current | $V_{EB} = 2 \text{ V}, I_C = 0$ | - | 100 | nA |
| h_{FE} | DC Current Gain | $V_{CE} = 10 \text{ V}, I_C = 4 \text{ mA}$ | 60 | - | - |
| $V_{CE(sat)}$ | Collector-Emitter Saturation Voltage | $I_C = 4 \text{ mA}, I_B = 0.4 \text{ mA}$ | - | 0.5 | V |
| $V_{BE(on)}$ | Base-Emitter On Voltage | $V_{CE} = 10 \text{ V}, I_C = 4 \text{ mA}$ | - | 0.95 | V |
| f_T | Current Gain Bandwidth Product | $V_{CE} = 10 \text{ V}, I_C = 4 \text{ mA}, f = 100 \text{ MHz}$ | 650 | - | MHz |
| C_{ob} | Output Capacitance | $V_{CB} = 10 \text{ V}, I_E = 0, f = 1 \text{ MHz}$ | - | 0.7 | pF |
| C_{rb} | Collector Base Feedback Capacitance | $V_{CB} = 10 \text{ V}, I_E = 0, f = 1 \text{ MHz}$ | 0.35 | 0.65 | pF |
| $C_{c-rbb'}$ | Collector Base Time Constant | $V_{CB} = 10 \text{ V}, I_C = 4 \text{ mA}, f = 31.8 \text{ MHz}$ | - | 9.0 | ps |

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

1. Pulse Test: $PW \leq 300 \mu\text{s}$, Duty Cycle $\leq 2\%$.

TYPICAL CHARACTERISTICS

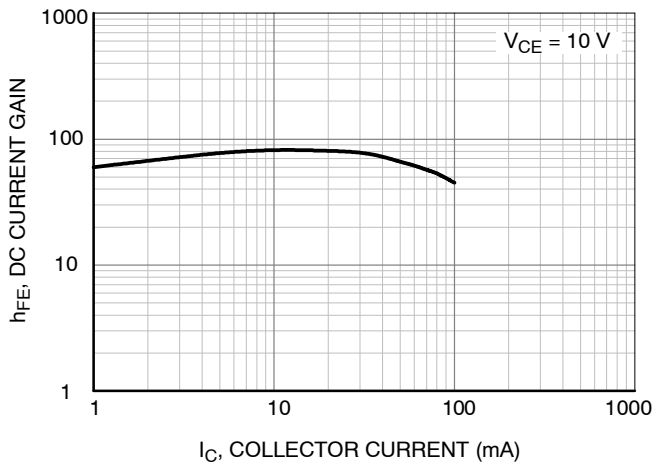


Figure 1. DC Current Gain

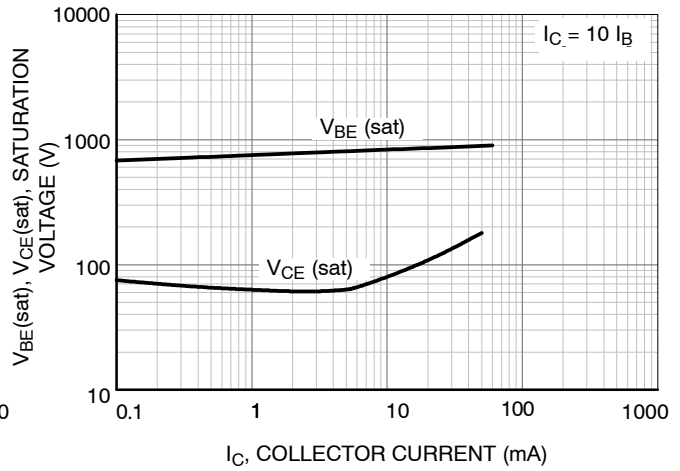


Figure 2. Base-Emitter Saturation Voltage and Collector-Emitter Saturation Voltage

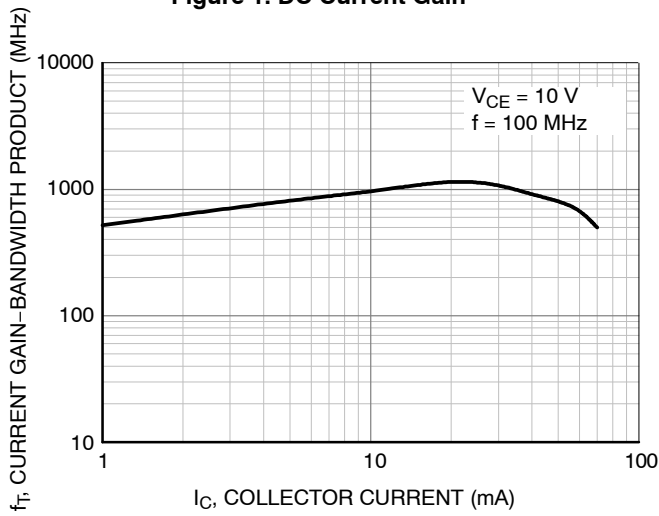


Figure 3. Current Gain Bandwidth Product

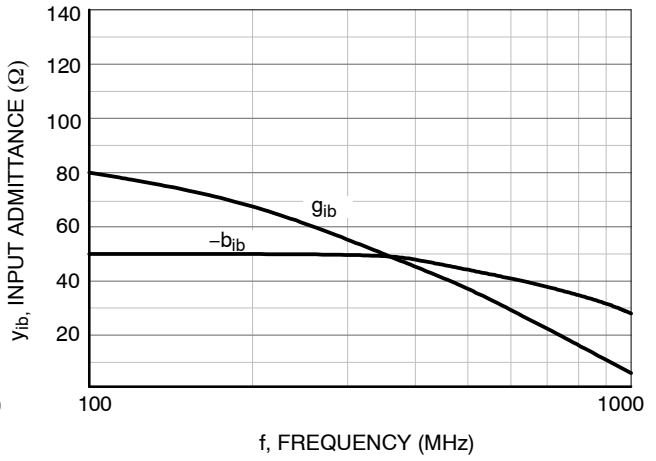


Figure 4. Rectangular Form

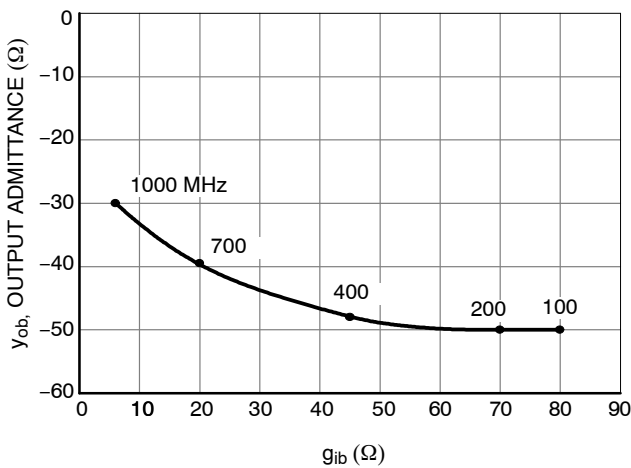


Figure 5. Polar Form

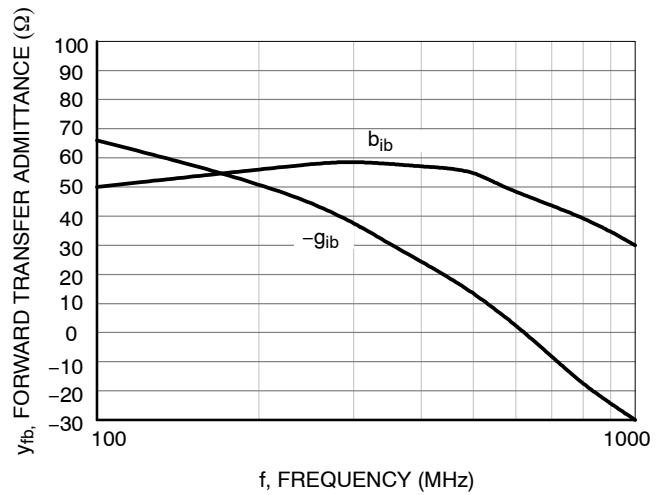


Figure 6. Rectangular Form

TYPICAL CHARACTERISTICS (CONTINUED)

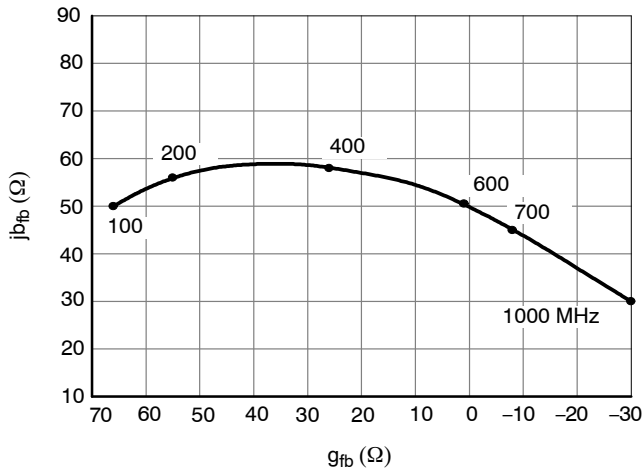


Figure 7. Polar Form

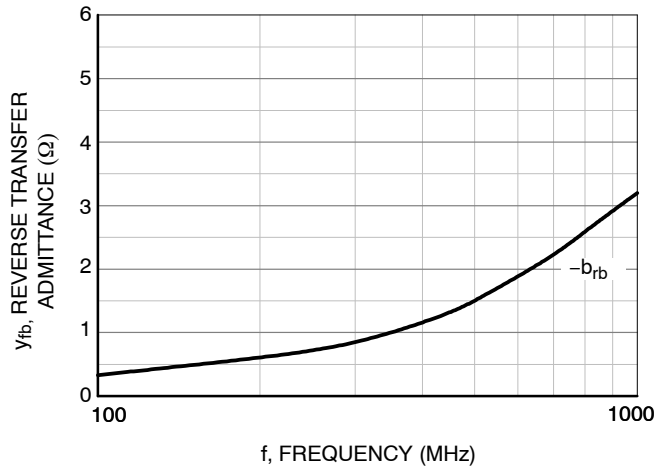


Figure 8. Rectangular Form

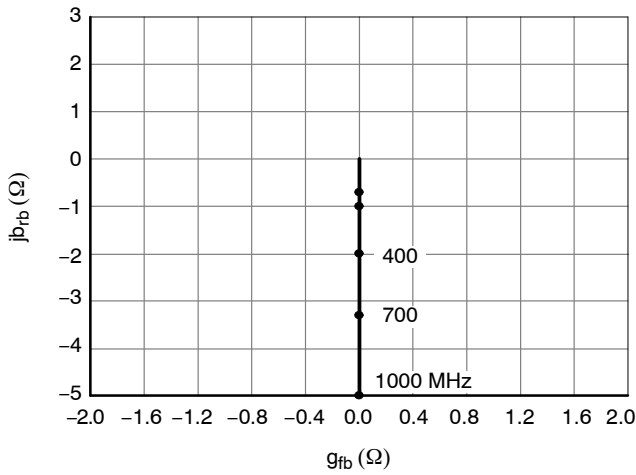


Figure 9. Polar Form

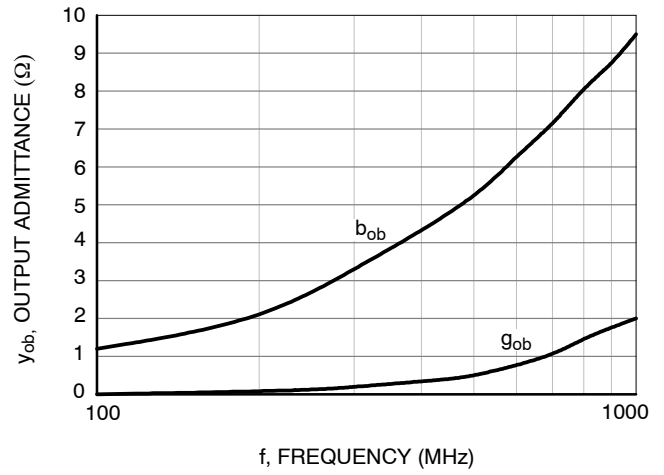


Figure 10. Rectangular Form

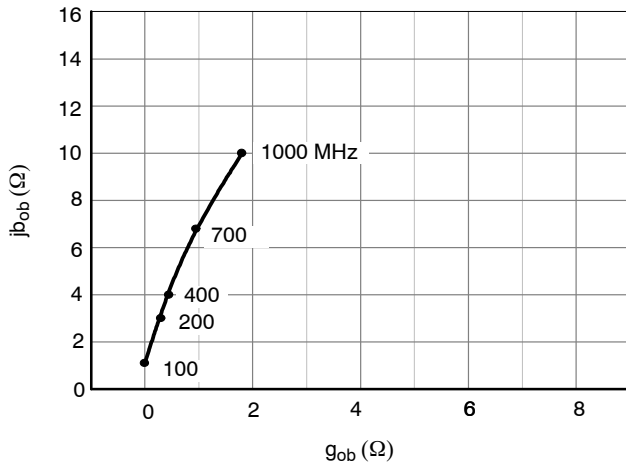


Figure 11. Polar Form

MECHANICAL CASE OUTLINE
PACKAGE DIMENSIONS

TO-92 3 4.825x4.76
CASE 135AN
ISSUE O

DATE 31 JUL 2016



NOTES: UNLESS OTHERWISE SPECIFIED

- A) DRAWING WITH REFERENCE TO JEDEC TO-92 RECOMMENDATIONS.
- B) ALL DIMENSIONS ARE IN MILLIMETERS.
- C) DRAWING CONFORMS TO ASME Y14.5M-2009.

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TO-92 3 4.83x4.76 LEADFORMED
CASE 135AR
ISSUE O

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