

NPN Epitaxial Silicon Transistor

KSC1815

Features

- Audio Frequency Amplifier and High-Frequency OSC
- Complement to KSA1015
- Collector-Base Voltage: $V_{CBO} = 50\text{ V}$
- This is a Pb-Free Device

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

| Symbol | Parameter | Value | Unit |
|-----------|---------------------------|------------|------------------|
| V_{CBO} | Collector-Base Voltage | 60 | V |
| V_{CEO} | Collector-Emitter Voltage | 50 | V |
| V_{EBO} | Emitter-Base Voltage | 5 | V |
| I_C | Collector Current | 150 | mA |
| I_B | Base Current | 50 | mA |
| T_J | Junction Temperature | 150 | $^\circ\text{C}$ |
| T_{STG} | Storage Temperature Range | -55 to 150 | $^\circ\text{C}$ |

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.

THERMAL CHARACTERISTICS (Values are at $T_A = 25^\circ\text{C}$ unless otherwise noted.) (Note 1)

| Symbol | Parameter | Max. | Unit |
|-----------------|---|------|---------------------------|
| P_D | Total Device Dissipation | 400 | mW |
| | Derate Above 25°C | 3.2 | mW/ $^\circ\text{C}$ |
| $R_{\theta JA}$ | Thermal Resistance, Junction to Ambient | 312 | $^\circ\text{C}/\text{W}$ |

1. PCB size: FR-4, 76 mm x 114 mm x 1.57 mm (3.0 inch x 4.5 inch x 0.062 inch) with minimum land pattern size.



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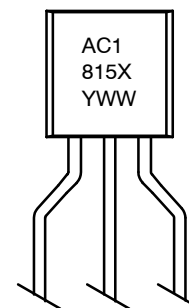
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1. Emitter
2. Collector
3. Base

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

MARKING DIAGRAM



A = Assembly Code
C1815 = Device Code
X = O / Y / GR / L
YWW = Date Code

ORDERING INFORMATION

| Device | Package | Shipping |
|------------|-----------------------|-----------------|
| KSC1815YTA | TO-92 3L (Pb-Free) | 2000 / Fan-Fold |

KSC1815

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

| Symbol | Parameter | Conditions | Min | Typ | Max | Unit |
|---------------|--------------------------------------|--|-----|------|------|---------------|
| BV_{CBO} | Collector-Base Voltage | $I_C = 1\text{ mA}, I_E = 0$ | 60 | | | V |
| BV_{CEO} | Collector-Emitter Voltage | $I_C = 10\text{ mA}, I_B = 0$ | 50 | | | V |
| BV_{EBO} | Emitter-Base Voltage | $I_E = 10\text{ }\mu\text{A}, I_C = 0$ | 5 | | | V |
| I_{CBO} | Collector Cut-Off Current | $V_{CB} = 60\text{ V}, I_E = 0$ | | | 0.1 | μA |
| I_{EBO} | Emitter Cut-Off Current | $V_{EB} = 5\text{ V}, I_C = 0$ | | | 0.1 | μA |
| $V_{CE(sat)}$ | Collector-Emitter Saturation Voltage | $I_C = 100\text{ mA}, I_B = 10\text{ mA}$ | | 0.10 | 0.25 | V |
| $V_{BE(sat)}$ | Base-Emitter Saturation Voltage | $I_C = 100\text{ mA}, I_B = 10\text{ mA}$ | | | 1.0 | V |
| h_{FE1} | DC Current Gain | $V_{CE} = 6\text{ V}, I_C = 2\text{ mA}$ | 70 | | 700 | |
| h_{FE2} | | $V_{CE} = 6\text{ V}, I_C = 150\text{ mA}$ | 25 | | | |
| f_T | Current Gain Bandwidth Product | $V_{CE} = 10\text{ V}, I_C = 1\text{ mA}$ | 80 | | | MHz |
| C_{ob} | Output Capacitance | $V_{CB} = 10\text{ V}, I_E = 0, f = 1\text{ MHz}$ | | 2.0 | 3.0 | pF |
| NF | Noise Figure | $V_{CE} = 6\text{ V}, I_C = 0.1\text{ mA},$ $R_S = 10\text{ k}\Omega, f = 1\text{ kHz}$ | | 1.0 | 10.0 | dB |

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.

h_{FE} CLASSIFICATION

| Classification | O | Y | GR | L |
|----------------|----------|-----------|-----------|-----------|
| H_{FE1} | 70 ~ 140 | 120 ~ 240 | 200 ~ 400 | 350 ~ 700 |

TYPICAL PERFORMANCE CHARACTERISTICS

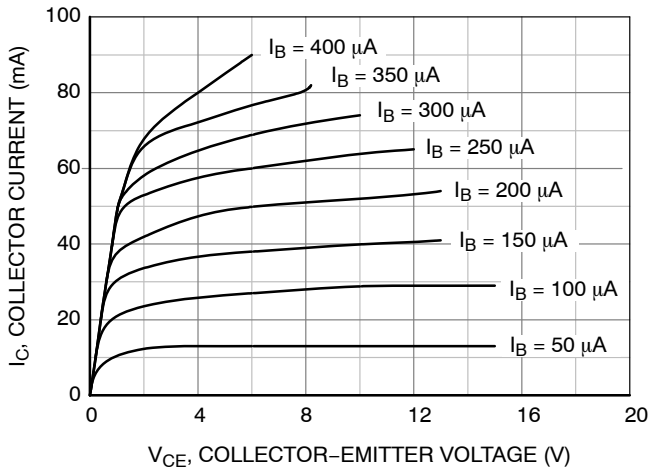


Figure 1. Static Characteristic

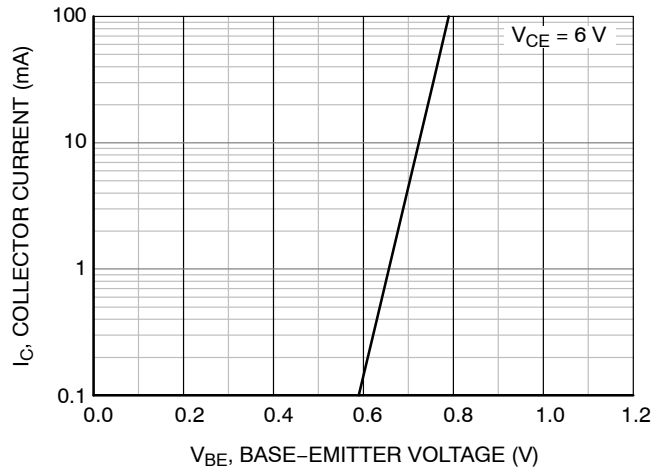


Figure 2. Static Characteristic

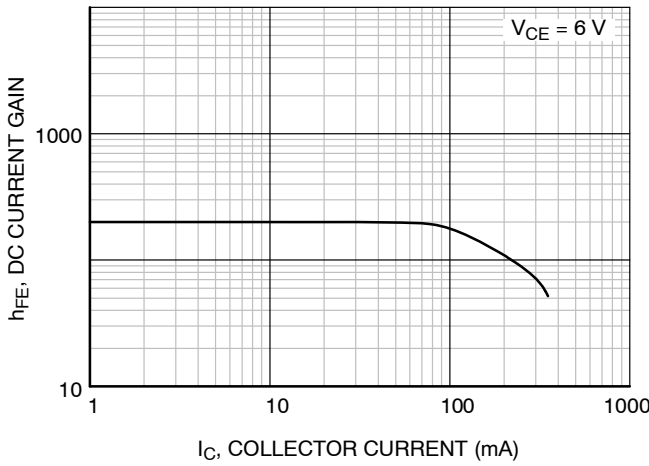


Figure 3. DC Current Gain

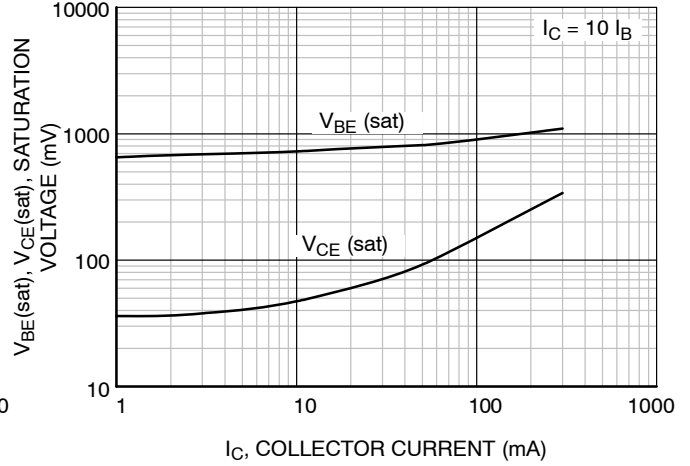


Figure 4. Base-Emitter Saturation Voltage and Collector-Emitter Saturation Voltage

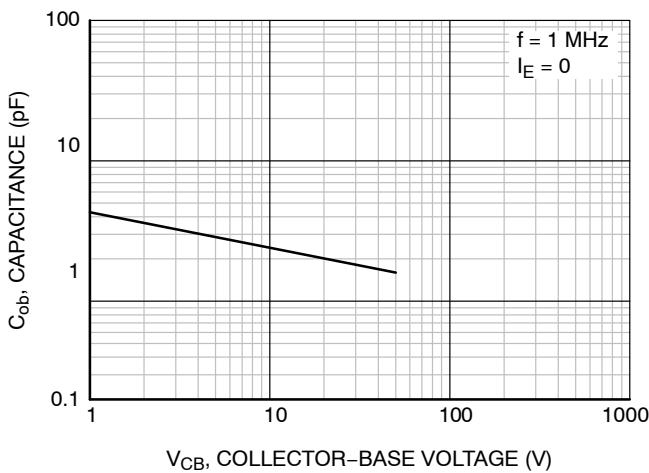


Figure 5. Output Capacitance

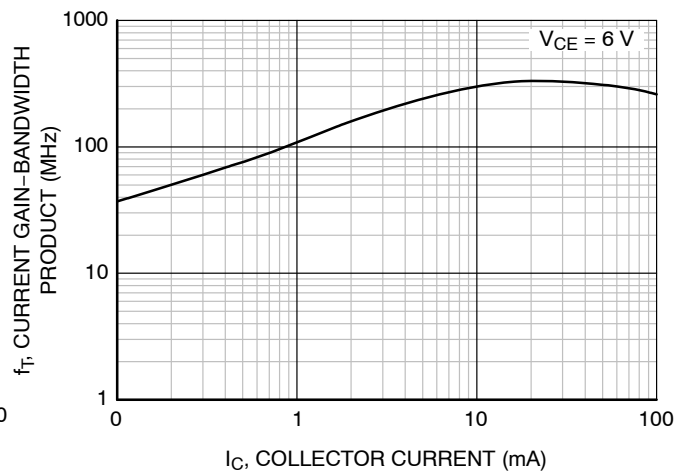
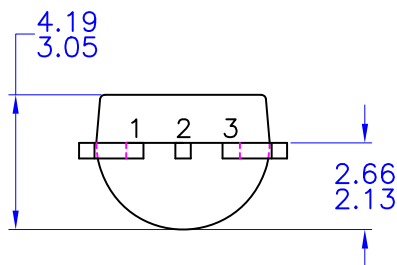
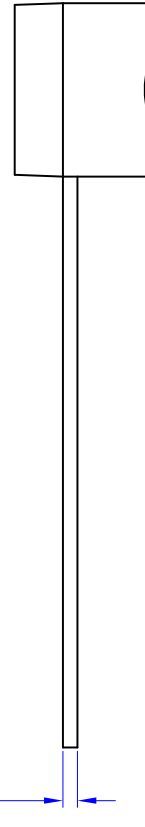
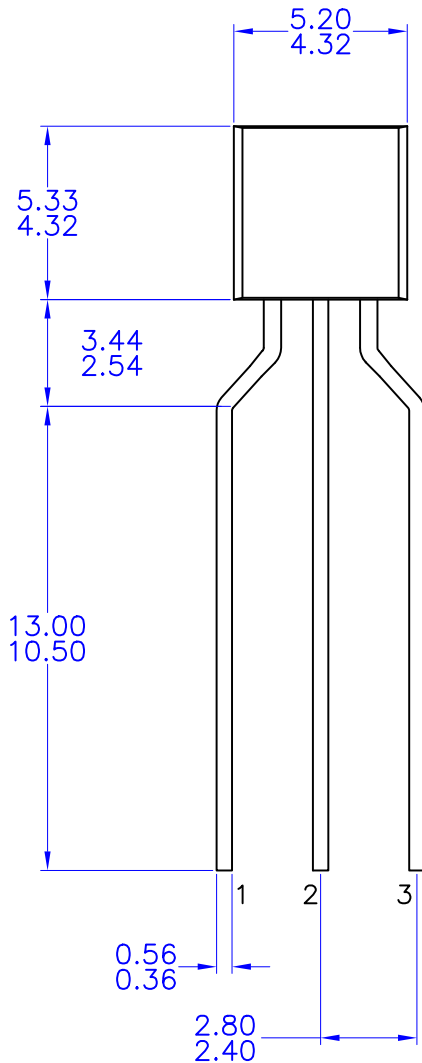


Figure 6. Current Gain Bandwidth Product

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DATE 30 SEP 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-1994

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