



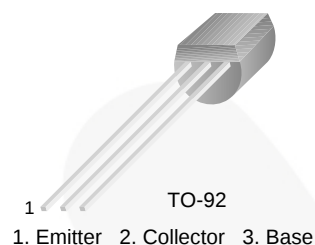
May 2014

# KSC1815

## NPN Epitaxial Silicon Transistor

### Features

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



### Ordering Information

| Part Number | Top Mark | Package  | Packing Method |
|-------------|----------|----------|----------------|
| KSC1815YTA  | YC&3     | TO-92 3L | Ammo           |

### Absolute Maximum Ratings

Stresses exceeding the absolute maximum ratings may damage the device. The device may not function or be operable above the recommended operating conditions and stressing the parts to these levels is not recommended. In addition, extended exposure to stresses above the recommended operating conditions may affect device reliability. The absolute maximum ratings are stress ratings only. 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 | $^\circ\text{C}$ |

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**Thermal Characteristics<sup>(1)</sup>**

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

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

**Note:**

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.

**Electrical Characteristics**

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

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

 **$h_{FE}$  Classification**

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

## Typical Performance Characteristics

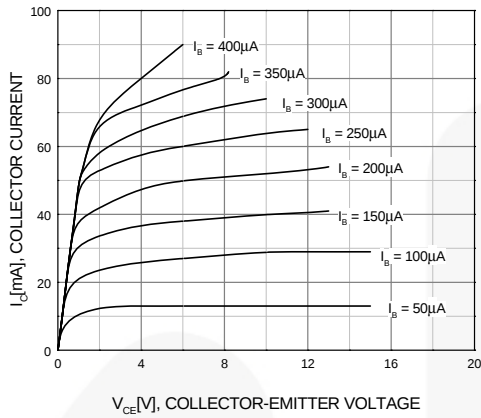


Figure 1. Static Characteristic

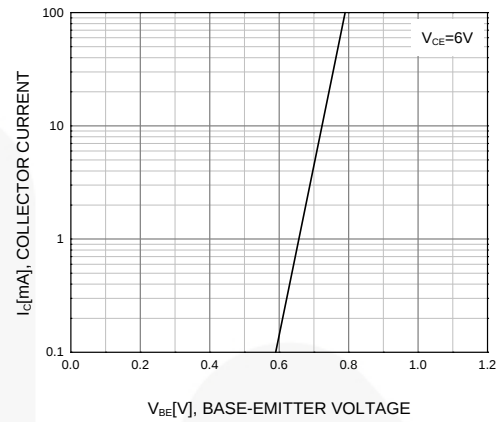


Figure 2. Transfer Characteristic

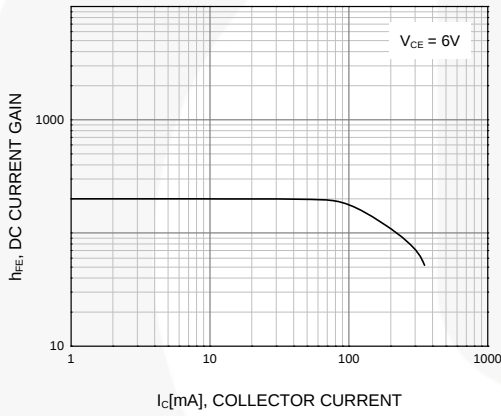


Figure 3. DC Current Gain

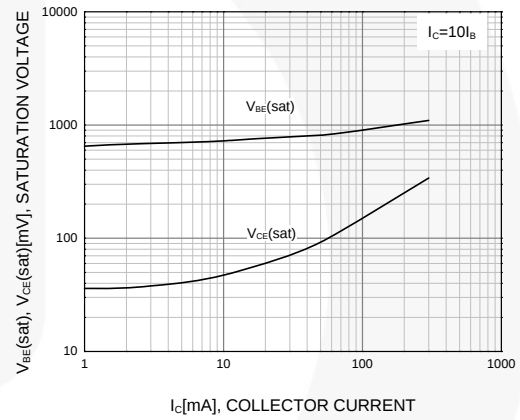


Figure 4. Base-Emitter Saturation Voltage and Collector-Emitter Saturation Voltage

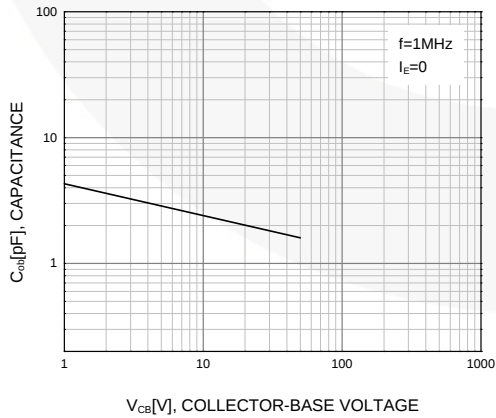


Figure 5. Output Capacitance

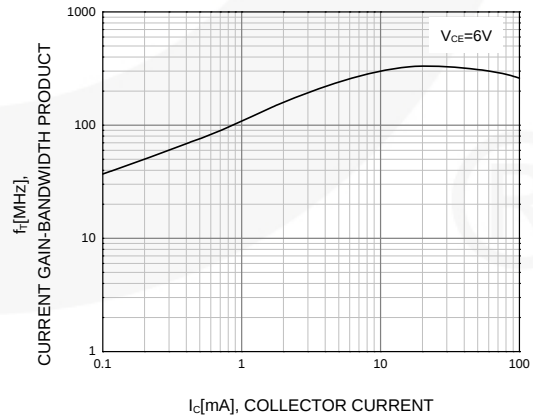
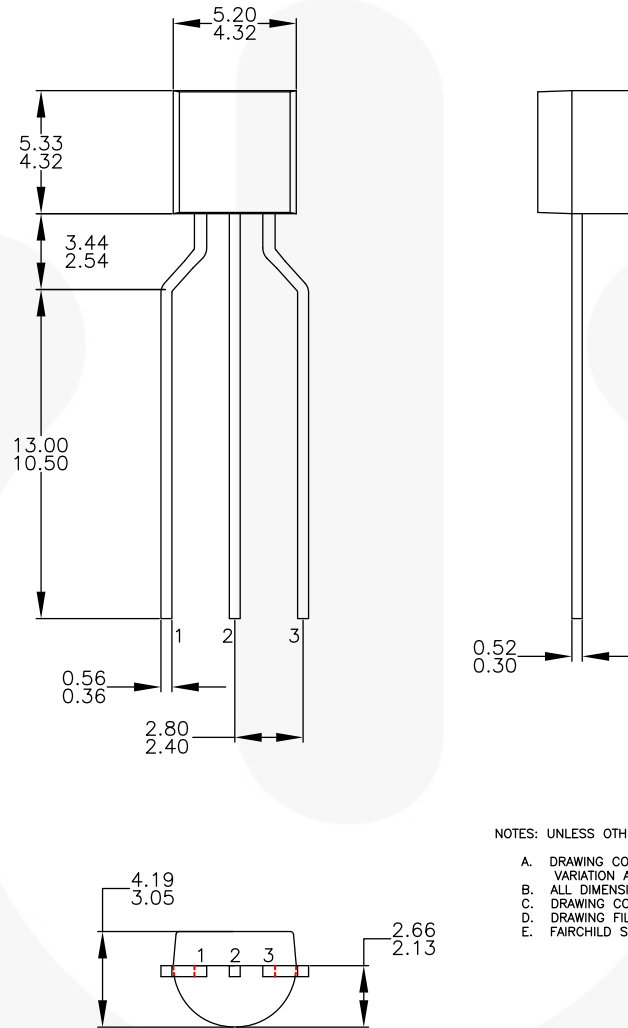


Figure 6. Current Gain Bandwidth Product

## Physical Dimensions

## TO-92 3L ( Ammo)



NOTES: UNLESS OTHERWISE SPECIFIED

- A. DRAWING CONFORMS TO JEDEC MS-013, VARIATION AC.
- B. ALL DIMENSIONS ARE IN MILLIMETERS.
- C. DRAWING CONFORMS TO ASME Y14.5M-2009.
- D. DRAWING FILENAME: MKT-ZA03FREV3.
- E. FAIRCHILD SEMICONDUCTOR.

Figure 7. 3-LEAD, TO-92, MOLDED 0.200 IN LINE SPACING LEAD FORM (J61Z OPTION)

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