September 2015

# KSP42 / KSP43
# NPN Epitaxial Silicon Transistor

## Features

- Collector-Emitter Voltage: $V_{CEO}$ = KSP42: 300 V
  KSP43: 200 V
- Collector Dissipation: $P_C$ (max.) = 625 mW


Straight Lead
Bulk Packing

Bent Lead
Tape & Reel
Ammo Packing

**TO-92**
1. Emitter
2. Base
3. Collector

## Ordering Information

| Part Number | Top Mark | Package | Packing Method |
|---|---|---|---|
| KSP42BU | KSP42 | TO-92 3L | Bulk |
| KSP42TA | KSP42 | TO-92 3L | Ammo |
| KSP43BU | KSP43 | TO-92 3L | Bulk |
| KSP43TA | KSP43 | 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°C unless otherwise noted.

| Symbol | Parameter | | Value | Unit |
|---|---|---|---|---|
| $V_{CBO}$ | Collector-Base Voltage | KSP42 | 300 | V |
| | | KSP43 | 200 | |
| $V_{CEO}$ | Collector-Emitter Voltage | KSP42 | 300 | V |
| | | KSP43 | 200 | |
| $V_{EBO}$ | Emitter-Base Voltage | | 6 | V |
| $I_C$ | Collector Current | | 500 | mA |
| $P_C$ | Collector Power Dissipation | | 625 | mW |
| $T_J$ | Junction Temperature | | 150 | °C |
| $T_{STG}$ | Storage Temperature | | -55 to 150 | °C |

## Electrical Characteristics

Values are at $T_A$ = 25°C unless otherwise noted.

| Symbol | Parameter | | Conditions | Min. | Max. | Unit |
|---|---|---|---|---|---|---|
| $BV_{CBO}$ | Collector-Base Breakdown Voltage | KSP42 | $I_C$ = 100 μA, $I_E$ = 0 | 300 | | V |
| | | KSP43 | | 200 | | |
| $BV_{CEO}$ | Collector-Emitter Breakdown Voltage(1) | KSP42 | $I_C$ = 1 mA, $I_B$ = 0 | 300 | | V |
| | | KSP43 | | 200 | | |
| $BV_{EBO}$ | Emitter-Base Breakdown Voltage | | $I_E$ = 100 μA, $I_C$ = 0 | 6 | | V |
| $I_{CBO}$ | Collector Cut-Off Current | KSP42 | $V_{CB}$ = 200 V, $I_E$ = 0 | | 100 | nA |
| | | KSP43 | $V_{CB}$ = 160 V, $I_E$ = 0 | | 100 | |
| $I_{EBO}$ | Emitter Cut-Off Current | KSP42 | $V_{EB}$ = 6 V, $I_C$ = 0 | | 100 | nA |
| | | KSP43 | $V_{EB}$ = 4 V, $I_C$ = 0 | | 100 | |
| $h_{FE}$ | DC Current Gain(1) | | $V_{CE}$ = 10 V, $I_C$ = 1 mA | 25 | | |
| | | | $V_{CE}$ = 10 V, $I_C$ = 10 mA | 40 | | |
| | | | $V_{CE}$ = 10 V, $I_C$ = 30 mA | 40 | | |
| $V_{CE}$(sat) | Collector-Emitter Saturation Voltage(1) | | $I_C$ = 20 mA, $I_B$ = 2 mA | | 0.5 | V |
| $V_{BE}$(sat) | Base-Emitter Saturation Voltage(1) | | $I_C$ = 20 mA, $I_B$ = 2 mA | | 0.9 | V |
| $C_{ob}$ | Output Capacitance | KSP42 | $V_{CB}$ = 20 V, $I_E$ = 0, f = 1 MHz | | 3 | pF |
| | | KSP43 | | | 4 | |
| $f_T$ | Current Gain Bandwidth Product | | $V_{CE}$ = 20 V, $I_C$ = 10 mA, f = 100 MHz | 50 | | MHz |

**Note:**

1. Pulse test: pulse width ≤ 300 μs, duty cycle ≤ 2%.

## Typical Performance Characteristics

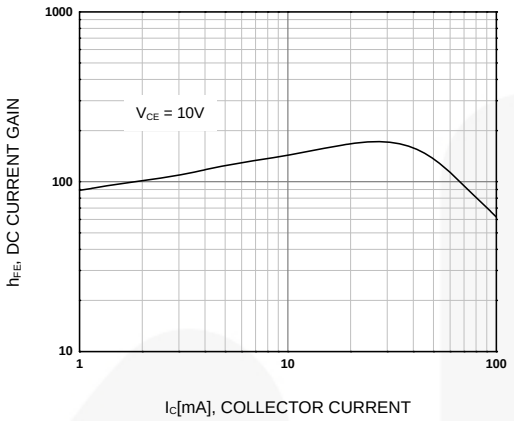


**Figure 1. DC Current Gain**

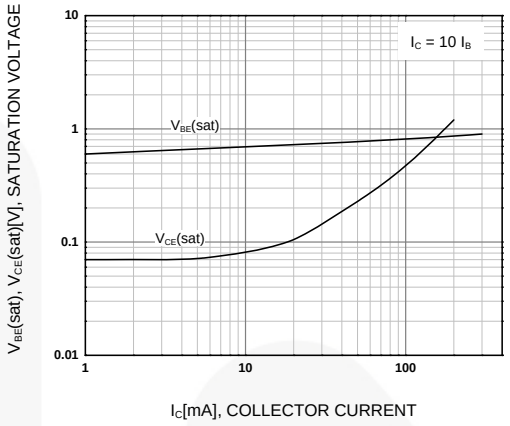


**Figure 2. Collector-Emitter Saturation Voltage and Base-Emitter Saturation Voltage**

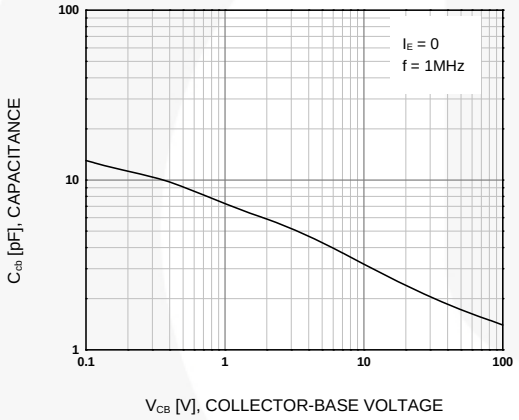


**Figure 3. Collector-Base Capacitance**

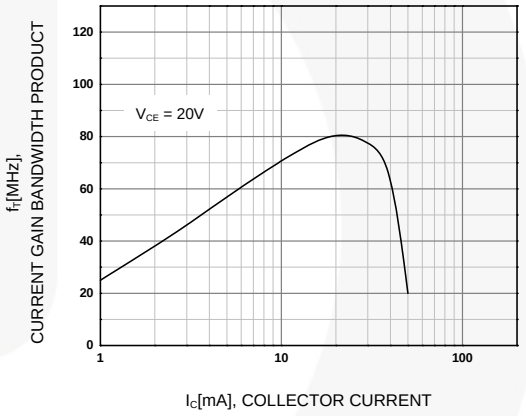


**Figure 4. Current Gain Bandwidth Product**

## Physical Dimensions

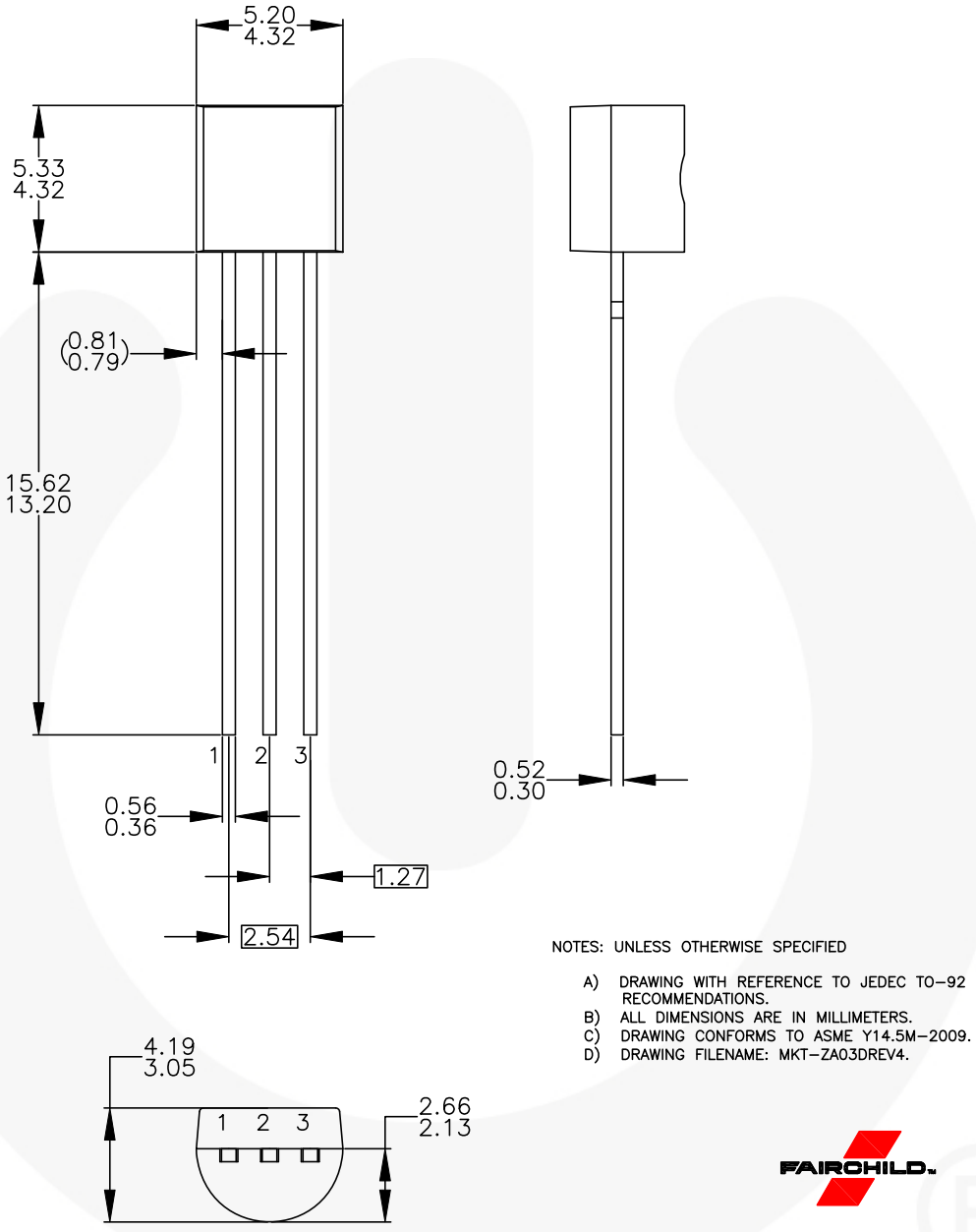


**Figure 5. 3-Lead, TO-92, JEDEC TO-92 Compliant Straight Lead Configuration, Bulk Type**

## Physical Dimensions (Continued)

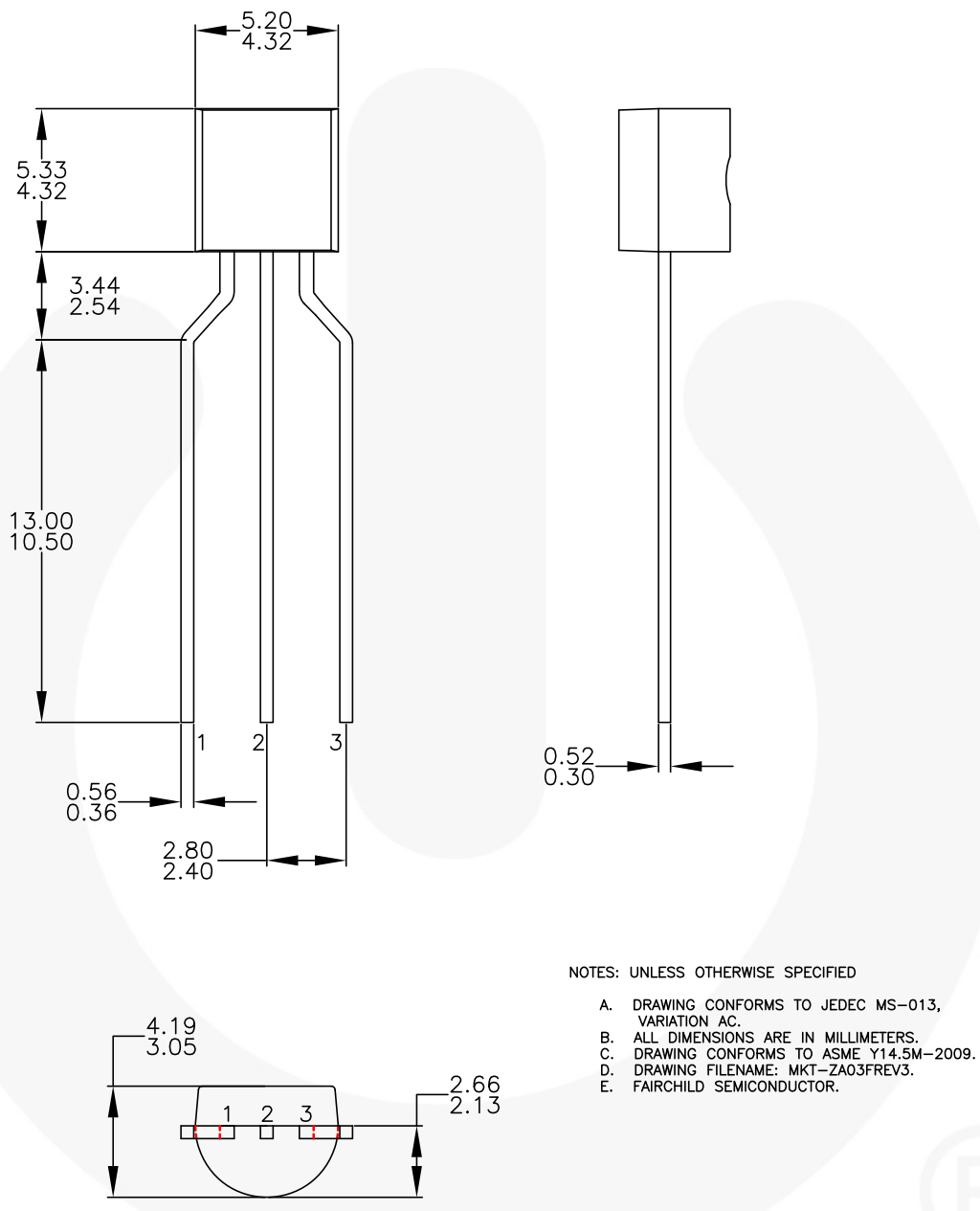


**Figure 6. 3-Lead, TO-92, Molded, 0.2 In Line Spacing Lead Form, Ammo, Tape and Reel Type**

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