

# PNP Epitaxial Silicon Transistor

## KSP92

### Description

High Voltage Transistor

### Features

- These Devices are Pb-Free, Halogen Free/BFR Free, Beryllium Free and are RoHS Compliant

### ABSOLUTE MAXIMUM RATINGS ( $T_a = 25^\circ\text{C}$ , unless otherwise noted)

| Symbol    | Parameter                                                | Value   | Unit                 |
|-----------|----------------------------------------------------------|---------|----------------------|
| $V_{CBO}$ | Collector-Base Voltage                                   | -300    | V                    |
| $V_{CEO}$ | Collector-Emitter Voltage                                | -300    | V                    |
| $V_{EBO}$ | Emitter-Base Voltage                                     | -5      | V                    |
| $I_C$     | Collector Current                                        | -500    | mA                   |
| $P_C$     | Collector Power Dissipation ( $T_a = 25^\circ\text{C}$ ) | 625     | mW                   |
|           | Derate above $25^\circ\text{C}$                          | 5       | mW/ $^\circ\text{C}$ |
| $P_C$     | Collector Power Dissipation ( $T_C = 25^\circ\text{C}$ ) | 1.5     | W                    |
|           | Derate above $25^\circ\text{C}$                          | 12      | mW/ $^\circ\text{C}$ |
| $T_J$     | Junction Temperature                                     | 150     | $^\circ\text{C}$     |
| $T_{STG}$ | Storage Temperature                                      | -55-150 | $^\circ\text{C}$     |

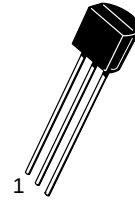
Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

### ELECTRICAL CHARACTERISTICS ( $T_a = 25^\circ\text{C}$ unless otherwise noted)

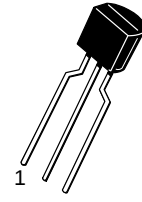
| Symbol               | Parameter                             | Test Condition                                                                                                                                             | Min            | Max         | Unit          |
|----------------------|---------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-------------|---------------|
| $BV_{CBO}$           | Collector-Base Breakdown Voltage      | $I_C = -100\ \mu\text{A}$ , $I_E = 0$                                                                                                                      | -300           | -           | V             |
| $BV_{CEO}$           | * Collector-Emitter Breakdown Voltage | $I_C = -1\ \text{mA}$ , $I_B = 0$                                                                                                                          | -300           | -           | V             |
| $BV_{EBO}$           | Emitter-Base Breakdown Voltage        | $I_E = -100\ \mu\text{A}$ , $I_C = 0$                                                                                                                      | -5             | -           | V             |
| $I_{CBO}$            | Collector Cur-off Current             | $V_{CB} = -200\ \text{V}$ , $I_E = 0$                                                                                                                      | -              | -0.25       | $\mu\text{A}$ |
| $I_{EBO}$            | Emitter Cut-off Current               | $V_{EB} = -3\ \text{V}$ , $I_C = 0$                                                                                                                        | -              | -0.10       | $\mu\text{A}$ |
| $h_{FE}$             | * DC Current Gain                     | $V_{CE} = -10\ \text{V}$ , $I_C = -1\ \text{mA}$<br>$V_{CE} = -10\ \text{V}$ , $I_C = -10\ \text{mA}$<br>$V_{CE} = -10\ \text{V}$ , $I_C = -30\ \text{mA}$ | 25<br>40<br>25 | -<br>-<br>- |               |
| $V_{CE}(\text{sat})$ | *Collector-Emitter Saturation Voltage | $I_C = -20\ \text{mA}$ , $I_B = -2\ \text{mA}$                                                                                                             | -              | -0.50       | V             |
| $V_{BE}(\text{sat})$ | * Base-Emitter Saturation Voltage     | $I_C = -20\ \text{mA}$ , $I_B = -2\ \text{mA}$                                                                                                             | -              | -0.90       | V             |
| $f_T$                | Current Gain Bandwidth Product        | $V_{CE} = -20\ \text{V}$ , $I_C = -10\ \text{mA}$ , $f = 100\ \text{MHz}$                                                                                  | 50             | -           | MHz           |
| $C_{ob}$             | Output Capacitance                    | $V_{CB} = -20\ \text{V}$ , $I_E = 0$ , $f = 1\ \text{MHz}$                                                                                                 | -              | 6           | pF            |

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.

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



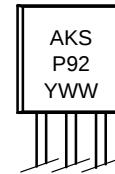
TO-92 3  
4.825x4.76  
CASE 135AN



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

1. Emitter
2. Base
3. Collector

### MARKING DIAGRAM



KSP92 = Specific Device Code  
A = Assembly Site  
WW = Work Week Number  
Y = Year of Production

### ORDERING INFORMATION

| Device  | Package                | Packing Method         |
|---------|------------------------|------------------------|
| KSP92BU | TO-92 3,<br>CASE 135AN | 10000 Units / Bulk Bag |
| KSP92TA | TO-92 3,<br>CASE 135AR | 2000 Units / Fan-Fold  |

## TYPICAL PERFORMANCE CHARACTERISTICS

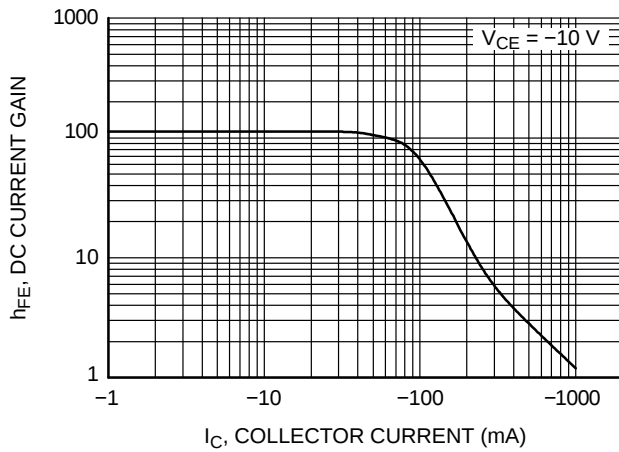


Figure 1. DC Current Gain

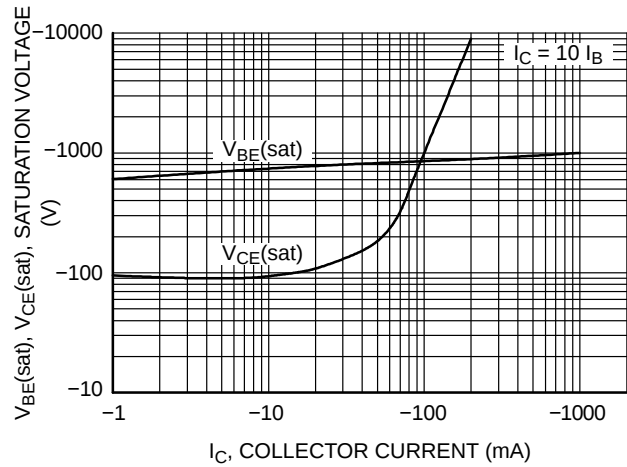


Figure 2. Saturation Voltage

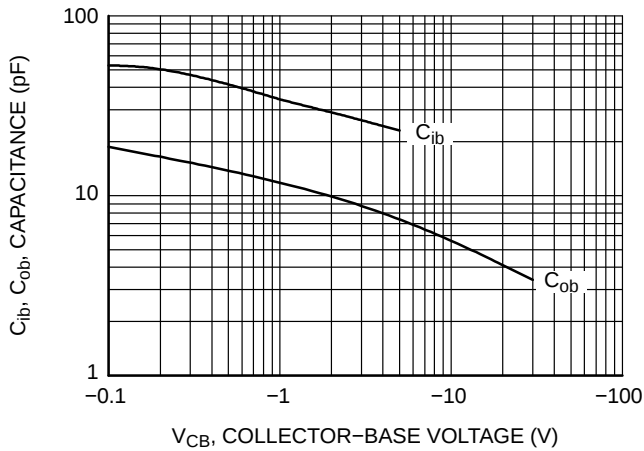


Figure 3. Capacitance

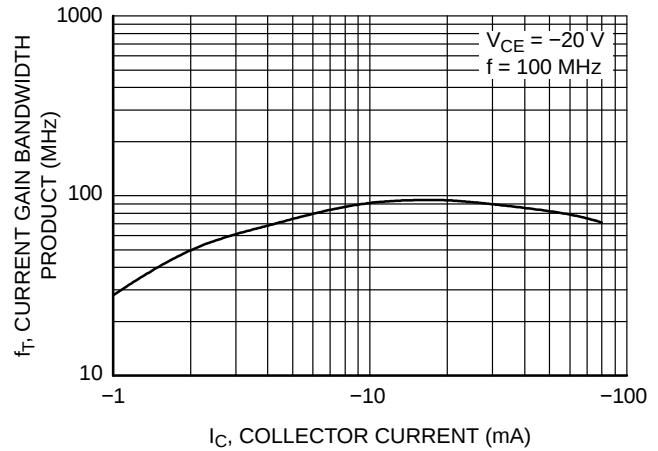


Figure 4. Current Gain Bandwidth Product

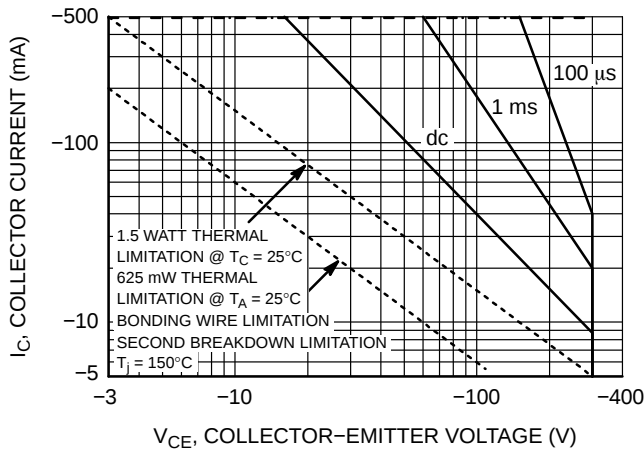
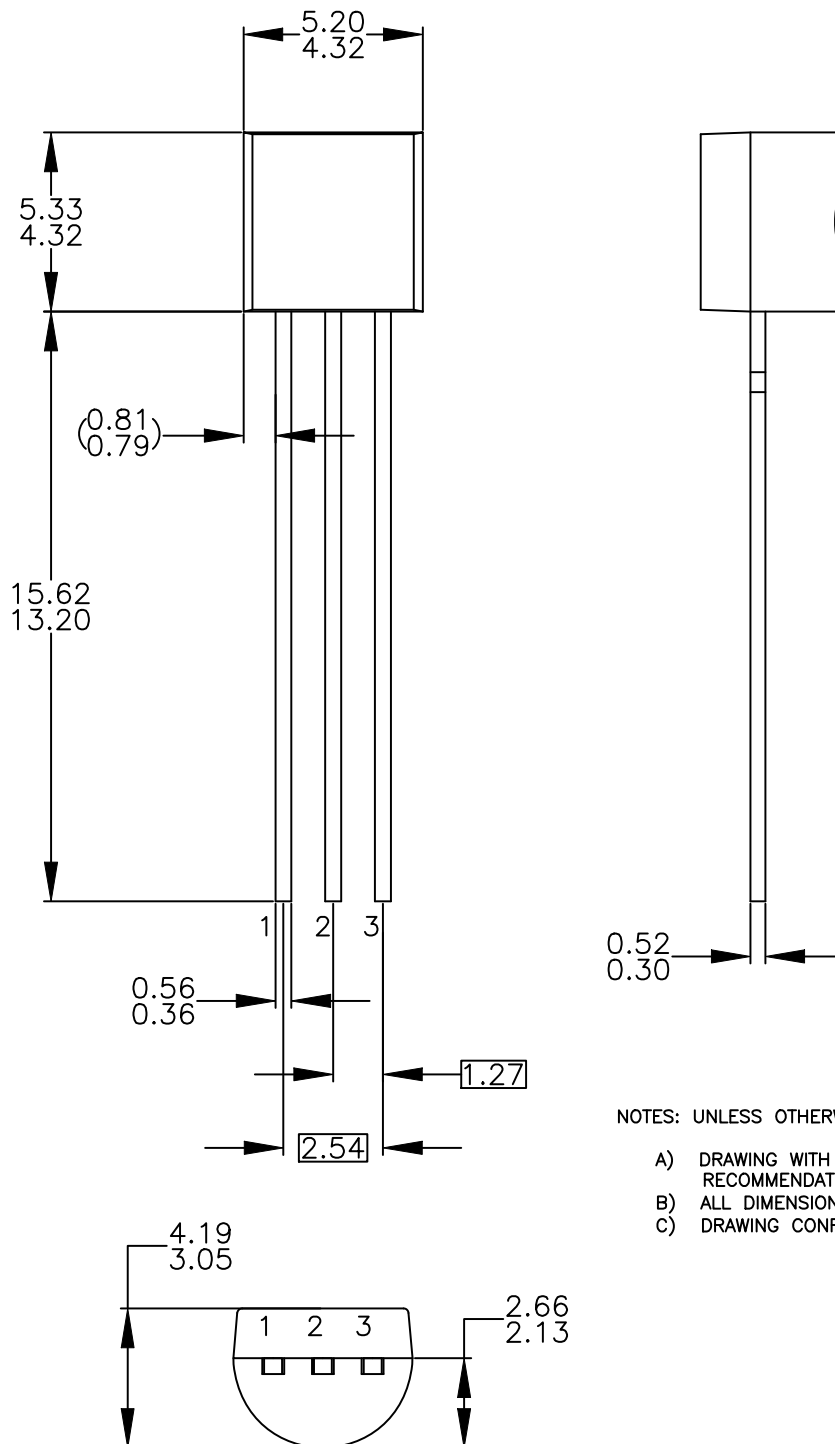


Figure 5. Active-Region Safe Operating Area

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

DATE 31 JUL 2016



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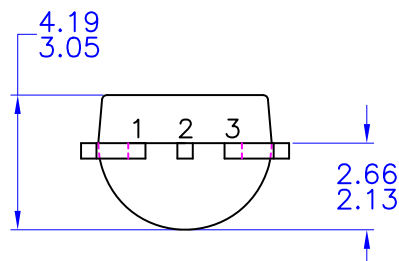
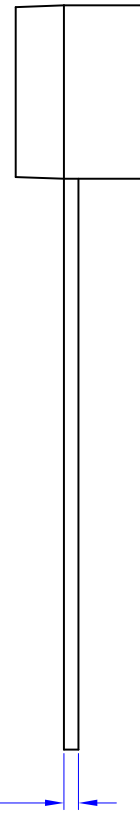
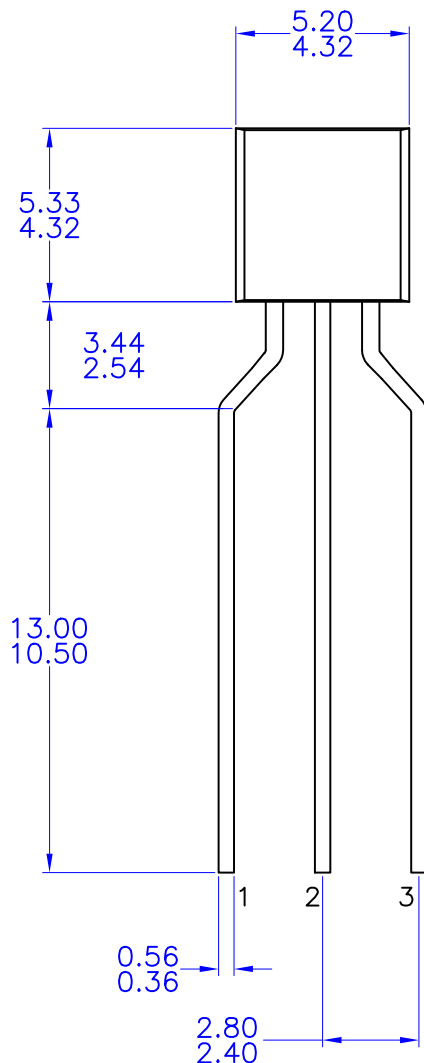
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|                         |                           |                                                                                                                                                                                     |
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**TO-92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

DATE 30 SEP 2016



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