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December 2015

# KSP94

## PNP Epitaxial Silicon Transistor

### Features

- High Voltage Transistor
- High Collector-Emitter Voltage:  $V_{CEO} = -400\text{ V}$
- Low Collector-Emitter Saturation Voltage
- Complement to KSP44



### Ordering Information

Part Number	Top Mark	Package	Packing Method
KSP94BU	KSP94	TO-92 3L	Bulk
KSP94TA	KSP94	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	-400	V
$V_{CEO}$	Collector-Emitter Voltage	-400	V
$V_{EBO}$	Emitter-Base Voltage	-6	V
$I_C$	Collector Current	-300	mA
$T_J$	Junction Temperature	150	$^\circ\text{C}$
$T_{STG}$	Storage Temperature	-55 to +150	$^\circ\text{C}$

**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	625	mW
	Derate Above $25^\circ\text{C}$	5.0	mW/ $^\circ\text{C}$
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient	200	$^\circ\text{C}/\text{W}$

**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
$BV_{CBO}$	Collector-Base Breakdown Voltage	$I_C = -100\ \mu\text{A}$ , $I_E = 0$	-400			V
$BV_{CEO}$	Collector-Emitter Breakdown Voltage	$I_C = -1\ \text{mA}$ , $I_B = 0$	-400			V
$BV_{EBO}$	Emitter-Base Breakdown Voltage	$I_E = -10\ \mu\text{A}$ , $I_C = 0$	-6			V
$I_{CBO}$	Collector Cut-Off Current	$V_{CB} = -300\ \text{V}$ , $I_E = 0$			-100	nA
$I_{CES}$	Collector Cut-Off Current	$V_{CE} = -400\ \text{V}$ , $V_{BE} = 0$			-1	$\mu\text{A}$
$I_{EBO}$	Emitter Cut-Off Current	$V_{EB} = -4\ \text{V}$ , $I_C = 0$			-100	nA
$h_{FE}$	DC Current Gain	$V_{CE} = -10\ \text{V}$ , $I_C = -1\ \text{mA}$	40			
		$V_{CE} = -10\ \text{V}$ , $I_C = -10\ \text{mA}$	50		300	
		$V_{CE} = -10\ \text{V}$ , $I_C = -50\ \text{mA}$	45			
		$V_{CE} = -10\ \text{V}$ , $I_C = -100\ \text{mA}$	40			
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C = -10\ \text{mA}$ , $I_B = -1\ \text{mA}$			-500	mV
		$I_C = -50\ \text{mA}$ , $I_B = -5\ \text{mA}$			-750	
$V_{BE(sat)}$	Base-Emitter Saturation Voltage	$I_C = -10\ \text{mA}$ , $I_B = -1\ \text{mA}$			-750	mV
$C_{ob}$	Output Capacitance	$V_{CB} = -20\ \text{V}$ , $I_E = 0$ , $f = 1\ \text{MHz}$		7		pF

## Typical Performance Characteristics

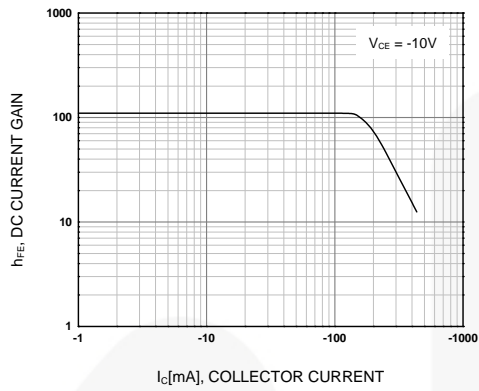


Figure 1. DC Current Gain

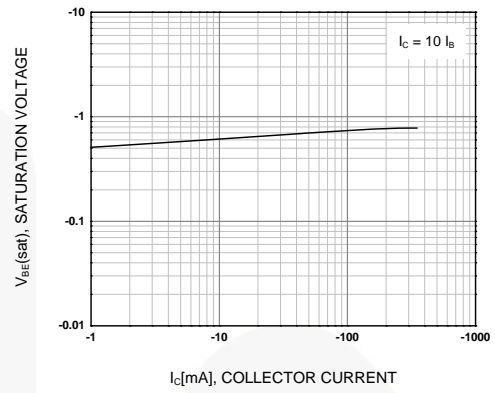


Figure 2. Base-Emitter Saturation Voltage

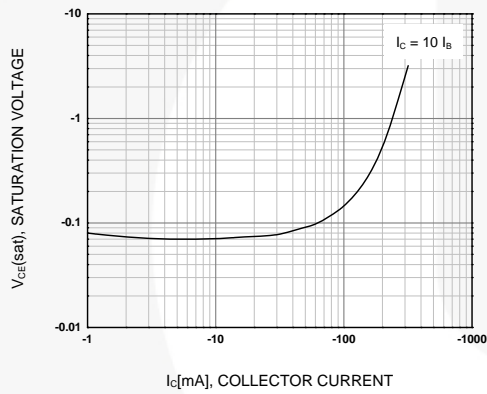


Figure 3. Collector-Emitter Saturation Voltage

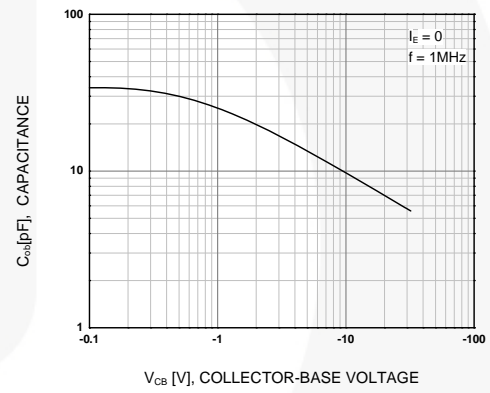
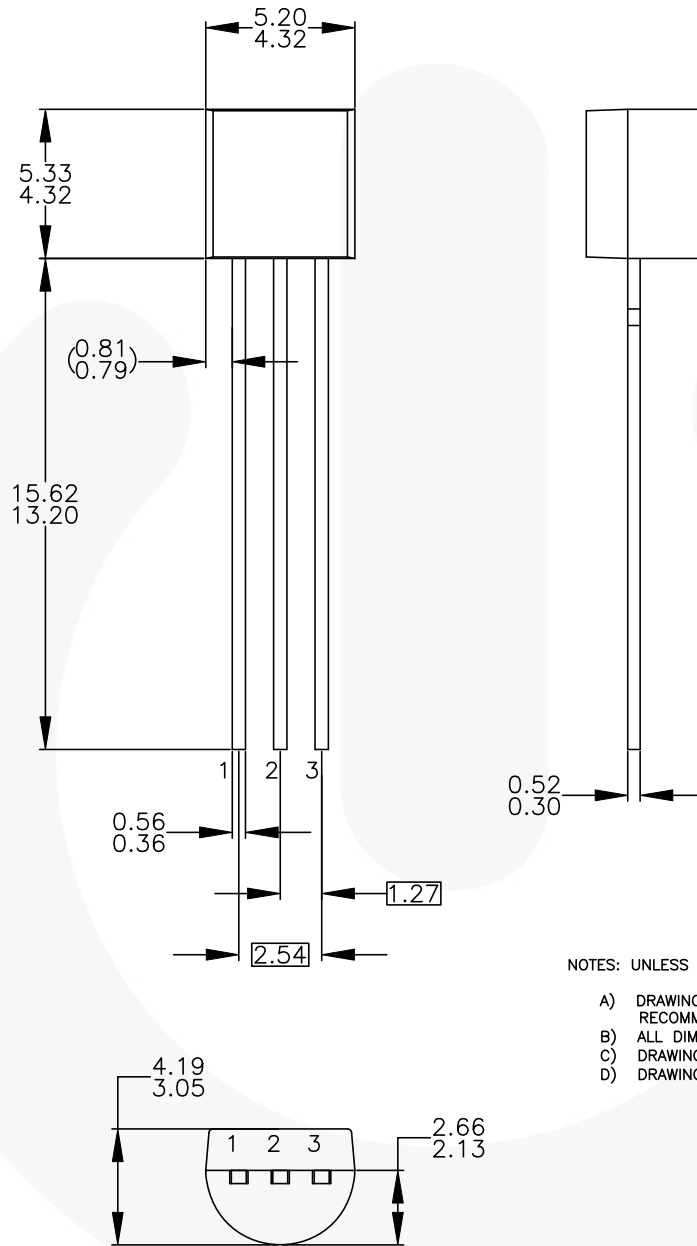


Figure 4. Collector Output Capacitance

## Physical Dimensions



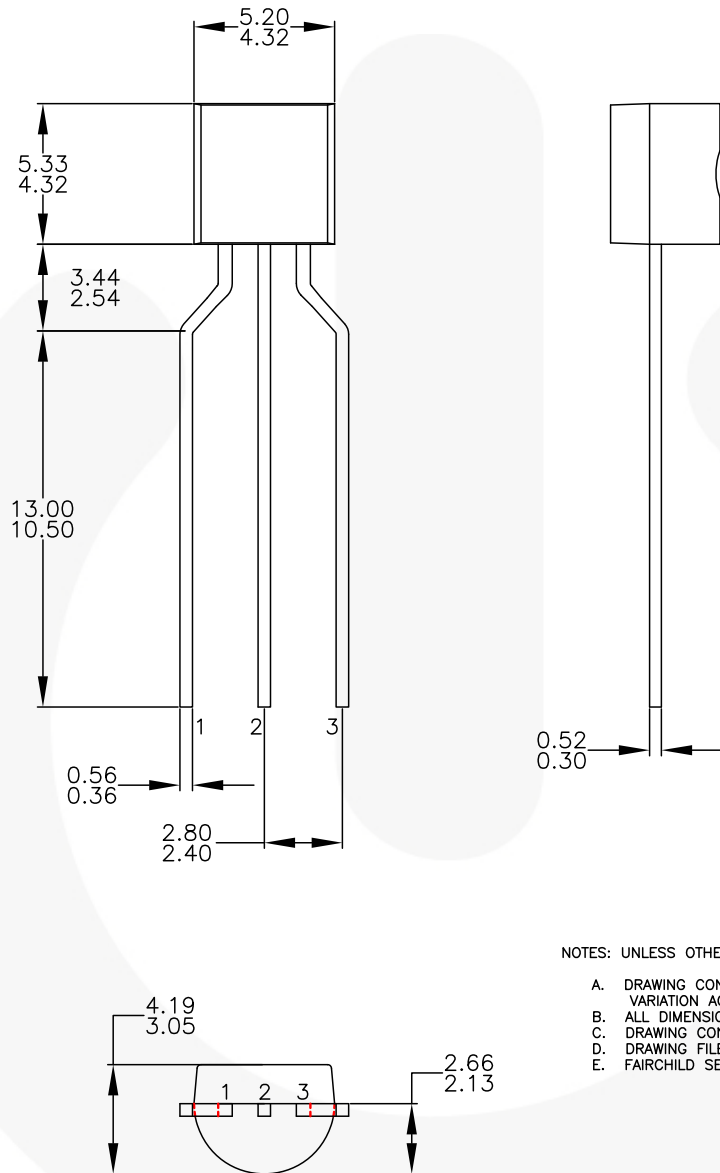
NOTES: UNLESS OTHERWISE SPECIFIED

- A) DRAWING WITH REFERENCE TO JEDEC TO-92 RECOMMENDATIONS.
- B) ALL DIMENSIONS ARE IN MILLIMETERS.
- C) DRAWING CONFORMS TO ASME Y14.5M-2009.
- D) DRAWING FILENAME: MKT-ZA03DREV4.



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

**Physical Dimensions** (Continued)



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



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