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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



## 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  $T_A = 25^\circ\text{C}$  unless otherwise noted.

Symbol	Parameter	Value	Unit
$V_{CBO}$	Collector-Base Voltage	KSP42	300
		KSP43	200
$V_{CEO}$	Collector-Emitter Voltage	KSP42	300
		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	$^\circ\text{C}$
$T_{STG}$	Storage Temperature	-55 to 150	$^\circ\text{C}$

KSP42 / KSP43 — NPN Epitaxial Silicon Transistor

## Electrical Characteristics

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

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

### Note:

1. Pulse test: pulse width  $\leq 300\ \mu\text{s}$ , duty cycle  $\leq 2\%$ .

## Typical Performance Characteristics

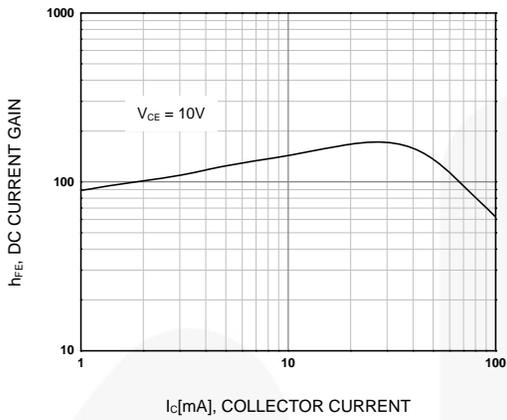


Figure 1. DC Current Gain

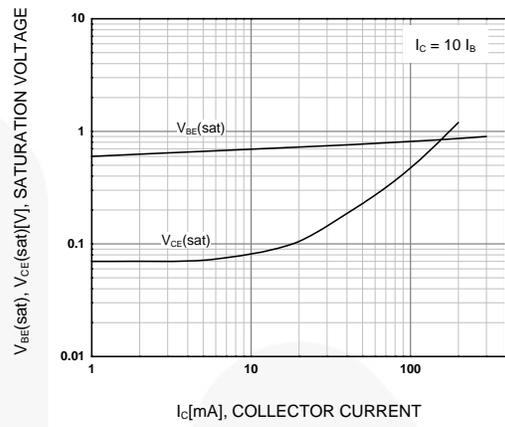


Figure 2. Collector-Emitter Saturation Voltage and Base-Emitter Saturation Voltage

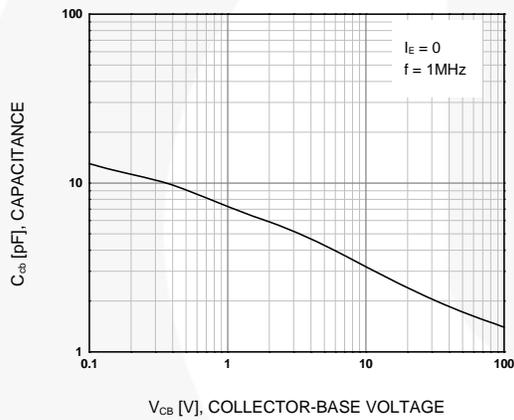


Figure 3. Collector-Base Capacitance

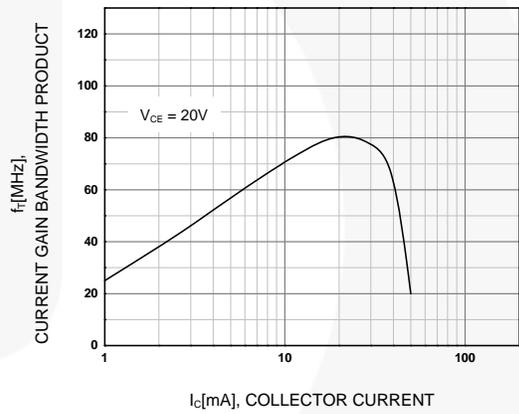
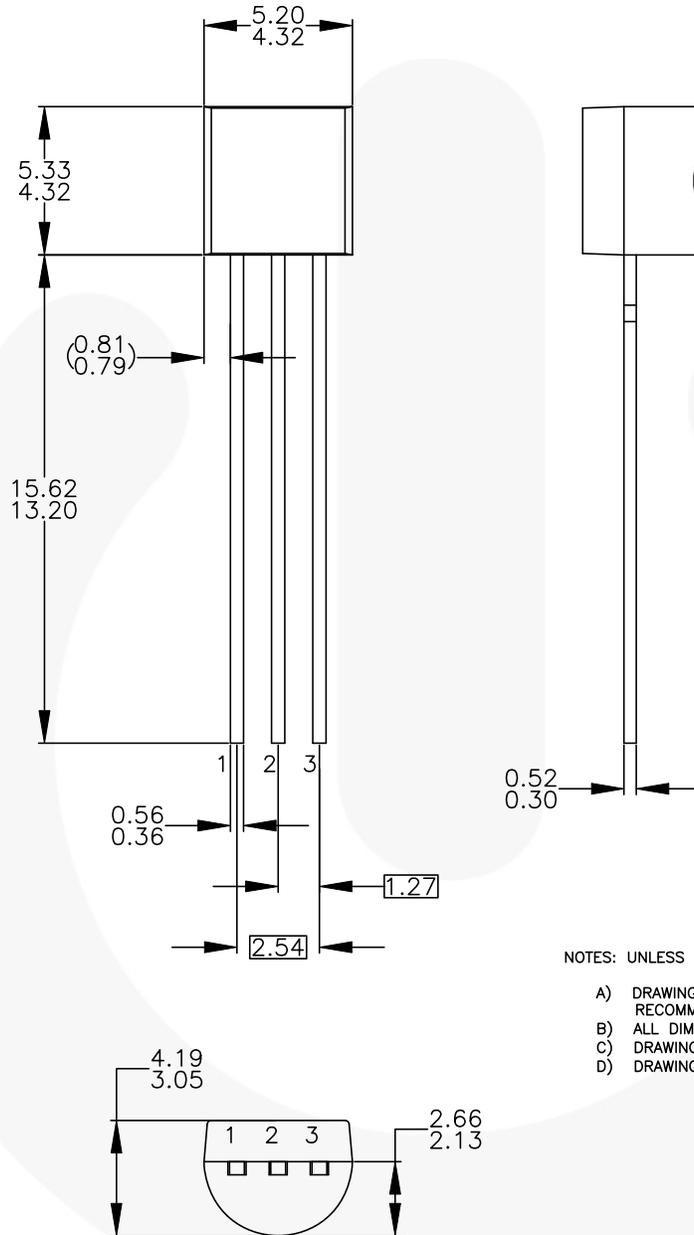


Figure 4. Current Gain Bandwidth Product

Physical Dimensions



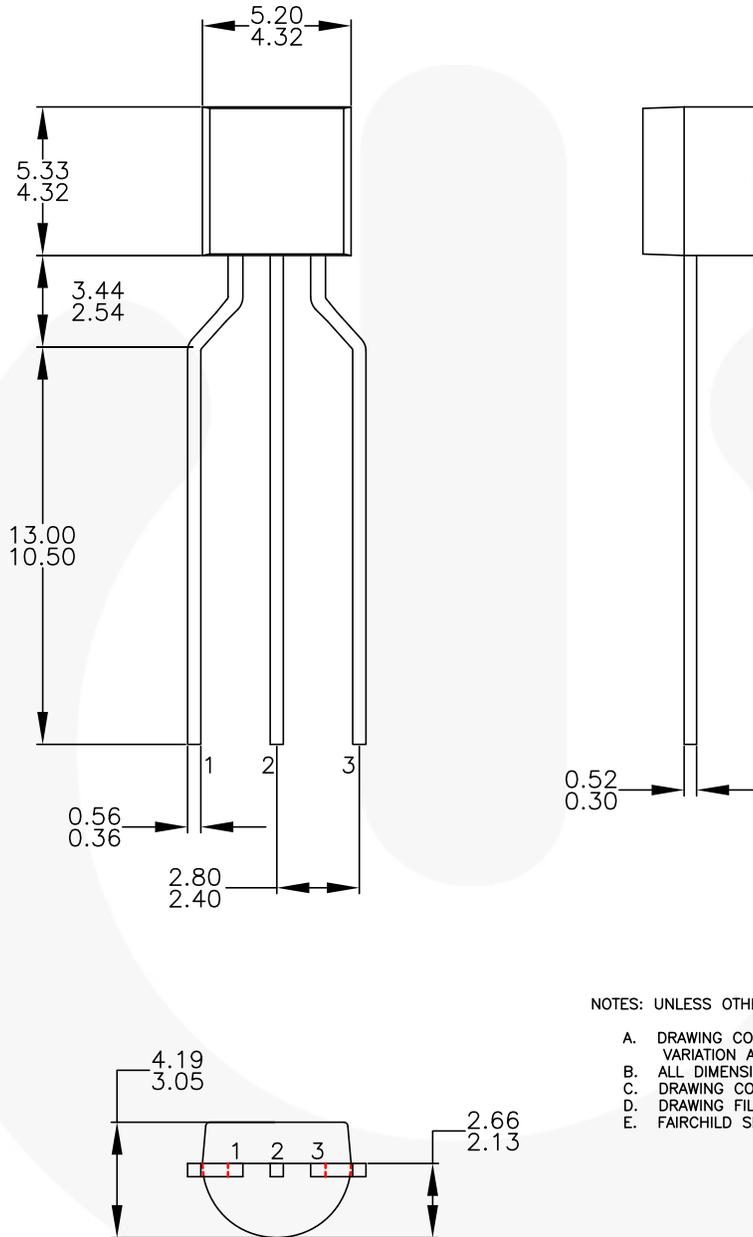
NOTES: UNLESS OTHERWISE SPECIFIED

- 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)



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