



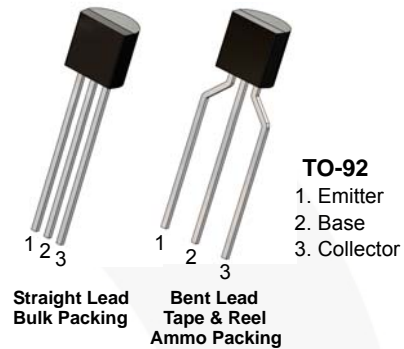
September 2015



# KSA643 PNP Epitaxial Silicon Transistor

## Features

- Low Frequency Power Amplifier
- Collector Power Dissipation :  $P_C = 500 \text{ mW}$
- Complement to KSD261
- Suffix “-C” means Center Collector (1. Emitter 2. Collector 3. Base)
- Non Suffix “-C” means Side Collector (1. Emitter 2. Base 3. Collector)



## Ordering Information

Part Number	Top Mark	Package	Packing Method
KSA643YTA	A643	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	-40	V
$V_{CEO}$	Collector-Emitter Voltage	-20	V
$V_{EBO}$	Emitter-Base Voltage	-5	V
$I_C$	Collector Current (DC)	-500	mA
$I_{CP}$	Collector Current (Pulse) <sup>(1)</sup>	-700	mA
$T_J$	Junction Temperature	150	$^\circ\text{C}$
$T_{STG}$	Storage Temperature	-55 to 150	$^\circ\text{C}$

### Note:

1.  $PW \leq 10 \text{ ms}$ , duty cycle  $\leq 50\%$

**Thermal Characteristics<sup>(2)</sup>**

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

Symbol	Parameter	Value	Unit
$P_C$	Collector Power Dissipation	500	mW
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient	250	$^\circ\text{C}/\text{W}$

**Note:**

2. 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	$I_C = -100 \mu\text{A}$ , $I_E = 0$	-40			V
$BV_{CEO}$	Collector-Emitter Breakdown Voltage	$I_C = -10 \text{ mA}$ , $I_B = 0$	-20			V
$BV_{EBO}$	Emitter-Base Breakdown Voltage	$I_E = -10 \mu\text{A}$ , $I_C = 0$	-5			V
$I_{CBO}$	Collector Cut-Off Current	$V_{CB} = -25 \text{ V}$ , $I_E = 0$			-200	nA
$I_{EBO}$	Emitter Cut-Off Current	$V_{EB} = -3 \text{ V}$ , $I_C = 0$			-200	nA
$h_{FE}$	DC Current Gain <sup>(3)</sup>	$V_{CE} = -1 \text{ V}$ , $I_C = -100 \text{ mA}$	40		400	
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage <sup>(3)</sup>	$I_C = -500 \text{ A}$ , $I_B = -50 \text{ mA}$		-0.3	-0.4	V
$V_{BE(sat)}$	Base-Emitter Saturation Voltage <sup>(3)</sup>	$I_C = -500 \text{ A}$ , $I_B = -50 \text{ mA}$		-1.0	-1.3	V

**Note:**

3. Pulse Test:  $PW \leq 350 \mu\text{s}$ , duty cycle  $\leq 2\%$

 **$h_{FE}$  Classification**

Classification	R	O	Y	G
$h_{FE}$	40 ~ 80	70 ~ 140	120 ~ 240	200 ~ 400

## Typical Performance Characteristics

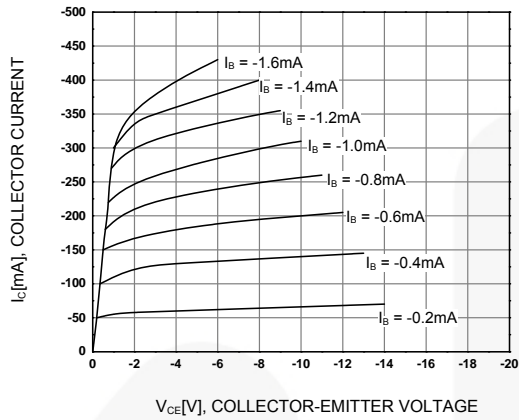


Figure 1. Static Characteristic

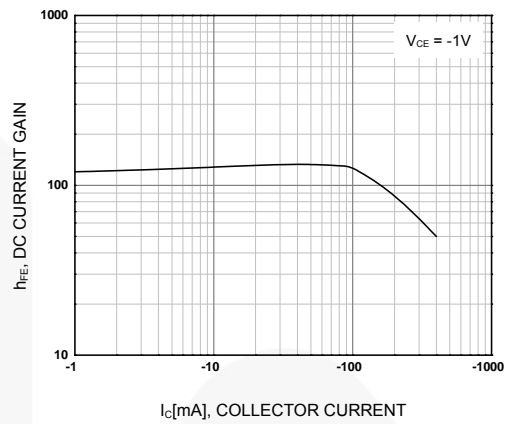


Figure 2. DC Current Gain

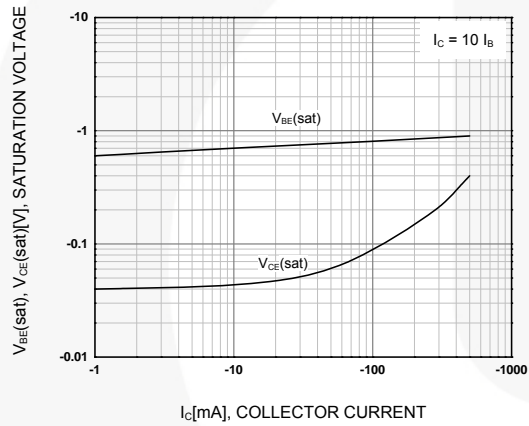


Figure 3. Base-Emitter Saturation Voltage and Collector-Emitter Saturation Voltage

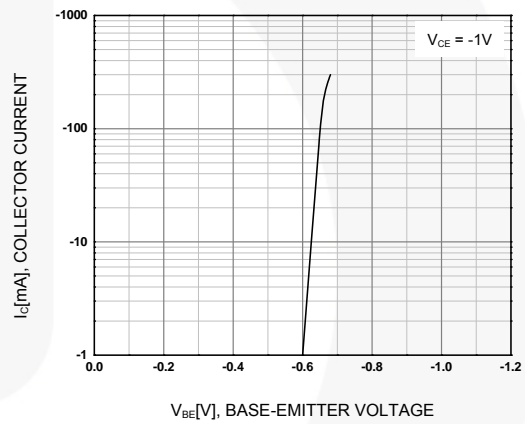


Figure 4. Base-Emitter On Voltage

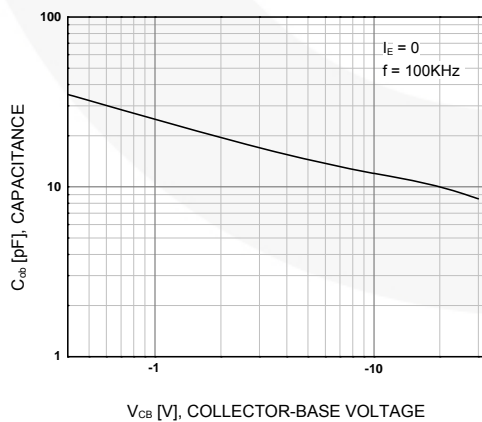
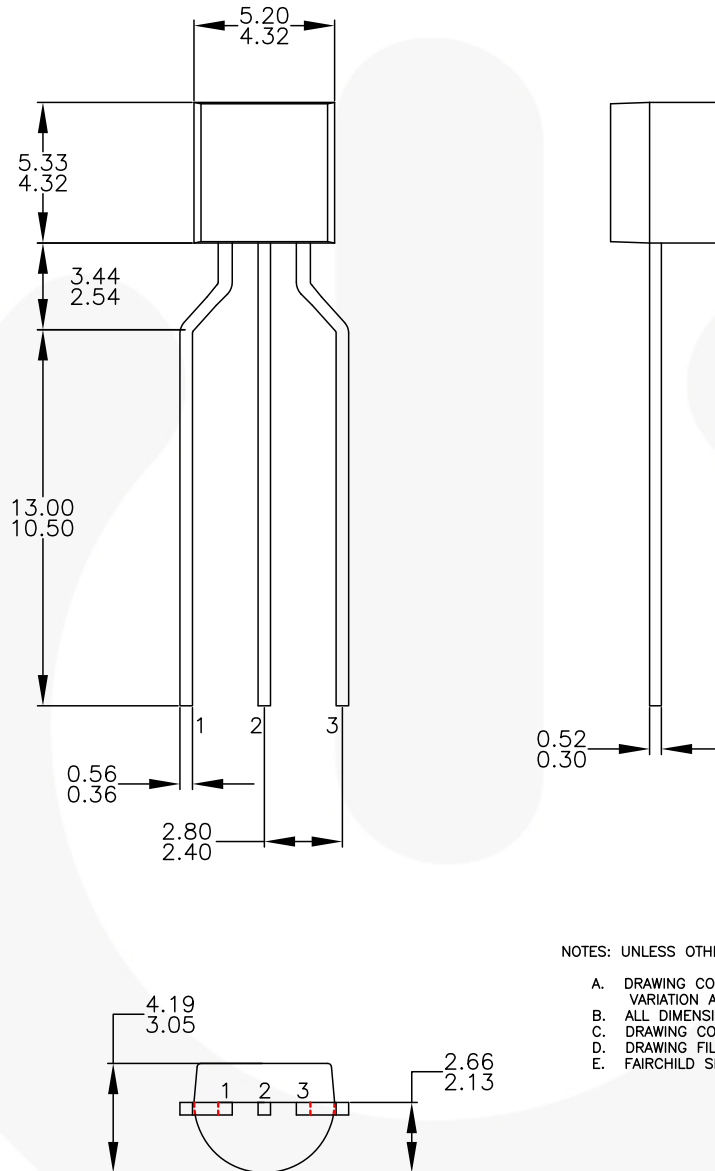


Figure 5. Collector Output Capacitance

**Physical Dimensions**



NOTES: UNLESS OTHERWISE SPECIFIED






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- B. ALL DIMENSIONS ARE IN MILLIMETERS.
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**Figure 6. 3-Lead, TO-92, Molded, 0.2 In Line Spacing Lead Form, Ammo Type**



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