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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) ⁽¹⁾	-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⁽²⁾

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	$^\circ\text{C/W}$

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 ⁽³⁾	$V_{CE} = -1\ \text{V}$, $I_C = -100\ \text{mA}$	40		400	
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage ⁽³⁾	$I_C = -500\ \text{A}$, $I_B = -50\ \text{mA}$		-0.3	-0.4	V
$V_{BE(sat)}$	Base-Emitter Saturation Voltage ⁽³⁾	$I_C = -500\ \text{A}$, $I_B = -50\ \text{mA}$		-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

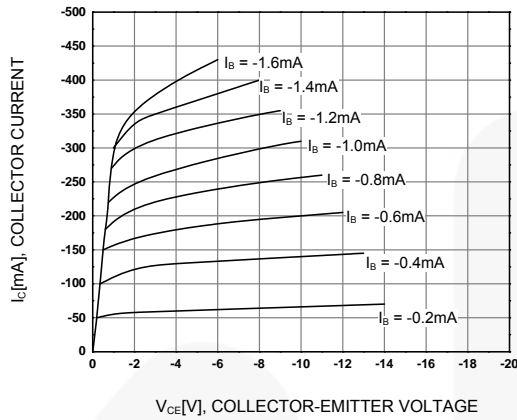


Figure 1. Static Characteristic

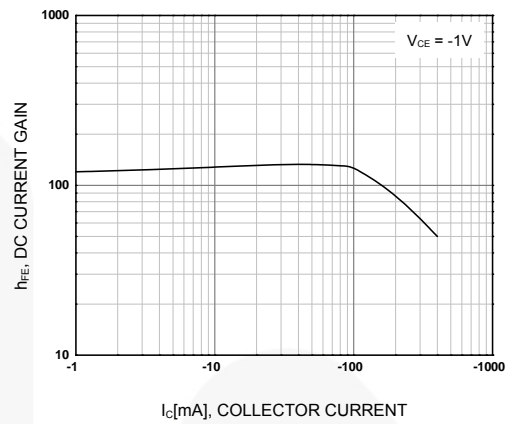


Figure 2. DC Current Gain

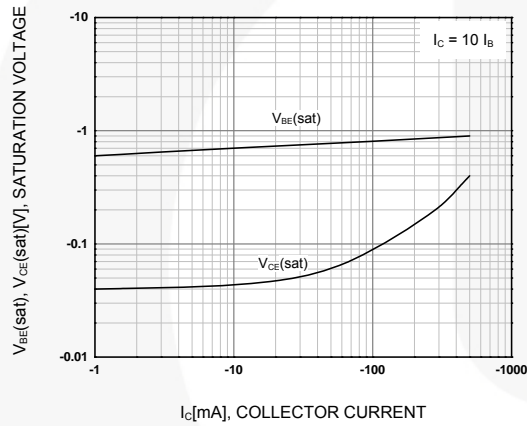


Figure 3. Base-Emitter Saturation Voltage and Collector-Emmitter Saturation Voltage

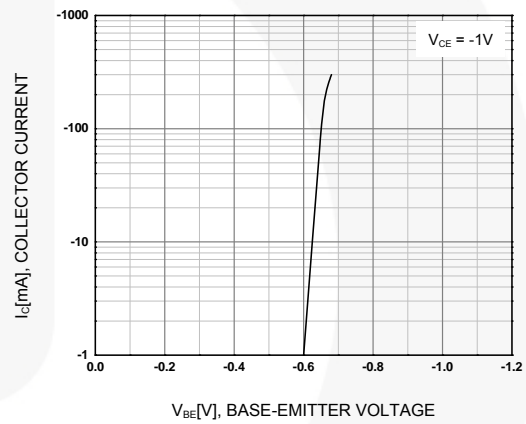


Figure 4. Base-Emitter On Voltage

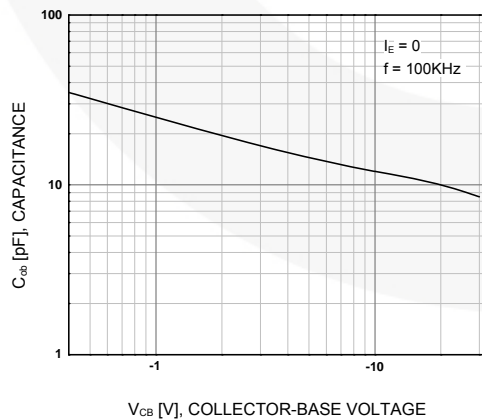
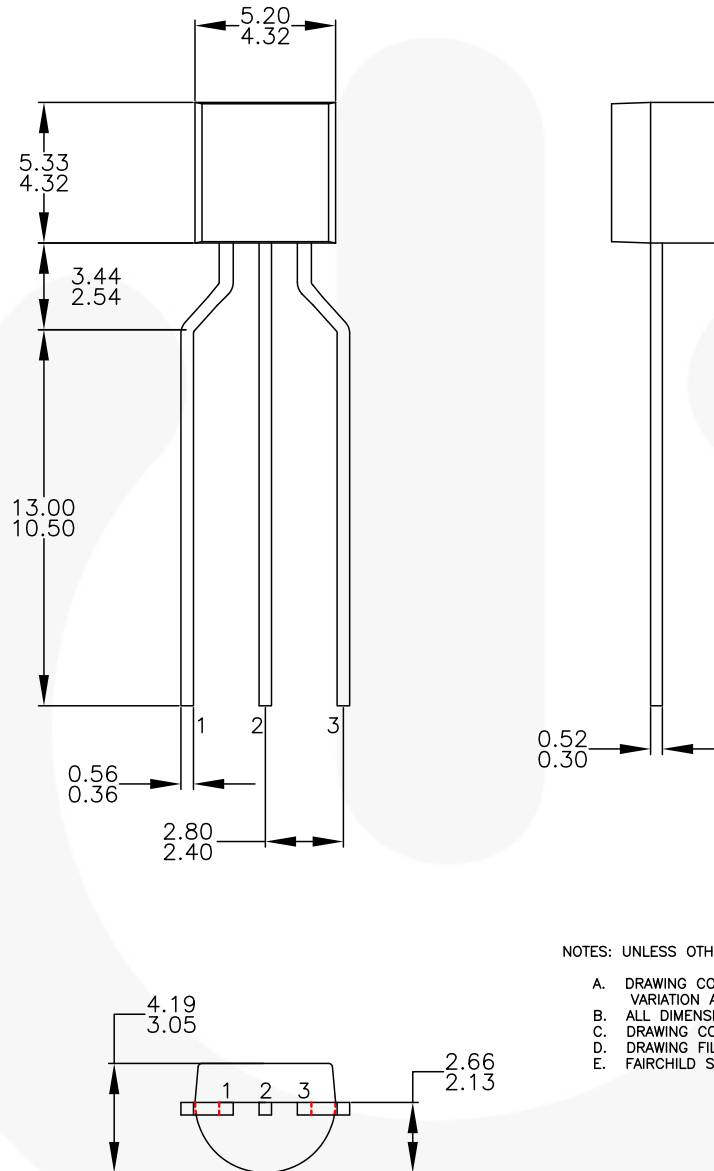


Figure 5. Collector Output Capacitance

Physical Dimensions



NOTES: UNLESS OTHERWISE SPECIFIED

- DRAWING CONFORMS TO JEDEC MS-013, VARIATION AC.
- ALL DIMENSIONS ARE IN MILLIMETERS.
- DRAWING CONFORMS TO ASME Y14.5M-2009.
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Figure 6. 3-Lead, TO-92, Molded, 0.2 In Line Spacing Lead Form, Ammo Type



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