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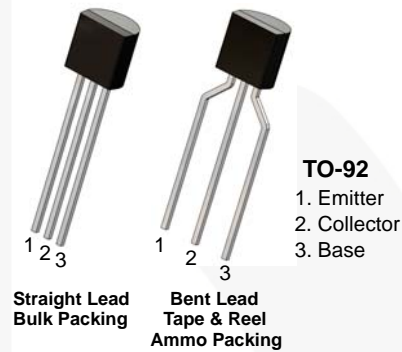
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# KSA1015

## PNP Epitaxial Silicon Transistor

### Features

- Low-Frequency Amplifier
- Collector-Base Voltage:  $V_{CBO} = -50\text{ V}$
- Complement to KSC1815



### Ordering Information

Part Number	Marking	Package	Packing Method
KSA1015GRTA	A1015	TO-92 3L	Ammo
KSA1015YTA	A1015	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	-50	V
$V_{CEO}$	Collector-Emitter Voltage	-50	V
$V_{EBO}$	Emitter-Base Voltage	-5	V
$I_C$	Collector Current	-150	mA
$I_B$	Base Current	-50	mA
$T_J$	Junction Temperature	150	$^\circ\text{C}$
$T_{STG}$	Storage Temperature Range	-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	400	mW
	Derate Above $25^\circ\text{C}$	3.2	mW/ $^\circ\text{C}$
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	312	$^\circ\text{C}/\text{W}$

**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**

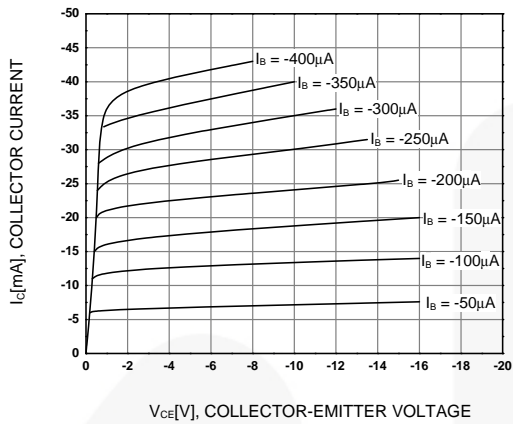
Values are at  $T_A = 25^\circ\text{C}$  unless otherwise noted.

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
$BV_{CBO}$	Collector-Base Breakdown Voltage	$I_C = -100 \mu\text{A}$ , $I_E = 0$	-50			V
$BV_{CEO}$	Collector-Emitter Breakdown Voltage	$I_C = -10 \text{ mA}$ , $I_B = 0$	-50			V
$BV_{EBO}$	Emitter-Base Breakdown Voltage	$I_E = -10 \mu\text{A}$ , $I_C = 0$	-5			V
$I_{CBO}$	Collector Cut-Off Current	$V_{CB} = -50 \text{ V}$ , $I_E = 0$			-0.1	$\mu\text{A}$
$I_{EBO}$	Emitter Cut-Off Current	$V_{EB} = -5 \text{ V}$ , $I_C = 0$			-0.1	$\mu\text{A}$
$h_{FE1}$	DC Current Gain	$V_{CE} = -6 \text{ V}$ , $I_C = -2 \text{ mA}$	70		400	
$h_{FE2}$	DC Current Gain	$V_{CE} = -6 \text{ V}$ , $I_C = -150 \text{ mA}$	25			
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C = -100 \text{ mA}$ , $I_B = -10 \text{ mA}$		-0.1	-0.3	V
$V_{BE(sat)}$	Base-Emitter Saturation Voltage	$I_C = -100 \text{ mA}$ , $I_B = -10 \text{ mA}$			-1.1	V
$f_T$	Current Gain Bandwidth Product	$V_{CE} = -10 \text{ V}$ , $I_C = -1 \text{ mA}$	80			MHz
$C_{ob}$	Output Capacitance	$V_{CB} = -10 \text{ V}$ , $I_E = 0$ , $f = 1 \text{ MHz}$		4	7	pF
NF	Noise Figure	$V_{CE} = -6 \text{ V}$ , $I_C = -0.1 \text{ mA}$ , $f = 100 \text{ Hz}$ , $R_G = 10 \text{ k}\Omega$		0.5	6	dB

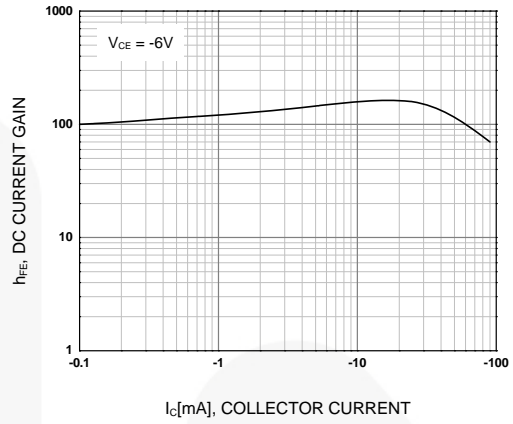
 **$h_{FE}$  Classification**

Classification	O	Y	GR
$h_{FE1}$	70 ~ 140	120 ~ 240	200 ~ 400

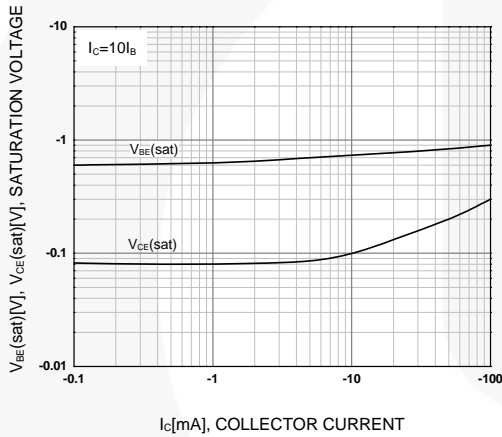
## Typical Performance Characteristics



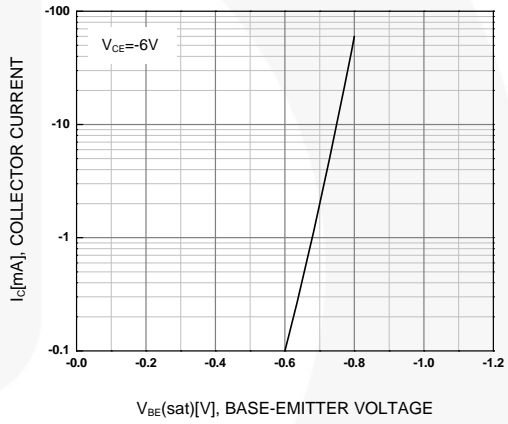
**Figure 1. Static Characteristic**



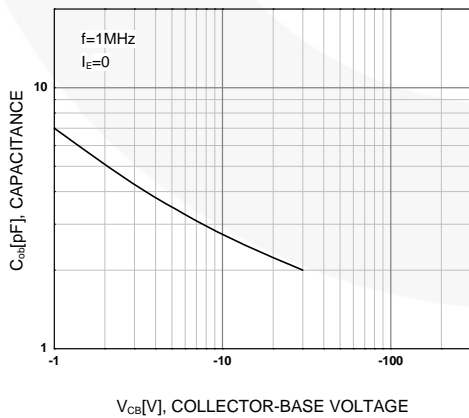
**Figure 2. DC Current Gain**



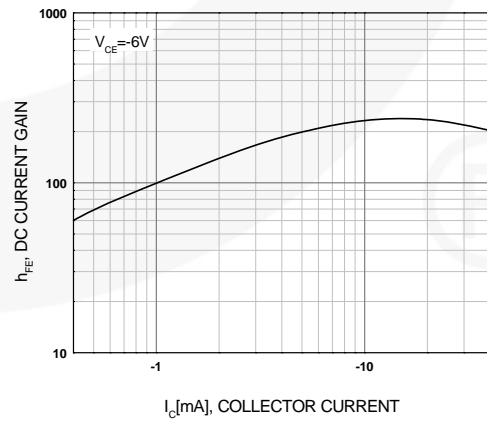
**Figure 3. Base-Emitter Saturation Voltage and Collector-Emitter Saturation Voltage**



**Figure 4. Base-Emitter On Voltage**

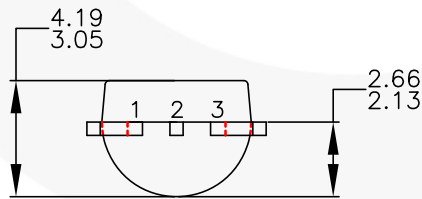
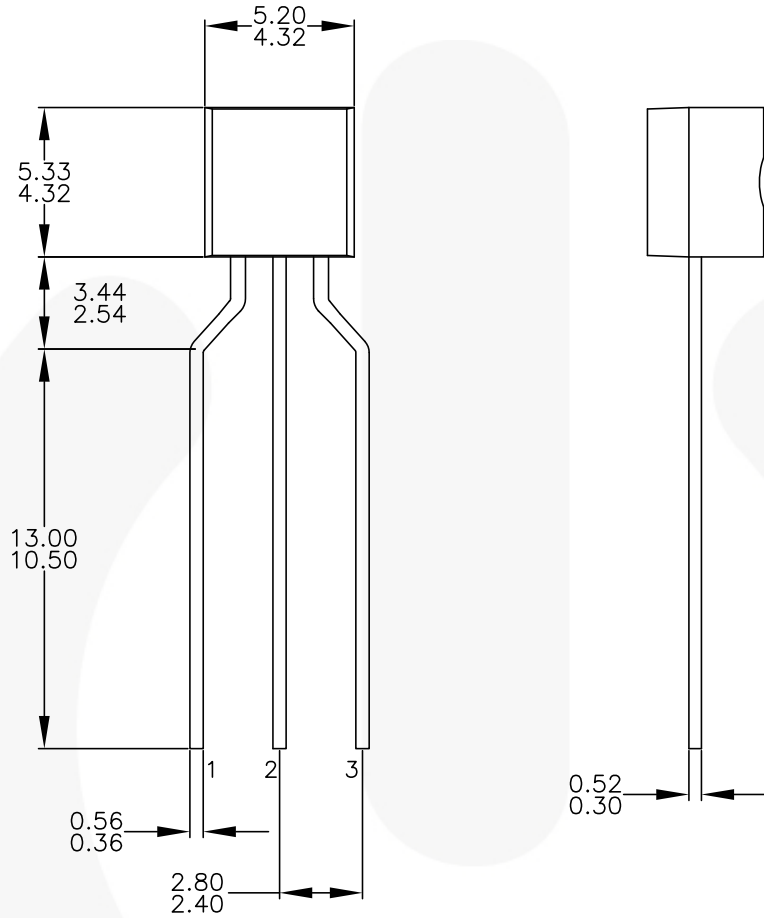


**Figure 5. Collector Output Capacitance**



**Figure 6. Current Gain Bandwidth Product**

Physical Dimensions



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.
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Figure 7. 3-LEAD, TO-92, MOLDED 0.200 IN LINE SPACING LD FORM



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