

# PNP Epitaxial Silicon Transistor

## KSA1015

### Features

- Low-Frequency Amplifier
- Collector-Base Voltage:  $V_{CBO} = -50\text{ V}$
- Complement to KSC1815
- These Devices are Pb-Free, Halogen Free/BFR Free and are RoHS Compliant

### ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ 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	$^\circ\text{C}$

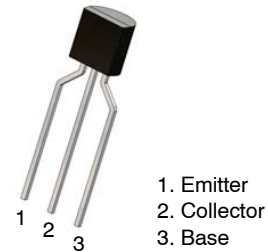
Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

### THERMAL CHARACTERISTICS (Note 1)

( $T_A = 25^\circ\text{C}$  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	$^\circ\text{C}/\text{W}$

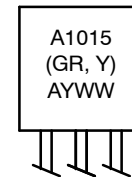
1. PCB size: FR-4, 76 mm x 114 mm x 1.57 mm (3.0 inch x 4.5 inch x 0.062 inch) with minimum land pattern size.



Bent Lead  
Tape & Reel  
Ammo Packing

TO-92 3 4.83x4.76 LEADFORMED  
CASE 135AR

### MARKING DIAGRAM



A = Assembly Site  
A1015(GR, Y) = Device Code  
Y = Year of Production,  
WW = Work Week Number

### ORDERING INFORMATION

Device	Marking	Package	Packing Method
KSA1015GRTA	A1015GR	TO-92 3L (Pb-Free)	Ammo
KSA1015YTA	A1015Y	TO-92 3L (Pb-Free)	Ammo

# KSA1015

## ELECTRICAL CHARACTERISTICS ( $T_A = 25^\circ\text{C}$ 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

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

## $h_{FE}$ CLASSIFICATION

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

## TYPICAL PERFORMANCE CHARACTERISTICS

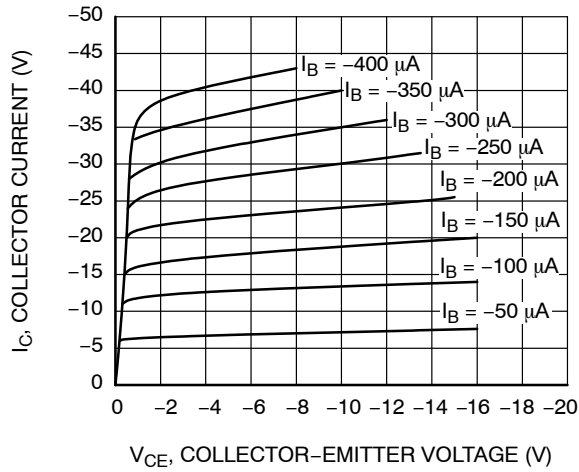


Figure 1. Static Characteristic

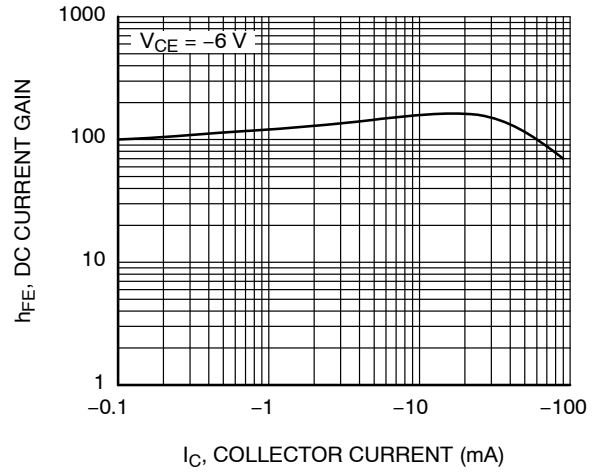


Figure 2. DC Current Gain

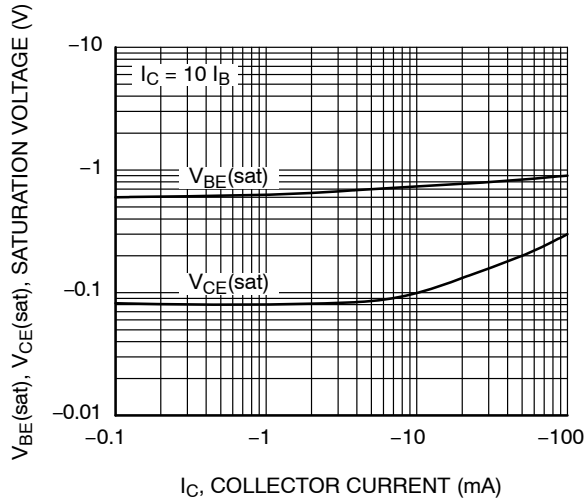


Figure 3. Base-Emitter Saturation Voltage and Collector-Emitter Saturation Voltage

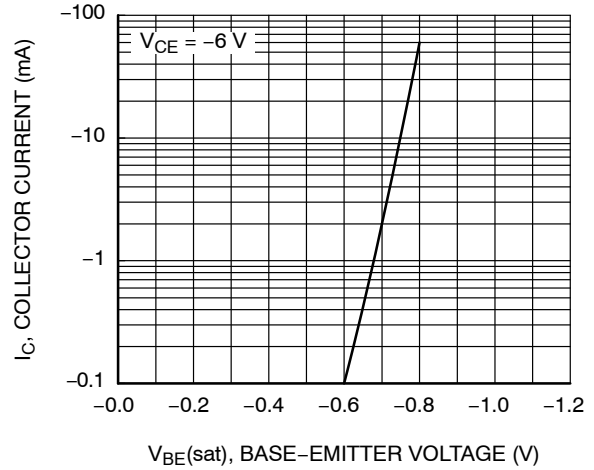


Figure 4. Base-Emitter On Voltage

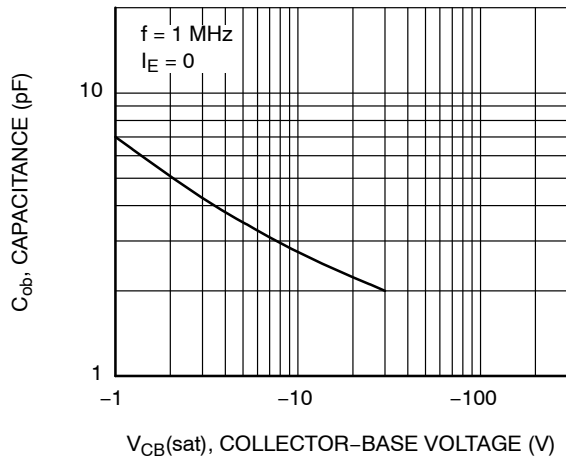


Figure 5. Collector Output Capacitance

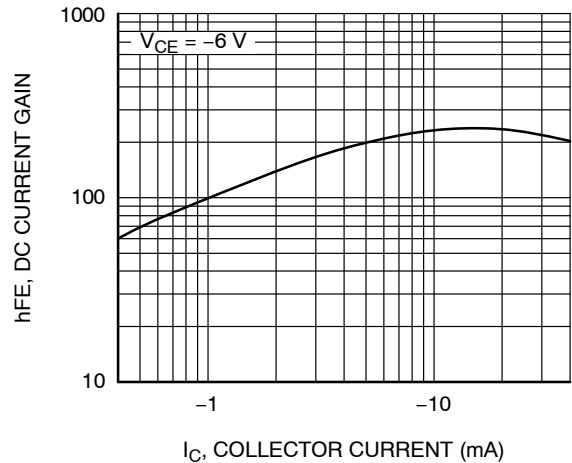
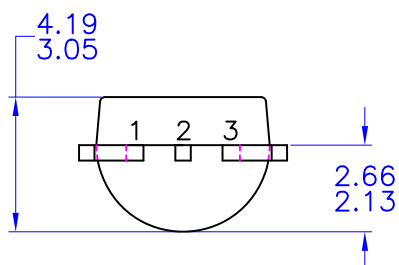
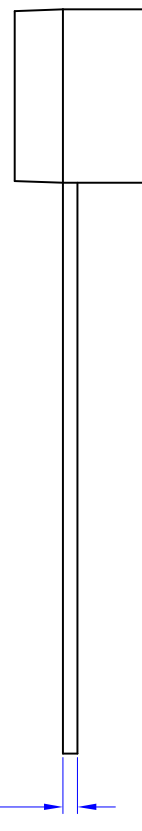
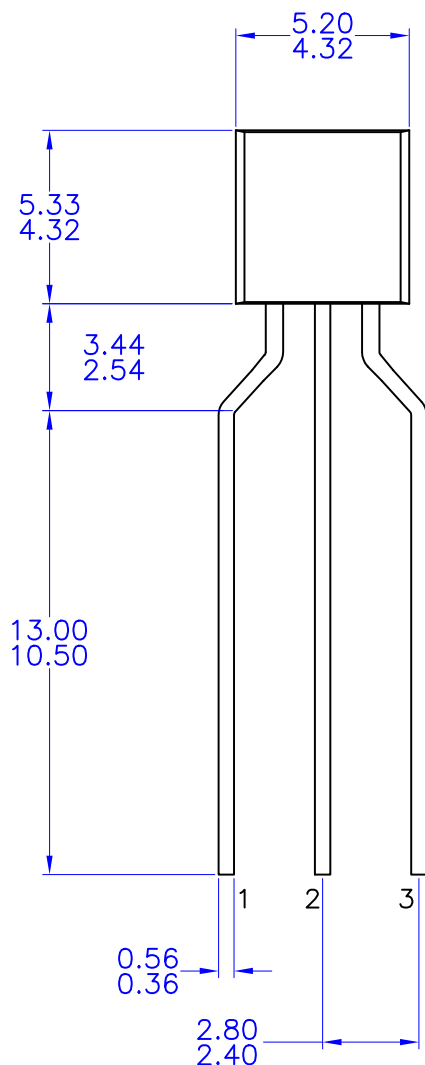


Figure 6. Current Gain Bandwidth Product

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DATE 30 SEP 2016



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-1994

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