

# NPN Epitaxial Silicon Transistor

## KSC945

### Features

- Audio Frequency Amplifier and High-Frequency OSC
- Complimentary to KSA733
- Collector-Base Voltage:  $V_{CBO} = 60\text{ V}$
- High Current Gain Bandwidth Product:  $f_T = 300\text{ MHz}$  (Typical)
- Suffix “-C” Means Center Collector  
(1. Emitter 2. Collector 3. Base)

### ABSOLUTE MAXIMUM RATINGS

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

Symbol	Parameter	Ratings	Unit
$V_{CBO}$	Collector-Base Voltage	60	V
$V_{CEO}$	Collector-Emitter Voltage	50	V
$V_{EBO}$	Emitter-Base Voltage	5	V
$I_C$	Collector Current	150	mA
$T_J$	Junction Temperature	150	$^\circ\text{C}$
$T_{STG}$	Storage Temperature	-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

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

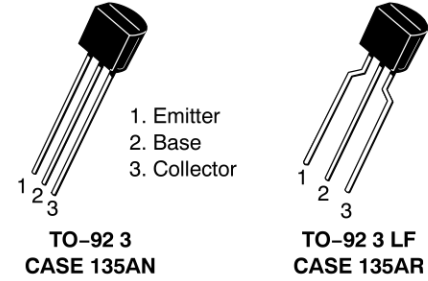
Symbol	Parameter	Value	Unit
$P_D$	Power Dissipation	250	mW
	Derate Above $25^\circ\text{C}$	2.0	mW/ $^\circ\text{C}$
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient	500	$^\circ\text{C}/\text{W}$

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.

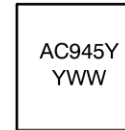
### ELECTRICAL CHARACTERISTICS ( $T_A = 25^\circ\text{C}$ unless otherwise noted.)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$BV_{CBO}$	Collector-Base Breakdown Voltage	$I_C = 100\ \mu\text{A}$ , $I_E = 0$	60	-	-	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	$V_{CB} = 40\ \text{V}$ , $I_E = 0$	-	-	0.1	$\mu\text{A}$
$I_{EBO}$	Emitter Cut-Off Current	$V_{EB} = 3\ \text{V}$ , $I_C = 0$	-	-	0.1	$\mu\text{A}$
$h_{FE}$	DC Current Gain	$V_{CE} = 6\ \text{V}$ , $I_C = 1.0\ \text{mA}$	120	-	240	
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C = 100\ \text{mA}$ , $I_B = 10\ \text{mA}$	-	0.15	0.30	V
$f_T$	Current Gain Bandwidth Product	$V_{CE} = 6\ \text{V}$ , $I_C = 10\ \text{mA}$	-	300	-	MHz
$C_{ob}$	Output Capacitance	$V_{CB} = 6\ \text{V}$ , $I_E = 0$ , $f = 1\ \text{MHz}$	-	2.5	-	pF
NF	Noise Figure	$V_{CE} = 6\ \text{V}$ , $I_C = 0.5\ \text{mA}$ , $f = 1\ \text{kHz}$ , $R_S = 500\ \Omega$	-	4.0	-	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.



### MARKING DIAGRAM



- A = Assembly Site
- C945Y = Specific Device Code
- Y = Year of Production
- WW = Work Week

### ORDERING INFORMATION

Device	Package	Shipping
KSC945YBU	TO-92 3 (Pb-Free)	10,000 Units / Bulk
KSC945CYTA	TO-92 3 LF (Pb-Free)	2,000 Units / FNFLD
KSC945YTA	TO-92 3 LF (Pb-Free)	2,000 Units / FNFLD

TYPICAL CHARACTERISTICS

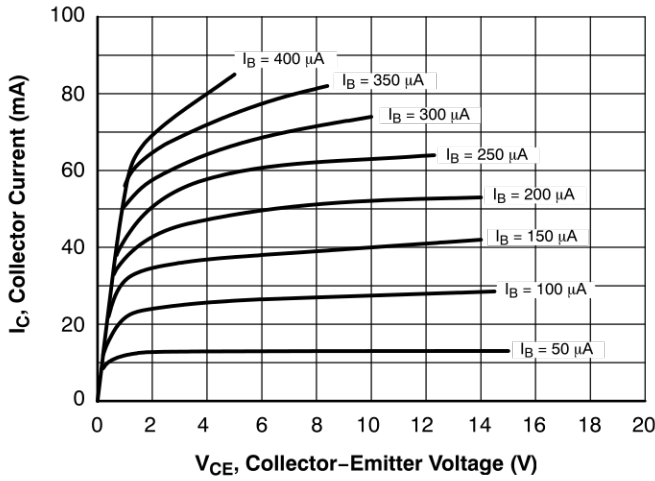


Figure 1. Static Characteristic

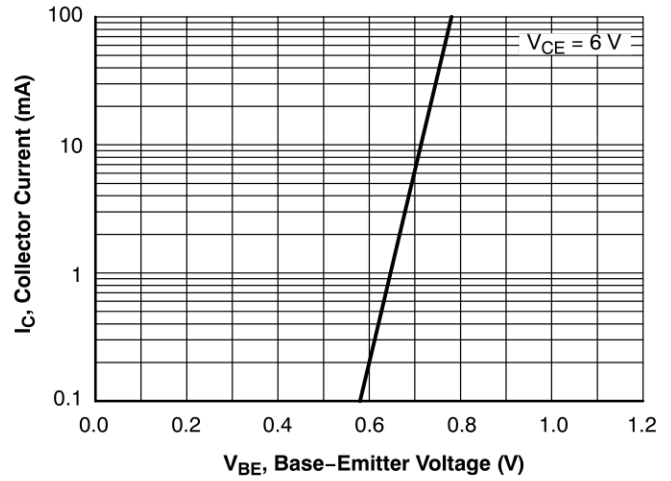


Figure 2. Transfer Characteristic

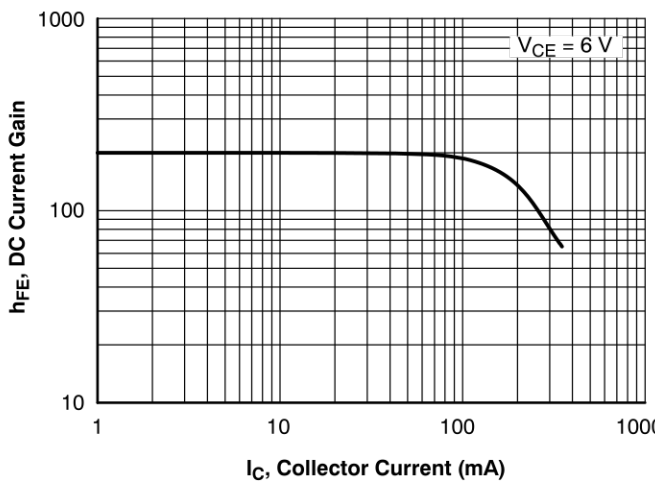


Figure 3. DC Current Gain

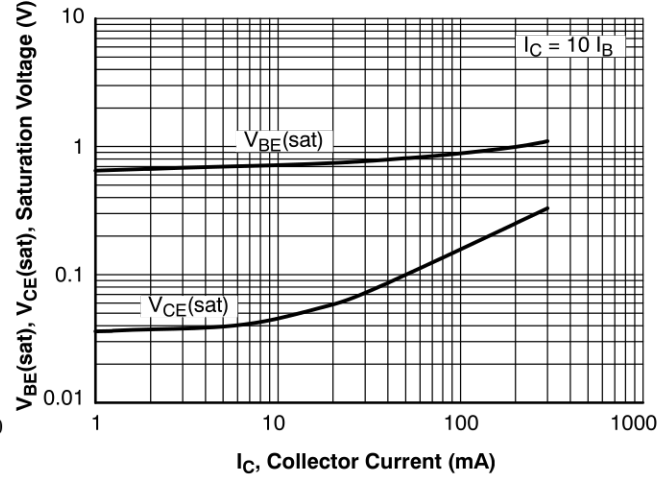


Figure 4. Base-Emitter Saturation Voltage and Collector-Emitter Saturation Voltage

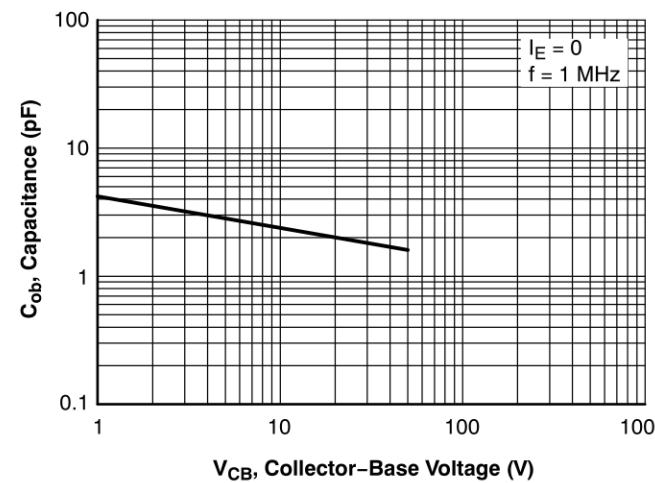


Figure 5. Output Capacitance

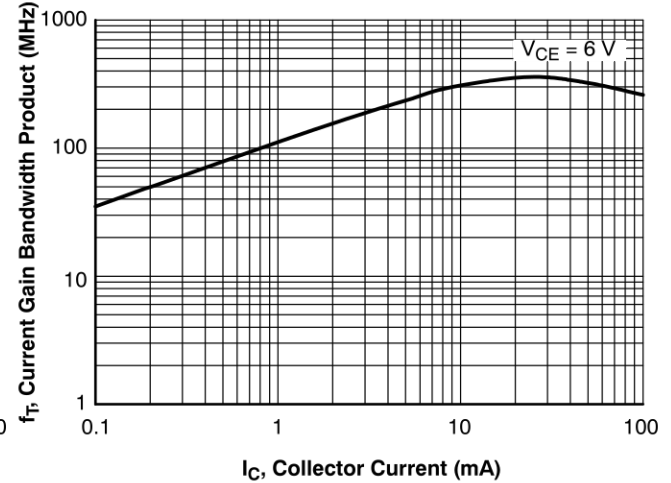
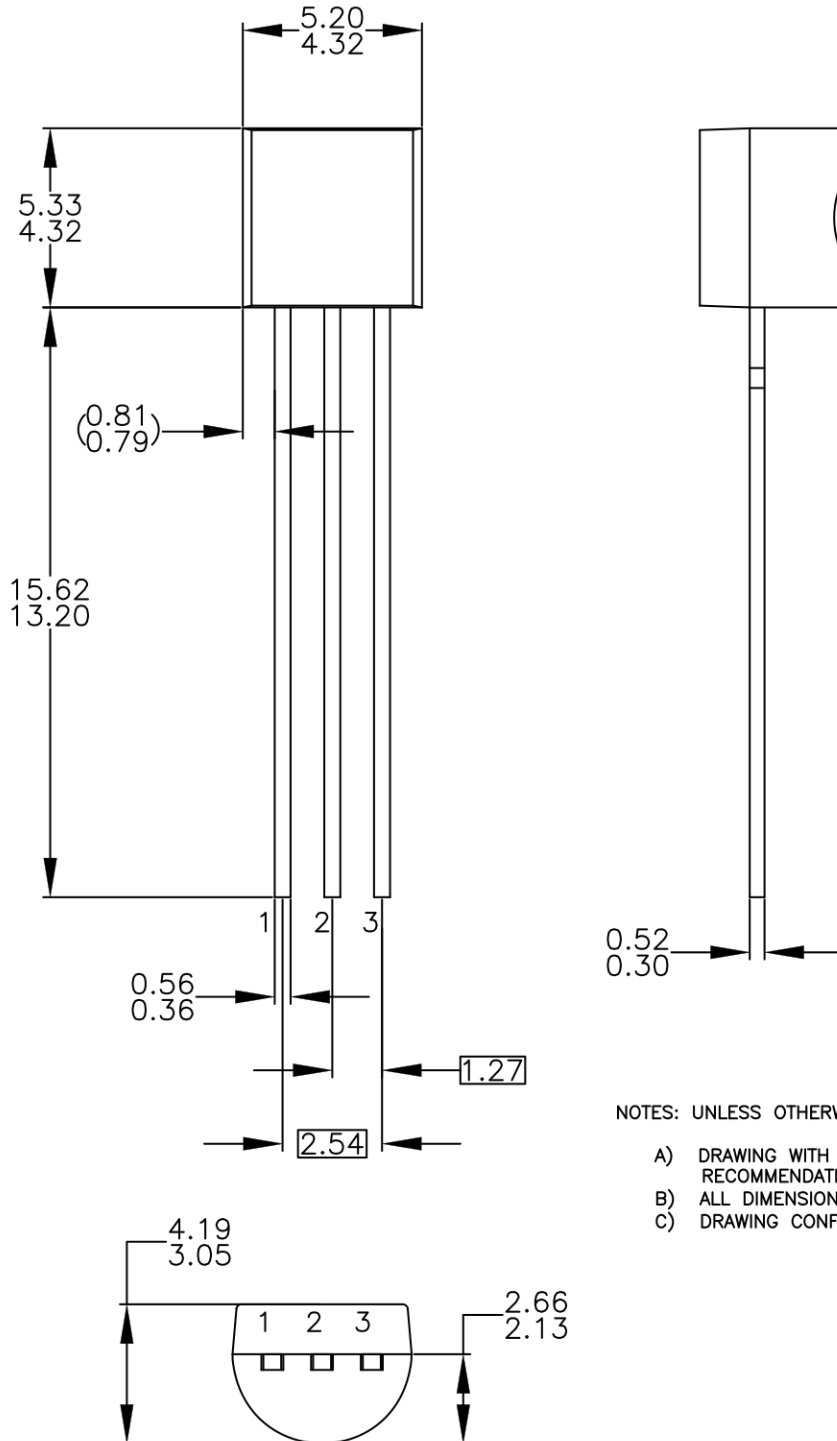


Figure 6. Current Gain Bandwidth Product

**MECHANICAL CASE OUTLINE**  
**PACKAGE DIMENSIONS**

TO-92 3 4.825x4.76  
CASE 135AN  
ISSUE O

DATE 31 JUL 2016



NOTES: UNLESS OTHERWISE SPECIFIED

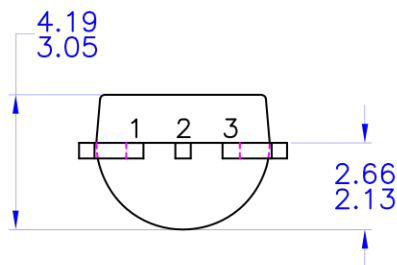
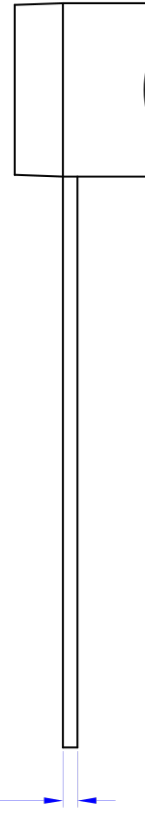
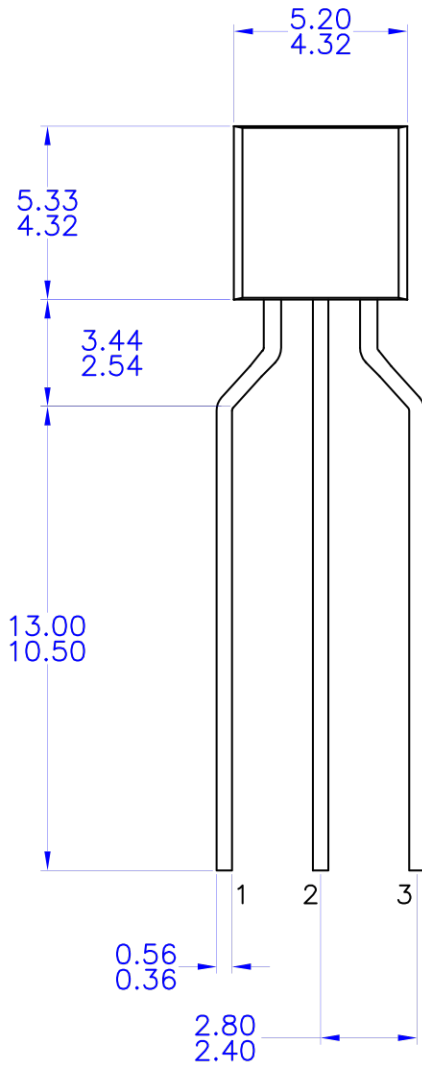
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**TO-92 3 4.83x4.76 LEADFORMED**  
**CASE 135AR**  
**ISSUE O**

DATE 30 SEP 2016



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