

PNP Epitaxial Silicon Transistor

KSA992

Features

- Audio Frequency Low-Noise Amplifier
- Complement to KSC1845
- These are Pb-Free Devices

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

Symbol	Parameter	Value	Unit
V_{CBO}	Collector-Base Voltage	-120	V
V_{CEO}	Collector-Emitter Voltage	-120	V
V_{EBO}	Emitter-Base Voltage	-5	V
I_C	Collector Current	-50	mA
I_B	Base Current	-10	mA
T_J	Junction Temperature	150	$^\circ\text{C}$
T_{STG}	Storage Temperature	-55 to 150	$^\circ\text{C}$

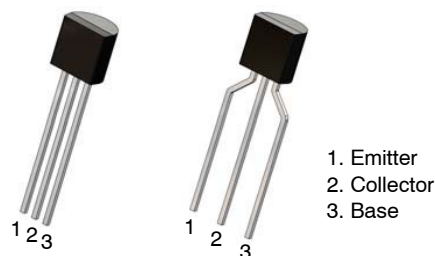
Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

THERMAL CHARACTERISTICS

(Values are at $T_A = 25^\circ\text{C}$ unless otherwise noted.) (Note 1)

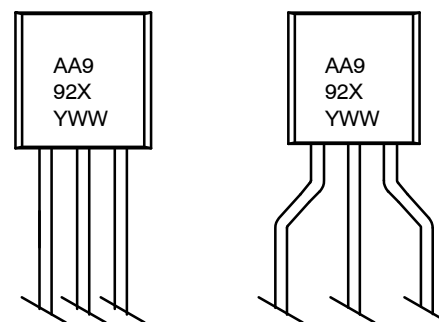
Symbol	Parameter	Value	Unit
P_D	Power Dissipation	500	mW
	Derate Above 25°C	4	mW/ $^\circ\text{C}$
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient	250	$^\circ\text{C}/\text{W}$

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.



TO-92 3 4.825x4.76 CASE 135AN
TO-92 3 4.83x4.76 LEADFORMED CASE 135AR

MARKING DIAGRAMS



A = Assembly Code
A992 = Device Code
X = F / FA / FB
YWW = Date Code

ORDERING INFORMATION

Device	Package	Shipping
KSA992FBU	TO-92 3 (Pb-Free)	10000 Units / Bulk Bag
KSA992FTA	TO-92 3 LF (Pb-Free)	2000 / Fan-Fold
KSA992FATA	TO-92 3 LF (Pb-Free)	2000 / Fan-Fold
KSA992FBTA	TO-92 3 LF (Pb-Free)	2000 / Fan-Fold

KSA992

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

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
I_{CBO}	Collector Cut-Off Current	$V_{CB} = -120\text{ V}$, $I_E = 0$	–	–	–50	nA
I_{CEO}	Collector Cut-Off Current	$V_{CE} = -100\text{ V}$, $I_B = 0$	–	–	–1	μA
I_{EBO}	Emitter Cut-Off Current	$V_{EB} = -5\text{ V}$, $I_C = 0$	–	–	–50	nA
h_{FE1}	DC Current Gain	$V_{CE} = -6\text{ V}$, $I_C = -0.1\text{ mA}$	150	500	–	
h_{FE2}		$V_{CE} = -6\text{ V}$, $I_C = -1\text{ mA}$	300	450	600	
$V_{BE(on)}$	Base-Emitter On Voltage	$V_{CE} = -6\text{ V}$, $I_C = -1\text{ mA}$	–0.55	–0.61	–0.65	V
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C = -10\text{ mA}$, $I_B = -1\text{ mA}$	–	–0.09	–0.30	V
f_T	Current Gain Bandwidth Product	$V_{CE} = -6\text{ V}$, $I_C = -1\text{ mA}$	50	100	–	MHz
C_{ob}	Output Capacitance	$V_{CB} = -30\text{ V}$, $I_E = 0$, $f = 1\text{ MHz}$	–	2	3	pF
NF	Noise Figure	$V_{CE} = -5\text{ V}$, $I_C = -1.0\text{ mA}$, $R_S = 100\text{ k}\Omega$, $f = 1\text{ kHz}$	–	7	–	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	F	FA	FB
h_{FE2}	300~600	300~470	430~600

TYPICAL PERFORMANCE CHARACTERISTICS

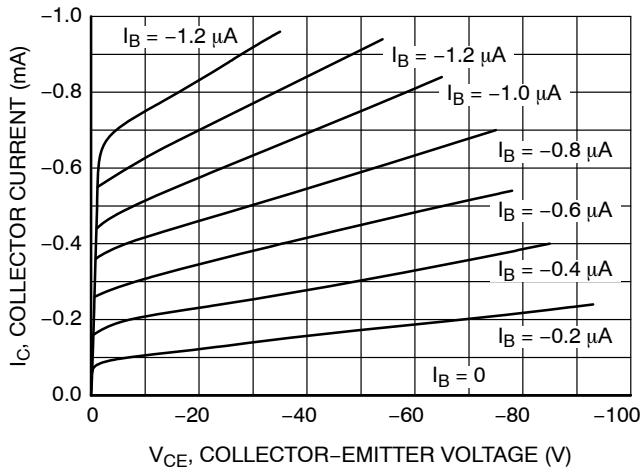


Figure 1. Static Characteristic

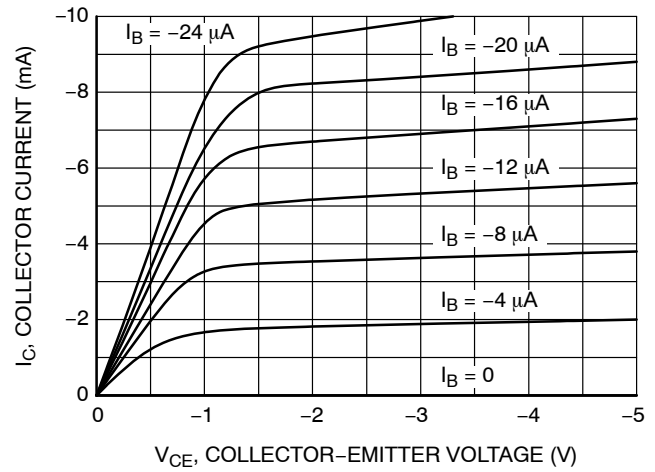


Figure 2. Static Characteristic

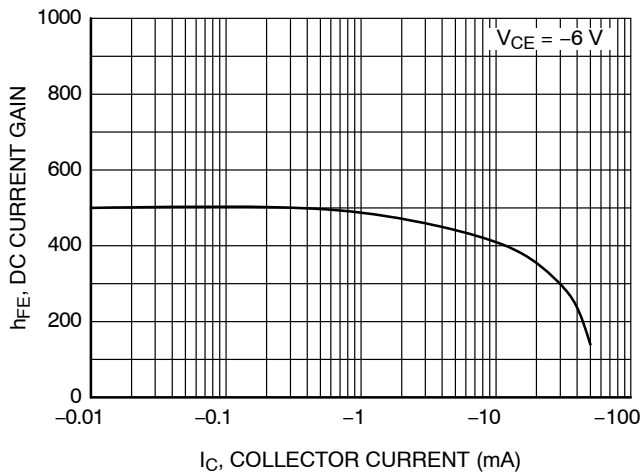


Figure 3. DC Current Gain

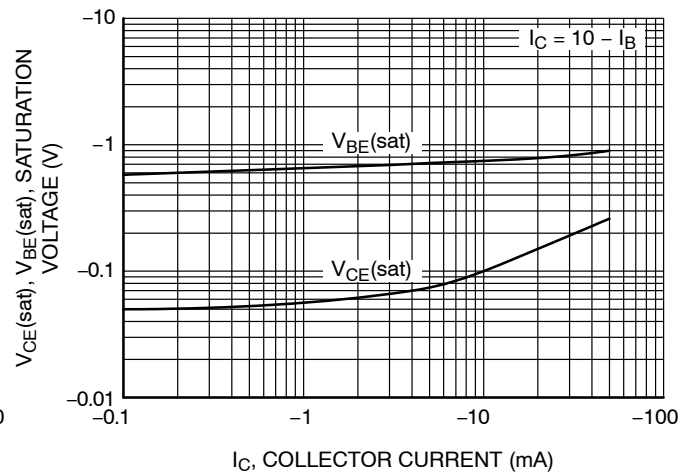


Figure 4. Base-Emitter Saturation Voltage and Collector-Emitter Saturation Voltage

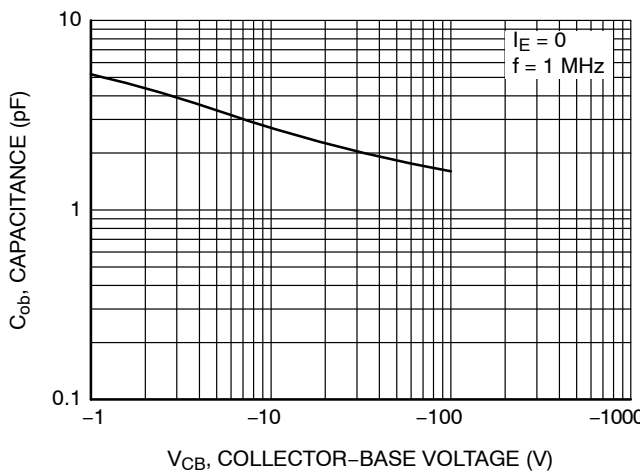


Figure 5. Collector Output Capacitance

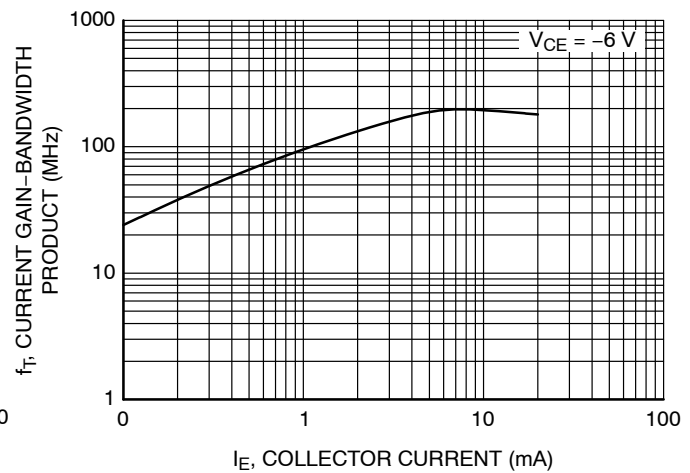
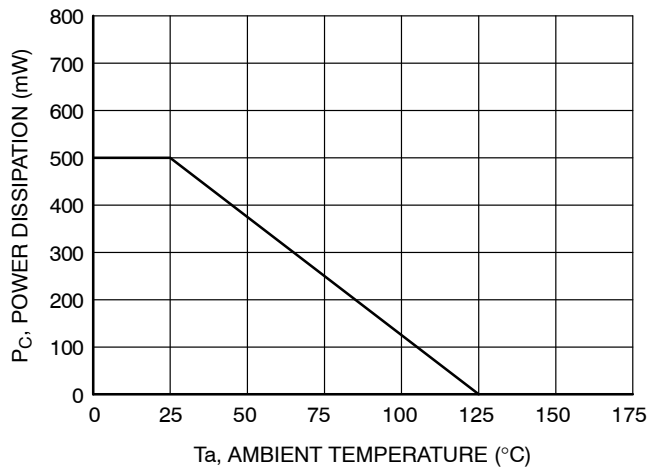


Figure 6. Current Gain Bandwidth Product

TYPICAL PERFORMANCE CHARACTERISTICS (Continued)

**Figure 7. Power Derating**

MECHANICAL CASE OUTLINE

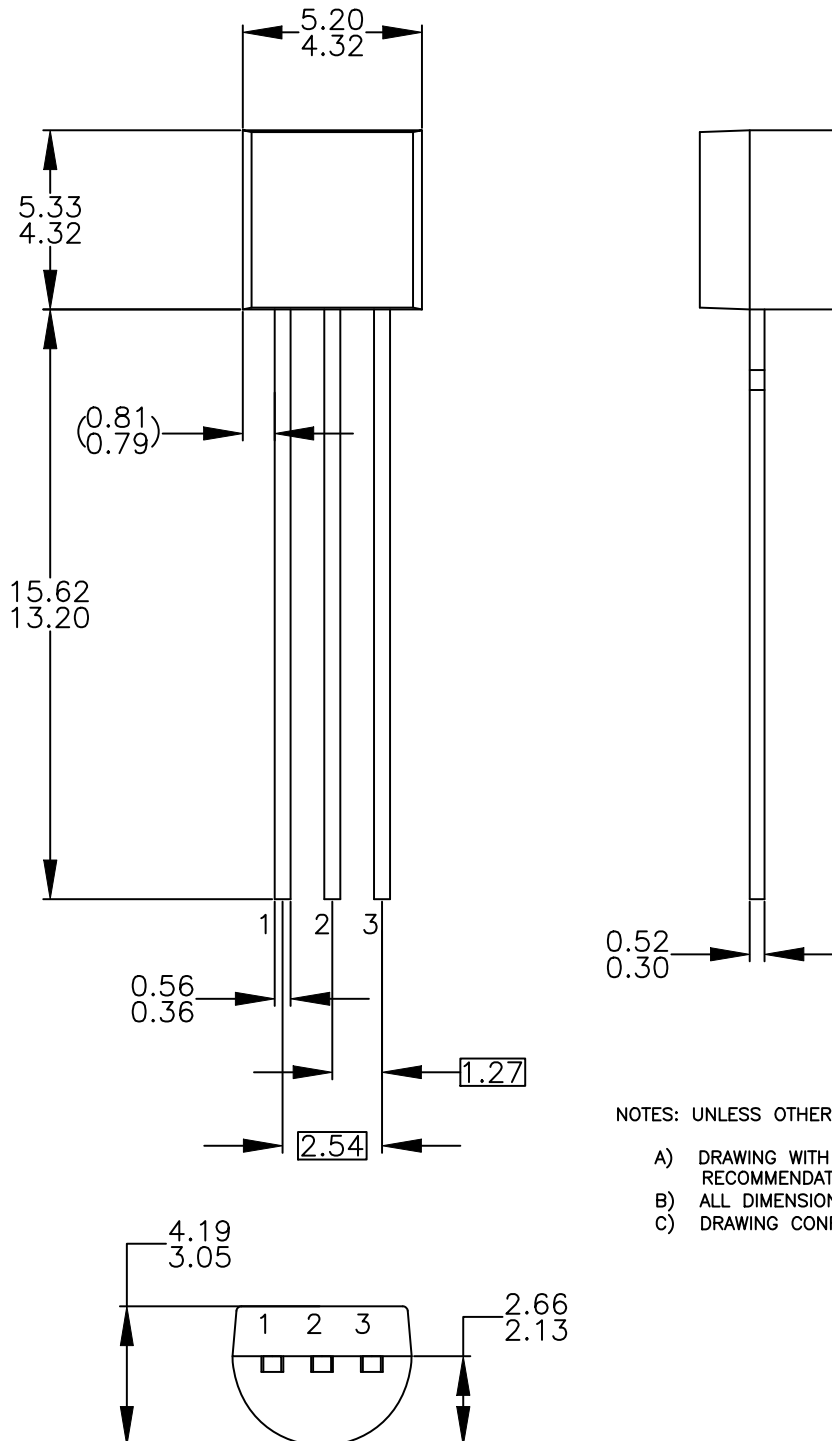
PACKAGE DIMENSIONS

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

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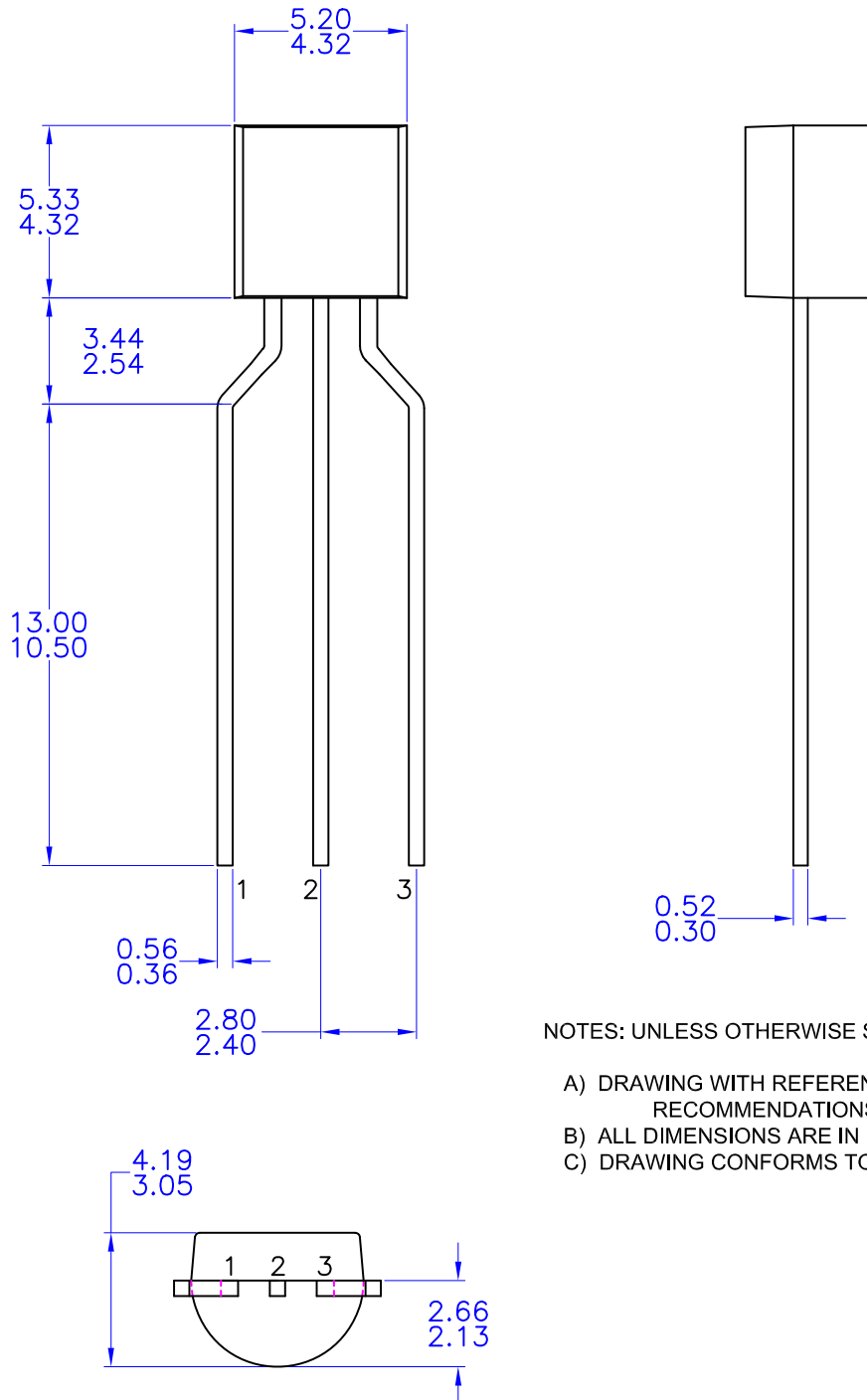
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CASE 135AR
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