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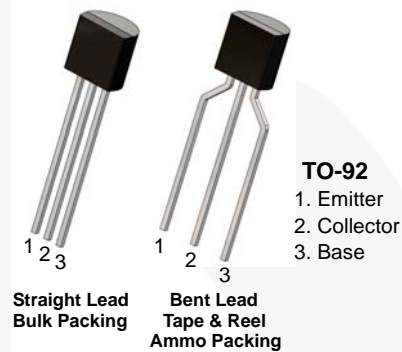


September 2015

# KSA992 PNP Epitaxial Silicon Transistor

## Features

- Audio Frequency Low-Noise Amplifier
- Complement to KSC1845



## Ordering Information

Part Number	Top Mark	Package	Packing Method
KSA992FBU	A992	TO-92 3L	Bulk
KSA992FTA	A992	TO-92 3L	Ammo
KSA992FATA	A992	TO-92 3L	Ammo
KSA992FBTA	A992	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	-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	$^\circ\text{C}$

**Thermal Characteristics<sup>(1)</sup>**

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

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

**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
$I_{CBO}$	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	$\mu\text{A}$
$I_{EBO}$	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		
$h_{FE2}$		$V_{CE} = -6\text{ V}, I_C = -1\text{ mA}$	200	500	800	
$V_{BE(on)}$	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
NV	Noise Voltage	$V_{CE} = -5.0\text{ V}, I_C = -1.0\text{ mA},$ $R_G = 100\text{ k}\Omega, G_V = 80\text{ dB},$ $f = 10\text{ Hz to }1.0\text{ kHz}$		25	40	mV

 **$h_{FE}$  Classification**

Classification	P	F	FA	FB	E
$h_{FE2}$	200 ~ 400	300 ~ 600	300 ~ 470	430 ~ 600	400 ~ 800

## Typical Performance Characteristics

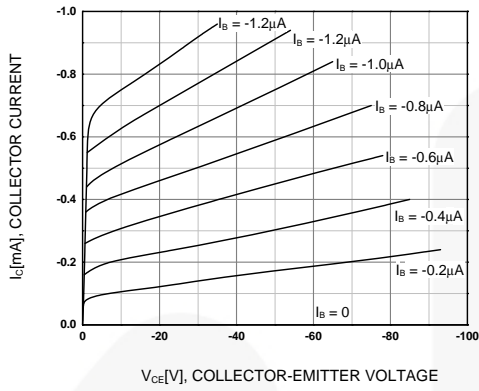


Figure 1. Static Characteristic

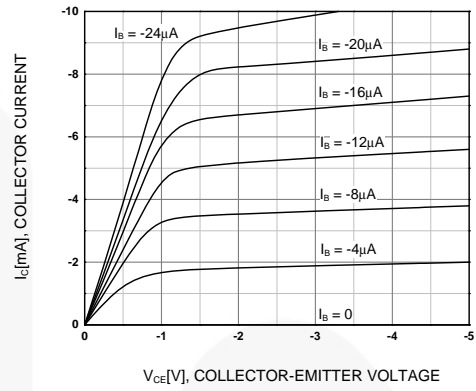


Figure 2. Static Characteristic

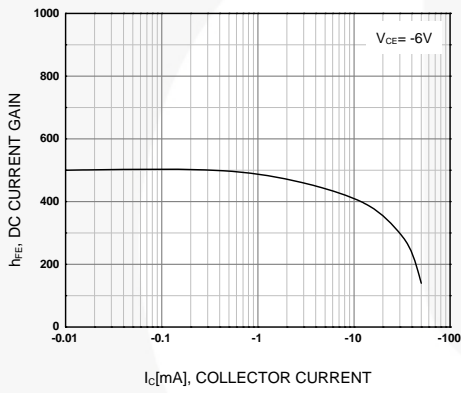


Figure 3. DC Current Gain

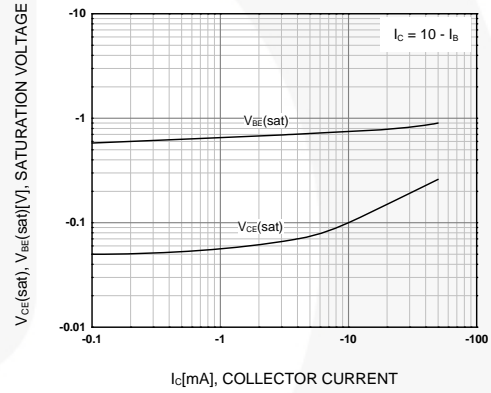


Figure 4. Base-Emitter Saturation Voltage and Collector-Emitter Saturation Voltage

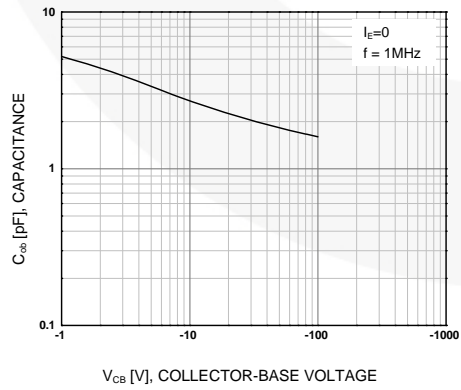


Figure 5. Collector Output Capacitance

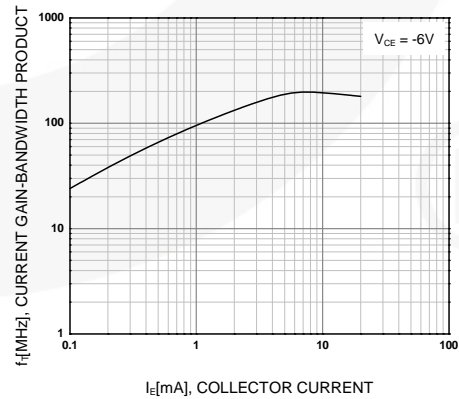


Figure 6. Current Gain Bandwidth Product

### Typical Performance Characteristics (Continued)

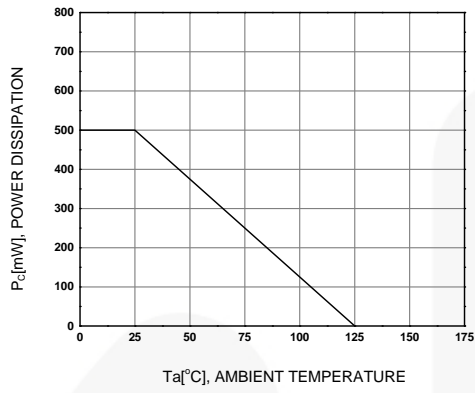
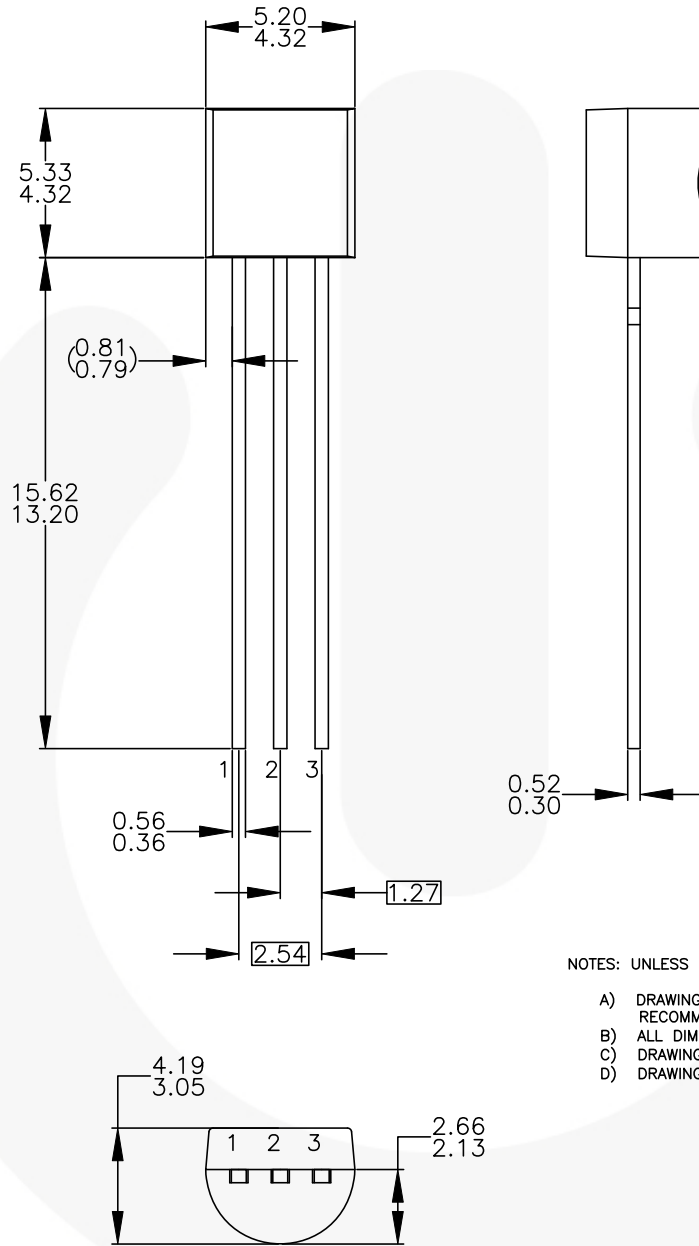


Figure 7. Power Derating



**Physical Dimensions**



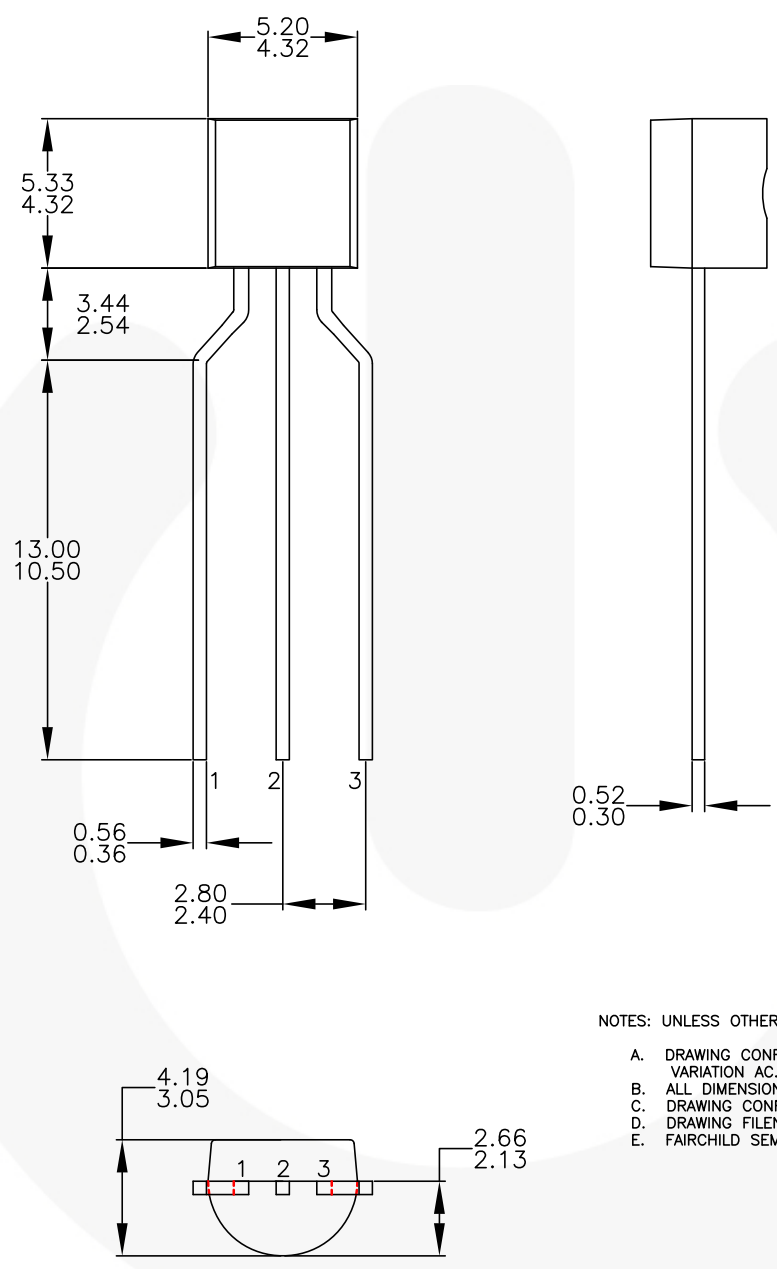
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- B) ALL DIMENSIONS ARE IN MILLIMETERS.
- C) DRAWING CONFORMS TO ASME Y14.5M-2009.
- D) DRAWING FILENAME: MKT-ZA03DREV4.



**Figure 8. 3-Lead, TO-92, JEDEC TO-92 Compliant Straight Lead Configuration, Bulk Type**

**Physical Dimensions** (Continued)



- NOTES: UNLESS OTHERWISE SPECIFIED
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  - B. ALL DIMENSIONS ARE IN MILLIMETERS.
  - C. DRAWING CONFORMS TO ASME Y14.5M-2009.
  - D. DRAWING FILENAME: MKT-ZA03FREX3.
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**Figure 9. 3-Lead, TO-92, Molded, 0.2 In Line Spacing Lead Form, Ammo, Tape and Reel Type**



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