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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⁽¹⁾

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°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	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}		$V_{CE} = -6\text{ V}, I_C = -1\text{ mA}$	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

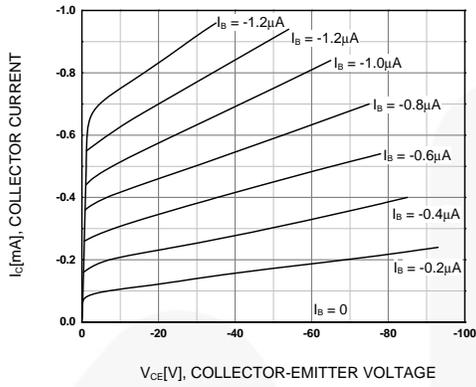


Figure 1. Static Characteristic

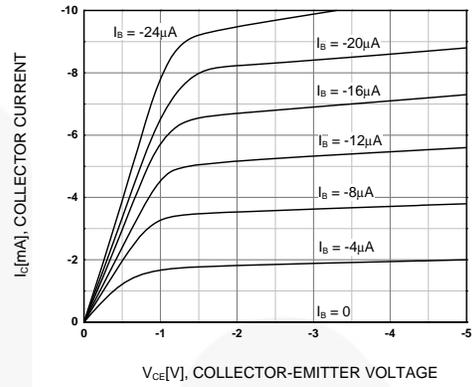


Figure 2. Static Characteristic

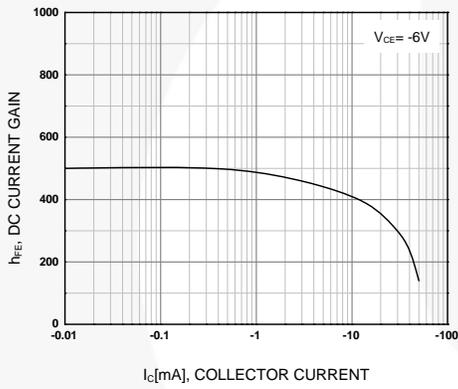


Figure 3. DC Current Gain

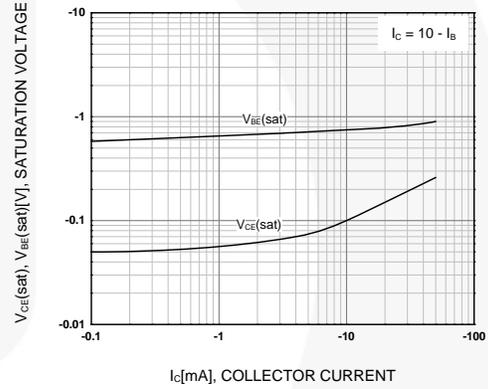


Figure 4. Base-Emitter Saturation Voltage and Collector-Emitter Saturation Voltage

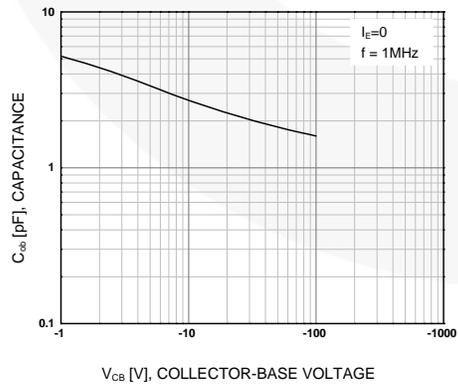


Figure 5. Collector Output Capacitance

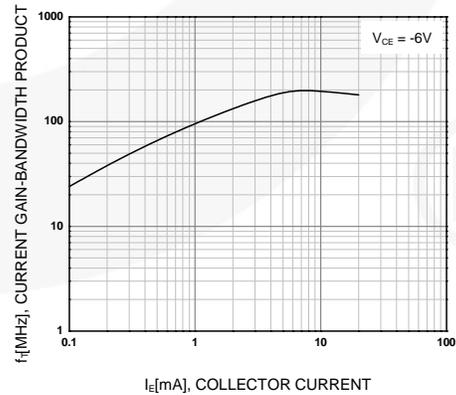


Figure 6. Current Gain Bandwidth Product

Typical Performance Characteristics (Continued)

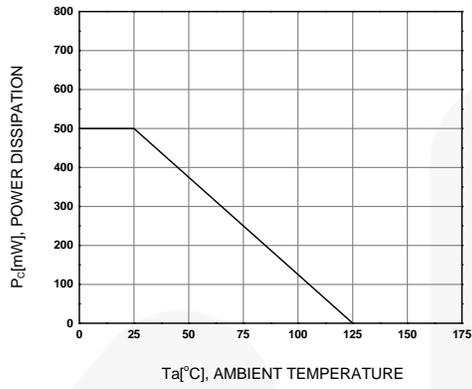
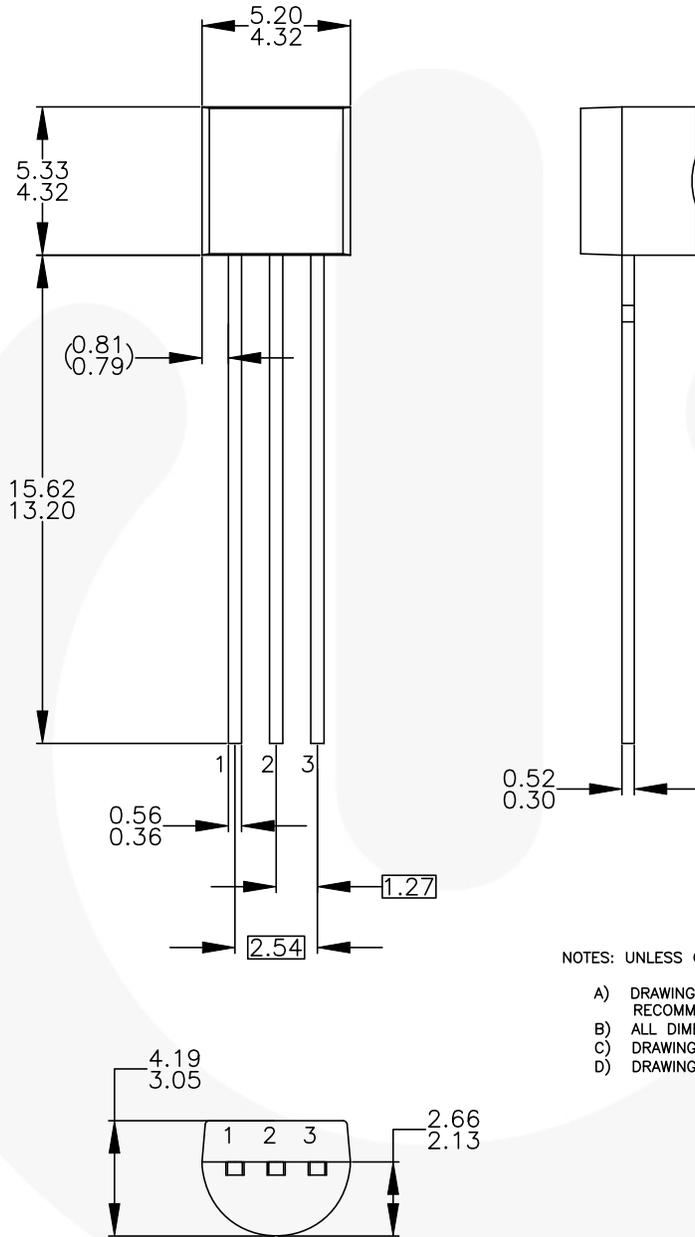


Figure 7. Power Derating



Physical Dimensions



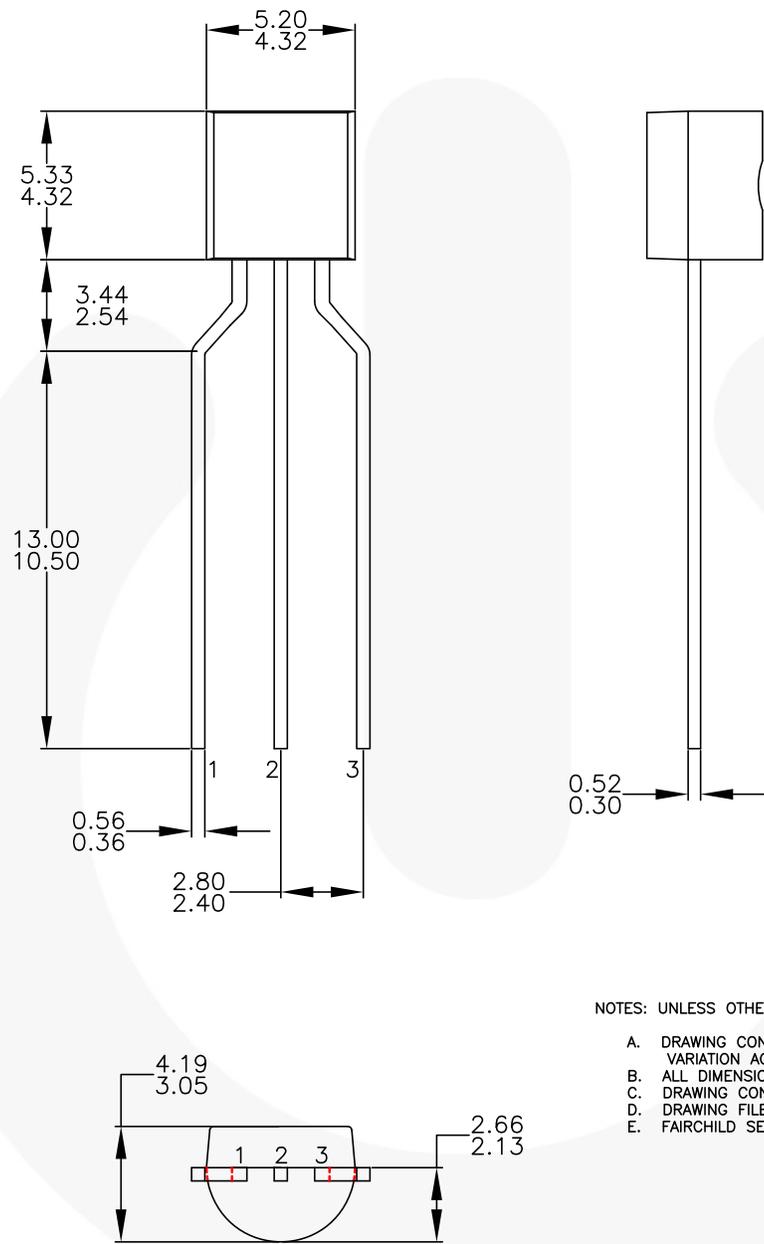
NOTES: UNLESS OTHERWISE SPECIFIED

- A) DRAWING WITH REFERENCE TO JEDEC TO-92 RECOMMENDATIONS.
- B) ALL DIMENSIONS ARE IN MILLIMETERS.
- C) DRAWING CONFORMS TO ASME Y14.5M-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
- A. DRAWING CONFORMS TO JEDEC MS-013, VARIATION AC.
 - B. ALL DIMENSIONS ARE IN MILLIMETERS.
 - C. DRAWING CONFORMS TO ASME Y14.5M-2009.
 - D. DRAWING FILENAME: MKT-ZA03FREX3.
 - E. FAIRCHILD SEMICONDUCTOR.

Figure 9. 3-Lead, TO-92, Molded, 0.2 In Line Spacing Lead Form, Ammo, Tape and Reel Type