



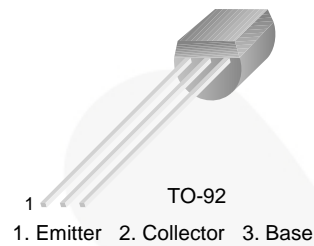
November 2014

# 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	$^\circ\text{C}$

KSA992 — PNP Epitaxial Silicon Transistor

**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

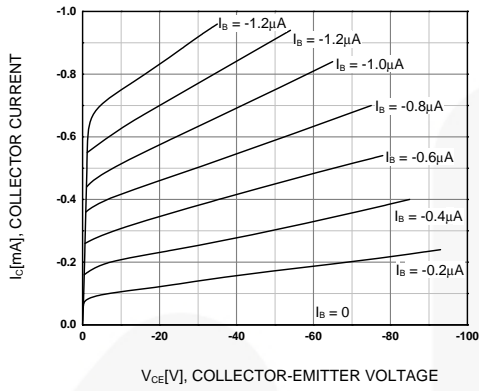


Figure 1. Static Characteristic

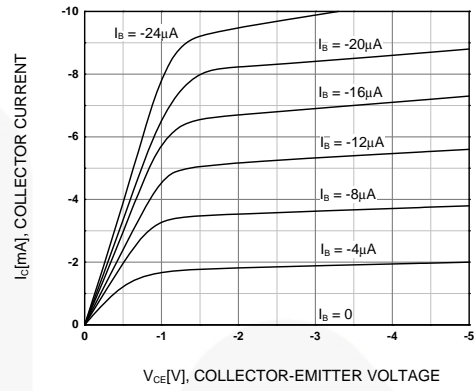


Figure 2. Static Characteristic

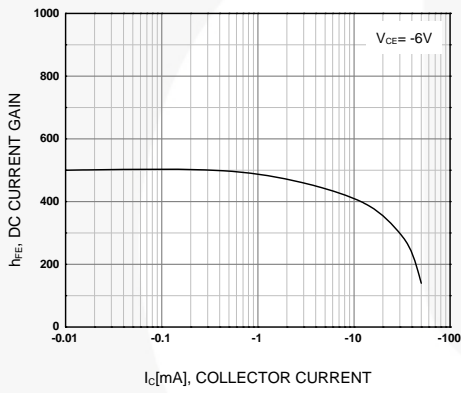


Figure 3. DC Current Gain

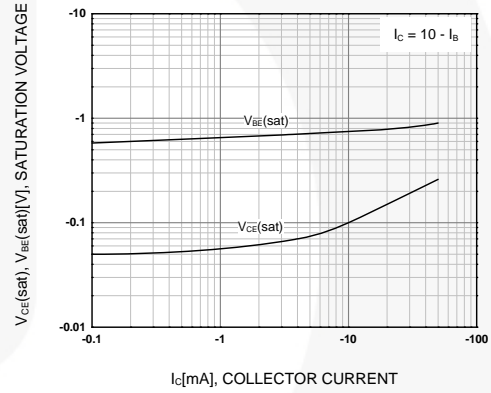


Figure 4. Base-Emitter Saturation Voltage and Collector-Emitter Saturation Voltage

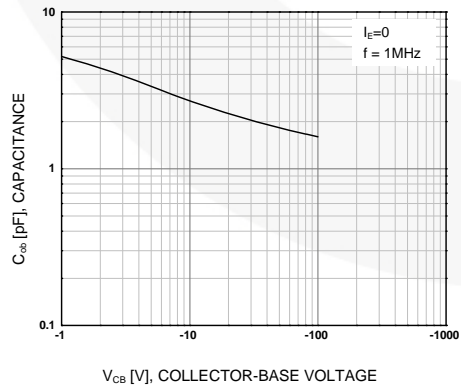


Figure 5. Collector Output Capacitance

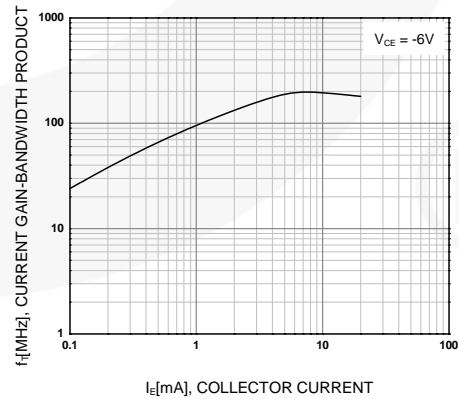


Figure 6. Current Gain Bandwidth Product

### Typical Performance Characteristics (Continued)

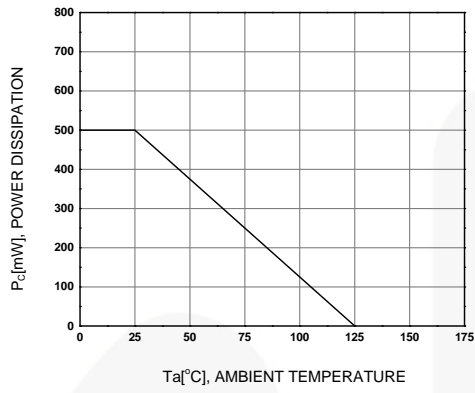
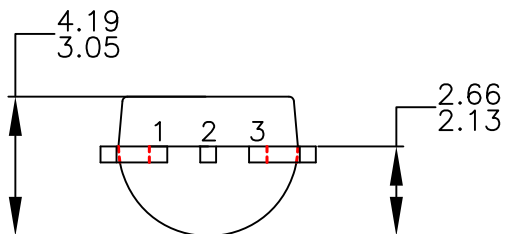


Figure 7. Power Derating





NOTES: UNLESS OTHERWISE SPECIFIED

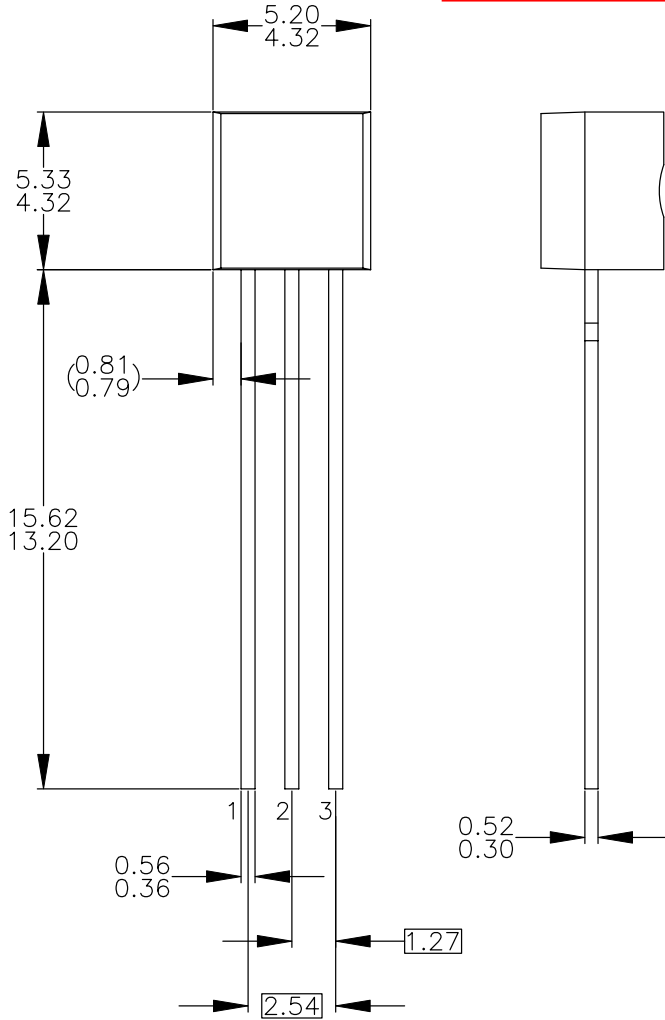
- A. DRAWING CONFORMS TO JEDEC MS-013, VARIATION AC.
- B. ALL DIMENSIONS ARE IN MILLIMETERS.
- C. DRAWING CONFORMS TO ASME Y14.5M-2009.
- D. DRAWING FILENAME: MKT-ZA03FREV3.
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REVISIONS

NO.	DESCRIPTION	DATE	NAME/SITE
A	RELEASE TO DOCUMENT CONTROL	MAR.4'96	RP
B	RDRW AS PER STD DWG TEMPLATE. CHG DIM REF FR DUAL DIM INCH(MM) TO SINGLE DIM MM. CHG LD PITCH DIM FR 1.14-1.40 TO 1.27 BSC. ADD DIM 2.54 BSC. CHG PKG WIDTH DIM FR 4.32- 4.70 TO 4.32-4.83; CHG PKG HEIGHT DIM FR 4.32-4.70 TO 4.32-4.78; CHG LD THICK DIM FR 0.30- 0.48 TO 0.30-0.52; DAMBAR-PKG DIM FR 1.27-1.65 TO 0.90-1.65; LD LGH DIM FR 14.47-15.64 TO 14.47-15.62; PKG DIM: 1.02-1.52 TO 0.92-1.52, 3.81-4.45 TO 3.40-4.80; NOTE 2: ADD DMOS "M" OPT'N AND LEGEND; NOTE B PKG 94 JFET OPT'N: CHG D TO S, CHG S TO D. ADD NOTE C. MOVE NOTE B INFO FR PKG 97&98 TO NEW NOTE D.	4OCT1999	RCM/MRG
3	CHG LD LEN FR <del>1.81</del> TO <del>1.88</del> ; CHG MOLD BODY HT FR <del>1.33</del> TO <del>1.33</del> ; CHG PKG EDGE TO LD EDGE DIST FR (0.81) TO (0.81); CHG MOLD BODY WIDTH FR <del>1.33</del> TO <del>1.33</del> ; ADD PKG THICKNESS DIM "E"; CHG "S" DIM FR <del>2.13</del> TO <del>2.13</del> ; REMOVE DAMBAR & EJECTOR PIN LOCATOR FEATURES & DIMENSIONS; REMOVE MOLDED SURFACE & DRAFT ANGLE DIMS; ADD NOTE ON JEDEC REFERENCE; ADD NOTE ON ASME Y14.5M-1994; REMOVE NOTE ON L34Z OPTION; ADD NOTE ON DWG FILENAME.	12FEB08	BMR/FSCP

**APPROVED**  
 July-14-2008



- 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.
  - D) TO-92 (92,94,96,97,98) PIN CONFIGURATION:

PIN	92			94			96			97			98		
	P	F	M	P	F	M	B	F	M	P	F	M	P	F	M
1	E	S	S	E	S	S	B	D	G	C	G	D	C	G	D
2	B	D	G	C	G	D	E	S	S	B	D	G	E	S	S
3	C	G	D	B	D	G	C	G	D	E	S	S	B	D	G

LEGEND:

P - BIPOLAR	E - EMITTER	D - DRAIN
F - JFET	B - BASE	S - SOURCE
M - DMOS	C - COLLECTOR	G - GATE

- E) FOR PACKAGE 92, 94, 96, 97 AND 98: PIN CONFIGURATION DRAIN "D" AND SOURCE "S" ARE INTERCHANGEABLE AT JFET "F" OPTION.
- F) DRAWING FILENAME: MKT-ZA03DREV3.

APPROVALS	DATE	 <b>FAIRCHILD</b> SEMICONDUCTOR™ 3LD, TO-92, MOLDED STD STRAIGHT LD (NO EOL CODE)
DRAWN: J.U. COMPARATIVO JR.	03APR2008	
CHECKED: L. GALERA		
APPROVED: M.R. GESTOLE		
G.S. BAJE		SCALE: 1:1 SIZE: N/A DRAWING NUMBER: MKT-ZA03D FORMERLY: N/A
		REV: 3 SHEET: 1 OF 1



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