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September 2015



KSC1009 — NPN Epitaxial Silicon Transistor

KSC1009 NPN Epitaxial Silicon Transistor

Features

- High Voltage Amplifier
- High Collector-Base Voltage : $V_{CBO} = 160\text{ V}$
- Collector Current : $I_C = 700\text{ mA}$
- Collector Power Dissipation : $P_C = 800\text{ mW}$
- Complement to KSA709
- Suffix “-C” means Center Collector (1. Emitter 2. Collector 3. Base)
- Non Suffix “-C” means Side Collector (1. Emitter 2. Base 3. Collector)



Ordering Information

Part Number	Top Mark	Package	Packing Method
KSC1009YTA	C1009 Y-	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	160	V
V_{CEO}	Collector-Emitter Voltage	140	V
V_{EBO}	Emitter-Base Voltage	8	V
I_C	Collector Current	700	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_C	Collector Power Dissipation	800	mW
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient	150	$^\circ\text{C}/\text{W}$

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
BV_{CBO}	Collector-Base Breakdown Voltage	$I_C = 100 \mu\text{A}, I_E = 0$	160			V
BV_{CEO}	Collector-Emitter Breakdown Voltage	$I_C = 10 \text{ mA}, I_B = 0$	140			V
BV_{EBO}	Emitter-Base Breakdown Voltage	$I_E = 10 \mu\text{A}, I_C = 0$	8			V
I_{CBO}	Collector Cut-Off Current	$V_{CB} = 60 \text{ V}, I_E = 0$			0.1	μA
I_{EBO}	Emitter Cut-Off Current	$V_{EB} = 5 \text{ V}, I_C = 0$			0.1	μA
h_{FE}	DC Current Gain	$V_{CE} = 2 \text{ V}, I_C = 50 \text{ mA}$	40		400	
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C = 200 \text{ mA}, I_B = 20 \text{ mA}$		0.2	0.7	V
$V_{BE(sat)}$	Base-Emitter Saturation Voltage	$I_C = 200 \text{ mA}, I_B = 20 \text{ mA}$		0.86	1.00	V
f_T	Current Gain Bandwidth Product	$V_{CE} = 10 \text{ V}, I_C = 50 \text{ mA}$	30	50		MHz
C_{ob}	Output Capacitance	$V_{CB} = 10 \text{ V}, I_E = 0,$ $f = 1 \text{ MHz}$		8		pF

 h_{FE} Classification

Classification	R	O	Y	G
h_{FE}	40 ~ 80	70 ~ 140	120 ~ 240	200 ~ 400

Typical Performance Characteristics

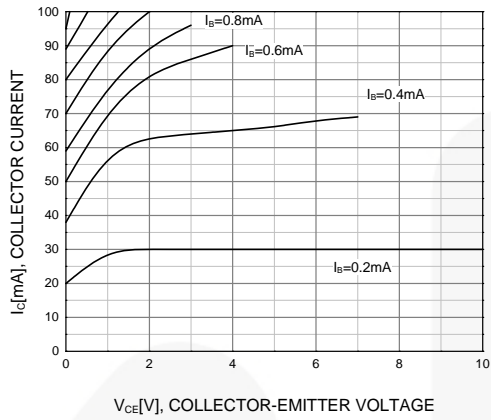


Figure 1. Static Characteristic

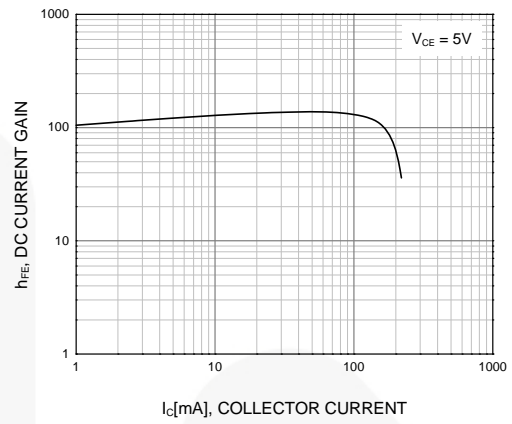


Figure 2. DC Current Gain

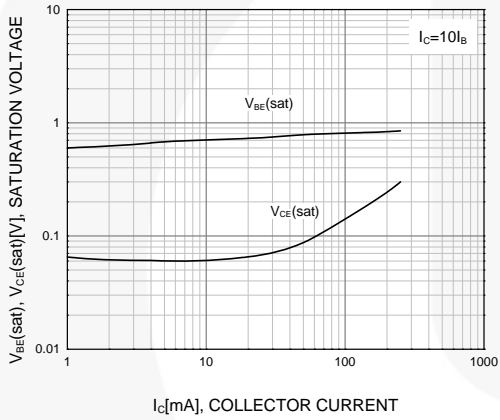


Figure 3. Base-Emitter Saturation Voltage and Collector-Emitter Saturation Voltage

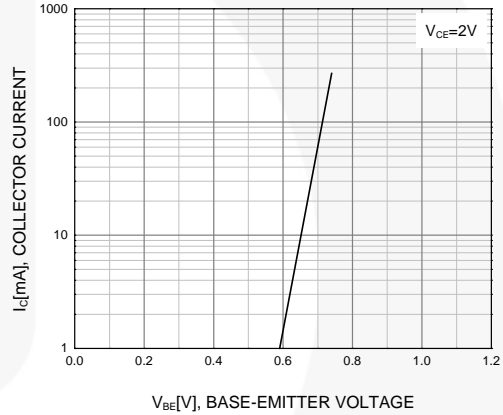


Figure 4. Base-Emitter On Voltage

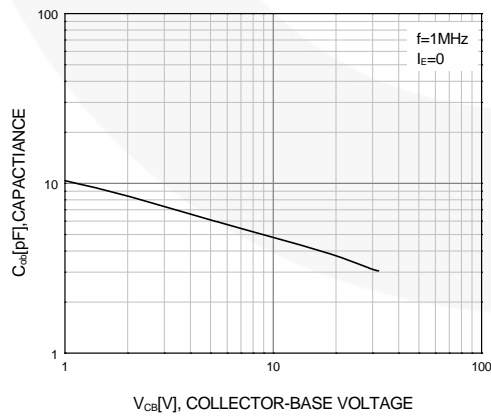
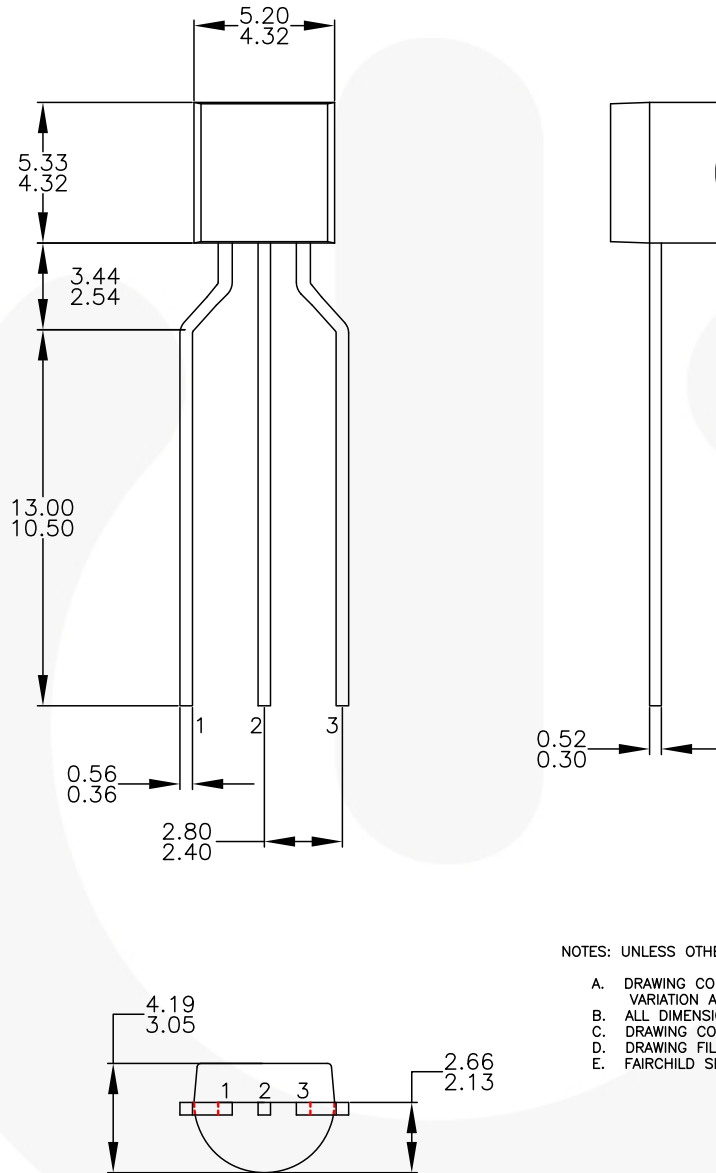


Figure 5. Collector Output Capacitance

Physical Dimensions



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.
- E. FAIRCHILD SEMICONDUCTOR.

Figure 6. 3-Lead, TO-92, Molded, 0.2 In Line Spacing Lead Form, Ammo Type



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No Identification Needed	Full Production	Datasheet contains final specifications. Fairchild Semiconductor reserves the right to make changes at any time without notice to improve the design.
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