



November 2014

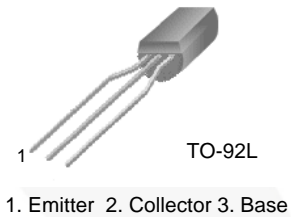
KSC2331 — NPN Epitaxial Silicon Transistor

KSC2331

NPN Epitaxial Silicon Transistor

Features

- Low-Frequency Amplifier and Medium Speed Switching
- Complement to KSA931
- High Collector-Base Voltage: $V_{CBO} = 80\text{ V}$
- Collector Current: $I_C = 700\text{ mA}$



Ordering Information

Part Number	Top Mark	Package	Packing Method
KSC2331YTA	C2331 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	80	V
V_{CEO}	Collector-Emitter Voltage	60	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_D	Power Dissipation	1	W
	Derate Above 25°C	8.0	mW/ $^\circ\text{C}$
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient	125	$^\circ\text{C}/\text{W}$

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	$I_C = 100 \mu\text{A}$, $I_E = 0$	80			V
BV_{CEO}	Collector-Emitter Breakdown Voltage	$I_C = 10 \text{ mA}$, $I_B = 0$	60			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		240	
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C = 500 \text{ mA}$, $I_B = 50 \text{ mA}$		0.2	0.7	V
$V_{BE(sat)}$	Base-Emitter Saturation Voltage	$I_C = 500 \text{ mA}$, $I_B = 50 \text{ mA}$		0.86	1.20	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
h_{FE}	40 ~ 80	70 ~ 140	120 ~ 240

Typical Performance Characteristics

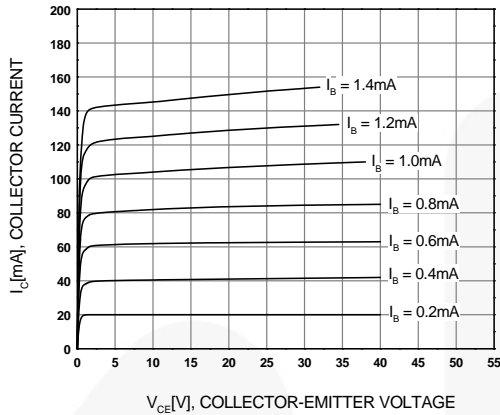


Figure 1. Static Characteristic

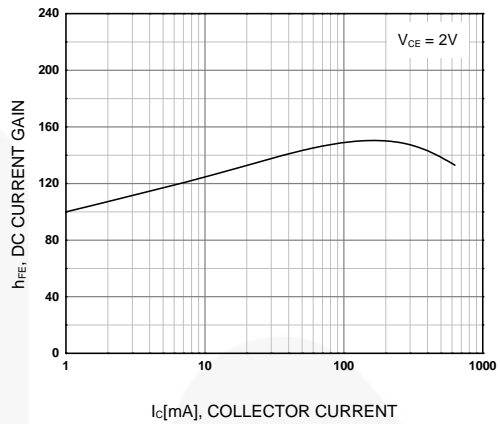


Figure 2. DC Current Gain

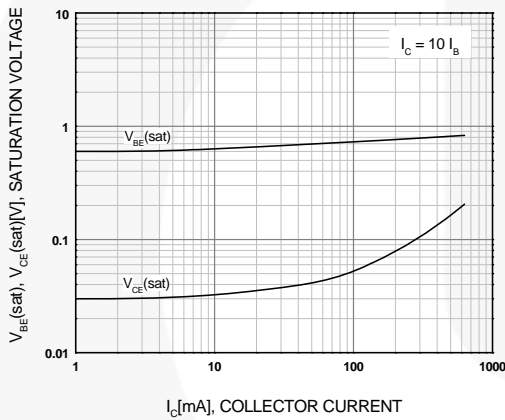


Figure 3. Base-Emitter Saturation Voltage and Collector-Emitter Saturation Voltage

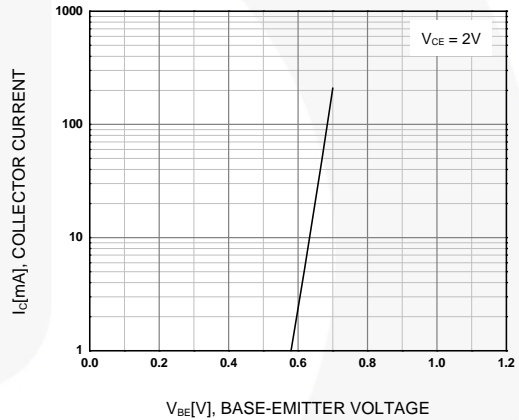


Figure 4. Base-Emitter On Voltage

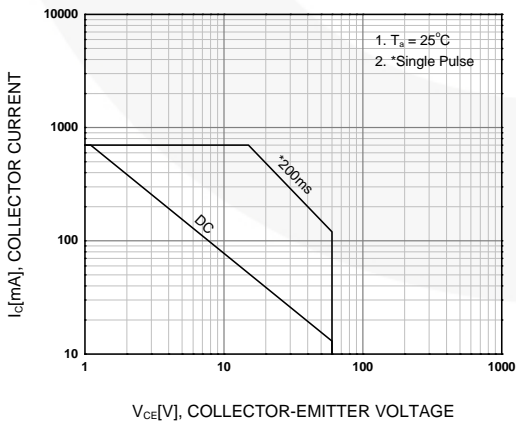


Figure 5. Safe Operating Area

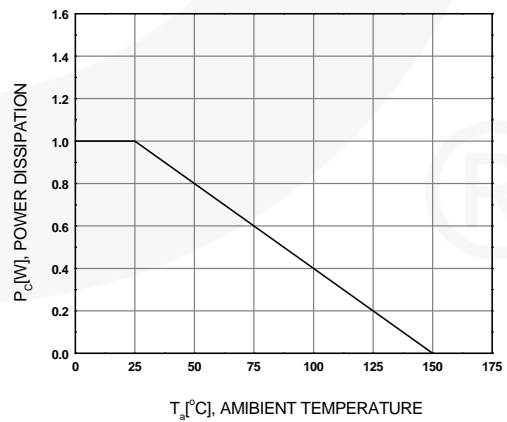
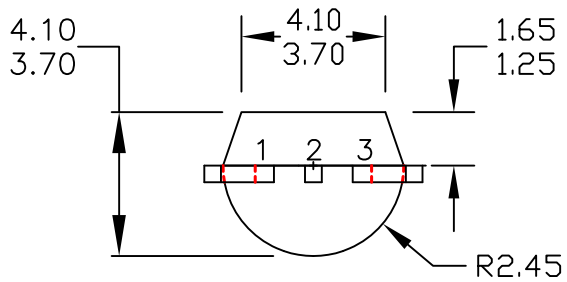
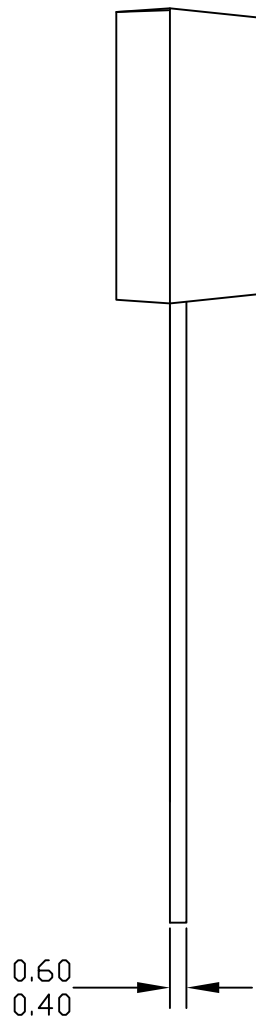
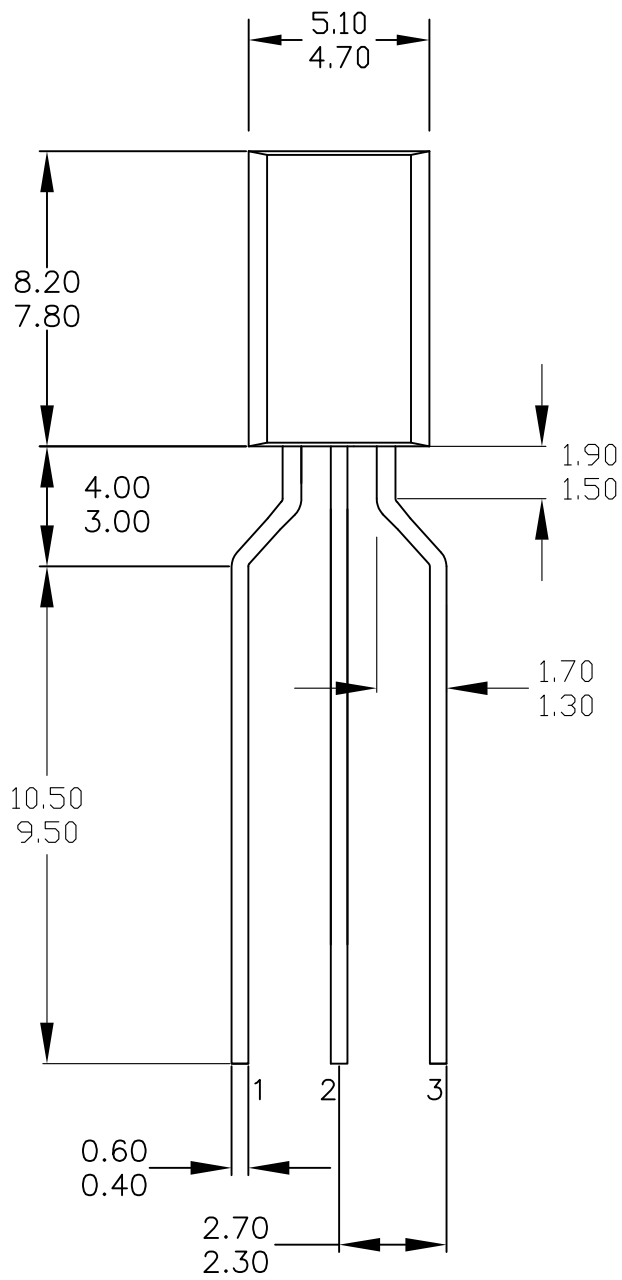


Figure 6. Power Derating



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