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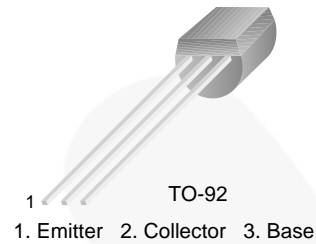
May 2016

# KSC1815

## NPN Epitaxial Silicon Transistor

### Features

- Audio Frequency Amplifier and High-Frequency OSC
- Complement to KSA1015
- Collector-Base Voltage:  $V_{CBO} = 50\text{ V}$



### Ordering Information

Part Number	Top Mark	Package	Packing Method
KSC1815YTA	YC&3	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	60	V
$V_{CEO}$	Collector-Emitter Voltage	50	V
$V_{EBO}$	Emitter-Base Voltage	5	V
$I_C$	Collector Current	150	mA
$I_B$	Base Current	50	mA
$T_J$	Junction Temperature	150	$^\circ\text{C}$
$T_{STG}$	Storage Temperature Range	-55 to 150	$^\circ\text{C}$

KSC1815 — NPN Epitaxial Silicon Transistor

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

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

Symbol	Parameter	Max.	Unit
$P_D$	Total Device Dissipation	400	mW
	Derate Above $25^\circ\text{C}$	3.2	mW/ $^\circ\text{C}$
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	312	$^\circ\text{C}/\text{W}$

**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**

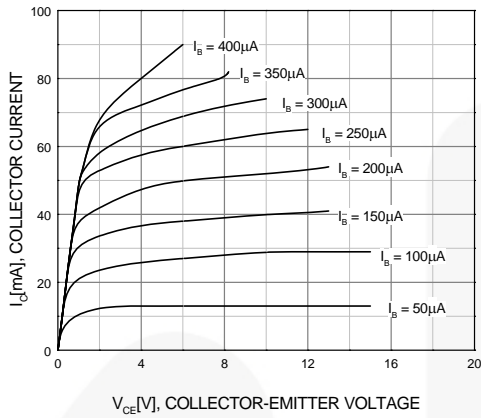
Values are at  $T_A = 25^\circ\text{C}$  unless otherwise noted.

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
$BV_{CBO}$	Collector-Base Voltage	$I_C = 1\text{ mA}, I_E = 0$	60			V
$BV_{CEO}$	Collector-Emitter Voltage	$I_C = 10\text{ mA}, I_B = 0$	50			V
$BV_{EBO}$	Emitter-Base Voltage	$I_E = 10\ \mu\text{A}, I_C = 0$	5			V
$I_{CBO}$	Collector Cut-Off Current	$V_{CB} = 60\text{ V}, I_E = 0$			0.1	$\mu\text{A}$
$I_{EBO}$	Emitter Cut-Off Current	$V_{EB} = 5\text{ V}, I_C = 0$			0.1	$\mu\text{A}$
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C = 100\text{ mA}, I_B = 10\text{ mA}$		0.10	0.25	V
$V_{BE(sat)}$	Base-Emitter Saturation Voltage	$I_C = 100\text{ mA}, I_B = 10\text{ mA}$			1.0	V
$h_{FE1}$	DC Current Gain	$V_{CE} = 6\text{ V}, I_C = 2\text{ mA}$	70		700	
$h_{FE2}$	DC Current Gain	$V_{CE} = 6\text{ V}, I_C = 150\text{ mA}$	25			
$f_T$	Current Gain Bandwidth Product	$V_{CE} = 10\text{ V}, I_C = 1\text{ mA}$	80			MHz
$C_{ob}$	Output Capacitance	$V_{CB} = 10\text{ V}, I_E = 0,$ $f = 1\text{ MHz}$		2.0	3.0	pF
$N_F$	Noise Figure	$V_{CE} = 6\text{ V}, I_C = 0.1\text{ mA},$ $R_S = 10\text{ k}\Omega, f = 1\text{ Hz}$		1.0	10.0	dB

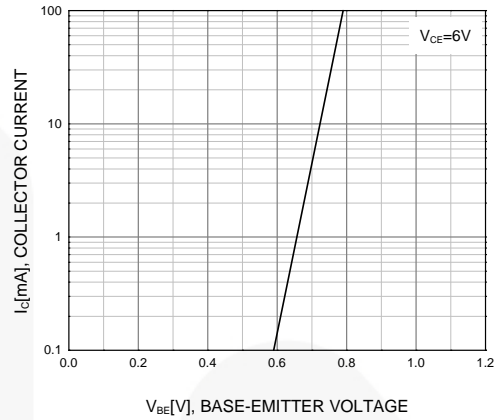
 **$h_{FE}$  Classification**

Classification	O	Y	GR	L
$h_{FE1}$	70 ~ 140	120 ~ 240	200 ~ 400	350 ~ 700

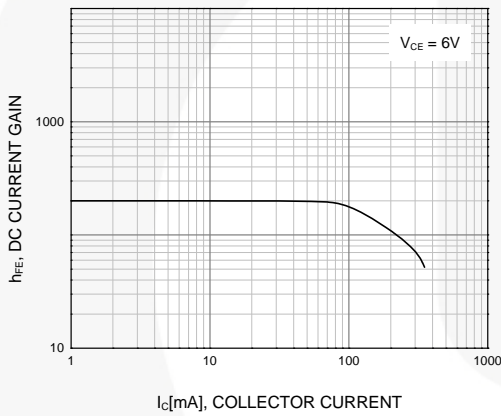
## Typical Performance Characteristics



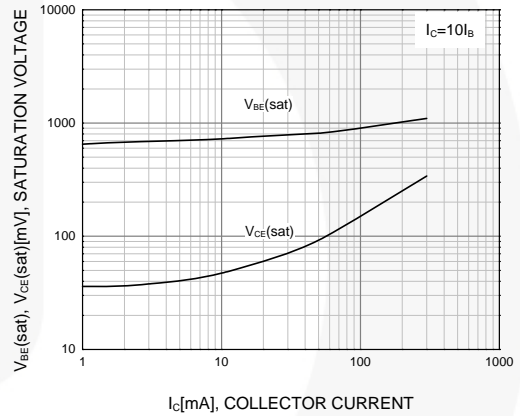
**Figure 1. Static Characteristic**



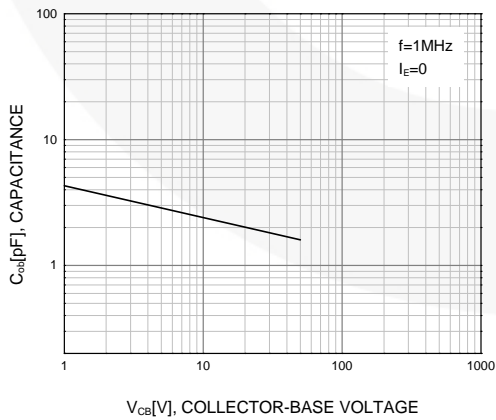
**Figure 2. Transfer Characteristic**



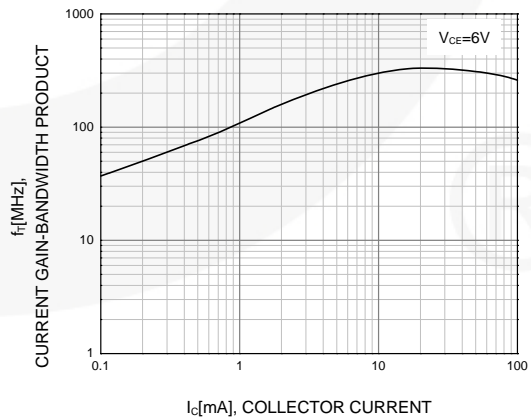
**Figure 3. DC Current Gain**



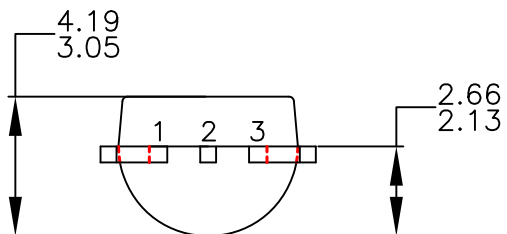
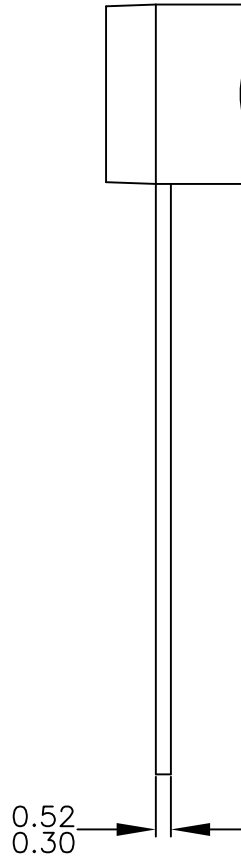
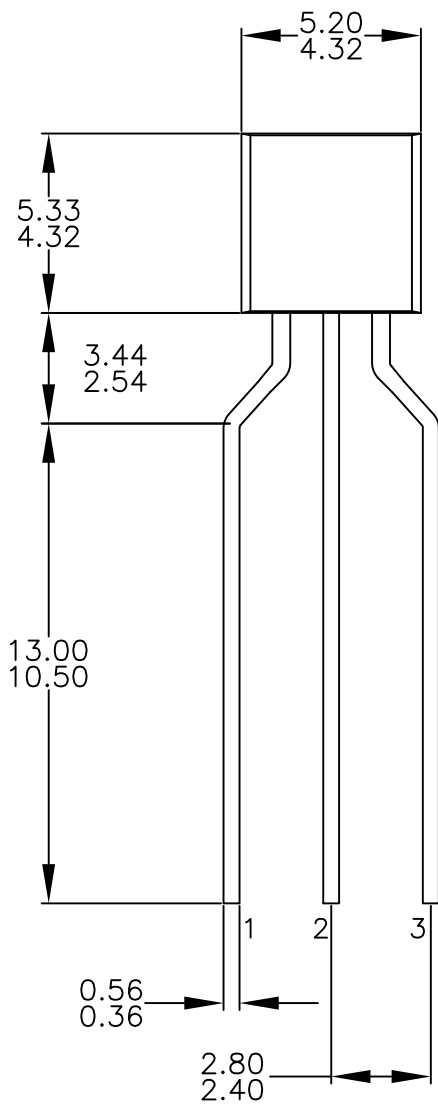
**Figure 4. Base-Emitter Saturation Voltage and Collector-Emitter Saturation Voltage**



**Figure 5. Output Capacitance**



**Figure 6. Current Gain Bandwidth Product**



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