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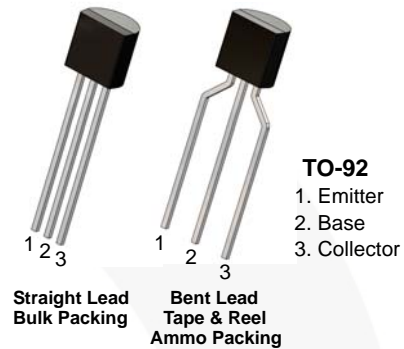
September 2015



# KSC815 NPN Epitaxial Silicon Transistor

## Features

- Low Frequency Amplifier and High Frequency Oscillator
- Collector-Base Voltage:  $V_{CBO} = 60\text{ V}$
- Complement to KSA539
- 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
KSC815YTA	C815	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	45	V
$V_{EBO}$	Emitter-Base Voltage	5	V
$I_C$	Collector Current	200	mA
$T_J$	Junction Temperature	150	$^\circ\text{C}$
$T_{STG}$	Storage Temperature	-55 to 150	$^\circ\text{C}$

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

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

Symbol	Parameter	Value	Unit
$P_C$	Collector Power Dissipation	400	mW
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient	310	$^\circ\text{C}/\text{W}$

**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	$I_C = 100 \mu\text{A}$ , $I_E = 0$	65			V
$BV_{CEO}$	Collector-Emitter Breakdown Voltage	$I_C = 10 \text{ mA}$ , $I_B = 0$	45			V
$BV_{EBO}$	Emitter-Base Breakdown Voltage	$I_E = 10 \mu\text{A}$ , $I_C = 0$	5			V
$I_{CBO}$	Collector Cut-Off Current	$V_{CB} = 45 \text{ V}$ , $I_E = 0$			0.1	$\mu\text{A}$
$I_{EBO}$	Emitter Cut-Off Current	$V_{EB} = 3 \text{ V}$ , $I_C = 0$			0.1	$\mu\text{A}$
$h_{FE}$	DC Current Gain	$V_{CE} = 1 \text{ V}$ , $I_C = 50 \text{ mA}$	40		400	
$V_{BE(on)}$	Base-Emitter On Voltage	$V_{CE} = 10 \text{ V}$ , $I_C = 10 \text{ mA}$	0.60	0.65	0.90	V
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C = 150 \text{ mA}$ , $I_B = 15 \text{ mA}$		0.15	0.40	V
$V_{BE(sat)}$	Base-Emitter Saturation Voltage	$I_C = 150 \text{ mA}$ , $I_B = 15 \text{ mA}$		0.83	1.10	V
$f_T$	Current Gain Bandwidth Product	$V_{CE} = 10 \text{ V}$ , $I_C = 10 \text{ mA}$	100	200		MHz
$C_{ob}$	Output Capacitance	$V_{CB} = 10 \text{ V}$ , $I_E = 0$ , $f = 1 \text{ MHz}$		4		pF

 **$h_{FE}$  Classification**

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

## Typical Performance Characteristics

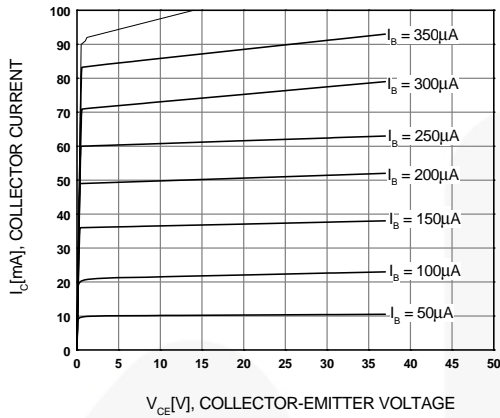


Figure 1. Static Characteristic

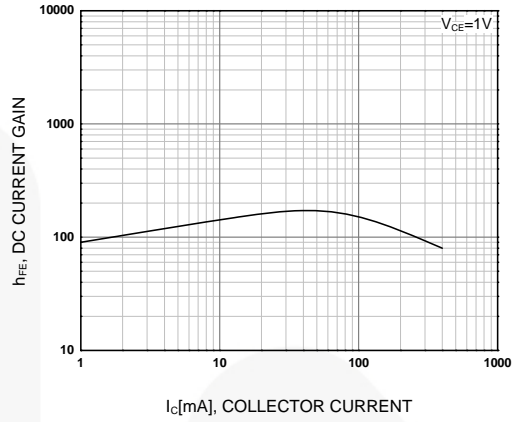


Figure 2. DC Current Gain

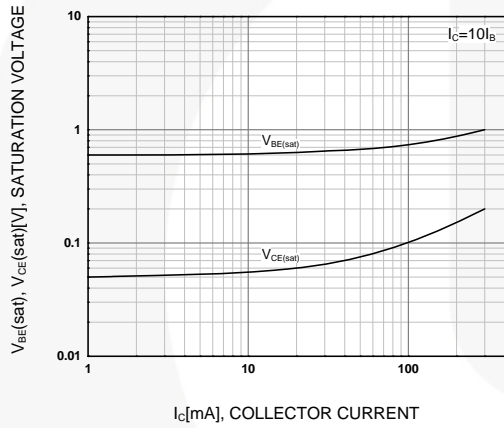


Figure 3. Base-Emitter Saturation Voltage and Collector-Emitter Saturation Voltage

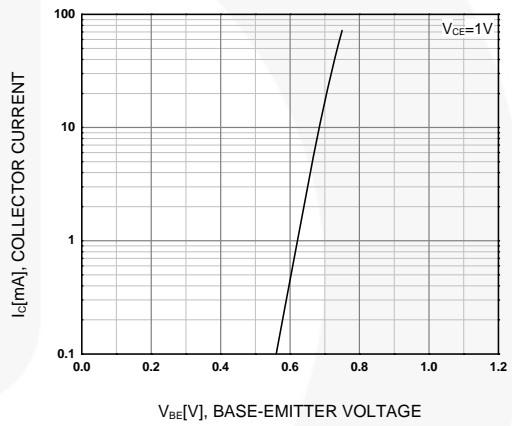


Figure 4. Base-Emitter On Voltage

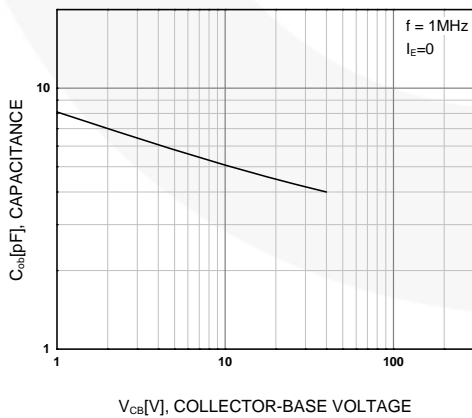


Figure 5. Collector Output Capacitance

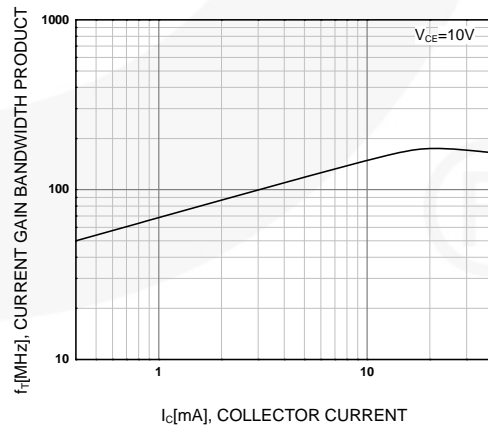
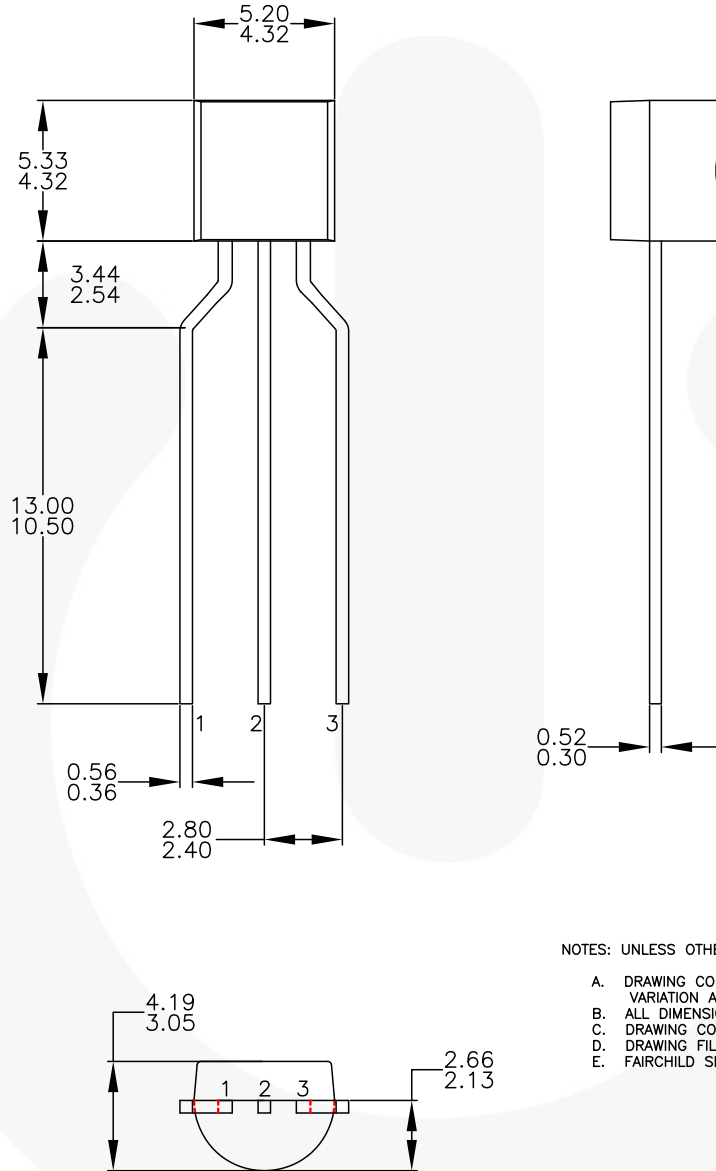


Figure 6. Current Gain Bandwidth Product

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 7. 3-Lead, TO-92, Molded, 0.2 In Line Spacing Lead Form, Ammo Type



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| EcoSPARK®                                                                                    | MicroFET™                                      | SmartMax™                                                                           |  SerDes™         |
| EfficientMax™                                                                                | MicroPak™                                      | SMART START™                                                                        | UHC®                                                                                                |
| ESBC™                                                                                        | MicroPak2™                                     | Solutions for Your Success™                                                         | Ultra FRFET™                                                                                        |
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| FACT Quiet Series™                                                                           | MotionGrid®                                    | SuperFET®                                                                           | VisualMax™                                                                                          |
| FACT®                                                                                        | MTi®                                           | SuperSOT™-3                                                                         | VoltagePlus™                                                                                        |
| FastvCore™                                                                                   | MTx®                                           | SuperSOT™-6                                                                         | XS™                                                                                                 |
| FETBench™                                                                                    | MVN®                                           | SuperSOT™-8                                                                         | Xsens™                                                                                              |
| FPS™                                                                                         | mWSaver®                                       | SupreMOS®                                                                           | 仙童®                                                                                                 |
|                                                                                              | OptoHiT™                                       | SyncFET™                                                                            |                                                                                                     |
|                                                                                              | OPTOLOGIC®                                     | Sync-Lock™                                                                          |                                                                                                     |

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