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September 2015



KSC1845 — NPN Epitaxial Silicon Transistor

KSC1845 NPN Epitaxial Silicon Transistor

Features

- Audio Frequency Low-Noise Amplifier
- Complement to KSA992



Ordering Information

Part Number	Top Mark	Package	Packing Method
KSC1845FTA	C1845	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	$^\circ\text{C}$

Thermal Characteristics⁽¹⁾

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°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
BV_{CBO}	Collector-Base Breakdown Voltage	$I_C = 100 \mu\text{A}$, $I_E = 0$	120			V
BV_{CEO}	Collector-Emitter Breakdown Voltage	$I_C = 1 \text{ mA}$, $I_B = 0$	120			V
BV_{EBO}	Emitter-Base Breakdown Voltage	$I_E = 100 \mu\text{A}$, $I_C = 0$	5			V
I_{CBO}	Collector Cut-Off Current	$V_{CB} = 120 \text{ V}$, $I_E = 0$			50	nA
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	580		
h_{FE2}	DC Current Gain	$V_{CE} = 6 \text{ V}$, $I_C = 1 \text{ mA}$	200	600	1200	
$V_{BE(on)}$	Base-Emitter On Voltage	$V_{CE} = 6 \text{ V}$, $I_C = 1 \text{ mA}$	0.55	0.59	0.65	V
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C = 10 \text{ mA}$, $I_B = 1 \text{ mA}$		0.07	0.30	V
f_T	Current Gain Bandwidth Product	$V_{CE} = 6 \text{ V}$, $I_C = 1 \text{ mA}$	50	110		MHz
C_{ob}	Output Capacitance	$V_{CB} = 30 \text{ V}$, $I_E = 0$, $f = 1 \text{ MHz}$		1.6	2.5	pF
NL	Noise Level	$V_{CE} = 5.0 \text{ V}$, $I_C = 1.0 \text{ mA}$, $R_G = 100\text{k}\Omega$, $G_V = 80 \text{ dB}$, $f = 10 \text{ Hz to } 1.0 \text{ kHz}$		25	40	mV

 h_{FE} Classification

Classification	P	F	E	U
h_{FE2}	200 ~ 400	300 ~ 600	400 ~ 800	600 ~ 1200

Typical Performance Characteristics

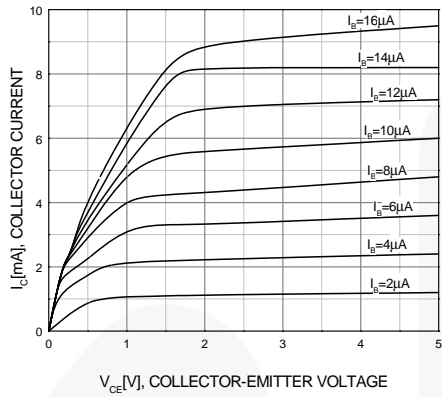


Figure 1. Static Characteristic

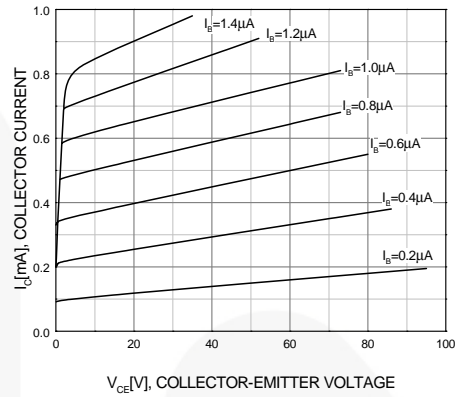


Figure 2. Static Characteristic

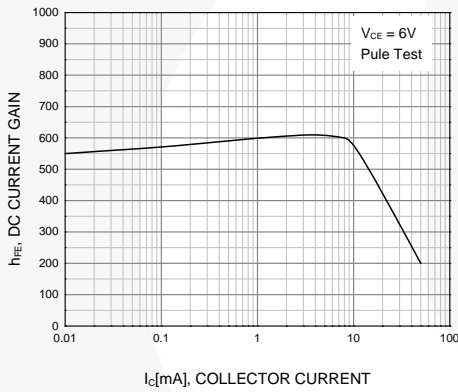


Figure 3. DC Current Gain

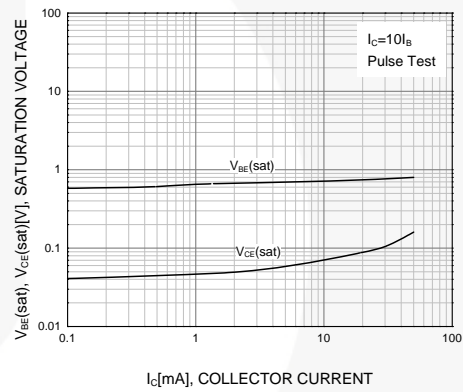


Figure 4. Base-Emitter Saturation Voltage and Collector-Emitter Saturation Voltage

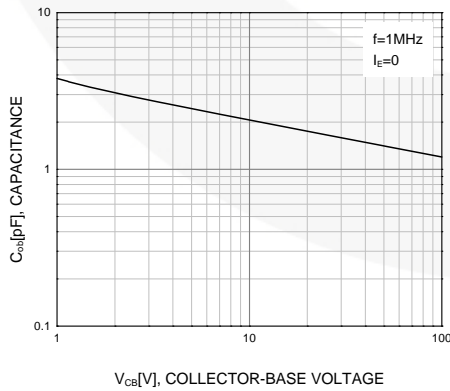


Figure 5. Collector Output Capacitance

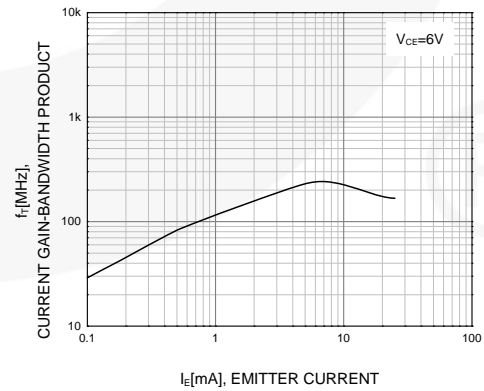


Figure 6. Current Gain Bandwidth Product

Typical Performance Characteristics (Continued)

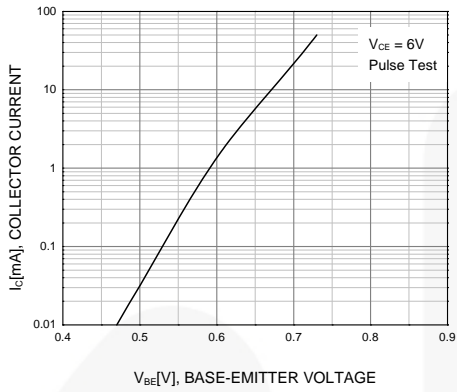


Figure 7. Collector Current vs. Base-Emitter Voltage

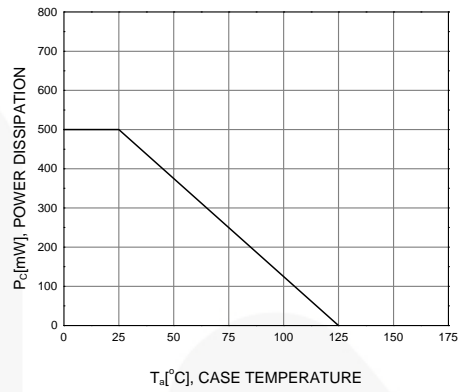


Figure 8. Power Derating



Physical Dimensions

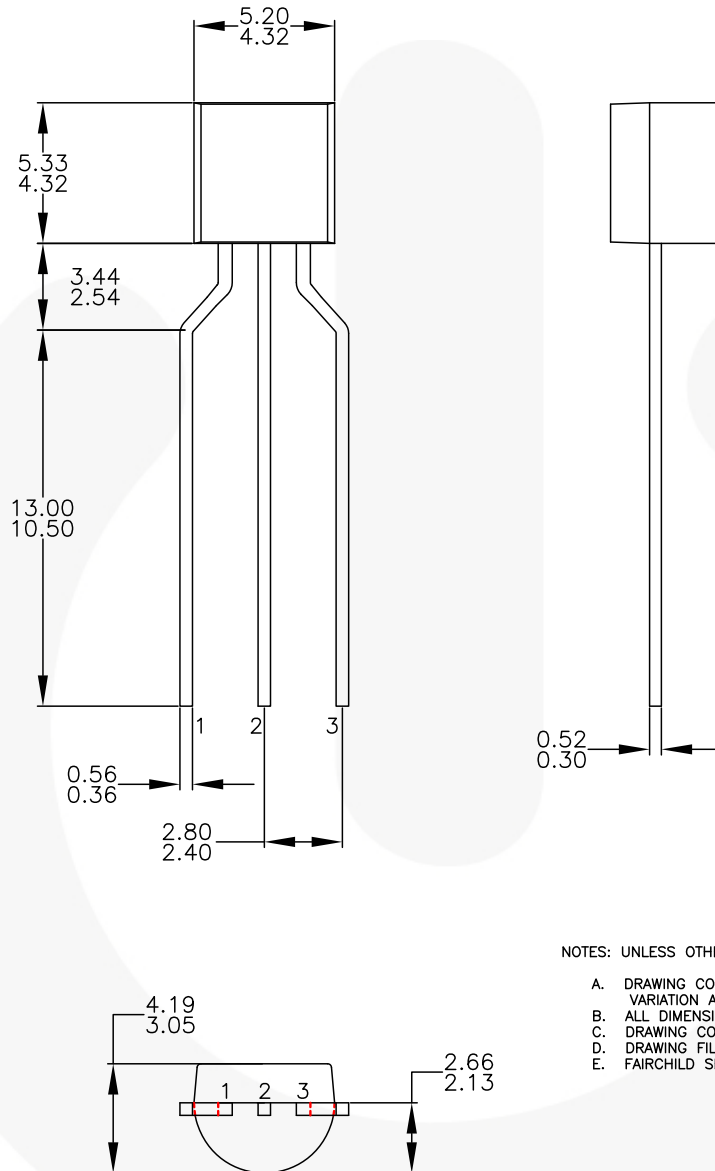


Figure 9. 3-Lead, TO-92, Molded, 0.2 In Line Spacing Lead Form, Ammo Type



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