

NPN Epitaxial Silicon Transistor

KSC1845

Features

- Audio Frequency Low-Noise Amplifier
- Complement to KSA992
- This is a Pb-Free Device

MAXIMUM RATINGS (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	$^\circ\text{C}$

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

THERMAL CHARACTERISTICS (Values are at $T_A = 25^\circ\text{C}$ unless otherwise noted.) (Note 1)

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	$^\circ\text{C}/\text{W}$

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.



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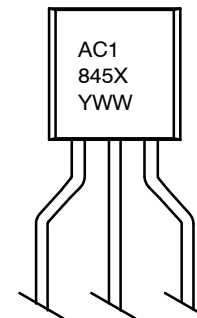
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1. Emitter
2. Collector
3. Base

**TO-92 3 4.83x4.76
LEADFORMED
CASE 135AR**

MARKING DIAGRAM



A = Assembly Code
C1845 = Device Code
X = P / F / E / U
YWW = Date Code

ORDERING INFORMATION

Device	Package	Shipping
KSC1845FTA	TO-92 3L (Pb-Free)	2000 / Fan-Fold

KSC1845

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	$I_C = 100 \mu\text{A}, I_A = 0$	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}		$V_{CE} = 6 \text{ V}, I_C = 1 \text{ mA}$	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	100	-	MHz
C_{ob}	Output Capacitance	$V_{CB} = 30 \text{ V}, I_E = 0, f = 1 \text{ MHz}$	-	1.6	2.5	pF
NF	Noise Figure	$V_{CE} = -5 \text{ V}, I_C = -1.0 \text{ mA}, R_S = 100 \text{ k}\Omega, f = 1 \text{ kHz}$	-	7	-	dB

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

h_{FE} CLASSIFICATION

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

TYPICAL PERFORMANCE CHARACTERISTICS

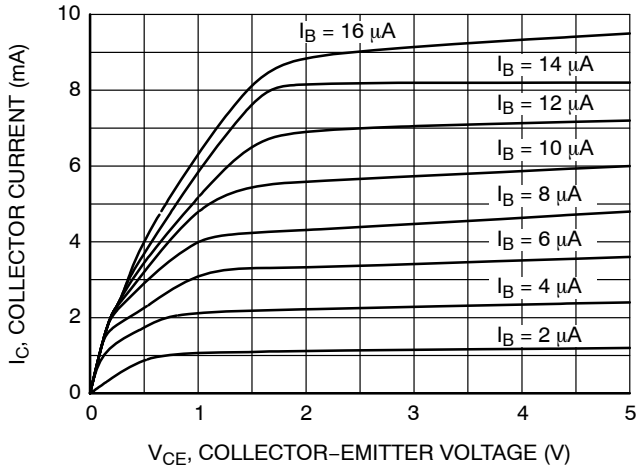


Figure 1. Static Characteristic

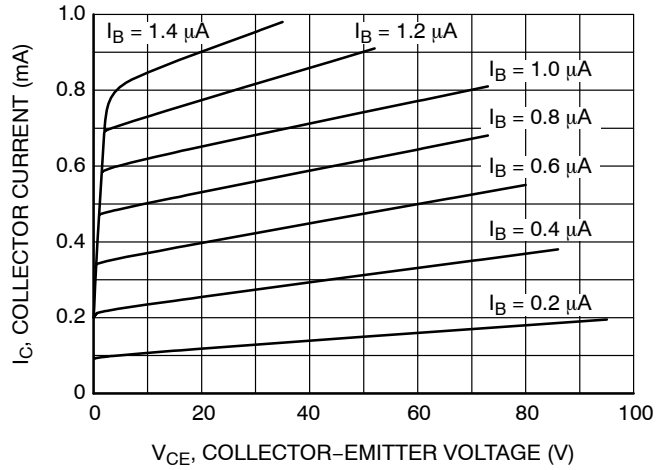


Figure 2. Static Characteristic

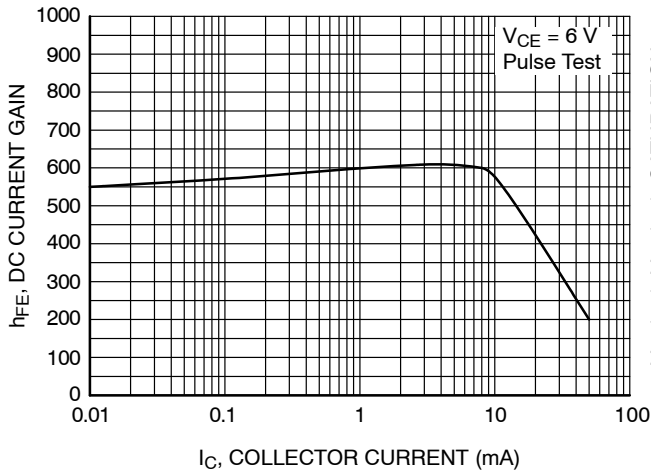


Figure 3. DC Current Gain

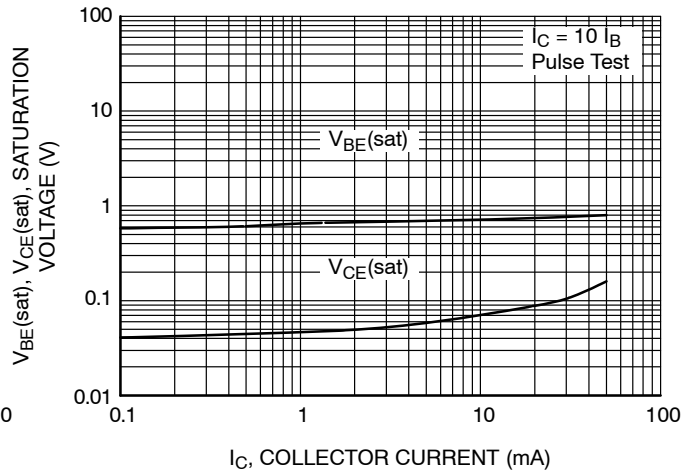


Figure 4. Base-Emitter Saturation Voltage and Collector-Emitter Saturation Voltage

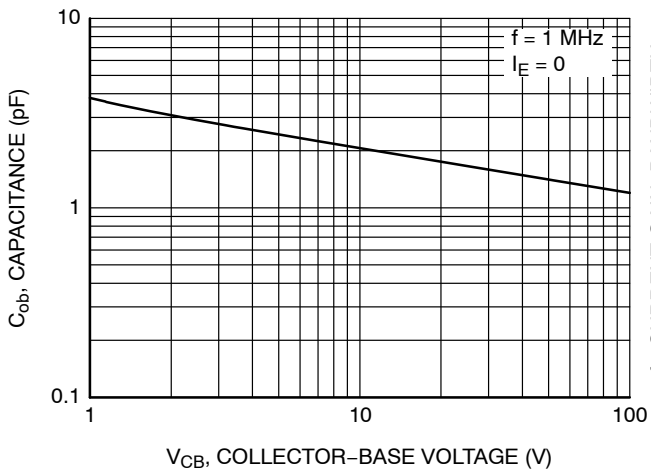


Figure 5. Collector Output Capacitance

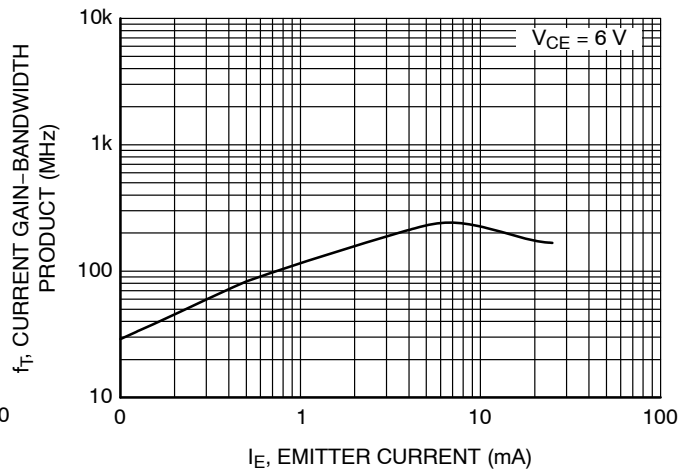


Figure 6. Current Gain Bandwidth Product

TYPICAL PERFORMANCE CHARACTERISTICS (Continued)

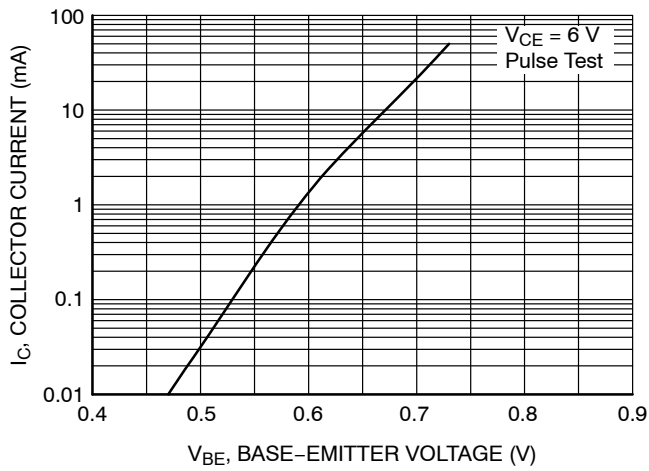


Figure 7. Collector Current vs. Base-Emitter Voltage

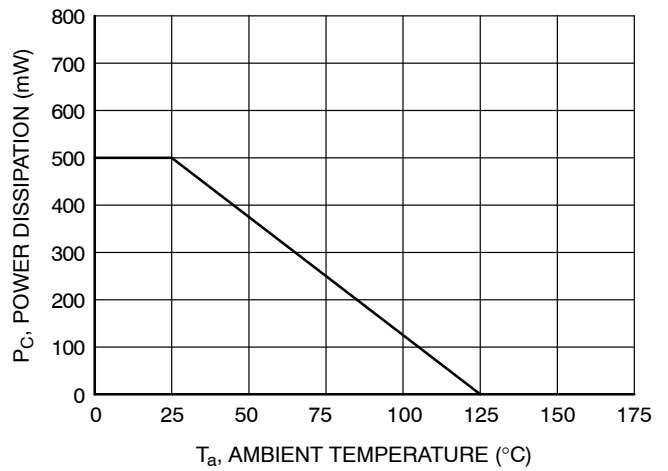


Figure 8. Power Derating

TO-92 3 4.83x4.76 LEADFORMED
CASE 135AR
ISSUE O


DATE 30 SEP 2016



NOTES: UNLESS OTHERWISE SPECIFIED

- A) DRAWING WITH REFERENCE TO JEDEC TO-92 RECOMMENDATIONS.
- B) ALL DIMENSIONS ARE IN MILLIMETERS.
- C) DRAWING CONFORMS TO ASME Y14.5M-1994

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