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°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	°C
T_{STG}	Storage Temperature	−55 to 150	°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°C unless otherwise noted.) (Note 1)

Symbol	Parameter	Value	Unit
P_D	Power Dissipation	500	mW
	Derate Above 25°C	4	mW/°C
$R_{\theta JA}$	Thermal Resistance, Junction−to−Ambient	250	°C/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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1. Emitter
2. Collector
3. Base

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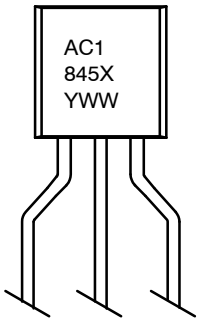
MARKING DIAGRAM



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

ELECTRICAL CHARACTERISTICS (Values are at T_A = 25°C unless otherwise noted.)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
BV_{CBO}	Collector−Base Breakdown Voltage	I_C = 100 μA, I_A = 0	120	–	–	V
BV_{CEO}	Collector−Emitter Breakdown Voltage	I_C = 1 mA, I_B = 0	120	–	–	V
BV_{EBO}	Emitter−Base Breakdown Voltage	I_E = 100 μA, I_C = 0	5	–	–	V
I_{CBO}	Collector Cut−Off Current	V_{CB} = 120 V, I_E = 0	–	–	50	nA
I_{EBO}	Emitter Cut−Off Current	V_{EB} = 5 V, I_C = 0	–	–	50	nA
h_{FE1}	DC Current Gain	V_{CE} = 6 V, I_C = 0.1 mA	150	580	–	
h_{FE2}		V_{CE} = 6 V, I_C = 1 mA	200	600	1200	
V_{BE}(on)	Base−Emitter On Voltage	V_{CE} = 6 V, I_C = 1 mA	0.55	0.59	0.65	V
V_{CE}(sat)	Collector−Emitter Saturation Voltage	I_C = 10 mA, I_B = 1 mA	–	0.07	0.30	V
f_T	Current Gain Bandwidth Product	V_{CE} = 6 V, I_C = 1 mA	50	100	–	MHz
C_{ob}	Output Capacitance	V_{CB} = 30 V, I_E = 0, f = 1 MHz	–	1.6	2.5	pF
NF	Noise Figure	V_{CE} = −5 V, I_C = −1.0 mA, R_S = 100 kΩ, f = 1 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

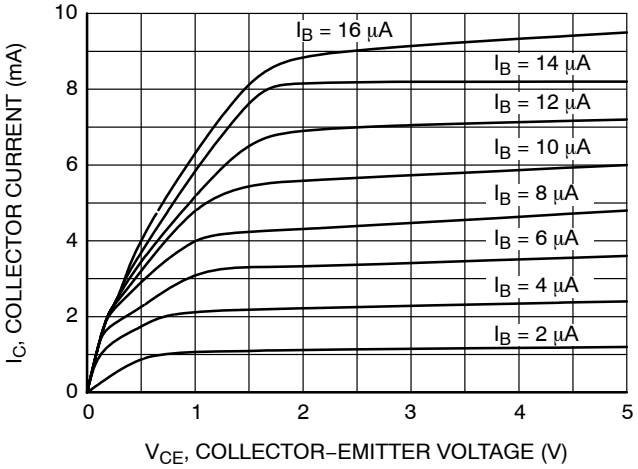


Figure 1. Static Characteristic

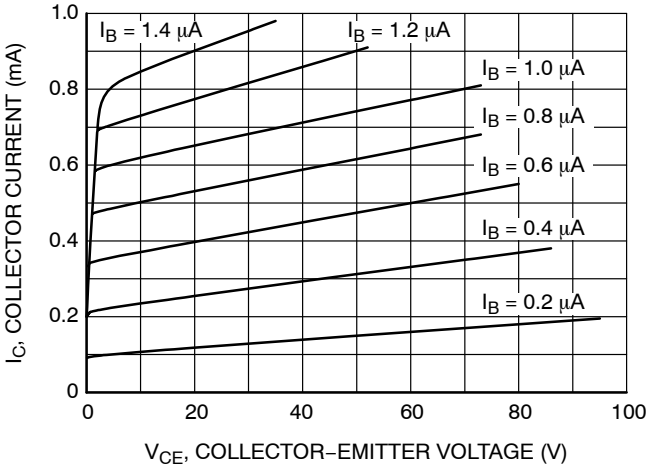


Figure 2. Static Characteristic

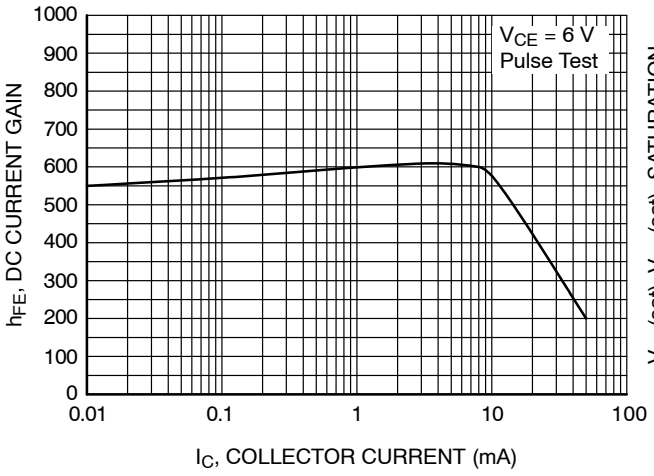


Figure 3. DC Current Gain

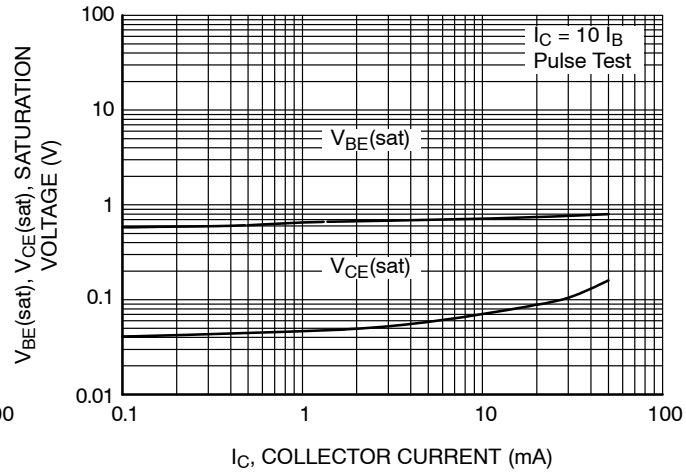


Figure 4. Base−Emitter Saturation Voltage and Collector−Emitter Saturation Voltage

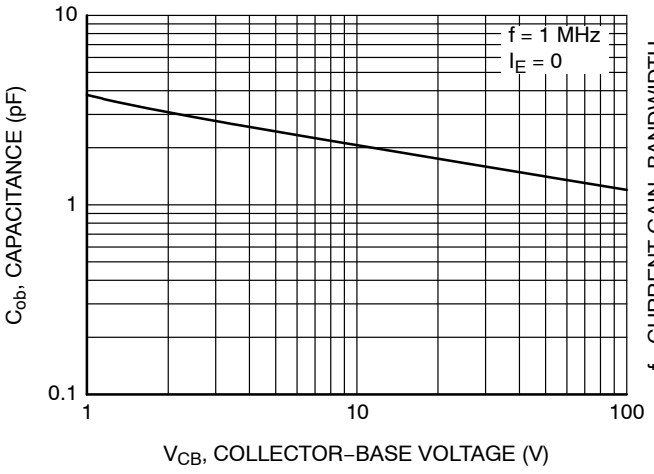


Figure 5. Collector Output Capacitance

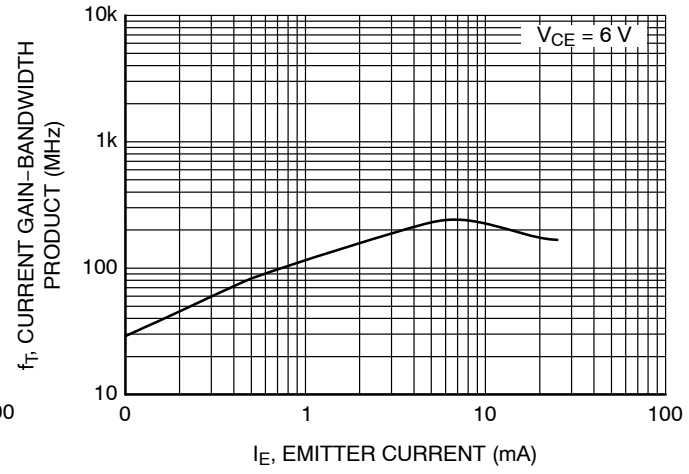


Figure 6. Current Gain Bandwidth Product

TYPICAL PERFORMANCE CHARACTERISTICS (Continued)

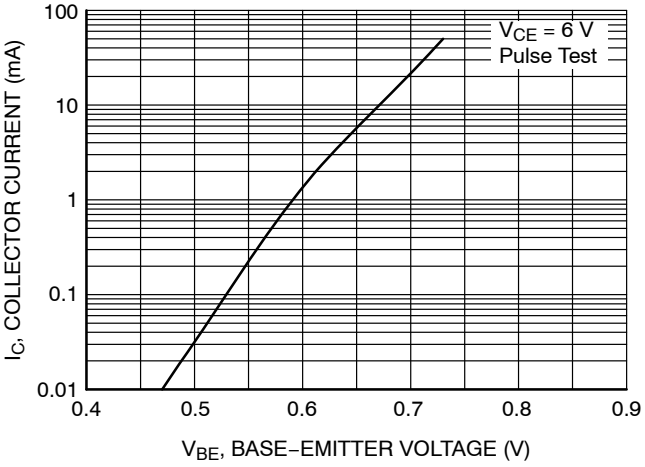


Figure 7. Collector Current vs. Base−Emitter Voltage

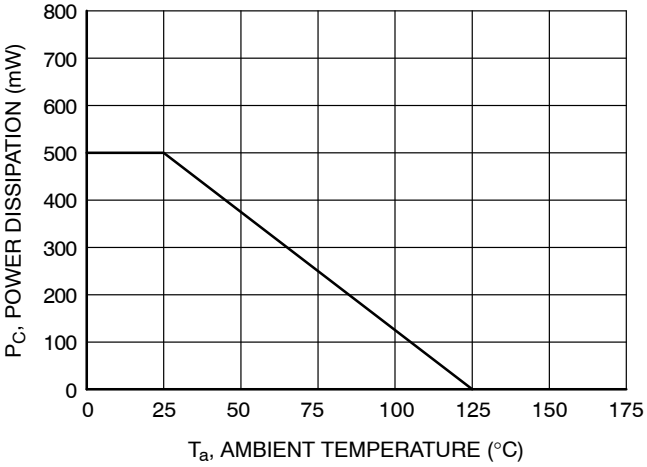


Figure 8. Power Derating

MECHANICAL CASE OUTLINE
PACKAGE DIMENSIONS

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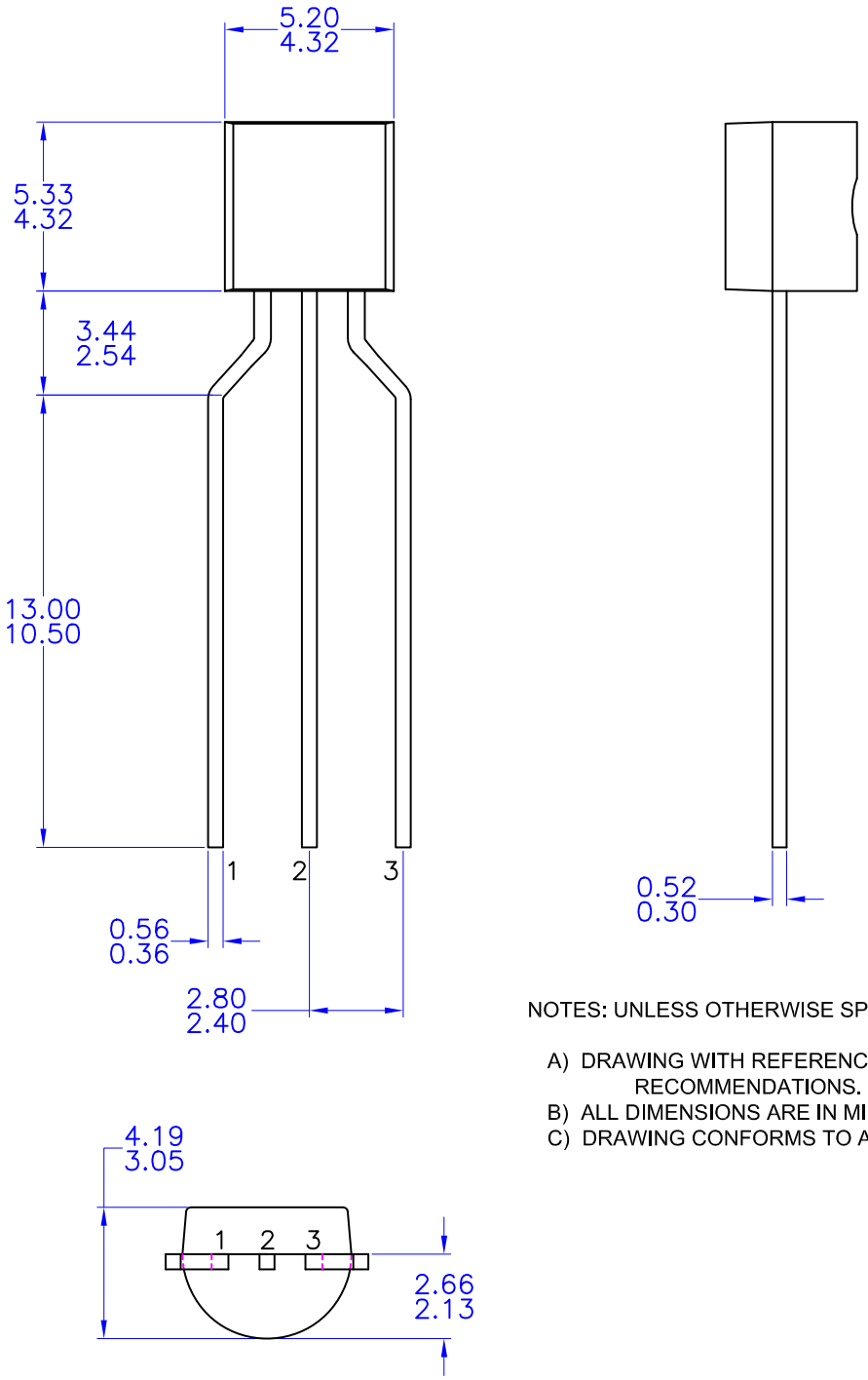

NOTES: UNLESS OTHERWISE SPECIFIED

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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