

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 $T_A = 25^{\circ}C$ 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
TJ	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 $T_A = 25^{\circ}C$ unless otherwise noted.) (Note 1)

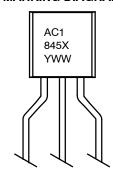
Symbol	Parameter	Value	Unit
P_{D}	Power Dissipation	500	mW
	Derate Above 25°C	4	mW/°C
$R_{ heta JA}$	Thermal Resistance, Junction-to-Ambient	250	°C/W

^{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.



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

MARKING DIAGRAM



A = Assembly Code C1845 = Device Code

X = F

YWW = Date Code

ORDERING INFORMATION

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

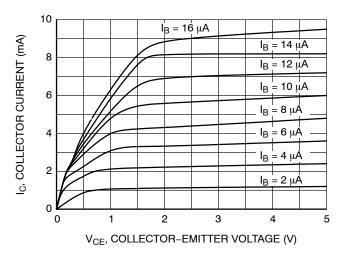
KSC1845

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

Symbol	Parameter	Conditions	Min	Тур	Max	Unit
BV _{CBO}	Collector-Base Breakdown Voltage	$I_C = 100 \mu A, I_A = 0$	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	$V_{CE} = 6 \text{ V}, I_{C} = 0.1 \text{ mA}$	150	580	-	
h _{FE2}		V _{CE} = 6 V, I _C = 1 mA	300	450	600	
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	$V_{CE} = -5 \text{ V, } I_{C} = -1.0 \text{ mA,}$ $R_{S} = 100 \text{ k}\Omega, f = 1 \text{ kHz}$	-	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.

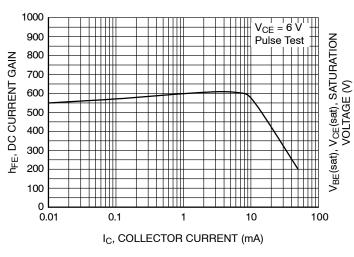
TYPICAL PERFORMANCE CHARACTERISTICS



1.0 $I_B = 1.4 \mu A$ $I_{B}^{\prime} = 1.2 \, \mu A$ IC, COLLECTOR CURRENT (mA) $I_B = 1.0 \mu A$ 0.8 $I_B = 0.8 \, \mu A$ 0.6 $I_B = 0.6 \, \mu A$ $I_B = 0.4 \, \mu A$ 0.4 $I_B = 0.2 \,\mu A$ 0.2 0 0 20 40 60 80 100 V_{CE}, COLLECTOR-EMITTER VOLTAGE (V)

Figure 1. Static Characteristic

Figure 2. Static Characteristic



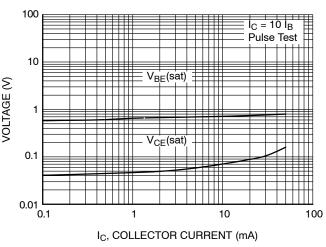
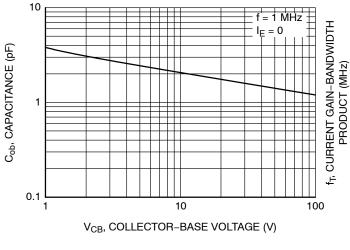


Figure 3. DC Current Gain

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



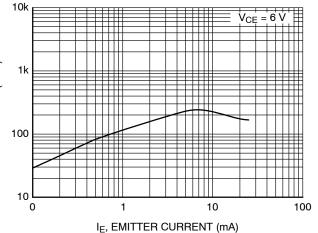
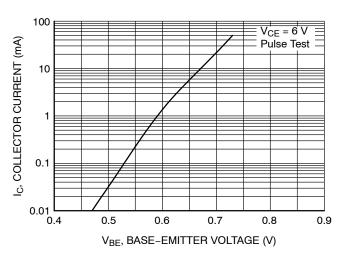


Figure 5. Collector Output Capacitance

Figure 6. Current Gain Bandwidth Product

KSC1845

TYPICAL PERFORMANCE CHARACTERISTICS (Continued)



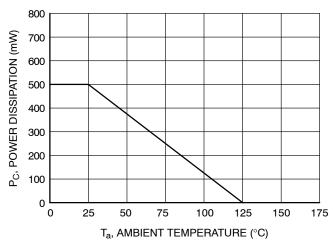


Figure 7. Collector Current vs. Base-Emitter Voltage

Figure 8. Power Derating

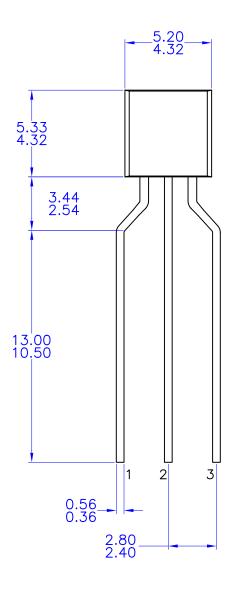


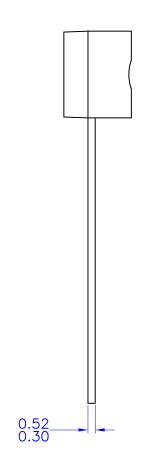


TO-92 3 4.83x4.76 LEADFORMED

CASE 135AR ISSUE O

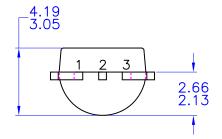
DATE 30 SEP 2016





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



DOCUMENT NUMBER:	98AON13879G	Electronic versions are uncontrolled except when accessed directly from the Document Repository. Printed versions are uncontrolled except when stamped "CONTROLLED COPY" in red.		
DESCRIPTION:	TO-92 3 4.83X4.76 LEADFORMED		PAGE 1 OF 1	

onsemi and Onsemi are trademarks of Semiconductor Components Industries, LLC dba onsemi or its subsidiaries in the United States and/or other countries. onsemi reserves the right to make changes without further notice to any products herein. onsemi makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does onsemi assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. onsemi does not convey any license under its patent rights nor the rights of others.

onsemi, Onsemi, and other names, marks, and brands are registered and/or common law trademarks of Semiconductor Components Industries, LLC dba "onsemi" or its affiliates and/or subsidiaries in the United States and/or other countries. onsemi owns the rights to a number of patents, trademarks, copyrights, trade secrets, and other intellectual property. A listing of onsemi's product/patent coverage may be accessed at www.onsemi.com/site/pdf/Patent-Marking.pdf. Onsemi reserves the right to make changes at any time to any products or information herein, without notice. The information herein is provided "as-is" and onsemi makes no warranty, representation or guarantee regarding the accuracy of the information, product features, availability, functionality, or suitability of its products for any particular purpose, nor does onsemi assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. Buyer is responsible for its products and applications using onsemi products, including compliance with all laws, regulations and safety requirements or standards, regardless of any support or applications information provided by onsemi. "Typical" parameters which may be provided in onsemi data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including "Typicals" must be validated for each customer application by customer's technical experts. onsemi does not convey any license under any of its intellectual property rights nor the rights of others. onsemi products are not designed, intended, or authorized for use as a critical component in life support systems or any FDA class 3 medical devices with a same or similar classification in a foreign jurisdiction or any devices intended for implantation in the human body. Should Buyer purchase

ADDITIONAL INFORMATION

TECHNICAL PUBLICATIONS:

 $\textbf{Technical Library:} \ \underline{www.onsemi.com/design/resources/technical-documentation}$

onsemi Website: www.onsemi.com

ONLINE SUPPORT: www.onsemi.com/support

For additional information, please contact your local Sales Representative at

www.onsemi.com/support/sales