



YOUSHANG SEMICONDUCTOR

设计研发新型功率器件

各类小信号开关

中低压及高压大电流等场效应管

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Description

NK-AC847BWQ and NK-AC847CWQ Bipolar Junction Transistors (BJT) are designed to meet the stringent requirements of Automotive Applications.

Features

- Ideally Suited for Automatic Insertion
- Complementary PNP Types: NK-AC857BWQ – NK-AC857CWQ
- For Switching and AF Amplifier Applications

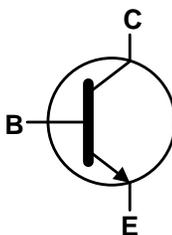
Mechanical Data

- Case: SOT323
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish – Matte Tin Plated Leads, Solderable per MIL-STD-202, Method 208 $\text{\textcircled{3}}$
- Weight: 0.006 grams (Approximate)

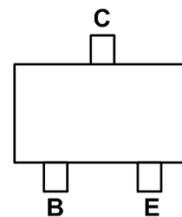
SOT323



Top View



Device Symbol



Top View
Pin-Out

Absolute Maximum Ratings (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V _{CB0}	50	V
Collector-Emitter Voltage	V _{CEO}	45	V
Emitter-Base Voltage	V _{EBO}	6	V
Continuous Collector Current	I _C	100	mA
Peak Collector Current	I _{CM}	200	mA
Peak Base Current	I _{BM}	200	mA

Thermal Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 6)	P _D	200	mW
Thermal Resistance, Junction to Ambient (Note 6)	R _{θJA}	625	°C/W
Operating and Storage Temperature Range	T _J , T _{STG}	-65 to +150	°C

ESD Ratings (Note 7)

Characteristic	Symbol	Value	Unit	JEDEC Class
Electrostatic Discharge - Human Body Model	ESD HBM	4,000	V	3A
Electrostatic Discharge - Machine Model	ESD MM	400	V	C

- Notes:
6. For a device mounted on minimum recommended pad layout 1oz weight copper that is on a single-sided FR-4 PCB; device is measured under still air conditions whilst operating in a steady-state.
 7. Refer to JEDEC specification JESD22-A114 and JESD22-A115.

Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic		Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage		BV _{CB0}	50	—	—	V	I _C = 100μA
Collector-Emitter Breakdown Voltage (Note 8)		BV _{CEO}	45	—	—	V	I _C = 10mA
Emitter-Base Breakdown Voltage		BV _{EBO}	6	—	—	V	I _E = 100μA
DC Current Gain (Note 8)	Current Gain Group	B	200	290	450	—	V _{CE} = 5.0V, I _C = 2.0mA
		C	420	520	800		
Collector Cutoff Current		I _{CBO}	—	—	20	nA	V _{CB} = 30V
					5	μA	V _{CB} = 30V, T _A = +150°C
Collector-Emitter Saturation Voltage (Note 8)		V _{CE(SAT)}	—	90	250	mV	I _C = 10mA, I _B = 0.5mA
				200	600		I _C = 100mA, I _B = 5.0mA
Base-Emitter Turn-On Voltage (Note 8)		V _{BE(ON)}	580	660	700	mV	I _C = 2mA, V _{CE} = 5V
				—	—		770
Base-Emitter Saturation Voltage (Note 8)		V _{BE(SAT)}	—	700	—	mV	I _C = 10mA, I _B = 0.5mA
				900			I _C = 100mA, I _B = 5mA
Output Capacitance		C _{OBO}	—	3	4.5	pF	V _{CB} = 10V, f = 1.0MHz
Transition Frequency		f _T	100	300	—	MHz	V _{CE} = 5V, I _C = 10mA, f = 100MHz
Noise Figure		NF	—	—	10	dB	V _{CE} = 5V, I _C = 200μA R _S = 2kΩ, f = 1kHz Δf = 200Hz

Note: 8. Measured under pulsed conditions. Pulse width ≤ 300μs. Duty cycle ≤ 2%.

typical Electrical Characteristics (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

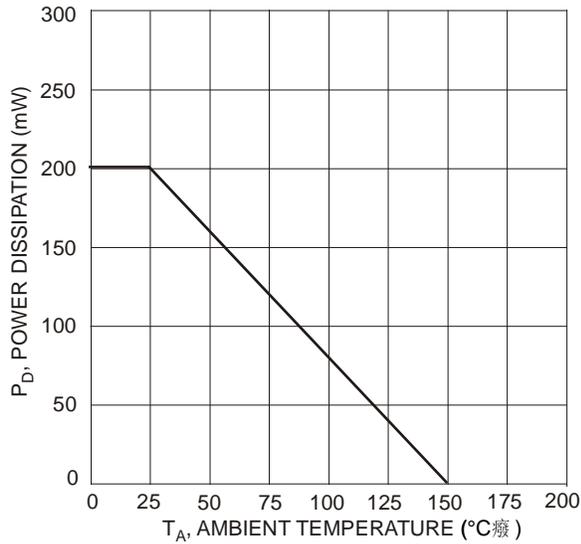


Figure 1 Power Dissipation vs. Ambient Temperature

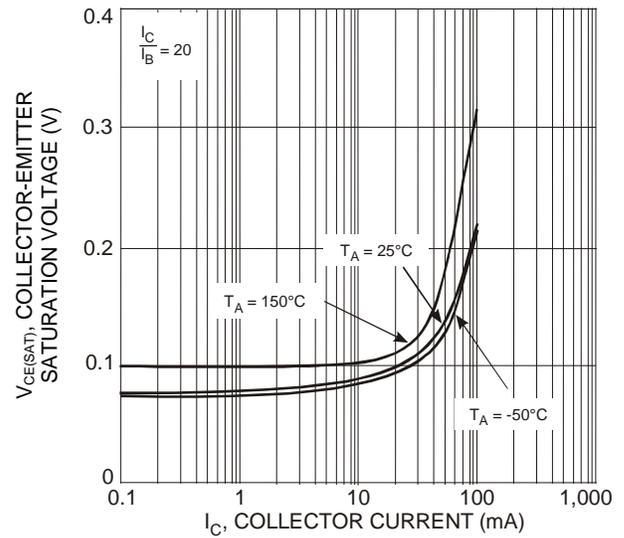


Figure 2 Typical Collector-Emitter Saturation Voltage vs. Collector Current

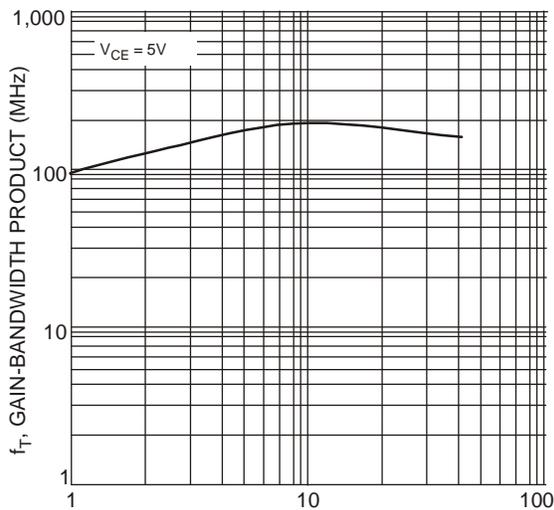


Figure 3 Typical Gain-Bandwidth Product vs. Collector Current

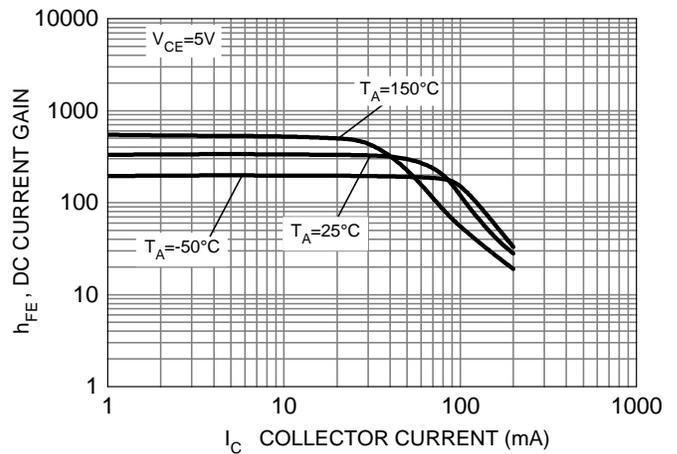


Figure 4 Typical DC Current Gain vs. Collector Current (Band B Group Gain)

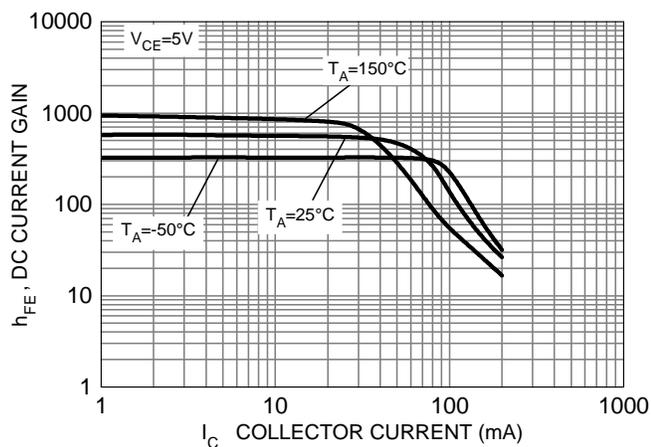
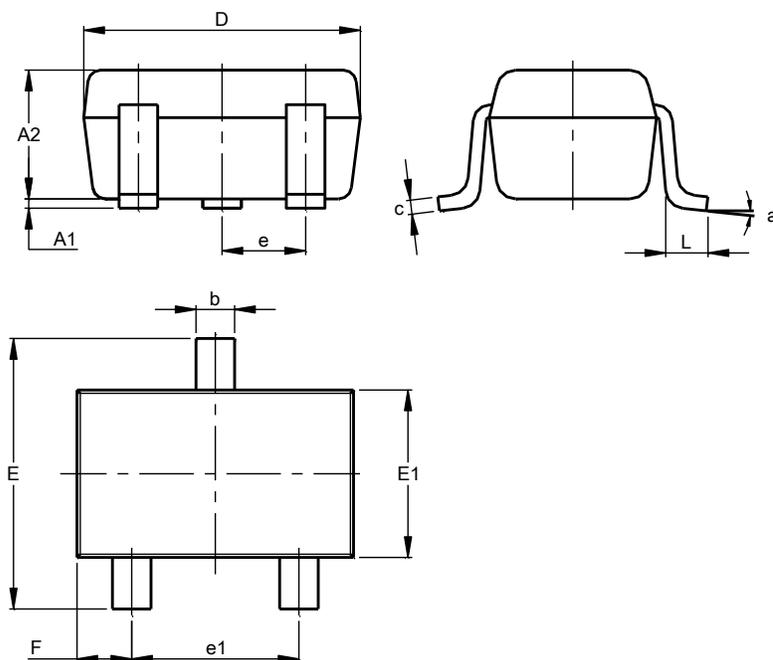


Figure 5 Typical DC Current Gain vs. Collector Current (Band C Group Gain)

Package Outline Dimensions

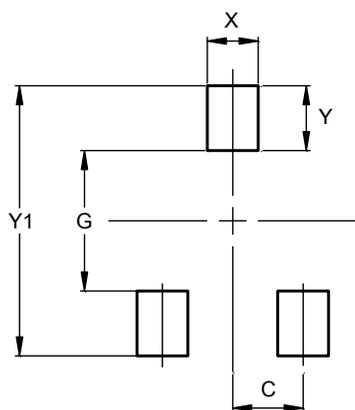
SOT323



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Dim	Min	Max	Typ
A1	0.00	0.10	0.05
A2	0.90	1.00	0.95
b	0.25	0.40	0.30
c	0.10	0.18	0.11
D	1.80	2.20	2.15
E	2.00	2.20	2.10
E1	1.15	1.35	1.30
e	0.650 BSC		
e1	1.20	1.40	1.30
F	0.375	0.475	0.425
L	0.25	0.40	0.30
a	0°	8°	--
All Dimensions in mm			

Suggested Pad Layout

SOT323



Dimensions	Value (in mm)
C	0.650
G	1.300
X	0.470
Y	0.600
Y1	2.500