优尚

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

0755-83047638
ysbdt@szyoushang.cn
www.szyoushang.cn

企业微信二维码

企业QQ二维码

Features

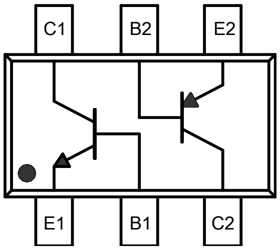
- Epitaxial Die Construction
- Two Internally Isolated NPN/PNP Transistors in One Package
- Ideal for Medium Power Amplification and Switching
- Ultra-Small Surface Mount Package

Mechanical Data

- Case: SOT363
- 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 Finish. Solderable per MIL-STD-202, Method 208 e3
- Weight: 0.006 grams (Approximate)

SOT363

Top View



Device Schematic
Top View

Absolute Maximum Ratings: NPN, NK-BC847B Type (Q1) (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	50	V
Collector-Emitter Voltage	V_{CEO}	45	V
Emitter-Base Voltage	V_{EBO}	6	V
Collector Current	I_C	100	mA
Peak Collector Current	I_{CM}	200	mA
Peak Emitter Current	I_{EM}	200	mA

Absolute Maximum Ratings: PNP, NK-BC857B Type (Q2) (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	-50	V
Collector-Emitter Voltage	V_{CEO}	-45	V
Emitter-Base Voltage	V_{EBO}	-6	V
Collector Current	I_C	-100	mA
Peak Collector Current	I_{CM}	-200	mA
Peak Emitter Current	I_{EM}	-200	mA

Thermal Characteristics – Total Device (@T_A = +25°C unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 5) Total Device	P_D	200	mW
Thermal Resistance, Junction to Ambient (Note 5)	$R_{\theta JA}$	625	°C/W
Operating and Storage Temperature Range	T_J, T_{STG}	-65 to +150	°C

Note: 5. For a device mounted on minimum recommended pad layout with 1oz copper that is on a single-sided 1.6mm FR-4 PCB; the device is measured under still air conditions whilst operating in a steady-state.

Thermal Characteristics – Total Device

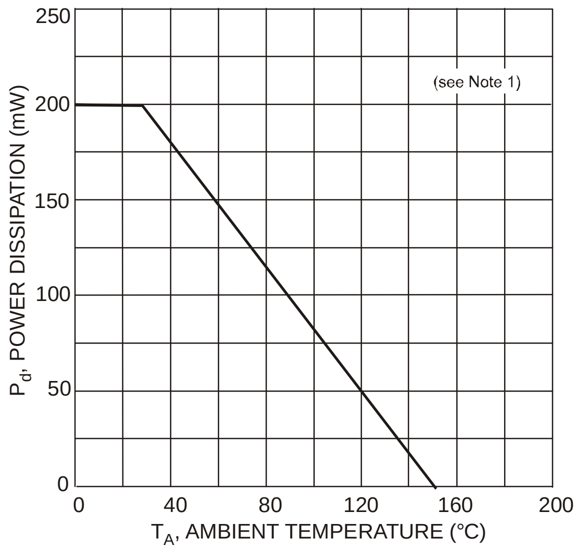


Fig. 1, Power Derating Curve (Total Device)

Electrical Characteristics: NPN, NK-BC847B Type (Q1) (@T_A = +25°C, unless otherwise specified.)

Characteristic (Note 6)	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV_{CBO}	50	—	—	V	I_C = 100µA
Collector-Emitter Breakdown Voltage	BV_{CEO}	45	—	—	V	I_C = 10mA
Emitter-Base Breakdown Voltage	BV_{EBO}	6	—	—	V	I_E = 100µA
DC Current Gain	h_{FE}	200	290	450	—	V_{CE} = 5.0V, I_C = 2.0mA
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$	—	90 200	250 600	mV	I_C = 10mA, I_B = 0.5mA I_C = 100mA, I_B = 5.0mA
Base-Emitter Saturation Voltage	$V_{BE(SAT)}$	—	700 900	—	mV	I_C = 10mA, I_B = 0.5mA I_C = 100mA, I_B = 5.0mA
Base-Emitter Voltage	$V_{BE(ON)}$	580 —	660 —	700 720	mV	V_{CE} = 5.0V, I_C = 2.0mA V_{CE} = 5.0V, I_C = 10mA
Collector-Cutoff Current	I_{CBO}	— —	— —	15 5.0	nA µA	V_{CB} = 30V V_{CB} = 30V, T_A = +150°C
Gain Bandwidth Product	f_T	100	300	—	MHz	V_{CE} = 5.0V, I_C = 10mA, f = 100MHz
Collector-Base Capacitance	C_{CBO}	—	3.5	6.0	pF	V_{CB} = 10V, f = 1.0MHz
Noise Figure	NF	—	2.0	10	dB	V_{CE} = 5V, I_C = 200µA, R_g = 2.0kΩ, f = 1.0kHz, ∆f = 200Hz

Note: 6. Short duration pulse test used to minimize self-heating effect.

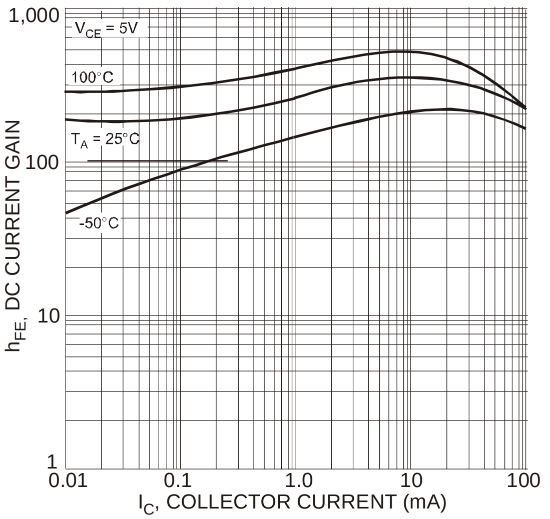


Figure 2. Typical DC Current Gain vs. Collector Current (NK-BC847B Type)

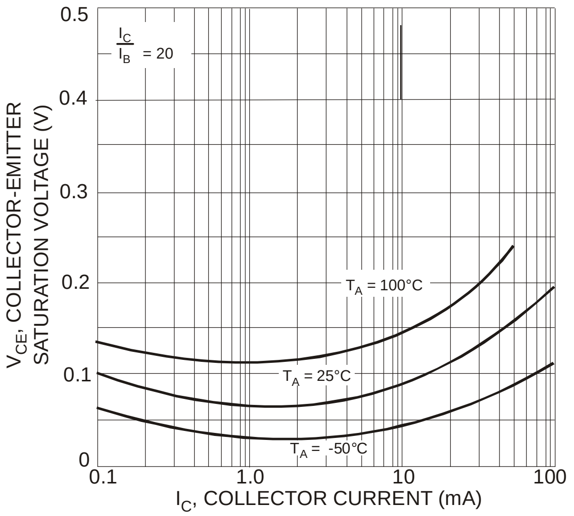


Figure 3. Typical Collector-Emitter Saturation Voltage vs. Collector Current (NK-BC847B Type)

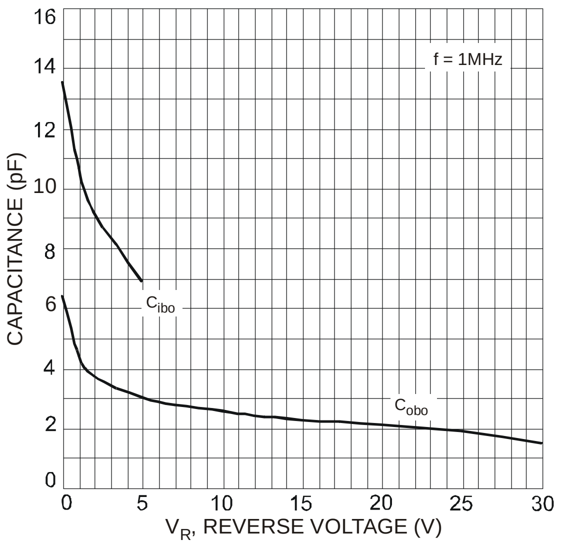


Figure 4. Typical Capacitance Characteristics (NK-BC847B Type)

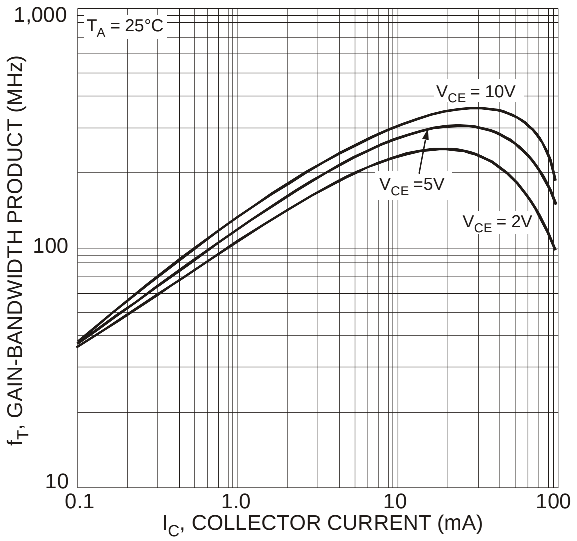


Figure 5. Typical Gain-Bandwidth Product vs. Collector Current (NK-BC847B Type)

Electrical Characteristics: PNP, NK-BC857B Type (Q2)(@T_A = +25°C, unless otherwise specified.)

Characteristic (Note 7)	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV_{CBO}	-50	—	—	V	I_C = -100µA
Collector-Emitter Breakdown Voltage	BV_{CEO}	-45	—	—	V	I_C = -10mA
Emitter-Base Breakdown Voltage	BV_{EBO}	-6	—	—	V	I_E = -100µA
DC Current Gain	h_{FE}	220	290	475	—	V_{CE} = -5.0V, I_C = -2.0mA
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$	—	-75 -250	-300 -650	mV	I_C = -10mA, I_B = -0.5mA I_C = -100mA, I_B = -5.0mA
Base-Emitter Saturation Voltage	$V_{BE(SAT)}$	—	-700 -850	— -950	mV	I_C = -10mA, I_B = -0.5mA I_C = -100mA, I_B = -5.0mA
Base-Emitter Voltage	$V_{BE(ON)}$	-600 —	-650 —	-750 -820	mV	V_{CE} = -5.0V, I_C = -2.0mA V_{CE} = -5.0V, I_C = -10mA
Collector-Cutoff Current	I_{CBO}	— —	— —	-15 -4.0	nA µA	V_{CB} = -30V V_{CB} = -30V, T_A = +150°C
Gain Bandwidth Product	f_T	100	200	—	MHz	V_{CE} = -5.0V, I_C = -10mA, f = 100MHz
Collector-Base Capacitance	C_{CBO}	—	3	4.5	pF	V_{CB} = -10V, f = 1.0MHz
Noise Figure	NF	—	—	10	dB	V_{CE} = -5V, I_C = -200µA, R_g = 2.0kΩ, f = 1.0kHz, Δf = 200Hz

Note: 7. Short duration pulse test used to minimize self-heating effect.

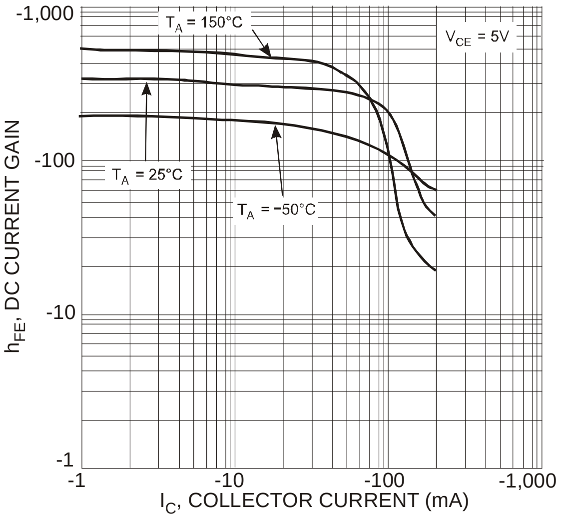


Figure 6. Typical DC Current Gain vs. Collector Current (NK-BC857B Type)

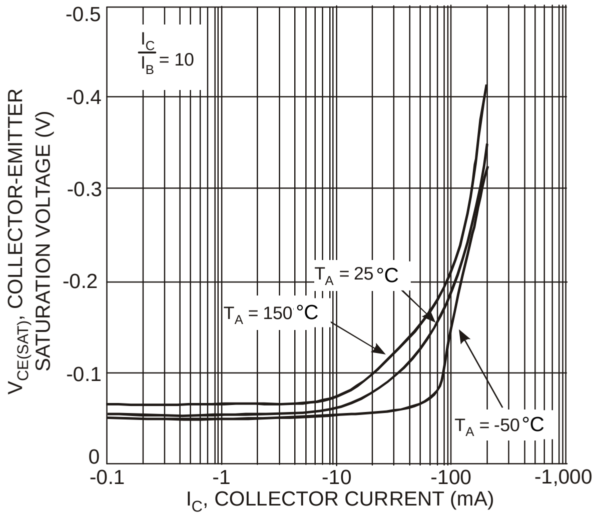


Figure 7. Typical Collector-Emitter Saturation Voltage vs. Collector Current (NK-BC857B Type)

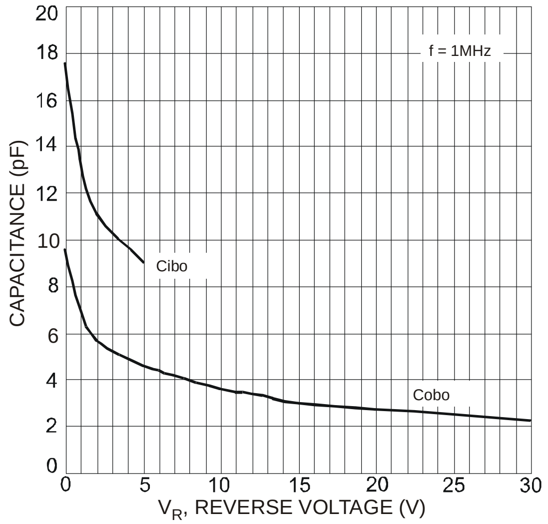


Figure 8. Typical Capacitance Characteristics (NK-BC857B Type)

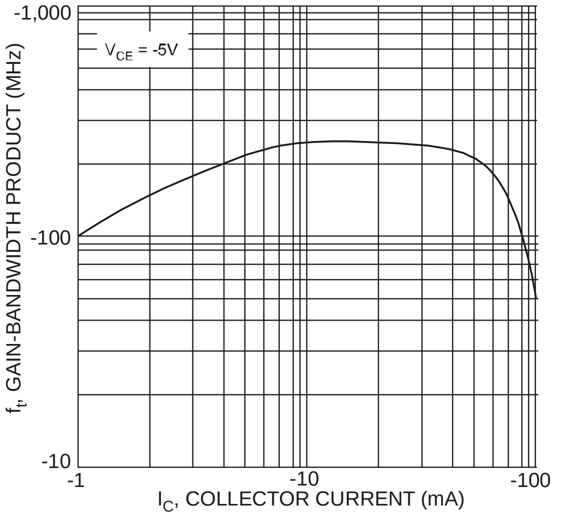
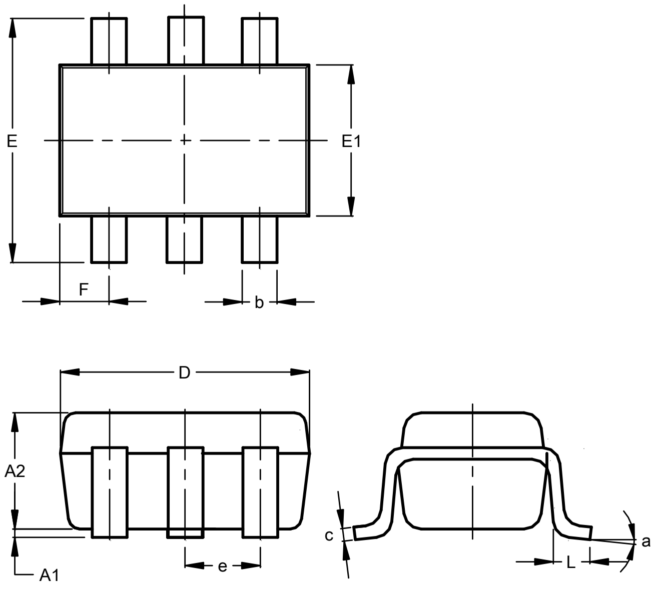


Figure 9. Typical Gain-Bandwidth Product vs. Collector Current (NK-BC857B Type)

Package Outline Dimensions

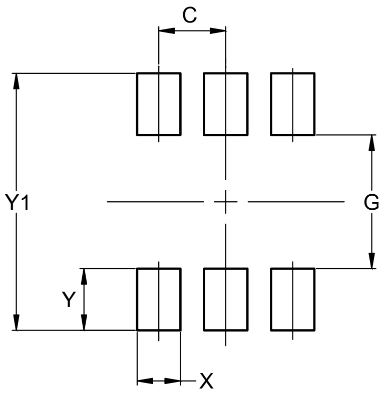
SOT363



SOT363			
Dim	**Min**	**Max**	**Typ**
A1	0.00	0.10	0.05
A2	0.90	1.00	1.00
b	0.10	0.30	0.25
c	0.10	0.22	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		
F	0.40	0.45	0.425
L	0.25	0.40	0.30
a	0°	8°	--
All Dimensions in mm			

Suggested Pad Layout

SOT363



Dimensions	Value (in mm)
C	0.650
G	1.300
X	0.420
Y	0.600
Y1	2.500