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

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Description

This Bipolar Junction Transistor (BJT) is designed to meet the stringent requirements of Automotive Applications.

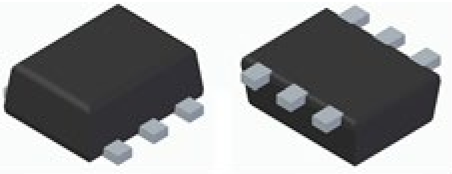
Features

- Epitaxial Die Construction
- Two Internally Isolated NPN/PNP Transistors in One Package
- Ultra-Small Surface Mount Package

Mechanical Data

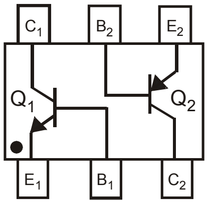
- Case: SOT563
- Case Material: Molded Plastic, “Green” Molding Compound.
- UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish—Matte Tin Annealed over Copper Lead-Frame.
  Solderable per MIL-STD-202, Method 208 e3
- Weight: 0.003 grams (Approximate)

SOT563



Top View

Bottom View



Device Schematic
Top View

Maximum Ratings: NPN, NK-BC847B Type)(Q (@ 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 Pulse Collector Current (single pulse)	I_{CM}	200	mA
Peak Pulse Emitter Current (single pulse)	I_{EM}	200	mA

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

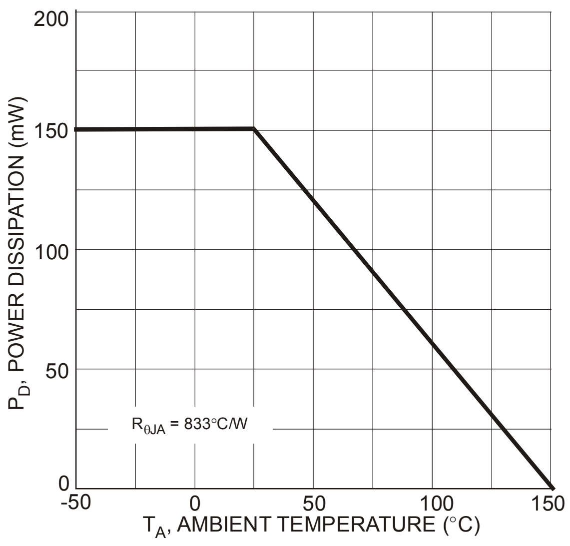
Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	-50	V
Collector-Emitter Voltage	V_{CEO}	-45	V
Emitter-Base Voltage	V_{EBO}	-6	V
Collector Current	I_C	-100	mA
Peak Pulse Collector Current (single pulse)	I_{CM}	-200	mA
Peak Pulse Emitter Current (single pulse)	I_{EM}	-200	mA

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

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 6) Total Device	P_D	150	mW
Thermal Resistance, Junction to Ambient (Note 6)	$R_{\theta JA}$	833	°C/W
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	°C

Note: 6. For a device surface mounted on minimum recommended pad layout FR-4 PCB with single sided 1oz copper, in still air conditions; the device is measured when operating in a steady-state condition.

Thermal Characteristics – Total Device

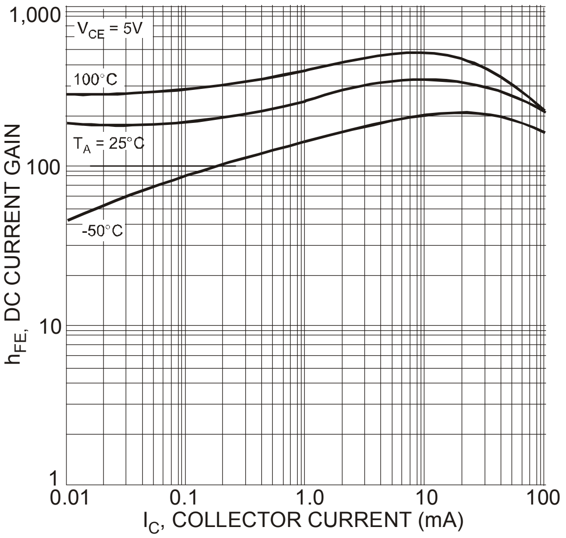


P_D v T_A

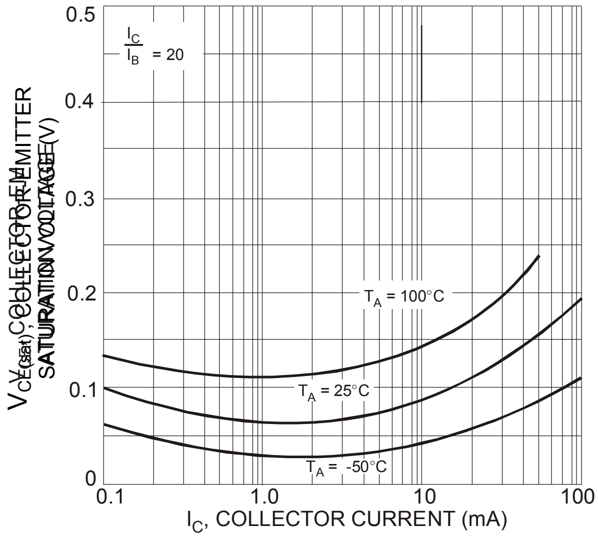
Electrical Characteristics: NPN, NK-BC847B Type (Q) (@ T_A = +25°C unless otherwise specified.)

Characteristic (Note 7)	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV_{CBO}	50	—	—	V	I_C = 100μA, I_B = 0
Collector-Emitter Breakdown Voltage	BV_{CEO}	45	—	—	V	I_C = 10mA, I_B = 0
Emitter-Base Breakdown Voltage	BV_{EBO}	6	—	—	V	I_E = 100μA, I_C = 0
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 Cut Off Current	I_{CBO}	— —	— —	15 5.0	nA μA	V_{CB} = 30V V_{CB} = 30V, T_A = +150°C
Transition Frequency	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

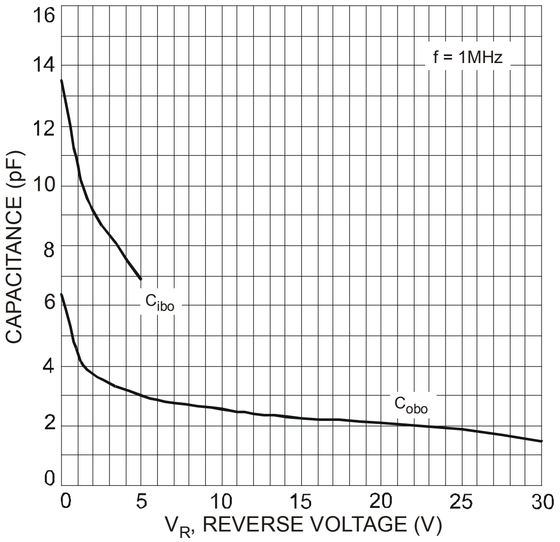
Note: 7. Short duration pulse test used to minimize self-heating effect.



h_{FE} v I_C



$V_{CE(sat)}$ v I_C



C v V_R

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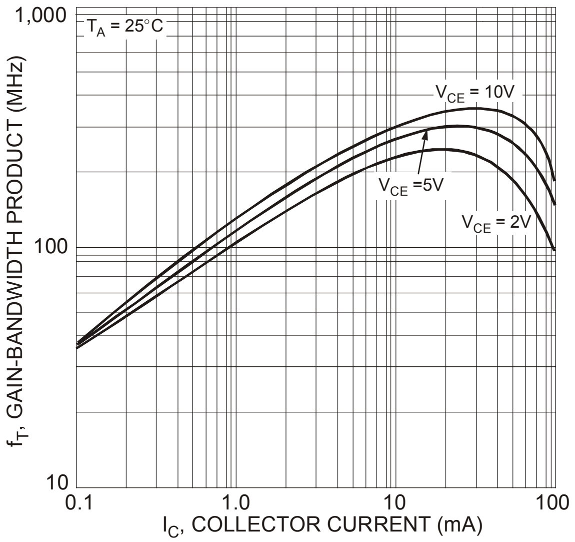


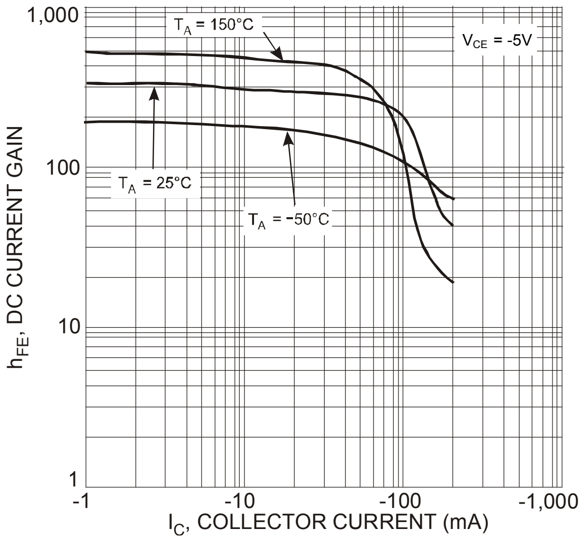
f_T v I_C

Electrical Characteristics: PNP, NK-BC857B Type (Q)

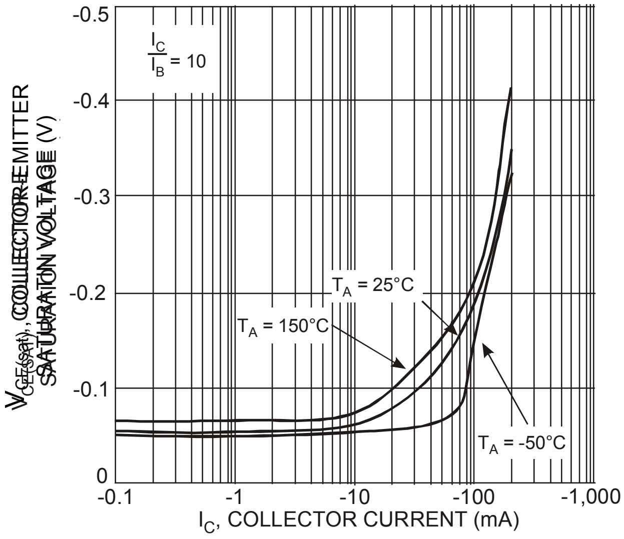
2(@ T_A = +25°C unless otherwise specified.)

Characteristic (Note 8)	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV_{CBO}	-50	—	—	V	I_C = -100µA, I_B = 0
Collector-Emitter Breakdown Voltage	BV_{CEO}	-45	—	—	V	I_C = -10mA, I_B = 0
Emitter-Base Breakdown Voltage	BV_{EBO}	-6	—	—	V	I_E = -100µA, I_C = 0
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 Cut Off Current	I_{CBO}	— —	— —	-15 -4.0	nA µA	V_{CB} = -30V V_{CB} = -30V, T_A = +150°C
Transition Frequency	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

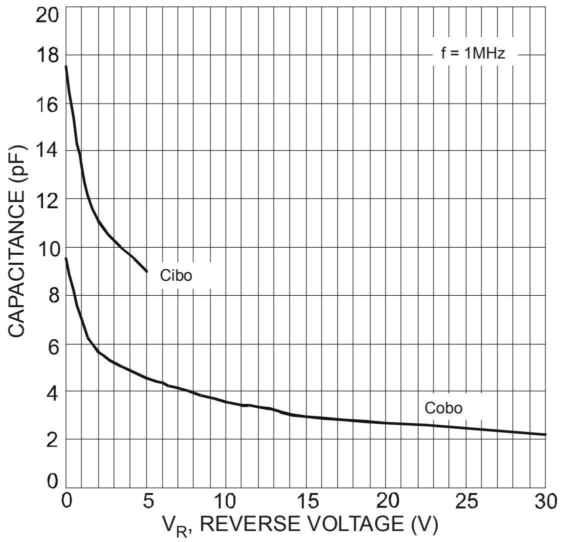
Note: 8. Short duration pulse test used to minimize self-heating effect.



h_{FE} v I_C



$V_{CE(sat)}$ v I_C



C v V_R

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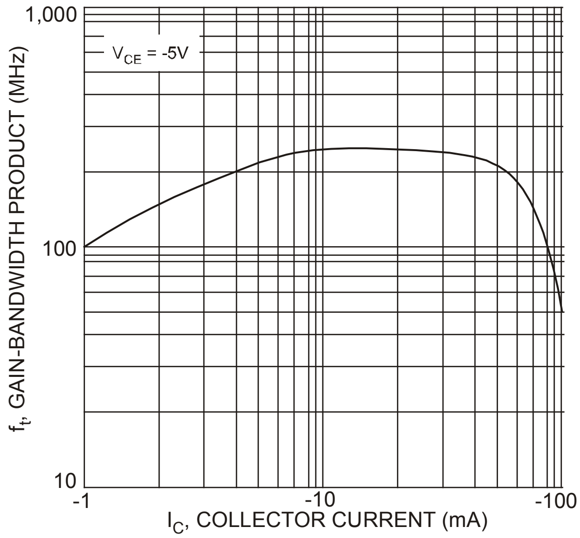
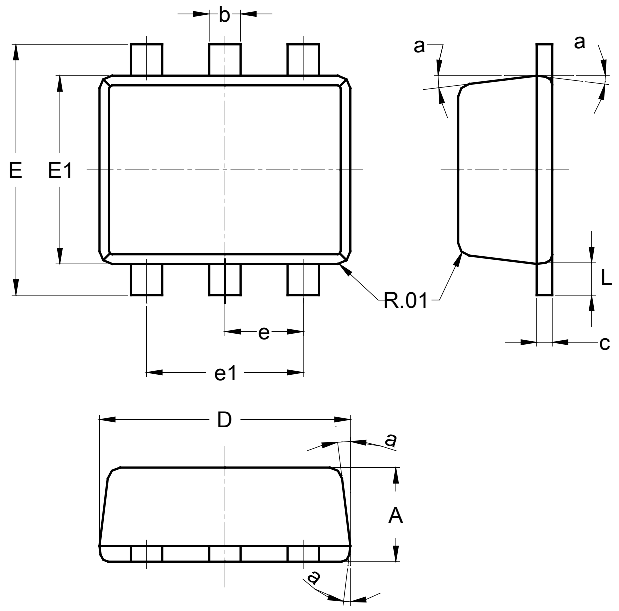


f_T v I_C

Package Outline Dimensions

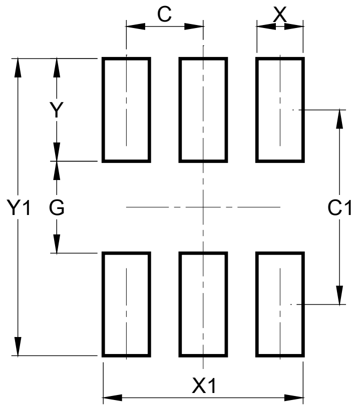
SOT563



SOT563			
Dim	**Min**	**Max**	**Typ**
A	0.55	0.60	0.60
b	0.15	0.30	0.20
c	0.10	0.18	0.11
D	1.50	1.70	1.60
E	1.55	1.70	1.60
E1	1.10	1.25	1.20
e	--	--	0.50
e1	0.90	1.10	1.00
L	0.10	0.30	0.20
a	8°	9°	7°
All Dimensions in mm			

Suggested Pad Layout

SOT563



Dimensions	Value (in mm)
C	0.500
C1	1.270
G	0.600
X	0.300
X1	1.300
Y	0.670
Y1	1.940