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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Features

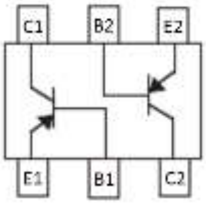
- BV_{CEO} > -40V
- I_C = -200mA High Collector Current
- Epitaxial Planar Die Construction
- Ideal for Low Power Amplification and Switching
- Ultra-Small Surface Mount Package

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 Finish.
  Solderable per MIL-STD-202, Method 208 e3
- Weight: 0.003 grams (Approximate)

SOT563

Top View Bottom View



Top View

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

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	-40	V
Collector-Emitter Voltage	V_{CEO}	-40	V
Emitter-Base Voltage	V_{EBO}	-6	V
Collector Current	I_C	-200	mA

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 5)	P_D	150	mW
Thermal Resistance, Junction to Ambient (Note 5)	$R_{\theta JA}$	833	°C/W
Operating and Storage and Temperature Range	T_J, T_{STG}	-55 to +150	°C

ESD Ratings (Note 6)

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:
5. For the device mounted on minimum recommended pad layout FR4 PCB with high coverage of single sided 1oz copper, in still air conditions; the device is measured when operating in a steady-state condition.
6. Refer to JEDEC specification JESD22-A114 and JESD22-A115.

Thermal Characteristic and Derating Information

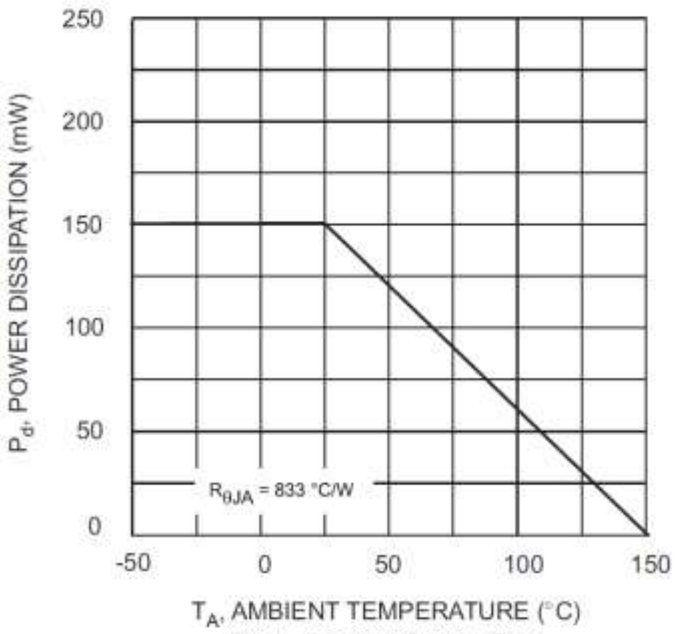


Fig. 1, Derating Curve - Total

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

Characteristic	Symbol	Min	Max	Unit	Test Condition
OFF CHARACTERISTICS					
Collector-Base Breakdown Voltage	BV_{CBO}	-40	—	V	I_C = -100µA, I_E = 0
Collector-Emitter Breakdown Voltage	BV_{CEO}	-40	—	V	I_C = -1mA, I_B = 0
Emitter-Base Breakdown Voltage	BV_{EBO}	-6	—	V	I_E = -100µA, I_C = 0
Collector Cut-Off Current	I_{CEX}	—	-50	nA	V_{CE} = -30V, $V_{EB(OFF)}$ = -3V
Base Cut-Off Current	I_{BL}	—	-50	nA	V_{CE} = -30V, $V_{EB(OFF)}$ = -3V
Emitter- Base Cut-Off Current	I_{EBO}	—	-20	nA	V_{EB} = -6V, I_C = 0
ON CHARACTERISTICS (Note 7)					
DC Current Gain	h_{FE}	60 80 100 60 30	— — 300 — —	—	I_C = -100µA, V_{CE} = -1V I_C = -1mA, V_{CE} = -1V I_C = -10mA, V_{CE} = -1V I_C =- 50mA, V_{CE} = -1V I_C = -100mA, V_{CE} = -1V
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$	—	-0.25 -0.4	V	I_C = -10mA, I_B = -1mA I_C = -50mA, I_B = -5mA
Base-Emitter Saturation Voltage	$V_{BE(SAT)}$	-0.65 —	-0.85 -0.95	V	I_C = -10mA, I_B = -1mA I_C = -50mA, I_B = -5mA
SMALL SIGNAL CHARACTERISTICS					
Output Capacitance	C_{OBO}	—	4.5	pF	V_{CB} = -5V, f = 1MHz, I_E = 0
Input Capacitance	C_{IBO}	—	10	pF	V_{EB} = -0.5V, f = 1MHz, I_C = 0
Input Impedance	h_{IE}	2	12	kΩ	V_{CE} = 10V, I_C = 1mA, f = 1kHz
Voltage Feedback Ratio	h_{RE}	0.1	10	x 10^{-4}	
Small Signal Current Gain	h_{FE}	100	400	—	
Output Admittance	h_{OE}	3	60	µS	
Current Gain-Bandwidth Product	f_T	250	—	MHz	V_{CE} = -20V, I_C = -10mA, f = 100MHz
Noise Figure	NF	—	4	dB	V_{CE} = -5V, I_C = -100µA, R_S = 1kΩ, f = 1kHz
SWITCHING CHARACTERISTICS					
Delay Time	t_D	—	35	ns	V_{CC} = -3V, I_C = -10mA, $-I_{B1}$ = I_{B2} = -1.0mA
Rise Time	t_R	—	35	ns	
Storage Time	t_S	—	200	ns	
Fall Time	t_F	—	50	ns	

Note: 7. Measured under pulsed conditions. Pulse width ≤ 300µs. Duty cycle ≤ 2%.

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

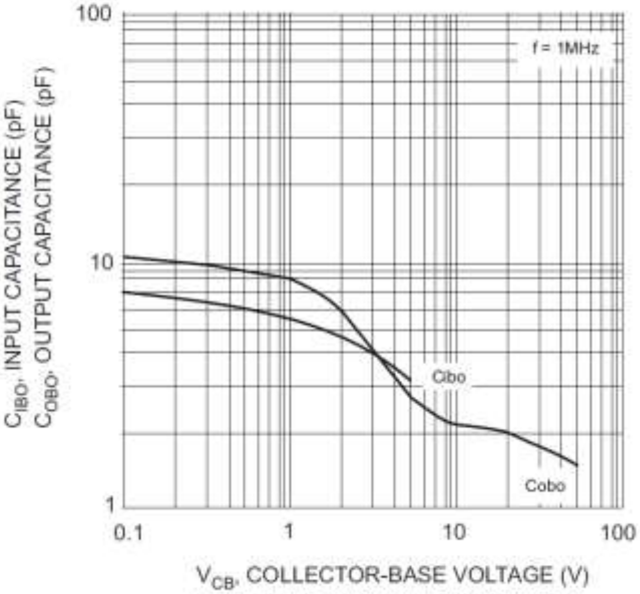


Fig. 2, Input and Output Capacitance vs. Collector-Base Voltage

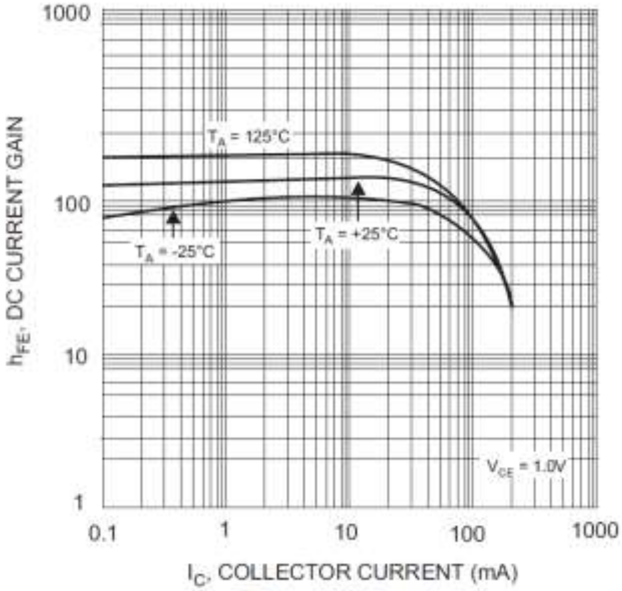


Fig. 3, Typical DC Current Gain vs Collector Current

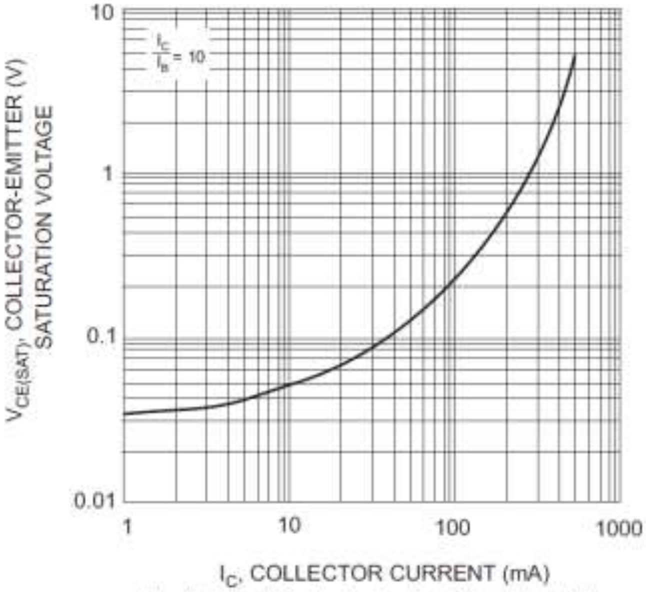


Fig. 4, Typical Collector-Emitter Saturation Voltage vs. Collector Current

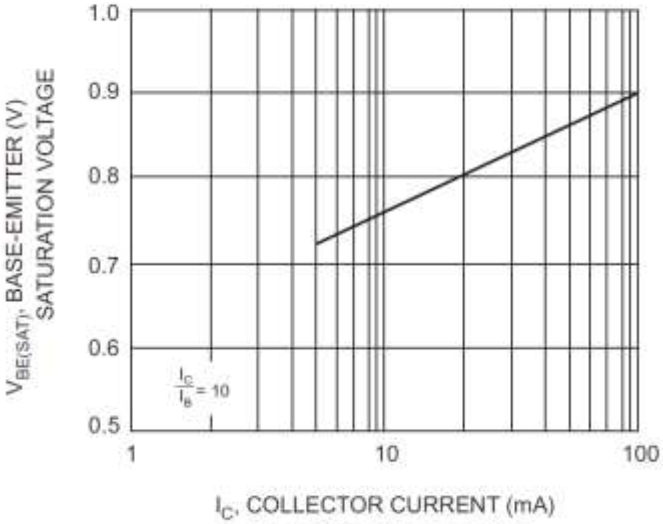
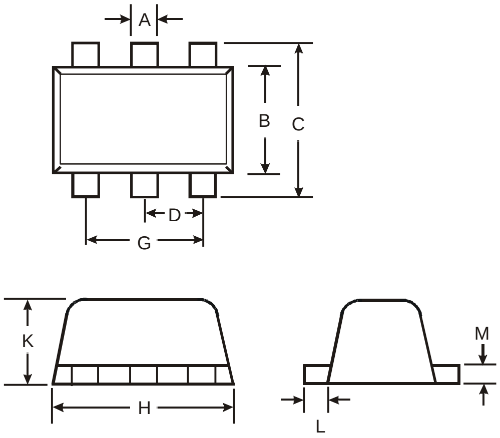


Fig. 5, Typical Base-Emitter Saturation Voltage vs. Collector Current

Package Outline Dimensions

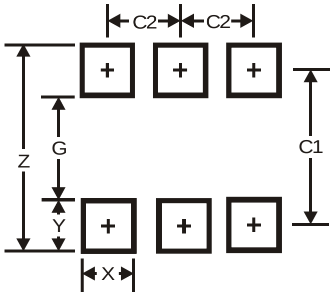
SOT563



SOT563			
Dim	**Min**	**Max**	**Typ**
A	0.15	0.30	0.20
B	1.10	1.25	1.20
C	1.55	1.70	1.60
D	-	-	0.50
G	0.90	1.10	1.00
H	1.50	1.70	1.60
K	0.55	0.60	0.60
L	0.10	0.30	0.20
M	0.10	0.18	0.11
All Dimensions in mm			

Suggested Pad Layout

SOT563



Dimensions	SOT563
Z	2.2
G	1.2
X	0.375
Y	0.5
C1	1.7
C2	0.5