



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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企业微信二维码



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Features

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

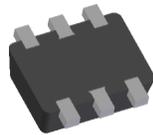
Mechanical Data

- Package: SOT563
- package 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 
- Weight: 0.003 grams (Approximate)

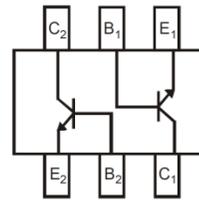
SOT563



Top View



Bottom View



Device Schematic
Top View

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

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V _{CBO}	60	V
Collector-Emitter Voltage	V _{CEO}	40	V
Emitter-Base Voltage	V _{EBO}	6.0	V
Collector Current	I _C	200	mA

Thermal Characteristics

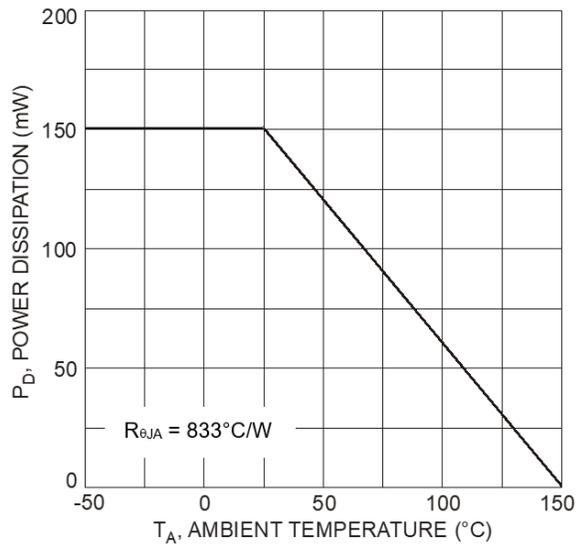
Characteristic	Symbol	Value	Unit
Power Dissipation (Note 5)	P _D	150	mW
Thermal Resistance, Junction to Ambient (Note 5)	R _{θJA}	833	°C/W
Operating and Storage and Temperature Range	T _J , T _{STG}	-55 to +150	°C

ESD Ratings (Note 6)

Characteristic	Symbol	Value	Unit	JEDEC Class
Electrostatic Discharge—Human Body Model	ESD HBM	4000	V	3A
Electrostatic Discharge—Machine Model	ESD MM	400	V	C

- Notes:
5. For the device mounted on minimum recommended pad layout FR-4 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



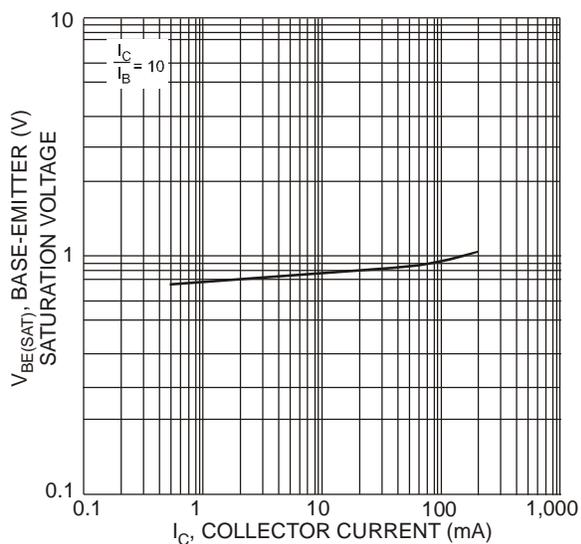
Derating Curve - Total

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

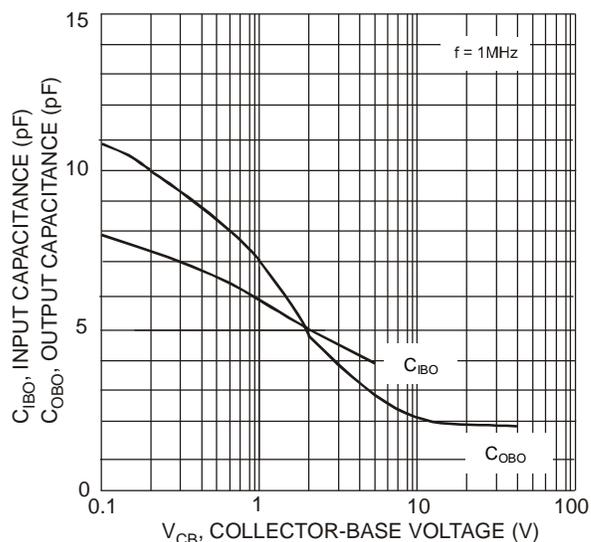
Characteristic	Symbol	Min	Max	Unit	Test Condition
OFF CHARACTERISTICS					
Collector-Base Breakdown Voltage	BV_{CBO}	60	—	V	$I_C = 100\mu\text{A}, I_E = 0$
Collector-Emitter Breakdown Voltage (Note 7)	BV_{CEO}	40	—	V	$I_C = 1\text{mA}, I_B = 0$
Emitter-Base Breakdown Voltage	BV_{EBO}	6	—	V	$I_E = 100\mu\text{A}, I_C = 0$
Collector-Emitter Cut-Off Current	I_{CEV}	—	50	nA	$V_{CE} = 30\text{V}, V_{EB(OFF)} = 3\text{V}$
Emitter-Base Cut-Off Current	I_{EBO}	—	50	nA	$V_{EB} = 6\text{V}$
ON CHARACTERISTICS (Note 7)					
DC Current Gain	h_{FE}	40	—	—	$I_C = 100\mu\text{A}, V_{CE} = 1\text{V}$
		70	—		
		100	300		
		60	—		
		30	—		
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	—	0.20 0.30	V	$I_C = 10\text{mA}, I_B = 1\text{mA}$ $I_C = 50\text{mA}, I_B = 5\text{mA}$
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	0.65 —	0.85 0.95	V	$I_C = 10\text{mA}, I_B = 1\text{mA}$ $I_C = 50\text{mA}, I_B = 5\text{mA}$
SMALL SIGNAL CHARACTERISTICS					
Output Capacitance	C_{obo}	—	4	pF	$V_{CB} = 5\text{V}, f = 1\text{MHz}, I_E = 0$
Input Capacitance	C_{ibo}	—	8	pF	$V_{EB} = 0.5\text{V}, f = 1\text{MHz}, I_C = 0$
Input Impedance	h_{ie}	1	10	k Ω	$V_{CE} = 10\text{V}, I_C = 1\text{mA},$ $f = 1\text{kHz}$
Voltage Feedback Ratio	h_{re}	0.5	8.0	$\times 10^{-4}$	
Small Signal Current Gain	h_{fe}	100	400	—	
Output Admittance	h_{oe}	1	40	μS	
Current Gain-Bandwidth Product	f_T	300	—	MHz	$V_{CE} = 20\text{V}, I_C = 10\text{mA},$ $f = 100\text{MHz}$
Noise Figure	NF	—	5.0	dB	$V_{CE} = 5\text{V}, I_C = 100\mu\text{A},$ $R_S = 1\text{k}\Omega, f = 1\text{kHz}$
SWITCHING CHARACTERISTICS					
Delay Time	t_d	—	35	ns	$V_{CC} = 3\text{V}, I_C = 10\text{mA},$ $V_{BE(OFF)} = -0.5\text{V}, I_{B1} = 1\text{mA}$
Rise Time	t_r	—	35	ns	
Storage Time	t_s	—	200	ns	$V_{CC} = 3\text{V}, I_C = 10\text{mA},$ $I_{B1} = -I_{B2} = 1\text{mA}$
Fall Time	t_f	—	50	ns	

 Note: 7. Measured under pulsed conditions. Pulse width $\leq 300\mu\text{s}$. Duty cycle $\leq 2\%$.

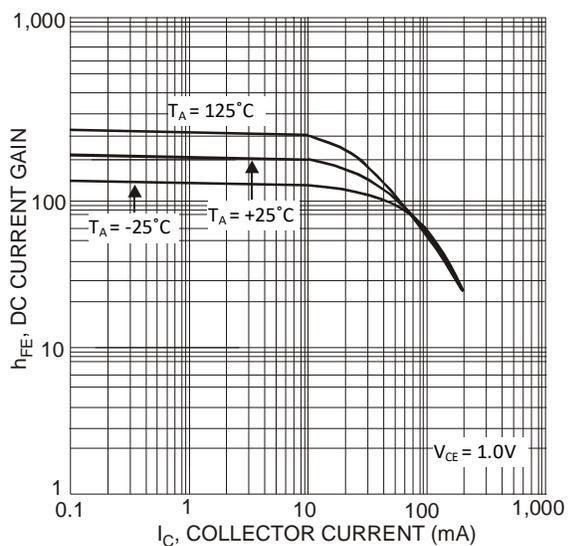
Typical Electrical Characteristics (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)



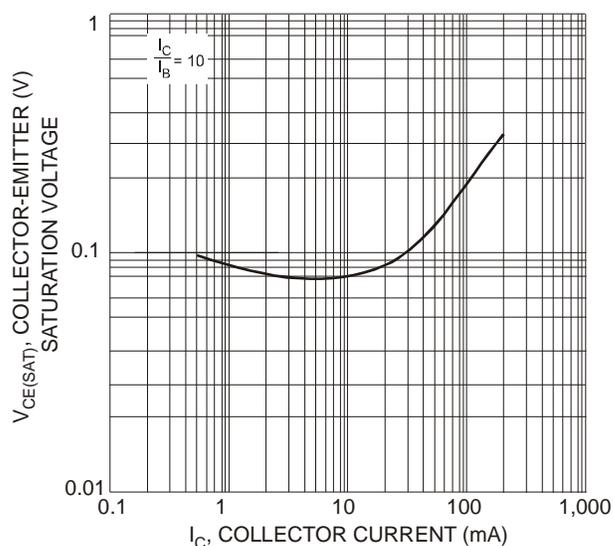
Typical Base-Emitter Saturation Voltage vs. Collector Current



Input and Output Capacitance vs. Collector-Base Voltage

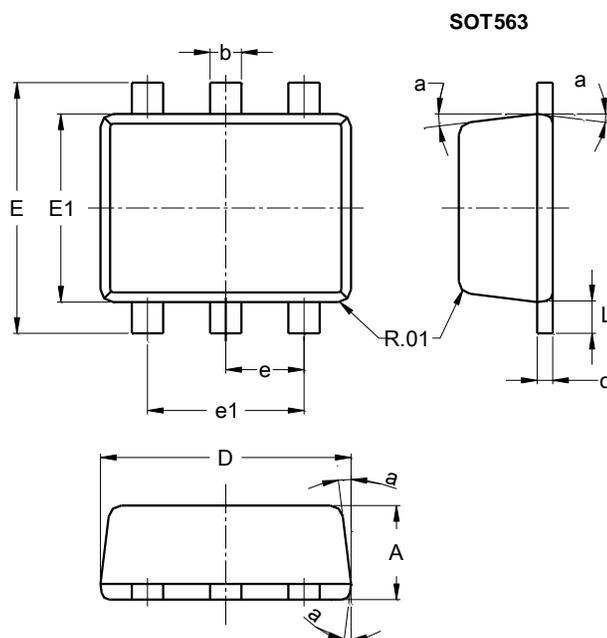


Typical DC Current Gain vs. Collector Current



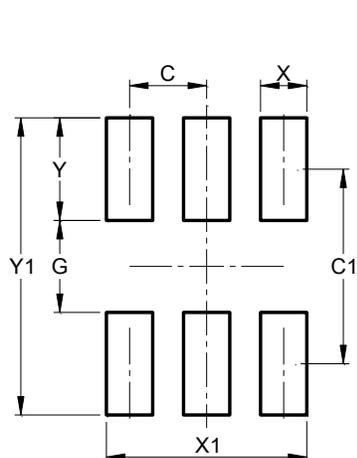
Typical Collector-Emitter Saturation Voltage vs. Collector Current

Package Outline Dimensions



SOT563			
Dim	Min	Max	Typ
A	0.55	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



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