



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 Planar Die Construction
- Complementary PNP Type Available (NK-DSS5220V)
- Low Collector-Emitter Saturation Voltage,  $V_{CE(SAT)}$
- High Current Gain ( $h_{FE}$ ) at High  $I_C$
- Surface Mount Package Suited for Automated Assembly
- Ultra-Small Surface Mount Package

## Mechanical Data

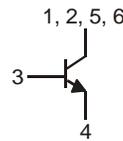
- Case: SOT-563
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020D
- Terminals: Finish — Matte Tin annealed over Copper leadframe. Solderable per MIL-STD-202, Method 208
- Marking Information: See Page 4
- Ordering Information: See Page 4
- Weight: 0.003 grams (approximate)



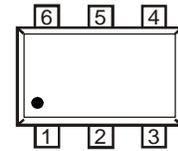
Top View



Bottom View



Device Schematic



Pin Out Configuration

## Maximum Ratings @ $T_A = 25^\circ\text{C}$ unless otherwise specified

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	$V_{CBO}$	20	V
Collector-Emitter Voltage	$V_{CEO}$	20	V
Emitter-Base Voltage	$V_{EBO}$	5	V
Collector Current - Continuous	$I_C$	2	A
Peak Pulse Collector Current	$I_{CM}$	4	A
Base Current (DC)	$I_B$	0.3	A
Peak Base Current	$I_{BM}$	0.6	A

## Thermal Characteristics

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 3) @ $T_A = 25^\circ\text{C}$	$P_D$	600	mW
Thermal Resistance, Junction to Ambient (Note 3) @ $T_A = 25^\circ\text{C}$	$R_{\theta JA}$	208	$^\circ\text{C/W}$
Operating and Storage Temperature Range	$T_J, T_{STG}$	-55 to +150	$^\circ\text{C}$

**Electrical Characteristics** @ $T_A = 25^\circ\text{C}$  unless otherwise specified

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
<b>OFF CHARACTERISTICS</b>						
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	20	—	—	V	$I_C = 100\mu\text{A}, I_E = 0$
Collector-Emitter Breakdown Voltage (Note 4)	$V_{(BR)CEO}$	20	—	—	V	$I_C = 10\text{mA}, I_B = 0$
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	5	—	—	V	$I_E = 100\mu\text{A}, I_C = 0$
Collector Cutoff Current	$I_{CBO}$	—	—	100	nA	$V_{CB} = 20\text{V}, I_E = 0$
Collector Cutoff Current	$I_{CES}$	—	—	100	nA	$V_{CE} = 20\text{V}, V_{BE} = 0$
Emitter Cutoff Current	$I_{EBO}$	—	—	100	nA	$V_{EB} = 5\text{V}, I_C = 0$
<b>ON CHARACTERISTICS (Note 4)</b>						
DC Current Gain	$h_{FE}$	220	—	—	—	$V_{CE} = 2\text{V}, I_C = 1\text{mA}$
		220	—	—		$V_{CE} = 2\text{V}, I_C = 100\text{mA}$
		220	—	—		$V_{CE} = 2\text{V}, I_C = 500\text{mA}$
		200	—	—		$V_{CE} = 2\text{V}, I_C = 1\text{A}$
		120	—	—		$V_{CE} = 2\text{V}, I_C = 2\text{A}$
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$	—	—	55	mV	$I_C = 100\text{mA}, I_B = 1\text{mA}$
		—	—	95		$I_C = 500\text{mA}, I_B = 50\text{mA}$
		—	—	180		$I_C = 1\text{A}, I_B = 50\text{mA}$
		—	—	175		$I_C = 1\text{A}, I_B = 100\text{mA}$
		—	—	355		$I_C = 2\text{A}, I_B = 100\text{mA}$
Collector-Emitter Saturation Resistance	$R_{CE(SAT)}$	—	—	175	m $\Omega$	$I_C = 1\text{A}, I_B = 100\text{mA}$
Base-Emitter Saturation Voltage	$V_{BE(SAT)}$	—	—	1.1	V	$I_C = 1\text{A}, I_B = 50\text{mA}$
		—	—	1.2		$I_C = 1\text{A}, I_B = 100\text{mA}$
Base-Emitter Turn On Voltage	$V_{BE(ON)}$	—	—	1.1	V	$V_{CE} = 5\text{V}, I_C = 1\text{A}$
<b>SMALL SIGNAL CHARACTERISTICS</b>						
Output Capacitance	$C_{obo}$	—	16	—	pF	$V_{CB} = 10\text{V}, f = 1.0\text{MHz}$
Current Gain-Bandwidth Product	$f_T$	—	260	—	MHz	$V_{CE} = 10\text{V}, I_C = 50\text{mA}, f = 100\text{MHz}$
<b>SWITCHING CHARACTERISTICS</b>						
Turn-On Time	$t_{on}$	—	60	—	ns	$V_{CC} = 10\text{V}$ $I_C = 1\text{A}, I_{B1} = I_{B2} = 50\text{mA}$
Delay Time	$t_d$	—	20	—	ns	
Rise Time	$t_r$	—	40	—	ns	
Turn-Off Time	$t_{off}$	—	225	—	ns	
Storage Time	$t_s$	—	205	—	ns	
Fall Time	$t_f$	—	20	—	ns	

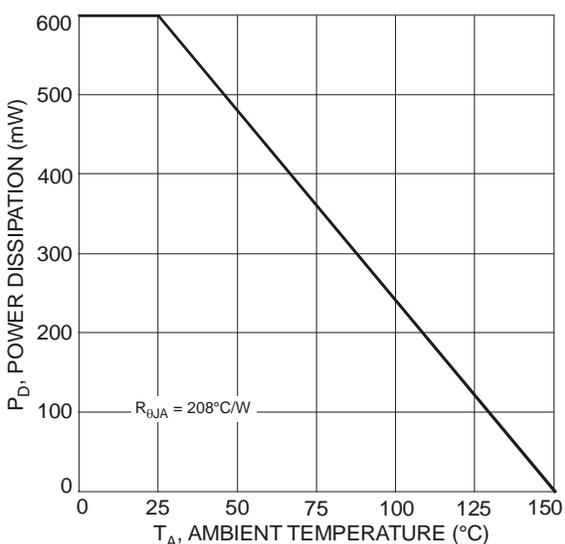
 Notes: 4. Measured under pulsed conditions. Pulse width = 300 $\mu\text{s}$ . Duty cycle  $\leq 2\%$ .


Fig. 1 Power Dissipation vs. Ambient Temperature (Note 3)

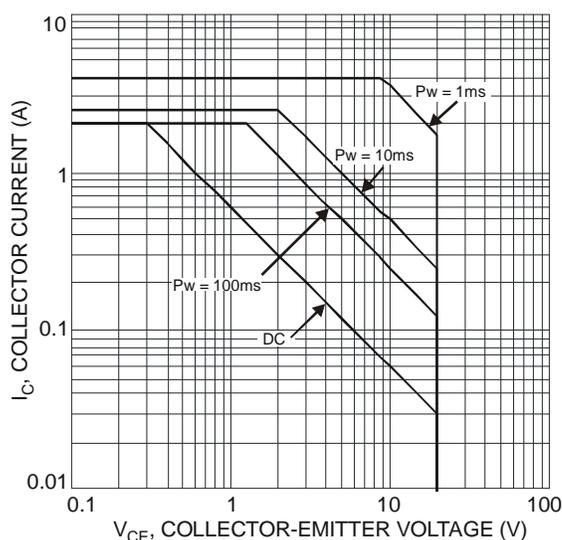
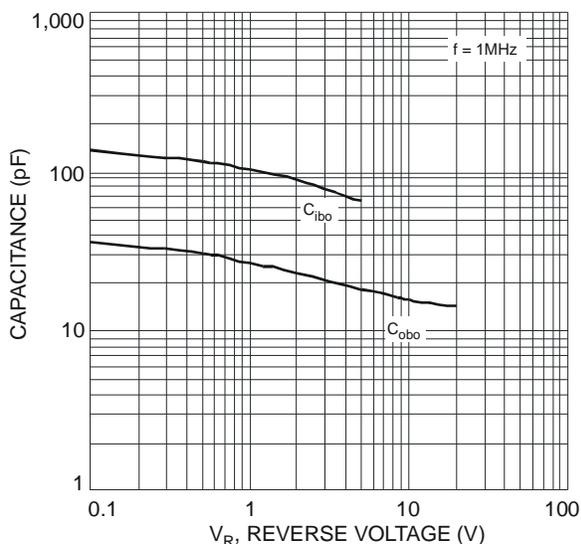
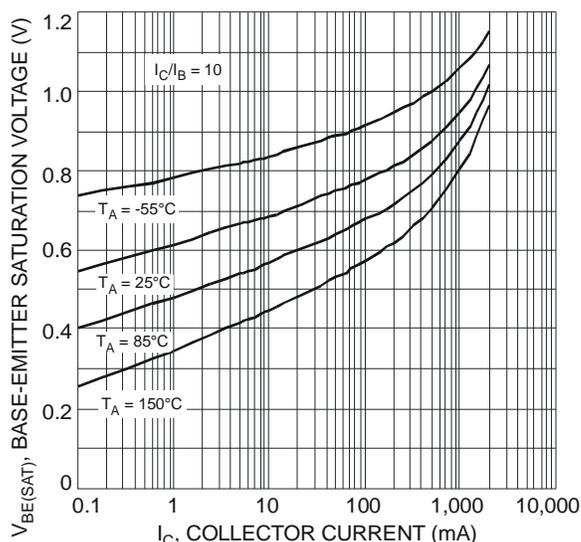
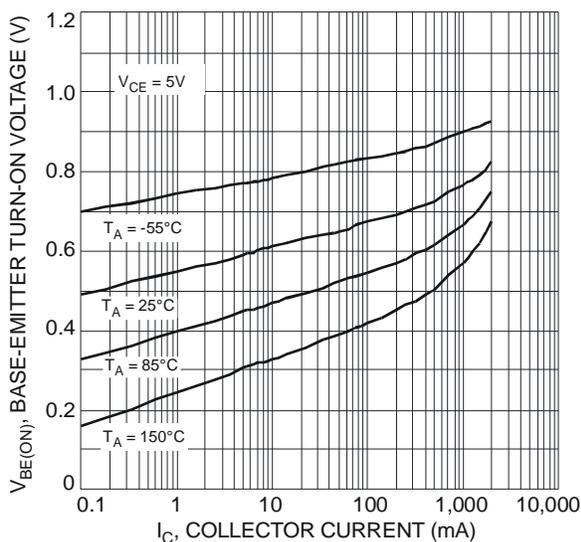
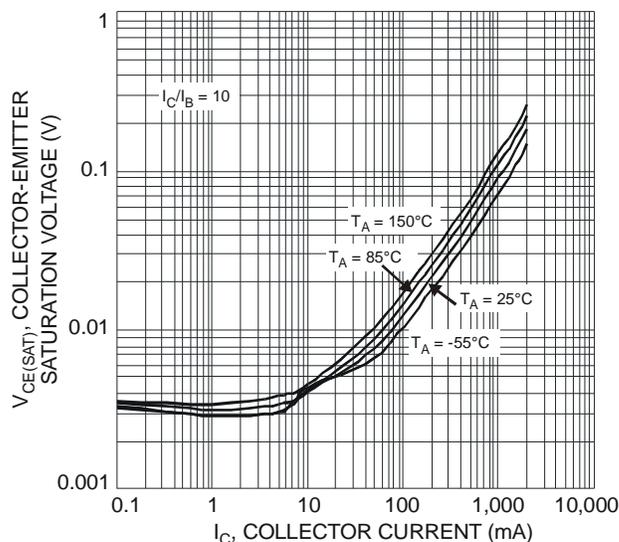
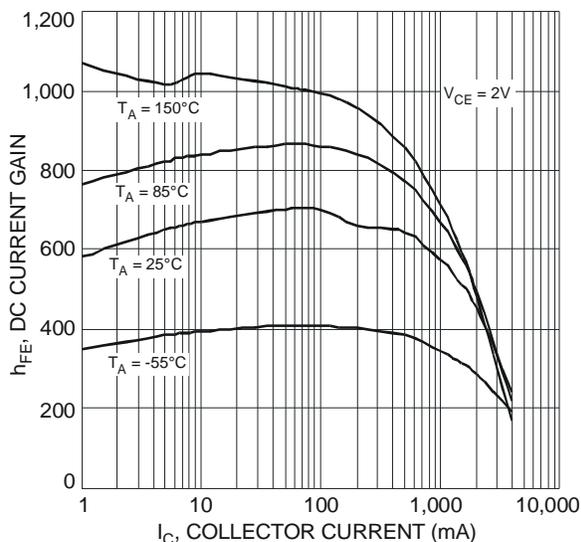


Fig. 2 Typical Collector Current vs. Collector-Emitter Voltage (Note 3)



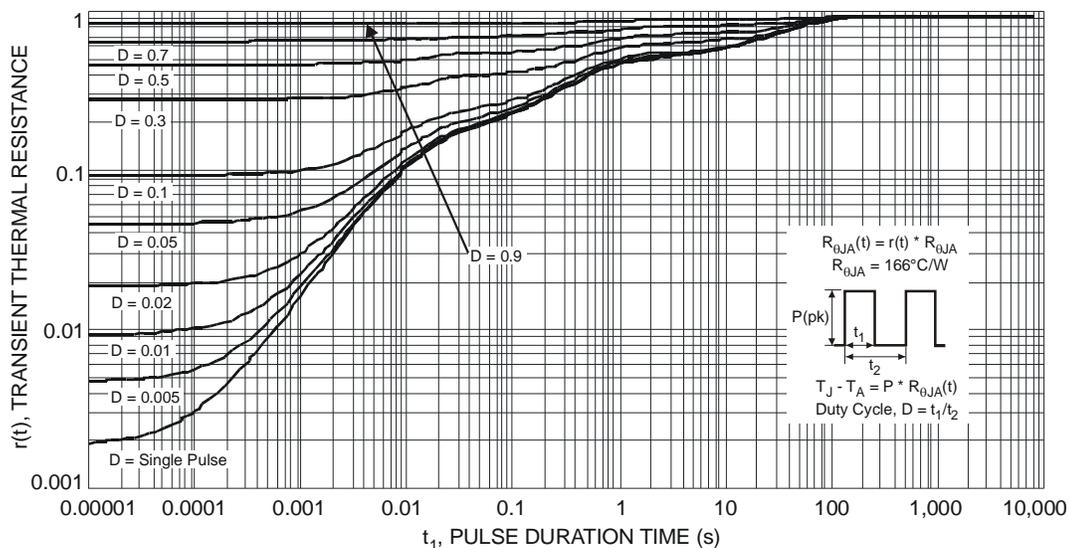
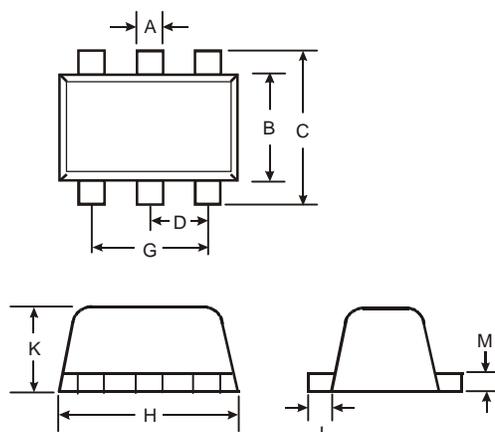


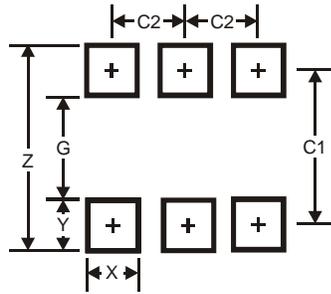
Fig. 8 Transient Thermal Response (Note 3)

**Package Outline Dimensions**



SOT-563			
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**



Dimensions	Value (in mm)
Z	2.2
G	1.2
X	0.375
Y	0.5
C1	1.7
C2	0.5