



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



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Features

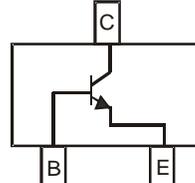
- Epitaxial Planar Die Construction
- Ideal for Medium Power Amplification and Switching
- Complimentary PNP Type Available (NK-DSS5320T)

Mechanical Data

- Case: SOT-23
- 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: 0.008 grams (approximate)



Top View



Device Schematic

Maximum Ratings @_{TA} = 25°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
Peak Pulse Current	I _{CM}	5	A
Repetitive Peak Pulse Current (Note 3)	I _{CRP}	3	A
Continuous Collector Current	I _C	2	A
Base Current	I _B	0.5	A

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 4) @ T _A = 25°C	P _D	600	mW
Thermal Resistance, Junction to Ambient Air (Note 4) @ T _A = 25°C	R _{θJA}	209	°C/W
Operating and Storage Temperature Range	T _J , T _{STG}	-55 to +150	°C

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Conditions
OFF CHARACTERISTICS						
Collector-Base Cutoff Current	I_{CBO}	—	—	100	nA	$V_{CB} = 20\text{V}, I_E = 0$
Emitter-Base Cutoff Current	I_{EBO}	—	—	50	μA	$V_{CB} = 20\text{V}, I_E = 0, T_A = 150^\circ\text{C}$
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	20	—	—	V	$I_C = 100\mu\text{A}$
Collector-Emitter Breakdown Voltage (Note 5)	$V_{(BR)CEO}$	20	—	—	V	$I_C = 10\text{mA}$
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	5	—	—	V	$I_E = 100\mu\text{A}$
ON CHARACTERISTICS (Note 5)						
DC Current Gain	h_{FE}	220	—	—	—	$V_{CE} = 2\text{V}, I_C = 0.1\text{A}$
		220	—	—		$V_{CE} = 2\text{V}, I_C = 0.5\text{A}$
		220	—	—		$V_{CE} = 2\text{V}, I_C = 1\text{A}$
		200	—	—		$V_{CE} = 2\text{V}, I_C = 2\text{A}$
		150	—	—		$V_{CE} = 2\text{V}, I_C = 3\text{A}$
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$	—	—	70	mV	$I_C = 0.5\text{A}, I_B = 50\text{mA}$
		—	—	120		$I_C = 1\text{A}, I_B = 50\text{mA}$
		—	—	230		$I_C = 2\text{A}, I_B = 40\text{mA}$
		—	70	210		$I_C = 2\text{A}, I_B = 200\text{mA}$
		—	—	310		$I_C = 3\text{A}, I_B = 300\text{mA}$
Equivalent On-Resistance	$R_{CE(SAT)}$	—	35	105	$\text{m}\Omega$	$I_E = 2\text{A}, I_B = 200\text{mA}$
Base-Emitter Saturation Voltage	$V_{BE(SAT)}$	—	—	1.1	V	$I_C = 2\text{A}, I_B = 40\text{mA}$
		—	—	1.2	V	$I_C = 3\text{A}, I_B = 300\text{mA}$
Base-Emitter Turn-on Voltage	$V_{BE(ON)}$	—	—	1.2	V	$V_{CE} = 2\text{V}, I_C = 1\text{A}$
SMALL SIGNAL CHARACTERISTICS						
Transition Frequency	f_T	100	—	—	MHz	$V_{CE} = 5\text{V}, I_C = 100\text{mA}, f = 100\text{MHz}$
Output Capacitance	C_{ob}	—	—	35	pF	$V_{CB} = 10\text{V}, f = 1\text{MHz}$

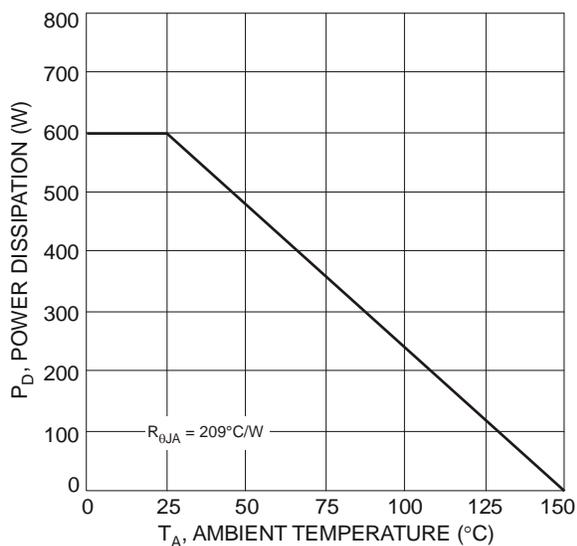
 Notes: 5. Measured under pulsed conditions. Pulse width = 300 μs . Duty cycle $\leq 2\%$.


Fig. 1 Power Dissipation vs. Ambient Temperature (Note 4)

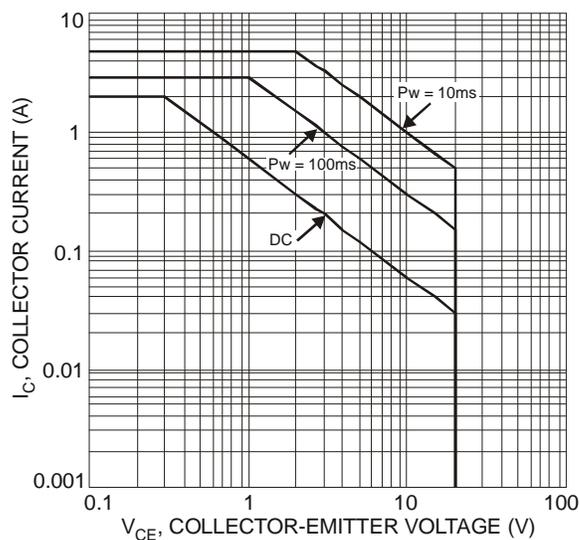


Fig. 2 Typical Collector Current vs. Collector-Emitter Voltage

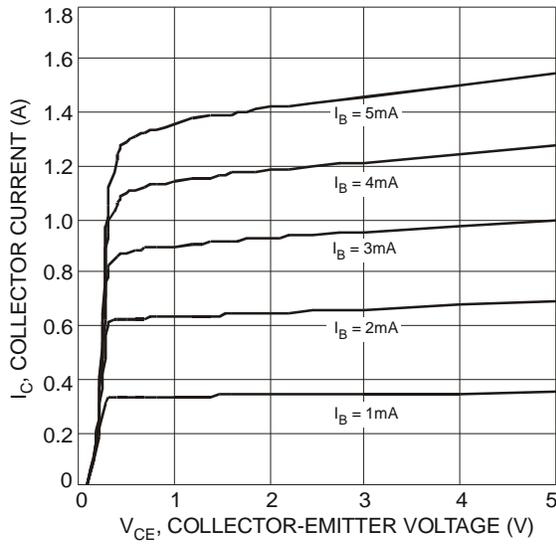


Fig. 3 Typical Collector Current vs. Collector-Emitter Voltage

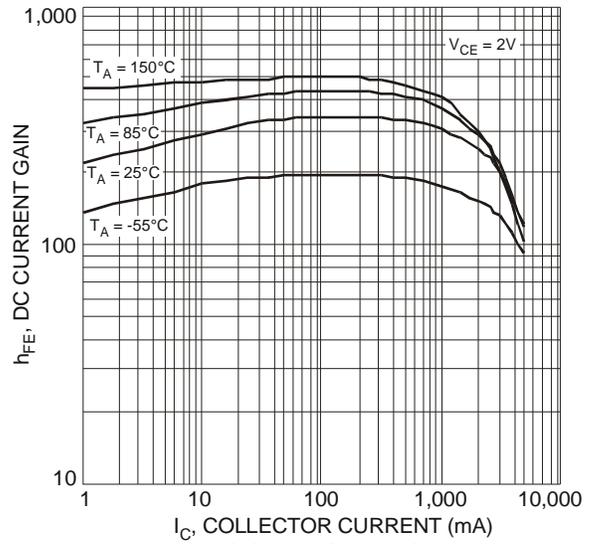


Fig. 4 Typical DC Current Gain vs. Collector Current

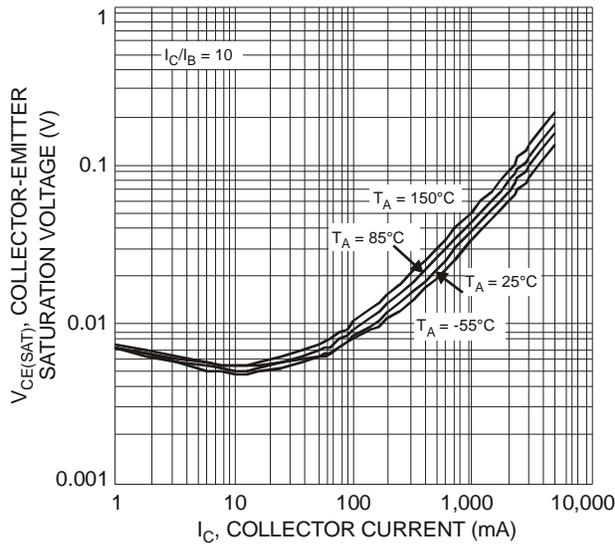


Fig. 5 Typical Collector-Emitter Saturation Voltage vs. Collector Current

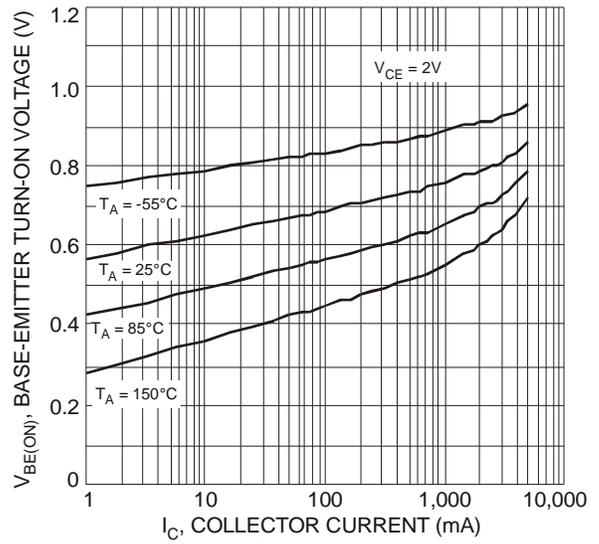


Fig. 6 Typical Base-Emitter Turn-On Voltage vs. Collector Current

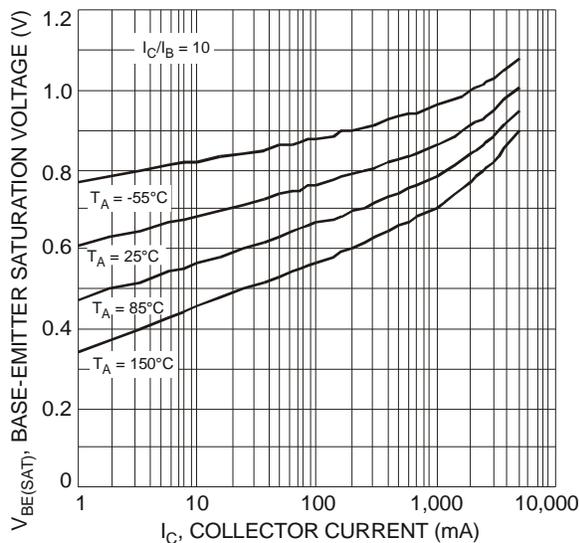


Fig. 7 Typical Base-Emitter Saturation Voltage vs. Collector Current

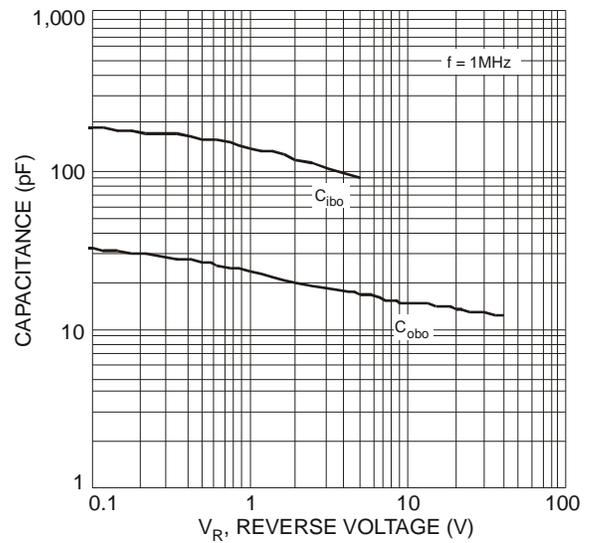


Fig. 8 Typical Capacitance Characteristics

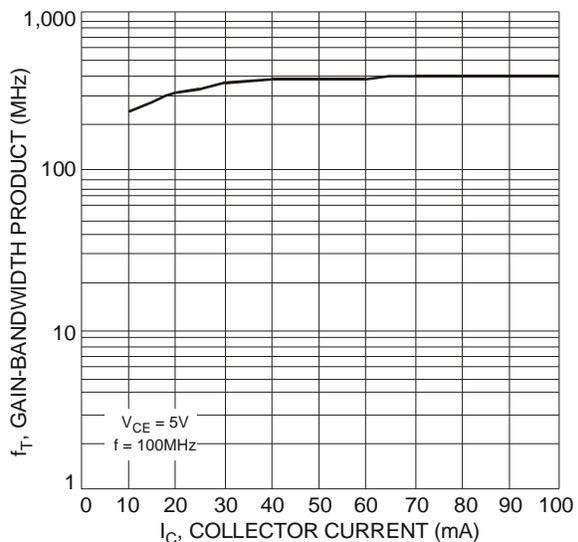


Fig. 9 Typical Gain-Bandwidth Product vs. Collector Current

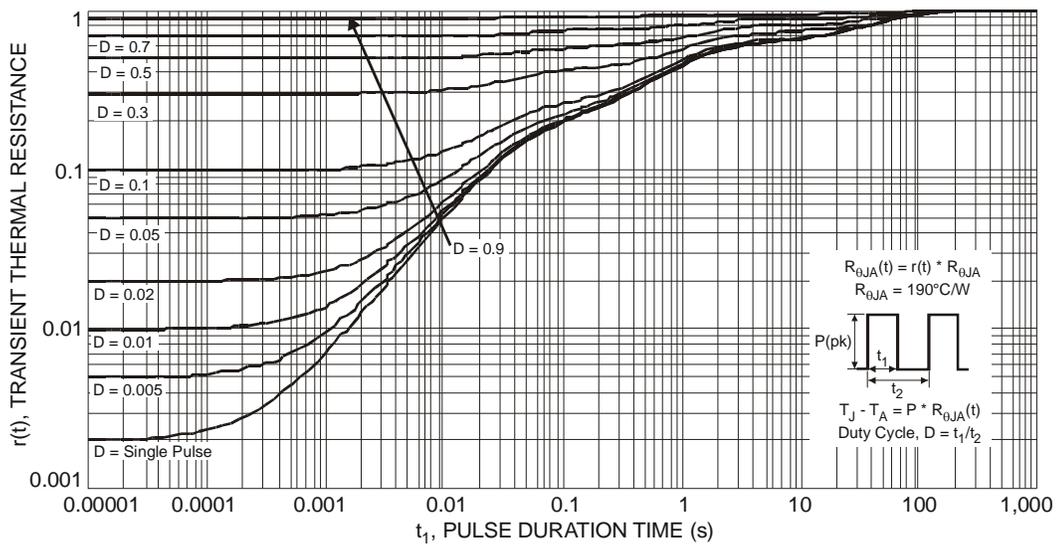
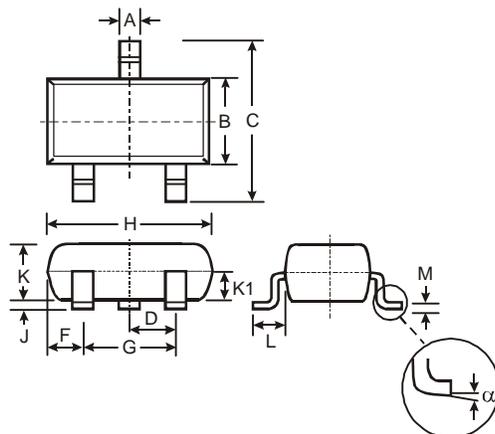


Fig. 10 Transient Thermal Response

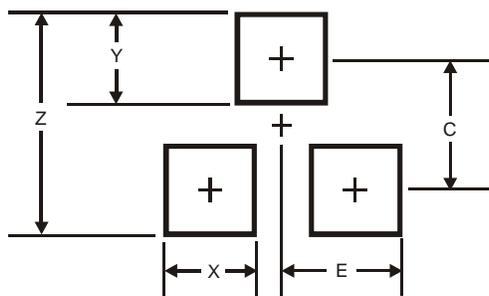
Package Outline Dimensions



SOT-23			
Dim	Min	Max	Typ
A	0.37	0.51	0.40
B	1.20	1.40	1.30
C	2.30	2.50	2.40
D	0.89	1.03	0.915
F	0.45	0.60	0.535
G	1.78	2.05	1.83
H	2.80	3.00	2.90
J	0.013	0.10	0.05
K	0.903	1.10	1.00
K1	-	-	0.400
L	0.45	0.61	0.55
M	0.085	0.18	0.11
α	0°	8°	-

All Dimensions in mm

Suggested Pad Layout



Dimensions	Value (in mm)
Z	2.9
X	0.8
Y	0.9
C	2.0
E	1.35