



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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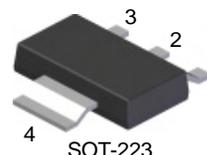
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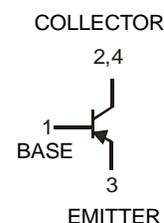
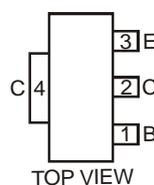
Features

- Epitaxial Planar Die Construction
- Complementary NPN Type Available (NK-DZTA42)
- Ideally Suited for Automated Assembly Processes
- Ideal for Medium Power Switching or Amplification Applications



Mechanical Data

- Case: SOT-223
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020C
- Terminals: Finish - Matte Tin annealed over Copper Leadframe (Lead Free Plating). Solderable per MIL-STD-202, Method 208
- Marking & Type Code Information: See Page 3
- Ordering Information: See Page 3
- Weight: 0.115 grams (approximate)



Schematic and Pin Configuration

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

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V_{CB0}	-300	V
Collector-Emitter Voltage	V_{CEO}	-300	V
Emitter-Base Voltage	V_{EBO}	-5	V
Base Current	I_B	-100	mA
Continuous Collector Current	I_C	-500	mA

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Power Dissipation @ $T_A = 25^\circ\text{C}$ (Note 3)	P_d	1	W
Thermal Resistance, Junction to Ambient @ $T_A = 25^\circ\text{C}$ (Note 3)	$R_{\theta JA}$	125	$^\circ\text{C/W}$
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 Conditions
OFF CHARACTERISTICS (Note 4)						
Collector-Base Breakdown Voltage	$V_{(BR)CB0}$	-300	—	—	V	$I_C = -100\mu\text{A}, I_E = 0$
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	-300	—	—	V	$I_C = -1\text{mA}, I_B = 0$
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	-5	—	—	V	$I_E = -100\mu\text{A}, I_C = 0$
Collector-Base Cut-Off Current	I_{CBO}	—	—	-0.25	μA	$V_{CB} = -200\text{V}, I_E = 0$
Emitter-Base Cut-Off Current	I_{EBO}	—	—	-0.1	μA	$V_{EB} = -3\text{V}, I_C = 0$
ON CHARACTERISTICS (Note 4)						
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$	—	—	-0.5	V	$I_C = -20\text{mA}, I_B = -2\text{mA}$
Base-Emitter Saturation Voltage	$V_{BE(SAT)}$	—	—	-0.9	V	$I_C = -20\text{mA}, I_B = -2\text{mA}$
DC Current Gain	h_{FE}	25	—	—	V	$I_C = -1\text{mA}, V_{CE} = -10\text{V}$
		40	—	—		$I_C = -10\text{mA}, V_{CE} = -10\text{V}$
		25	—	—		$I_C = -30\text{mA}, V_{CE} = -10\text{V}$
SMALL SIGNAL CHARACTERISTICS						
Gain-Bandwidth Product	f_T	50	—	—	MHz	$I_C = -10\text{mA}, V_{CE} = -20\text{V}, f = 100\text{MHz}$
Output Capacitance	C_{obo}	—	—	6	pF	$V_{CB} = -20\text{V}, f = 1\text{MHz}$

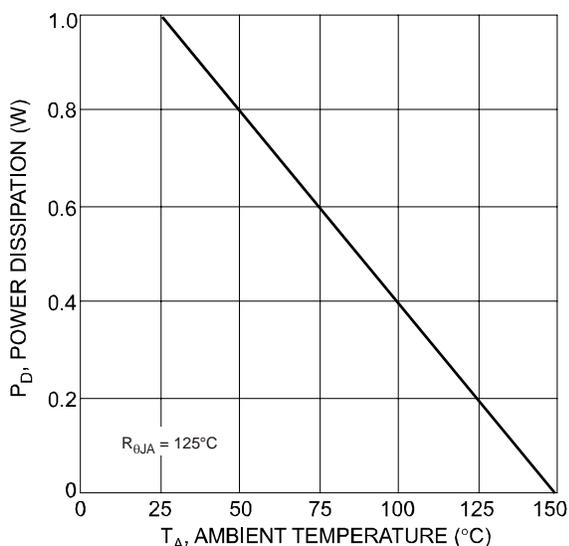


Fig. 1, Power Dissipation vs. Ambient Temperature (Note 3)

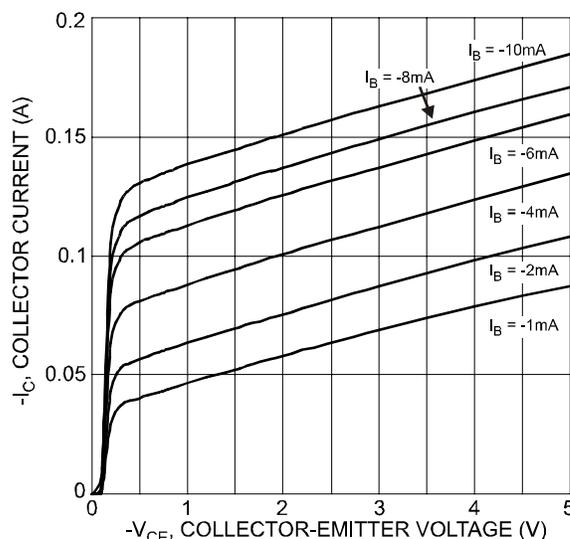


Fig. 2, Typical Collector Current vs. Collector-Emitter Voltage

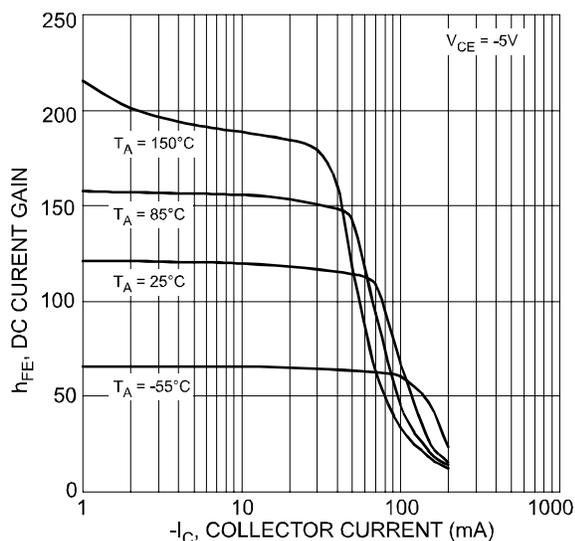


Fig. 3, Typical DC Current Gain vs. Collector Current

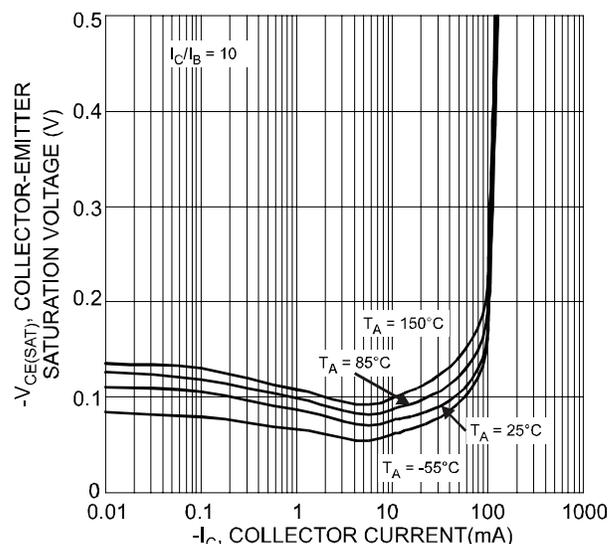


Fig. 4, Typical Collector-Emitter Saturation Voltage vs. Collector Current

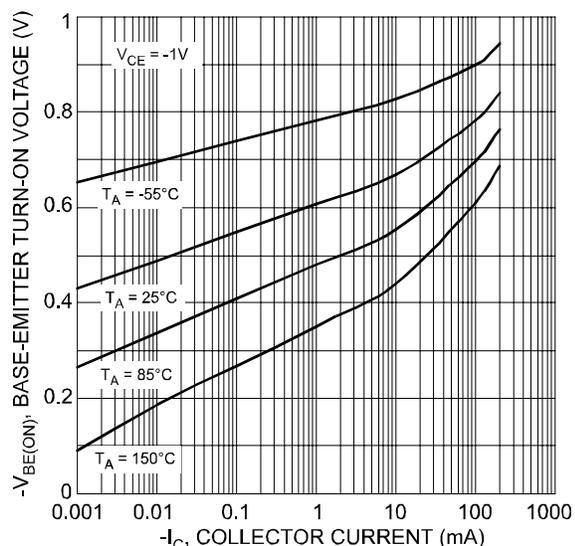


Fig. 5, Typical Base-Emitter Turn-On Voltage vs. Collector Current

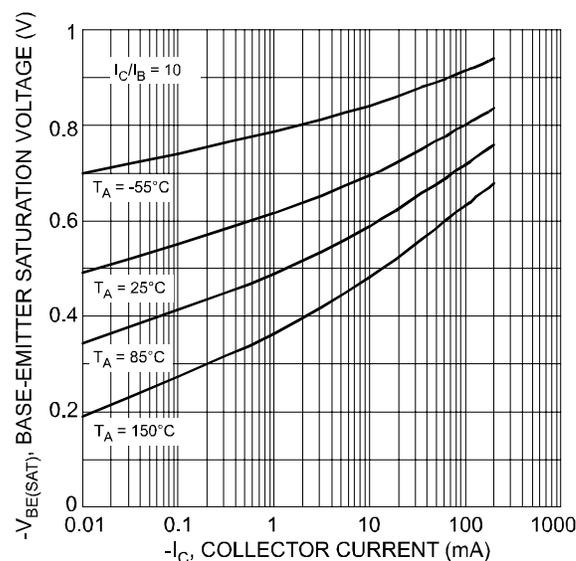


Fig. 6, Typical Base-Emitter Saturation Voltage vs. Collector Current

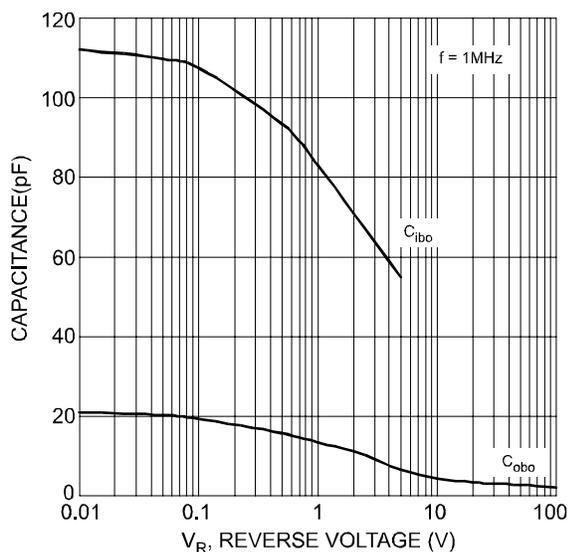


Fig. 7, Typical Capacitance Characteristics

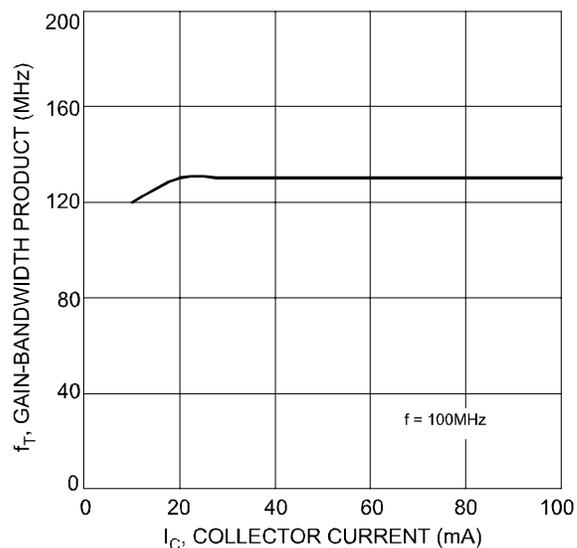
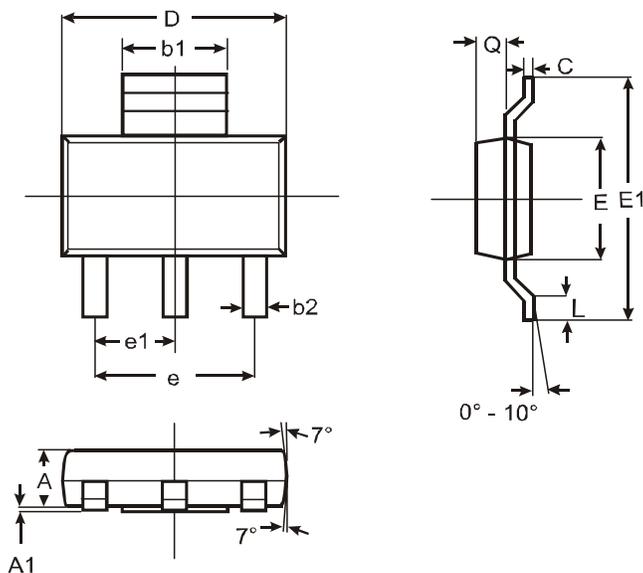


Fig. 8, Typical Gain-Bandwidth Product vs. Collector Current

Package Outline Dimensions



SOT-223			
Dim	Min	Max	Typ
A	1.55	1.65	1.60
A1	0.010	0.15	0.05
b1	2.90	3.10	3.00
b2	0.60	0.80	0.70
C	0.20	0.30	0.25
D	6.45	6.55	6.50
E	3.45	3.55	3.50
E1	6.90	7.10	7.00
e	—	—	4.60
e1	—	—	2.30
L	0.55	0.75	0.65
Q	0.84	0.94	0.89
All Dimensions in mm			

Suggested Pad Layout: (Based on IPC-SM-782)

