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

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Features

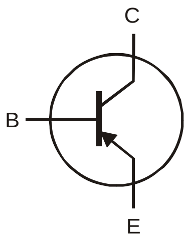
- Epitaxial Planar Die Construction
- Ideal for Medium Power Amplification and Switching

Mechanical Data

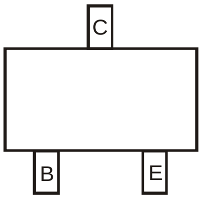
- Case: SOT-23
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish — Matte Tin annealed over Copper leadframe. Solderable per MIL-STD-202, Method 208
- Weight: 0.008 grams (approximate)

SOT-23

Top View



Device Symbol



Pin-Out Top

Maximum Ratings @T_A = 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 4)	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 5) @ T_A = 25°C	P_D	600	mW
Thermal Resistance, Junction to Ambient Air (Note 4) @ T_A = 25°C	$R_{\theta JA}$	209	°C/W
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	°C

Notes: 4. Operated under pulsed conditions: pulse width ≤100ms, duty cycle ≤ 0.25.
5. Device mounted on 15mm x 15mm x1.6mm FR4 PCB with high coverage of single sided 1oz copper, in still air conditions.

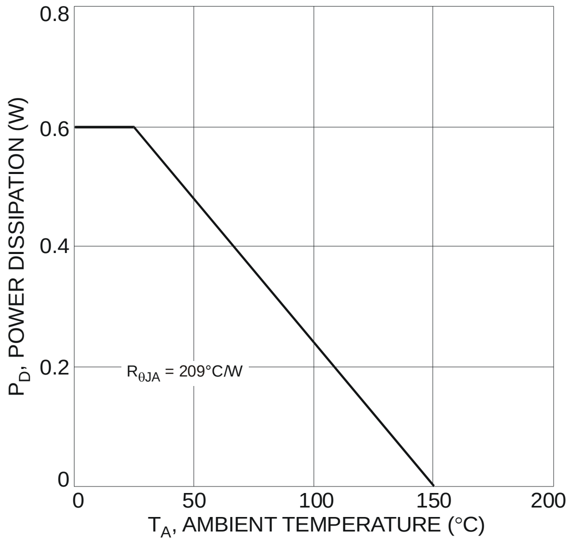


Fig. 1 Power Dissipation vs. Ambient Temperature

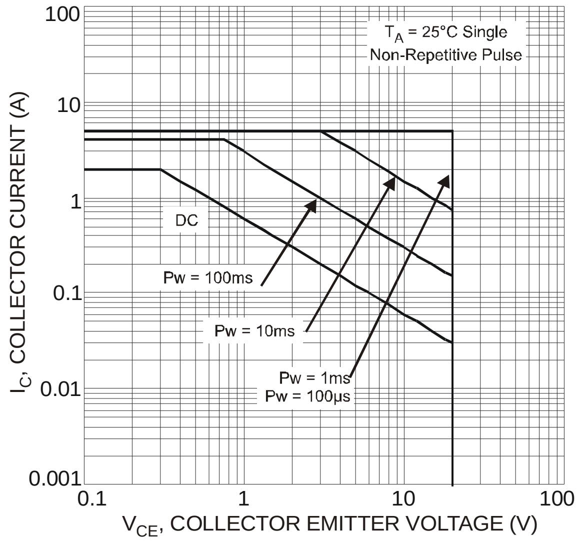


Fig. 2 Safe Operating Area

Electrical Characteristics @T_A = 25°C unless otherwise specified

Characteristic	Symbol	Min	Typ	Max	Unit	Test Conditions
Collector-Base Cutoff Current	I_{CBO}	—	—	-100	nA	V_{CB} = -20V, I_E = 0
		—	—	-50	µA	V_{CB} = -20V, I_E = 0, T_A = 150°C
Emitter-Base Cutoff Current	I_{EBO}	—	—	-100	nA	V_{EB} = -5V, I_C = 0
Collector-Base Breakdown Voltage	BV_{CBO}	-20	—	—	V	I_C = -100µA
Collector-Emitter Breakdown Voltage (Note 6)	BV_{CEO}	-20	—	—	V	I_C = -10mA
Emitter-Base Breakdown Voltage	BV_{EBO}	-5	—	—	V	I_E = -100µA
DC Current Gain (Note 5)	h_{FE}	220	—	—	—	V_{CE} = -2V, I_C = -0.1A
		220	—	—		V_{CE} = -2V, I_C = -0.5A
		200	—	—		V_{CE} = -2V, I_C = -1A
		150	—	—		V_{CE} = -2V, I_C = -2A
		100	—	—		V_{CE} = -2V, I_C = -3A
Collector-Emitter Saturation Voltage (Note 6)	$V_{CE(sat)}$	—	—	-70	mV	I_C = -0.5A, I_B = -50mA
		—	—	-130		I_C = -1A, I_B = -50mA
		—	—	-230		I_C = -2A, I_B = -100mA
		—	—	-210		I_C = -2A, I_B = -200mA
		—	—	-300		I_C = -3A, I_B = -300mA
Equivalent On-Resistance	$R_{CE(sat)}$	—	—	105	mΩ	I_E = -2A, I_B = -200mA
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	—	—	-1.1	V	I_C = -2A, I_B = -100mA
		—	—	-1.2	V	I_C = -3A, I_B = -300mA
Base-Emitter Turn-on Voltage	$V_{BE(on)}$	—	—	-1.2	V	V_{CE} = -2V, I_C = -1A
Transition Frequency	f_T	100	180	—	MHz	V_{CE} = -5V, I_C = -100mA, f = 100MHz
Output Capacitance	C_{ob}	—	25	50	pF	V_{CB} = -10V, f = 1MHz
Turn-On Time	t_{on}	—	67	—	ns	V_{CC} = -10V, I_C = -1A, I_{B1} = $-I_{B2}$ = -50mA
Delay Time	t_d	—	23	—	ns	
Rise Time	t_r	—	44	—	ns	
Turn-Off Time	t_{off}	—	224	—	ns	
Storage Time	t_s	—	184	—	ns	
Fall Time	t_f	—	40	—	ns	

Notes: 6. Measured under pulsed conditions. Pulse width = 300µs. Duty cycle ≤2%.

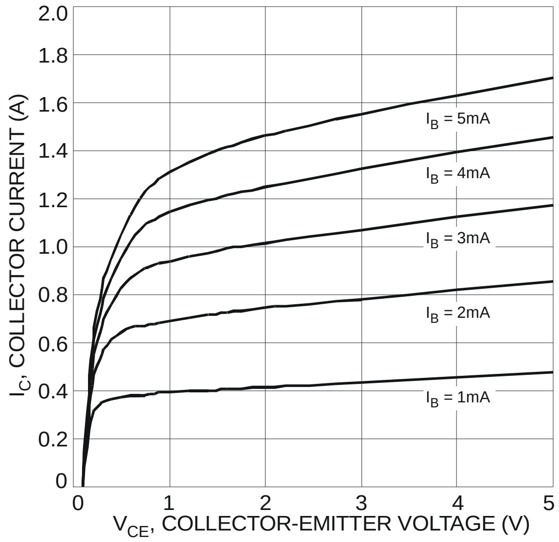


Fig. 3 Typical Collector Current vs. Collector-Emitter Voltage

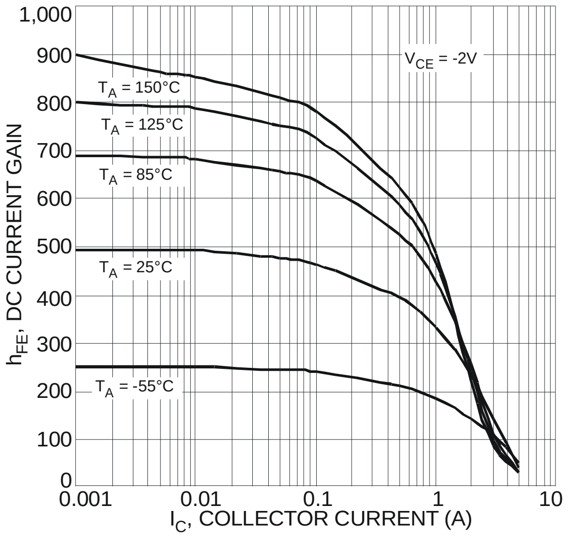


Fig. 4 Typical DC Current Gain vs. Collector Current

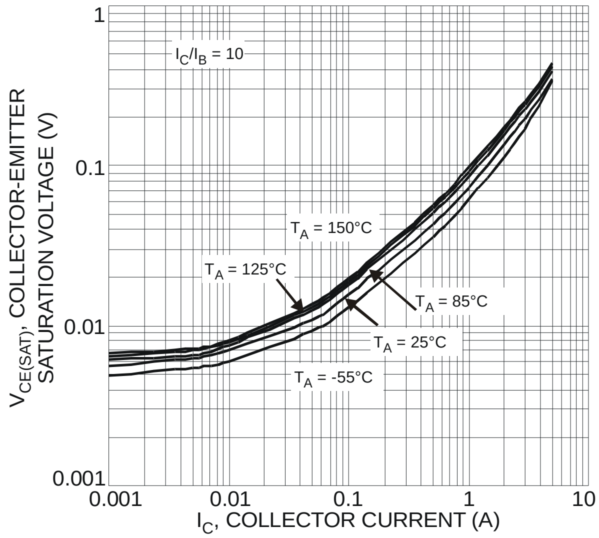


Fig. 5 Typical Collector-Emitter Saturation Voltage vs. Collector Current

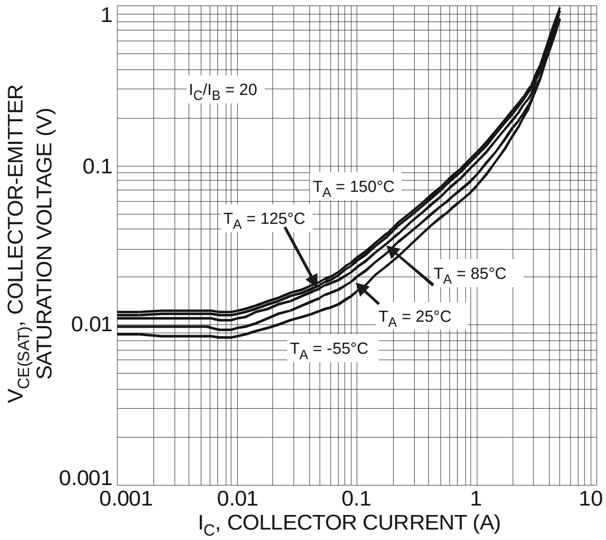


Fig. 6 Typical Collector-Emitter Saturation Voltage vs. Collector Current

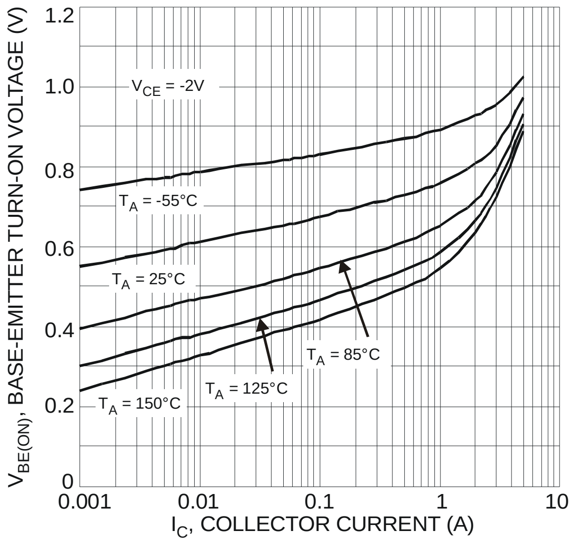


Fig. 7 Typical Base-Emitter Turn-On Voltage vs. Collector Current

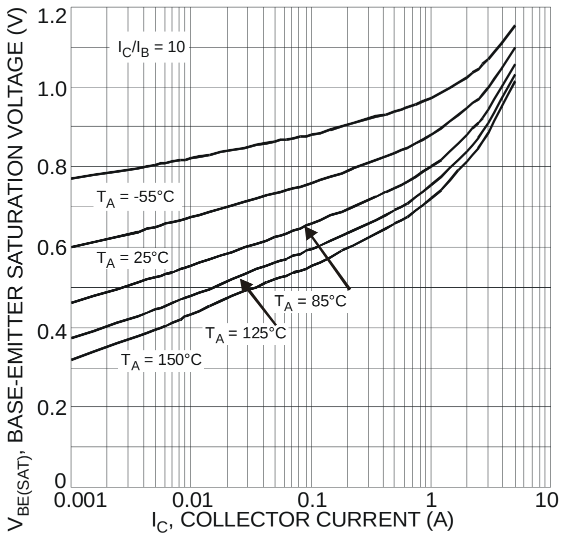
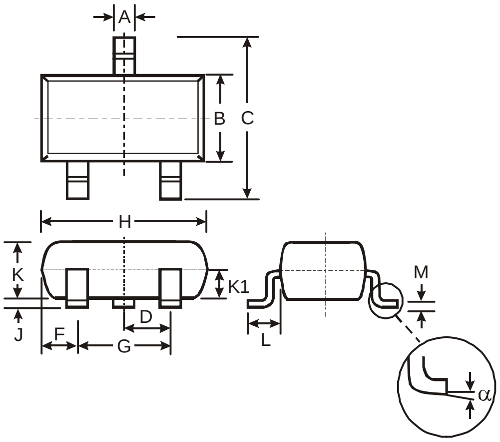


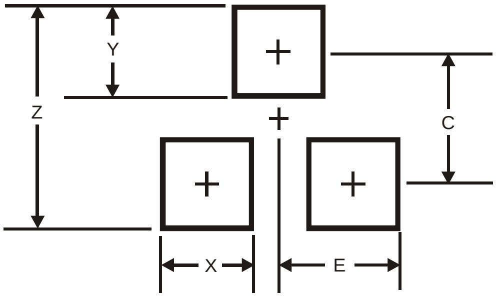
Fig. 8 Typical Base-Emitter Saturation Voltage vs. Collector Current

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