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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Description

This bipolar junction transistor (BJT) is designed to meet the stringent requirements of automotive applications.

Features

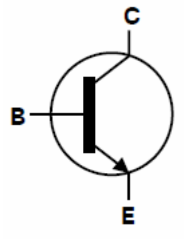
- BV_{CEO} > 25V
- I_C = 50mA Continuous Collector Current
- Designed for VHF/UHF Amplifier Applications and High Output VHF Oscillators
- High Current Gain Bandwidth Product
- Ideal for Mixer and RF Amplifier Applications with Collector Currents in the 100µA to 30mA Range

Mechanical Data

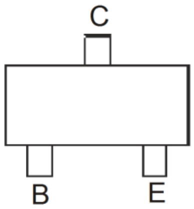
- Case: SOT23
- Case Material: Molded Plastic, “Green” Molding Compound; UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish—Matte Tin Plated Leads, Solderable per MIL-STD-202, Method 208 e3
- Weight: 0.008 grams (Approximate)

SOT23

Top View



Device Symbol



Top View
Pin-Out

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

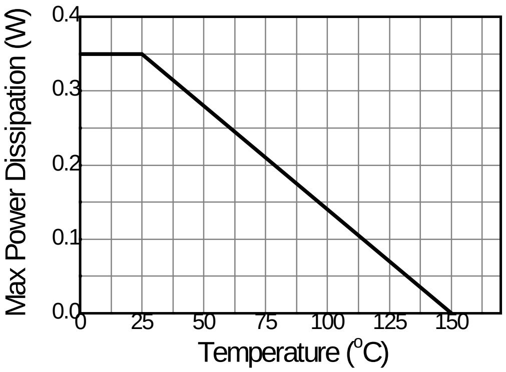
Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	30	V
Collector-Emitter Voltage	V_{CEO}	25	V
Emitter-Base Voltage	V_{EBO}	3	V
Collector Current	I_C	50	mA

Thermal Characteristics (@T_A = +25°C, unless otherwise specified.)

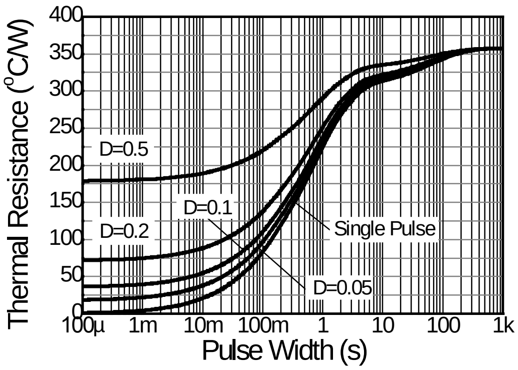
Characteristic		Symbol	Value	Unit
Power Dissipation	(Note 6)	P_D	310	mW
	(Note 7)		350	
Thermal Resistance, Junction to Ambient	(Note 6)	$R_{\theta JA}$	403	°C/W
	(Note 7)		357	
Thermal Resistance, Junction to Leads	(Note 8)	$R_{\theta JL}$	350	°C/W
Operating and Storage Temperature Range		T_J, T_{STG}	-65 to +150	°C

Notes:
6. For a device mounted on minimum recommended pad layout FR-4 PCB with high coverage of single sided 1oz copper; device is measured under still air conditions whilst operating in a steady-state.
7. Same as Note 6, except mounted on 15mm × 15mm 1oz copper.
8. Thermal resistance from junction to solder-point (at the end of the collector lead).

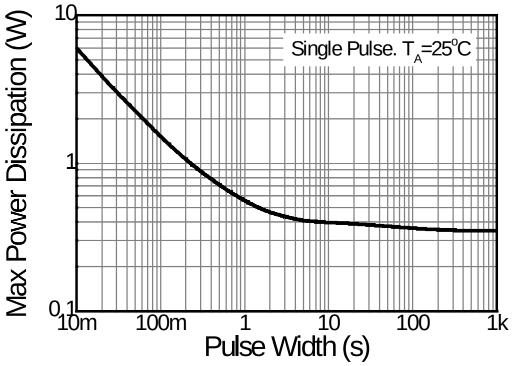
Thermal Characteristics and Derating Information



Derating Curve



Transient Thermal Impedance



Pulse Power Dissipation

Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 9)						
Collector-Base Breakdown Voltage	BV_{CBO}	30	—	—	V	I_C = 100µA
Collector-Emitter Breakdown Voltage	BV_{CEO}	25	—	—	V	I_C = 1mA
Emitter-Base Breakdown Voltage	BV_{EBO}	3	—	—	V	I_C = 100µA
Collector-Base Cut-Off Current	I_{CBO}	—	—	100	nA	V_{CB} = 25V
Emitter-Base Cut-Off Current	I_{EBO}	—	—	100	nA	V_{EB} = 2V
ON CHARACTERISTICS (Note 9)						
DC Current Gain	h_{FE}	60	—	—	—	V_{CE} = 10V, I_C = 4mA
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$	—	—	0.5	V	I_C = 4mA, I_B = 400µA
Base-Emitter Voltage	$V_{BE(SAT)}$	—	—	0.95	V	I_C = 4mA, I_B = 400µA
Base-Emitter Turn-on Voltage	$V_{BE(ON)}$	—	—	0.95	V	V_{CE} = 10V, I_C = 4mA
SMALL SIGNAL CHARACTERISTICS						
Current Gain Bandwidth Product	f_T	650	—	—	MHz	V_{CE} = 10V, I_C = 4mA, f = 100MHz
Collector-Base Capacitance	C_{CBO}	—	—	0.7	pF	V_{CB} = 10V, f = 1MHz
Collector-Base Feedback Capacitance	C_{RBO}	—	—	0.65	pF	V_{CB} = 10V, f = 1MHz
Collector-Base Time Constant	Rb'Cc	—	—	9	ps	V_{CB} = 10V, f = 31.8MHz, I_C = 4mA

Note 9: Measured under pulsed conditions. Pulse width ≤ 300µs. Duty cycle ≤ 2%.

Typical Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

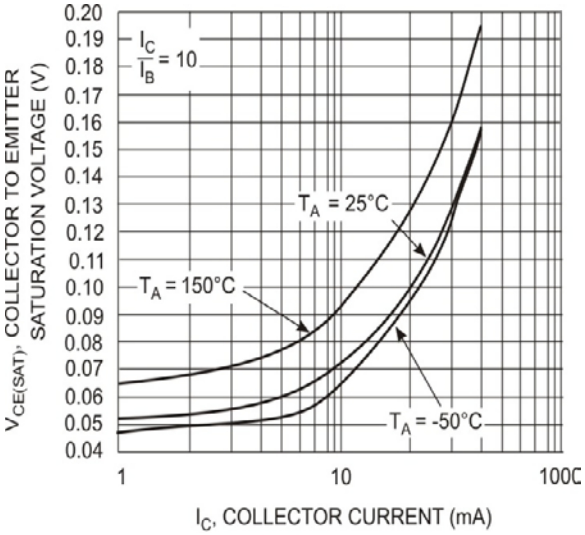


Fig. 1 Collector Emitter Saturation Voltage vs. Collector Current

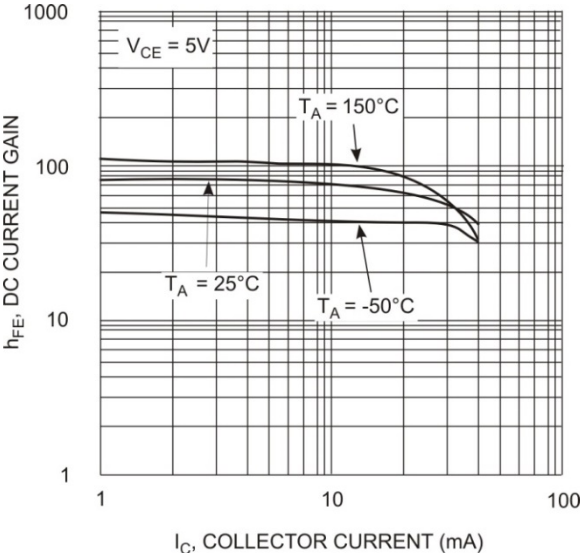


Fig. 2 DC Current Gain vs. Collector Current

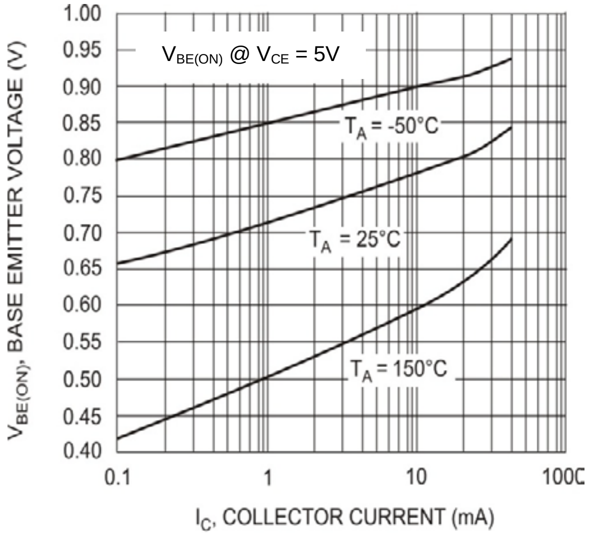


Fig. 3 Base Emitter Voltage vs. Collector Current

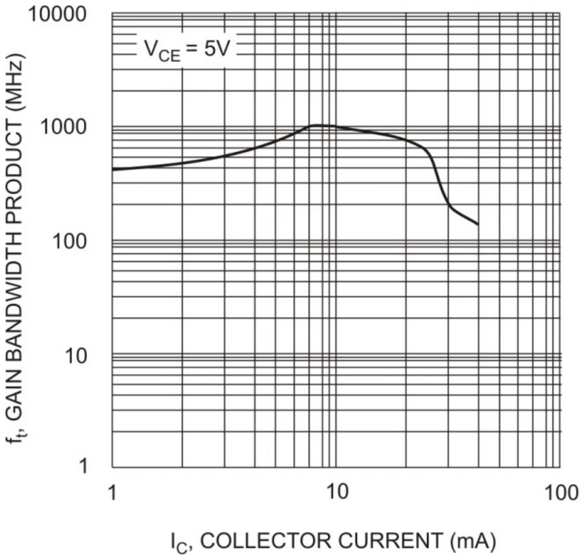
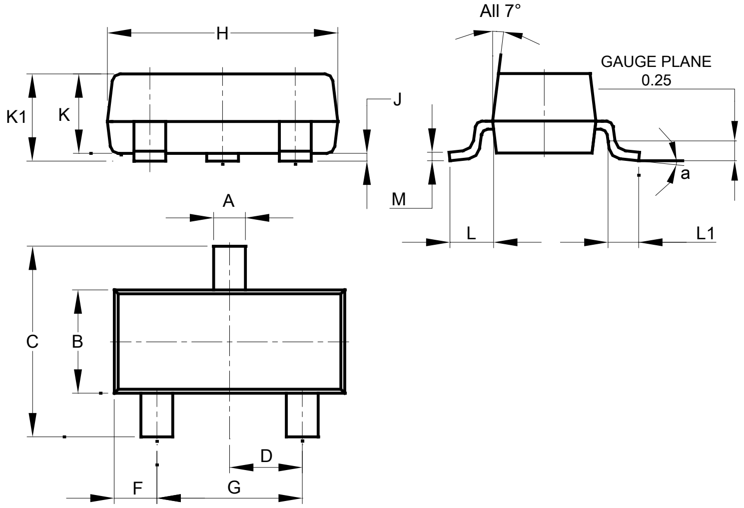


Fig. 4 Gain Bandwidth Product vs. Collector Current

Package Outline Dimensions

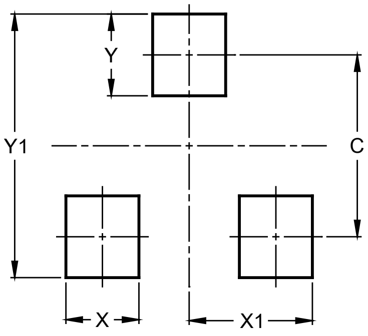
SOT23



SOT23			
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	0.890	1.00	0.975
K1	0.903	1.10	1.025
L	0.45	0.61	0.55
L1	0.25	0.55	0.40
M	0.085	0.150	0.110
a	0°	8°	--
All Dimensions in mm			

Suggested Pad Layout

SOT23



Dimensions	Value (in mm)
C	2.0
X	0.8
X1	1.35
Y	0.9
Y1	2.9