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

0755-83047638
ysbdt@szyoushang.cn
www.szyoushang.cn

企业微信二维码

企业QQ二维码

Description

This Bipolar Junction Transistor (BJT) is designed to meet the stringent requirement of Automotive Applications.

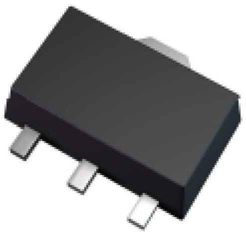
Features

- BV_{CEO} > -50V
- I_C = -2A High Continuous Collector Current
- High Gain Holds up

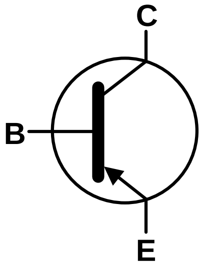
Mechanical Data

- Case: SOT89
- Case Material: Molded Plastic. “Green” Molding Compound. UL Flammability 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: 0.052 grams (Approximate)

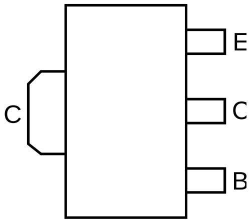
SOT89



Top View



Device Symbol



Top View
Pin Out

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

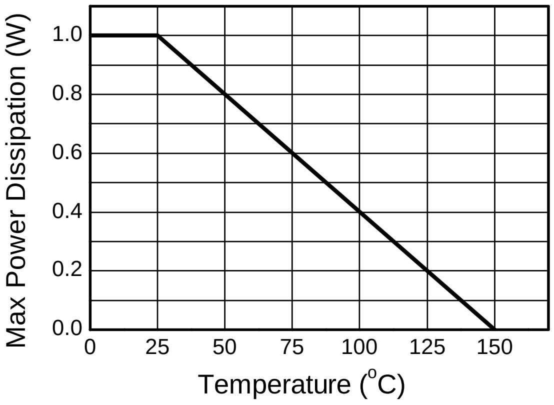
Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	-50	V
Collector-Emitter Voltage	V_{CEO}	-50	V
Emitter-Base Voltage	V_{EBO}	-6	V
Continuous Collector Current	I_C	-2	A
Peak Pulse Current	I_{CM}	-2.5	A
Base Current	I_B	-500	mA

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

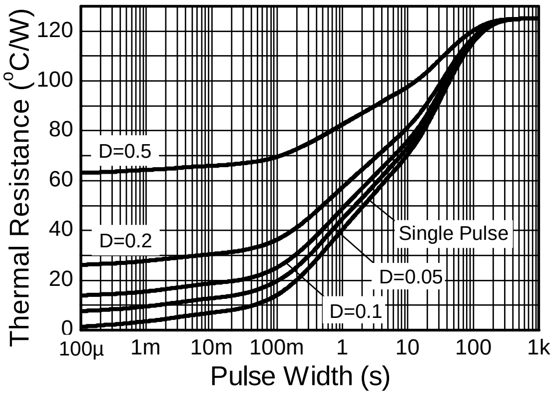
Characteristic	Symbol	Value	Unit
Power Dissipation (Note 6)	P_D	1	W
Thermal Resistance, Junction to Ambient (Note 6)	$R_{\theta JA}$	125	°C/W
Thermal Resistance, Junction to Leads (Note 7)	$R_{\theta JL}$	18.3	°C/W
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	°C

Notes: 6. For a device surface mounted on 15mm x 15mm x 0.6mm FR-4 PCB with high coverage of single sided 1 oz copper, in still air conditions; the device is measured when operating in steady state condition.
7. Thermal resistance from junction to solder-point (on the exposed collector pad).

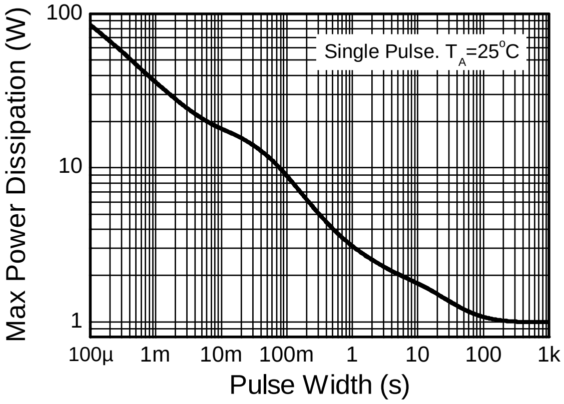
Thermal Characteristics and Derating Information



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
Collector-Base Breakdown Voltage	BV_{CBO}	-50	—	—	V	I_C = -100µA
Collector-Emitter Breakdown Voltage (Note 8)	BV_{CEO}	-50	—	—	V	I_C = -10mA
Emitter-Base Breakdown Voltage	BV_{EBO}	-6	—	—	V	I_E = -100µA
Collector Cut-off Current	I_{CBO}	—	—	-100	nA	V_{CB} = -50V
Emitter Cut-off Current	I_{EBO}	—	—	-100	nA	V_{EB} = -5V
DC Current Gain (Note 8)	h_{FE}	120	—	240	—	I_C = -500mA, V_{CE} = -2V
		20		—		I_C = -2A, V_{CE} = -2V
Collector-Emitter Saturation Voltage (Note 8)	$V_{CE(sat)}$	—	—	-0.5	V	I_C = -1A, I_B = -50mA
Base-Emitter Saturation Voltage (Note 8)	$V_{BE(sat)}$	—	—	-1.2	V	I_C = -1A, I_B = -50mA
Transition Frequency	f_T	—	160	—	MHz	I_C = -100mA, V_{CE} = -2V, f = 100MHz
Output Capacitance	C_{obo}	—	17	—	pF	V_{CB} = -10V, I_E = 0, f = 1MHz
Turn-On Time	t_{on}	—	25	—	ns	V_{CE}= -2V, I_C = -1A, I_{B1} = -I_{B2} = -50mA
Storage Time	$t_{(s)}$	—	130	—	ns	
Fall Time	$t_{(f)}$	—	12	—	ns	

Note: 8. Measured under pulsed conditions. Pulse width ≤ 300µs. Duty cycle ≤ 2%

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

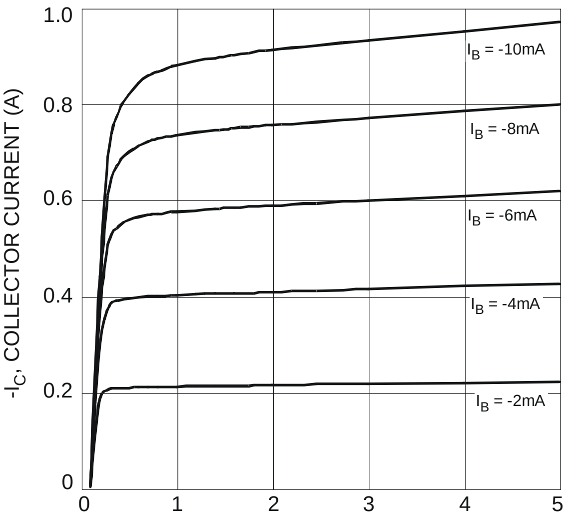


Figure 1 Typical Collector Current vs. Collector-Emitter Voltage

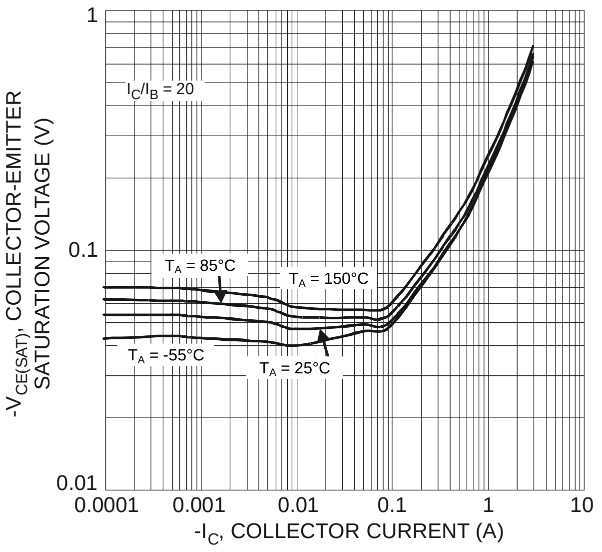


Figure 2 Typical Collector-Emitter Saturation Voltage vs. Collector Current

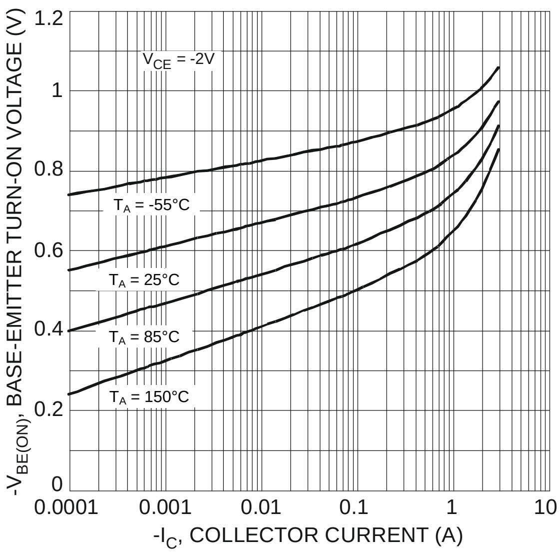


Figure 3 Typical Base-Emitter Turn-On Voltage vs. Collector Current

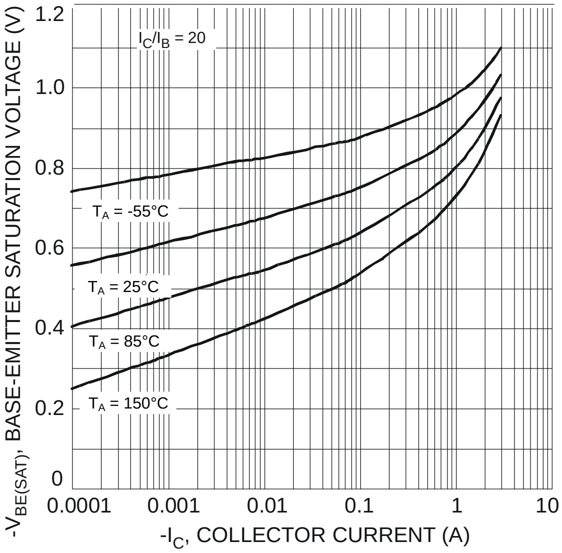


Figure 4 Typical Base-Emitter Saturation Voltage vs. Collector Current

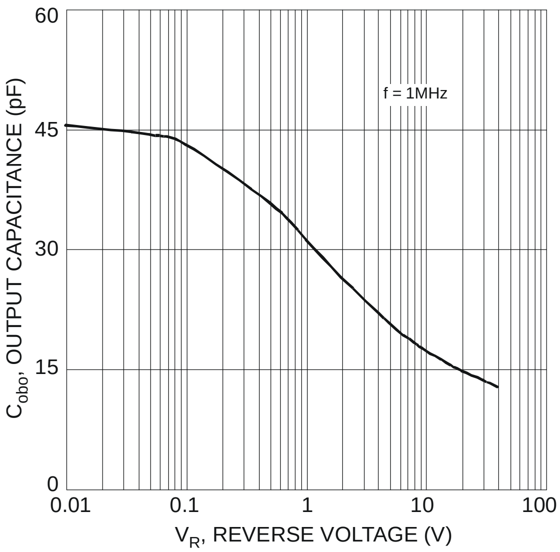


Figure 5 Typical Output Capacitance Characteristics

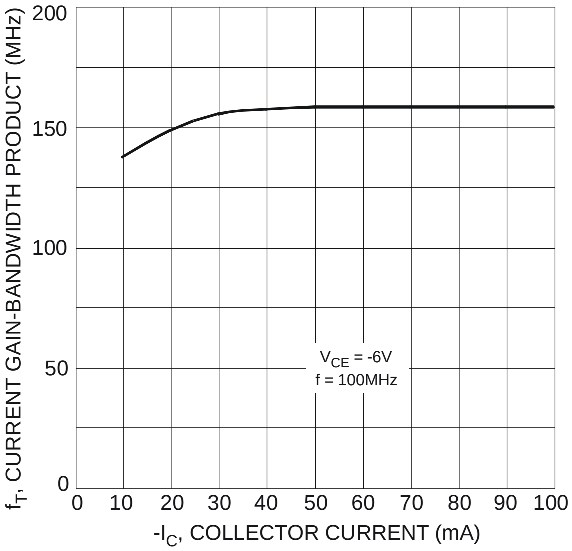
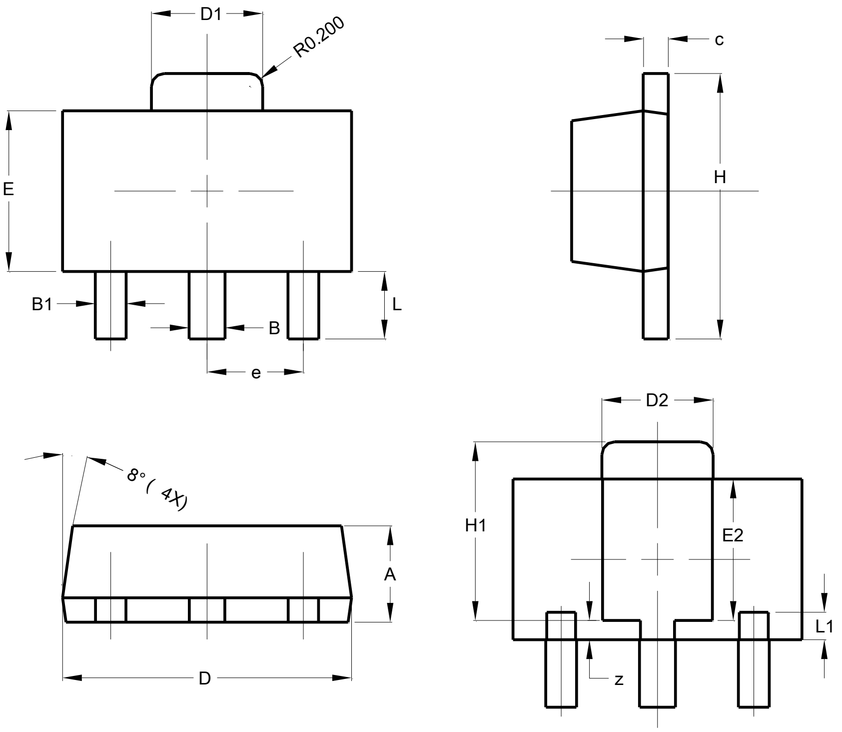


Figure 6 Typical Gain-Bandwidth Product vs. Collector Current

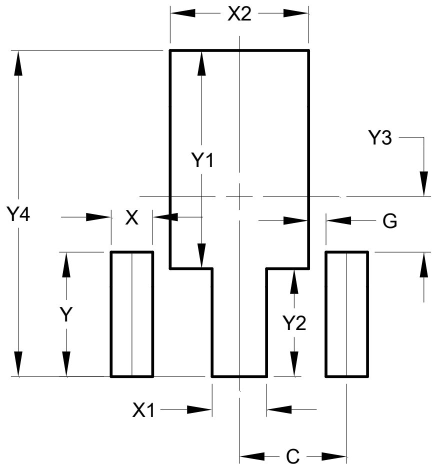
SOT89



SOT89			
Dim	**Min**	**Max**	**Typ**
A	1.40	1.60	1.50
B	0.50	0.62	0.56
B1	0.42	0.54	0.48
c	0.35	0.43	0.38
D	4.40	4.60	4.50
D1	1.62	1.83	1.733
D2	1.61	1.81	1.71
E	2.40	2.60	2.50
E2	2.05	2.35	2.20
e	-	-	1.50
H	3.95	4.25	4.10
H1	2.63	2.93	2.78
L	0.90	1.20	1.05
L1	0.327	0.527	0.427
z	0.20	0.40	0.30
All Dimensions in mm			

Suggested Pad Layout

SOT89



Dimensions	Value (in mm)
C	1.500
G	0.244
X	0.580
X1	0.760
X2	1.933
Y	1.730
Y1	3.030
Y2	1.500
Y3	0.770
Y4	4.530