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.

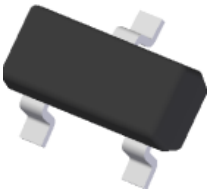
Features

- BV_{CEO} > 60V
- Darlington Transistor h_{FE} > 10k @ 100mA for High Gain
- I_C = 500mA High Continuous Collector Current
- Complementary Darlington PNP Type: NK-BCV46

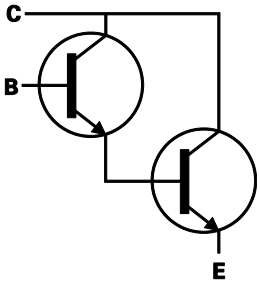
Mechanical Data

- 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)

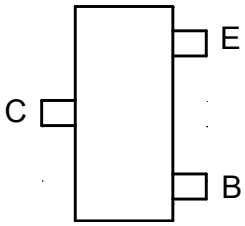
SOT23



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}	80	V
Collector-Emitter Voltage	V_{CEO}	60	V
Emitter-Base Voltage	V_{EBO}	10	V
Continuous Collector Current	I_C	500	mA
Peak Pulse Current	I_{CM}	800	mA
Base Current	I_B	100	mA

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

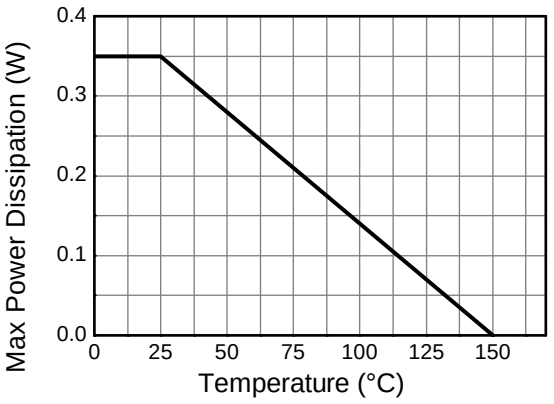
Characteristic		Symbol	Value	Unit
Power Dissipation	(Note 6)	P_D	310	mW
	(Note 7)		350	
Thermal Resistance, Junction to Ambient	(Note 6)	$R_{\theta JA}$	403	°C/W
	(Note 7)		357	
Thermal Resistance, Junction to Leads	(Note 8)	$R_{\theta JL}$	350	°C/W
Operating and Storage Temperature Range		T_J,T_{STG}	-55 to +150	°C

ESD Ratings (Note 9)

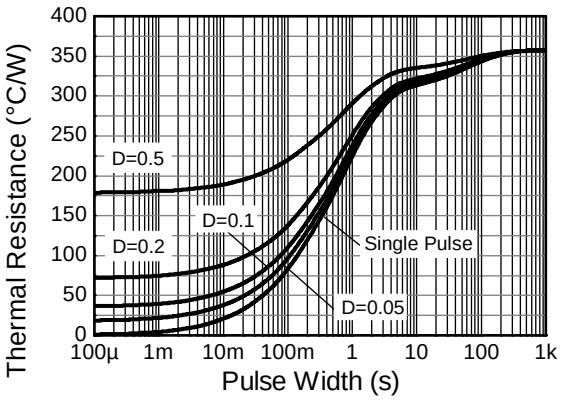
Characteristic	Symbol	Value	Unit	JEDEC Class
Electrostatic Discharge - Human Body Model	ESD HBM	2,000	V	2
Electrostatic Discharge - Machine Model	ESD MM	200	V	B

Notes:
6. For the device mounted on minimum recommended pad layout FR4 PCB with high coverage of single sided 1oz copper in still air condition; the device is measured when operating in a steady-state condition.
7. Same as note (6), except the device is mounted on 15mm x 15mm FR4 PCB.
8. Thermal resistance from junction to solder-point (at the end of the leads).
9. Refer to JEDEC specification JESD22-A114 and JESD22-A115.

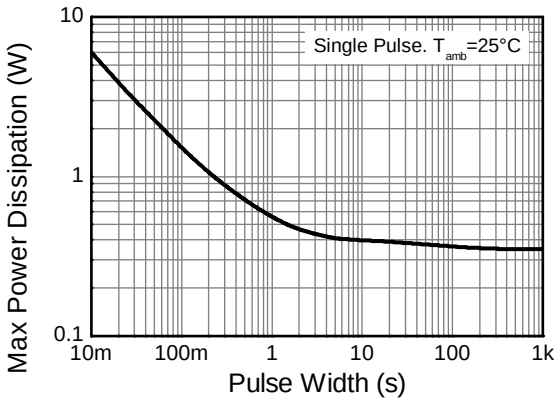
Thermal Characteristics and Derating Information (@T_A = +25°C, unless otherwise specified.)



Derating Curve



Transient Thermal Impedance



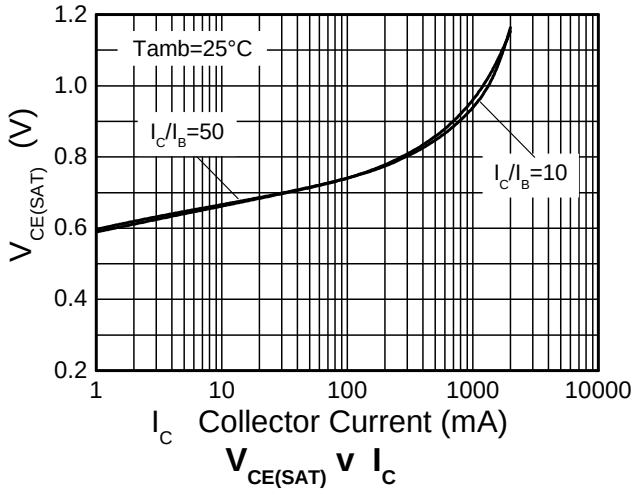
Pulse Power Dissipation

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

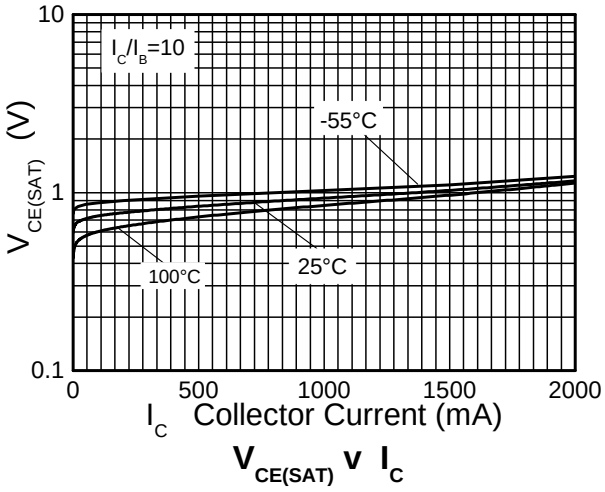
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS						
Collector-Base Breakdown Voltage	BV_{CBO}	80	—	—	V	I_C = 100μA
Collector-Emitter Breakdown Voltage (Note 10)	BV_{CEO}	60	—	—	V	I_{CEO} = 10mA
Emitter-Base Breakdown Voltage	BV_{EBO}	10	—	—	V	I_{EBO} = 10μA
Collector cut-off current	I_{CBO}	— —	<1 —	100 10	nA μA	V_{CB} = 60V V_{CB} = 60V, T_A = +150°C
Emitter-base Cut-off Current	I_{EBO}	—	<1	100	nA	V_{EB} = 4V
ON CHARACTERISTICS (Note 10)						
Static Forward Current Transfer Ratio	h_{FE}	2,000 4,000 10,000 2,000	—	—	—	I_C = 100μA, V_{CE} = 1V I_C = 10mA, V_{CE} = 5V I_C = 100mA, V_{CE} = 5V I_C = 500mA, V_{CE} = 5V
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	—	—	1.0	V	I_C = 100mA, I_B = 0.1mA
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	—	—	1.5	V	I_C = 100mA, I_B = 0.1mA
SMALL SIGNAL CHARACTERISTICS (Note 10)						
Transition Frequency	f_T	—	170	—	MHz	I_C = 50mA, V_{CE} = 5V, f = 20MHz
Output Capacitance	C_{obo}	—	3.5	—	pF	V_{CB} = 10V, f = 1MHz

Note: 10. Measured under pulsed conditions. Pulse width ≤ 300μs. Duty cycle ≤ 2%.

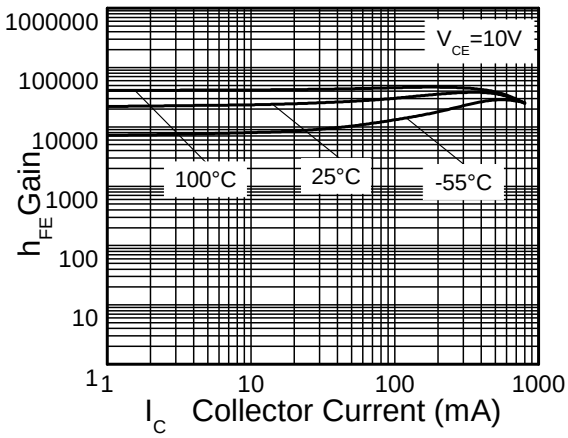
Typical Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)



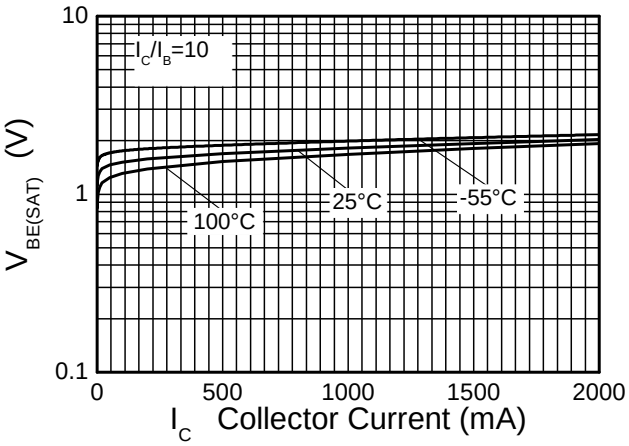
$V_{CE(SAT)}$ v I_C



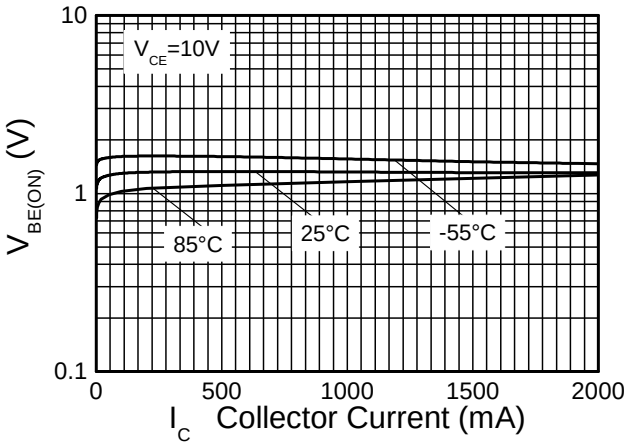
$V_{CE(SAT)}$ v I_C



h_{FE} v I_C

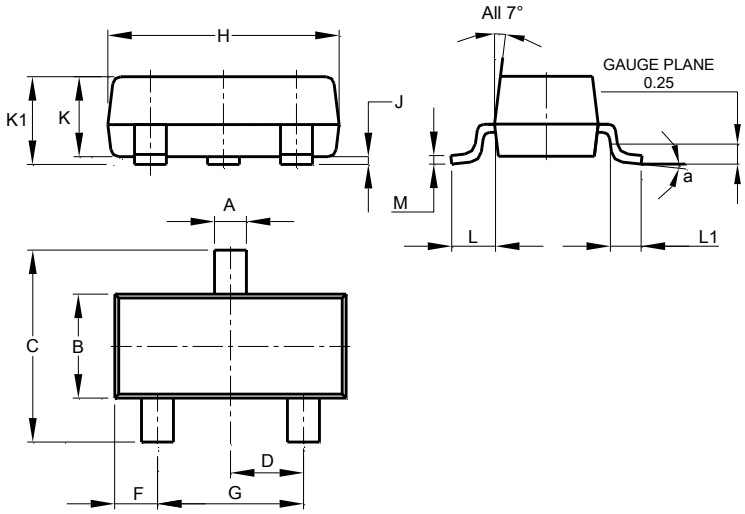


$V_{BE(SAT)}$ v I_C



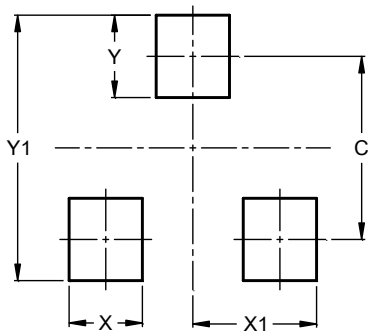
$V_{BE(ON)}$ v I_C

Package Outline Dimensions



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



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