



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

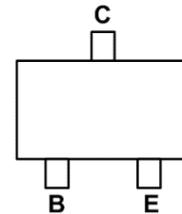
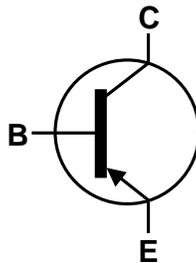
This Bipolar Junction Transistor (BJT) is designed to meet the stringent requirements of automotive applications.

Features

- $BV_{CEO} > -45V$
- $I_C = -100mA$ High Collector Current
- Ideally Suited for Automatic Insertion
- Complementary NPN Types Available (NK-BC847CWQ)
- For Switching and AF Amplifier Applications

Mechanical Data

- Package: SOT323
- Package 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 @3
- Weight: 0.006 grams (Approximate)



Absolute Maximum Ratings (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	-50	V
Collector-Emitter Voltage	V_{CEO}	-45	V
Emitter-Base Voltage	V_{EBO}	-5.0	V
Continuous Collector Current	I_C	-100	mA
Peak Collector Current	I_{CM}	-200	mA
Peak Emitter Current	I_{EM}	-200	mA

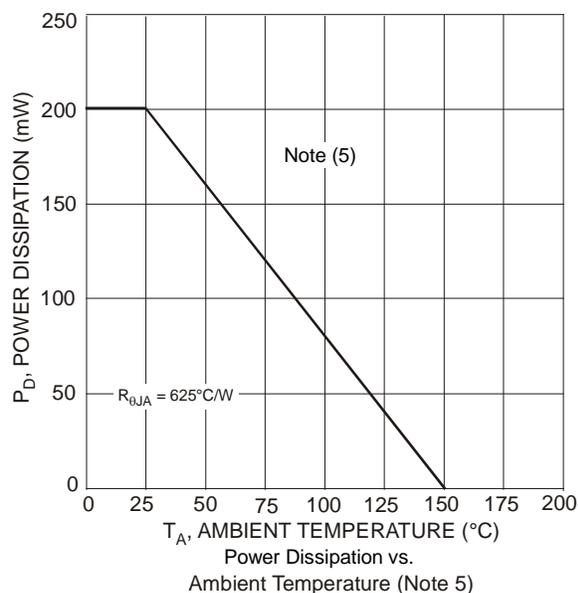
Thermal Characteristics (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 5)	P_D	200	mW
Thermal Resistance, Junction to Ambient (Note 5)	$R_{\theta JA}$	625	$^\circ\text{C}/\text{W}$
Operating and Storage Temperature Range	T_J, T_{STG}	-65 to +150	$^\circ\text{C}$

ESD Ratings (Note 6)

Characteristic	Symbol	Value	Unit	JEDEC Class
Electrostatic Discharge - Human Body Model	ESD HBM	4000	V	3A
Electrostatic Discharge - Charged Device Model	ESD CDM	1000	V	C3

- Notes:
5. For a device mounted on minimum recommended pad layout 1oz weight copper that is on a single-sided FR4 PCB; device is measured under still air conditions whilst operating in a steady-state.
 6. Refer to JEDEC specification JESD22-A114 and JESD22-A115.

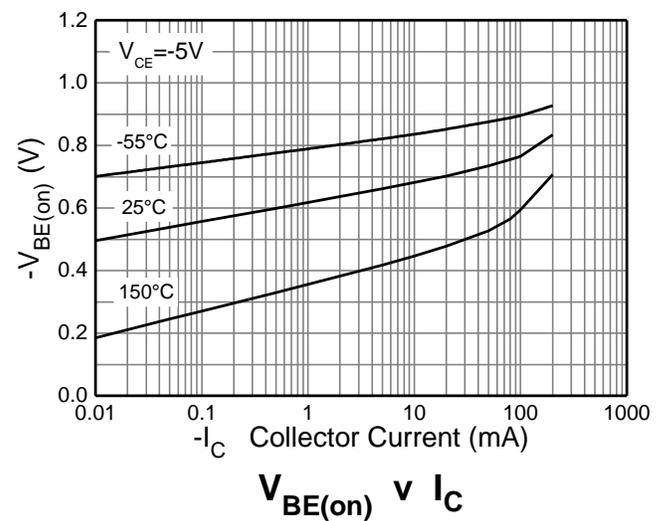
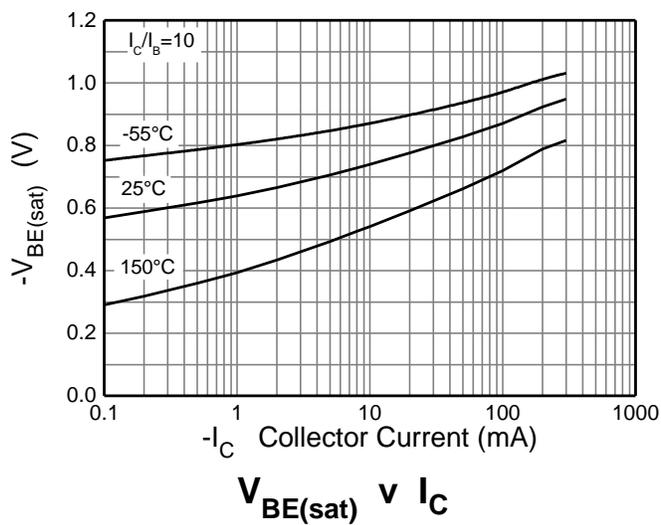
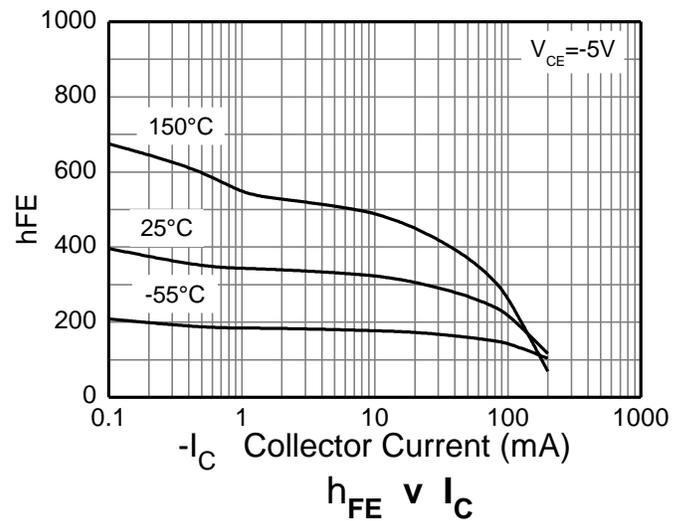
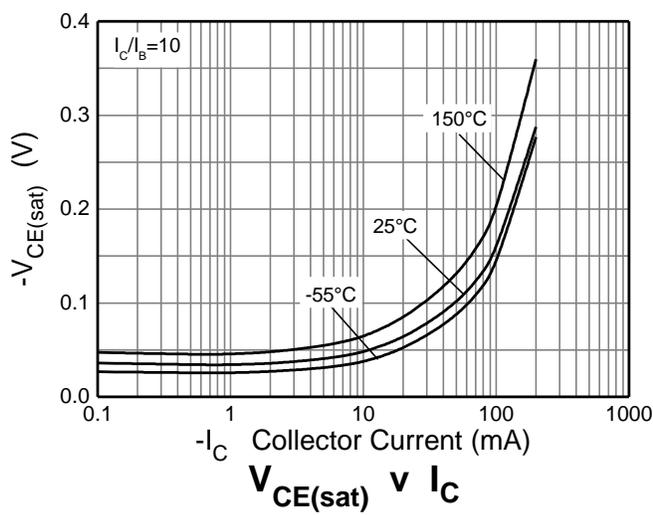


Electrical Characteristics (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV_{CBO}	-50	—	—	V	$I_C = -100\text{nA}$
Collector-Emitter Breakdown Voltage (Note 7)	BV_{CEO}	-45	—	—	V	$I_C = -10\text{mA}$
Emitter-Base Breakdown Voltage	BV_{EBO}	-5	—	—	V	$I_E = -100\text{nA}$
DC Current Gain (Note 7)	h_{FE}	420	520	800	—	$V_{CE} = -5\text{V}, I_C = -2\text{mA}$
Collector Cutoff Current	I_{CBO}	—	—	-15	nA	$V_{CB} = -30\text{V}$
				-4	μA	$V_{CB} = -30\text{V}, T_A = +150^\circ\text{C}$
Collector-Emitter Saturation Voltage (Note 7)	$V_{CE(sat)}$	—	-75	-300	mV	$I_C = -10\text{mA}, I_B = -0.5\text{mA}$
			-250	-650		$I_C = -100\text{mA}, I_B = -5\text{mA}$
Base-Emitter Turn-On Voltage (Note 7)	$V_{BE(on)}$	-600	-650	-750	mV	$I_C = -2\text{mA}, V_{CE} = -5\text{V}$
		—	—	-820		$I_C = -10\text{mA}, V_{CE} = -5\text{V}$
Base-Emitter Saturation Voltage (Note 7)	$V_{BE(sat)}$	—	-700	—	mV	$I_C = -10\text{mA}, I_B = -0.5\text{mA}$
			-850	-950		$I_C = -100\text{mA}, I_B = -5\text{mA}$
Output Capacitance	C_{obo}	—	3	4.5	pF	$V_{CB} = -10\text{V}, f = 1\text{MHz}$
Transition Frequency	f_T	100	200	—	MHz	$V_{CE} = -5\text{V}, I_C = -10\text{mA}, f = 100\text{MHz}$
Noise Figure	NF	—	—	10	dB	$V_{CE} = -5\text{V}, I_C = -200\mu\text{A}$ $R_S = 2\text{k}\Omega, f = 1\text{kHz}$ $\Delta f = 200\text{Hz}$

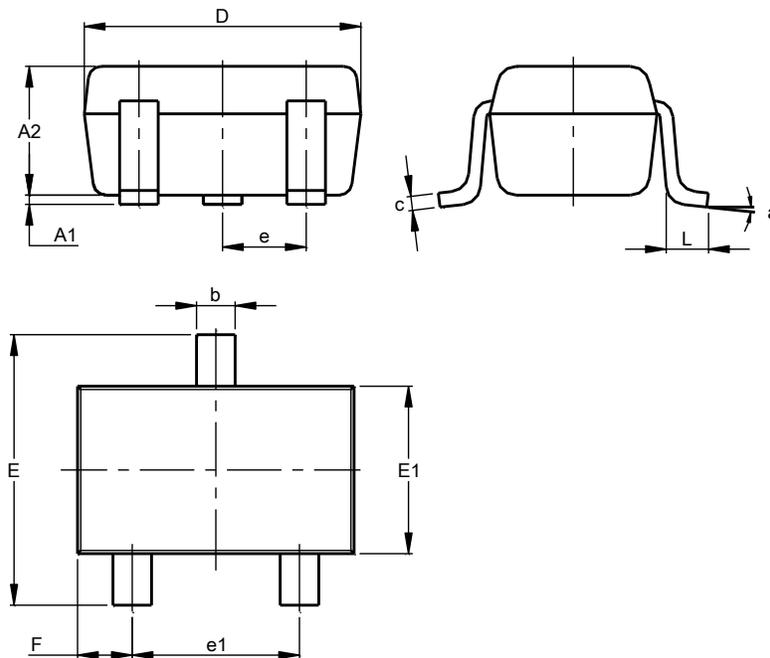
Notes: 7. Measured under pulsed conditions. Pulse width $\leq 300\mu\text{s}$. Duty cycle $\leq 2\%$

Typical Electrical Characteristics (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)



Package Outline Dimensions

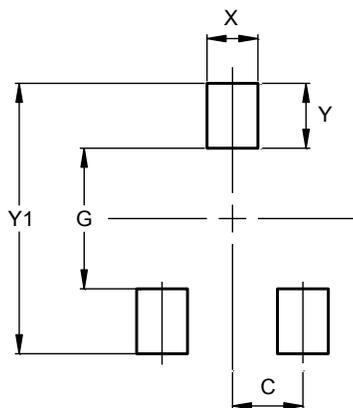
SOT323



SOT323			
Dim	Min	Max	Typ
A1	0.00	0.10	0.05
A2	0.90	1.00	0.95
b	0.25	0.40	0.30
c	0.10	0.18	0.11
D	1.80	2.20	2.15
E	2.00	2.20	2.10
E1	1.15	1.35	1.30
e	0.650 BSC		
e1	1.20	1.40	1.30
F	0.375	0.475	0.425
L	0.25	0.40	0.30
a	0°	8°	--
All Dimensions in mm			

Suggested Pad Layout

SOT323



Dimensions	Value (in mm)
C	0.650
G	1.300
X	0.470
Y	0.600
Y1	2.500