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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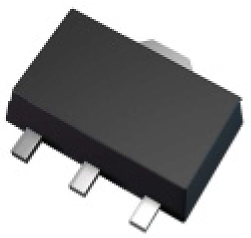
Features

- BV_{CEO} > 45V
- I_C = 2A high Continuous Collector Current
- I_{CM} up to 6A Peak Pulse Current
- High gain h_{FE} > 400 @ 1A
- 2W Power Dissipation
- Low saturation voltage $V_{CE(sat)}$ < 300mV @ 1A
- Complementary PNP type: NK-FCX790A

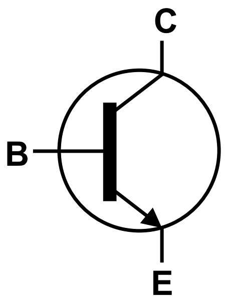
Mechanical Data

- 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)

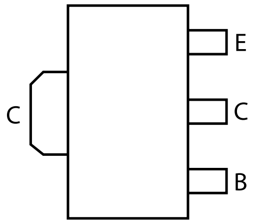
SOT89



Top View



Device Symbol



Top View
Pin Out

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

Characteristic	Symbol	Limit	Unit
Collector-Base Voltage	V_{CBO}	45	V
Collector-Emitter Voltage	V_{CEO}	45	V
Emitter-Base Voltage	V_{EBO}	7	V
Continuous Collector Current	I_C	2	A
Peak Pulse Current	I_{CM}	6	A
Base Current	I_B	500	mA

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

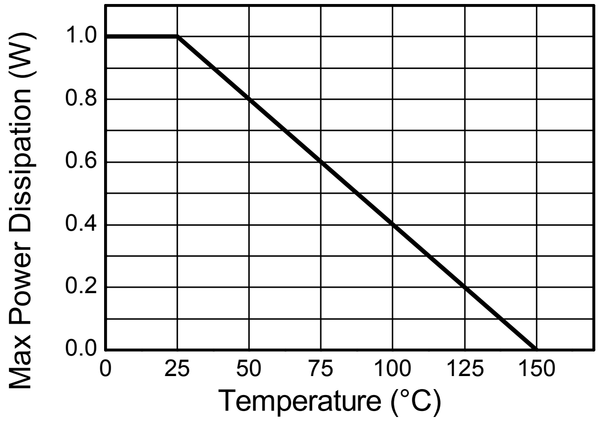
Characteristic		Symbol	Value	Unit
Power Dissipation	(Note 5)	P_D	1	W
	(Note 6)		2	
Thermal Resistance, Junction to Ambient Air	(Note 5)	$R_{\theta JA}$	125	°C/W
	(Note 6)		62.5	
Thermal Resistance, Junction to Leads	(Note 7)	$R_{\theta JL}$	5.31	°C/W
Operating and Storage Temperature Range		T_J, T_{STG}	-55 to +150	°C

ESD Ratings (Note 8)

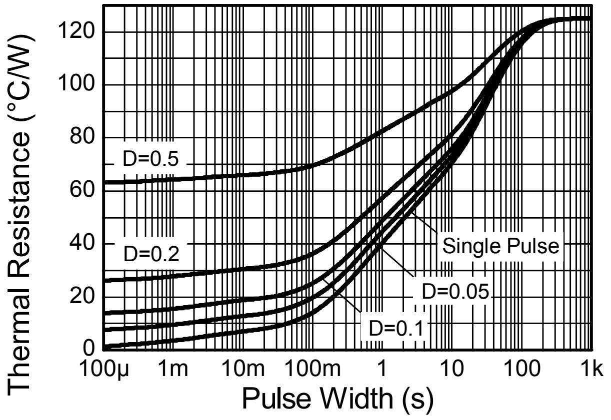
Characteristic	Symbol	Value	Unit	JEDEC Class
Electrostatic Discharge - Human Body Model	ESD HBM	≥ 8,000	V	3B
Electrostatic Discharge - Machine Model	ESD MM	≥ 400	V	C

Notes:
5. For a device surface mounted on 15mm x 15mm x 0.6mm FR4 PCB with high coverage of single sided 1 oz copper, in still air conditions; the device is measured when operating in steady state condition.
6. Same as note (5), except the device is mounted on 40mm x 40mm x 1.6mm FR4 PCB.
7. Thermal resistance from junction to solder-point (on the exposed collector pad).
8. Refer to JEDEC specification JESD22-A114 and JESD22-A115.

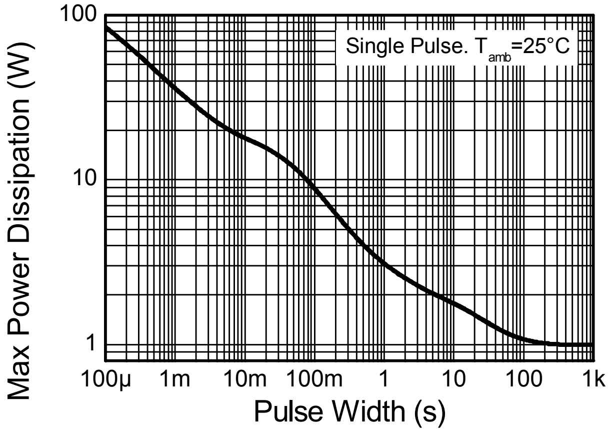
Thermal Characteristics and Derating Information



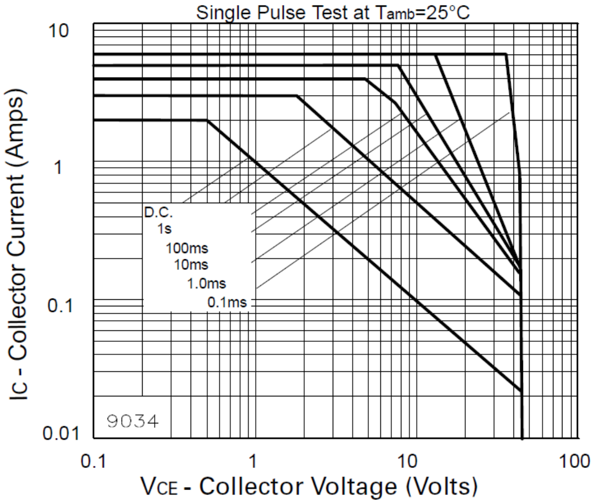
Derating Curve



Transient Thermal Impedance



Pulse Power Dissipation



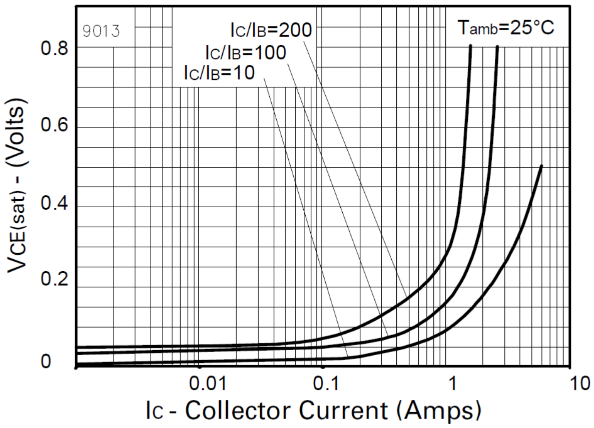
Safe Operating Area

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

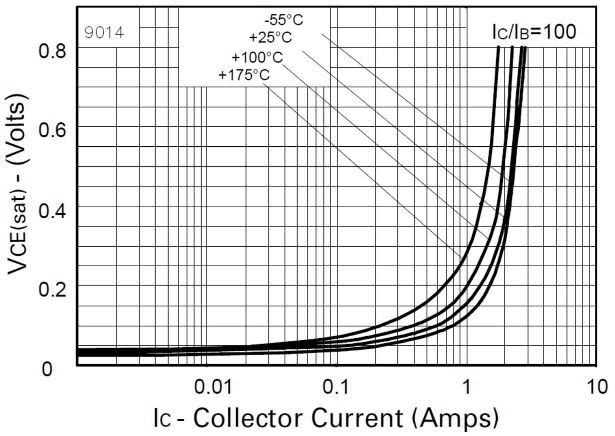
Characteristic	Symbol	Min	Typ.	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV_{CBO}	45	—	—	V	I_C = 100μA
Collector-Emitter Breakdown Voltage (Note 9)	BV_{CEO}	45	—	—	V	I_C = 10mA
Emitter-Base Breakdown Voltage	BV_{EBO}	7	—	—	V	I_E = 100μA
Collector Cutoff Current	I_{CBO}	—	—	100	nA	V_{CB} = 35V
Emitter Cutoff Current	I_{EBO}	—	—	100	nA	V_{EB} = 5.6V
DC current transfer Static ratio (Note 9)	h_{FE}	500 400 150	— — —	— — —	—	I_C = 100mA, V_{CE} = 2V I_C = 1A, V_{CE} = 2V I_C = 2A, V_{CE} = 2V
Collector-Emitter Saturation Voltage (Note 9)	$V_{CE(sat)}$	— —	— —	80 300	mV	I_C = 0.1A, I_B = 0.5mA I_C = 1A, I_B = 5mA
Base-Emitter Saturation Voltage (Note 9)	$V_{BE(sat)}$	—	—	0.9	V	I_C = 1A, I_B = 10mA
Base-Emitter Turn-on Voltage (Note 9)	$V_{BE(on)}$	—	—	0.85	V	I_C = 1A, V_{CE} = 2V
Transitional Frequency	f_T	150	—	—	MHz	I_C = 50mA, V_{CE} = 5V f = 50MHz
Input capacitance	C_{ibo}	—	200	—	pF	V_{EB} = 0.5V, f = 1MHz,
Output capacitance	C_{obo}	—	16	—	pF	V_{CB} = 10V, f = 1MHz,
Switching times	t_{on}	—	33	—	ns	I_C = 500mA, V_{CC} = 10V I_{B1} = -I_{B2} = 50mA
	t_{off}		1300			

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

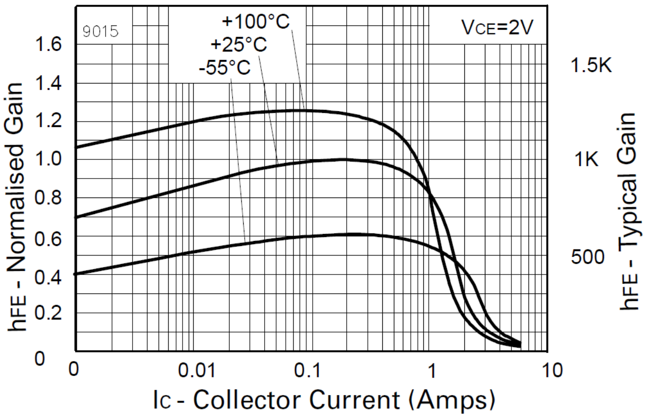
Typical Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)



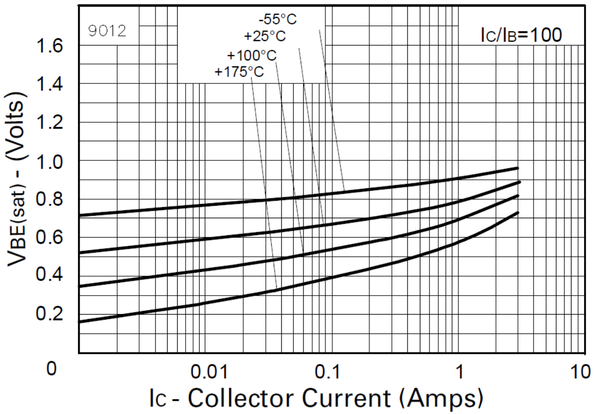
$V_{CE(sat)}$ v I_C



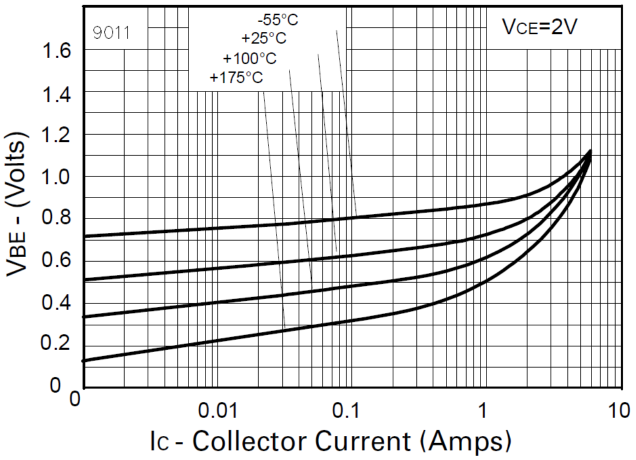
$V_{CE(sat)}$ v I_C



h_{FE} v I_C

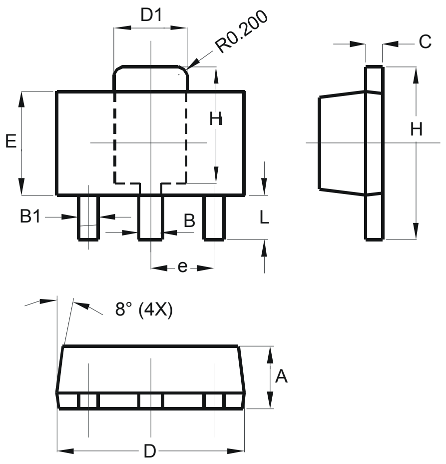


$V_{BE(sat)}$ v I_C



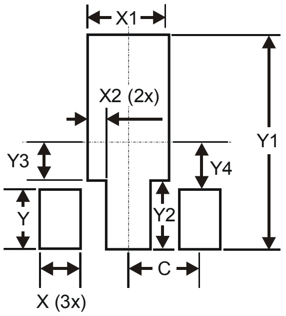
$V_{BE(on)}$ v I_C

Package Outline Dimensions



SOT89		
Dim	**Min**	**Max**
A	1.40	1.60
B	0.44	0.62
B1	0.35	0.54
C	0.35	0.44
D	4.40	4.60
D1	1.62	1.83
E	2.29	2.60
e	1.50 Typ	
H	3.94	4.25
H1	2.63	2.93
L	0.89	1.20
All Dimensions in mm		

Suggested Pad Layout



Dimensions	Value (in mm)
X	0.900
X1	1.733
X2	0.416
Y	1.300
Y1	4.600
Y2	1.475
Y3	0.950
Y4	1.125
C	1.500