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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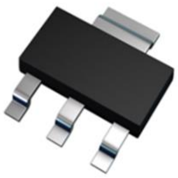
Features

- BV_{CEO} > 150V
- I_C = 5A High Continuous Collector Current
- I_{CM} = 10A Peak Pulse Current
- Very Low Saturation Voltage $V_{CE(sat)}$ < 110mV @ 1A
- $R_{CE(sat)}$ = 50mΩ for a Low Equivalent On-Resistance
- h_{FE} Specified Up to 10A for a High Gain Hold-Up
- Complementary PNP Type: NK-FZT955

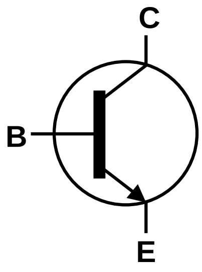
Mechanical Data

- Package: SOT223 (Type DN)
- Package 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: 0.112 grams (Approximate)

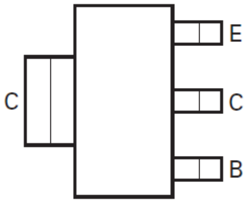
SOT223 (Type DN)



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}	250	V
Collector-Emitter Voltage	V_{CEO}	150	V
Emitter-Base Voltage	V_{EBO}	7	V
Continuous Collector Current	I_C	5	A
Peak Pulse Current	I_{CM}	10	A
Base Current	I_B	1	A

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

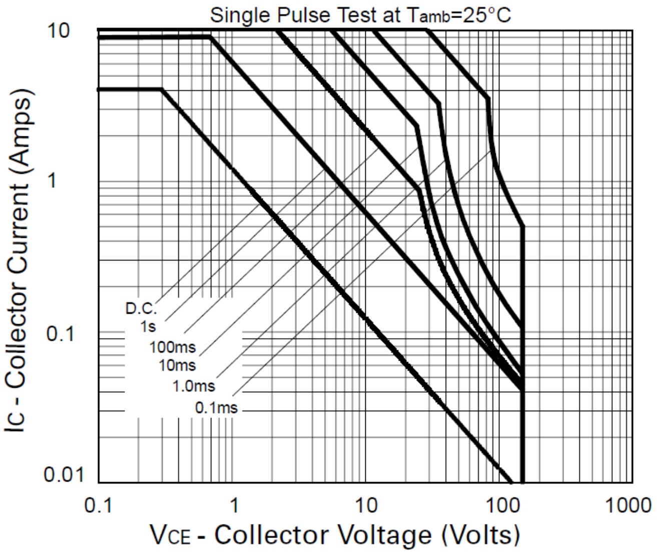
Characteristic		Symbol	Value	Unit
Power Dissipation Linear Derating Factor	(Note 5)	P_D	3.0 24	W mW/°C
	(Note 6)		1.6 12.8	
Thermal Resistance, Junction to Ambient	(Note 5)	$R_{\theta JA}$	42	°C/W
	(Note 6)	$R_{\theta JA}$	78	
Thermal Resistance Junction to Lead	(Note 7)	$R_{\theta JL}$	8.8	
Operating and Storage Temperature Range		T_J, T_{STG}	-55 to +150	°C

ESD Ratings (Note 8)

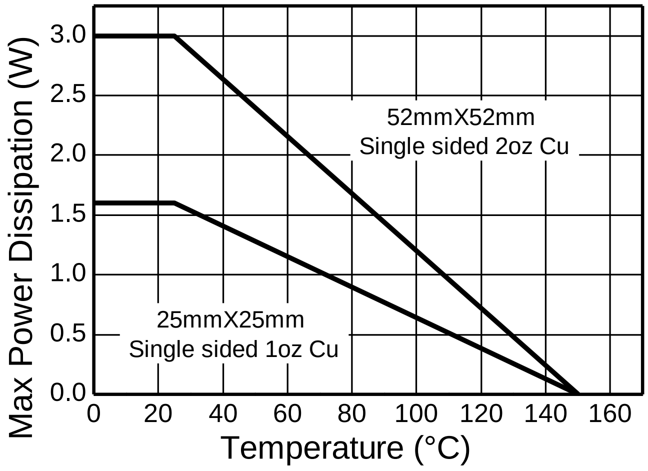
Characteristic	Symbol	Value	Unit	JEDEC Class
Electrostatic Discharge - Human Body Model	ESD HBM	≥ 8,000	V	3B
Electrostatic Discharge - Machine Model	ESD MM	≥ 400	V	C

Notes:
5. For a device surface mounted on 52mm X 52mm FR4 PCB with high coverage of single sided 2oz copper, in still air conditions; device measured when operating in steady state condition.
6. Same as Note 5, except the device is mounted on 25mm x 25mm single sided 1oz weight copper.
7. Thermal resistance from junction to solder-point (at the end of the collector lead).
8. Refer to JEDEC specification JESD22-A114 and JESD22-A115.

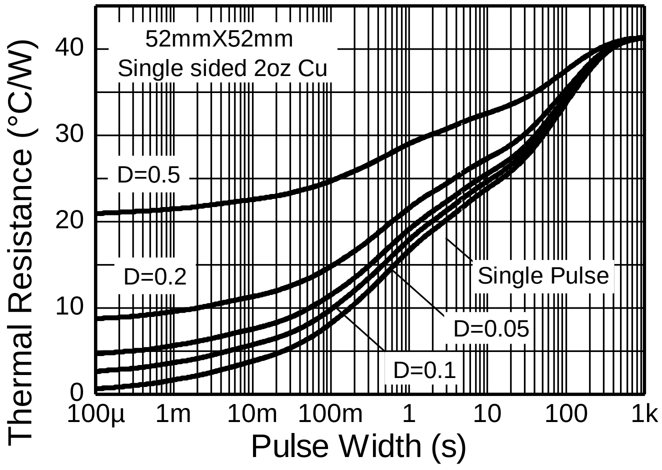
Thermal Characteristics and Derating Information



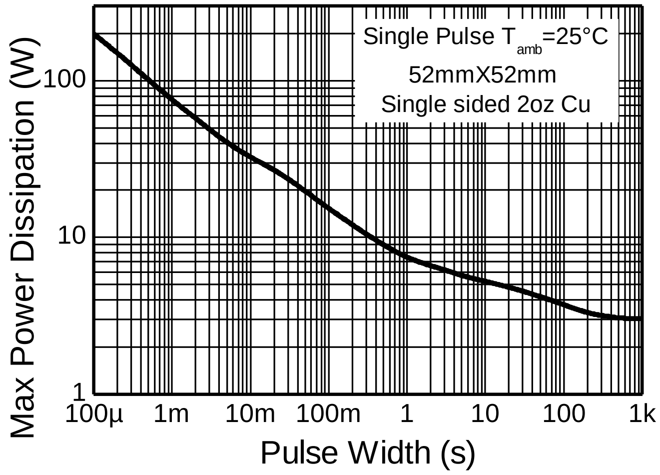
Safe Operating Area



Derating Curve



Transient Thermal Impedance



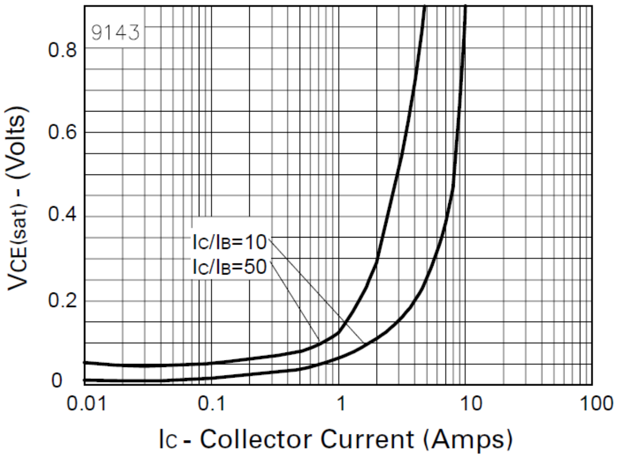
Pulse Power Dissipation

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

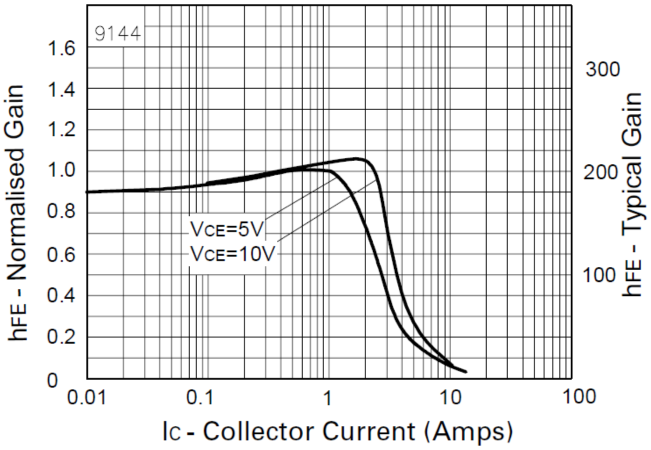
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV_{CBO}	250	375	—	V	$I_C = 100\mu A$
Collector-Emitter Breakdown Voltage	BV_{CER}	250	375	—	V	$I_C = 1\mu A$, $R_B \le 1k\Omega$
Collector-Emitter Breakdown Voltage (Note 9)	BV_{CEO}	150	180	—	V	$I_C = 1mA$
Emitter-Base Breakdown Voltage	BV_{EBO}	7	8	—	V	$I_E = 100\mu A$
Collector Cut-Off Current	I_{CBO}	—	—	50 1	nA µA	$V_{CB} = 200V$ $V_{CB} = 200V$, @T_A = +100°C
Collector Cut-Off Current	I_{CER}	—	—	50 1	nA µA	$V_{CE} = 200V$, $R \le 1k\Omega$ $V_{CE} = 200V$, @T_A = +100°C
Emitter Cut-Off Current	I_{EBO}	—	—	10	nA	$V_{EB} = 6V$
Collector-Emitter Saturation Voltage (Note 9)	$V_{CE(sat)}$	—	20 35 60 260	40 65 110 355	mV	$I_C = 100mA$, $I_B = 5mA$ $I_C = 500mA$, $I_B = 50mA$ $I_C = 1A$, $I_B = 100mA$ $I_C = 5A$, $I_B = 500mA$
Base-Emitter Saturation Voltage (Note 9)	$V_{BE(sat)}$	—	—	1,250	mV	$I_C = 5A$, $I_B = 500mA$
Base-Emitter Turn-On Voltage (Note 9)	$V_{BE(on)}$	—	—	1,100	mV	$I_C = 5A$, $V_{CE} = 5V$
DC Current Gain (Note 9)	h_{FE}	100 100 15 —	200 200 30 10	— 300 — —		$I_C = 10mA$, $V_{CE} = 5V$ $I_C = 1A$, $V_{CE} = 5V$ $I_C = 5A$, $V_{CE} = 5V$ $I_C = 10A$, $V_{CE} = 5V$
Current Gain-Bandwidth Product (Note 9)	f_T	—	90	—	MHz	$V_{CE} = 10V$, $I_C = 100mA$ f = 50MHz
Output Capacitance	C_{obo}	—	22	—	pF	$V_{CB} = 10V$, f = 1MHz
Switching Times	t_{on} t_{off}	—	66 2,130	—	ns ns	$I_C = 1A$, $V_{CC} = 50V$ $I_{B1} = -I_{B2} = 100mA$

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

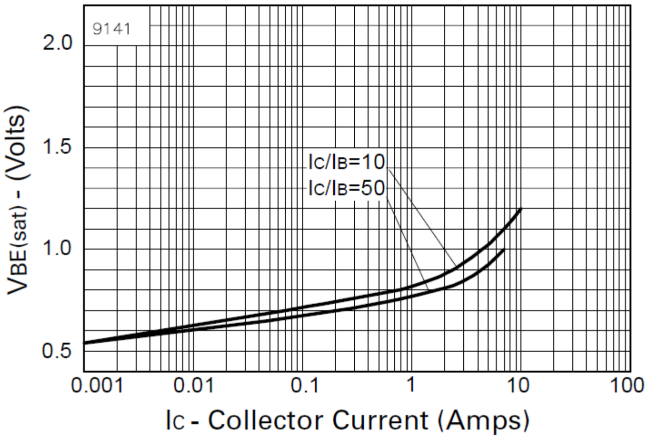
Typical Electrical Characteristics (@ T_A = +25°C, unless otherwise specified.)



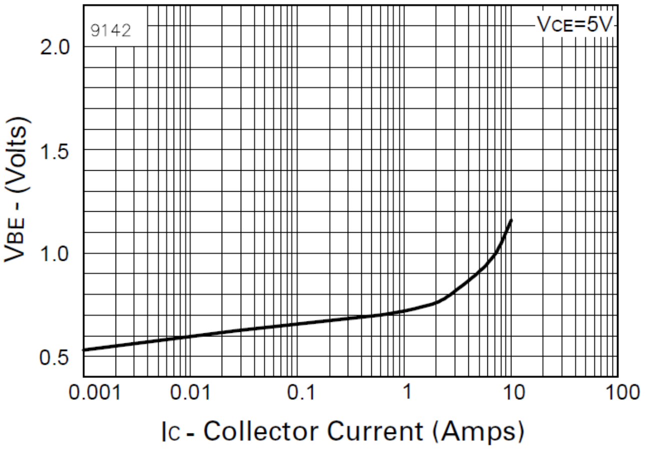
$V_{CE(sat)}$ v I_C



h_{FE} v I_C



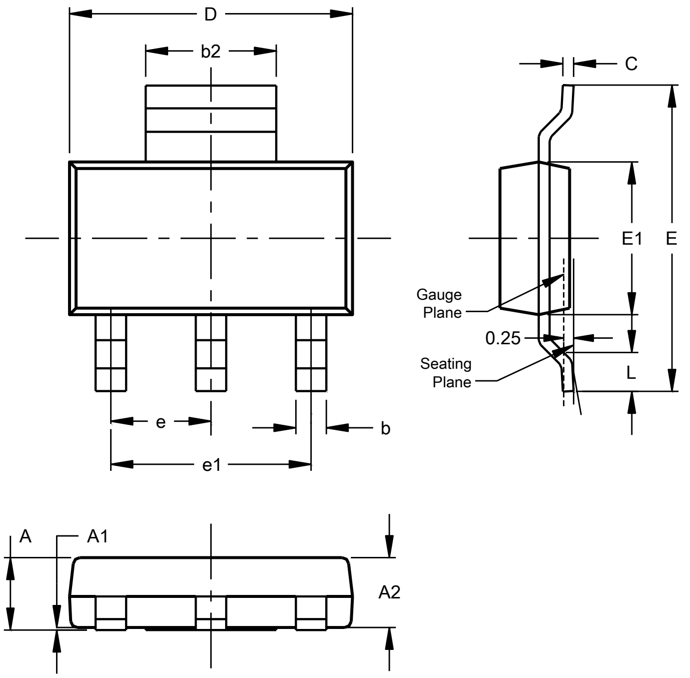
$V_{BE(sat)}$ v I_C



$V_{BE(on)}$ v I_C

Package Outline Dimensions

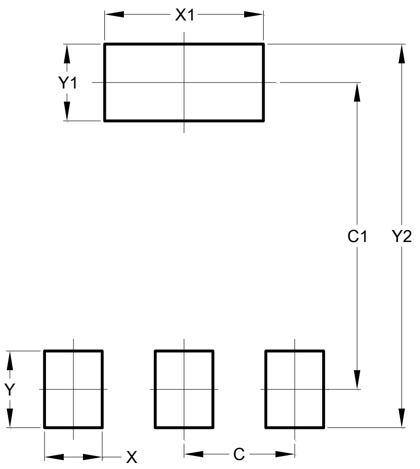
SOT223 (Type DN)



SOT223 (Type DN)			
Dim	**Min**	**Max**	**Typ**
A	--	1.70	--
A1	0.01	0.15	--
A2	1.50	1.68	1.60
b	0.60	0.80	0.70
b2	2.90	3.10	--
c	0.20	0.32	--
D	6.30	6.70	--
E	6.70	7.30	--
E1	3.30	3.70	--
e	--	--	2.30
e1	--	--	4.60
L	0.85	--	--
All Dimensions in mm			

Suggested Pad Layout

SOT223 (Type DN)



Dimensions	Value (in mm)
C	2.30
C1	6.40
X	1.20
X1	3.30
Y	1.60
Y1	1.60
Y2	8.00