



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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企业微信二维码



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Features

- $BV_{CEO} > 180V$
- $I_C = 0.5A$ Continuous Current
- $h_{FE} > 500$ for High Gain @ 0.1A
- Very Low Saturation Voltage
- Complementary PNP Type: DIODES™ NK-FZT795A

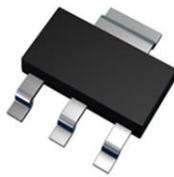
Mechanical Data

- Package: SOT223
- 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)

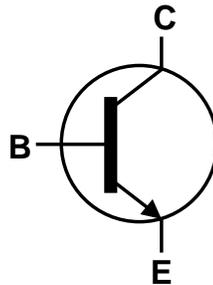
Applications

- Darlington replacements
- Relay and solenoid drivers

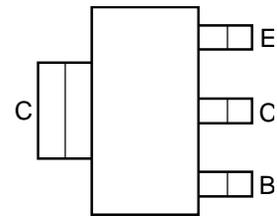
SOT223 (Type DN)



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 _{CB0}	180	V
Collector-Emitter Voltage	V _{CEO}	180	V
Emitter-Base Voltage	V _{EB0}	7	V
Continuous Collector Current	I _C	0.5	A
Peak Pulse Current	I _{CM}	1	A

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

Characteristic	Symbol	Value	Unit
Power Dissipation	(Note 5)	3	W
	(Note 6)	2	
	(Note 7)	1.6	
	(Note 8)	1.2	
Thermal Resistance, Junction to Ambient	(Note 5)	41.7	°C/W
	(Note 6)	62.5	
	(Note 7)	78.1	
	(Note 8)	104	
Thermal Resistance Junction to Lead	R _{θJL}	12.9	
Operating and Storage Temperature Range	T _J , T _{STG}	-55 to +150	°C

ESD Ratings (Note 10)

Characteristic	Symbol	Value	Unit	JEDEC Class
Electrostatic Discharge — Human Body Model	ESD HBM	4,000	V	3A
Electrostatic Discharge — Machine Model	ESD MM	400	V	C

- Notes:
5. For a device mounted with the collector lead on 50mm × 50mm 2oz copper that is on a single-sided 1.6mm FR4 PCB; device is measured under still air conditions whilst operating in a steady-state.
 6. Same as Note 5, except the device is mounted on 25mm × 25mm 2oz copper.
 7. Same as Note 5, except the device is mounted on 25mm × 25mm 1oz copper.
 8. Same as Note 5, except the device is mounted on minimum recommended pad layout.
 9. Thermal resistance from junction to solder-point (at the end of the collector lead).
 10. Refer to JEDEC specification JESD22-A114 and JESD22-A115.

Thermal Characteristics and Derating Information

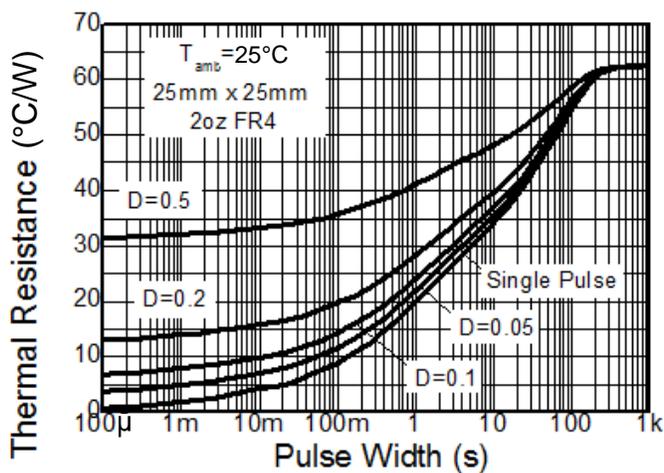


Figure 1. Transient Thermal Impedance

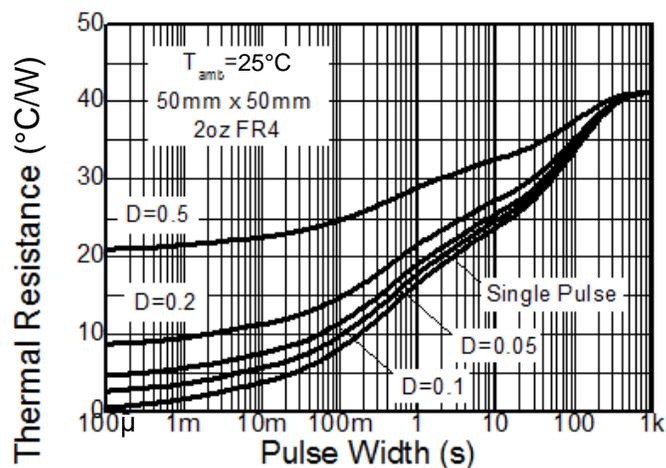


Figure 2. Transient Thermal Impedance

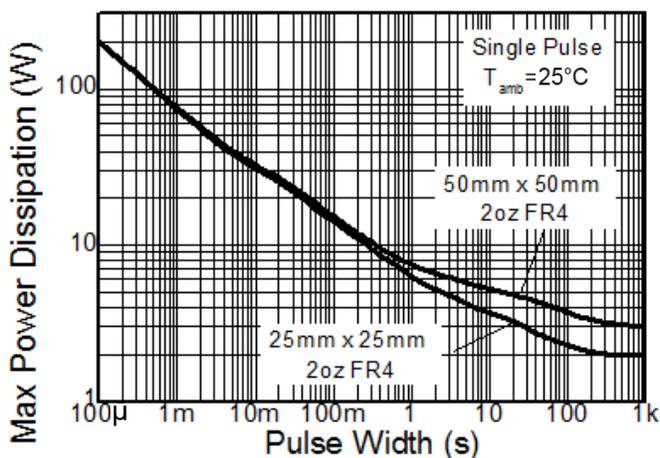


Figure 3. Pulse Power Dissipation

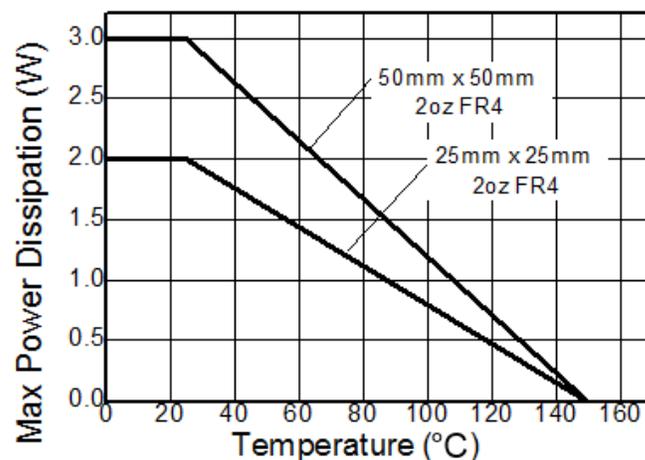


Figure 4. Derating Curve

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV _{CBO}	180	—	—	V	I _C = 100μA
Collector-Emitter Breakdown Voltage (Note 11)	BV _{CEO}	180	—	—	V	I _C = 10mA
Emitter-Base Breakdown Voltage	BV _{EBO}	7	—	—	V	I _E = 100μA
Collector-Base Cut-Off Current	I _{CBO}	—	—	100	nA	V _{CB} = 140V
Emitter Cut-Off Current	I _{EBO}	—	—	50	nA	V _{EB} = 6V
DC Current Gain (Note 11)	h _{FE}	500 150	— —	— —	— —	I _C = 100mA, V _{CE} = 5V I _C = 200mA, V _{CE} = 5V
Collector-Emitter Saturation Voltage (Note 11)	V _{CE(sat)}	— — —	— — —	200 200 250	mV	I _C = 50mA, I _B = 0.5mA I _C = 100mA, I _B = 2mA I _C = 200mA, I _B = 5mA
Base-Emitter Saturation Voltage (Note 11)	V _{BE(sat)}	—	—	0.9	V	I _C = 200mA, I _B = 50mA
Base-Emitter Turn-On Voltage (Note 11)	V _{BE(on)}	—	—	0.9	V	I _C = 200mA, V _{CE} = 5V
Input Capacitance	C _{ibo}	—	200	—	pF	V _{EB} = 0.5V, f = 1MHz
Output Capacitance	C _{obo}	—	6	—	pF	V _{CB} = 10V, f = 1MHz
Current Gain-Bandwidth Product	f _T	130	—	—	MHz	V _{CE} = 5V, I _C = 50mA, f = 50MHz
Turn-On Time	t _{on}	—	80	—	ns	V _{CC} = 50V, I _C = 100mA,
Turn-Off Time	t _{off}	—	4400	—	ns	I _{B1} = -I _{B2} = 10mA

Note: 11. Measured under pulsed conditions. Pulse width ≤ 300μs. Duty cycle ≤ 2%.

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

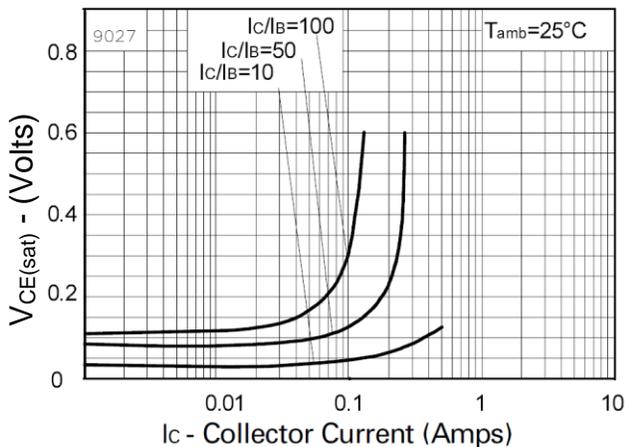


Figure 5. $V_{CE(sat)}$ vs. I_c

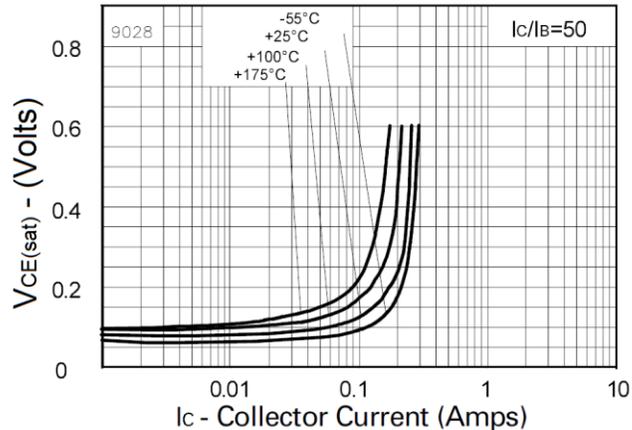


Figure 6. $V_{CE(sat)}$ vs. I_c

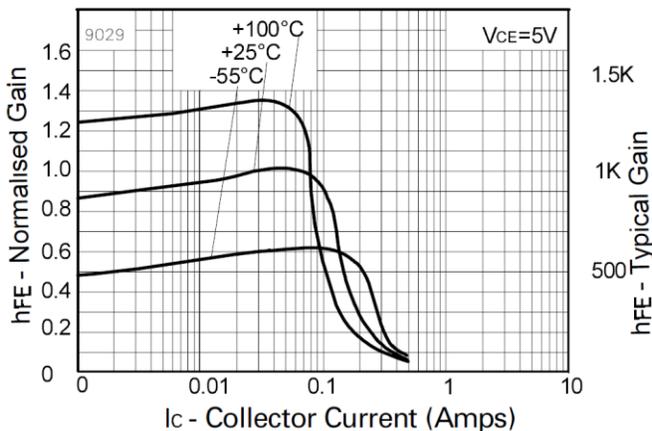


Figure 7. h_{FE} vs. I_c

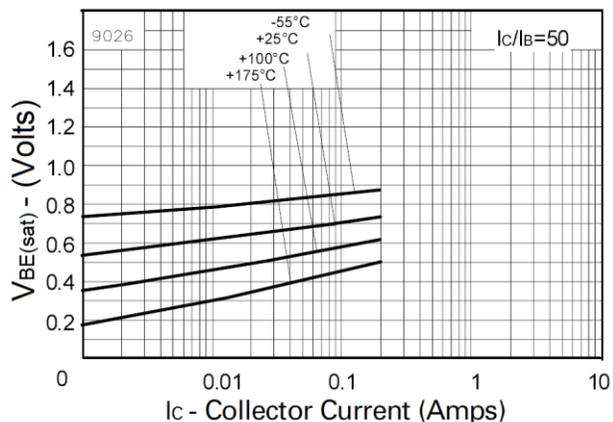


Figure 8. $V_{BE(sat)}$ vs. I_c

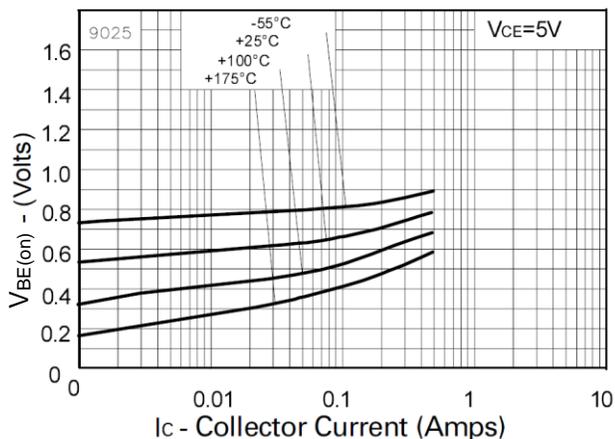
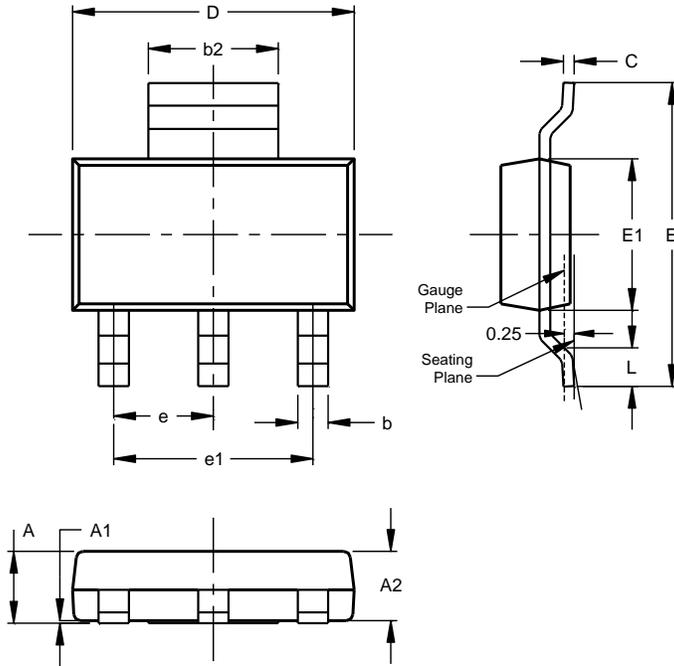


Figure 9. $V_{BE(on)}$ vs. I_c

Package Outline Dimensions

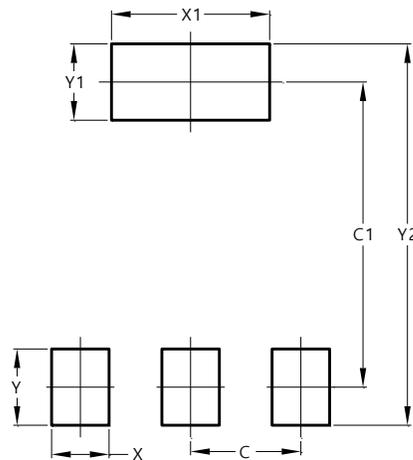
SOT223 (Type DN)



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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

Note: For high voltage applications, the appropriate industry sector guidelines should be considered with regards to voltage spacing between terminals.