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

0755-83047638
ysbdt@szyoushang.cn
www.szyoushang.cn

企业微信二维码

企业QQ二维码

Features

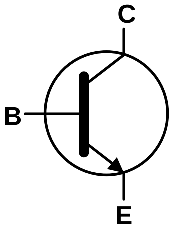
- $BV_{CEO} > 60V$
- I_C = 6A High Continuous Current
- I_{CM} = 12A Peak Pulse Current
- Low Saturation Voltage $V_{CE(sat)} < 60mV$ @ 1A
- Complementary PNP Type: DIODES™ NK-DSS60600MZ4

Mechanical Data

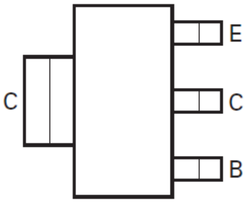
- Package: SOT223
- Package Material: Molded Plastic. “Green” Molding Compound. UL Flammability Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish - Matte Tin Plated Leads, Solderable per MIL-STD-202, Method 208 e3
- Weight: 0.115 grams (Approximate)

SOT223

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}	100	V
Collector-Emitter Voltage	V_{CEO}	60	V
Emitter-Base Voltage	V_{EBO}	6	V
Continuous Collector Current	I_C	6	A
Peak Pulse Collector Current	I_{CM}	12	A

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

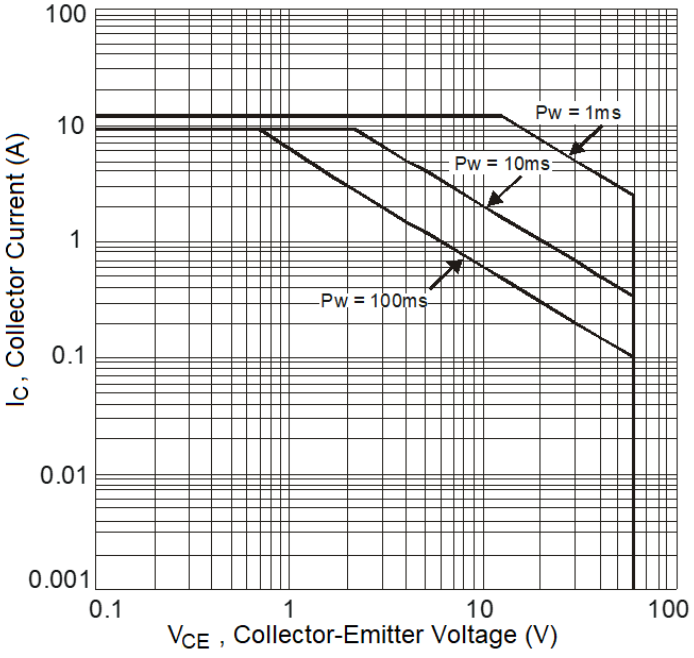
Characteristic		Symbol	Value	Unit
Power Dissipation	(Note 5)	P_D	3	W
	(Note 6)		2	
	(Note 7)		1.2	
Thermal Resistance, Junction to Ambient	(Note 5)	$R_{\theta JA}$	41.7	°C/W
	(Note 6)		62.5	
	(Note 7)		104	
Thermal Resistance, Junction to Leads (Note 8)		$R_{\theta JL}$	12.9	°C/W
Operating and Storage Temperature Range		T_J, T_{STG}	-55 to +150	°C

ESD Ratings (Note 9)

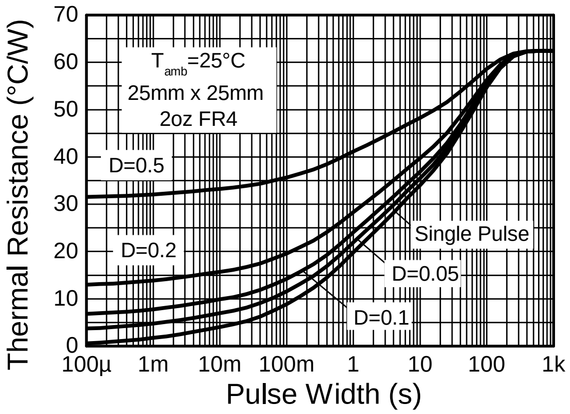
Characteristic	Symbol	Value	Unit	JEDEC Class
Electrostatic Discharge – Human Body Model	ESD HBM	4,000	V	3A
Electrostatic Discharge – Machine Model	ESD MM	400	V	C

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

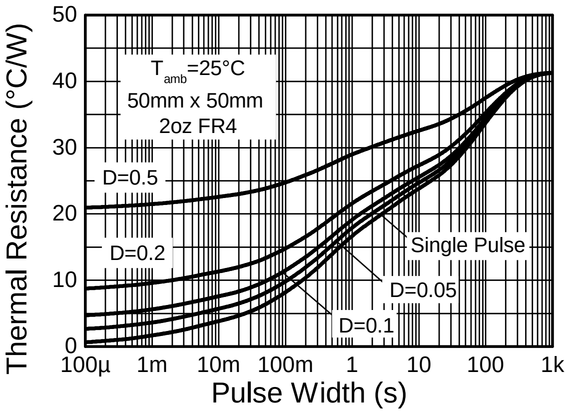
Thermal Characteristics and Derating Information



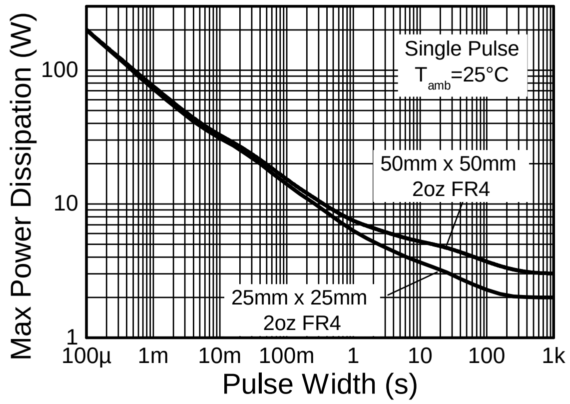
Safe Operating Area



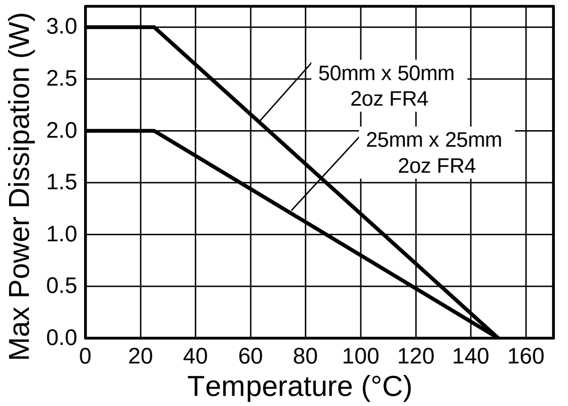
Transient Thermal Impedance



Transient Thermal Impedance



Pulse Power Dissipation



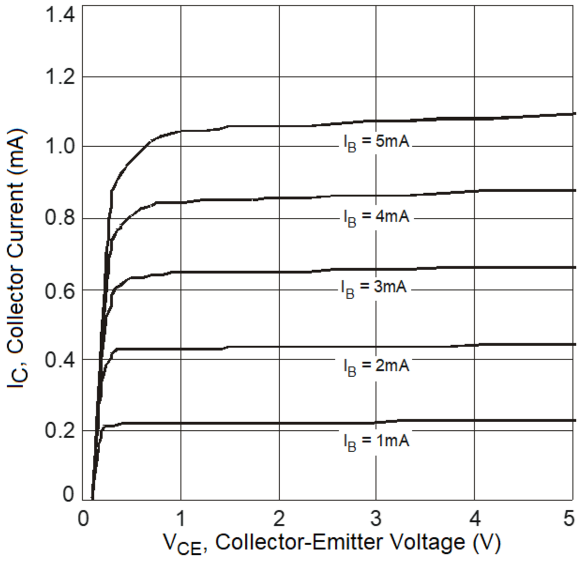
Derating Curve

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

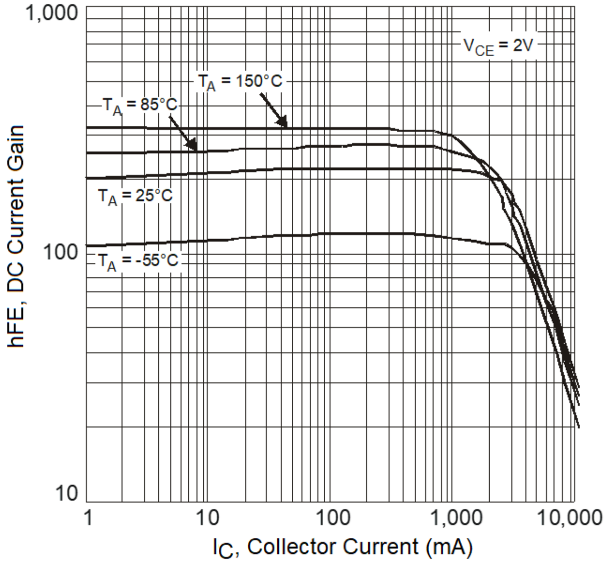
Characteristic	Symbol	Min	Typ	Max	Unit	Test Conditions
OFF CHARACTERISTICS						
Collector-Base Breakdown Voltage	BV_{CBO}	100	—	—	V	I_C = 100µA
Collector-Emitter Breakdown Voltage (Note 10)	BV_{CEO}	60	—	—	V	I_C = 10mA
Emitter-Base Breakdown Voltage	BV_{EBO}	6	—	—	V	I_E = 100µA
Collector-Base Cutoff Current	I_{CBO}	—	—	100	nA	V_{CB} = 40V, I_E = 0
		—	—	50	µA	V_{CB} = 40V, I_E = 0, T_J = +150°C
Emitter-Base Cutoff Current	I_{EBO}	—	—	100	nA	V_{EB} = 6V, I_C = 0
ON CHARACTERISTICS (Note 10)						
DC Current Gain	h_{FE}	150	—	—	—	V_{CE} = 2V, I_C = 0.5A
		120	—	360		V_{CE} = 2V, I_C = 1A
		100	—	—		V_{CE} = 2V, I_C = 2A
		50	—	—		V_{CE} = 2V, I_C = 6A
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	—	—	40	mV	I_C = 0.1A, I_B = 2.0mA
		—	—	60		I_C = 1A, I_B = 100mA
		—	80	100		I_C = 2A, I_B = 200mA
		—	—	220		I_C = 3A, I_B = 60mA
		—	—	300		I_C = 6A, I_B = 600mA
Equivalent On-Resistance	$R_{CE(sat)}$	—	40	50	mΩ	I_E = 2A, I_B = 200mA
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	—	—	0.9	V	I_C = 1A, I_B = 100mA
Base-Emitter Turn-on Voltage	$V_{BE(on)}$	—	—	0.9	V	V_{CE} = 2V, I_C = 1A
SMALL SIGNAL CHARACTERISTICS						
Transition Frequency	f_T	100	—	—	MHz	V_{CE} = 10V, I_C = 100mA, f = 100MHz
Output Capacitance	C_{obo}	—	26	—	pF	V_{CB} = 10V, f = 1MHz
Input Capacitance	C_{ibo}	—	325	—	pF	V_{EB} = 5V, f = 1MHz
Turn-On Time	t_{on}	—	87	—	ns	V_{CC} = -30v, I_{CC} = 150mA, I_{B1} = - I_{B2} = 15mA
Delay Time	t_d	—	41	—	ns	
Rise Time	t_r	—	46	—	ns	
Turn-Off Time	t_{off}	—	294	—	ns	
Storage Time	t_s	—	250	—	ns	
Fall Time	t_f	—	44	—	ns	

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

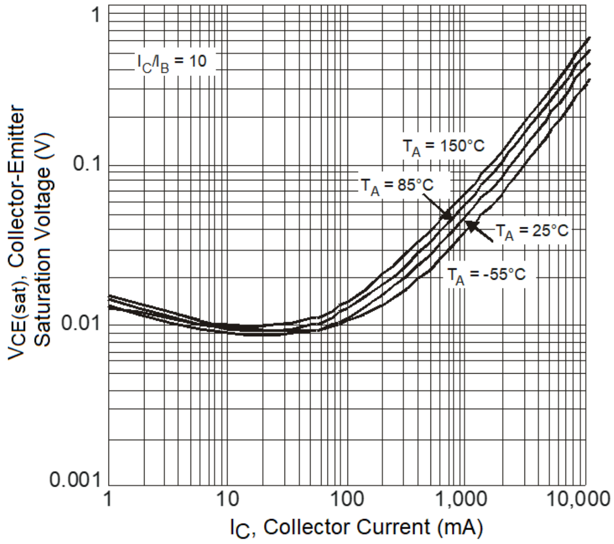
Typical Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)



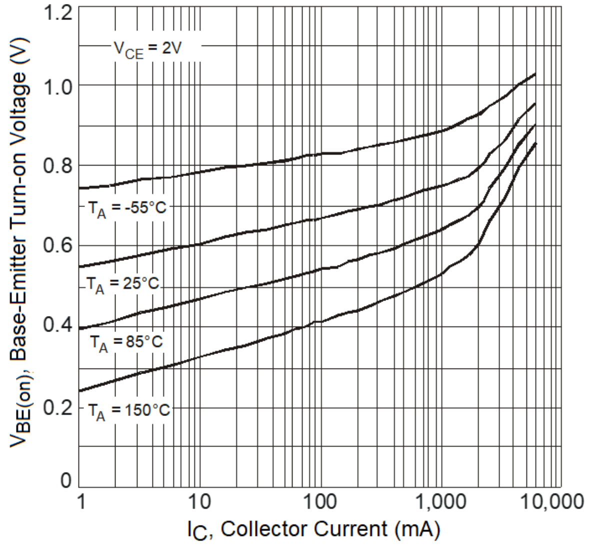
I_C v V_{CE}



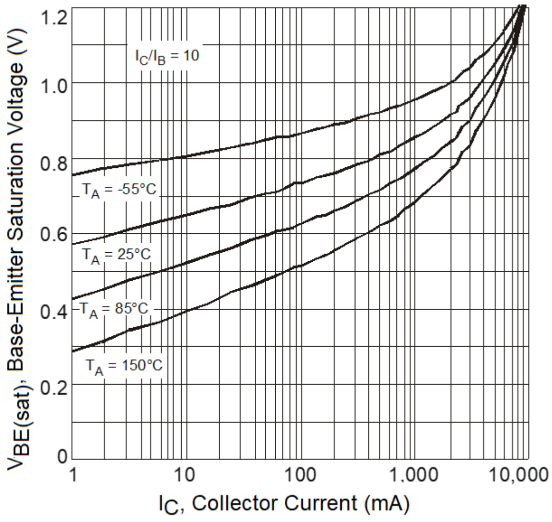
hFE v I_C



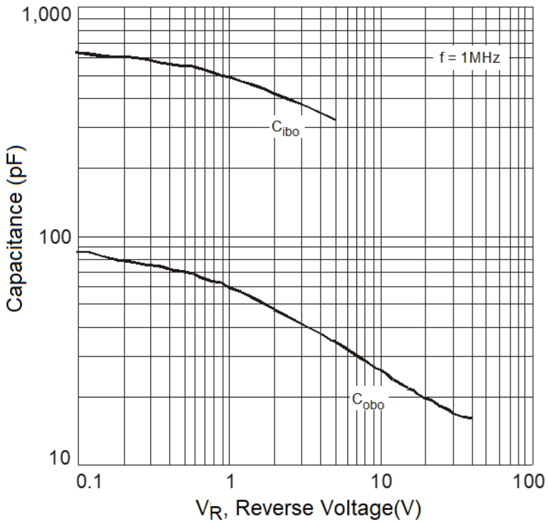
$V_{CE(sat)}$ v I_C



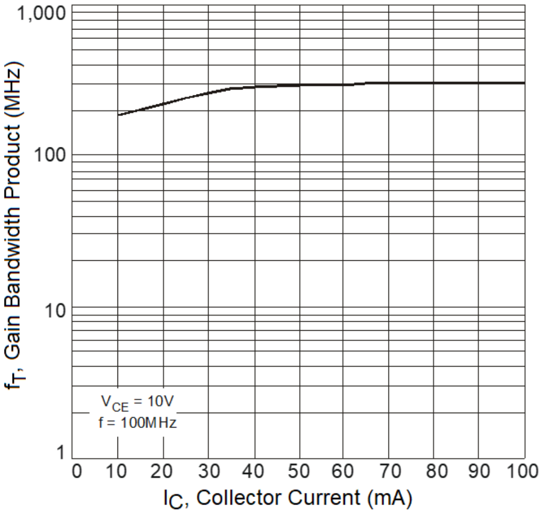
$V_{BE(on)}$ v I_C



$V_{BE(sat)}$ v I_C



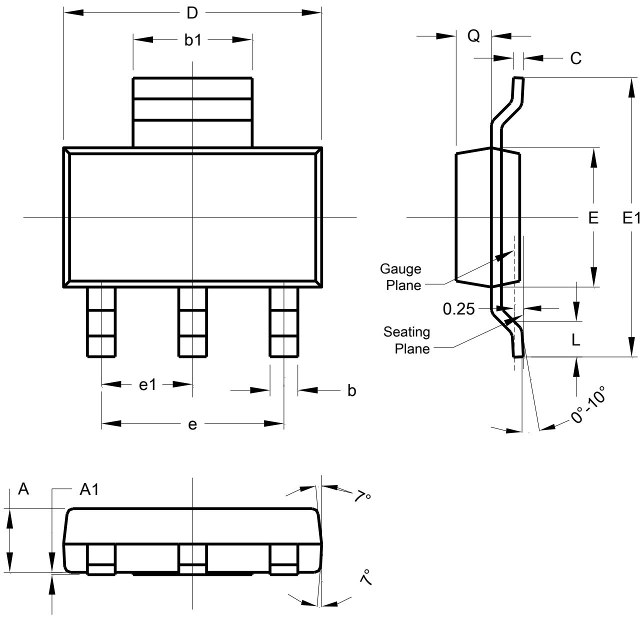
Capacitance Characteristic



f_T v I_C

Package Outline Dimensions

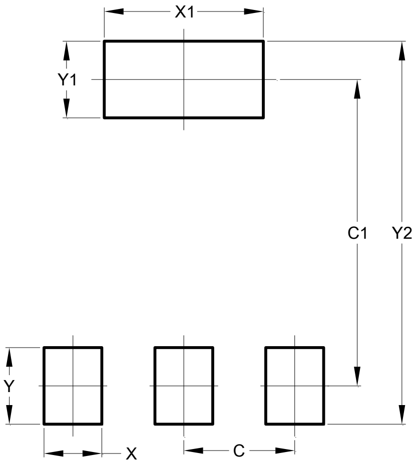
SOT223



SOT223			
Dim	**Min**	**Max**	**Typ**
A	1.55	1.65	1.60
A1	0.010	0.15	0.05
b	0.60	0.80	0.70
b1	2.90	3.10	3.00
C	0.20	0.30	0.25
D	6.45	6.55	6.50
E	3.45	3.55	3.50
E1	6.90	7.10	7.00
e	–	–	4.60
e1	–	–	2.30
L	0.85	1.05	0.95
Q	0.84	0.94	0.89
All Dimensions in mm			

Suggested Pad Layout

SOT223



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