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} > -40V
- I_C = -1A High Continuous Current
- I_{CM} = -2A Peak Pulse Current
- Low Saturation Voltage $V_{CE(sat)}$ < -500mV @ -1A
- R_{SAT} = 350mΩ for a Low Equivalent On-resistance
- Complementary NPN type: NK-ZXTN2040F

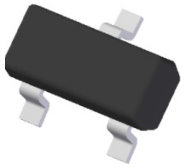
Mechanical Data

- Case: SOT23
- Case 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 e3
- Weight: 0.008 grams (approximate)

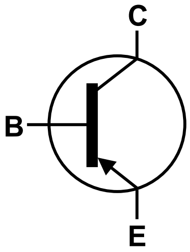
Application

- Power MOSFET gate driving
- Low loss power switching

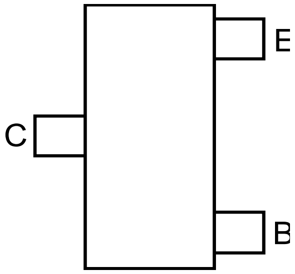
SOT23



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}	-40	V
Collector-Emitter Voltage	V_{CEO}	-40	V
Emitter-Base Voltage	V_{EBO}	-7	V
Continuous Collector Current	I_C	-1	A
Peak Pulse Current	I_{CM}	-2	A
Base Current	I_B	-200	mA
Peak Base Current	I_{BM}	-1	A

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

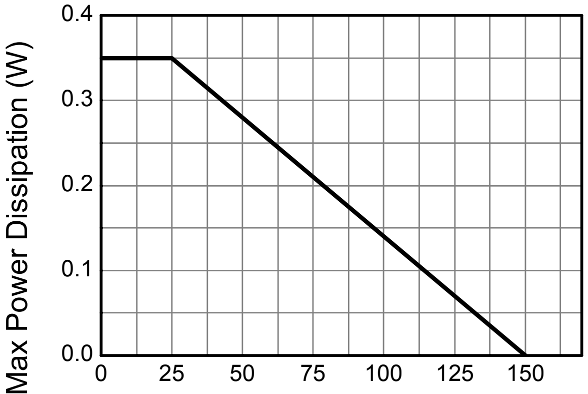
Characteristic		Symbol	Value	Unit
Power Dissipation	(Note 5)	P_D	310	mW
	(Note 6)		350	
Thermal Resistance, Junction to Ambient	(Note 5)	$R_{\theta JA}$	403	°C/W
	(Note 6)		357	
Thermal Resistance, Junction to Leads	(Note 7)	$R_{\theta JL}$	350	°C/W
Operating and Storage Temperature Range		T_J, T_{STG}	-55 to +150	°C

ESD Ratings (Note 8)

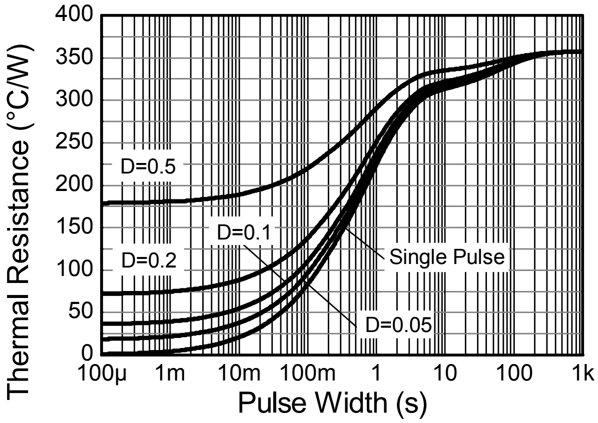
Characteristic	Symbol	Value	Unit	JEDEC Class
Electrostatic Discharge - Human Body Model	ESD HBM	4,000	V	3A
Electrostatic Discharge - Machine Model	ESD MM	400	V	C

Notes:
5. For a device mounted on minimum recommended pad layout 1oz copper that is on a single-sided 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 15 mm x 15mm 1oz copper.
7. Thermal resistance from junction to solder-point (at the end of the leads).
8. Refer to JEDEC specification JESD22-A114 and JESD22-A115.

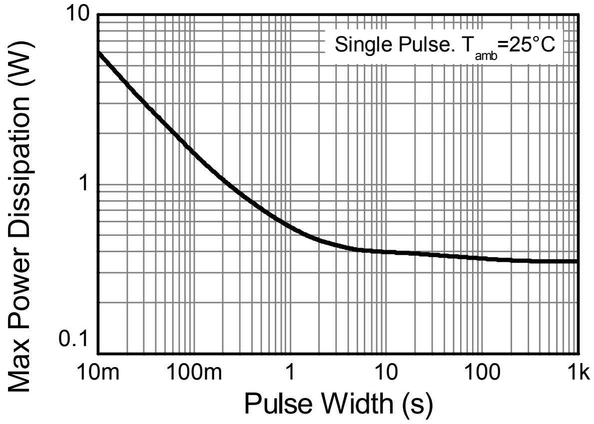
Thermal Characteristics and Derating Information



Derating Curve



Transient Thermal Impedance



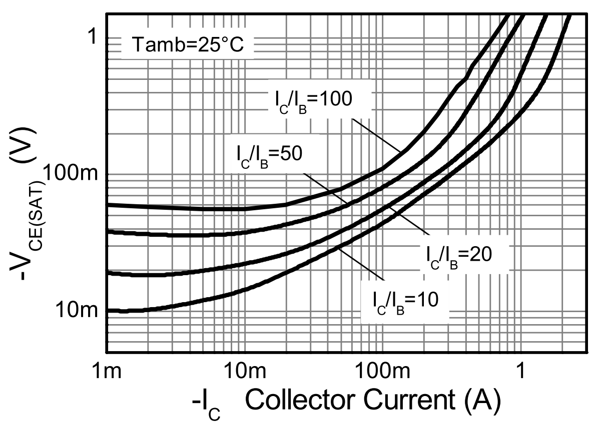
Pulse Power Dissipation

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

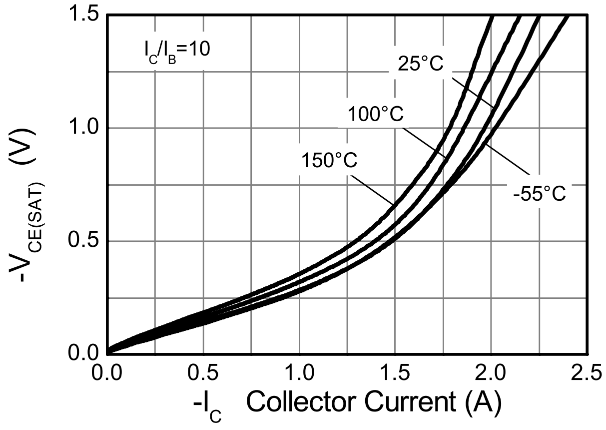
Characteristic		Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage		BV_{CBO}	-40	-	-	V	I_C = -100μA
Collector-Emitter Breakdown Voltage (Note 9)		BV_{CEO}	-40	-	-	V	I_C = -10mA
Emitter-Base Breakdown Voltage		BV_{EBO}	-7	-	-	V	I_E = -100μA
Collector Cutoff Current		I_{CBO}	-	-	-100	nA	V_{CB} = -30V
Emitter Cutoff Current		I_{EBO}	-	-	-100	nA	V_{EB} = -5.6V
Emitter Cutoff Current		I_{CES}	-	-	-100	nA	V_{CE} = -30V
DC current transfer Static ratio (Note 9)		h_{FE}	300	-	-	-	I_C = -1mA, V_{CE} = -5V
			300	-	800		I_C = -100mA, V_{CE} = -5V
			250	-	-		I_C = -500mA, V_{CE} = -5V
			160	-	-		I_C = -1A, V_{CE} = -5V
			30	-	-		I_C = -2A, V_{CE} = -5V
Collector-Emitter Saturation Voltage (Note 9)		$V_{CE(sat)}$	-	-	-200	mV	I_C = -100mA, I_B = -1mA
			-	-	-350		I_C = -500mA, I_B = -20mA
			-	-	-500		I_C = -1A, I_B = -100mA
Base-Emitter Saturation Voltage (Note 9)		$V_{BE(sat)}$	-	-	-1.1	V	I_C = -1A, I_B = -100mA
Base-Emitter Turn-on Voltage (Note 9)		$V_{BE(on)}$	-	-	-1.0	V	I_C = -1A, V_{CE} = -5V
Transitional Frequency		f_T	150	300	-	MHz	I_C = -50mA, V_{CE} = -10V, f = 100MHz
Output capacitance		C_{obo}	-	-	10	pF	V_{CB} = -10V, f = 1MHz,
Switching Time	Delay Time	$t_{(d)}$	-	34.9	-	ns	V_{CC} = -10V, I_C = -500mA, I_{B1} = $-I_{B2}$ =-25mA
	Rise Time	$t_{(r)}$	-	19.2	-		
	Storage Time	$t_{(s)}$	-	249	-		
	Fall Time	$t_{(f)}$	-	62	-		

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

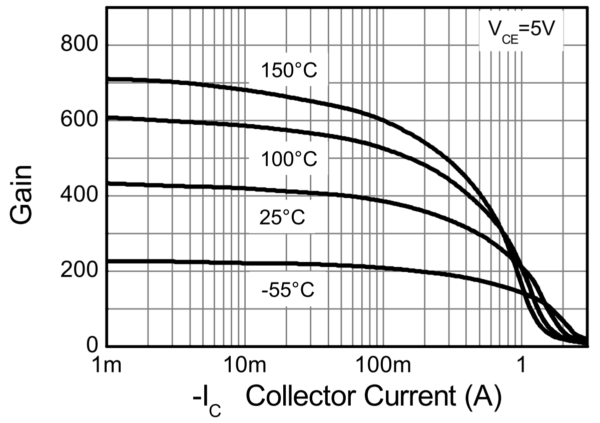
Typical Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)



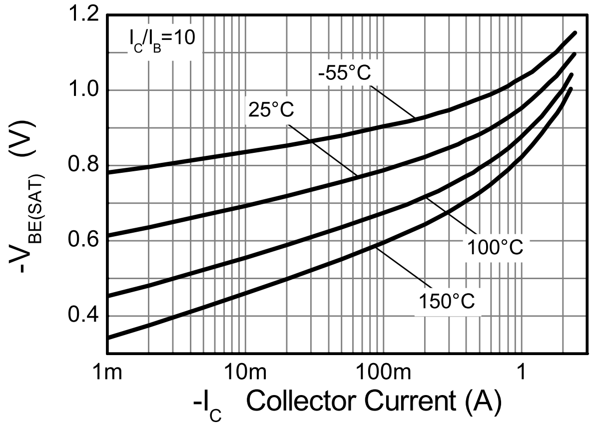
$V_{CE(SAT)}$ v I_C



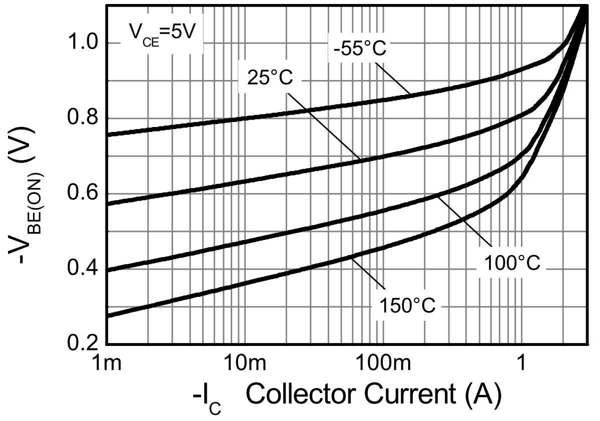
$V_{CE(SAT)}$ v I_C



h_{FE} v I_C

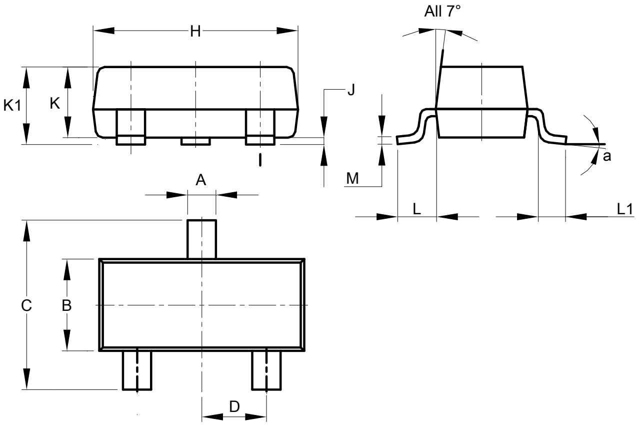


$V_{BE(SAT)}$ v I_C



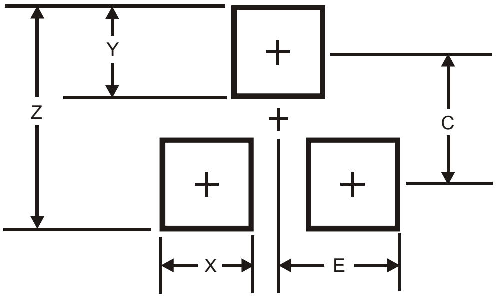
$V_{BE(ON)}$ v I_C

Package Outline Dimensions



SOT23			
Dim	**Min**	**Max**	**Typ**
A	0.37	0.51	0.40
B	1.20	1.40	1.30
C	2.30	2.50	2.40
D	0.89	1.03	0.915
F	0.45	0.60	0.535
G	1.78	2.05	1.83
H	2.80	3.00	2.90
J	0.013	0.10	0.05
K	0.890	1.00	0.975
K1	0.903	1.10	1.025
L	0.45	0.61	0.55
L1	0.25	0.55	0.40
M	0.085	0.150	0.110
a	8°		
All Dimensions in mm			

Suggested Pad Layout



Dimensions	Value (in mm)
Z	2.9
X	0.8
Y	0.9
C	2.0
E	1.35