General Description

The SJB015N2200 uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 10V. This device is suitable for use as a wide variety of applications.

Features

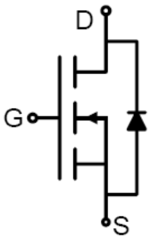
- Low Gate Charge
- High Power and current handing capability
- Lead free product is acquired

Application

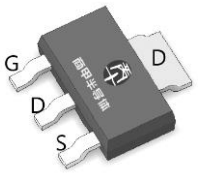
- Power switching application
- Hard switched and high frequency circuits

Key Performance Parametes

Parameter	Value	Unit
V_{DS}	150	V
$R_{DS(ON)\_TYP}$	225	mΩ
I_D	2	A
Q_G	16	nC



Schematic Diagram



SOT-223-3L top view

Package Marking and Ordering Information

Device/Ordering Code	Marking	Package	Reel Size	Tape width	Quantity
SJB015N2200	SJB015N2200	SOT-223-3L	\	\	2500

Table 1. Absolute Maximum Ratings (T_A=25℃ unless otherwise noted)

Symbol	Parameter	Limit	Unit
V_{DS}	Drain-Source Voltage (V_{GS}=0V)	150	V
V_{GS}	Gate-Source Voltage (V_{DS}=0V)	±20	V
I_D	Drain Current-Continuous(T_A=25℃)	2	A
	Drain Current-Continuous(T_A=100℃)	1.25	A
$I_{DM\ (pluse)}$	Drain Current-Continuous@ Current-Pulsed (Note 1)	8	A
P_D	Maximum Power Dissipation(T_A=25℃)	2.5	W
	Maximum Power Dissipation(T_A=100℃)	1	W
T_J, T_{STG}	Operating Junction and Storage Temperature Range	-55 To 150	℃

Table 2. Thermal Characteristic

Symbol	Parameter	Typ	Max	Unit
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient		50	℃/W

Table 3. Electrical Characteristics (T_J=25℃ unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
On/Off States						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V I_D=250μA	150			V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=150V, V_{GS}=0V T_J=25℃			1	μA
		V_{DS}=150V, V_{GS}=0V T_J=125℃			100	μA
I_{GSS}	Gate-Body Leakage Current	V_{GS}=±20V, V_{DS}=0V			±100	nA
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=250μA	1		3	V
g_{FS}	Forward Transconductance	V_{DS}=5V, I_D=2A		4.5		S
$R_{DS(ON)}$	Drain-Source On-State Resistance	V_{GS}=10V, I_D=2A T_J=25℃		225	270	mΩ
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS}=25V,V_{GS}=0V, f=1.0MHz		733		pF
C_{oss}	Output Capacitance			13.5		pF
C_{rss}	Reverse Transfer Capacitance			5		pF
R_g	Gate resistance	V_{GS}=0V, V_{DS}=0V, f=1.0MHz		1.4		Ω
Switching Parameters						
$t_{d(on)}$	Turn-on Delay Time	V_{GS}=10V, V_{DS}=75V, R_L=25Ω, R_{GEN}=6Ω		9		nS
t_r	Turn-on Rise Time			11		nS
$t_{d(off)}$	Turn-Off Delay Time			24		nS
t_f	Turn-Off Fall Time			8		nS
Q_g	Total Gate Charge	V_{GS}=10V, V_{DS}=75V, I_D=3A		16		nC
Q_{gs}	Gate-Source Charge			2.1		nC
Q_{gd}	Gate-Drain Charge			6.4		nC
Source-Drain Diode Characteristics						
I_{SD}	Source-Drain Current (Body Diode)				2	A
V_{SD}	Forward on Voltage (Note 3)	V_{GS}=0V, I_S=3A			1.2	V

Notes 1.Repetitive Rating: Pulse width limited by maximum junction temperature.
Notes 2.E_{AS} condition: T_J=25℃,V_{DD}=40V,V_G=10V, Rg=25Ω, L=0.5mH.
Notes 3.Repetitive Rating: Pulse width limited by maximum junction temperature.

Typical Electrical And Thermal Characteristics (Curves)

Figure 1. Output Characteristics

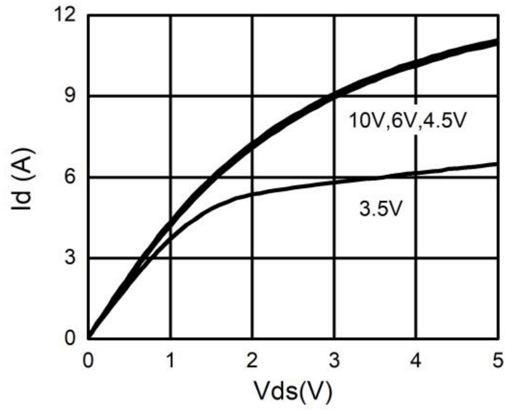


Figure 2. Transfer Characteristics

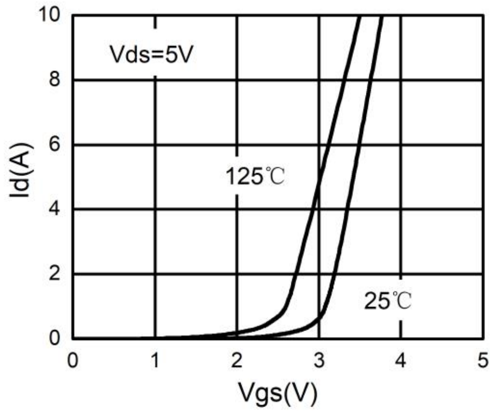


Figure 3. Power Dissipation

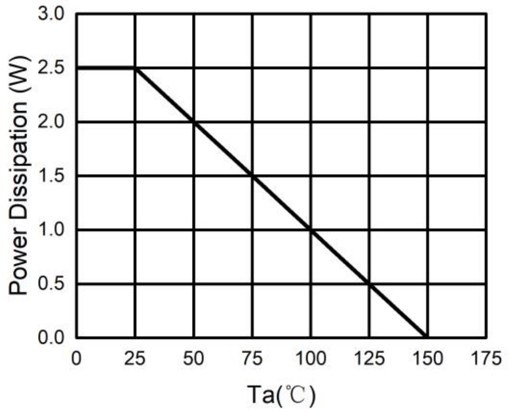


Figure 4. Drain Current

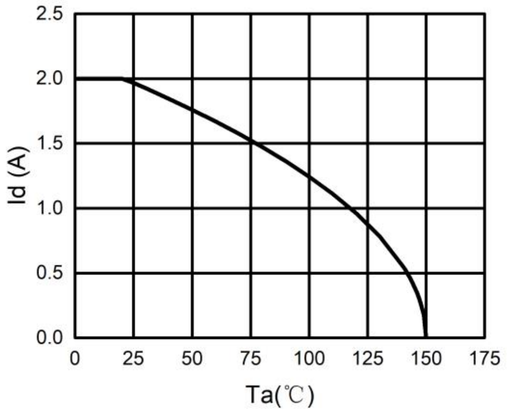


Figure 5. BV_{DSS} vs Junction Temperature

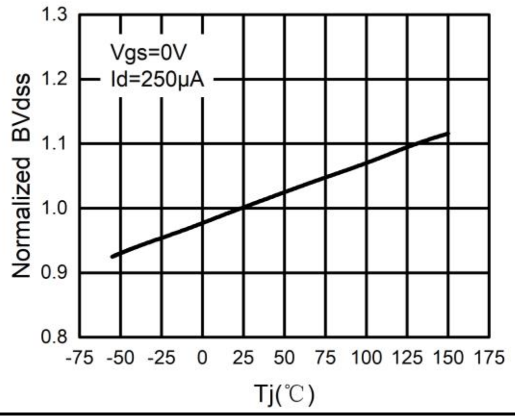
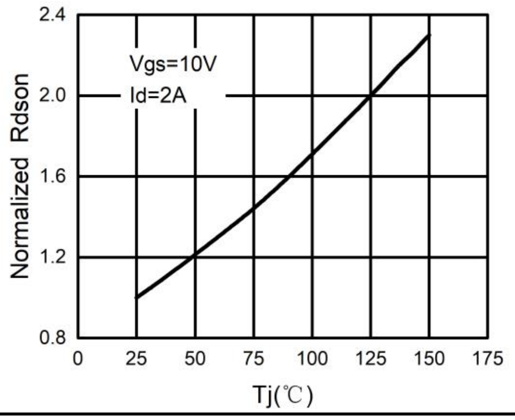


Figure 6. $R_{DS(ON)}$ vs Junction Temperature



Typical Electrical And Thermal Characteristics (Curves)

Figure 7. Gate Charge Waveforms

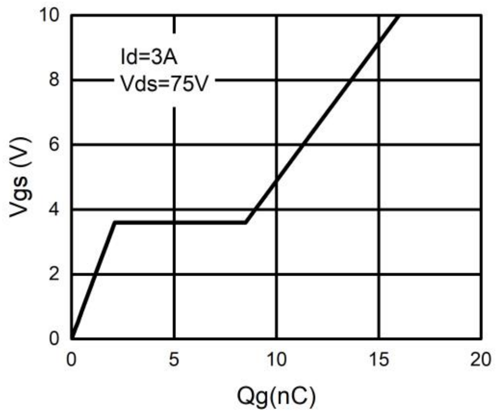


Figure 8. Capacitance

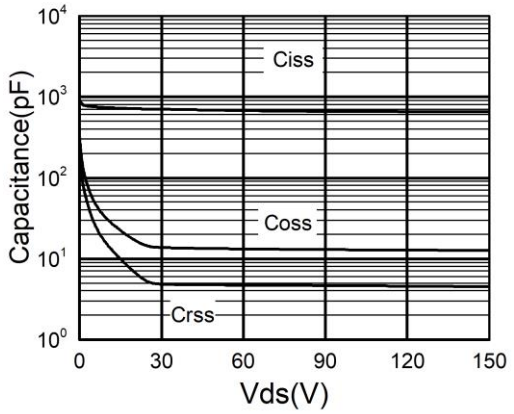


Figure 9. Body-Diode Characteristics

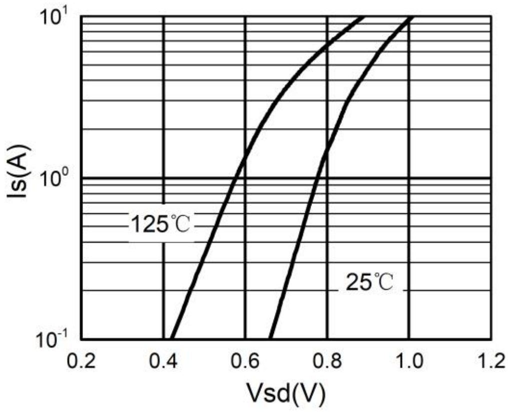
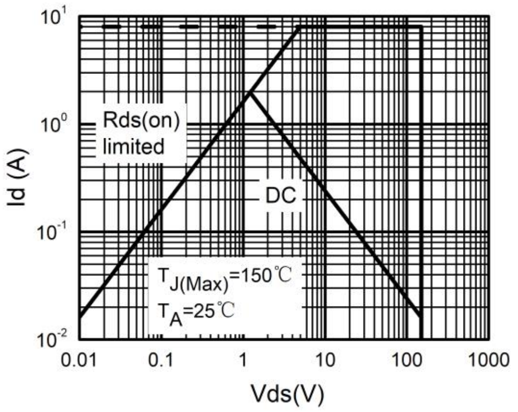
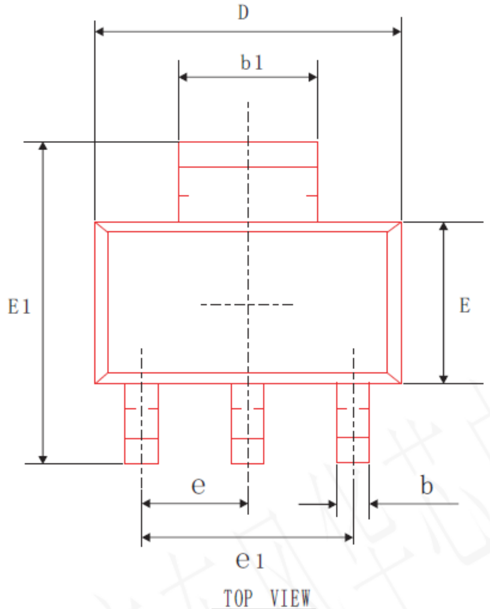


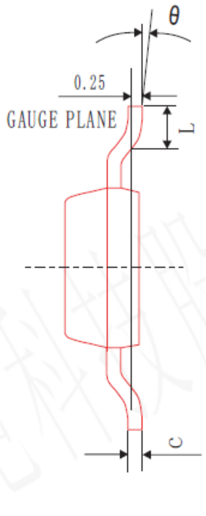
Figure 10. Maximum Safe Operating Area



SOT-223-3L Package Information



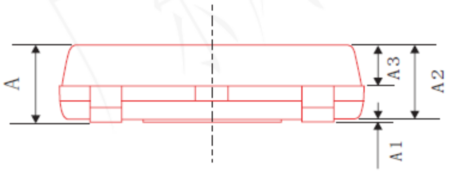
TOP VIEW



SIDE VIEW

COMMON DIMENSIONS
(UNITS OF MEASURE=mm)

SYMBOL	MIN	NOM	MAX
A	——	——	1.80
A1	0.00	0.05	0.10
A2	1.50	1.60	1.70
A3	0.85	0.90	0.95
b	0.66	0.70	0.80
b1	2.96	3.00	3.10
c	0.25	0.30	0.35
D	6.30	6.50	6.70
E	3.30	3.50	3.70
E1	6.80	7.00	7.20
e1	4.40	4.60	4.80
L	0.90	——	1.15
θ	0°	5°	10°
e	2.3 BSC		



SIDE VIEW

Attention

This product described in this document can not be used in life support devices or systems, aircraft's control systems, and other applications whose failure can be reasonably expected to result in serious physical and/or material damage，apart from that when an application agreement is signed between customer and Wuxi Shangjia Semiconductor

The performances and characteristics of this product in the independent testing state are displayed in this document. Wuxi Shangjia Semiconductor can't guarantee of the performances and characteristics of this described product that mounted in the customer’s products or equipments as same as that in the independent testing state. So the customer should evaluate and test devices mounted in the customer’s products or equipments.

Wuxi Shangjia Semiconductor reserves the right to improve the designs, functions and reliability of this product and modify any and all information described in this document without notice customer, apart from that when an notice agreement is signed between customer and Wuxi Shangjia Semiconductor.

The information given in this document shall in no event be regarded as a guarantee of conditions or characteristics. With respect to any examples or hints given herein, any typical values stated herein and/or any information regarding the application of the device, Wuxi Shangjia Semiconductor hereby disclaims any and all warranties and liabilities of any kind, including without limitation, warranties of non-infringement of intellectual property rights of any third party.