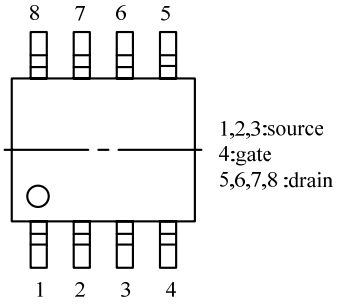
BYD Microelectronics Co., Ltd.

BF90315SNS

30V N-Channel MOSFET

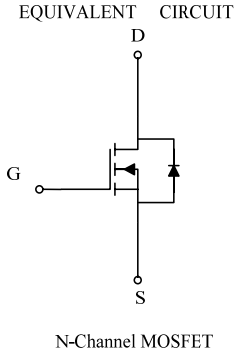
General Description

The BF90315SNS is a Single N-channel MOS Field Effect Transistor, which uses advanced trench technology to provide excellent $R_{DS(ON)}$ and low gate charge.
It is applied in the electronic systems as a power switch.



Features

- V_{DS}=30 V
- I_D=11.6 A
- Low on-state resistance
  $R_{DS\ (on)}$ < 15 mΩ (V_{GS}=10V)
  $R_{DS\ (on)}$ < 22 mΩ (V_{GS}=4.5V)



Absolute Maximum Ratings(T_C = 25℃)

Symbol	Parameter	Value	Unit
V_{DS}	Drain-Source Voltage	30	V
I_D	Drain Current(continuous)at Tc=25℃	11.6	A
I_{DM}	Drain Current (pulsed) (Note a)	48	A
V_{GS}	Gate-Source Voltage	±20	V
P_D	Power Dissipation T_C = 25°C	2	W
T_J,Tstg	Operating and Storage Temperature Range	-55 to +150	℃

Ordering Information

Part Number	Package	Packaging
BF90315SNS	SOP8	Tape & Reel

Electrical Characteristics (T_c = 25℃)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
BV_{DS}	Drain-source Breakdown Voltage	I_D=250uA,V_{GS}=0V	30			V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS} =30V, V_{GS} =0V			1	uA
I_{GSS}	Gate-body Leakage Current	V_{GS}=±20V,V_{DS}=0V			±0.1	uA
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=250uA	1		3	V
$R_{DS(on)}$	Static Drain-source On Resistance	V_{GS}=4.5V,I_D=5.8A		17	22	mΩ
		V_{GS}=10V,I_D=5.8A		10	15	
C_{iss}	Input Capacitance	V_{DS}=15V,f=1MHz,V_{GS}=0V		731		pF
C_{oss}	Output Capacitance			66		pF
C_{rss}	Reverse Transfer Capacitance			36		pF
$t_{d(on)}$	Turn-on Delay Time	V_{DD}=15V,I_D=5.8A, V_{GS}=10V, R_G=4.7Ω (Note b,c)		15		ns
t_r	Rise Time			10		ns
$t_{d(off)}$	Turn-off Delay Time			43		ns
t_f	Fall Time			7		ns
Q_g	Total Gate Charge	V_{DS}=24V,I_D=11.6A,V_{GS}=10V (Note b,c)		19		nC
Q_{gs}	Gate-source Charge			4.2		nC
Q_{gd}	Gate-Drain Charge			3.8		nC
V_{SD}(*)	Forward On Voltage	V_{GS}=0V,I_F=11.6A		0.7	1	V

Notes
a: Repetitive Rating : Pulse width limited by maximum junction temperature
b: Pulse Test : Pulse width ≤ 300μs, Duty cycle ≤ 2%
c: Essentially independent of operating temperature
(*)Pulsed: Pulse duration

Caution: These values must not be exceeded under any conditions.

Typical characteristics (25℃ unless noted)

Figure 1 Output Characteristics **Figure 2 Transfer Characteristics**

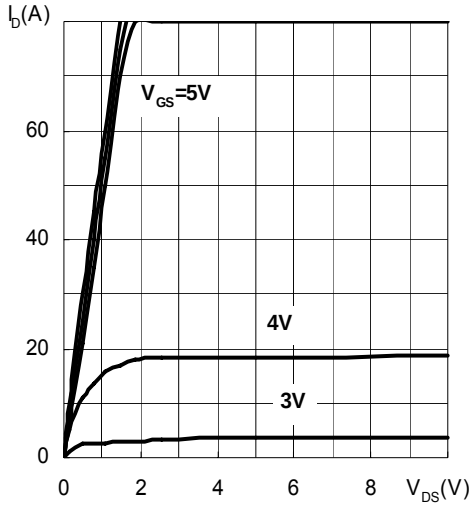


Figure 3 Normalized Vth vs. Temperature

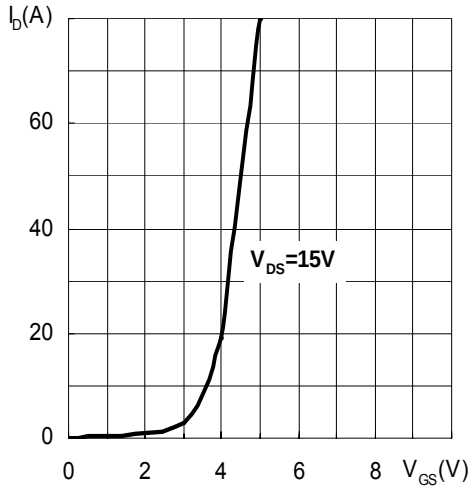


Figure 4 Normalized BV_{DSS} vs. Temperature

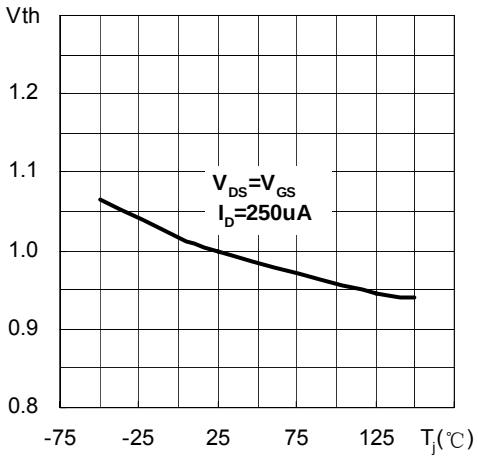


Figure 5 R_{DSON} vs. Temperature

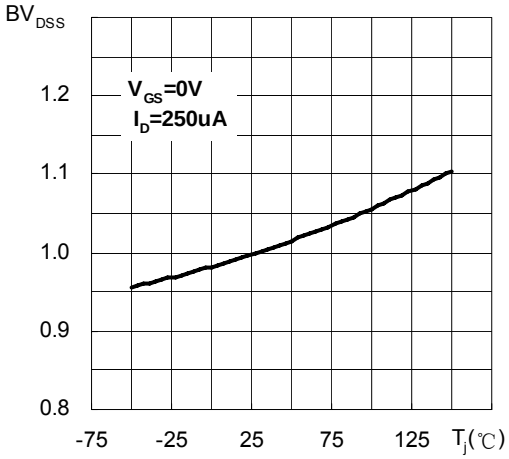


Figure 6 I_{GSS} vs Environment Temperature

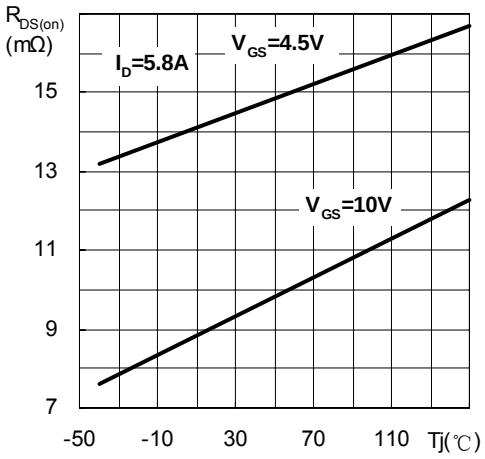


Figure 7 Capacitance

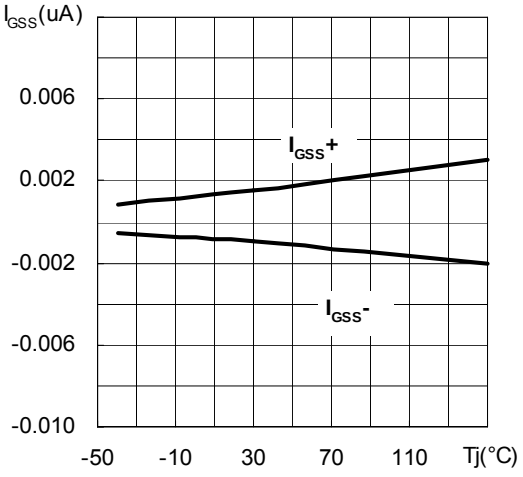


Figure 8 Gate Charge

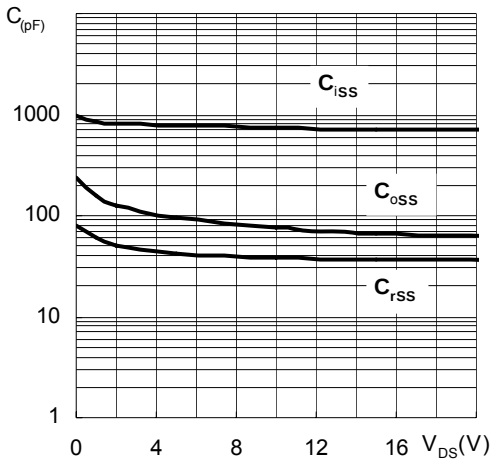


Figure 9 Safe Operating Area

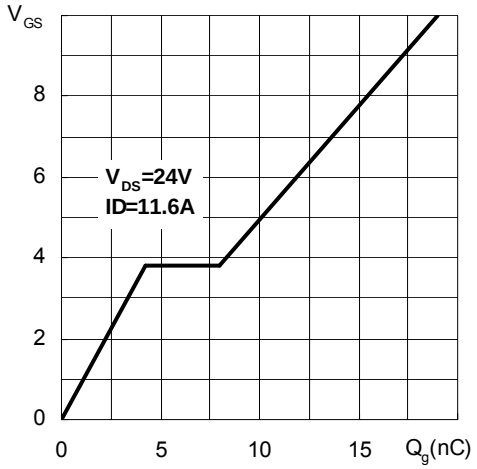
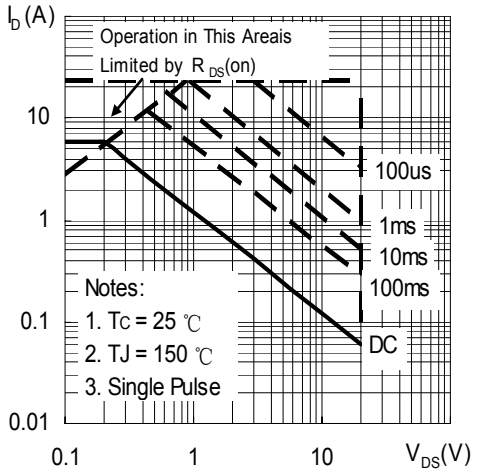


Figure 10 Maximum I_{DSS} vs. Case Temperature



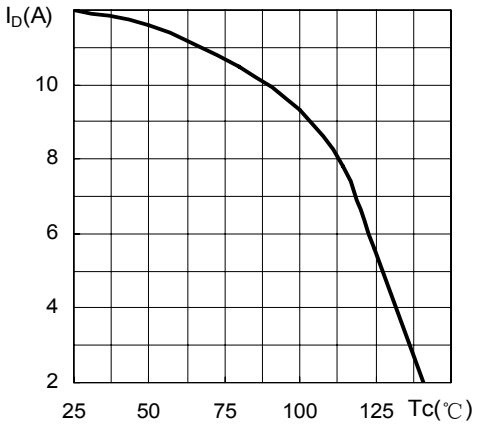


Figure 11 Rdson vs. V_{GS}

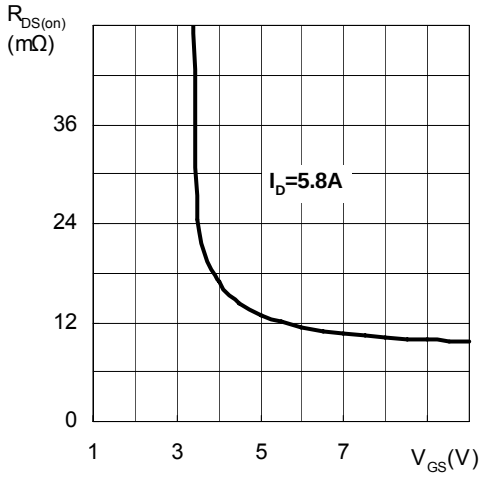
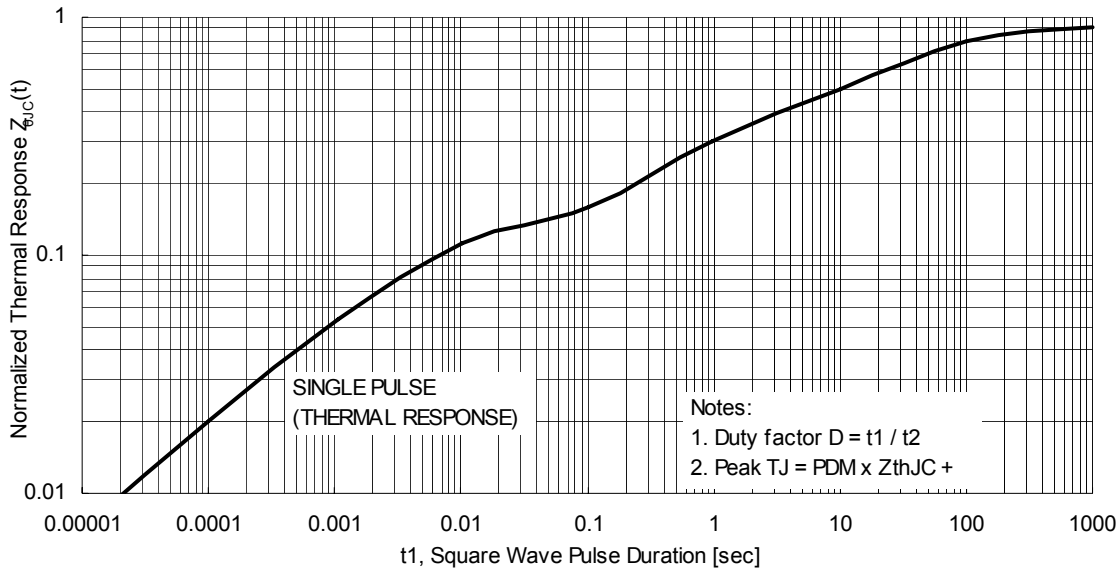
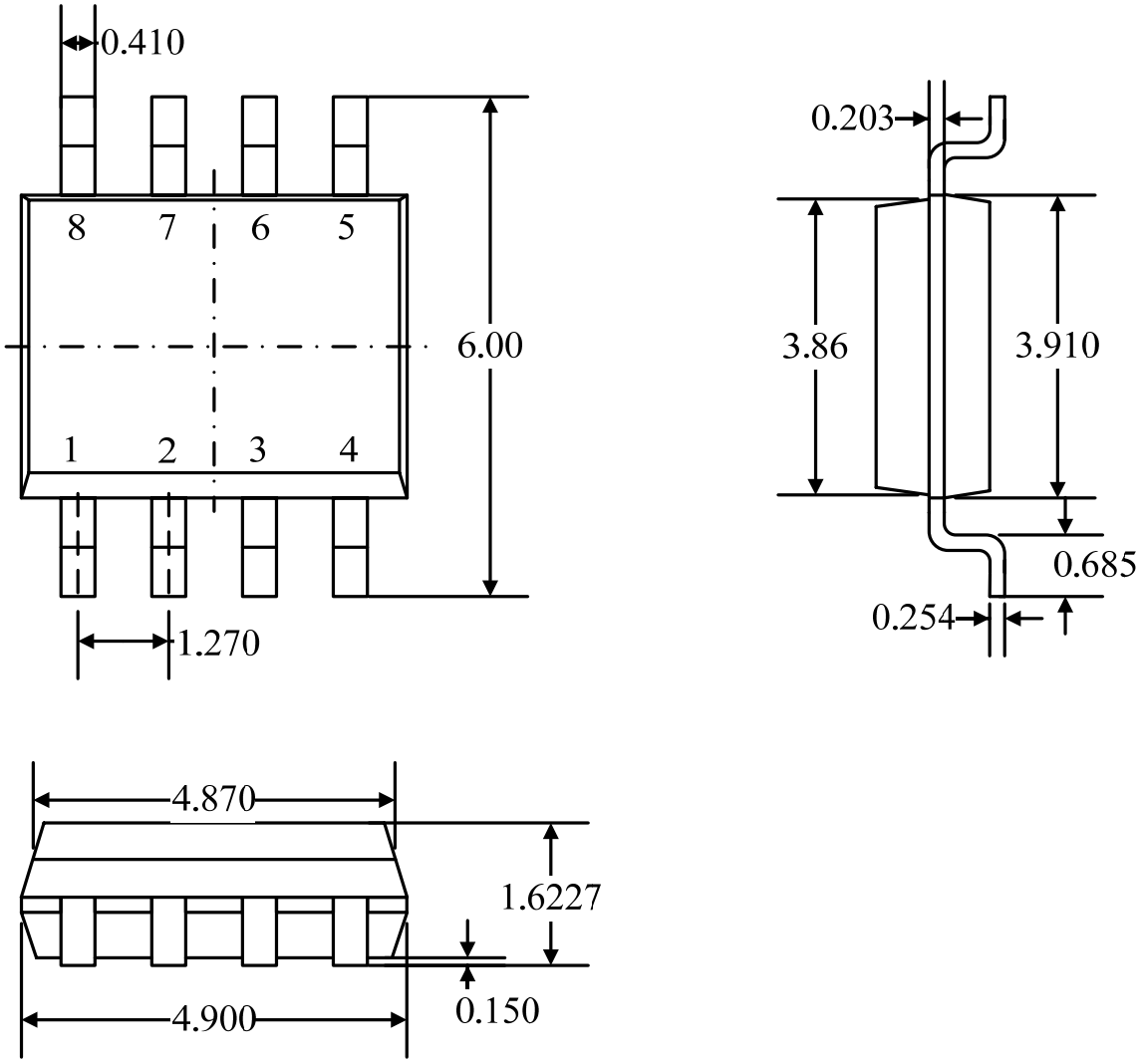


Figure 12 Normalized Maximum Transient Thermal Impedance



Package Drawing:



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