SEMICONDUCTOR

JHG15810C

N-Channel Fast Switching MOSFET

FEATURES

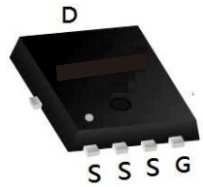
- Advanced Trench MOS Technology
- 100% EAS Guaranteed
- Super Low RDS (ON)
- Green Device Available

BVDSS	RDS ON	ID
100V	4.5mΩ	100A

Application

- MOTOR Driver
- BMS.
- High frequency switching and synchronous
- rectification.

DFN 5X6 Pin Configuration



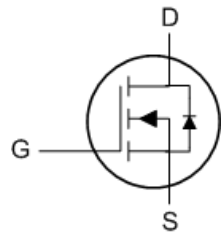


Table1 Absolute Maximum Ratings (T_C=25°C, unless otherwise specified)

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	100	V
V_{GS}	Gate-Source Voltage	±20	V
I_D@T_C=25℃	Continuous Drain Current, V_{GS} @ 10V [1,6]	100	A
I_D@T_C=100℃	Continuous Drain Current, V_{GS} @ 10V [1,6]	95	A
I_{DM}	Pulsed Drain Current [2]	480	A
EAS	Single Pulse Avalanche Energy [3]	196	mJ
I_{AS}	Avalanche Current	28	A
P_D@T_C=25℃	Total Power Dissipation [4]	227	W
T_{STG}	Storage Temperature Range	-55 to 150	℃
T_J	Operating Junction Temperature Range	-55 to 150	℃

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction-Ambient [1]	---	62	℃/W
$R_{\theta JC}$	Thermal Resistance Junction-Case [1]	---	0.6	℃/W

Table 2.Thermal Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V , I_D=250uA	100	---	---	V
$R_{DS(ON)}$	Static Drain -Source On -Resistance [2]	V_{GS}=10V , I_D=30A	---	3.7	4.5	mΩ
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D =250uA	2.0	3.0	4.0	V
I_{DSS}	Drain-Source Lea kage Current	V_{DS}=10 0V , V_{GS}=0V , T_J=25℃	---	---	1	uA
		V_{DS}=10 0V , V_{GS}=0V , T_J=12 5℃	---	---	10	
I_{GSS}	Gate -Source Leakage Current	V_{GS}=±20V , V_{DS}=0V	---	---	±100	nA
gfs	Forward Transconductance	V_{DS}=5V , I_D=30A	---	50	---	S
R_g	Gate Resistance	V_{DS}=0V , V_{GS}=0V , f=1MHz	---	1	---	Ω
Qg	Total Gate Charge (10 V)	V_{DS}=50V , V_{GS}=10V , I_D=20A	---	72	---	nC
Qgs	Gate -Source Charge		---	28	---	
Qgd	Gate -Drain Charge		---	15	---	
Td(on)	Turn-On Delay Time	V_{DD}=50V , V_{GS}=10V , R_G=3.0 , I_D=20A	---	35	---	ns
Tr	Rise Time		---	18	---	
Td(off)	Turn-Off Delay Time		---	45	---	
Tf	Fall Time		---	55	---	
Ciss	Input Capacitance	V_{DS}=50V , V_{GS}=0V , f=1MHz	---	4725	---	pF
Coss	Output Capacitance		---	609	---	
Crss	Reverse Transfer Capacitance		---	14	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current [1,5]	V_G=V_D=0V , Force Current	---	---	100	A
V_{SD}	Diode Forward Voltage [2]	V_{GS}=0V , I_S=50A , T_J=25℃	---	---	1. 3	V
t_{rr}	Reverse Recovery Time	I_F=30A , dI/dt=100A/?s , T_J=25℃	---	70	---	nS
Q_{rr}	Revers e Recovery Charge		---	170	---	nC

Note :
1.The data tested by surface mounted on a 1 inch^2 FR -4 board with 2OZ copper.
2.T he data tested by pulsed , pulse width ≦300us , duty cycle ≦2%
3.The EAS data shows Max. rating . The test condition is V_{DD} =25V,V_{GS}=10V,L=0. 5mH,I_{AS}=28A
4.The power dissipation is limited by 150 ℃ junction temperature
5.The data is theoretically the same as I_D and I_{DM} , in real applications , should be limited by total power dissipation.
6.Package limitation current.

Typical Characteristics

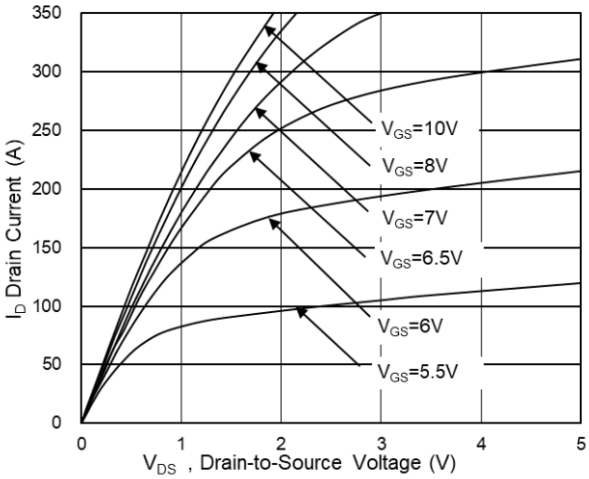


Fig.1 Typical Output Characteristics

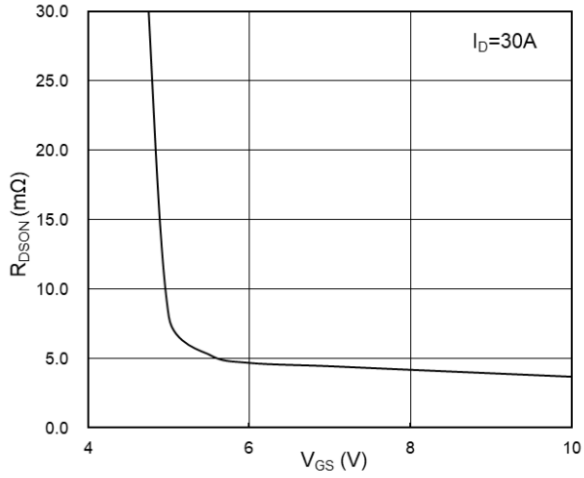


Fig.2 On -Resistance v s G -S Voltage

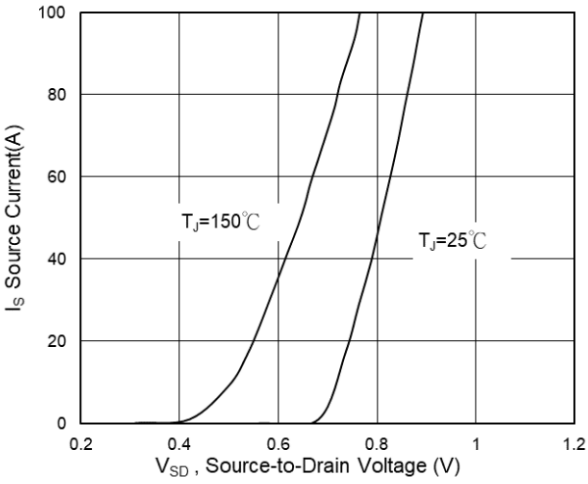


Fig. 3 Source Drain Forward Characteristics

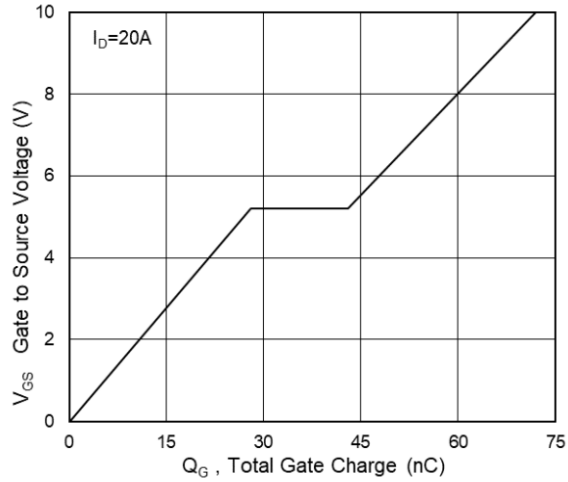


Fig. 4 Gate -Charge Characteristics

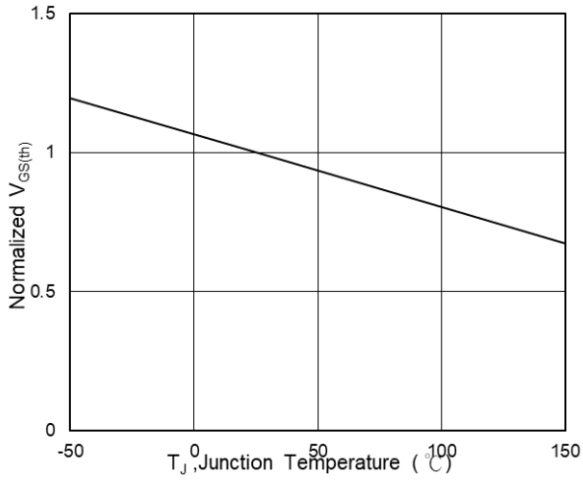


Fig. 5 Normalized V_{TH} vs T_J

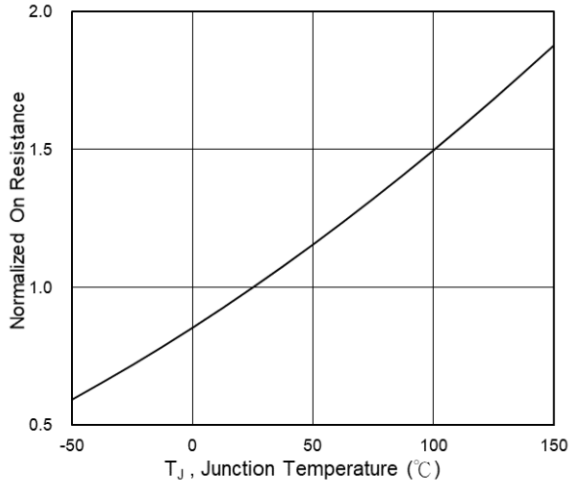


Fig. 6 Normalized R_{DSON} vs T_J

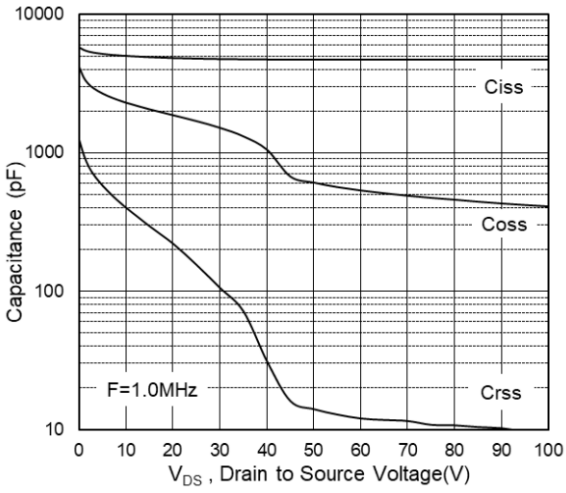


Fig. 7 Capacitance

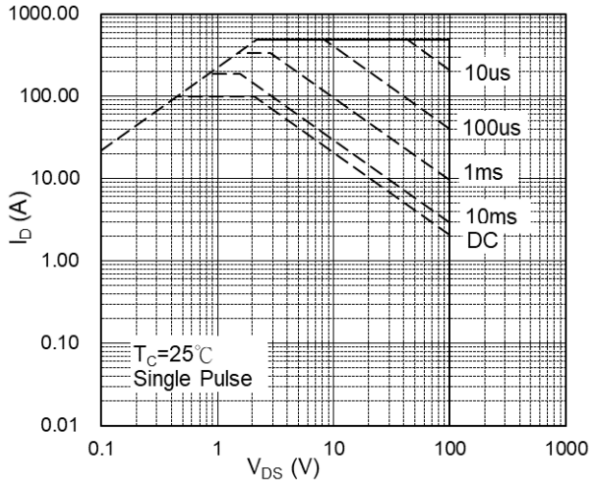


Fig .8 Safe Operating Area

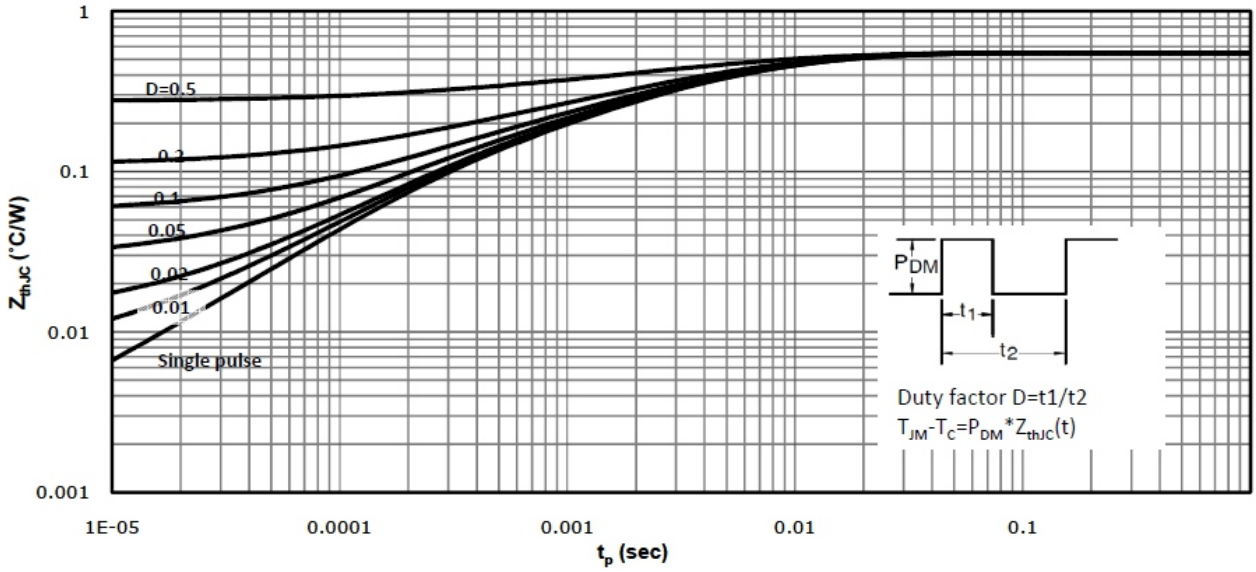


Fig. 9 Normalized Maximum Transient Thermal Impedance

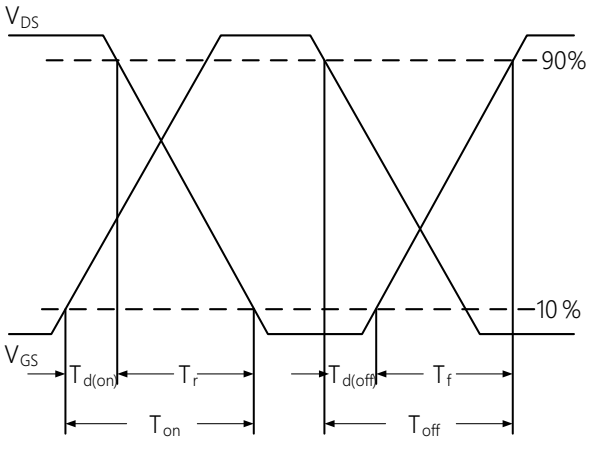


Fig. 10 Switch ing Time Waveform

$$EAS = \frac{1}{2} L \times I_{AS}^2 \times \frac{BV_{DSS}}{BV_{DSS} - V_{DD}}$$

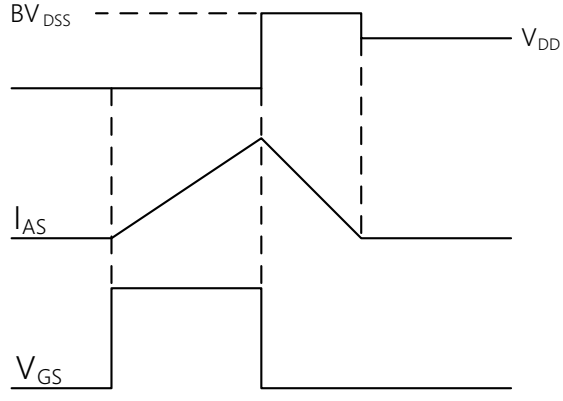


Fig. 11 Unclamped Inductive Switching Waveform

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