N-Channel Power MOSFET

General Description

- Very low on-resistance $R_{DS(ON)}$
- Low Gate Charge
- Excellent Gate Charge x $R_{DS(ON)}$ Product

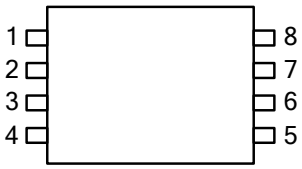
Applications

- High Frequency Switching and Synchronous Rectification

Product Summary

V_{DS}	100V
I_D	60A
$R_{DS(ON)}$ (at V_{GS}=10V)	< 11.5mΩ (Max)
$R_{DS(ON)}$ (at V_{GS}=4.5V)	< 15 mΩ (Max)

100% DVDS Tested
100% UIS Tested
100% Rg Tested



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Absolute Maximum Ratings

SL60N10Q

Electrical Characteristics@T_j=25°C(unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V, I_D=10mA	100	-	-	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance[2]	V_{GS}=10V, I_D =20A	-	8	11.5	mΩ
		V_{GS}=4.5V, I_D=20A	-	11.6	15	mΩ
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=250uA	1.2	-	2.4	V
g_{fs}	Forward Transconductance	V_{DS}=10V, I_D=20A	-	-	-	S
I_{DSS}	Drain-Source Leakage Current	V_{DS}=20V, V_{GS}=0V	-	-	1	uA
I_{GSS}	Gate-Source Leakage	V_{GS}=±20V, V_{DS}=0V	-	-	±100	nA
Q_g	Total Gate Charge	I_D=20A	-	29	-	nC
Q_{gs}	Gate-Source Charge	V_{DS}=15V	-	14	-	nC
Q_{gd}	Gate-Drain ("Miller") Charge	V_{GS}=4.5V	-	10	-	nC
$t_{d(on)}$	Turn-on Delay Time	V_{DS}=15V	-	8	-	ns
t_r	Rise Time	I_D=1A	-	4	-	ns
$t_{d(off)}$	Turn-off Delay Time	R_G=3.3Ω	-	28	-	ns
t_f	Fall Time	V_{GS}=10V	-	6	-	ns
C_{iss}	Input Capacitance	V_{GS}=0V	-	2550	-	pF
C_{oss}	Output Capacitance	V_{DS}=15V	-	305	-	pF
C_{rss}	Reverse Transfer Capacitance	f=1.0MHz	-	12	-	pF
R_g	Gate Resistance	f=1.0MHz	-	1.6	-	Ω

Source-Drain Diode

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
V_{SD}	Forward On Voltage[2]	I_S=20A, V_{GS}=0V	-	-	1.2	V
t_{rr}	Reverse Recovery Time	I_S=20A, V_{GS}=0V,	-	45	-	ns
Q_{rr}	Reverse Recovery Charge	dI/dt=100A/μs	-	30	-	nC

Note :
1.The data tested by surface mounted on a 1 inch^2 FR-4 board with 2OZ copper.
2.The 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=0.3mH,I_{AS}=15A
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.

Typical Characteristics

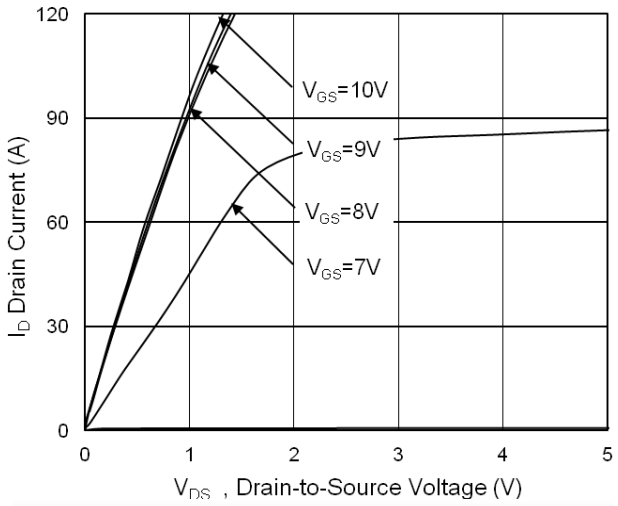

Fig.1 Typical Output Characteristics

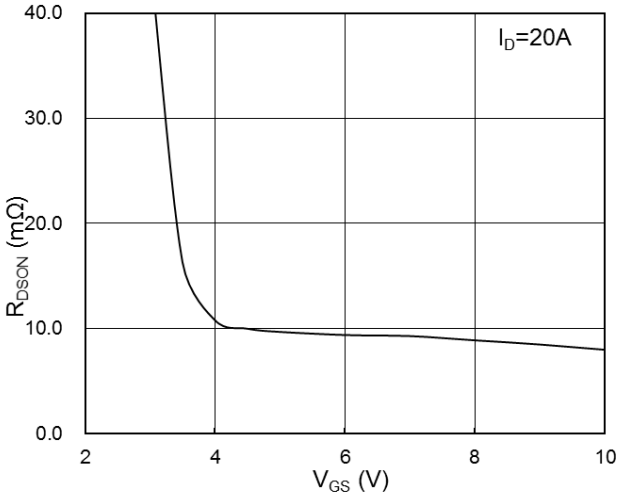

Fig.2 On-Resistance vs G-S Voltage

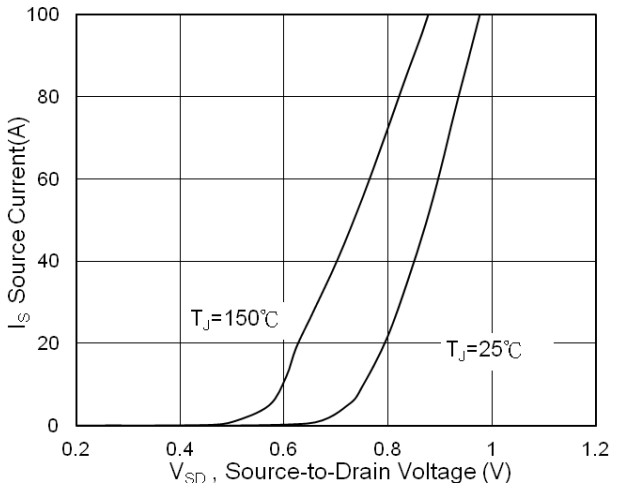

Fig.3 Source Drain Forward Characteristics

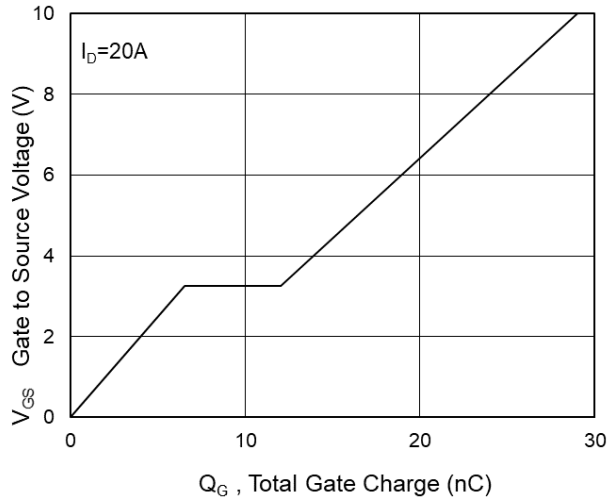

Fig.4 Gate-Charge Characteristics

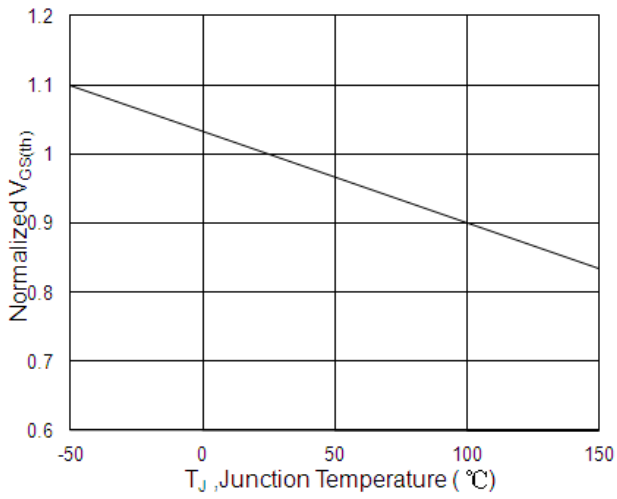

Fig.5 Normalized $V_{GS(th)}$ vs T_J

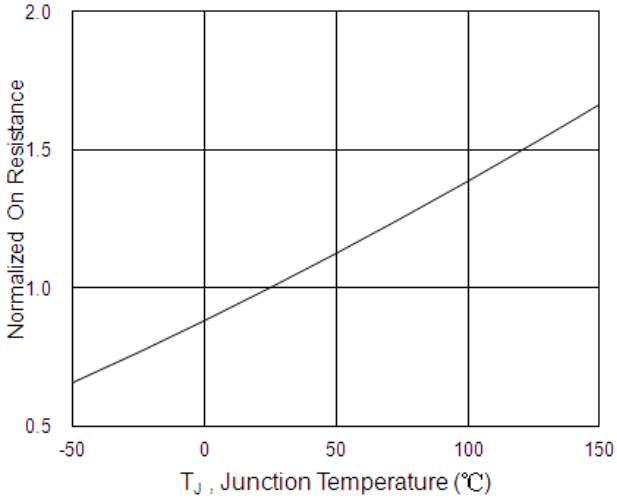

Fig.6 Normalized R_{DSON} vs T_J

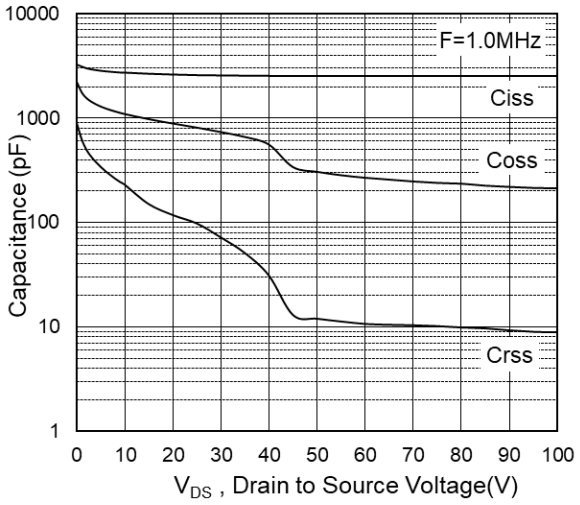

Fig.7 Capacitance

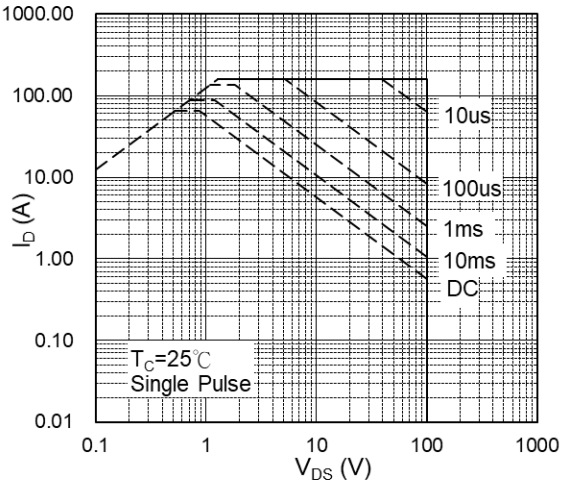

Fig.8 Safe Operating Area

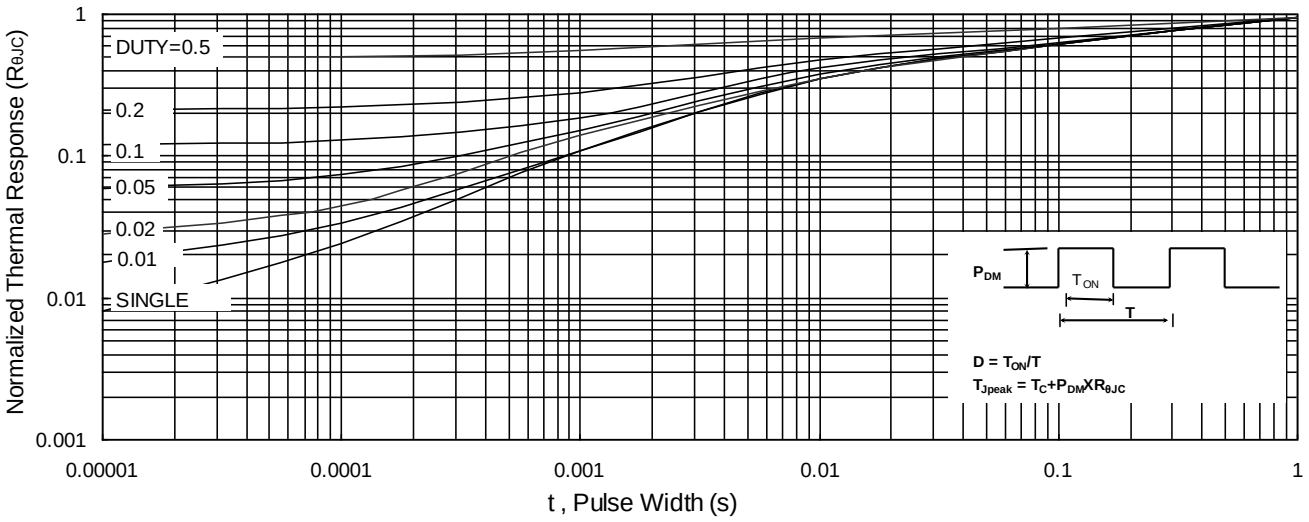

Fig.9 Normalized Maximum Transient Thermal Impedance

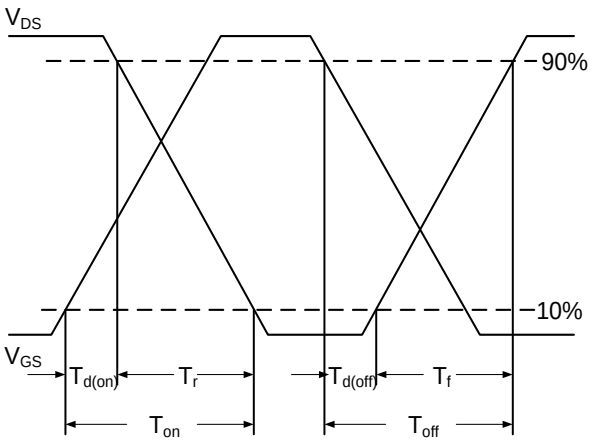

Fig.10 Switching Time Waveform

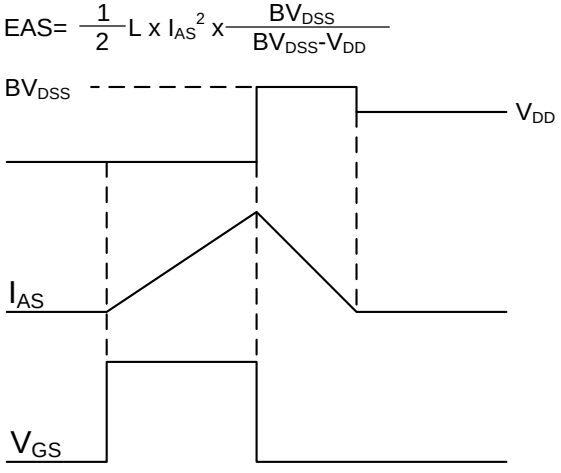

Fig.11 Unclamped Inductive Switching Waveform

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