SL65N10Q

N-Channel Power MOSFET

General Description

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

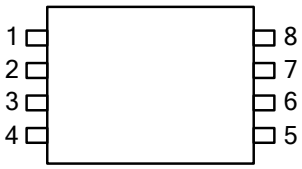
Applications

- High Frequency Switching and Synchronous Rectification

Product Summary

V_{DS}	100V
I_D	65A
$R_{DS(ON)}$ (at V_{GS}=10V)	< 14mΩ(Max)
$R_{DS(ON)}$ (at V_{GS}=4.5V)	< 17mΩ(Max)

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



DFN5x6

Part Number	Package Type	Form	Marking
SL65N10Q	DFN5x6	Tape & Reel	SL65N10Q

Absolute Maximum Ratings (T_A =25ºC unless otherwise noted)

Parameter		Symbol	Maximum	Units
Drain-Source Voltage		V_{DS}	100	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current	Silicon Limited	I_D	65	A
	T_C =100ºC B		40	
Pulsed Drain Current A		I_{DM}	130	A
Avalanche Current A		I_{AS}	60	A
Single Pulse Avalanche Energy L =0.3mH A		E_{AS}	180	mJ
Power Dissipation C	T_C =25ºC	P_D	89	W
	T_A =25ºC		2.5	W
Junction and Storage Temperature Range		T_J, T_{STG}	-55 to 150	ºC

Thermal Characteristics

Parameter		Symbol	Maximum	Units
Maximum Junction-to-Case	Steady-State	$R_{\theta JC}$	62	ºC/W
Maximum Junction-to-Ambient	Steady-State	$R_{\theta JA}$	1.4	

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	-	-	14	mΩ
		V_{GS}=4.5V, I_D=20A	-	-	17	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	-	30	-	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	-	75	-	nC
Q_{gs}	Gate-Source Charge	V_{DS}=15V	-	15	-	nC
Q_{gd}	Gate-Drain ("Miller") Charge	V_{GS}=4.5V	-	20	-	nC
$t_{d(on)}$	Turn-on Delay Time	V_{DS}=15V	-	18	-	ns
t_r	Rise Time	I_D=1A	-	8	-	ns
$t_{d(off)}$	Turn-off Delay Time	R_G=3.3Ω	-	58	-	ns
t_f	Fall Time	V_{GS}=10V	-	15	-	ns
C_{iss}	Input Capacitance	V_{GS}=0V	-	4708	-	pF
C_{oss}	Output Capacitance	V_{DS}=15V	-	326	-	pF
C_{rss}	Reverse Transfer Capacitance	f=1.0MHz	-	247	-	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,	-	24	-	ns
Q_{rr}	Reverse Recovery Charge	dI/dt=100A/μs	-	30	-	nC

Typical Characteristics

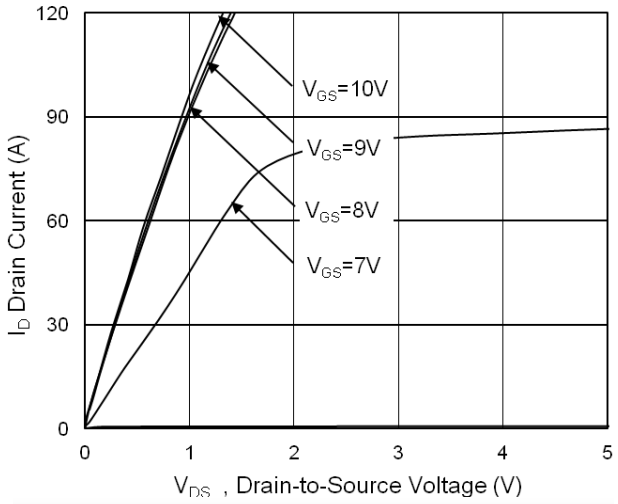


Fig.1 Typical Output Characteristics

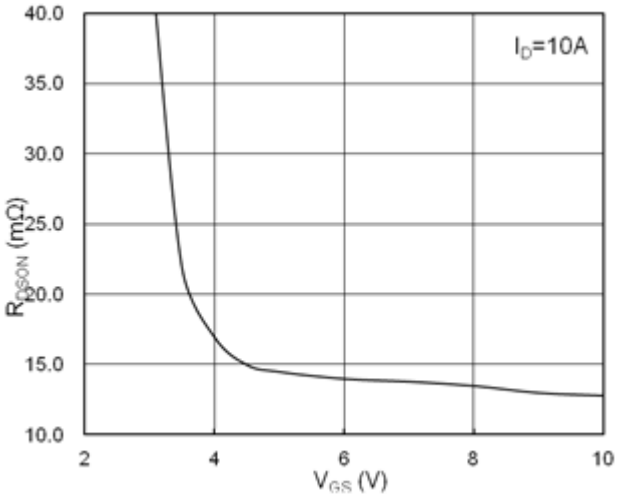


Fig.2 On-Resistance v.s Gate-Source

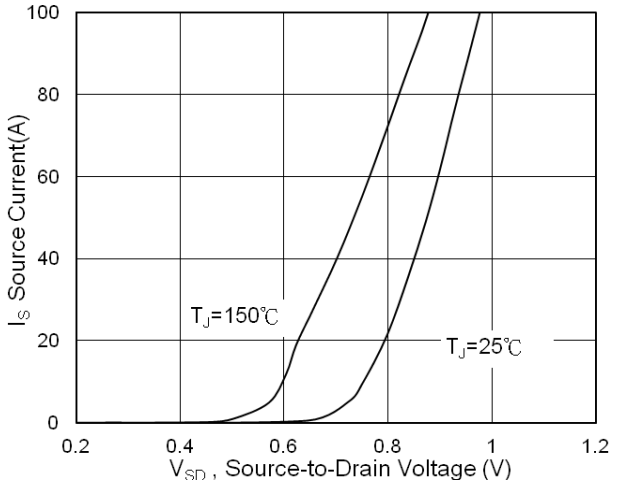


Fig.3 Forward Characteristics of Reverse

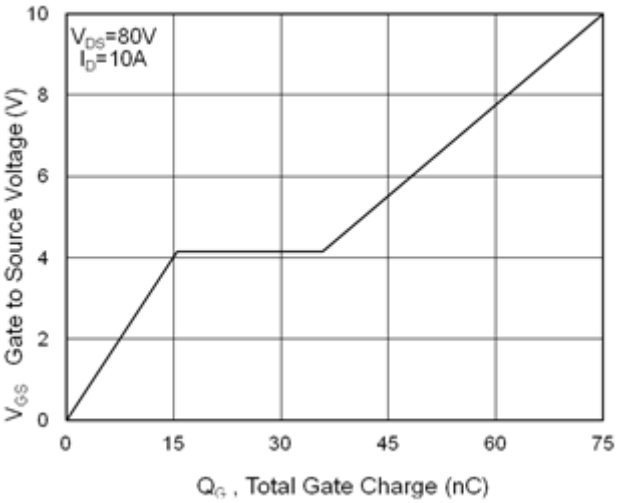


Fig.4 Gate-Charge Characteristics

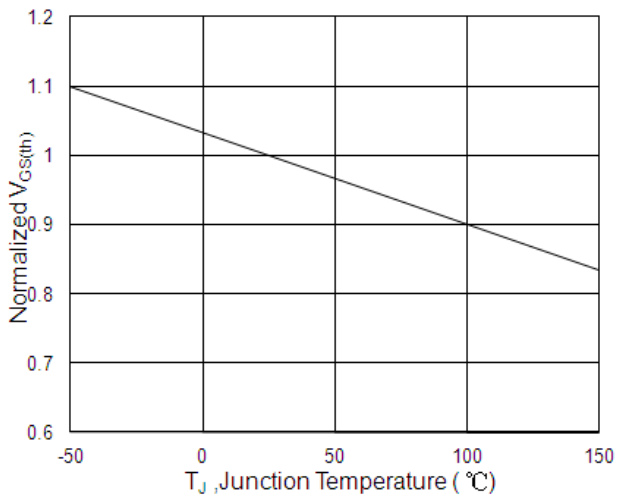


Fig.5 Normalized $V_{GS(th)}$ vs. T_J

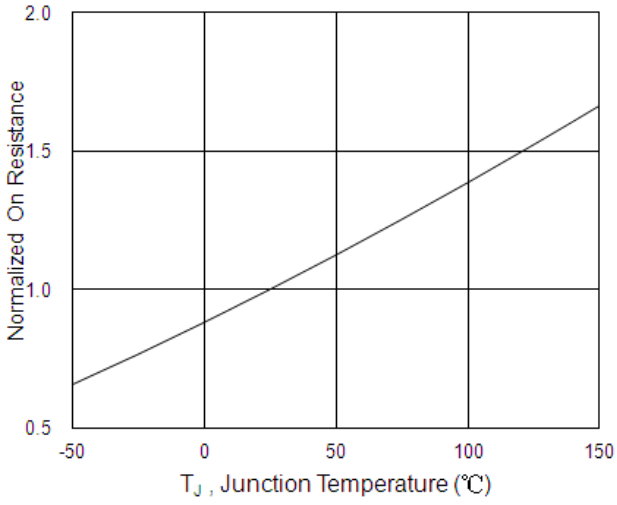


Fig.6 Normalized R_{DSON} vs. T_J

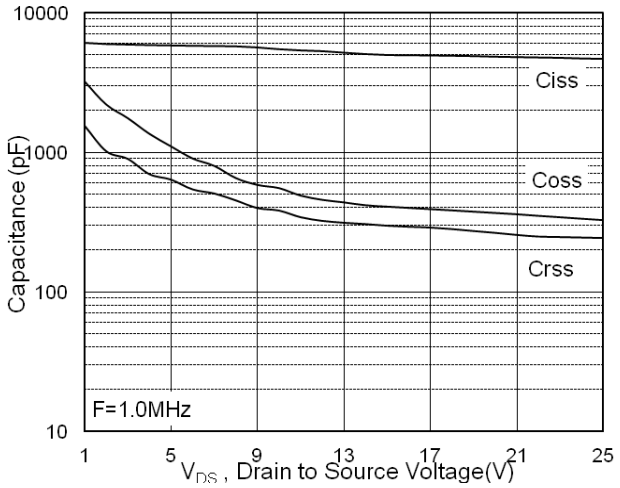


Fig.7 Capacitance

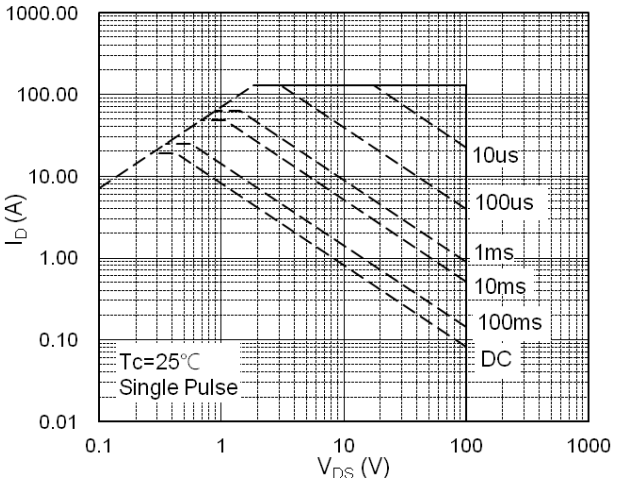


Fig.8 Safe Operating Area

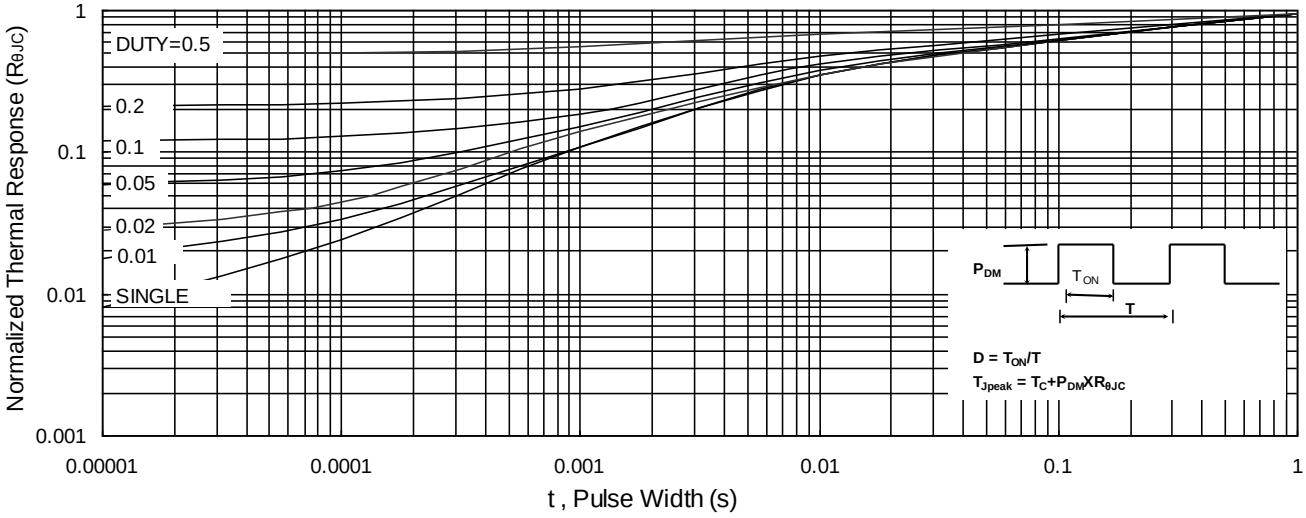


Fig.9 Normalized Maximum Transient Thermal Impedance

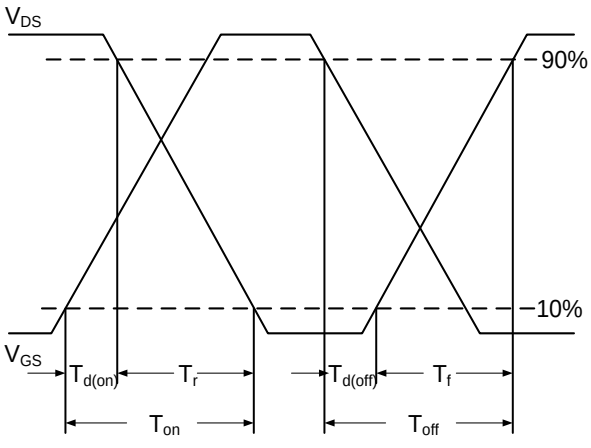


Fig.10 Switching Time Waveform

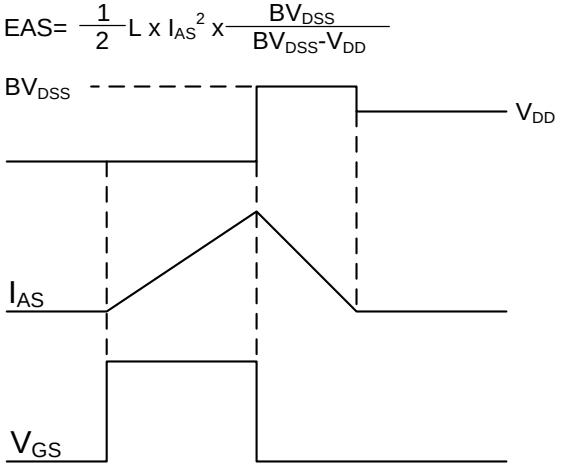
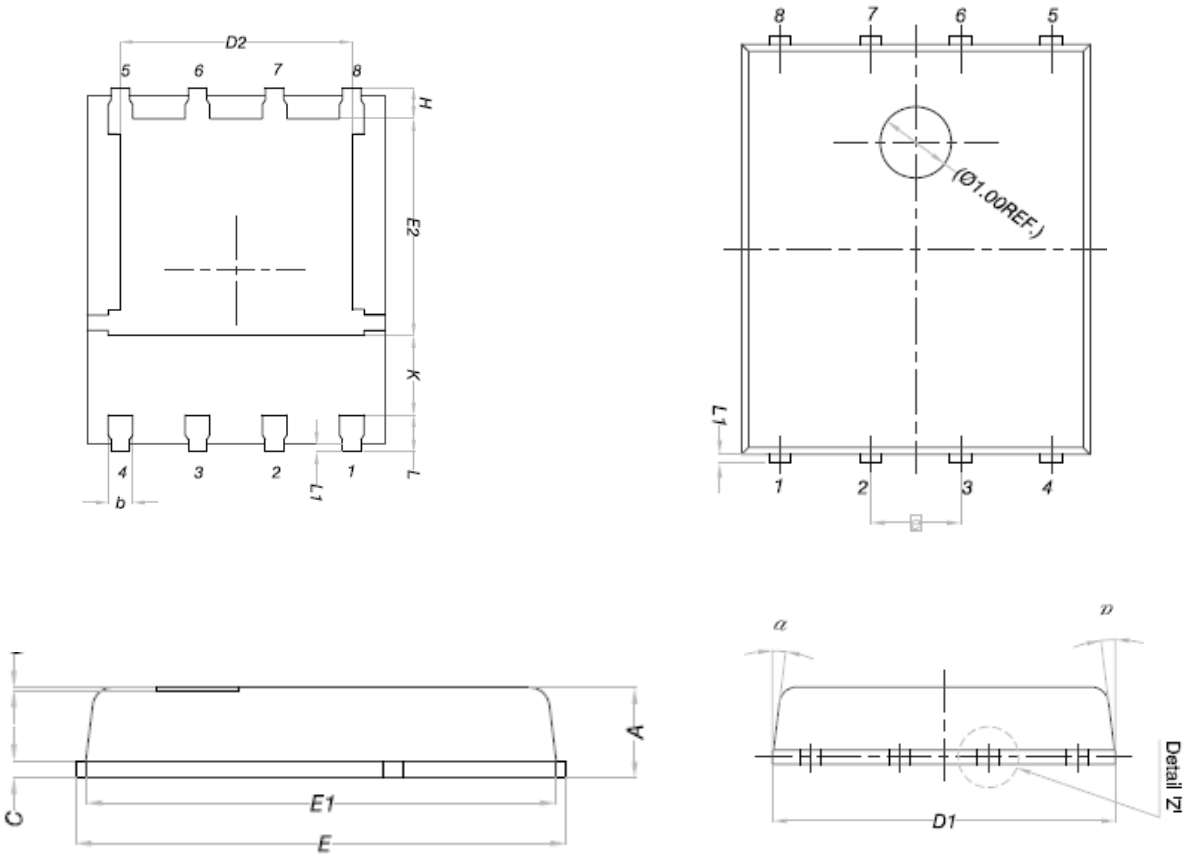


Fig.11 Unclamped Inductive Switching Waveform

DFN5x6



DIM.	MILLIMETERS		
	MIN.	NOM.	MAX.
A	0.90	1.00	1.10
A1	0	-	0.05
b	0.33	0.41	0.51
C	0.20	0.25	0.30
D1	4.80	4.90	5.00
D2	3.61	3.81	3.96

DIM.	MILLIMETERS		
	MIN.	NOM.	MAX.
E	5.90	6.00	6.10
E1	5.70	5.75	5.80
E2	3.38	3.58	3.78
e	1.27 BSC		
H	0.41	0.51	0.61
K	1.10	-	-
L	0.51	0.61	0.71
L1	0.06	0.13	0.20
α	0°	-	12°