Slkor

SL48N08Q

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

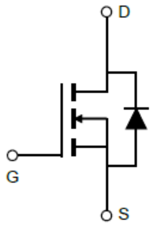
- High Frequency Switching and Synchronous Rectification

Product Summary

V_{DS}	80V
I_D	48A
$R_{DS(ON)}$ (at V_{GS} =10V)	< 6.5mΩ (Max)
$R_{DS(ON)}$ (at V_{GS} =4.5V)	< 8.5mΩ (Max)

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

DFN5x6



Part Number	Package Type	Form	Marking
SL48N08Q	DFN5x6	Tape & Reel	SL48N08Q

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

Parameter		Symbol	Maximum	Units
Drain-Source Voltage		V_{DS}	80	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current	Silicon Limited	I_D	48	A
	T_C =100ºC [B]		42.5	
Pulsed Drain Current [A]		I_{DM}	170	A
Avalanche Current [A]		I_{AS}	34	A
Single Pulse Avalanche Energy	L =0.3mH [A]	E_{AS}	57.8	mJ
Power Dissipation [C]	T_C =25ºC	P_D	56	W
	T_A =25ºC		2	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	$R_{\Theta JA}$	2.2	

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	80	-	-	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance[2]	V_{GS}=10V, I_D =20A	-	4.3	6.5	mΩ
		V_{GS}=4.5V, I_D=20A	-	6.3	8.5	mΩ
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=250uA	1.2	-	2.3	V
g_{fs}	Forward Transconductance	V_{DS}=10V, I_D=20A	-	75	-	S
I_{DSS}	Drain-Source Leakage Current	V_{DS}=20V, V_{GS}=0V	-	-	10	uA
I_{GSS}	Gate-Source Leakage	V_{GS}=±20V, V_{DS}=0V	-	-	±100	nA
Q_g	Total Gate Charge	I_D=20A	-	40	-	nC
Q_{gs}	Gate-Source Charge	V_{DS}=15V	-	7.2	-	nC
Q_{gd}	Gate-Drain ("Miller") Charge	V_{GS}=4.5V	-	6.5	-	nC
$t_{d(on)}$	Turn-on Delay Time	V_{DS}=15V	-	8.3	-	ns
t_r	Rise Time	I_D=1A	-	4.2	-	ns
$t_{d(off)}$	Turn-off Delay Time	R_G=3.3Ω	-	36	-	ns
t_f	Fall Time	V_{GS}=10V	-	6.9	-	ns
C_{iss}	Input Capacitance	V_{GS}=0V	-	2860	-	pF
C_{oss}	Output Capacitance	V_{DS}=15V	-	410	-	pF
C_{rss}	Reverse Transfer Capacitance	f=1.0MHz	-	38	-	pF
R_g	Gate Resistance	f=1.0MHz	-	0.5	-	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	V
t_{rr}	Reverse Recovery Time	I_S=20A, V_{GS}=0V,	-	27	-	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=0.1mH,I_{AS}=34A
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.The maximum current rating is package limited.

Typical Characteristics

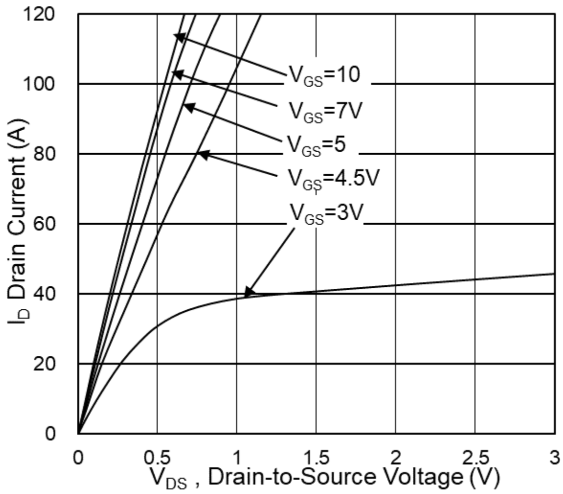


Fig.1 Typical Output Characteristics

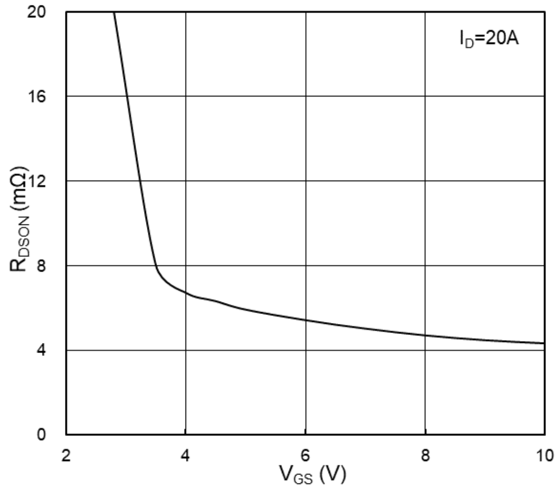


Fig.2 On-Resistance vs G-S Voltage

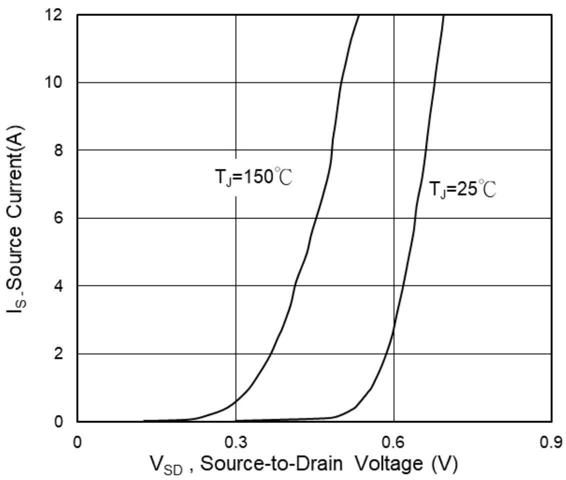


Fig.3 Source Drain Forward Characteristics

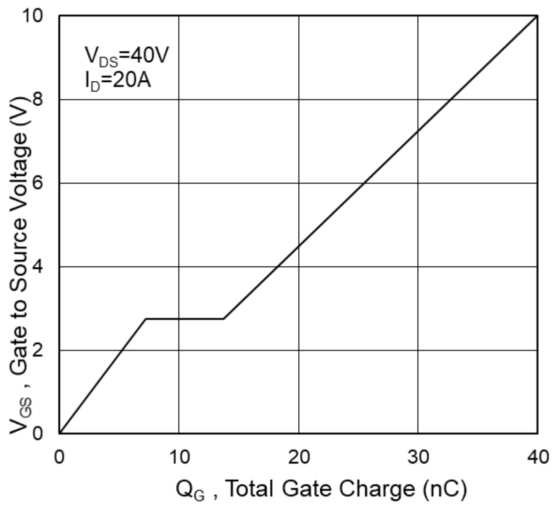


Fig.4 Gate-Charge Characteristics

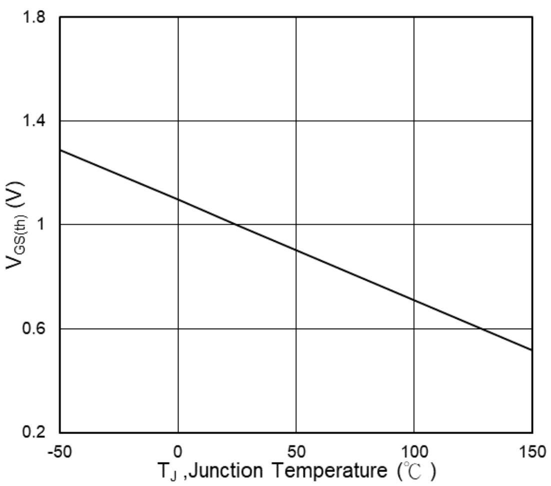


Fig.5 Normalized $V_{GS(th)}$ vs. T_J

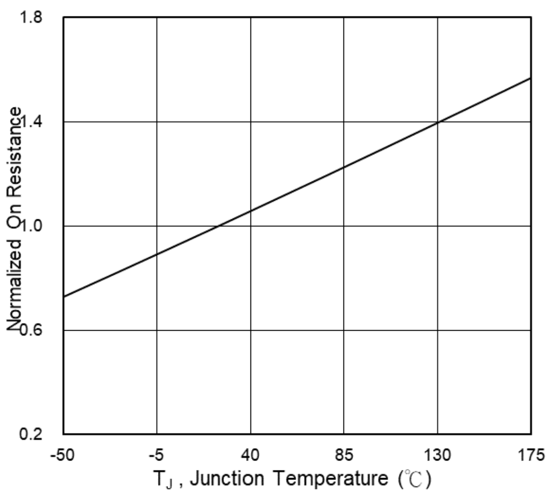


Fig.6 Normalized R_{DSON} vs. T_J

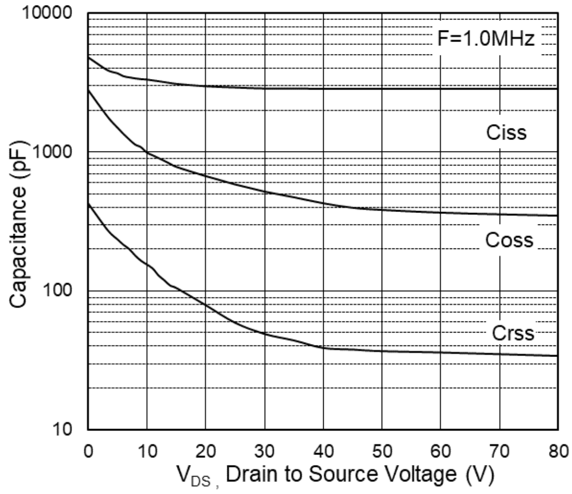


Fig.7 Capacitance

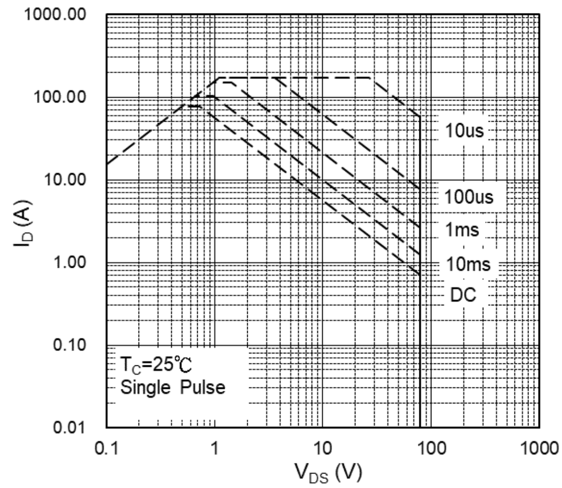


Fig.8 Safe Operating Area

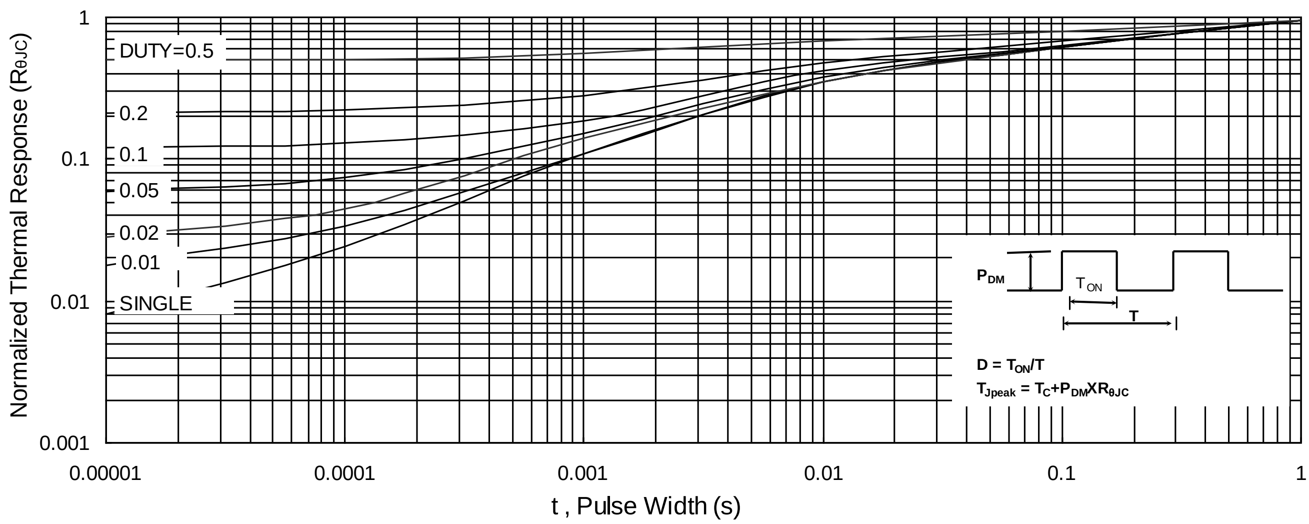


Fig.9 Normalized Maximum Transient Thermal Impedance

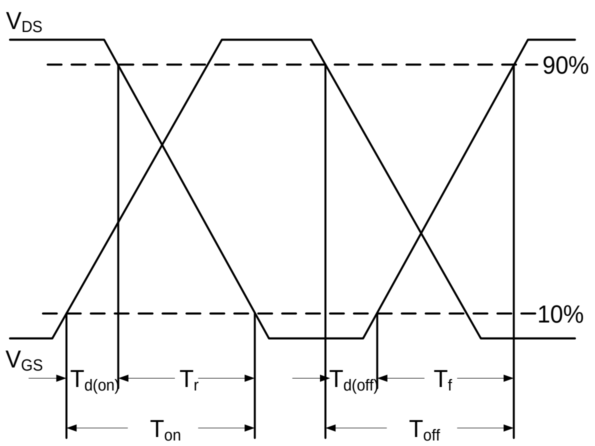


Fig.10 Switching Time Waveform

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

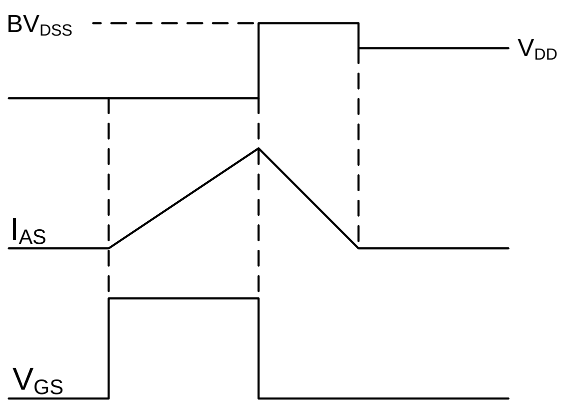
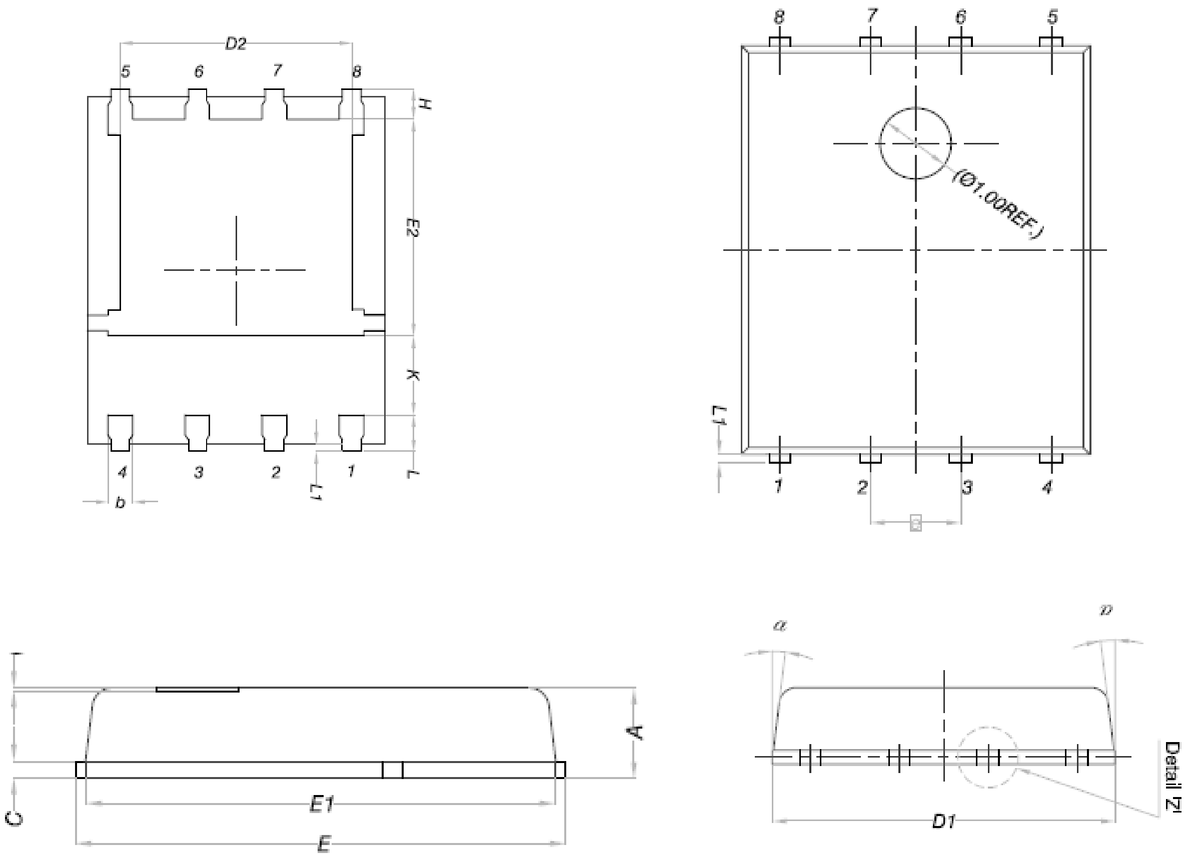


Fig.11 Unclamped Inductive Switching Waveform

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°