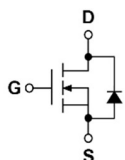


N-Channel Enhancement Mode MOSFET

Pin Description



Symbol



Product Summary

Symbol	N-Channel	Unit
V_{DSS}	80	V
$R_{DS(ON)-Max}$	7.7	mΩ
I_D	68	A

Feature

- Advanced trench cell design
- Reliable and Rugged
- ROHS Compliant & Halogen-Free
- 100% UIS and Rg Tested

Applications

- Motor drivers
- DC-DC Converter

Ordering Information

Orderable Part Number	Package Type	Form	Shipping	Marking
SL68N08G	PDFN3.3*3.3	Tape & Reel	5000 / Tape & Reel	

Absolute Maximum Ratings (T_J=25°C Unless Otherwise Noted)

Symbol	Parameter	N-Channel	Unit
V_{DSS}	Drain-Source Voltage	80	V
V_{GSS}	Gate-Source Voltage	±20	
T_J	Maximum Junction Temperature	150	°C
T_{STG}	Storage Temperature Range	-55 to 150	°C
$I_{DM}^{①}$	Pulse Drain Current Tested	T _C =25°C 171	A
I_D	Continuous Drain Current	T _C =25°C 68	A
		T _C =100°C 43	
P_D	Maximum Power Dissipation	T _C =25°C 35.7	W
		T _C =100°C 14.3	
I_D	Continuous Drain Current	T _A =25°C 14.7	A
		T _A =70°C 11.8	
P_D	Maximum Power Dissipation	T _A =25°C 1.7	W
		T _A =70°C 1.1	
$I_{AS}^{②}$	Avalanche Current, Single pulse	L=0.1mH 25	A
		L=0.5mH 15	
$E_{AS}^{③}$	Avalanche Energy, Single pulse	L=0.1mH 31	mJ
		L=0.5mH 56	

Thermal Characteristics

Symbol	Parameter	Rating	Unit
$R_{θJC}$	Thermal Resistance-Junction to Case	Steady State 3.5	°C/W
$R_{θJA}^{③}$	Thermal Resistance-Junction to Ambient	Steady State 75	°C/W

Note ① : Max. current is limited by junction temperature

Note ② : UIS tested and pulse width are limited by maximum junction temperature 150°C

Note ③ : Surface Mounted on 1in² FR-4 board with 1oz.

N-Channel Electrical Characteristics ($T_J=25^{\circ}\text{C}$ Unless Otherwise Noted)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
Static Electrical Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_{DS}=250\mu A$	80	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=64V, V_{GS}=0V$	-	-	1	μA
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_{DS}=250\mu A$	1	2	3	V
I_{GSS}	Gate Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	± 100	nA
$R_{DS(ON)}$ ●	Drain-Source On-state Resistance	$V_{GS}=10V, I_{DS}=20A$	-	6.4	7.7	m Ω
		$V_{GS}=4.5V, I_{DS}=10A$	-	10	13	
gfs	Forward Transconductance	$V_{DS}=5V, I_{DS}=10A$	-	27	-	S
Dynamic Characteristics ●						
R_G	Gate Resistance	$V_{GS}=0V, V_{DS}=0V,$ Freq.=1MHz	-	1.2	-	Ω
C_{iss}	Input Capacitance	$V_{GS}=0V,$ $V_{DS}=40V,$ Freq.=1MHz	-	1692	-	pF
C_{oss}	Output Capacitance					
C_{rss}	Reverse Transfer Capacitance					
$t_{d(ON)}$	Turn-on Delay Time	$V_{GS}=10V, V_{DS}=40V,$ $I_D=1A, R_{GEN}=6\Omega$	-	8	-	nS
t_r	Turn-on Rise Time					
$t_{d(OFF)}$	Turn-off Delay Time					
t_f	Turn-off Fall Time					
Q_g	Total Gate Charge	$V_{GS}=4.5V, V_{DS}=40V$ $I_D=20A$	-	20	-	nC
Q_g	Total Gate Charge	$V_{GS}=10V, V_{DS}=50V,$ $I_D=20A$	-	35	-	
Q_{gs}	Gate-Source Charge		-	8	-	
Q_{gd}	Gate-Drain Charge		-	9.3	-	
Source-Drain Characteristics						
V_{SD} ●	Diode Forward Voltage	$I_{SD}=10A, V_{GS}=0V$	-	0.8	1.1	V
t_{rr}	Reverse Recovery Time	$I_F=10A, V_R=40V$	-	33	-	nS
Q_{rr}	Reverse Recovery Charge	$dI_F/dt=100A/\mu s$	-	30	-	nC

Note ④ : Pulse test (pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$).

Note ⑤ : Guaranteed by design, not subject to production testing.

N-Channel Typical Characteristics

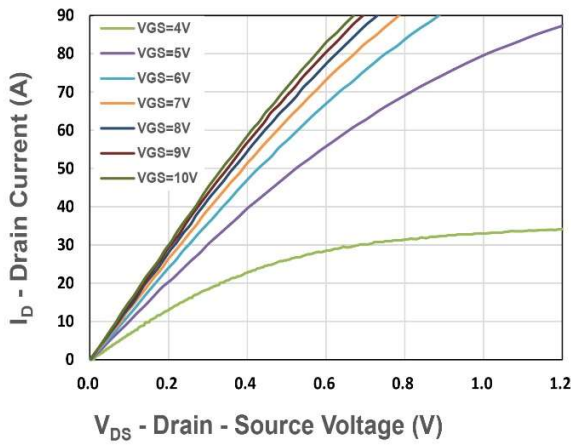


Figure 1. Output Characteristics

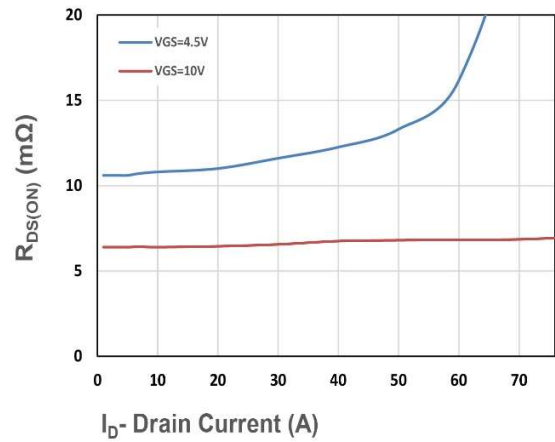


Figure 2. On-Resistance vs. ID

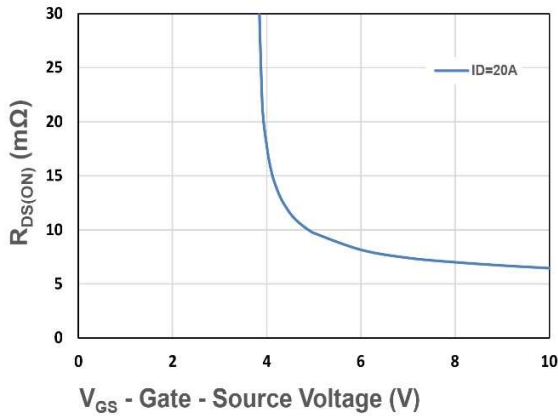


Figure 3. On-Resistance vs. VGS

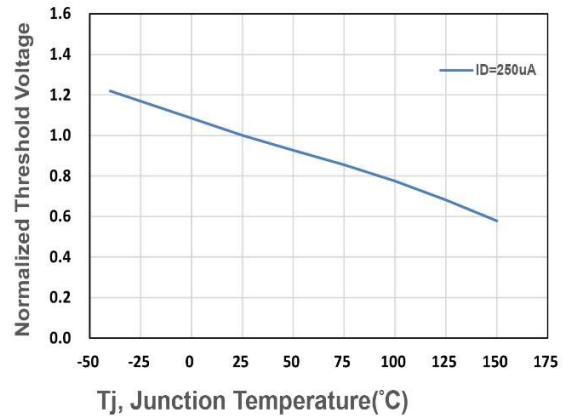


Figure 4. Gate Threshold Voltage

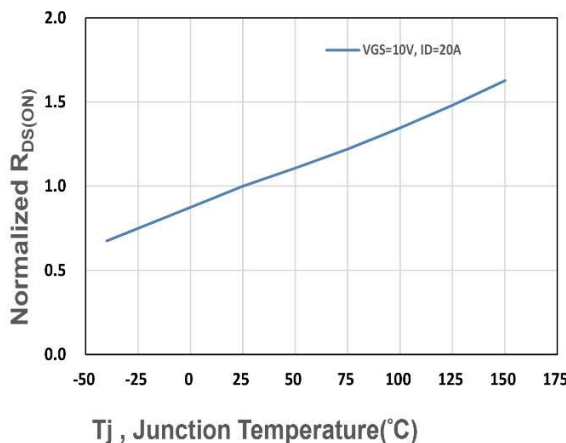


Figure 5. Drain-Source On Resistance

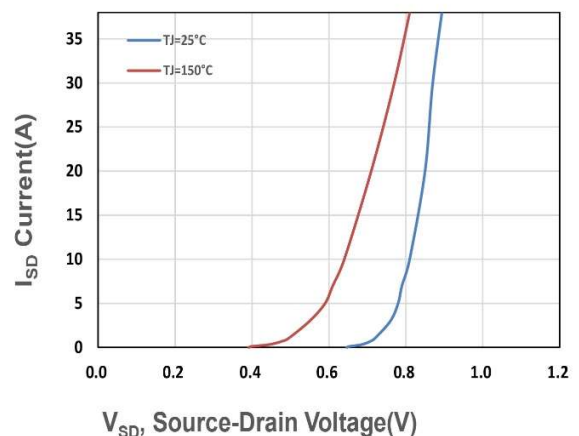
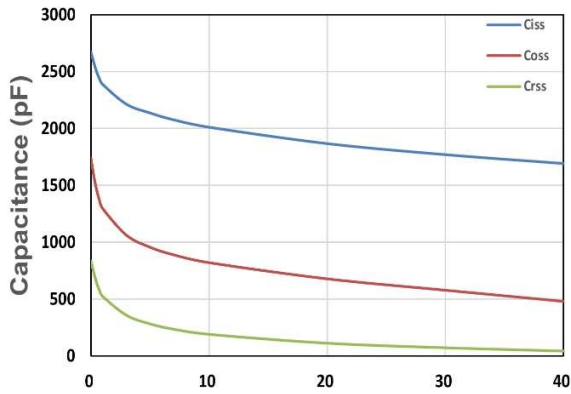
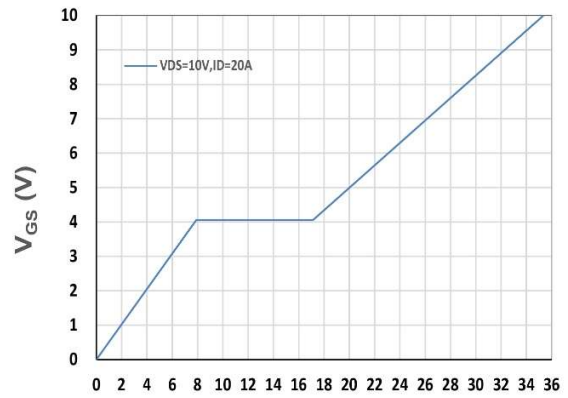


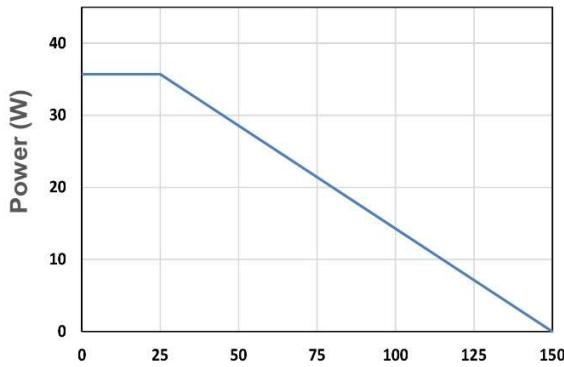
Figure 6. Source-Drain Diode Forward



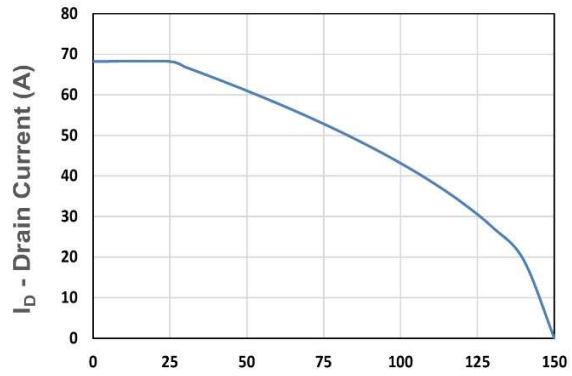
V_{DS} - Drain - Source Voltage (V)
Figure 7. Capacitance



Qg, Total Gate Charge (nC)
Figure 8. Gate Charge Characteristics



Tc - Case Temperature (°C)
Figure 9. Power Dissipation



Tc - Case Temperature (°C)
Figure 10. Drain Current

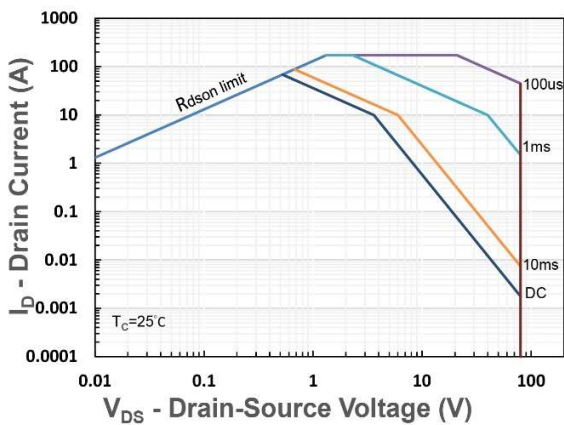


Figure 11. Safe Operating Area

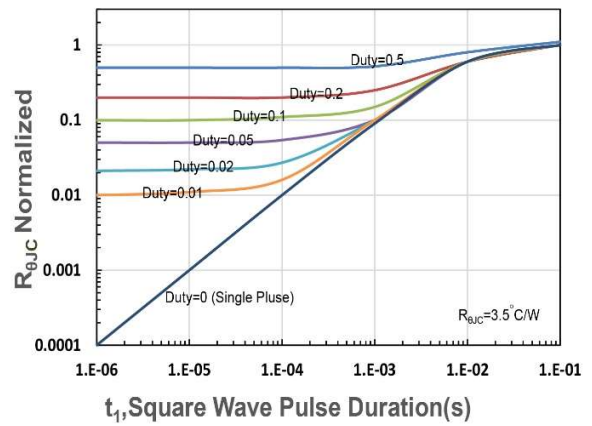


Figure 12. R_{θJC} Transient Thermal Impedance

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