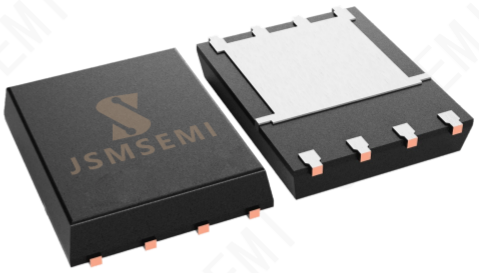
Product Summary

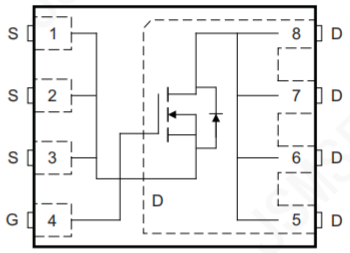
- V_{DS} 40V
- I_D 225A
- $R_{DS(ON)}$(at V_{GS}=10V) <1.4mΩ
- $R_{DS(ON)}$(at V_{GS}=4.5V) <2.6mΩ
- 100% EAS Tested
- 100% ▽V_{DS} Tested



General Description

- Split gate trench MOSFET technology
- Excellent package for heat dissipation
- High density cell design for low $R_{DS(ON)}$
- Moisture Sensitivity Level 1
- Epoxy Meets UL 94 V-0 Flammability Rating
- Halogen Free

Top View



Applications

- Power switching application
- Uninterruptible power supply
- DC-DC convertor

■ Absolute Maximum Ratings (T_A=25℃ unless otherwise noted)

Parameter		Symbol	Limit	Unit
Drain-source Voltage		V_{DS}	40	V
Gate-source Voltage		V_{GS}	±20	V
Drain Current	T_A=25℃	I_D	60	A
	T_A=100℃		25	
	T_C=25℃		225	
	T_C =100℃		141	
Pulsed Drain Current [A]		I_{DM}	720	A
Avalanche energy [B]		EAS	450	mJ
Total Power Dissipation [C]	T_A=25℃	P_D	2.2	W
	T_A=100℃		0.9	
	T_C=25℃		114	
Junction and Storage Temperature Range		T_J ,T_{STG}	-55～+150	℃

■Thermal resistance

Parameter		Symbol	Typ	Max	Units
Thermal Resistance Junction-to-Ambient [D]	Steady-State	$R_{\theta JA}$	45	55	℃/W
Thermal Resistance Junction-to-Case	Steady-State	$R_{\theta JC}$	1.0	1.1	

■ Electrical Characteristics (T_J=25℃ unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Static Parameter						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}= 0V, I_D=250μA	40	-	-	V
		V_{GS}= 0V, I_D=1mA	40	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=40V, V_{GS}=0V	-	-	1	μA
		V_{DS}=40V, V_{GS}=0V, Tj=150℃	-	-	100	
Gate-Body Leakage Current	I_{GSS}	V_{GS}= ±20V, V_{DS}=0V	-	-	±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}= V_{GS}, I_D=250μA	1.3	1.7	2.3	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=10V, I_D=50A	-	1.1	1.4	mΩ
		V_{GS}=4.5V, I_D=25A	-	1.7	2.6	
Diode Forward Voltage	V_{SD}	I_S=50A, V_{GS}=0V	-	-	1.2	V
Gate resistance	R_G	f=1MHz	-	3.5	-	Ω
Maximum Body-Diode Continuous Current	I_S		-	-	180	A
Dynamic Parameters						
Input Capacitance	C_{iss}	V_{DS}=20V, V_{GS}=0V, f=1MHz	-	5500	-	pF
Output Capacitance	C_{oss}		-	1850	-	
Reverse Transfer Capacitance	C_{rss}		-	65	-	
Switching Parameters						
Total Gate Charge	Q_g	V_{GS}=10V, V_{DS}=20V, I_D=50A	-	87	-	nC
Gate-Source Charge	Q_{gs}		-	18	-	
Gate-Drain Charge	Q_{gd}		-	15	-	
Reverse Recovery Charge	Q_{rr}	I_F=50A, di/dt=100A/us	-	53	-	nC
Reverse Recovery Time	t_{rr}		-	55	-	ns
Turn-on Delay Time	$t_{D(on)}$	V_{GS}=10V, V_{DD}=20V, I_D=50A R_{GEN}=3Ω	-	14	-	ns
Turn-on Rise Time	t_r		-	15	-	
Turn-off Delay Time	$t_{D(off)}$		-	84	-	
Turn-off fall Time	t_f		-	44	-	

A. Repetitive rating; pulse width limited by max. junction temperature.
B. T_J=25℃, V_G=10V, R_G=25Ω, L=0.5mH
C. P_d is based on max. junction temperature, using junction-case and junction-ambient thermal resistance.

■Typical Electrical and Thermal Characteristics Diagrams

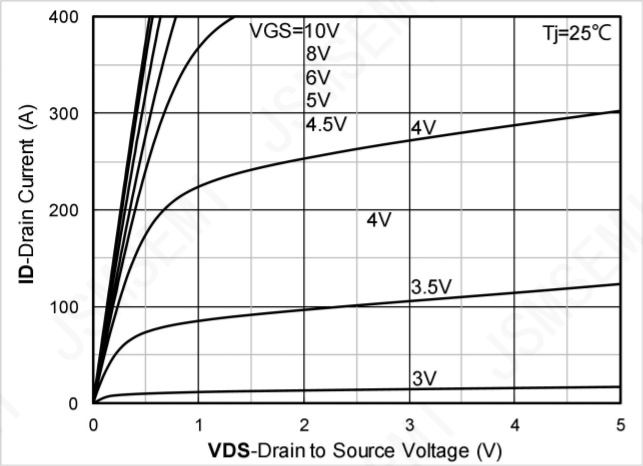


Figure 1. Output Characteristics

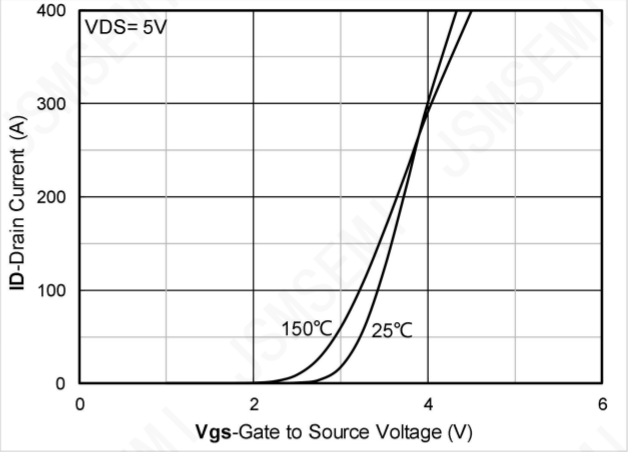


Figure 2. Transfer Characteristics

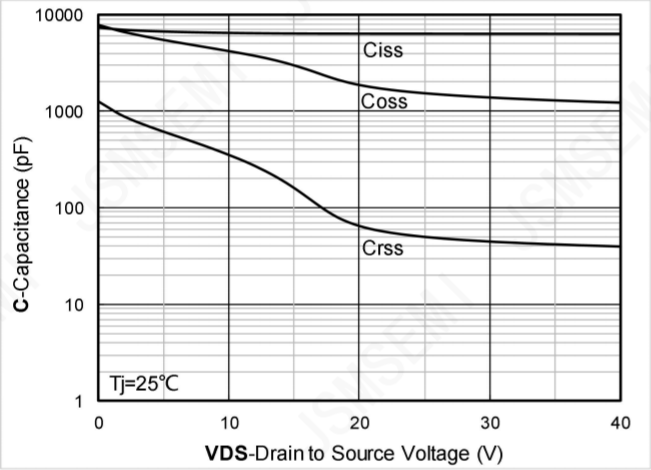


Figure 3. Capacitance Characteristics

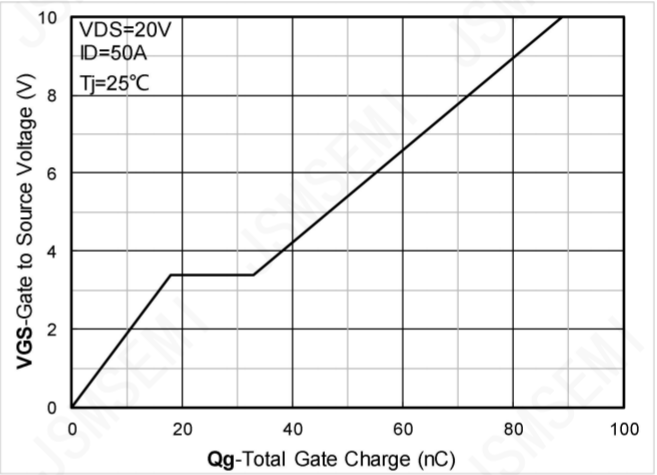


Figure 4. Gate Charge

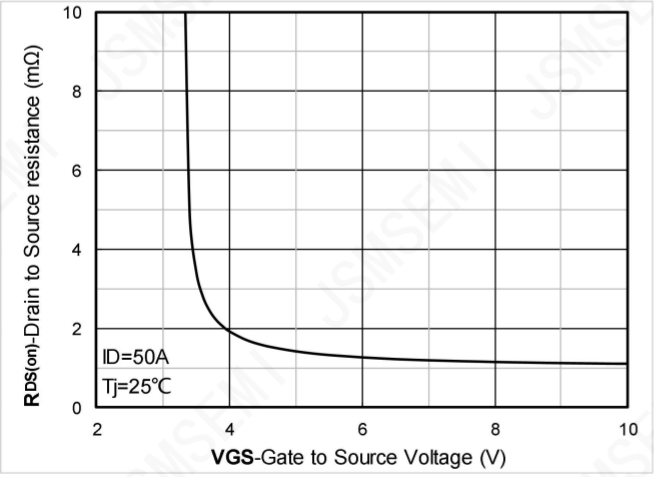


Figure 5. On-Resistance vs Gate to Source Voltage

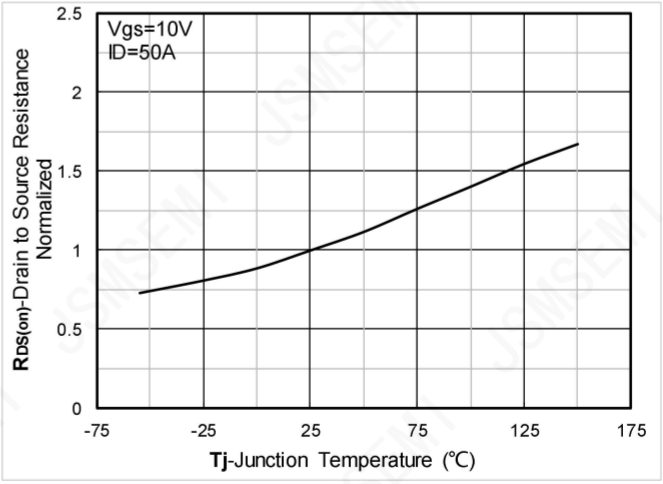


Figure 6. Normalized On-Resistance

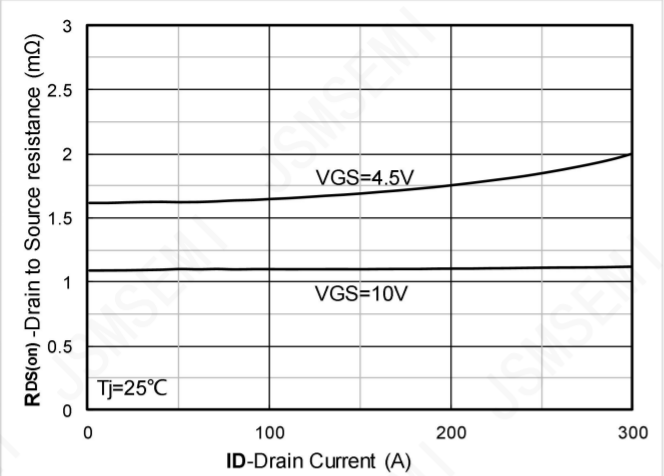


Figure 7. RDS(on) VS Drain Current

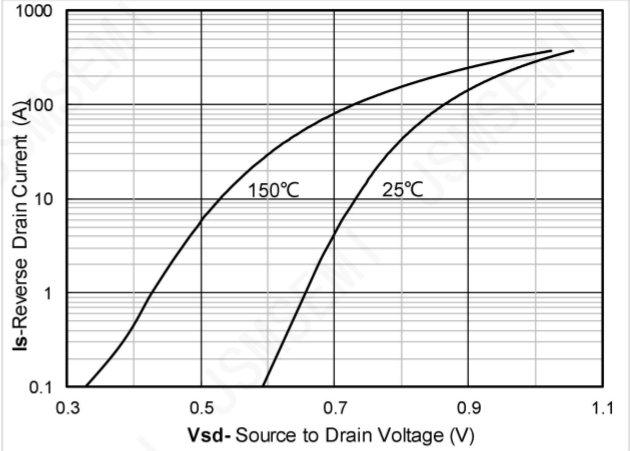


Figure 8. Forward characteristics of reverse diode

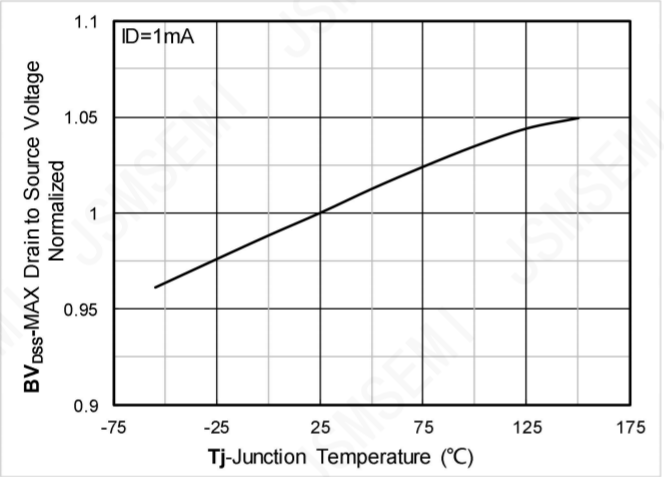


Figure 9. Normalized breakdown voltage

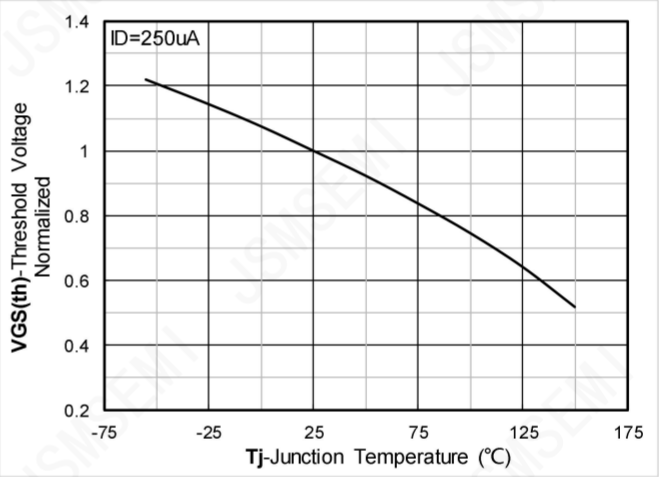


Figure 10. Normalized Threshold voltage

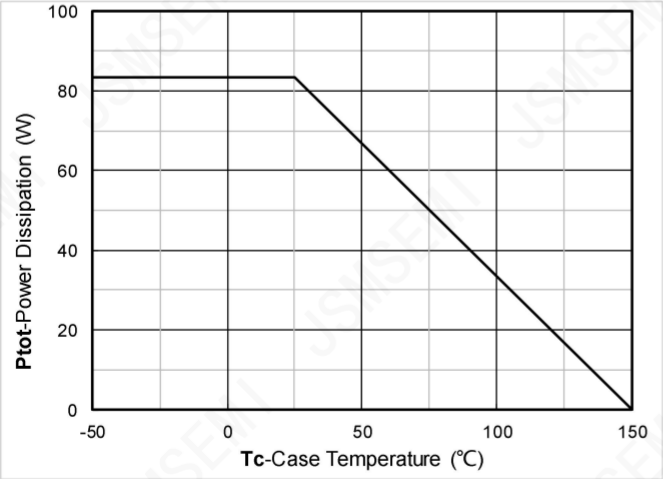


Figure 11. Power dissipation

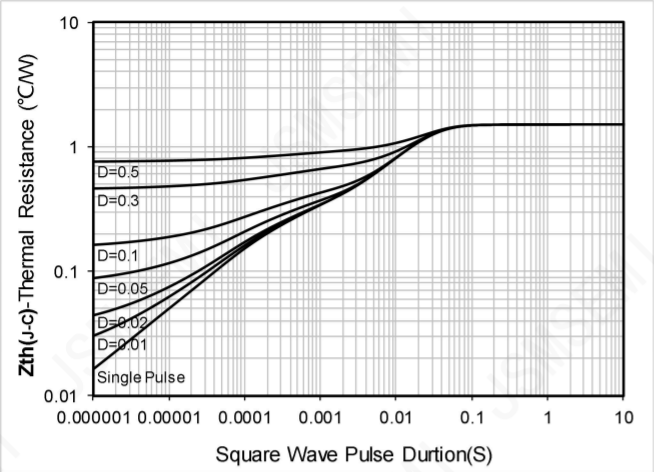


Figure 12. Maximum Transient Thermal Impedance

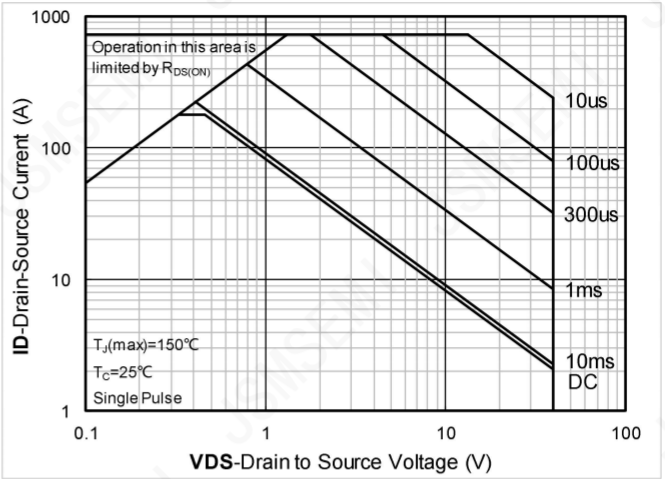


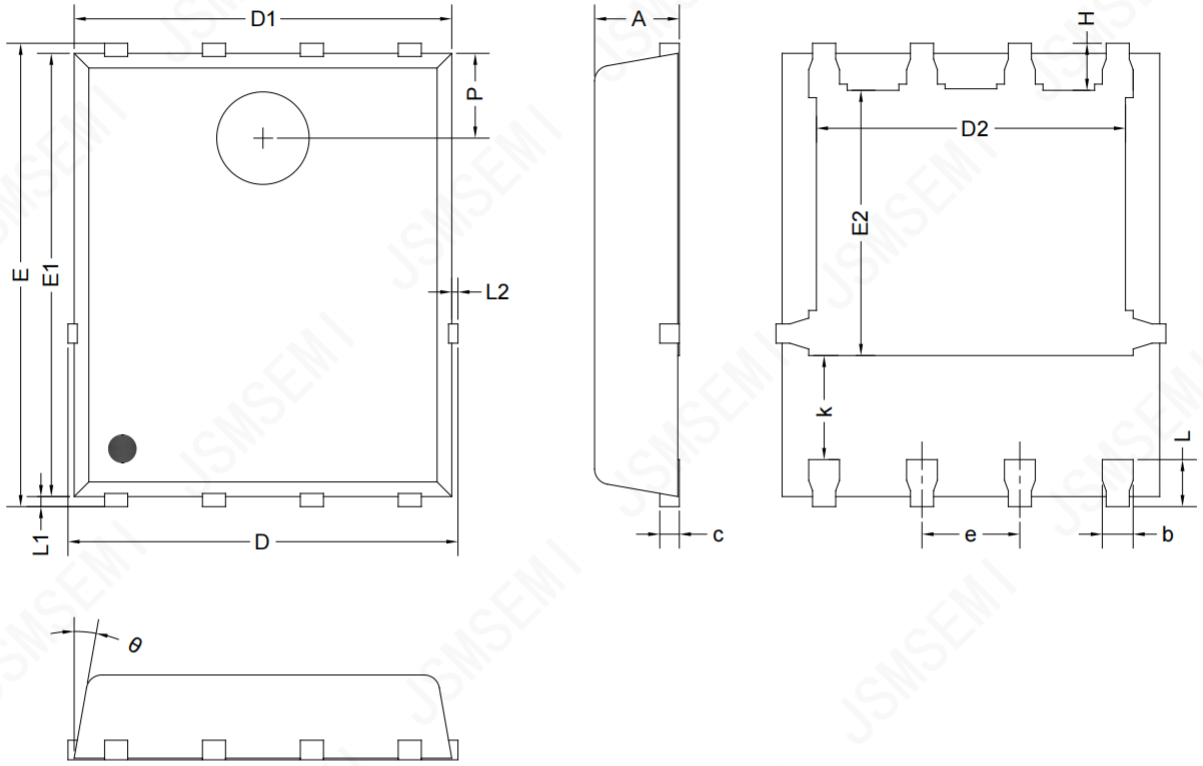
Figure 13. Safe Operation Area

Ordering Information

Order number	Package	Marking	Operation Temperature Range	MSL Grade	Ship,Quantity	Green
SSP40N01GHNK	DFN5060-8L	014N04QG5	-55 to 150°C	1	T&R,5000	Rohs

Package Information

PDFN5060-8L



Symbol	Dimensions In Millimeters		
	MIN	NOM	MAX
A	1.000	1.100	1.200
b	0.350	0.400	0.450
c	0.210	0.250	0.340
D	4.800	-	5.100
D1	4.800	4.900	5.000
D2	3.910	4.010	4.110
E	5.900	6.000	6.100
E1	5.700	5.750	5.800
E2	3.340	3.440	3.540
e	1.270 BSC		
H	0.510	0.610	0.710
k	1.100	-	-
L	0.510	0.610	0.710
L1	0.060	0.130	0.200
L2	-	-	0.100
P	1.000	1.100	1.200
θ	8°	10°	12°

NOTE: This drawing is subject to change without notice.