SEMICONDUCTOR

JHG130G04A

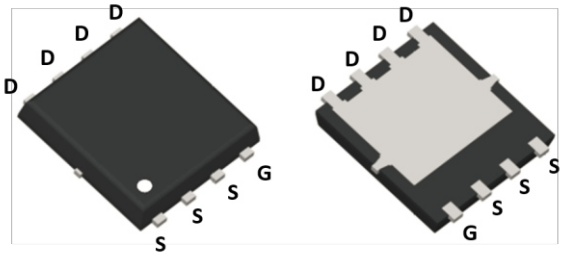
Channel Enhancement Mode Field Effect Transistor

Product Summary

- V_{DS} 40 V
- ID 130 A
- $R_{DS(ON)}$ (at V_{GS} =10V) < 1.8 mohm
- $R_{DS(ON)}$ (at V_{GS} =4.5V) < 3.0 mohm
- 100% UIS Tested
- 100% ▽V_{DS}Tested

Product Summary			
V_{DS}	$R_{DS(on)}$ (mΩ) Typ	I_D (A)	Qg (Typ)
40V	1.3@ 10V	130	96.8nc

DFN5060-8L

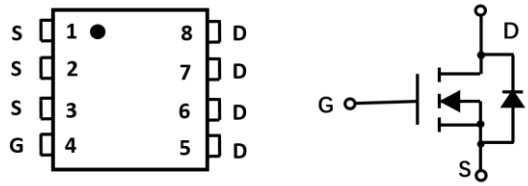


Genaral Description

- Split Gate Trench MOSFET technology
- Excellent package for heat dissipation
- High density cell design for low $R_{DS(ON)}$ DS(ON)

Application

- Motor control
- Synchronous -rectification
- Consumer electronic power supply
- Invertors



Mechanical Data

- Case:DFN5060-8L Package

Table1 Absolute Maximum Ratings (T_C=25°C, unless otherwise specified)

Parameter		Symbol	Limit	Unit
Drain-Source Voltage		V_{DS}	40	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current	T_C=25°C	I_D	130	A
	T_C=100°C		82	
Pulsed Drain Current (Note 1)		I_{DM}	390	A
Single Pulse Avalanche Energy (Note 2)		E_{AS}	200	mJ
Power Dissipation	T_C=25°C	P_D	140	W
	T_C=100°C		56	
Operating Junction and Storage Temperature		T_J/T_{STG}	-55~+175	°C

Table 2.Thermal Characteristics

Parameter	Symbol	Limit	Unit
Thermal resistance Junction to Ambient	$R_{\theta JA}$	62	°C/W
Thermal resistance Junction to Case	$R_{\theta JC}$	0.89	°C/W

Table 3. Electrical Characteristics (T_J=25°C, unless otherwise specified)

Parameter		Symbol	Test Conditions	Min	Typ	Max	Unit
Off Characteristics							
Drain-Source Breakdown Voltage		BV_{DSS}	V_{GS}=0V,I_D=250μA	40	-	-	V
Drain-Source Leakage Current		I_{DSS}	V_{DS}=40V,V_{GS}=0V	-	-	1	μA
Gate- Source Leakage Current	Forward	I_{GSS}	V_{GS}=20V,V_{DS}=0V	-	-	100	nA
	Reverse		V_{GS}=-20V,V_{DS}=0V	-	-	-100	nA
On Characteristics(Note 4)							
Gate Threshold Voltage		$V_{GS(TH)}$	V_{DS}=V_{GS},I_D=250μA	1.0	1.8	2.5	V
Static Drain-Source On-State Resistance		$R_{DS(ON)}$	V_{GS}=10V,I_D=55A	-	1.3	1.8	mΩ
			V_{GS}=4.5V,I_D=55A	-	2.0	3.0	
Dynamic Characteristics(Note 5)							
Input Capacitance		C_{ISS}	V_{DS}=20V,V_{GS}=0V,f=1MHz	-	6587	-	pF
Output Capacitance		C_{OSS}		-	2537	-	pF
Reverse Transfer Capacitance		C_{RSS}		-	179	-	pF
Switching Characteristics (Note 5)							
Turn-On Delay Time		$t_{d(on)}$	V_{DD}=20V,I_D=20A, V_{GS}=10V,R_G=2.0Ω	-	26.6	-	ns
Turn-On Rise Time		t_R		-	9.3	-	ns
Turn-Off Delay Time		$t_{d(off)}$		-	96	-	ns
Turn-Off Fall Time		t_f		-	39	-	ns
Total Gate Charge		Q_G	V_{DS}=20V,I_D=20A, V_{GS}=10V	-	96.8	-	nC
Gate-Source Charge		Q_{GS}		-	14.5	-	nC
Gate-Drain Charge		Q_{GD}		-	18.4	-	nC
Drain-Source Diode Characteristics and Maximum Ratings							
Drain-Source Diode Forward Voltage		V_{SD}	V_{GS}=0V, I_S=20A	-	-	1.3	V
Maximum Continuous Drain-Source Diode Forward Current		I_S		-	-	130	A
Reverse Recovery Time		trr	V_{GS}=0V, I_F=20A dI$_F$/dt=100A/μs (Note 1)	-	205	-	ns
Reverse Recovery Charge		Q_{RR}		-	557	-	nC

Notes : 1 Repetitive Rating:Pulse width limited by maximum junction temperature
2 L=0.3mH, V_{DD}=30V,R_G=25Ω,Starting T_J=25°C
4 Pulse Test: Pulse width ≤300μS, Duty cycle≤2%
5 Guaranteed by design,not subject to production

Typical Test Circuit

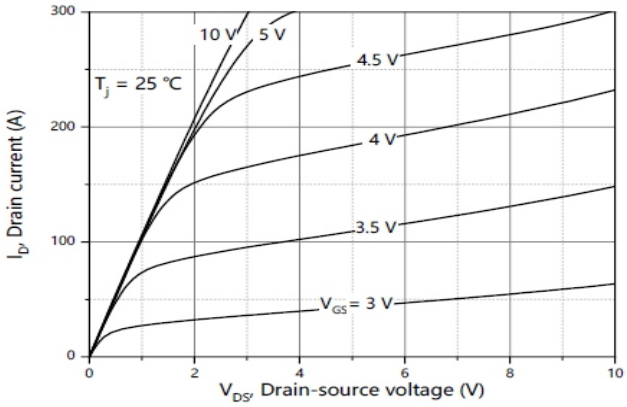


Figure1. Output Characteristics

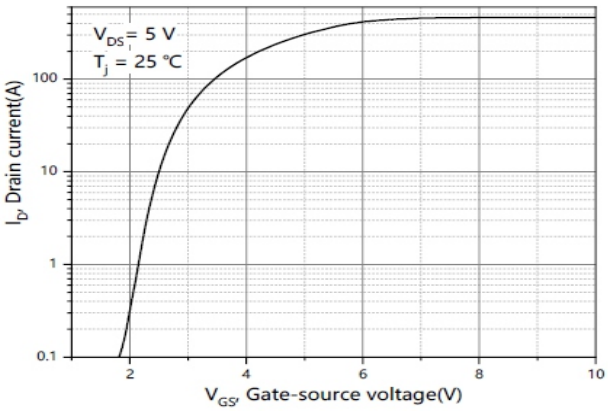


Fig ure2. Transfer Characteristics

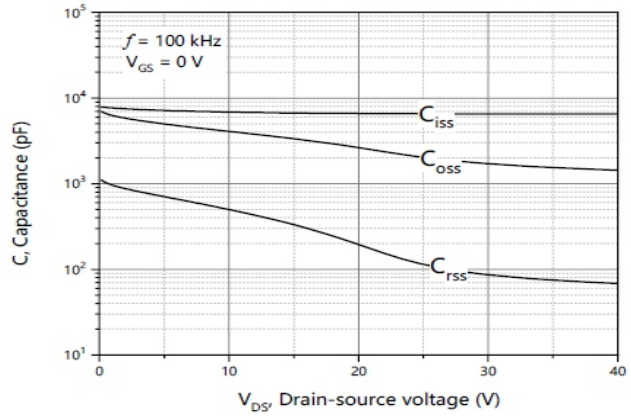


Figure3. Capacitance Characteristics

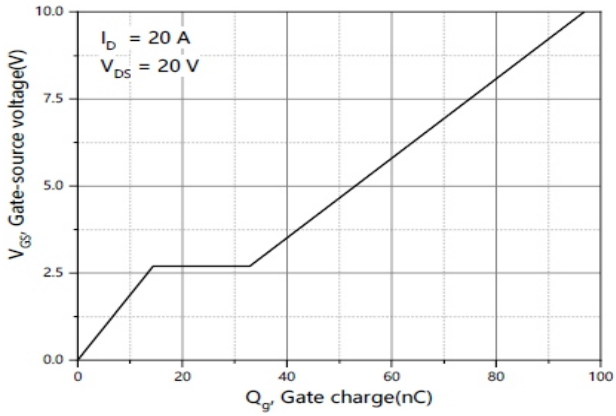


Figure4. Gate Charge

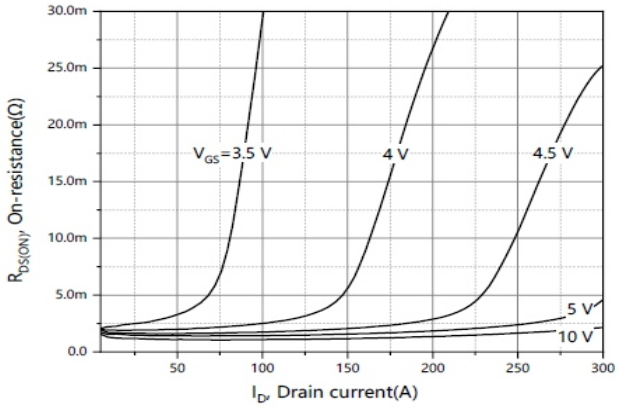


Figure5. Drain -Source on Resistance

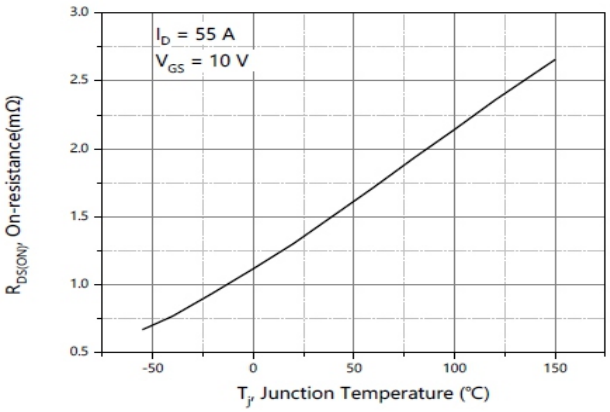


Figure6. Drain -Source on Resistance

Typical Test Circuit

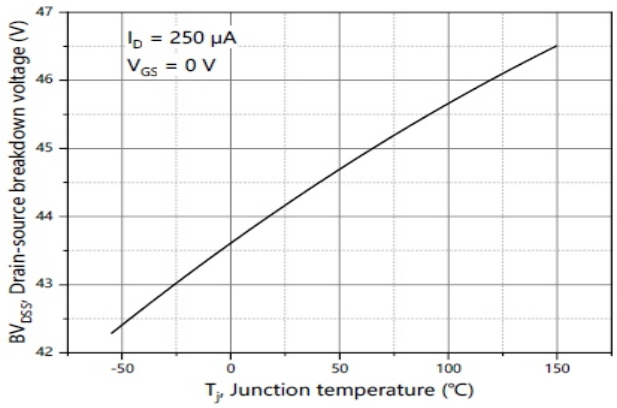


Figure7. Drain-Source Breakdown Voltage

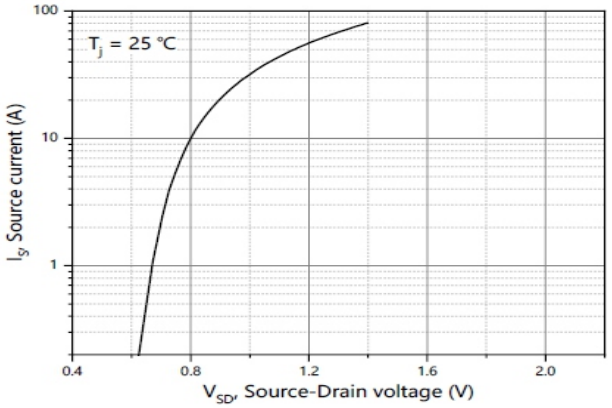


Figure8. Forward Characteristic of Body Diode

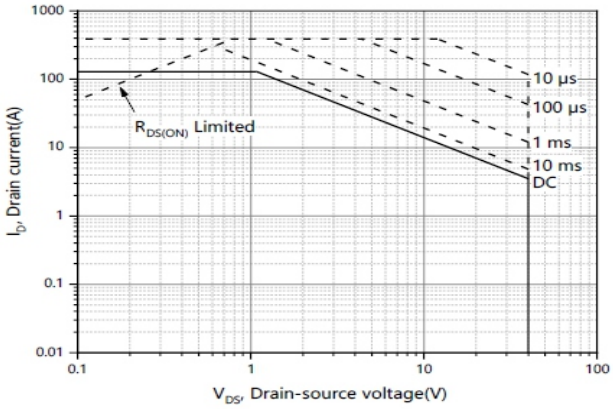


Figure9. Safe Operation Area

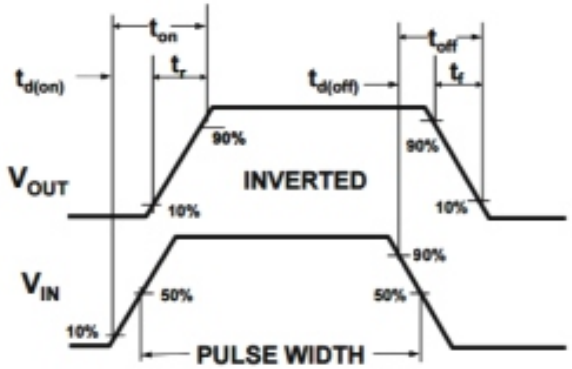
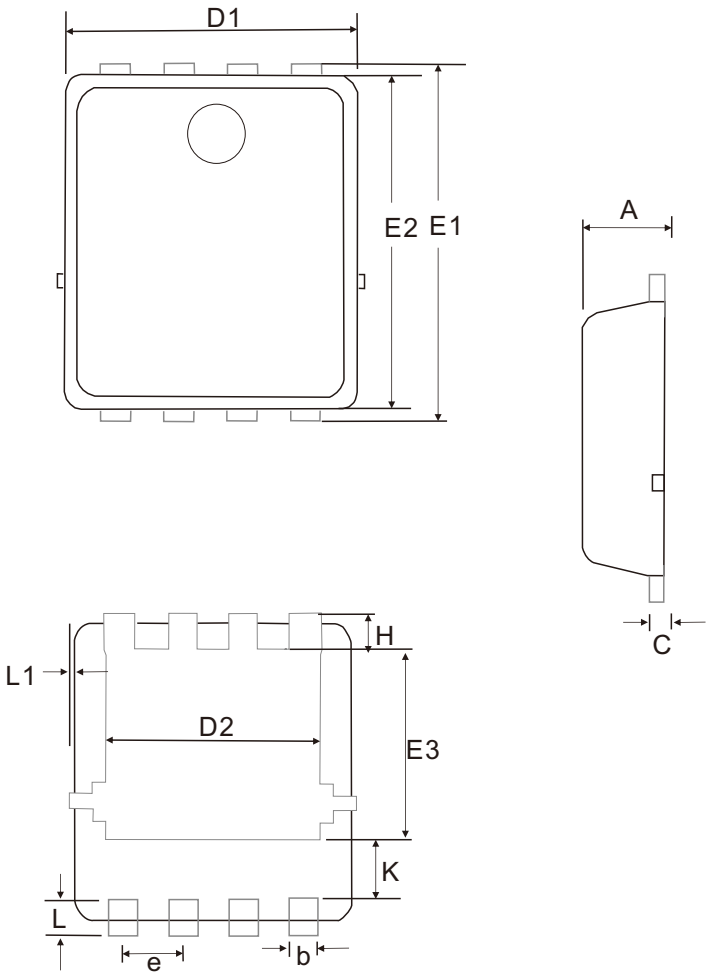


Figure 10 . Switching wave

Dimensions

DFN5060-8L PACKAGE OUTLINE DIMENSIONS



Symbol	Dimensions in millimeters	
	Min	Max
A	1.00	1.20
b	0.30	0.50
C	0.154	0.354
D1	5.00	5.40
D2	3.92	4.32
E1	5.95	6.35
E2	5.66	6.06
E3	3.52	3.92
e	1.17	1.37
L	0.00	0.12
L1	0.56	0.76
H	0.40	0.60
K	1.15	1.45

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