

Product Summary

- V_{DS} 100 V
- I_D 18 A
- $R_{DS(ON)}$ (at $V_{GS} = 10V$) < 60 mohm
- $R_{DS(ON)}$ (at $V_{GS} = 4.5V$) < 70 mohm
- 100% UIS Tested
- 100% ∇V_{DS} Tested

Product Summary			
V_{DS}	$R_{DS(on)}$ (m Ω) Typ	I_D (A)	Q_g (Typ)
100V	49 @ 10V	18	28nc

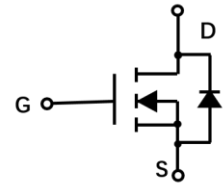
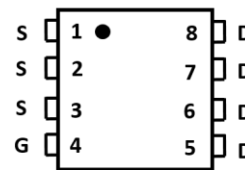
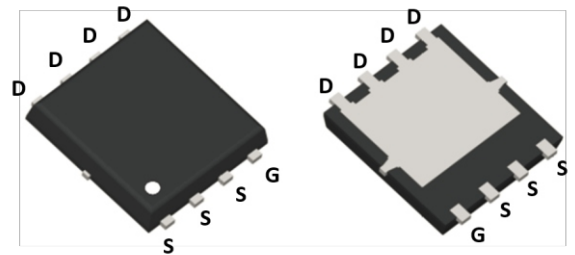
General Description

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

Application

- DC -DC Converters
- Power management functions
- Backlighting

DFN5060-8L



Mechanical Data

- Case:DFN5060-8L Package

Table1 Absolute Maximum Ratings ($T_C=25^\circ C$, unless otherwise specified)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	100	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current	I_D	$T_C=25^\circ C$	18
		$T_C=100^\circ C$	11.4
Pulsed Drain Current (Note 1)	I_{DM}	75	A
Single Pulse Avalanche Energy (Note 2)	E_{AS}	32	mJ
Power Dissipation	P_D	30	W
Operating Junction and Storage Temperature	T_J/T_{STG}	-55~+175	$^\circ C$

Table 2. Thermal Characteristics

Parameter	Symbol	Limit	Unit
Thermal resistance Junction to Case	$R_{\theta JC}$	4.1	$^{\circ}\text{C}/\text{W}$

Table 3. Electrical Characteristics ($T_J=25^{\circ}\text{C}$, unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit	
Off Characteristics							
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=250\mu\text{A}$	100	-	-	V	
Drain-Source Leakage Current	I_{DSS}	$V_{DS}=100V, V_{GS}=0V$	-	-	1	μA	
Gate- Source Leakage Current	Forward	I_{GSS}	$V_{GS}=20V, V_{DS}=0V$	-	-	100	nA
	Reverse	I_{GSS}	$V_{GS}=-20V, V_{DS}=0V$	-	-	-100	nA
On Characteristics(Note 4)							
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{DS}=V_{GS}, I_D=250\mu\text{A}$	1.1	1.8	3.0	V	
Static Drain-Source On-State Resistance	$R_{DS(ON)}$	$V_{GS}=10V, I_D=8A$	-	49	60	m Ω	
		$V_{GS}=4.5V, I_D=8A$	-	52	70		
Dynamic Characteristics(Note 5)							
Input Capacitance	C_{ISS}	$V_{DS}=50V, V_{GS}=0V, f=1\text{MHz}$	-	1360	-	pF	
Output Capacitance	C_{OSS}		-	114	-	pF	
Reverse Transfer Capacitance	C_{RSS}		-	58	-	pF	
Switching Characteristics (Note 5)							
Turn-On Delay Time	$t_d(\text{on})$	$V_{DD}=30V, I_D=2A, V_{GS}=10V, R_G=3\Omega$	-	5	-	ns	
Turn-On Rise Time	t_R		-	39	-	ns	
Turn-Off Delay Time	$t_d(\text{off})$		-	19	-	ns	
Turn-Off Fall Time	t_f		-	7	-	ns	
Total Gate Charge	Q_G	$V_{DS}=50V, I_D=10A, V_{GS}=10V$	-	28	-	nC	
Gate-Source Charge	Q_{GS}		-	4.6	-	nC	
Gate-Drain Charge	Q_{GD}		-	4.9	-	nC	
Drain-Source Diode Characteristics and Maximum Ratings							
Drain-Source Diode Forward Voltage	V_{SD}	$V_{GS}=0V, I_S=18A$	-	0.8	1.2	V	
Maximum Continuous Drain-Source Diode Forward Current	I_S		-	-	18	A	
Reverse Recovery Time	t_{rr}	$V_{GS}=0V, I_F=20A$	-	45	-	ns	
Reverse Recovery Charge	Q_{RR}	$dI_F/dt=100A/\mu\text{s}$ (Note 1)	-	23	-	nC	

Notes : 1 Repetitive Rating: Pulse width limited by maximum junction temperature

2 $L=0.5\text{mH}, V_{DD}=30V, V_G=10V, R_G=25\Omega$, Starting $T_J=25^{\circ}\text{C}$

4 Pulse Test: Pulse width $\leq 300\mu\text{s}$, Duty cycle $\leq 2\%$

5 Guaranteed by design, not subject to production

Typical Test Circuit

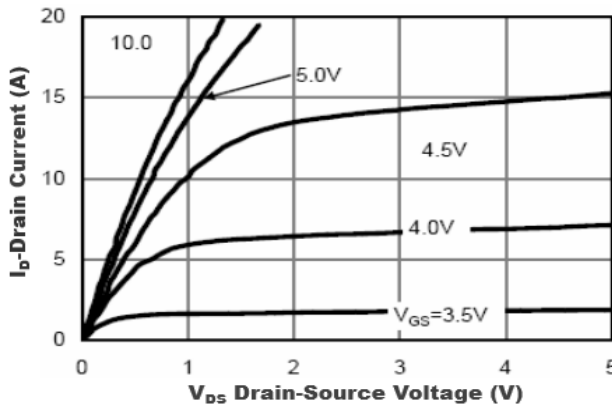


Figure1. Output Characteristics

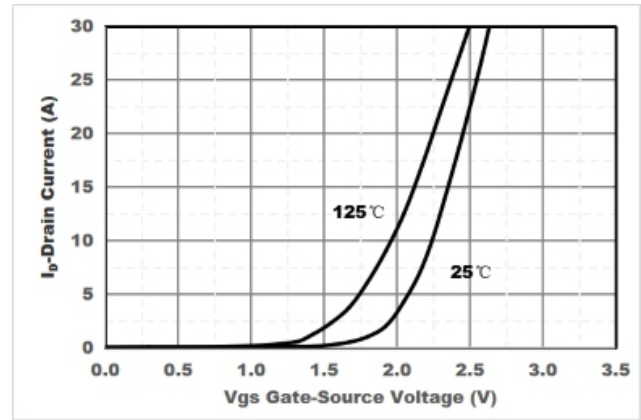


Figure2. Transfer Characteristics

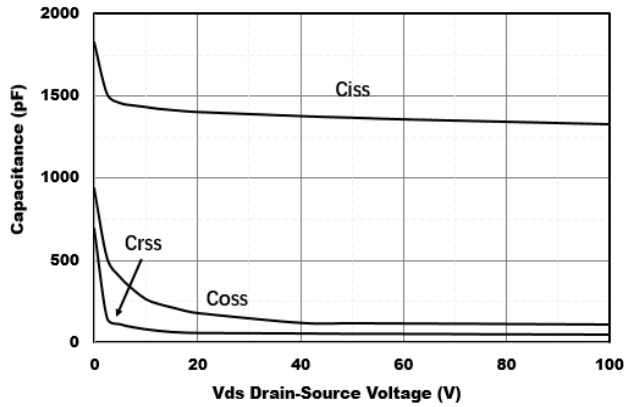


Figure3. Capacitance Characteristics

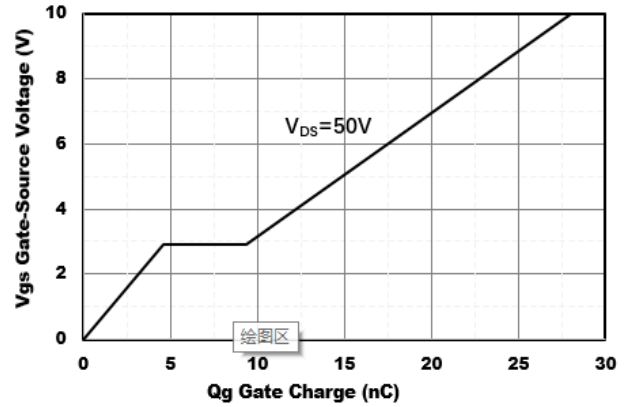


Figure4. Gate Charge

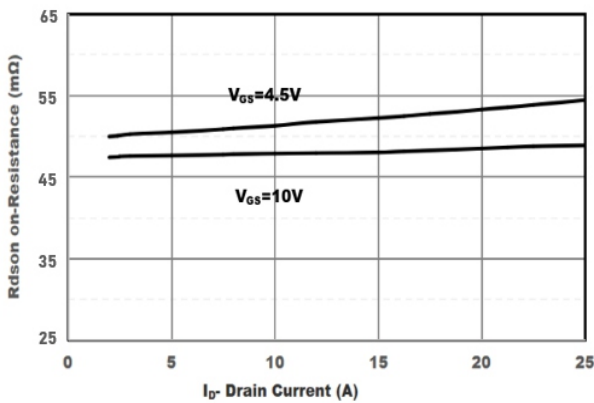


Figure5. Drain -Source on Resistance

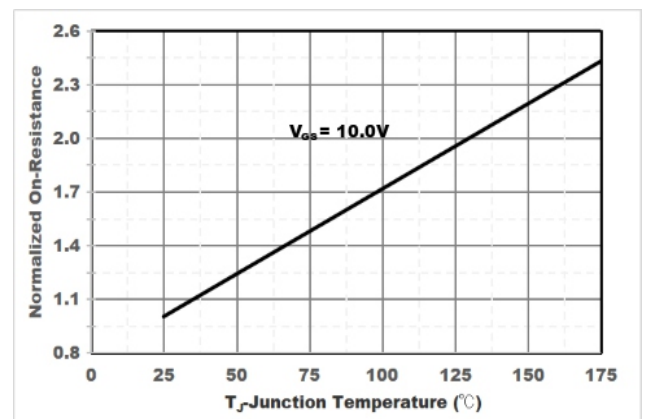


Figure6. Drain -Source on Resistance

Typical Test Circuit

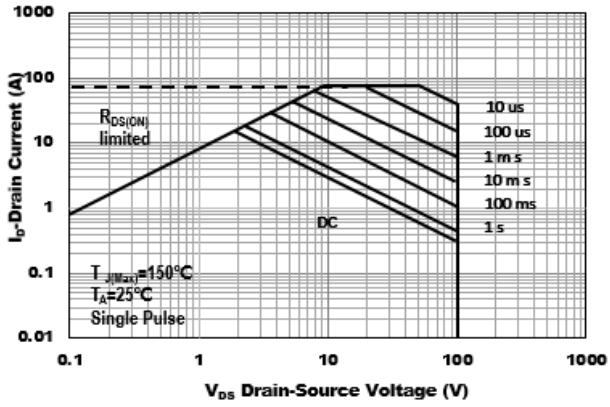


Figure7. Safe Operation Area

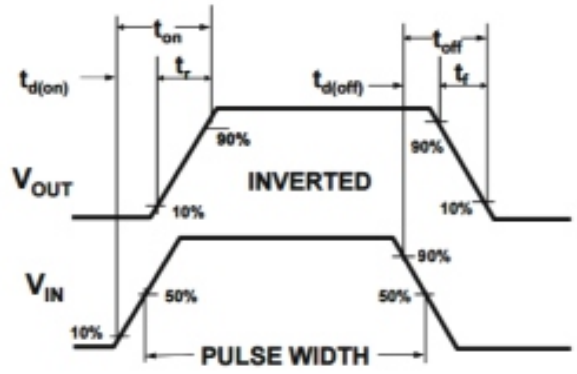
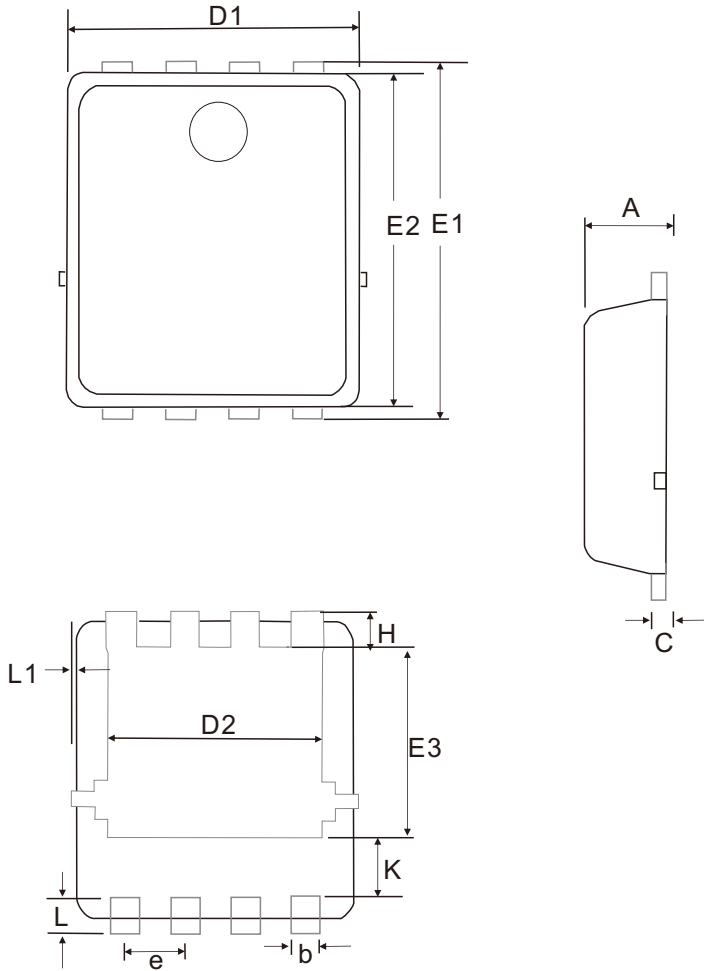


Figure8. Switching wave

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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