

### Product Summary

- V<sub>DS</sub> 100 V
- I<sub>D</sub> (Package limited) 60 A
- R<sub>DS(ON)</sub> (at V<sub>GS</sub> =10V) < 8.6 mohm
- R<sub>DS(ON)</sub> (at V<sub>GS</sub> =4.5V) < 13 mohm
- 100% UIS Tested
- 100%  $\nabla$ V<sub>DS</sub>Tested

Product Summary			
V <sub>DS</sub>	R <sub>DS(on)</sub> (m $\Omega$ ) Typ	I <sub>D</sub> (A)	Q <sub>g</sub> (Typ)
100V	7.2 @ 10V	60	32nc

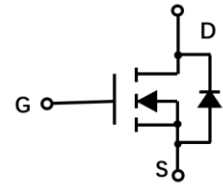
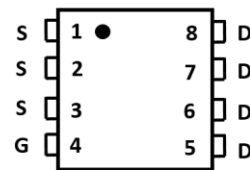
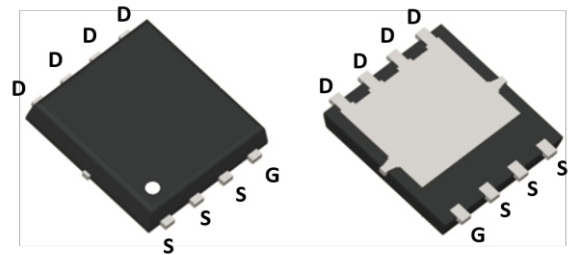
### General Description

- Low R<sub>DS(on)</sub> & FOM
- Extremely low Switching loss
- Excellent stability and uniformity
- Fast switching and soft recovery

### Application

- UPS
- Hard Switching and High Speed Circuit
- Isolated DC/DC convertor
- Power tools

### DFN5060-8L



### Mechanical Data

- Case:DFN5060-8L Package

**Table1 Absolute Maximum Ratings** (T<sub>c</sub>=25°C, unless otherwise specified)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V <sub>DS</sub>	100	V
Gate-Source Voltage	V <sub>GS</sub>	±20	V
Continuous Drain Current	I <sub>D</sub>	T <sub>c</sub> =25°C	60
		T <sub>c</sub> =100°C	38
Pulsed Drain Current (Note 1)	I <sub>DM</sub>	240	A
Single Pulse Avalanche Energy (Note 2)	E <sub>AS</sub>	200	mJ
Power Dissipation	P <sub>D</sub>	T <sub>c</sub> =25°C	72
		T <sub>c</sub> =100°C	28.8
Operating Junction and Storage Temperature	T <sub>J</sub> /T <sub>STG</sub>	-55~+175	°C

Table 2. Thermal Characteristics

Parameter	Symbol	Limit	Unit
Thermal resistance Junction to Ambient	$R_{\theta JA}$	37.8	$^{\circ}C/W$
Thermal resistance Junction to Case	$R_{\theta JC}$	1.75	$^{\circ}C/W$

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	$BV_{DSS}$	$V_{GS}=0V, I_D=250\mu A$	100	-	-	V
Drain-Source Leakage Current	$I_{DSS}$	$V_{DS}=20V, V_{GS}=0V$	-	-	1	$\mu A$
Gate- Source Leakage Current	Forward	$V_{GS}=20V, V_{DS}=0V$	-	-	100	nA
	Reverse	$V_{GS}=-20V, V_{DS}=0V$	-	-	-100	nA
On Characteristics(Note 4)						
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	2.0	2.8	4.0	V
Static Drain-Source On-State Resistance	$R_{DS(ON)}$	$V_{GS}=10V, I_D=20A$	-	7.2	8.6	m $\Omega$
		$V_{GS}=6.0V, I_D=20A$	-	10	13	
Dynamic Characteristics(Note 5)						
Input Capacitance	$C_{ISS}$	$V_{DS}=50V, V_{GS}=0V, f=1MHz$	-	2431	-	pF
Output Capacitance	$C_{OSS}$		-	715	-	pF
Reverse Transfer Capacitance	$C_{RSS}$		-	32	-	pF
Switching Characteristics (Note 5)						
Turn-On Delay Time	$t_d(on)$	$V_{DD}=50V, I_D=20A,$ $V_{GS}=10V, R_G=10\Omega$	-	51	-	ns
Turn-On Rise Time	$t_r$		-	14.5	-	ns
Turn-Off Delay Time	$t_d(off)$		-	69	-	ns
Turn-Off Fall Time	$t_f$		-	20.7	-	ns
Total Gate Charge	$Q_G$	$V_{DS}=50V, I_D=20A,$ $V_{GS}=10V$	-	32	-	nC
Gate-Source Charge	$Q_{GS}$		-	11.1	-	nC
Gate-Drain Charge	$Q_{GD}$		-	4.8	-	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	$I_S$		-	-	60	A
Reverse Recovery Time	$t_{rr}$	$V_{GS}=0V, I_F=20A$	-	51.8	-	ns
Reverse Recovery Charge	$Q_{RR}$	$dI_F/dt=100A/\mu s$ (Note 1)	-	84	-	nC

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

2  $L=0.3mH, V_{DD}=50V, R_G=25\Omega, Starting T_J=25^{\circ}C$

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

5 Guaranteed by design, not subject to production

Typical Test Circuit

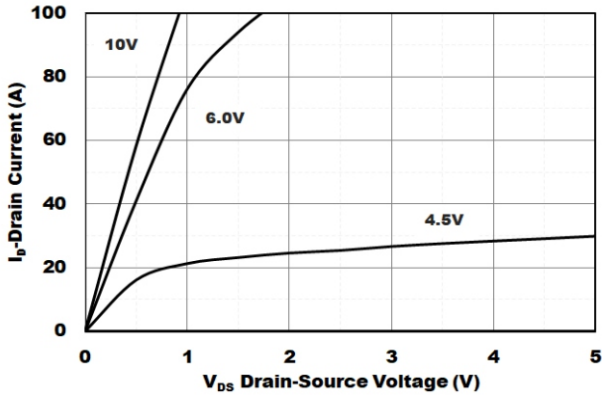


Figure1. Output Characteristics

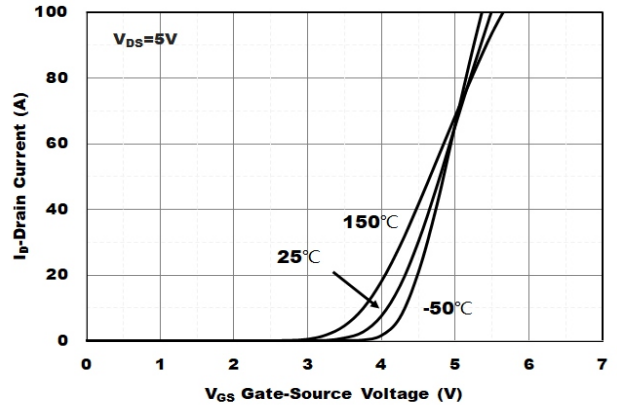


Figure2. Transfer Characteristics

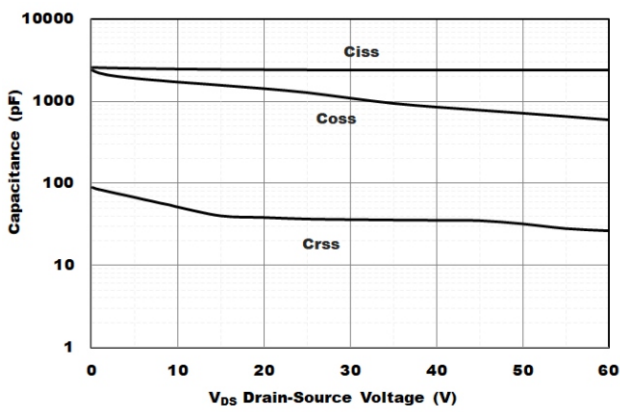


Figure3. Capacitance Characteristics

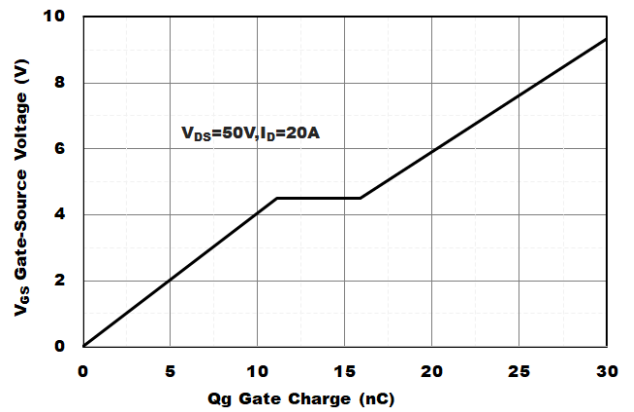


Figure4. Gate Charge

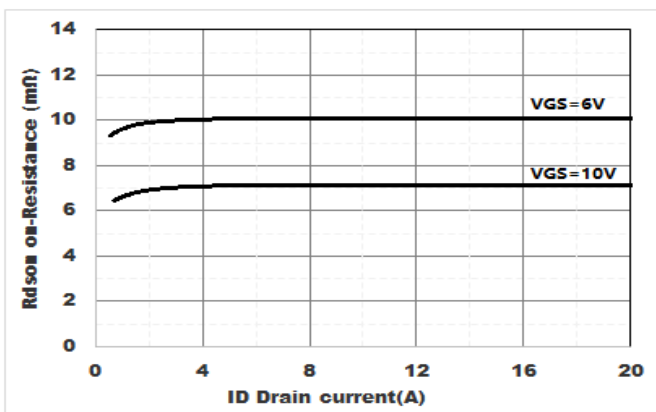


Figure5. On-Resistance vs. Drain Current

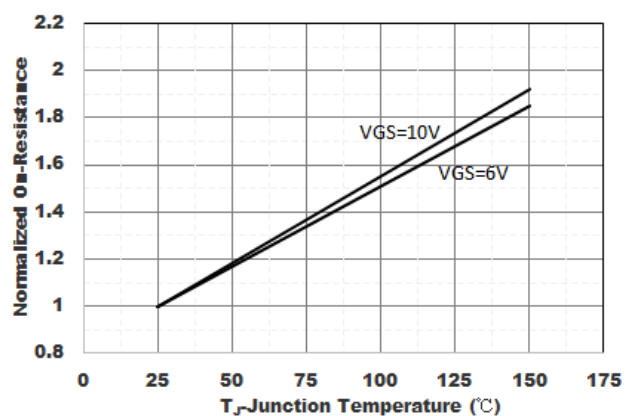


Figure6. Normalized On-Resistance

Typical Test Circuit

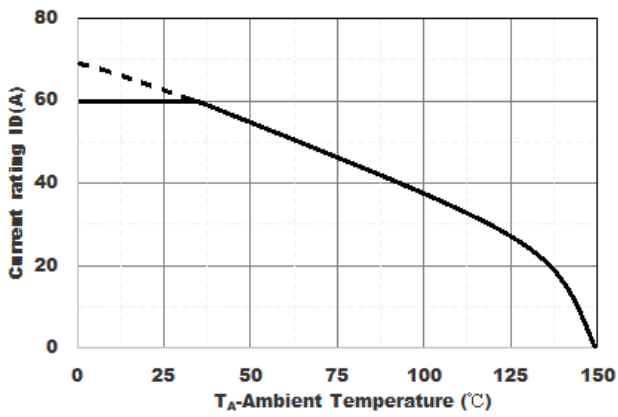


Figure7. Drain current

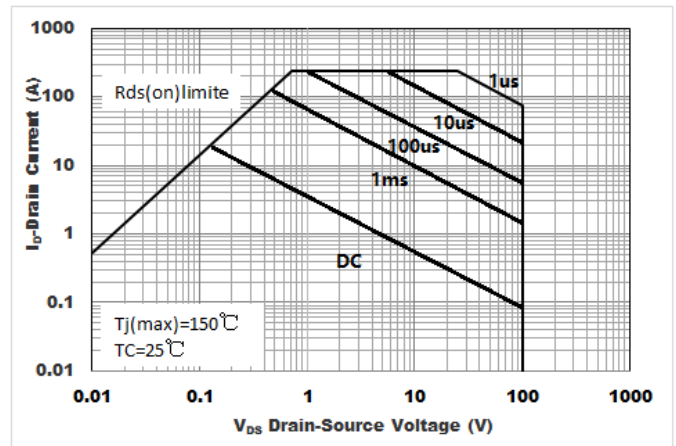


Figure8.Safe Operation Area

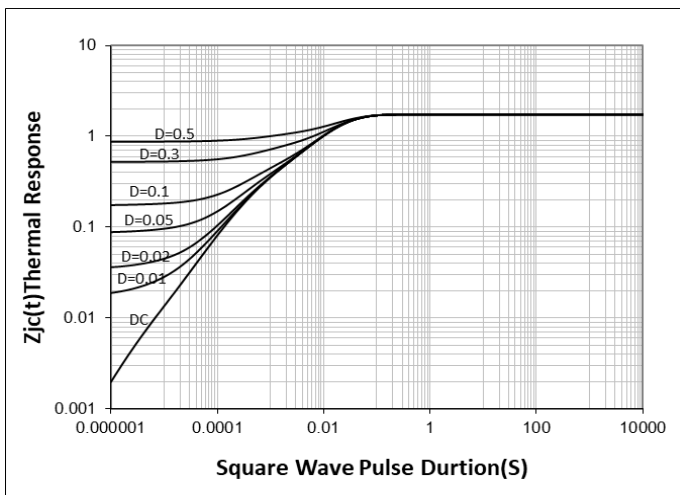
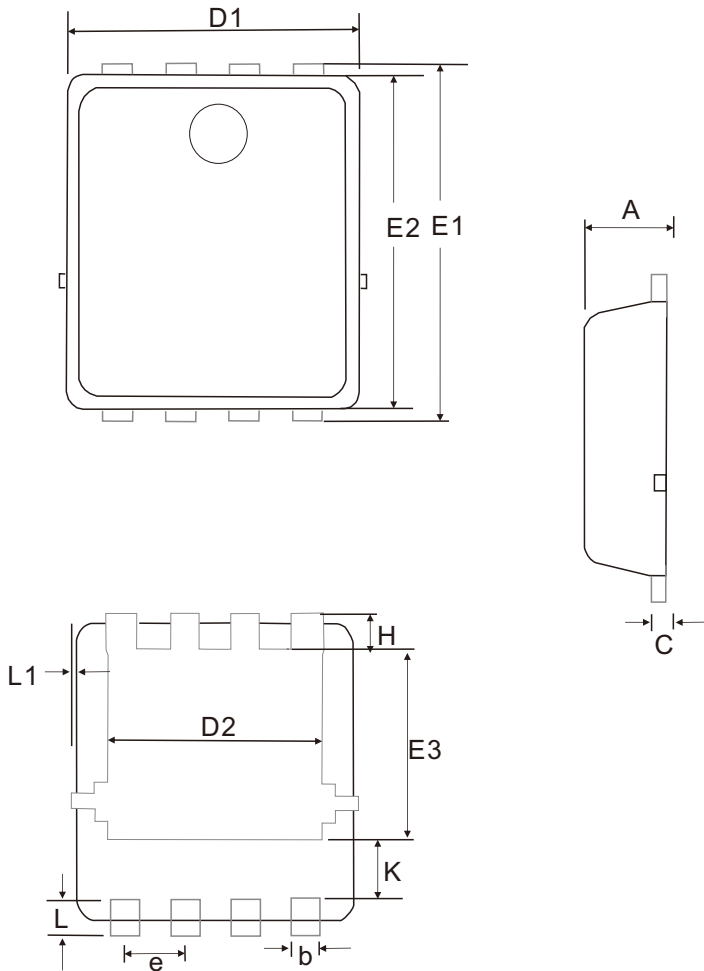


Figure 9.Transient thermal impedance

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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