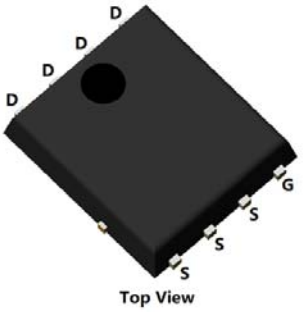
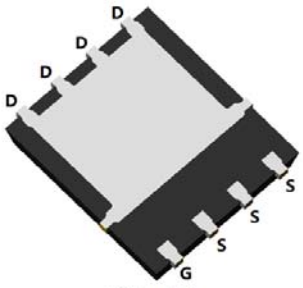
P-Channel Enhancement Mode Field Effect Transistor

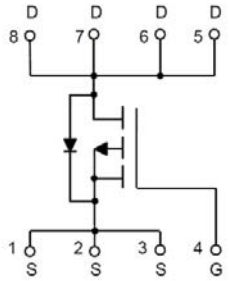


Top View



Bottom View

PDFN5060-8L



Product Summary

- V_{DS} -60V
- I_D -40A
- $R_{DS(ON)}$(at V_{GS}=-10V) ＜25 mohm
- $R_{DS(ON)}$(at V_{GS}=-4.5V) ＜30 mohm
- 100% EAS Tested
- 100% ▽V_{DS} Tested

General Description

- Split gate trench MOSFET technology
- Low $R_{DS(on)}$ & FOM
- Low Crss
- Extremely low switching loss
- Excellent stability and uniformity
- Moisture Sensitivity Level 1
- Epoxy Meets UL 94 V-0 Flammability Rating
- Halogen Free

Applications

- Load Switch
- Industrial DC/DC Conversion Circuits

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

Parameter		Symbol	Limit	Unit
Drain-source Voltage		V_{DS}	-60	V
Gate-source Voltage		V_{GS}	±20	V
Drain Current	Tc=25℃	I_D	-40	A
	Tc=100℃		-25	
Pulsed Drain Current [A]		I_{DM}	-160	A
Avalanche energy [B]		E_{AS}	256	mJ
Total Power Dissipation [C]	Tc=25℃	P_D	88	W
	Tc=100℃		35.2	
Junction and Storage Temperature Range		T_J ,T_{STG}	-55～+150	℃

■Thermal resistance

Parameter		Symbol	Typ	Max	Units
Thermal Resistance Junction-to-Ambient [D]	t≤10S	$R_{\theta JA}$	15	20	℃/W
Thermal Resistance Junction-to-Ambient [D]	Steady-State		40	50	
Thermal Resistance Junction-to-Case	Steady-State	$R_{\theta JC}$	1.15	1.42	

■ Ordering Information (Example)

PREFERED P/N	PACKING CODE	Marking	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
G40GP06A	F1	G40GP06A	5000	10000	100000	13“ reel

■ 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		-60			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=-60V,V_{GS}=0V	T_J=25℃			-1	μA
			T_J=55℃			-5	
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	-1.8	-2.5	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}= -10V, I_D=-20A			16	25	mΩ
		V_{GS}= -4.5V, I_D=-10A			23	30	
Gate Resistance	Rg	f=1MHz			6		Ω
Diode Forward Voltage	V_{SD}	I_S=-20A,V_{GS}=0V			-0.85	-1.3	V
Maximum Body-Diode Continuous Current	I_S					-40	A
Dynamic Parameters							
Input Capacitance	C_{iss}	V_{DS}=-30V,V_{GS}=0V,f=1MHZ			2200		pF
Output Capacitance	C_{oss}				700		
Reverse Transfer Capacitance	C_{rss}				56		
Switching Parameters							
Total Gate Charge	Q_g(-10V)	V_{GS}=-10V,V_{DS}=-30V,I_D=-20A			37.5		nC
Total Gate Charge	Q_g(-4.5V)				17.4		
Gate-Source Charge	Q_{gs}				8.8		
Gate-Drain Charge	Q_{gd}				7.1		
Reverse Recovery Chrage	Q_{rr}	I_F=-20A, di/dt=100A/us			22.3		
Reverse Recovery Time	t_{rr}				33.2		ns
Turn-on Delay Time	$t_{D(on)}$	V_{GS}=-10V,V_{DD}=-30V,R_L=2.5Ω R_{GEN}=6Ω			9.9		
Turn-on Rise Time	t_r				39.2		
Turn-off Delay Time	$t_{D(off)}$				72.5		
Turn-off fall Time	t_f				64.7		

A. Repetitive rating; pulse width limited by max. junction temperature.
B. V_{DD}=50V, R_G=25Ω, L=2mH, I_{AS}=16A.
C. Pd is based on max. junction temperature, using junction-case thermal resistance.
D. The value of RqJA is measured with the device mounted on 1in2 FR-4 board with 2oz. Copper, in a still air environment with TA =25°C. The Power dissipation PDSM is based on R qJA t≤ 10s and the maximum allowed junction temperature of 150°C. The value in any given application depends on the user's specific board design.

■ Typical Performance Characteristics

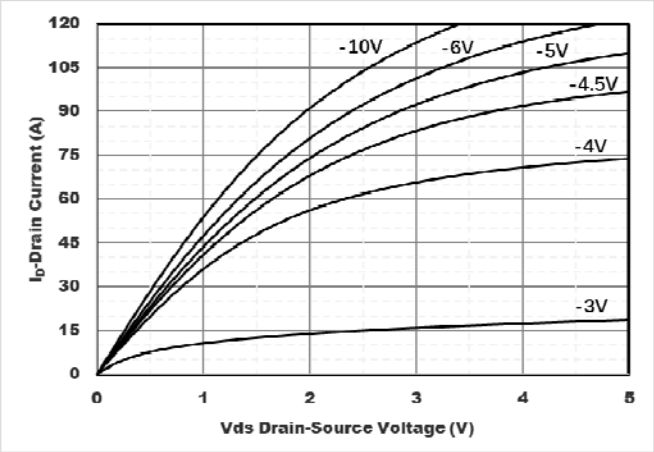


Figure1. Output Characteristics

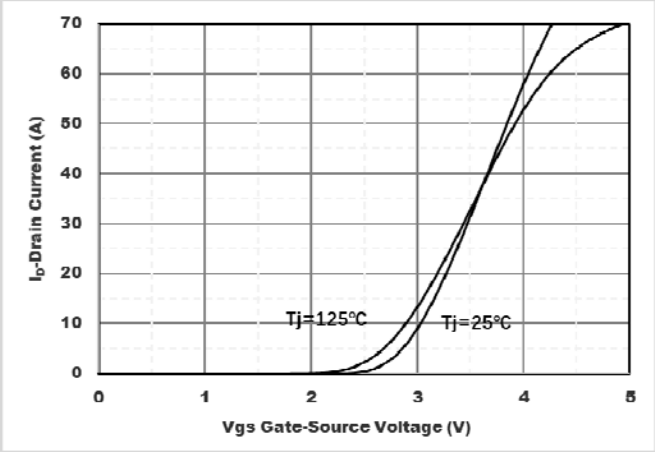


Figure2. Transfer Characteristics

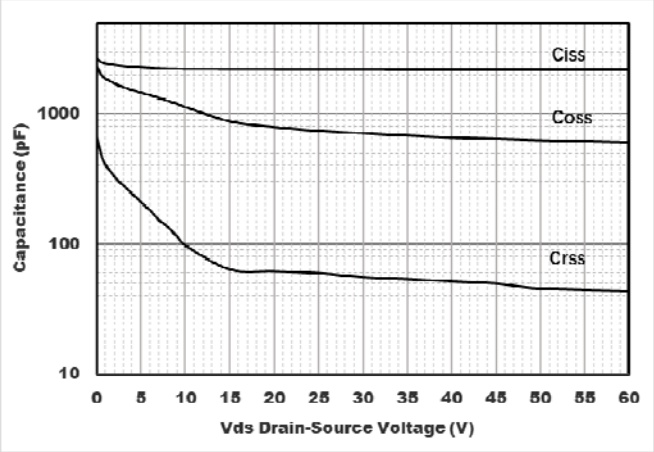


Figure3. Capacitance Characteristics

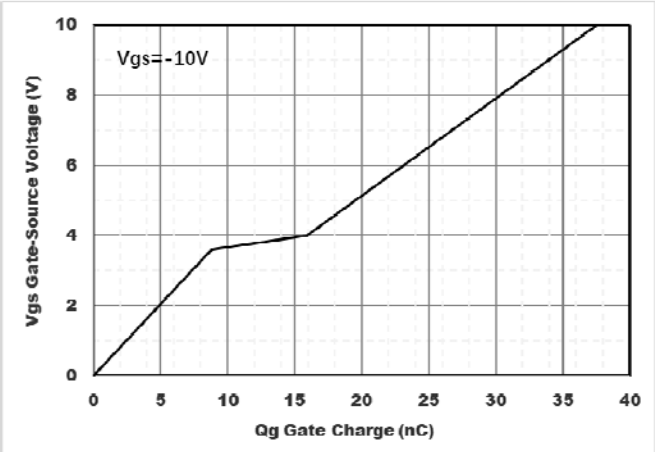


Figure4. Gate Charge

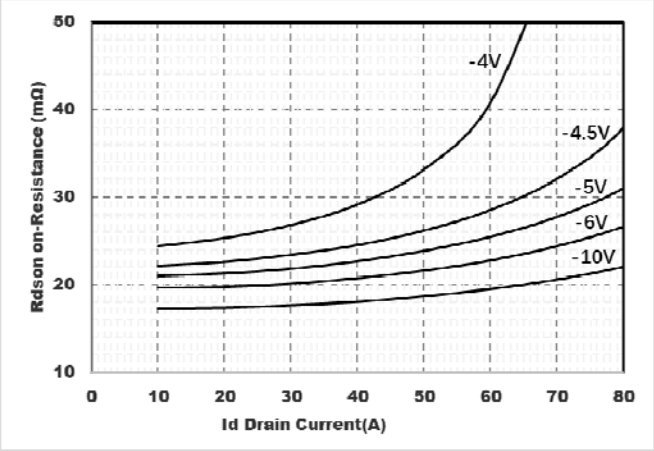


Figure5. : On-Resistance vs. Gate to Source Voltage

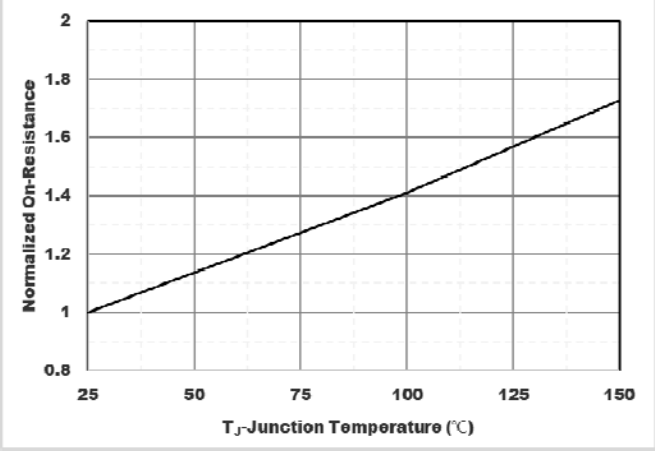


Figure6.Normalized On-Resistance

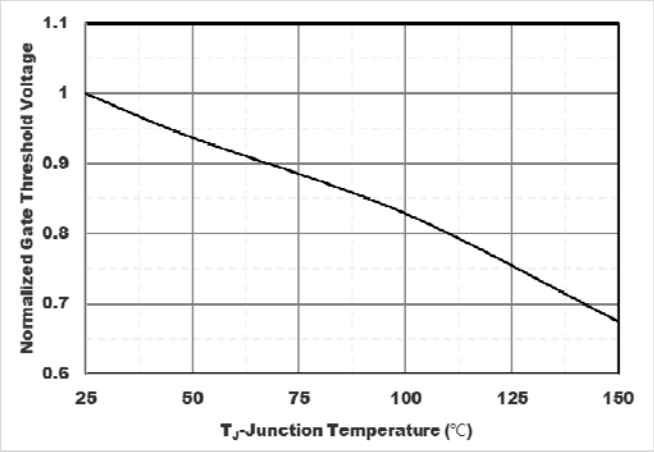


Figure7. Normalized Gate Threshold Voltage

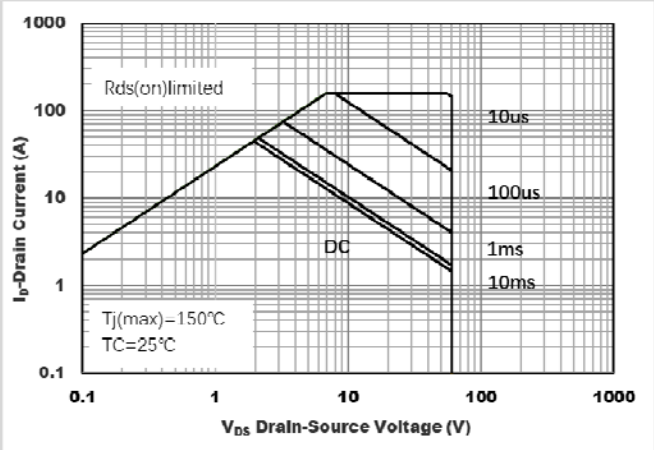


Figure8.Safe Operation Area

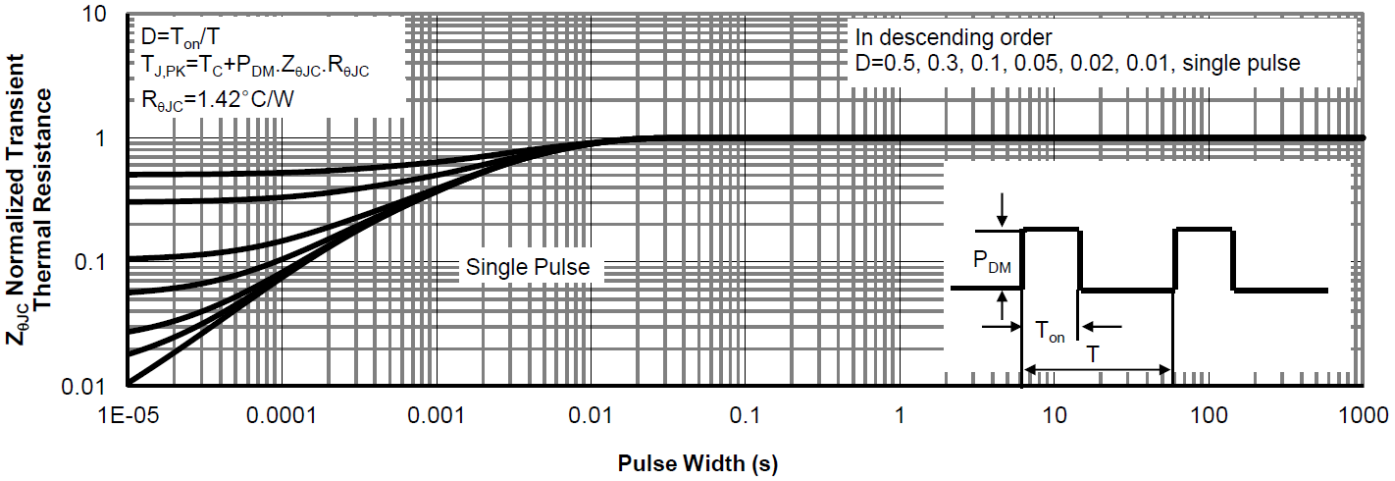
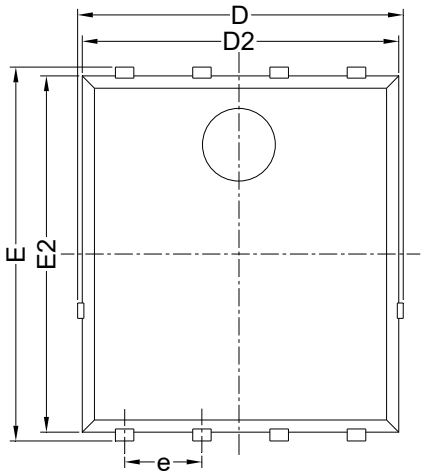
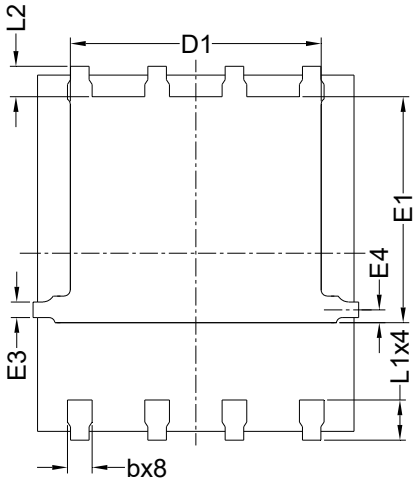


Figure9.Normalized Maximum Transient thermal impedance

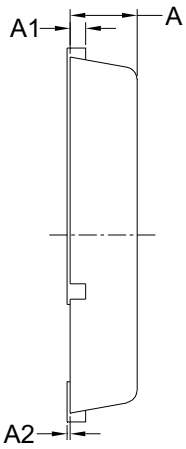
■ PDFN5060-8L-B-1.1MM Package information



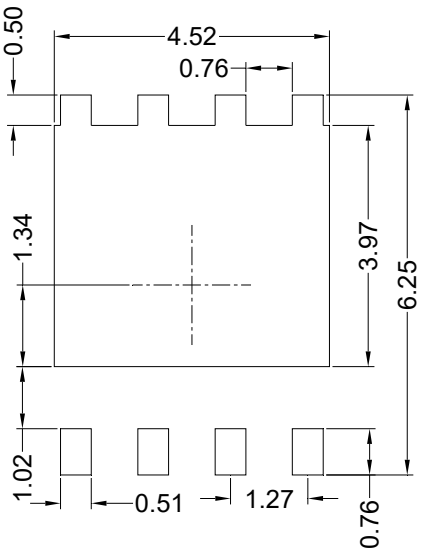
Top View
正面视图



Bottom View
背面视图



Side View
侧面视图



Suggested Solder Pad Layout
Top View

SYMBOL	MILLIMETER		
	MIN	NOM	MAX
D	5.15	5.35	5.55
E	5.95	6.15	6.35
A	1.00	1.10	1.20
A1		0.254 BSC	
A2			0.10
D1	3.92	4.12	4.32
E1	3.52	3.72	3.92
D2	5.00	5.20	5.40
E2	5.66	5.86	6.06
E3		0.254 REF	
E4		0.21 REF	
L1	0.56	0.66	0.76
L2		0.50 BSC	
b	0.31	0.41	0.51
e		1.27 BSC	

Note:
1.Controlling dimension:in millimeters.
2.General tolerance:±0.10mm.
3.The pad layout is for reference purposes only.

Notice

All products, product specifications and data are subject to change without notice to improve reliability, function or design or otherwise. Information contained herein is intended to provide a product description only. No license, express or implied, to any intellectual property rights is granted by this document. Except as provided in STARSEA's terms and conditions of sale for such products, STARSEA assumes no liability whatsoever, and disclaims any express or implied warranty, relating to sale and/or use of STARSEA products including liability or warranties relating to fitness for a particular purpose, merchantability, or infringement of any patent, copyright, or other intellectual property right.