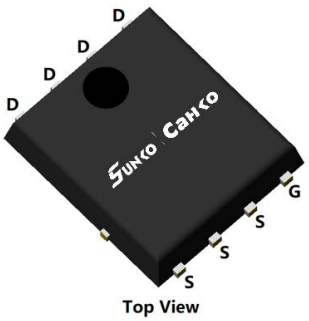
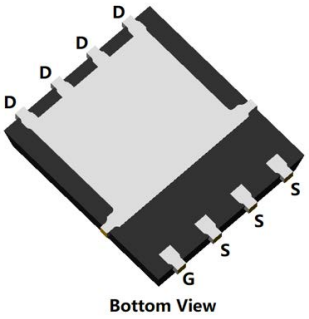
SCG85G06AK

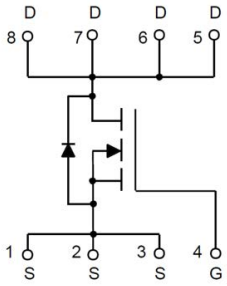
N-Channel Enhancement Mode Field Effect Transistor



Top View



Bottom View



PDFN5060-8L

Product Summary

- V_{DS} 60V
- I_D 85A
- $R_{DS(ON)}$(at V_{GS}=10V) ＜3.7 mohm
- $R_{DS(ON)}$(at V_{GS}=4.5V) ＜5.0 mohm
- 100% EAS Tested
- 100% ▽V_{DS} Tested
- ESD Protected up to 2.0KV(HBM)

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

Applications

- DC-DC Converters
- Power management functions
- Synchronous-rectification application

■ 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 [A]	T_C=25℃	I_D	85	A
	T_C=100℃		54	
Pulsed Drain Current [B]		I_{DM}	340	A
Avalanche energy		E_{AS}	400	mJ
Total Power Dissipation [C]	Tc=25℃	P_D	110	W
	Tc=100℃		44	
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	$R_{\theta JA}$	14	17	℃/W
Thermal Resistance Junction-to-Ambient [D]	Steady-State		40	55	
Thermal Resistance Junction-to-Case	Steady-State	$R_{\theta JC}$	0.85	1.1	

■ Ordering Information (Example)

PREFERED P/N	PACKING CODE	Marking	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
SCG85G06AK	F1	SCG85G06AK	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			1	μA
Gate-Body Leakage Current	I_{GSS}	V_{GS}= ±20V, V_{DS}=0V			±10	μA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}= V_{GS}, I_D=250μA	1.0	1.6	2.5	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}= 10V, I_D=20A		2.9	3.7	mΩ
		V_{GS}= 4.5V, I_D=20A		3.8	5.0	
Diode Forward Voltage	V_{SD}	I_S=20A,V_{GS}=0V		0.8	1.3	V
Maximum Body-Diode Continuous Current	I_S				85	A
Gate resistance	R_g	f=1MHz		2		Ω
Dynamic Parameters						
Input Capacitance	C_{iss}	V_{DS}=30V,V_{GS}=0V,f=1MHZ		4650		pF
Output Capacitance	C_{oss}			850		
Reverse Transfer Capacitance	C_{rss}			65		
Switching Parameters						
Total Gate Charge	Q_g	V_{GS}=10V,V_{DS}=30V,I_D=25A		70.78		nC
Gate-Source Charge	Q_{gs}			16.64		
Gate-Drain Charge	Q_{gd}			10.62		
Reverse Recovery Chrage	Q_{rr}	I_F=20A, di/dt=500A/us		39.8		
Reverse Recovery Time	t_{rr}			41.6		ns
Turn-on Delay Time	$t_{D(on)}$	V_{GS}=10V,V_{DD}=30V,ID=25A R_{GEN}=2Ω		15.9		
Turn-on Rise Time	t_r			55.2		
Turn-off Delay Time	$t_{D(off)}$			57.5		
Turn-off fall Time	t_f			91.3		

A. Repetitive rating; pulse width limited by max. junction temperature.
B. V_{DD}=50V，V_{GS}=10V, L=2mH, I_{AS}=20A.
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

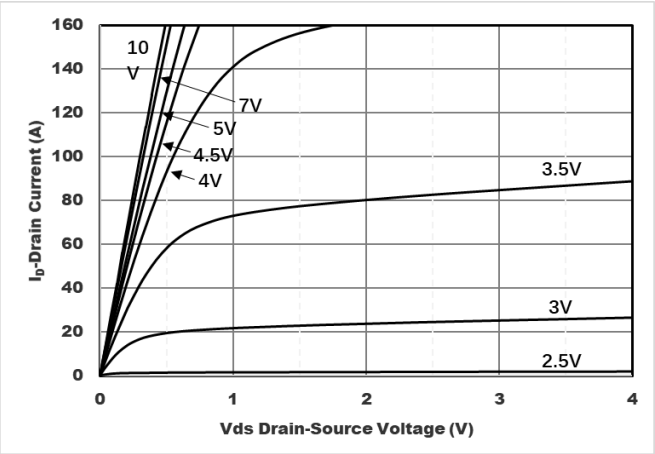


Figure1. Output Characteristics

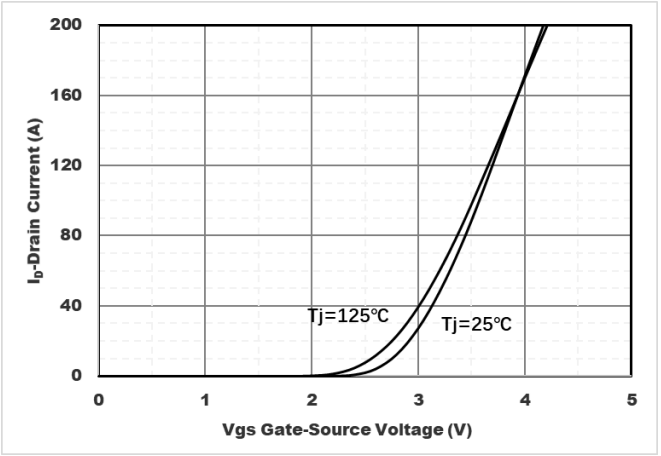


Figure2. Transfer Characteristics

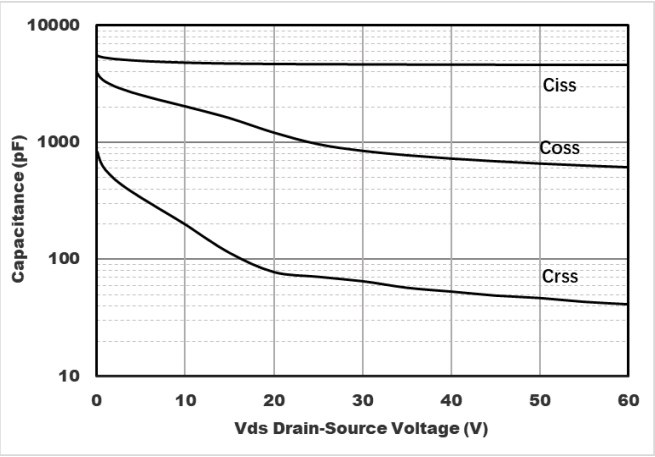


Figure3. Capacitance Characteristics

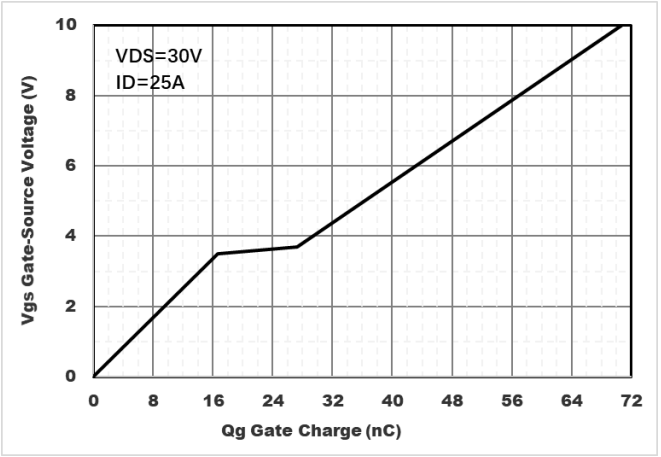


Figure4. Gate Charge

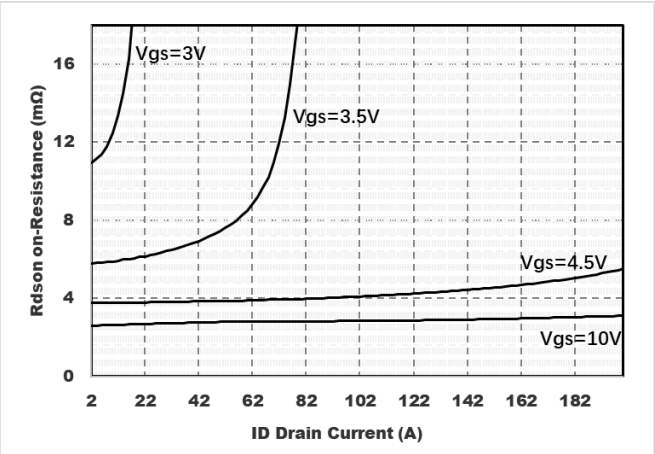


Figure5. Drain-Source on Resistance

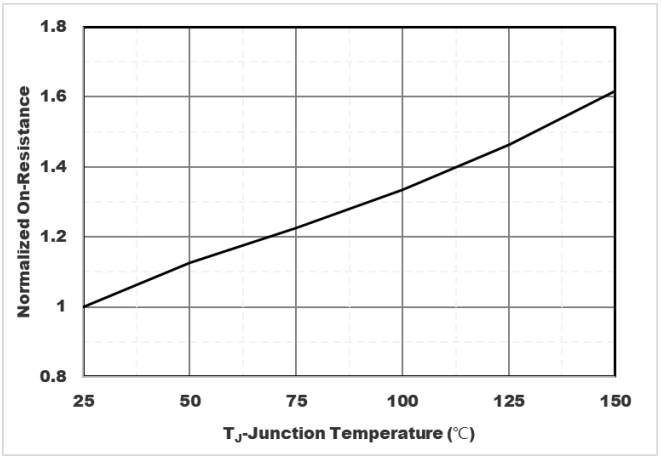


Figure6. Drain-Source on Resistance

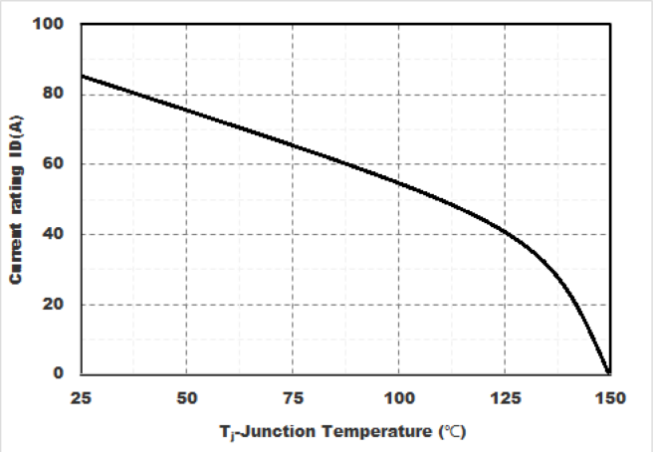


Figure7. Drain current

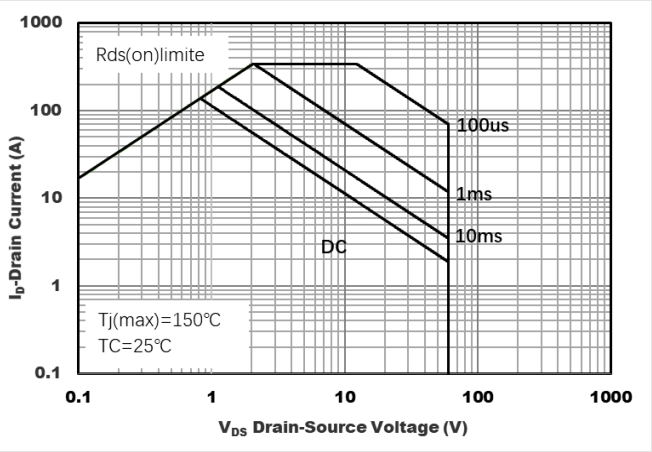


Figure8. Safe Operation Area

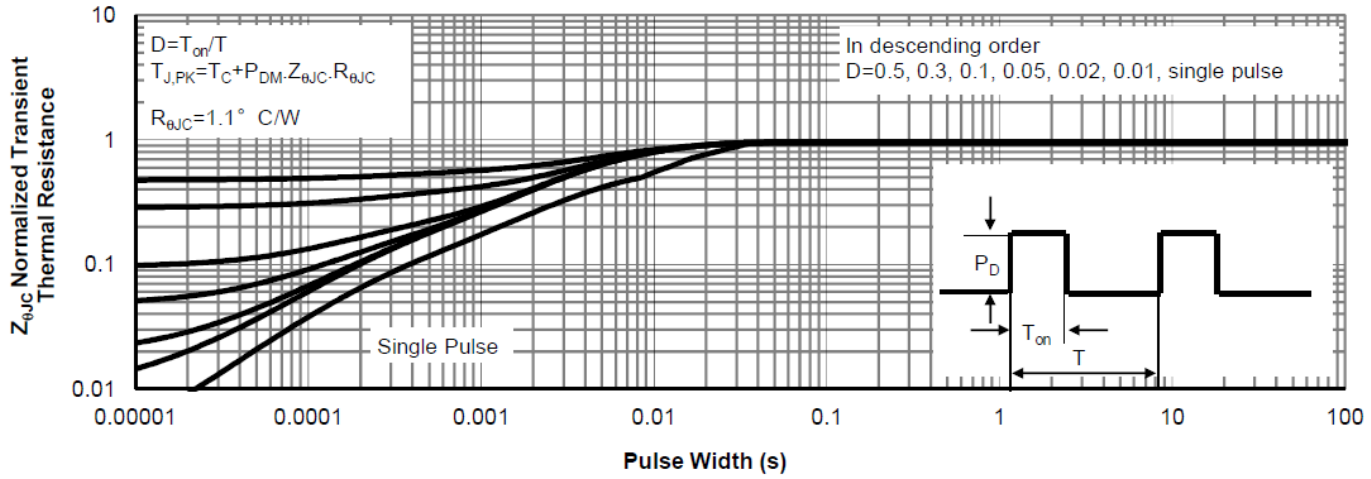
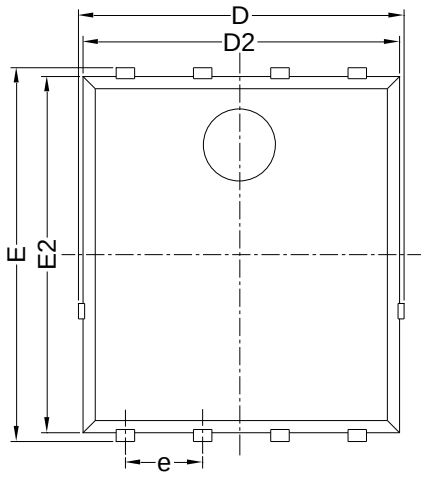
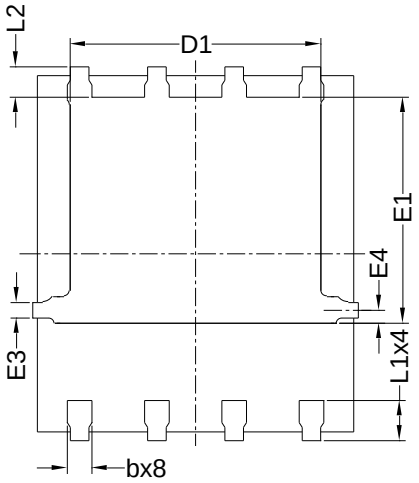


Figure9. Normalized Maximum Transient Thermal Impedance

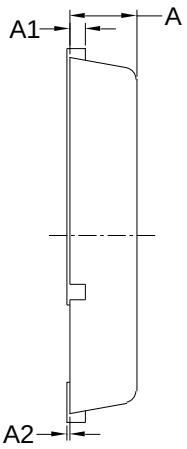
■ PDFN5060-8L-B-1.1MM Package information



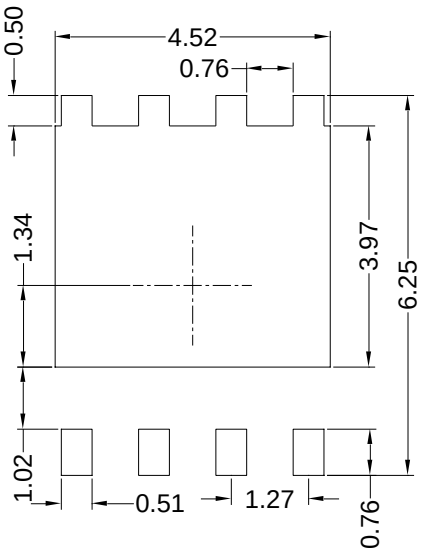
Top View
正面视图



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.

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