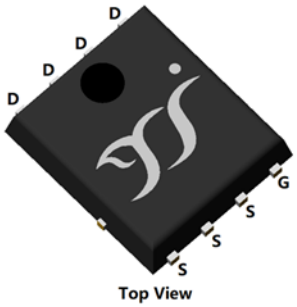
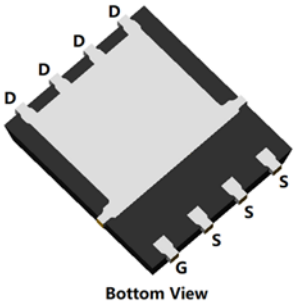
N-Channel Enhancement Mode Field Effect Transistor

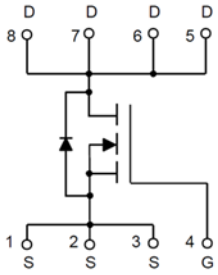


Top View



Bottom View

PDFN5060-8L



Product Summary

- V_{DS} 40 V
- I_D 100 A
- $R_{DS(ON)}$(at V_{GS}=10V) ＜3.5 mohm
- $R_{DS(ON)}$(at V_{GS}=4.5V) ＜4.8 mohm
- 100% EAS Tested
- 100% ▽V_{DS} Tested

General Description

- Trench Power LV 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
- Backlighting

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

Parameter		Symbol	Limit	Unit
Drain-source Voltage		V_{DS}	40	V
Gate-source Voltage		V_{GS}	±20	V
Drain Current	T_C=25℃	I_D	100	A
	T_C=100℃		63	
Pulsed Drain Current [A]		I_{DM}	360	A
Total Power Dissipation @ T_C=25℃ [B]		P_D	83	W
Total Power Dissipation @ T_C=100℃ [B]		P_D	30	W
Total Power Dissipation @ T_A=25℃ [C]		P_D	6.2	W
Single Pulse Avalanche Energy [D]		E_{AS}	400	mJ
Thermal Resistance Junction-to-Case		$R_{\theta JC}$	1.67	℃/ W
Thermal Resistance Junction-to-Ambient		$R_{\theta JA}$	20	℃/ W
Junction and Storage Temperature Range		T_J ,T_{STG}	-55～+150	℃

■ Ordering Information (Example)

PREFERED P/N	PACKING CODE	Marking	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
YJG100N04A	F1	YJG100N04A	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	40			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=40V,V_{GS}=0V			1	μA
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	1.0	1.5	2.5	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}= 10V, I_D=20A		2.8	3.5	mΩ
		V_{GS}= 4.5V, I_D=20A		4.0	4.8	
Diode Forward Voltage	V_{SD}	I_S=20A,V_{GS}=0V		0.80	1.2	V
Maximum Body-Diode Continuous Current	I_S				100	A
Gate resistance	Rg	f=1 MHz		3.5		Ω
Dynamic Parameters						
Input Capacitance	C_{iss}	V_{DS}=20V,V_{GS}=0V,f=1MHZ		4645		pF
Output Capacitance	C_{oss}			436		
Reverse Transfer Capacitance	C_{rss}			360		
Switching Parameters						
Total Gate Charge	Q_g(10V)	V_{GS}=10V,V_{DS}=20V,I_D=20A		102		nC
Total Gate Charge	Q_g(4.5V)			49		
Gate-Source Charge	Q_{gs}			15.8		
Gate-Drain Charge	Q_{gd}			21.9		
Reverse Recovery Charge	Q_{rr}	I_F=20A, di/dt=100A/us		7.4		
Reverse Recovery Time	t_{rr}			22.3		ns
Turn-on Delay Time	$t_{D(on)}$	V_{GS}=10V, V_{DD}=20V , I_D=20A R_{GEN}=3Ω		12		
Turn-on Rise Time	t_r			54		
Turn-off Delay Time	$t_{D(off)}$			120		
Turn-off fall Time	t_f			80		

A. Pulse Test: Pulse Width≤300us,Duty cycle ≤2%.
B. The power dissipation P_D is based on $T_{J(MAX)}$=150℃, using junction-to-case thermal resistance, and is more useful in setting the upper dissipation limit for cases where additional heatsinking is used.
C. The value of $R_{\theta JA}$ is measured with the device mounted on 1in2 FR-4 board with 2oz. Copper, in a still air environment with T_A =25℃.
D. T_j=25℃, V_{DD}=40V, V_G=10V, L=2mH.

■ Typical Performance Characteristics

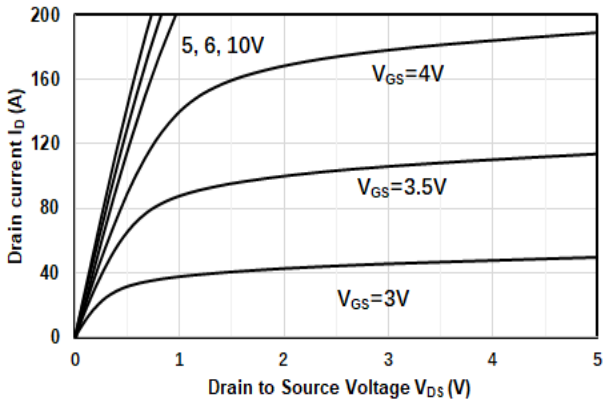


Figure1. Output Characteristics

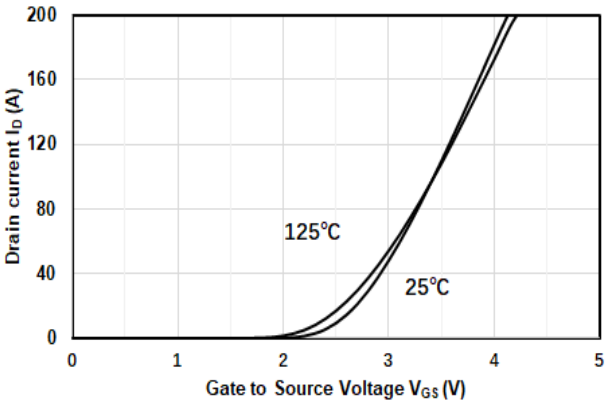


Figure2. Transfer Characteristics

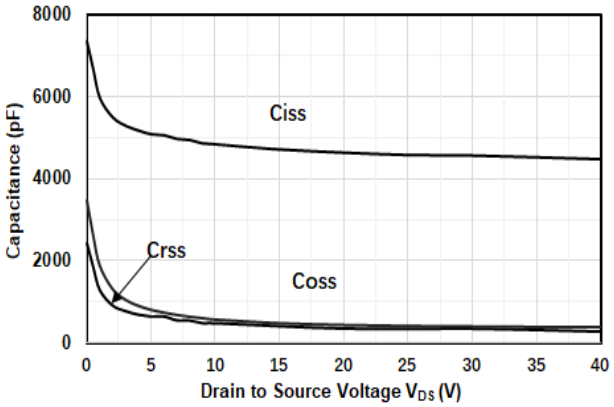


Figure3. Capacitance Characteristics

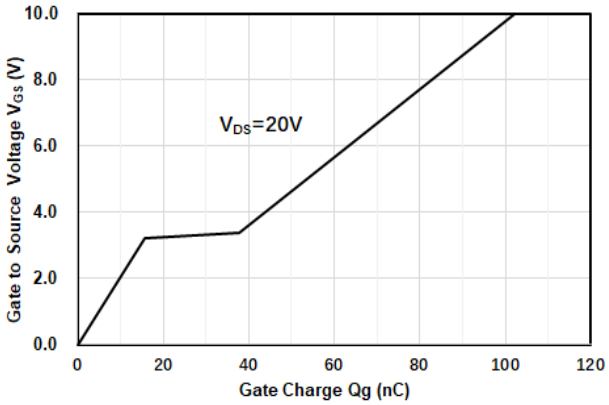


Figure4. Gate Charge

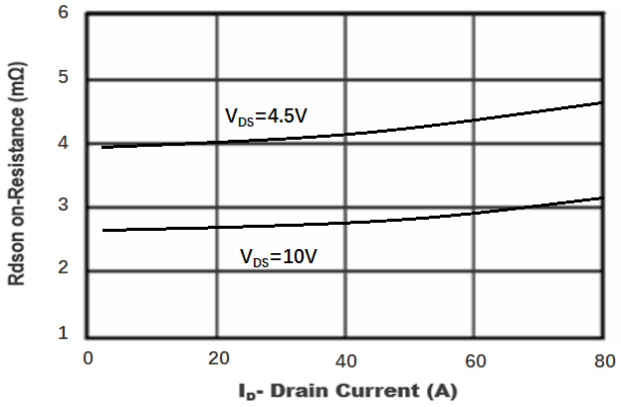


Figure5. Drain-Source on Resistance

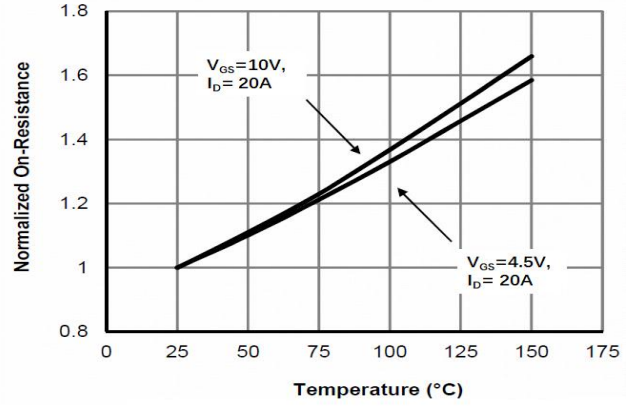


Figure6. Drain-Source on Resistance

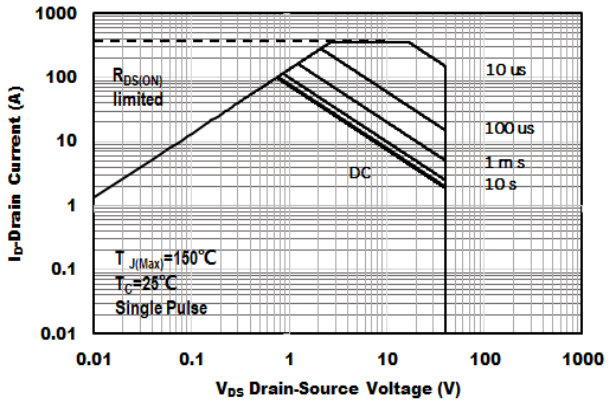


Figure7. Safe Operation Area

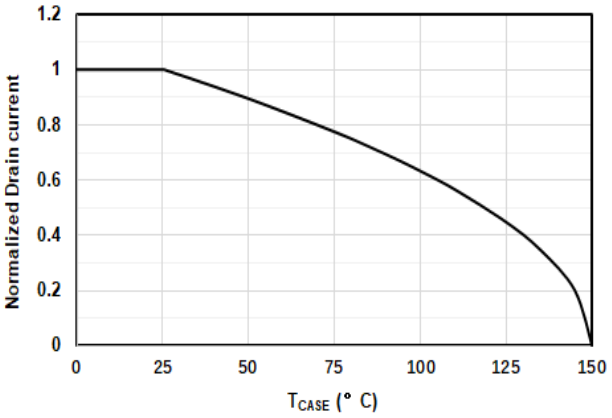


Figure8. Drain current vs. Case Temperature

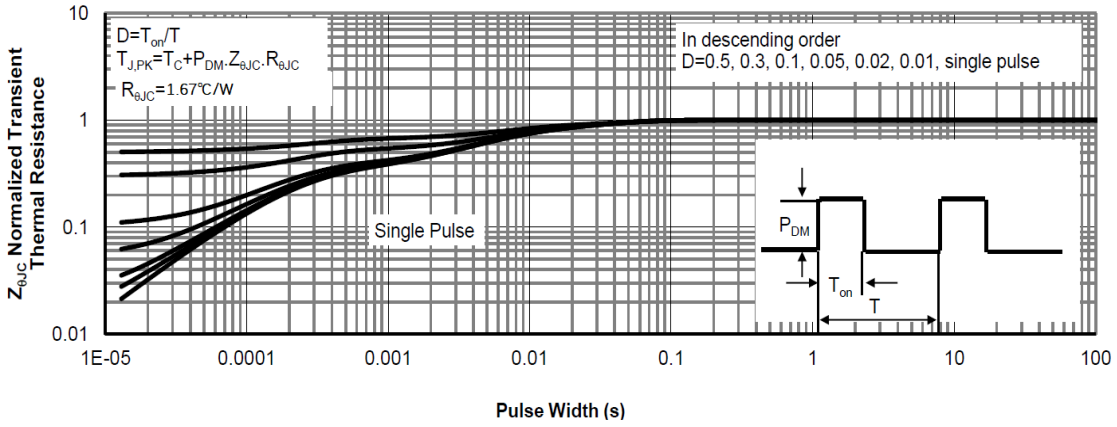
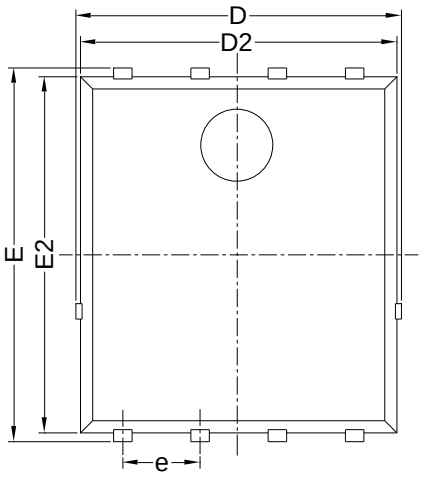
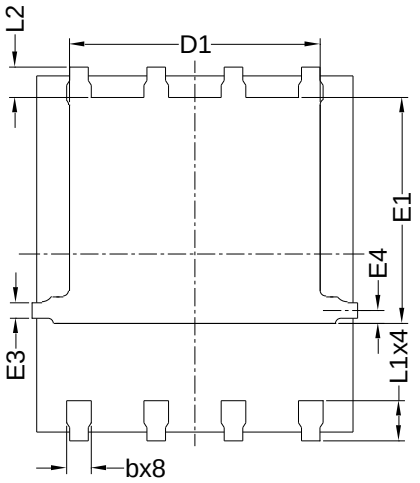


Figure9. Normalized Maximum Transient Thermal Impedance

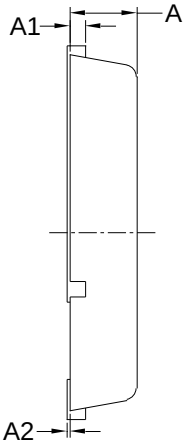
■ PDFN5060-8L-B-1.1MM Package information



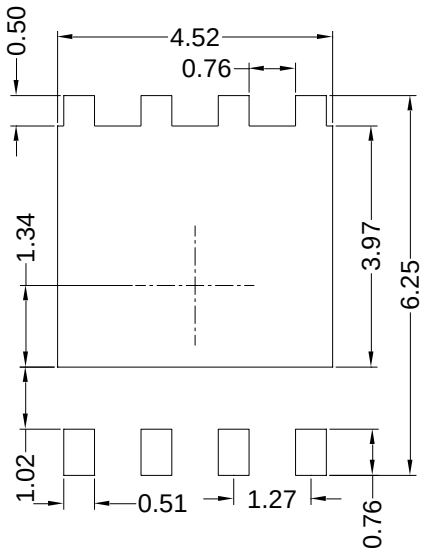
Top View
正面视图



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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