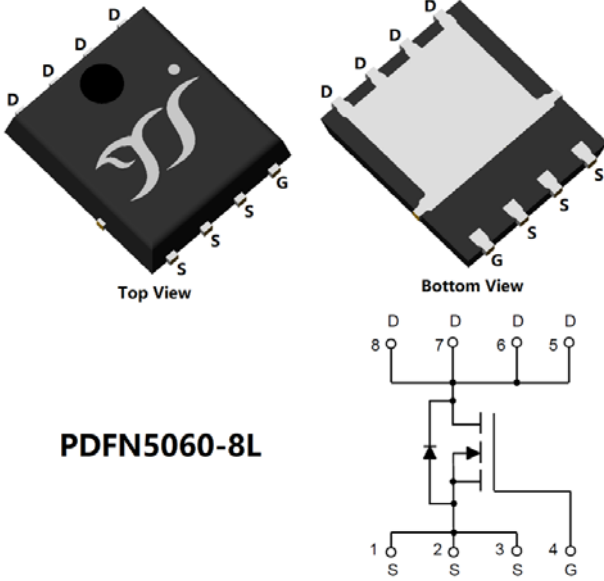


N-Channel Enhancement Mode Field Effect Transistor



PDFN5060-8L

Product Summary

- V_{DS} 40V
- I_D 30A
- $R_{DS(ON)}$ (at $V_{GS}=10V$) $<16m\Omega$
- $R_{DS(ON)}$ (at $V_{GS}=4.5V$) $<20m\Omega$
- 100% EAS Tested
- 100% ∇V_{DS} Tested

General Description

- Excellent package for heat dissipation
- High density cell design for low $R_{DS(ON)}$
- Moisture Sensitivity Level 3
- Part no. with suffix "Q" means AEC-Q101 qualified

Applications

- Power switching application
- Uninterruptible power supply
- DC-DC convertor
- 12V Automotive systems

■ Absolute Maximum Ratings ($T_A=25^\circ C$ unless otherwise noted)

Parameter		Symbol	Limit	Unit
Drain-source Voltage		V_{DS}	40	V
Gate-source Voltage		V_{GS}	± 20	V
Drain Current	$T_A=25^\circ C$	I_D	8.8	A
	$T_A=100^\circ C$		6	
	$T_C=25^\circ C$		30	
	$T_C=100^\circ C$		21	
Pulsed Drain Current ^A		I_{DM}	90	A
Avalanche energy ^B		EAS	40	mJ
Total Power Dissipation ^C	$T_A=25^\circ C$	P_D	2.5	W
	$T_A=100^\circ C$		1	
	$T_C=25^\circ C$		35.7	
	$T_C=100^\circ C$		14	
Thermal Resistance Junction-to-Case		$R_{\theta JC}$	3.5	$^\circ C/W$
Thermal Resistance Junction-to-Ambient ^D		$R_{\theta JA}$	50	$^\circ C/W$
Junction and Storage Temperature Range		T_J, T_{STG}	-55~+150	$^\circ C$

■ Ordering Information (Example)

PREFERRED P/N	PACKING CODE	Marking	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
YJG30N04AQ	F1	YJG30N04A	5000	10000	100000	13" reel



YJG30N04AQ

■ Electrical Characteristics (T_J=25°C 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	1.6	2.5	V
Static Drain-Source On-Resistance	R _{DS(on)}	V _{GS} =10V, I _D =20A		10	16	mΩ
		V _{GS} =4.5V, I _D =10A		13.5	20	mΩ
Diode Forward Voltage	V _{SD}	I _S =18A, V _{GS} =0V		0.85	1.2	V
Gate resistance	R _G	f=1MHz		2.7		Ω
Dynamic Parameters						
Input Capacitance	C _{iss}	V _{DS} =25V, V _{GS} =0V, f=1MHz		1000		pF
Output Capacitance	C _{oss}			105		
Reverse Transfer Capacitance	C _{rss}			85		
Switching Parameters						
Total Gate Charge	Q _g	V _{GS} =10V, V _{DS} =20V, I _D =20A	-	23	-	nC
Gate-Source Charge	Q _{gs}		-	3.5	-	
Gate-Drain Charge	Q _{gd}		-	6.5	-	
Reverse Recovery Charge	Q _{rr}	I _F =20A, di/dt=300A/us	-	10	-	nC
Reverse Recovery Time	t _{rr}		-	12	-	ns
Turn-on Delay Time	t _{D(on)}	V _{GS} =10V, V _{DD} =20V, I _D =20A R _{GEN} =3Ω	-	3.8	-	ns
Turn-on Rise Time	t _r		-	58	-	
Turn-off Delay Time	t _{D(off)}		-	20	-	
Turn-off fall Time	t _f		-	2.6	-	

A. Repetitive rating; pulse width limited by max. junction temperature.

B. T_J=25°C, V_{DD}=35V, V_G=10V, L=1mH, I_{AS}=9A.

C. P_q is based on max. junction temperature, using junction-case thermal resistance.

D. The value of R_{θJA} is measured with the device mounted on 1 in² FR-4 board with 2oz. Copper, in the still air environment with T_A=25°C. The maximum allowed junction temperature of 150°C. The value in any given application depends on the user's specific board design.



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Typical Electrical and Thermal Characteristics Diagrams

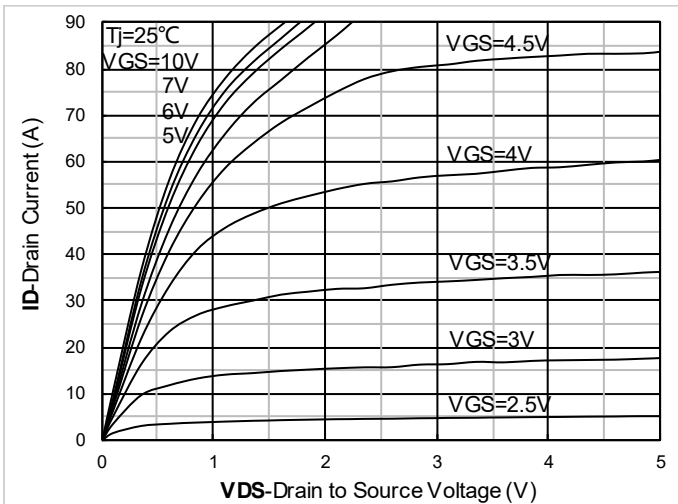


Figure 1. Output Characteristics

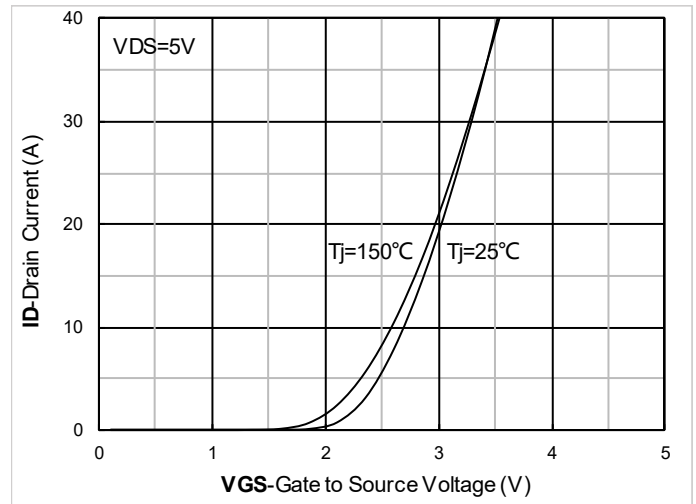


Figure 2. Transfer Characteristics

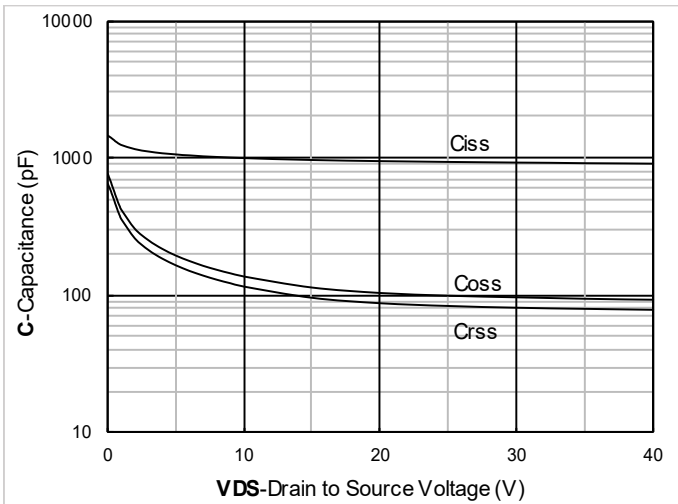


Figure 3. Capacitance Characteristics

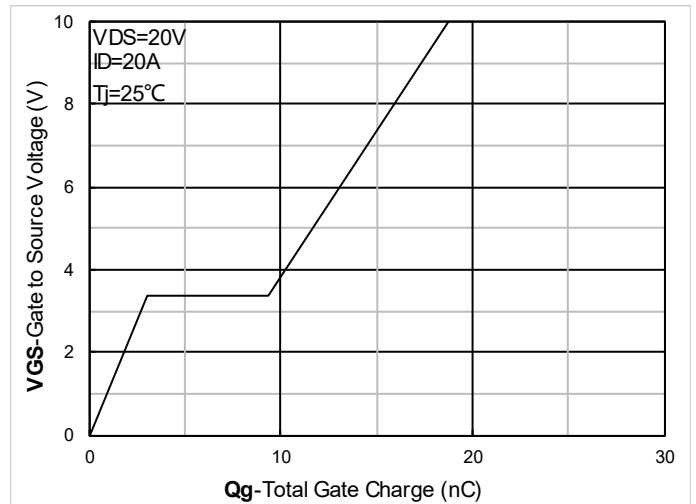


Figure 4. Gate Charge

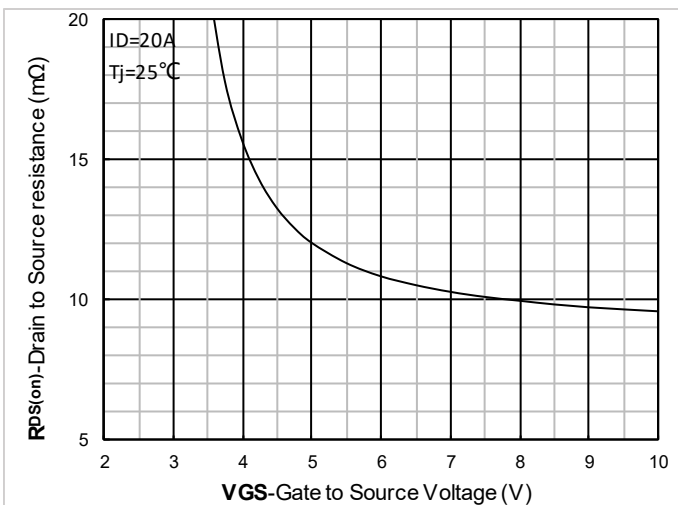


Figure 5. On-Resistance vs Gate to Source Voltage

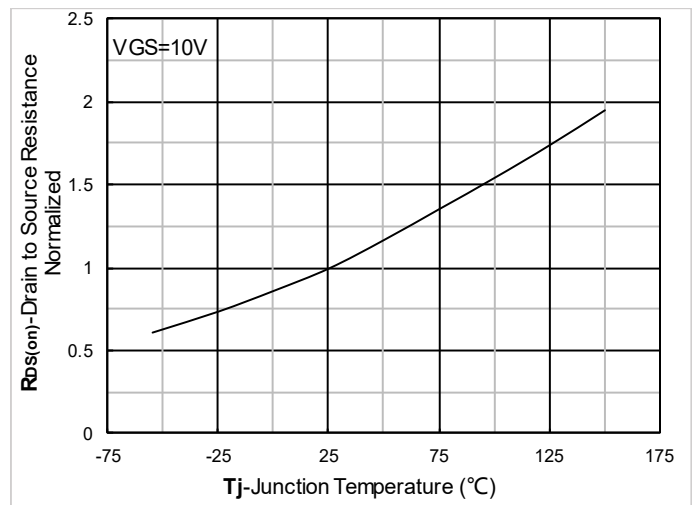


Figure 6. Normalized On-Resistance



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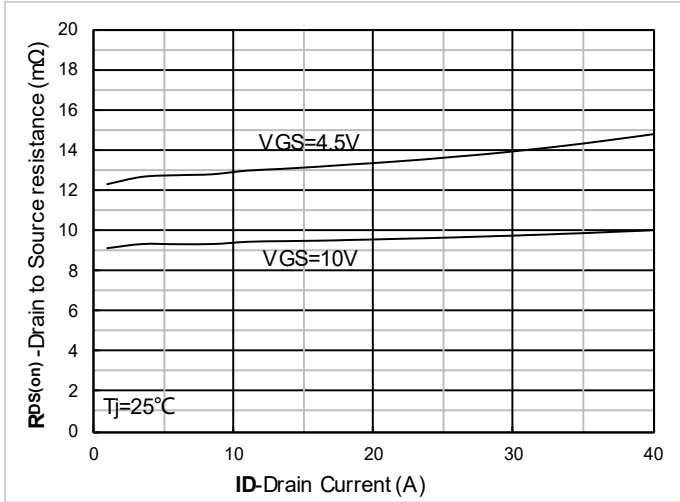


Figure 7. $R_{DS(on)}$ VS Drain Current

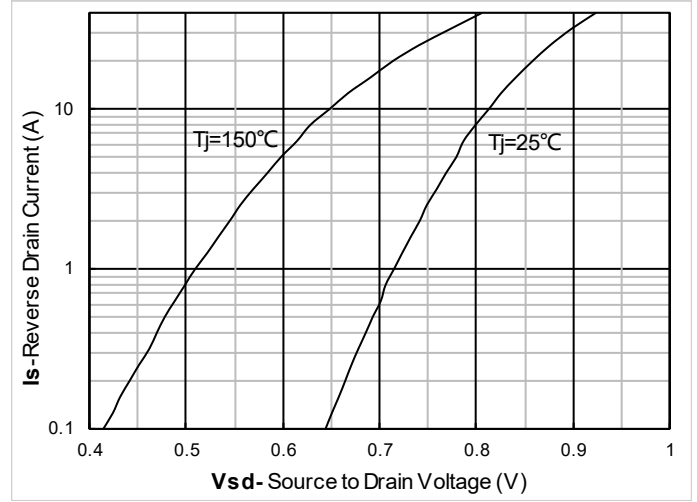


Figure 8. Forward characteristics of reverse diode

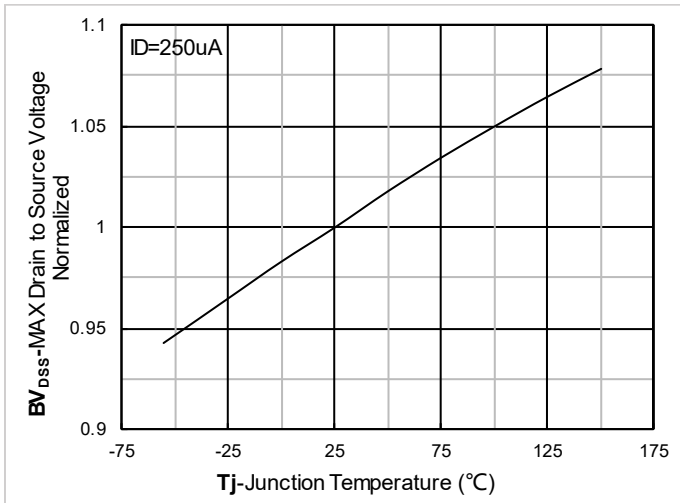


Figure 9. Normalized breakdown voltage

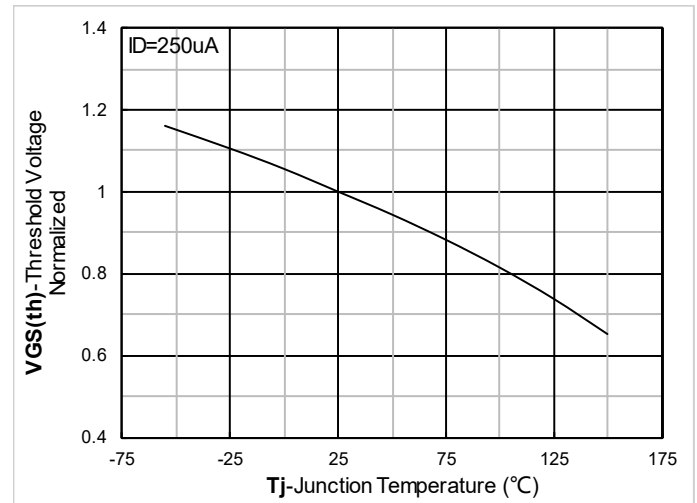


Figure 10. Normalized Threshold voltage

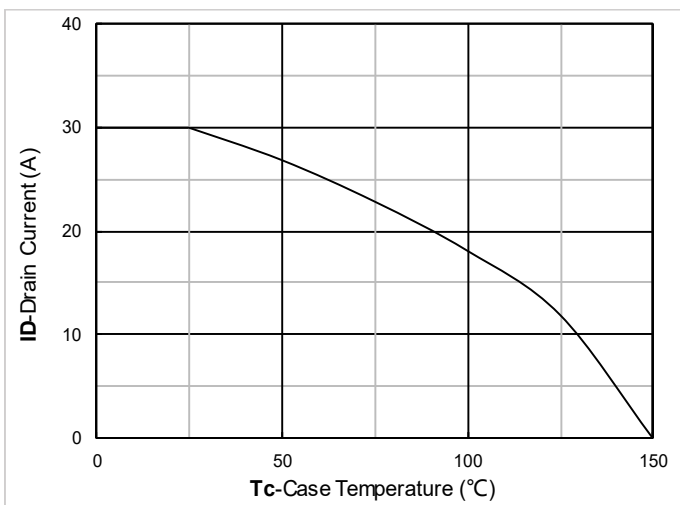


Figure 11. Current dissipation

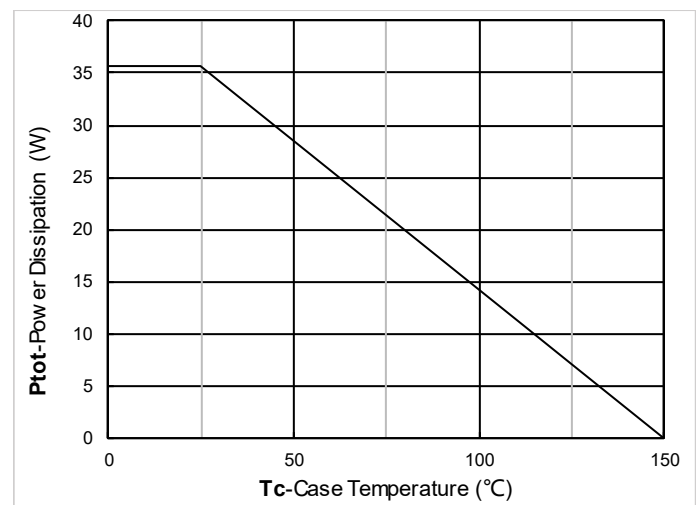


Figure 12. Power dissipation



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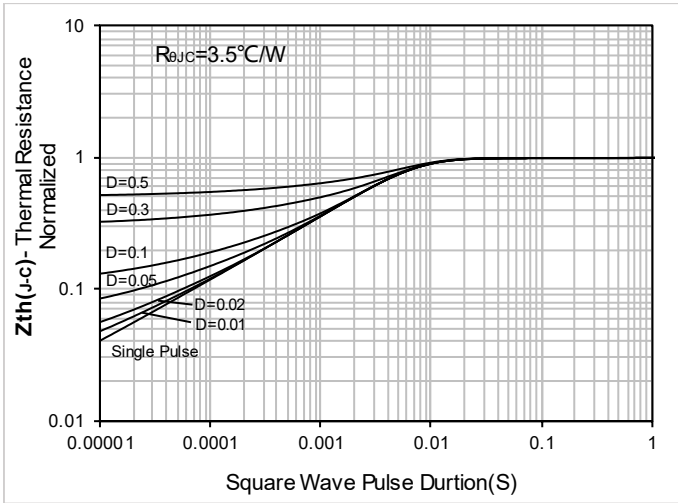


Figure 13. Maximum Transient Thermal Impedance

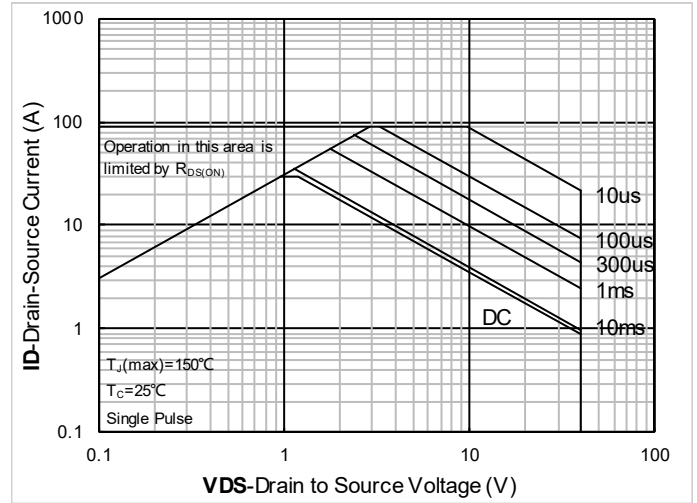
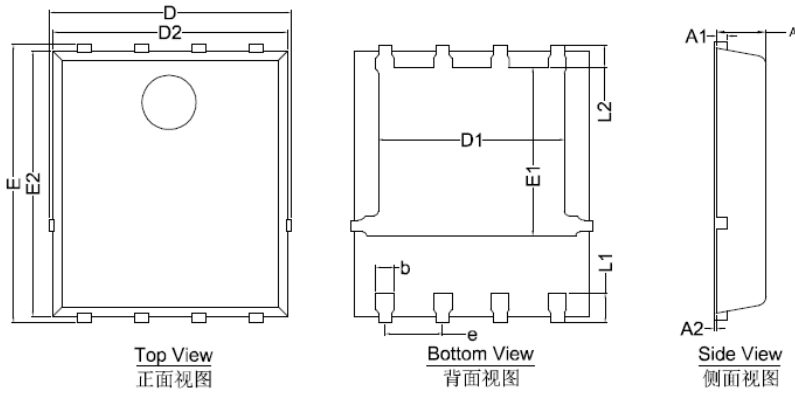


Figure 14. Safe Operation Area

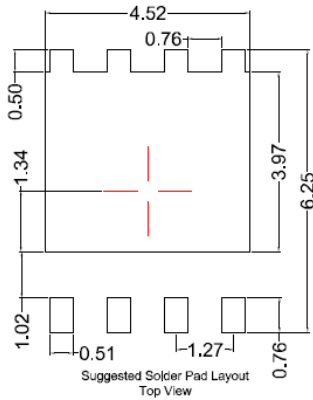


YJG30N04AQ

■ PDFN5060-8L-1.1MM Package information



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
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: ± 0.10 mm.
 3. The pad layout is for reference purposes only.



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