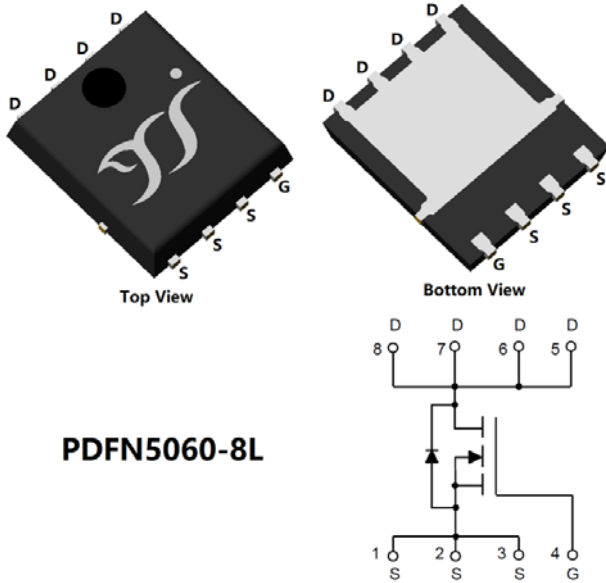




N-Channel Enhancement Mode Field Effect Transistor



PDFN5060-8L

Product Summary

- V_{DS} 40V
- I_D 320A
- $R_{DS(ON)}$ (at $V_{GS}=10V$) $<1.1m\Omega$
- 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 1
- Part no. with suffix "Q" means AEC-Q101 qualified

Applications

- Power switching application
- Uninterruptible power supply
- DC-DC convertor

■ 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	$T_C=25^\circ C$	I_D	320	A
	$T_C=100^\circ C$		225	
	$T_A=25^\circ C$		50	
	$T_A=100^\circ C$		36	
Pulsed Drain Current ^A		I_{DM}	900	A
Avalanche energy ^B		EAS	540	mJ
Total Power Dissipation ^C	$T_C=25^\circ C$	P_D	192	W
	$T_C=100^\circ C$		96	
	$T_A=25^\circ C$		5	
	$T_A=100^\circ C$		2.5	
Thermal Resistance Junction-to-Case ^D		$R_{\theta JC}$	0.78	$^\circ C/W$
Thermal Resistance Junction-to-Air		$R_{\theta JA}$	30	$^\circ C/W$
Junction and Storage Temperature Range		T_J, T_{STG}	$-55 \sim +175$	$^\circ C$

■ Ordering Information (Example)

PREFERRED P/N	PACKING CODE	Marking	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
YJG320G04HJRQ	F1	G320G04HJR	5000	10000	100000	13" reel



YJG320G04HJRQ

■ 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 =1mA	2	2.5	4	V
Static Drain-Source On-Resistance	R _{DS(ON)}	V _{GS} =10V, I _D =75A		0.85	1.1	mΩ
Diode Forward Voltage	V _{SD}	I _S =20A, V _{GS} =0V		0.8	1.2	V
Gate resistance	R _G	f=1MHz		2.8		Ω
Dynamic Parameters						
Input Capacitance	C _{iss}	V _{DS} =25V, V _{GS} =0V, f=1MHz		7000		pF
Output Capacitance	C _{oss}			2000		
Reverse Transfer Capacitance	C _{rss}			320		
Switching Parameters						
Total Gate Charge	Q _g	V _{GS} =10V, V _{DS} =20V, I _D =50A	-	88	-	nC
Gate-Source Charge	Q _{gs}		-	29	-	
Gate-Drain Charge	Q _{gd}		-	10	-	
Reverse Recovery Charge	Q _{rr}	I _F =50A, di/dt=100A/us	-	63	-	nC
Reverse Recovery Time	t _{rr}		-	58	-	ns
Turn-on Delay Time	t _{D(on)}	V _{GS} =10V, V _{DD} =20V, I _D =50A R _{GEN} =2.5Ω	-	17	-	ns
Turn-on Rise Time	t _r		-	12	-	
Turn-off Delay Time	t _{D(off)}		-	56	-	
Turn-off fall Time	t _f		-	25	-	

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

B. T_J=25°C, V_{DD}=30V, V_G=10V, R_G=25Ω, L=3mH, I_{AS}=19A.

C. P_q is based on max. junction temperature, using junction-case and junction-ambient 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 175°C. The value in any given application depends on the user's specific board design.



■ Typical Electrical and Thermal Characteristics Diagrams

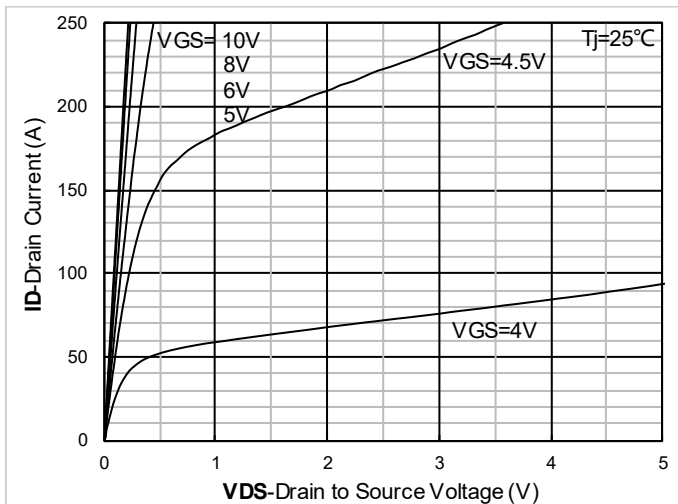


Figure 1. Output Characteristics

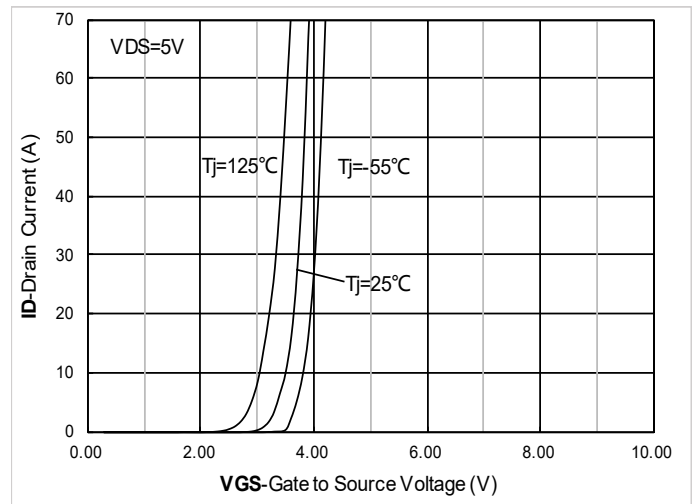


Figure 2. Transfer Characteristics

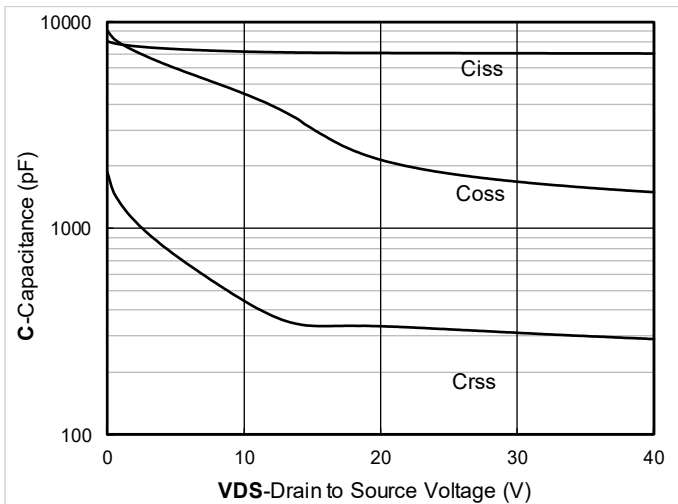


Figure 3. Capacitance Characteristics

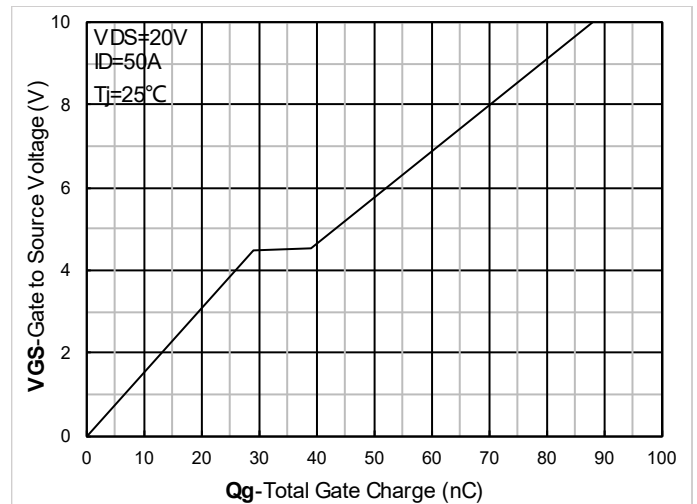


Figure 4. Gate Charge

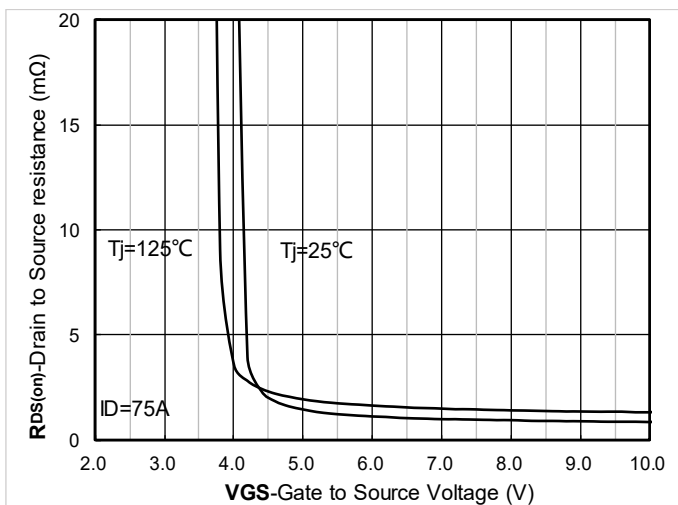


Figure 5. On-Resistance vs Gate to Source Voltage

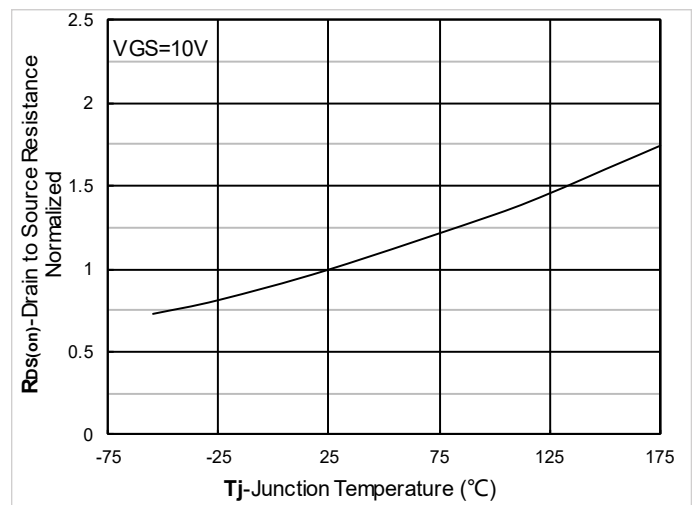


Figure 6. Normalized On-Resistance

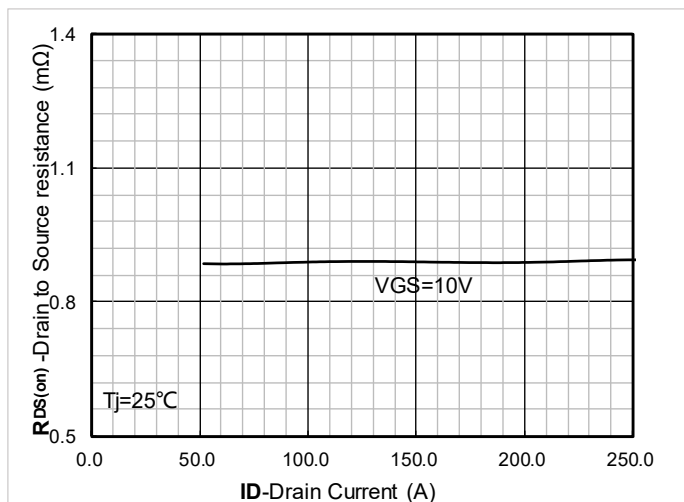


Figure 7. $R_{DS(on)}$ VS Drain Current

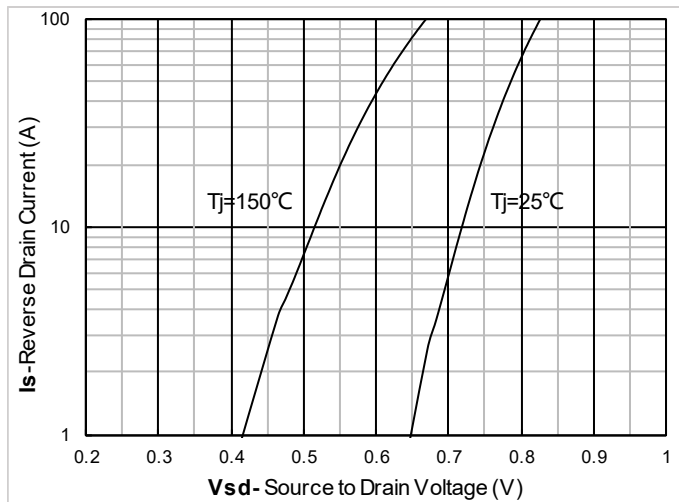


Figure 8. Forward characteristics of reverse diode

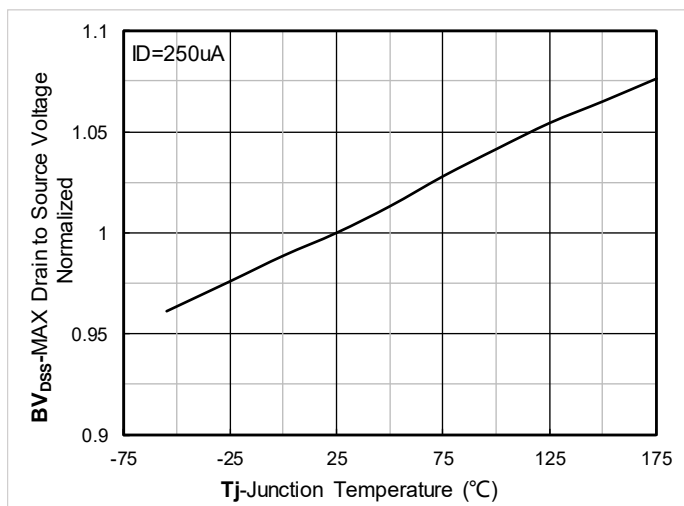


Figure 9. Normalized breakdown voltage

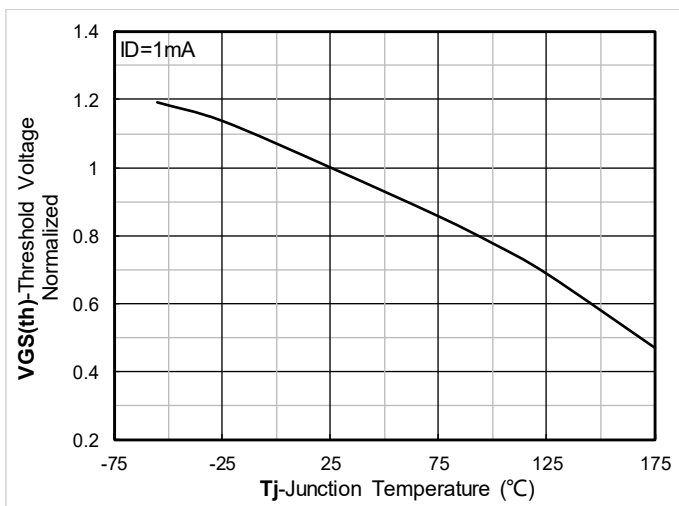


Figure 10. Normalized Threshold voltage

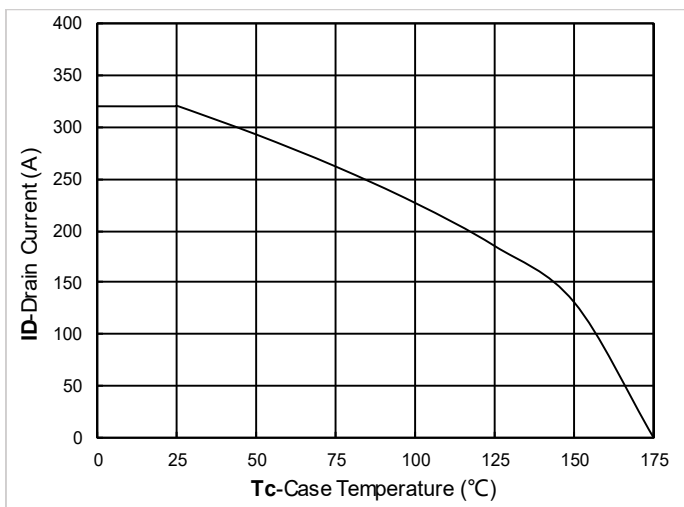


Figure 10. Current dissipation

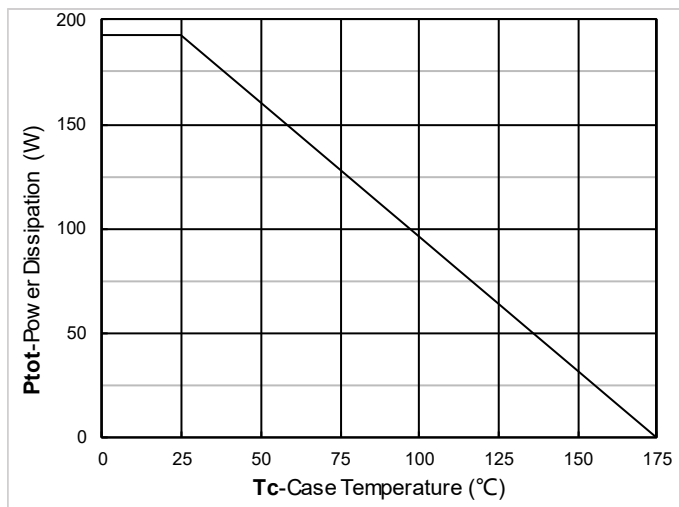


Figure 12. Power dissipation

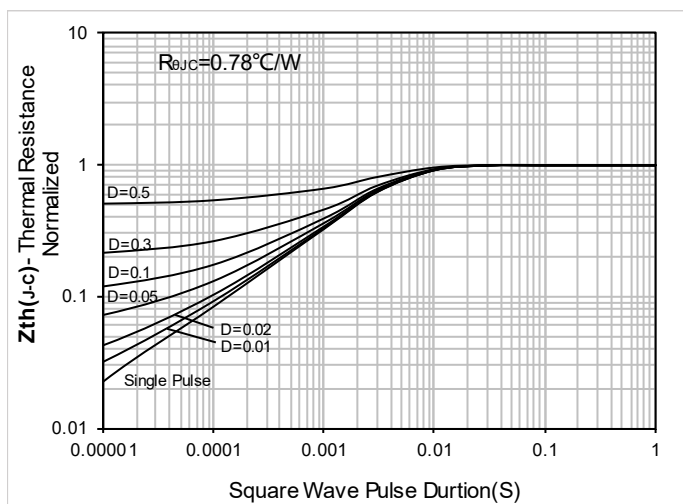


Figure 13. Maximum Transient Thermal Impedance

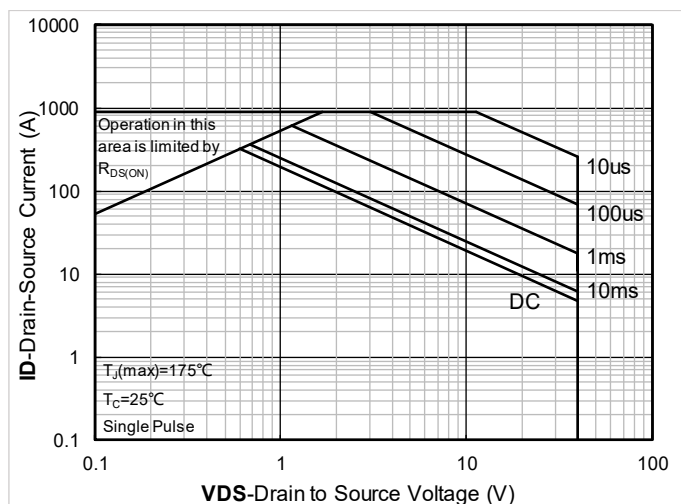
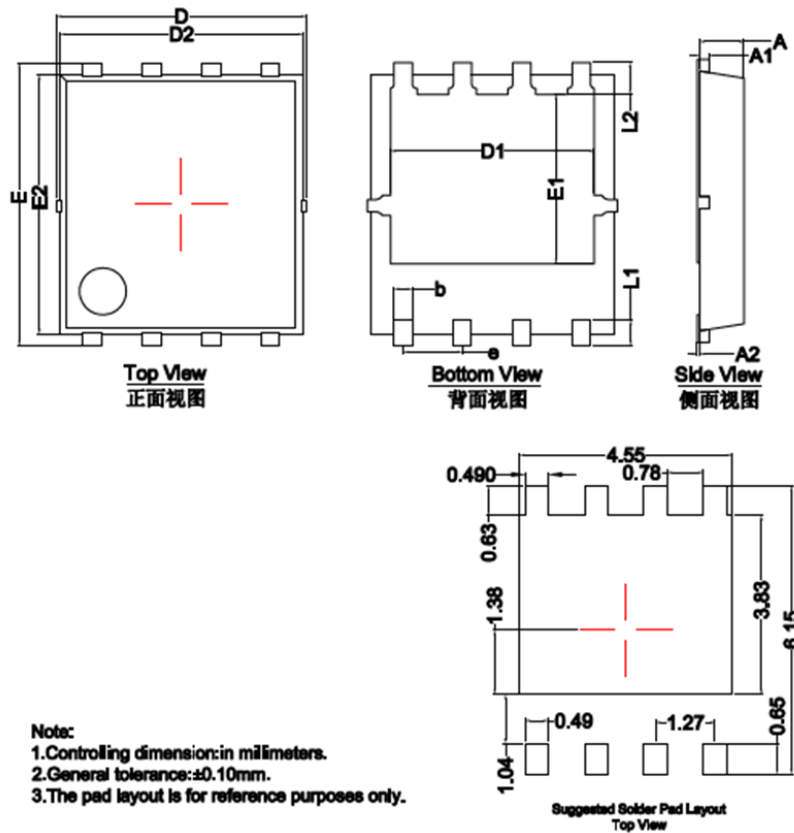


Figure 14. Safe Operation Area



YJG320G04HJRQ

■ PDFN5060-8L-0.95MM Package information



SYMBOL	MILLIMETER		
	MIN	NOM	MAX
D	5.15	5.35	5.55
E	5.95	6.05	6.15
A	0.85	0.95	1.05
A1	0.203 BSC		
A2			0.08
D1	4.25	4.35	4.45
E1	3.525	3.625	3.725
D2		5.20	
E2		5.55	
L1	0.45	0.55	0.65
L2	0.68 BSC		
b	0.3	0.4	0.5
e	1.27 BSC		



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