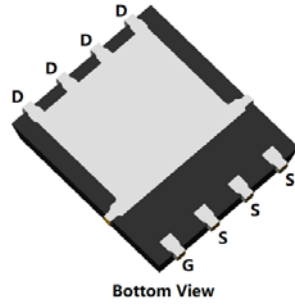
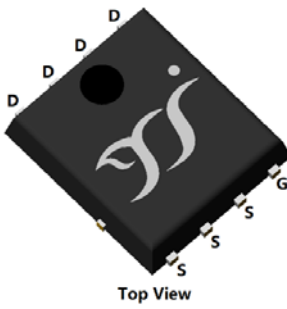
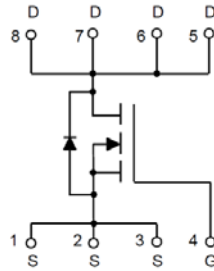


N-Channel Enhancement Mode Field Effect Transistor



PDFN5060-8L



Product Summary

- V_{DS} 100V
- I_D 110A
- $R_{DS(ON)}$ (at $V_{GS}=10V$) 5.5m Ω
- $R_{DS(ON)}$ (at $V_{GS}=6V$) 7.0m Ω
- 100% EAS Tested
- 100% V_{DS} Tested

General Description

- Split gate trench MOSFET technology
- High density cell design for low $R_{DS(ON)}$
- Moisture Sensitivity Level 3
- Epoxy Meets UL 94 V-0 Flammability Rating
- Halogen Free
- Part no. with suffix "Q" means AEC-Q101 qualified

Applications

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

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

Parameter		Symbol	Limit	Unit
Drain-source Voltage		V_{DS}	100	V
Gate-source Voltage		V_{GS}	± 20	V
Drain Current	$T_A=25$	I_D	15	A
	$T_A=100$		9.5	
	$T_C=25$		110	
	$T_C=100$		70	
Pulsed Drain Current ^A		I_{DM}	380	A
Avalanche energy ^B		EAS	400	mJ
Total Power Dissipation ^C	$T_A=25$	P_D	2.4	W
	$T_A=100$		0.9	
	$T_C=25$		113	
	$T_C=100$		45	
Junction and Storage Temperature Range		T_J, T_{STG}	-55 +150	

■ Thermal resistance

Parameter		Symbol	Typ	Max	Units
Thermal Resistance Junction-to-Ambient ^D	Steady-State	$R_{\theta JA}$	42	53	/W
Thermal Resistance Junction-to-Case	Steady-State	$R_{\theta JC}$	0.88	1.1	

■ Ordering Information (Example)

PREFERRED P/N	PACKING CODE	Marking	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
YJG110G10BQ	F1	YJG110G10B	5000	10000	100000	13" reel



YJG110G10BQ

■ Electrical Characteristics ($T_J=25$ unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Static Parameter						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=250\mu A$	100	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=100V, V_{GS}=0V$	-	-	1	μA
Gate-Body Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	± 100	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	2	3	4	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=20A$	-	4	5.5	m Ω
		$V_{GS}=6V, I_D=20A$	-	5	7	
Diode Forward Voltage	V_{SD}	$I_S=20A, V_{GS}=0V$	-	0.8	1.2	V
Gate resistance	R_G	$f=1MHz$	-	0.8	-	Ω
Maximum Body-Diode Continuous Current	I_S		-	-	110	A
Dynamic Parameters						
Input Capacitance	C_{iss}	$V_{DS}=25V, V_{GS}=0V, f=1MHz$	-	4700	-	pF
Output Capacitance	C_{oss}		-	2300	-	
Reverse Transfer Capacitance	C_{rss}		-	67	-	
Switching Parameters						
Total Gate Charge	Q_g	$V_{GS}=10V, V_{DS}=50V, I_D=55A$	-	55	-	nC
Gate-Source Charge	Q_{gs}		-	16	-	
Gate-Drain Charge	Q_{gd}		-	14	-	
Reverse Recovery Charge	Q_{rr}	$I_F=55A, di/dt=350A/us$	-	165	-	nC
Reverse Recovery Time	t_{rr}		-	47	-	ns
Turn-on Delay Time	$t_{D(on)}$	$V_{GS}=10V, V_{DD}=50V, I_D=55A$ $R_{GEN}=2.2\Omega$	-	24	-	ns
Turn-on Rise Time	t_r		-	125	-	
Turn-off Delay Time	$t_{D(off)}$		-	30	-	
Turn-off fall Time	t_f		-	8	-	

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

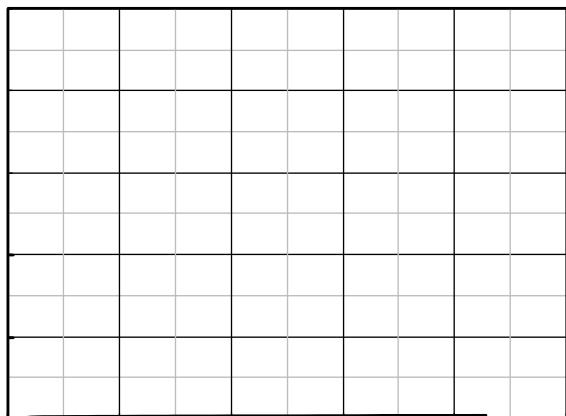
B. $T_J=25$, $V_{DD}=50V, V_G=10V, R_G=25\Omega, L=2mH, I_{AS}=20A$.

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

D. The value of $R_{\theta JA}$ is measured with the device mounted on the minimum recommend pad size, in the still air environment with $T_A=25$. The maximum allowed junction temperature of 150. The value in any given application depends on the user's specific board design.



■ Typical Electrical and Thermal Characteristics Diagrams





YJG110G10BQ

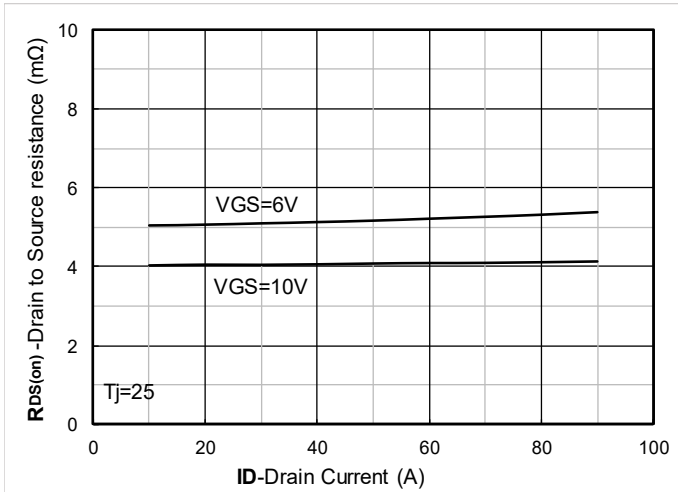


Figure 7. RDS(on) VS Drain Current

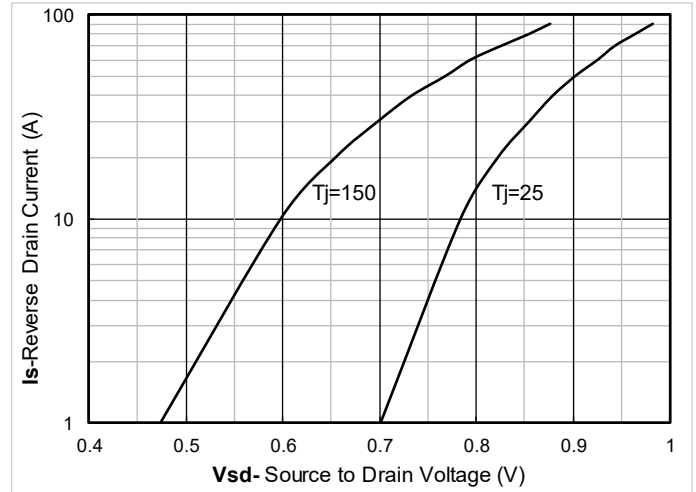


Figure 8. Forward characteristics of reverse diode

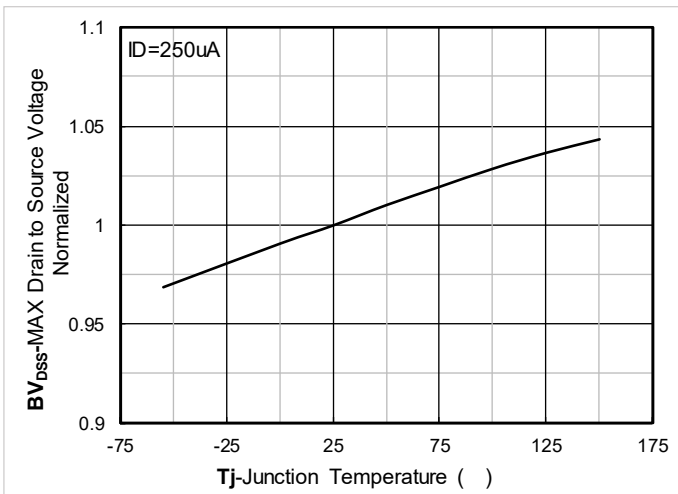


Figure 9. Normalized breakdown voltage

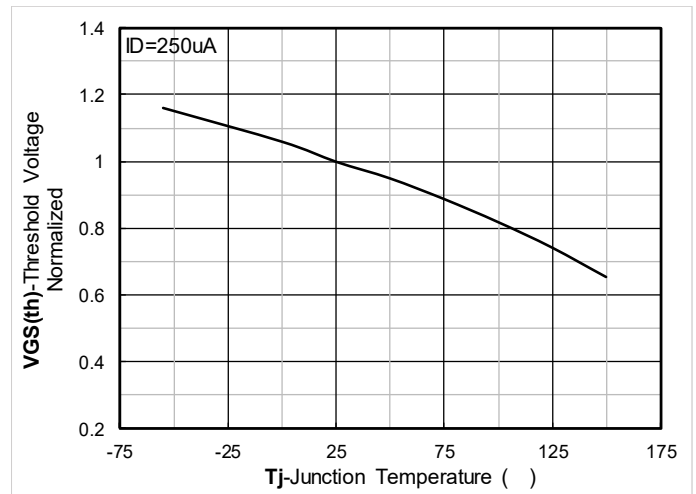


Figure 10. Normalized Threshold voltage

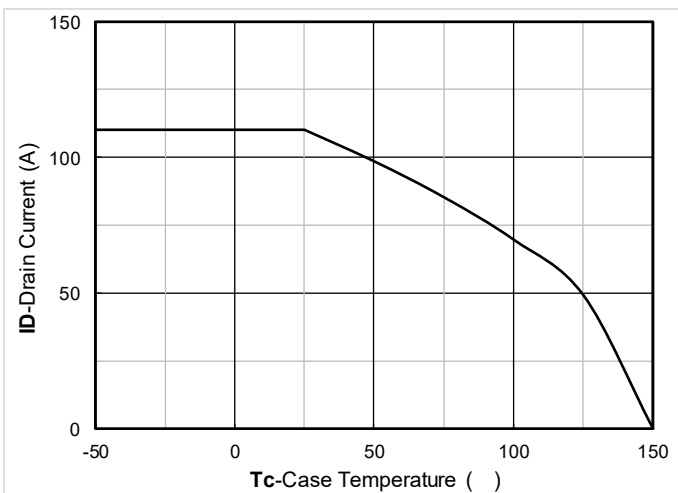


Figure 11. Current dissipation

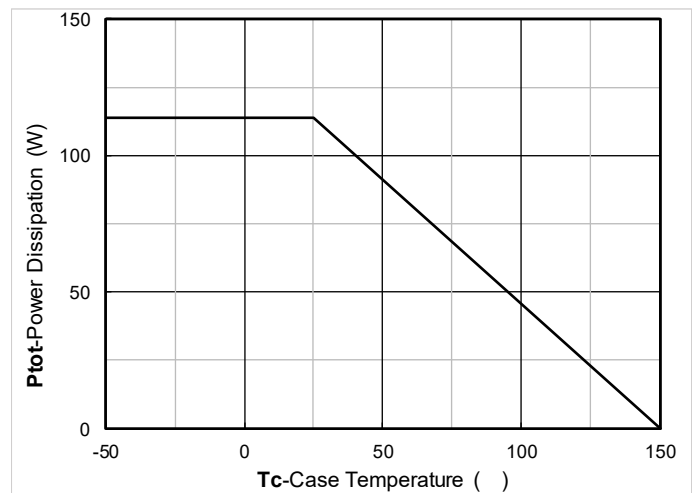


Figure 12. Power dissipation



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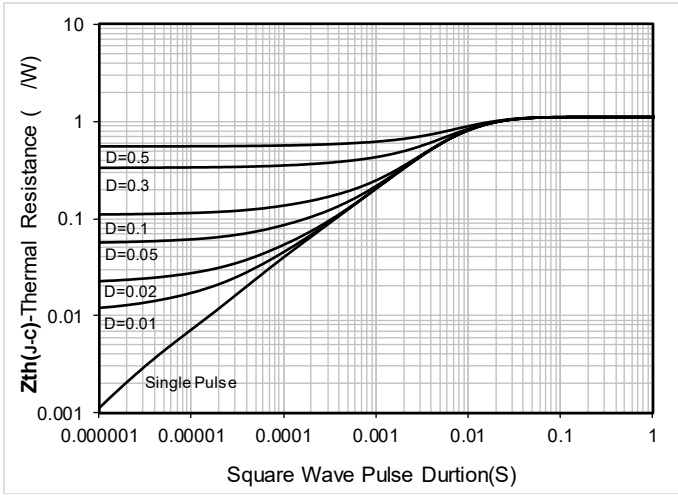


Figure 13. Maximum Transient Thermal Impedance

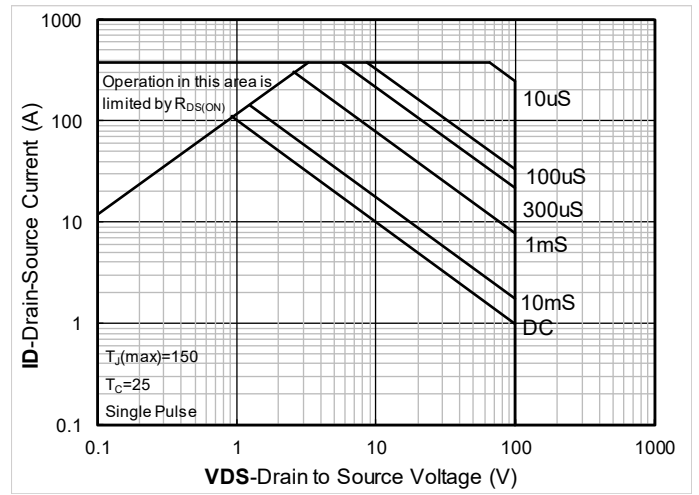
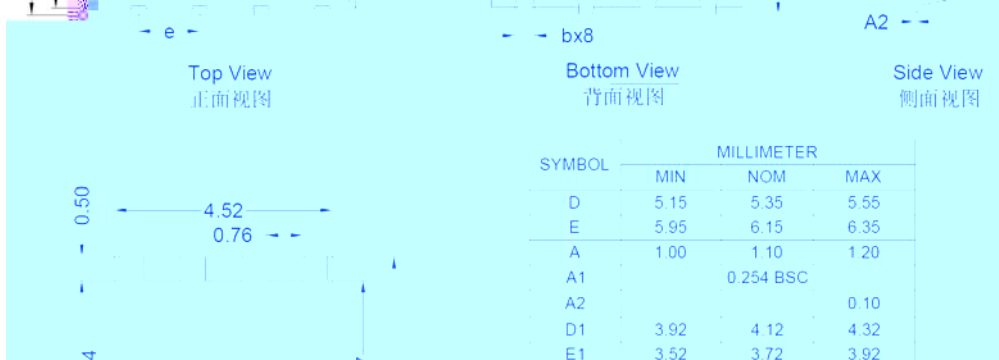
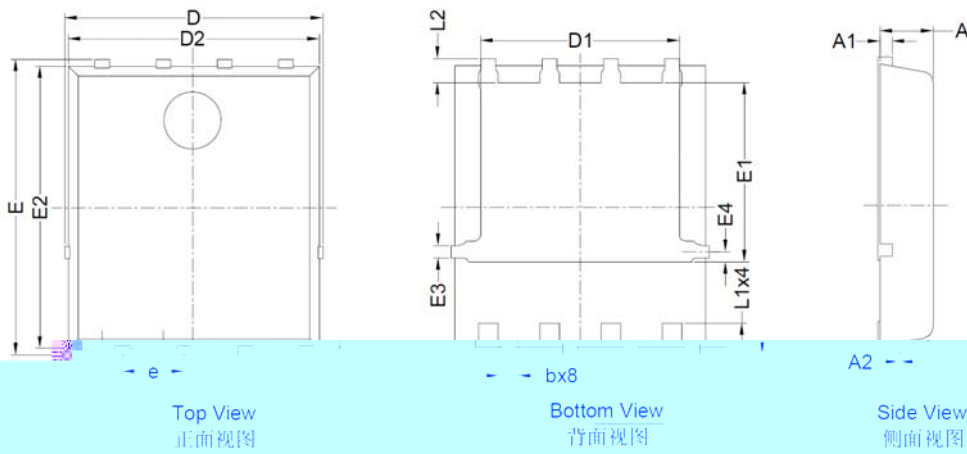


Figure 14. Safe Operation Area



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■ PDFN5060-8L 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
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: $\pm 0.10\text{mm}$.
3. The pad layout is for reference purposes only.



YJG110G10BQ

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