



YJG120G10AR

N-Channel Enhancement Mode Field Effect Transistor

Product Summary

V_{DS}	100V
I_D	120A
$R_{DS(ON)}$ (at $V_{GS}=10V$)	<4 mohm
$R_{DS(ON)}$ (at $V_{GS}=4.5V$)	<5 mohm
100% UIS Tested	
100% ∇V_{DS} Tested	

General Description

Split gate trench MOSFET technology
Excellent package for heat dissipation
High density cell design for low $R_{DS(ON)}$

Applications

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

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

Parameter		Symbol	Limit	Unit
Drain-source Voltage		V_{DS}	100	V
Gate-source Voltage		V_{GS}	± 20	V
Drain Current	$T_C=25^\circ C$	I_D	120	A
	$T_C=100^\circ C$		76	
Pulsed Drain Current ^A		I_{DM}	480	A
Avalanche energy ^B		EAS	529	mJ
Total Power Dissipation ^C	$T_C=25^\circ C$	P_D	108	W
	$T_C=100^\circ C$		46	
Junction and Storage Temperature Range		T_J, T_{STG}	-55~+150	$^\circ C$

Thermal resistance

Parameter	Symbol	Typ	Max	Units
Thermal Resistance Junction-to-Ambient ^D	R_{θ}	42		



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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 =250 .	100	-	-	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =100V, V _{GS} =0V	-	-	1	.
		V _{DS} =100V, V _{GS} =0V, T _J =150°C	-	-	100	
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 =250 .	1	1.8	2.5	V
Static Drain-Source On-Resistance	R _{DS(on)}	V _{GS} =10V, I _D =60A	-	3.2	4	m
		V _{GS} =10V, I _D =20A	-	3.2	4	
		V _{GS} =4.5V, I _D =20A	-	4	5	
Diode Forward Voltage	V _{SD}	I _S =60A, V _{GS} =0V	-	0.9	1.2	V
Gate resistance	R _G	f=1MHz, Open drain	-	0.9	-	
Maximum Body-Diode Continuous Current	I _S		-	-	120	A
Dynamic Parameters						
Input Capacitance	C _{iss}	V _{DS} =50V, V _{GS} =0V, f=1MHz	-	4400	-	pF
Output Capacitance	C _{oss}		-	1600	-	
Reverse Transfer Capacitance	C _{rss}		-	30	-	
Switching Parameters						
Total Gate Charge	Q _g	V _{GS} =10V, V _{DS} =50V, I _D =60A	-	65	-	nC
Gate-Source Charge	Q _{gs}		-	10	-	
Gate-Drain Charge	Q _{gd}		-	13	-	
Reverse Recovery Charge	Q _{rr}	I _F =60A, di/dt=350A/us	-	90	-	nC
Reverse Recovery Time	t _{rr}		-	35	-	ns
Turn-on Delay Time	t _{D(on)}	V _{GS} =10V, V _{DD} =50V, I _D =60A R _{GEN} =2.2	-	25	-	ns
Turn-on Rise Time	t _r		-	90	-	
Turn-off Delay Time	t _{D(off)}		-	27	-	
Turn-off fall Time	t _f		-	7	-	

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

B. T_J=25°C, V_{DD}=50V, V_G=10V, R_G 9 2mH, I_{AS}=23A.

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

D. The value of R_θ is measured with the device mounted on 1in2 FR-4 board with 2oz. Copper, in a 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

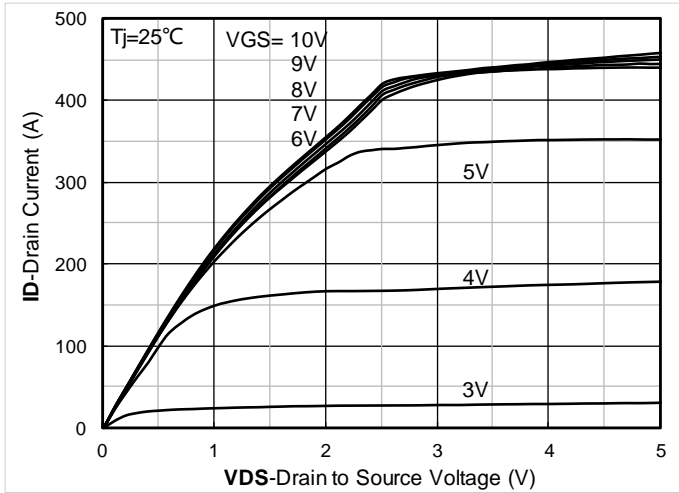


Figure1. Output Characteristics

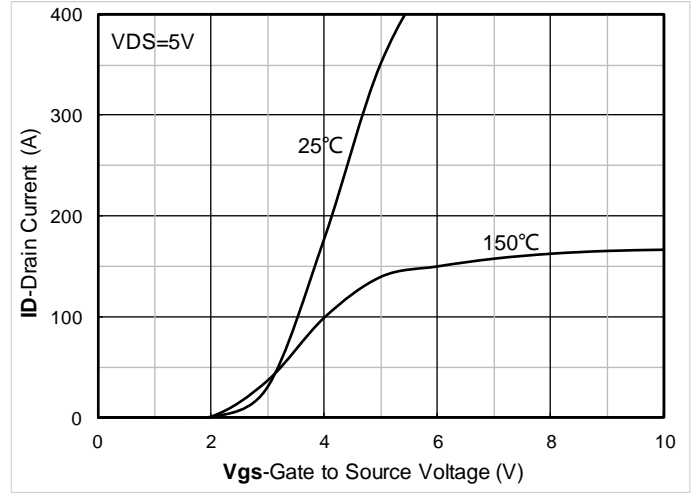


Figure2. Transfer Characteristics

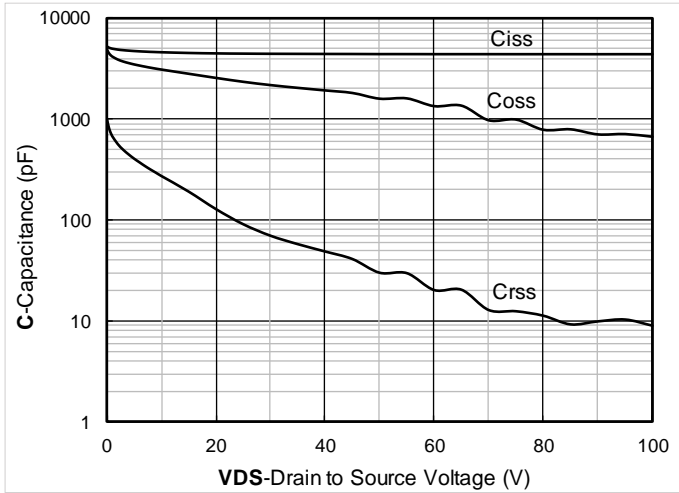


Figure3. Capacitance Characteristics

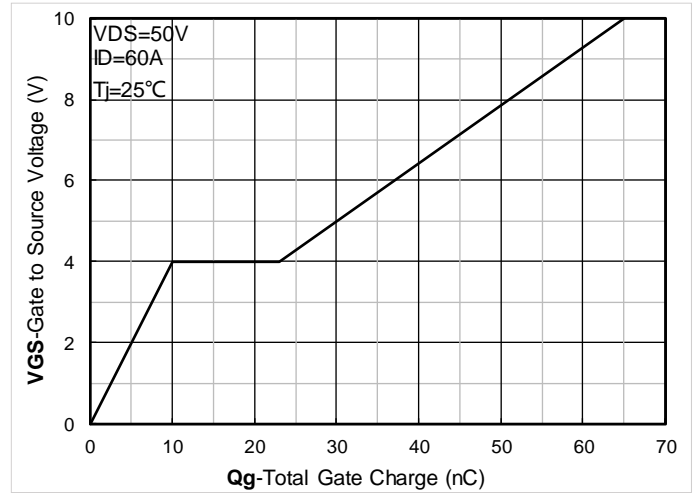


Figure4. Gate Charge

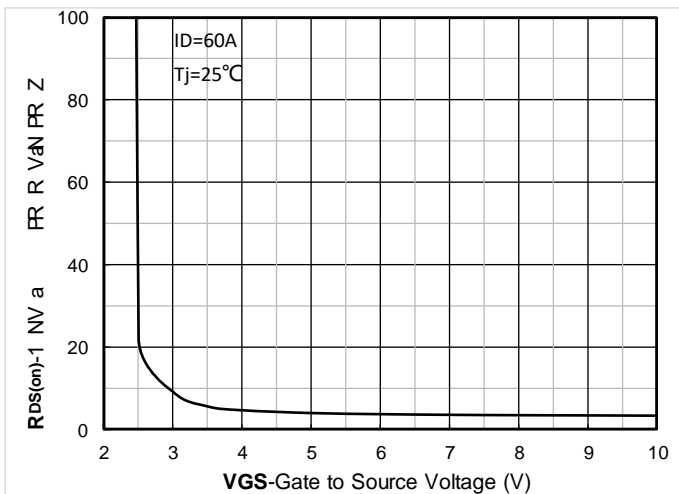


Figure5. On-Resistance vs Gate to Source Voltage

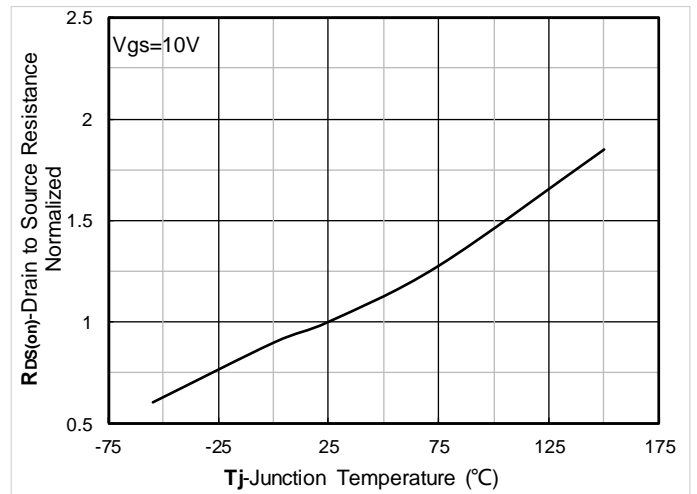


Figure6. Normalized On-Resistance



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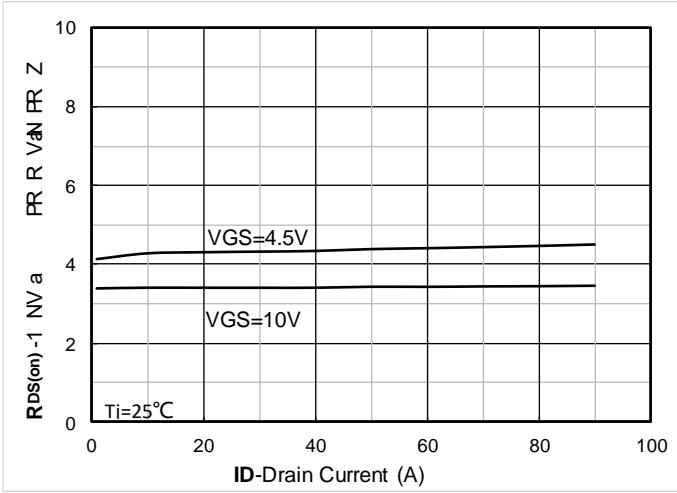


Figure7. RDS(on) VS Drain Current

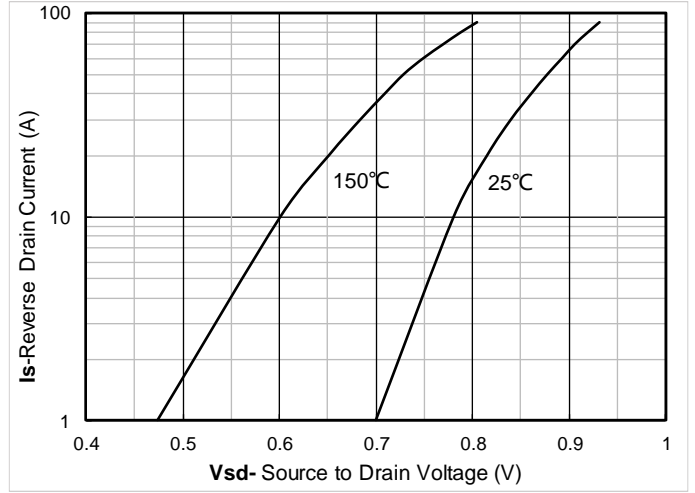


Figure8. Forward characteristics of reverse diode

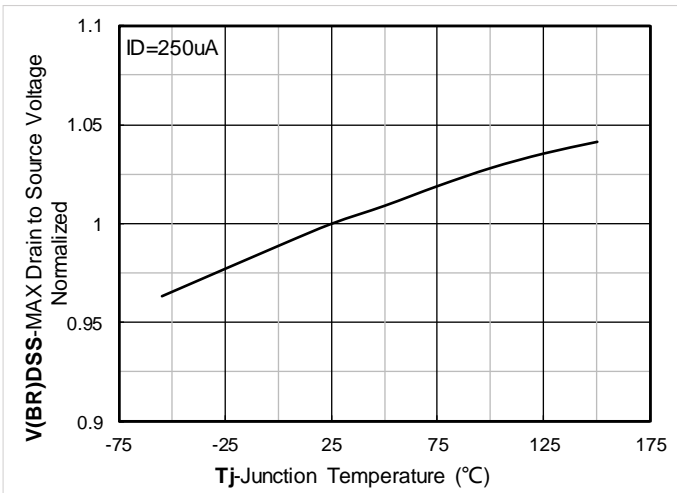


Figure9. Normalized breakdown voltage

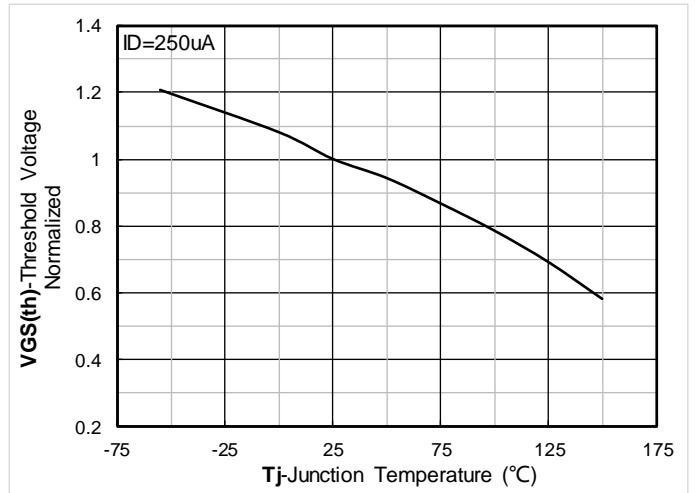


Figure10. Normalized Threshold voltage

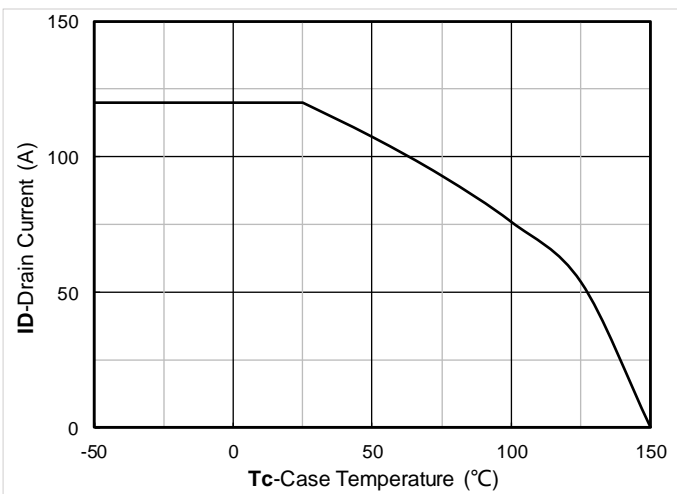


Figure11. Current dissipation

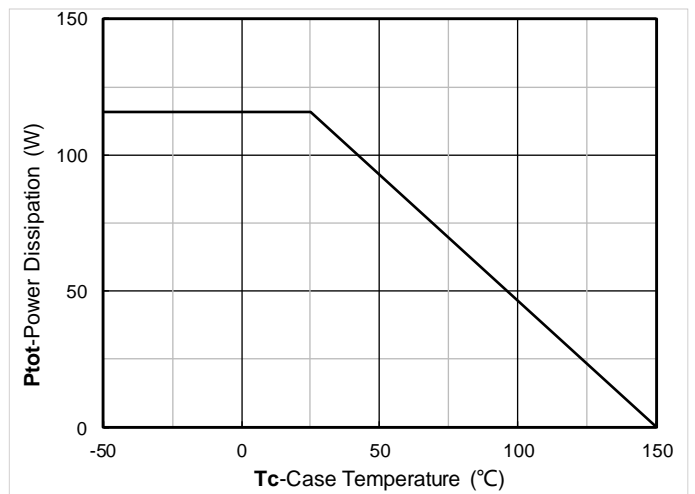


Figure12. Power dissipation



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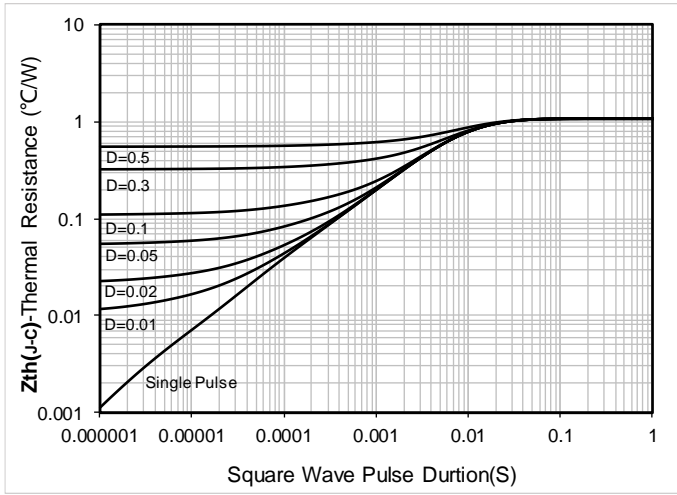


Figure13. Maximum Transient Thermal Impedance

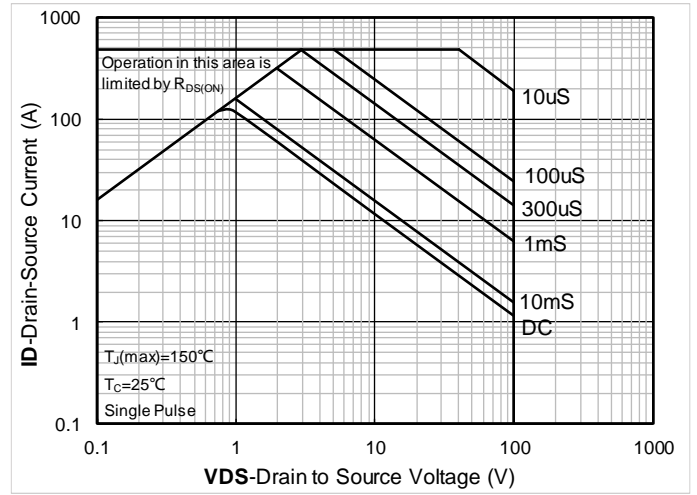
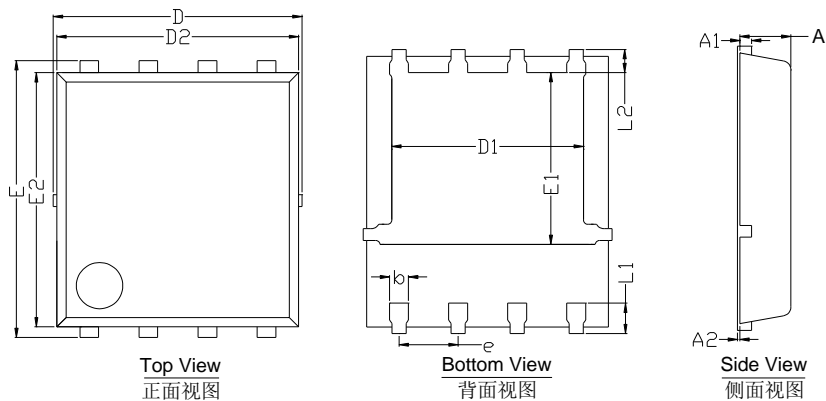


Figure14. Safe Operation Area

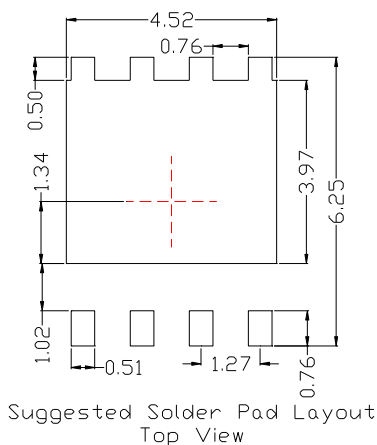


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PDFN5060-8L-D-0.95MM Package information



SYMBOL	MILLIMETER		
	MIN	NOM	MAX
D	5.15	5.35	5.55
E	5.95	6.05	6.15
A	0.85	0.95	1.00
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		



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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