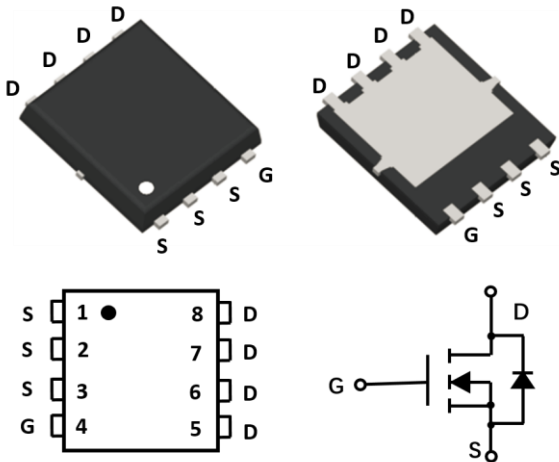


N-Channel Enhancement Mode Field Effect Transistor

PDFN5060-8L



Product Summary

- V_{DS} 60V
- I_D 130A
- I_D (Package limited) 85A
- $R_{DS(ON)}$ (at $V_{GS}=10V$) <3.0 mohm
- $R_{DS(ON)}$ (at $V_{GS}=4.5V$) <4.5 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

- DC-DC Converters
- Power management functions
- Synchronous-rectification applications

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

Parameter	Symbol	Limit	Unit
Drain-source Voltage	V_{DS}	60	V
Gate-source Voltage	V_{GS}	± 20	V
Drain Current	I_D	130	A
Drain Current ^A	I_D	$T_C=25^\circ\text{C}$	85
		$T_C=100^\circ\text{C}$	54
Pulsed Drain Current ^B	I_{DM}	390	A
Avalanche energy ^C	E_{AS}	270	mJ
Total Power Dissipation ^D	P_D	105	W
Thermal Resistance Junction-to-Case	$R_{\theta JC}$	1.2	°C/W
Thermal Resistance Junction-to-Ambient ^E	$R_{\theta JA}$	55	
Junction and Storage Temperature Range	T_J, T_{STG}	-55~+150	°C

■ Ordering Information (Example)

PREFERRED P/N	PACKING CODE	Marking	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
YJG85G06A	F2	YJG85G06A	3000	6000	60000	13" reel



YJG85G06A

■ 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	60			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =60V, 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	1.7	2.5	V
Static Drain-Source On-Resistance	R _{DS(on)}	V _{GS} = 10V, I _D =20A		2.5	3.0	mΩ
		V _{GS} = 4.5V, I _D =10A		3.5	4.5	
Diode Forward Voltage	V _{SD}	I _S =20A, V _{GS} =0V			1.2	V
Maximum Body-Diode Continuous Current	I _S				85	A
Dynamic Parameters						
Input Capacitance	C _{iss}	V _{DS} =25V, V _{GS} =0V, f=1MHZ		5377		pF
Output Capacitance	C _{oss}			1666		
Reverse Transfer Capacitance	C _{rss}			77.7		
Switching Parameters						
Total Gate Charge	Q _g	V _{GS} =10V, V _{DS} =30V, I _D =25A		66.1		nC
Gate-Source Charge	Q _{gs}			10.7		
Gate-Drain Charge	Q _{gd}			10.9		
Reverse Recovery Charge	Q _{rr}	I _F =25A, di/dt=100A/us		73		ns
Reverse Recovery Time	t _{rr}			68		
Turn-on Delay Time	t _{d(on)}	V _{GS} =10V, V _{DD} =30V, I _D =25A R _{GEN} =2Ω		22.5		ns
Turn-on Rise Time	t _r			6.7		
Turn-off Delay Time	t _{d(off)}			80.3		
Turn-off fall Time	t _f			26.9		

Note:

- The maximum current rating is package limited.
- Repetitive rating; pulse width limited by max. junction temperature.
- V_{DD}=50 V, R_G=25 Ω, L=0.5 mH, starting T_J=25 °C.
- P_D is based on max. junction temperature, using junction-case thermal resistance.
- The value of R_{θJA} is measured with the device mounted on 1 in 2 FR-4 board with 2oz. Copper, in a still air environment with T_a=25 °C.



■ Typical Performance Characteristics

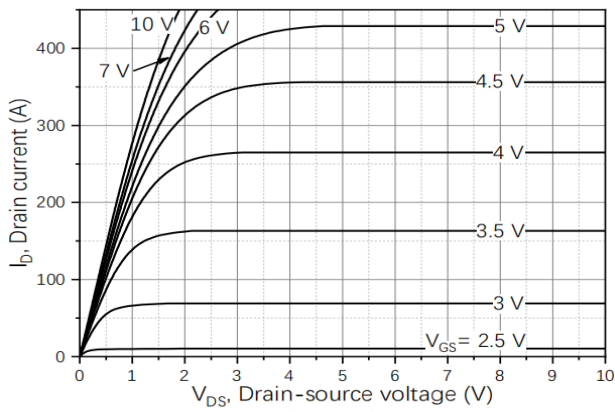


Figure1. Output Characteristics

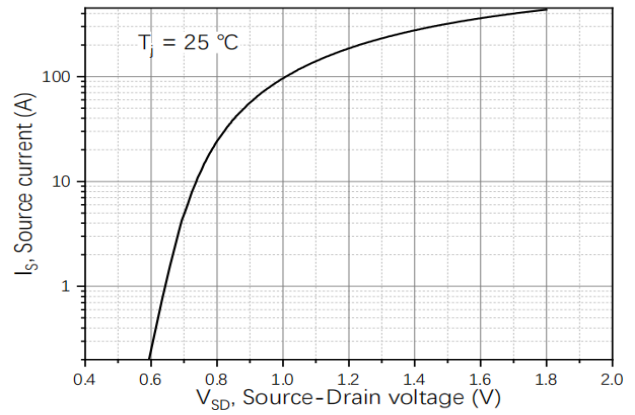


Figure2. Transfer Characteristics

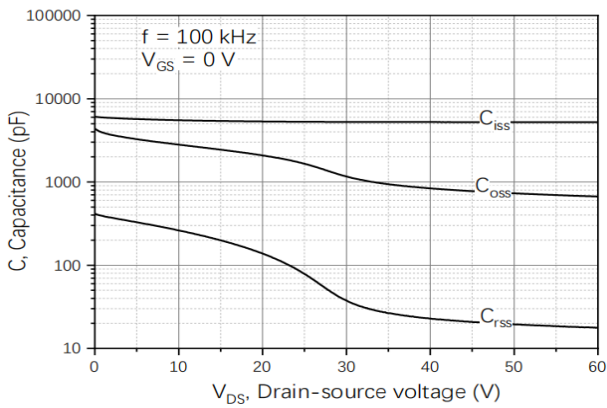


Figure3. Capacitance Characteristics

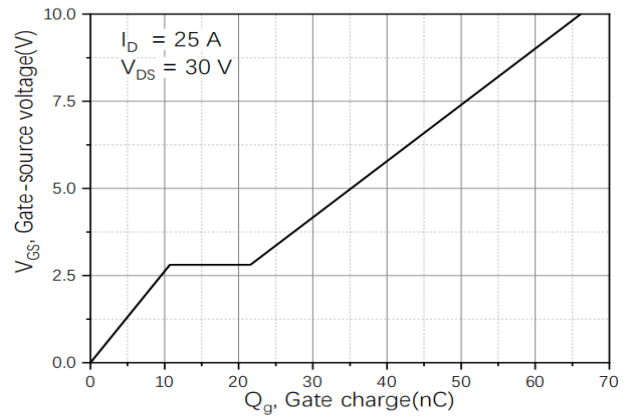


Figure4. Gate Charge

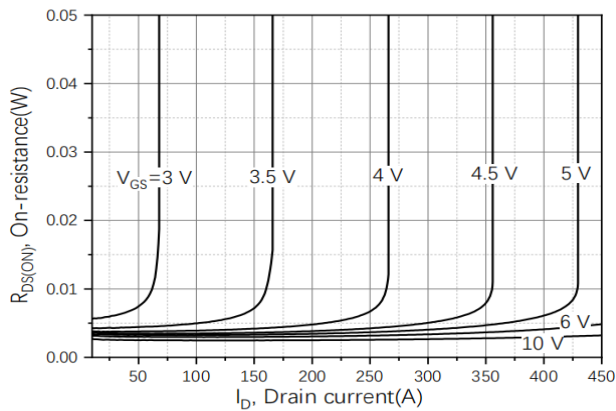


Figure5. Drain-Source on Resistance

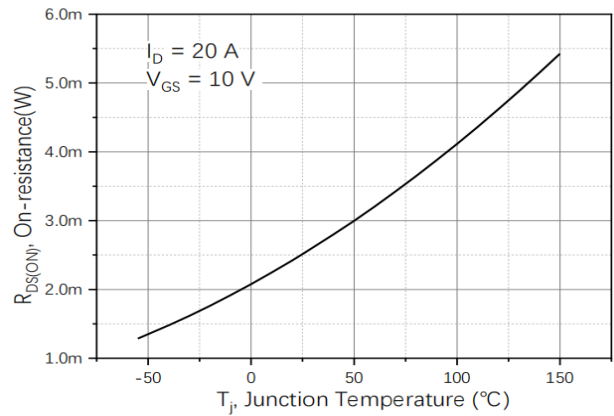


Figure6. Drain-Source on Resistance



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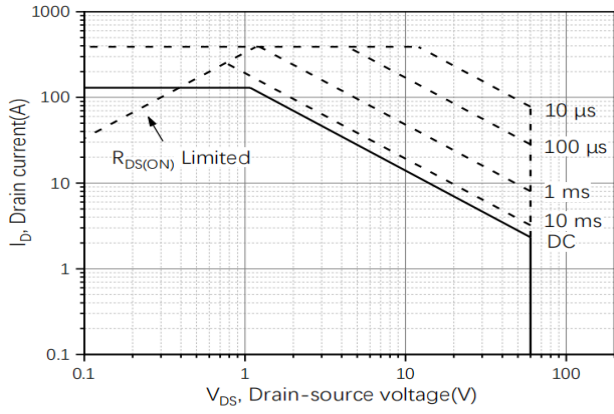


Figure7. Safe Operation Area

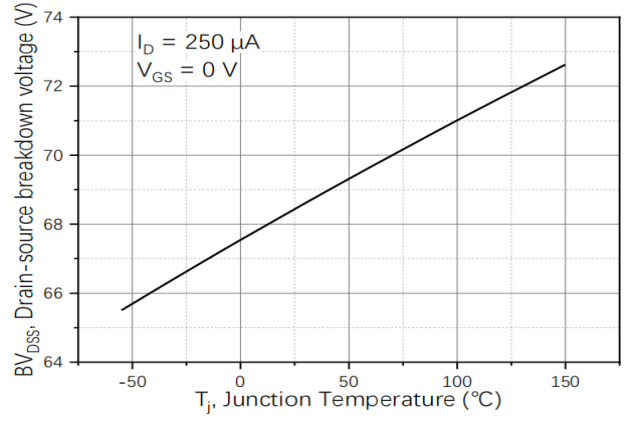


Figure8. Drain-source breakdown voltage

■ Test circuits and waveforms

Figure A: Gate Charge Test Circuit & Waveforms

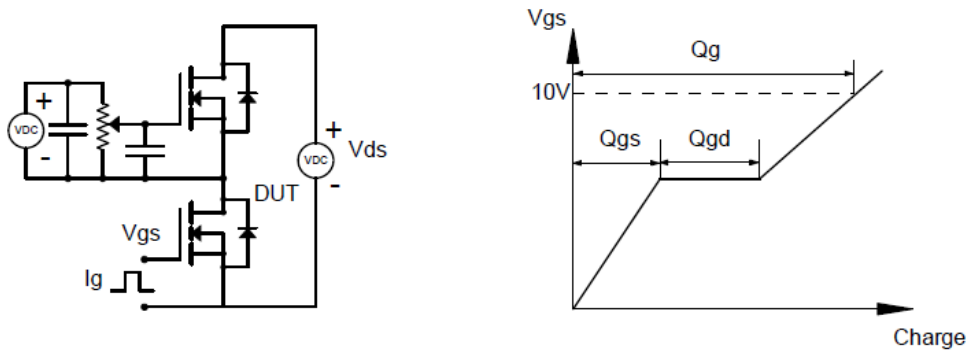


Figure B: Resistive Switching Test Circuit & Waveforms

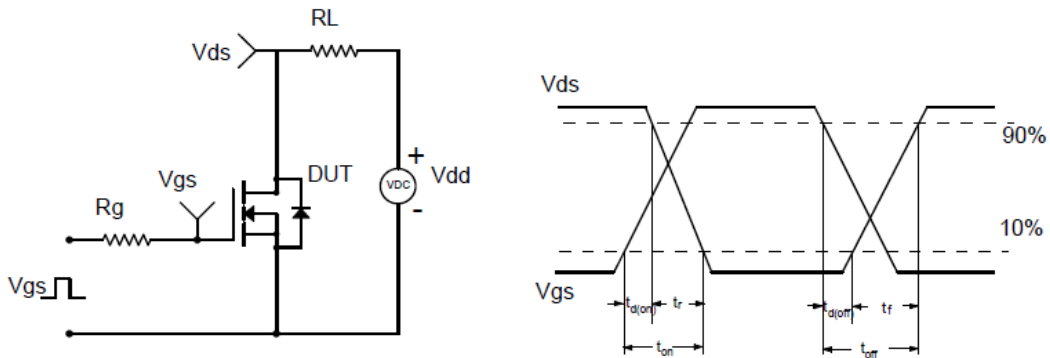


Figure C: Unclamped Inductive Switching (UIS) Test

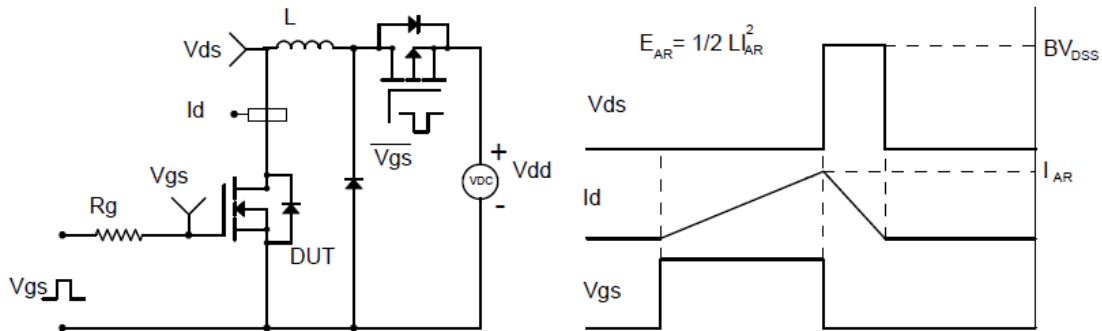
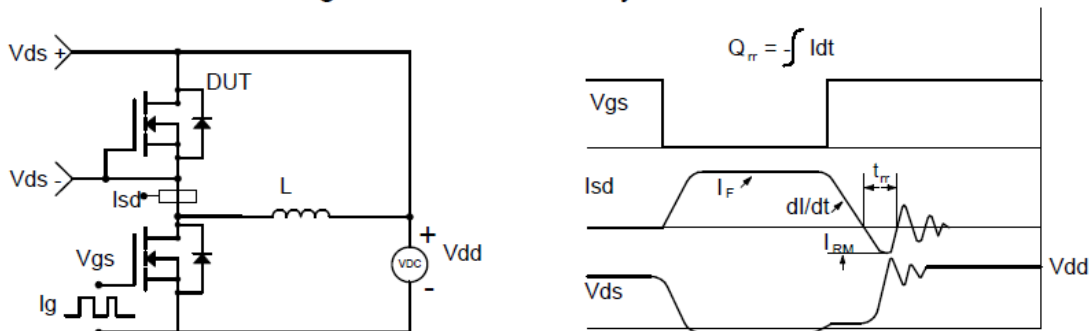


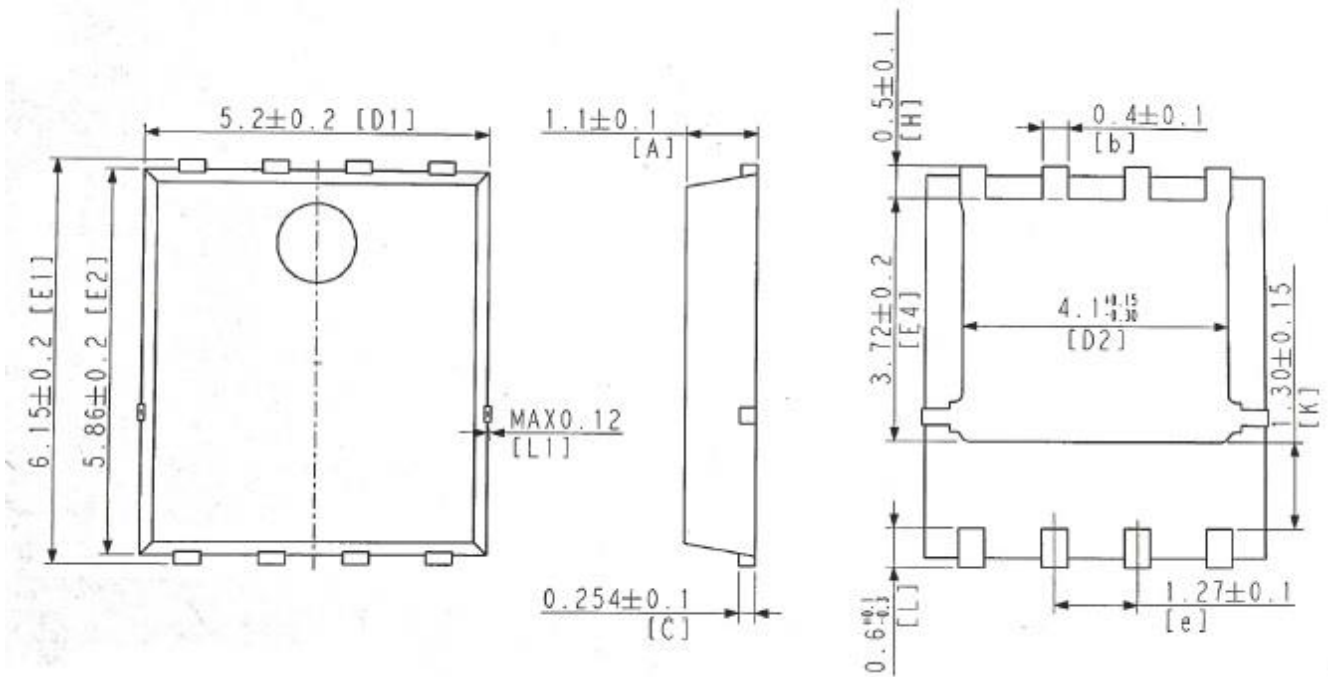
Figure D: Diode Recovery Test Circuit & Waveforms





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■ PDFN5060-8L Package information





YJG85G06A

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