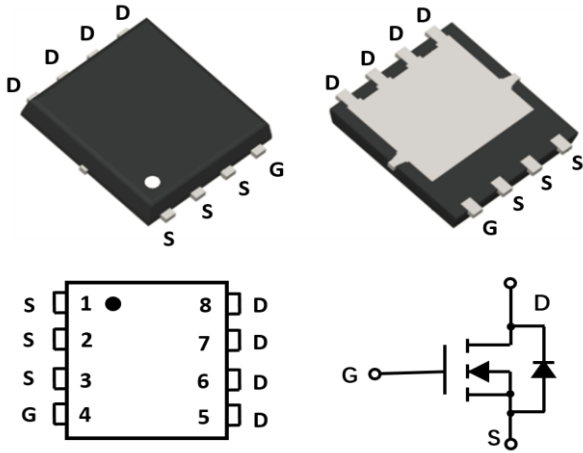


## N-Channel Enhancement Mode Field Effect Transistor

### PDFN5060-8L



### Product Summary

- $V_{DS}$  60V
- $I_D$  53A
- $R_{DS(ON)}$  (at  $V_{GS}=10V$ ) < 8.2 mohm
- $R_{DS(ON)}$  (at  $V_{GS}=4.5V$ ) < 12 mohm
- 100% UIS Tested
- 100%  $\nabla V_{DS}$  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
- Industrial and Motor Drive application

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

Parameter	Symbol	Limit	Unit
Drain-source Voltage	$V_{DS}$	60	V
Gate-source Voltage	$V_{GS}$	$\pm 20$	V
Drain Current	$I_D$	$T_C=25^\circ C$	53
		$T_C=100^\circ C$	34
Pulsed Drain Current <sup>A</sup>	$I_{DM}$	160	A
Avalanche energy <sup>B</sup>	$E_{AS}$	195	mJ
Total Power Dissipation	$P_D$	$T_C=25^\circ C$	75
		$T_C=100^\circ C$	30
Thermal Resistance Junction-to-Case	$R_{\theta JC}$	1.8	$^\circ C/W$
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
YJG53G06A	F2	YJG53G06A	3000	6000	60000	13" reel



# YJG53G06A

## ■ Electrical Characteristics (T<sub>J</sub>=25°C unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
<b>Static Parameter</b>						
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	V <sub>GS</sub> = 0V, I <sub>D</sub> =250μA	60			V
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =60V, V <sub>GS</sub> =0V	T <sub>J</sub> =25°C		1	μA
			T <sub>J</sub> =55°C		5	
Gate-Body Leakage Current	I <sub>GSS</sub>	V <sub>GS</sub> = ±20V, V <sub>DS</sub> =0V			±100	nA
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> =250μA	1.2	1.7	2.2	V
Static Drain-Source On-Resistance	R <sub>DS(on)</sub>	V <sub>GS</sub> = 10V, I <sub>D</sub> =20A		6.8	8.2	mΩ
		V <sub>GS</sub> = 4.5V, I <sub>D</sub> =10A		9.5	12	
Diode Forward Voltage	V <sub>SD</sub>	I <sub>S</sub> =20A, V <sub>GS</sub> =0V		0.8	1.2	V
Maximum Body-Diode Continuous Current	I <sub>S</sub>				53	A
<b>Dynamic Parameters</b>						
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =30V, V <sub>GS</sub> =0V, f=1MHZ		1990		pF
Output Capacitance	C <sub>oss</sub>			470		
Reverse Transfer Capacitance	C <sub>rss</sub>			14		
<b>Switching Parameters</b>						
Total Gate Charge	Q <sub>g</sub>	V <sub>GS</sub> =10V, V <sub>DS</sub> =30V, I <sub>D</sub> =20A		31		nC
Gate-Source Charge	Q <sub>gs</sub>			6		
Gate-Drain Charge	Q <sub>gd</sub>			5		
Reverse Recovery Charge	Q <sub>rr</sub>	I <sub>F</sub> =20A, di/dt=500A/us		17		ns
Reverse Recovery Time	t <sub>rr</sub>			58		
Turn-on Delay Time	t <sub>D(on)</sub>	V <sub>GS</sub> =10V, V <sub>DD</sub> =30V, R <sub>L</sub> =2.5Ω R <sub>GEN</sub> =3Ω		10		ns
Turn-on Rise Time	t <sub>r</sub>			5		
Turn-off Delay Time	t <sub>D(off)</sub>			30		
Turn-off fall Time	t <sub>f</sub>			8		

A. Pulse Test: Pulse Width ≤ 300us, Duty cycle ≤ 2%.

B. T<sub>J</sub>=25°C, V<sub>DD</sub>=30V, V<sub>G</sub>=10V, L=0.5mH, R<sub>g</sub>=25 Ω



■ Typical Performance Characteristics

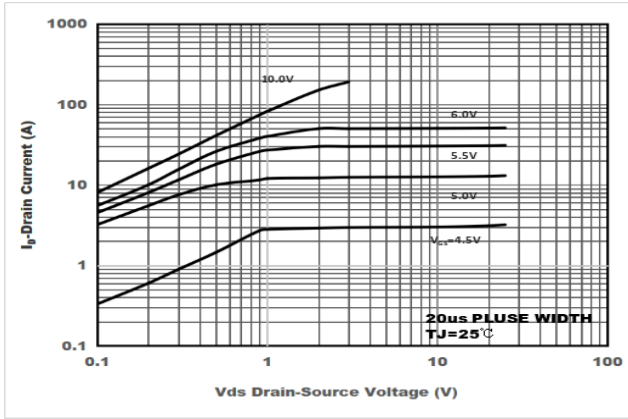


Figure1. Output Characteristics

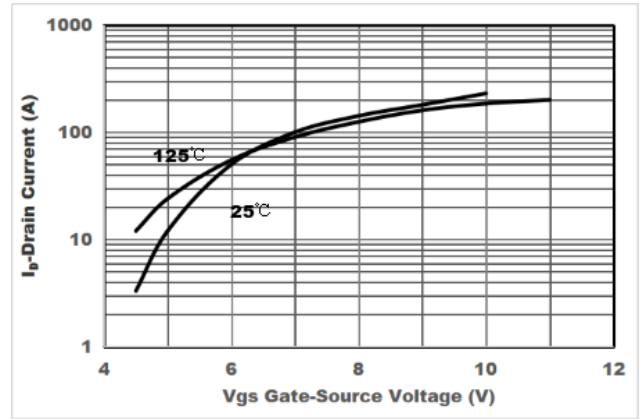


Figure2. Transfer Characteristics

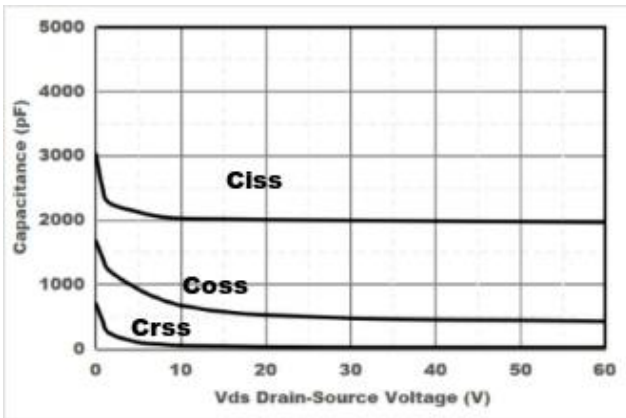


Figure3. Capacitance Characteristics

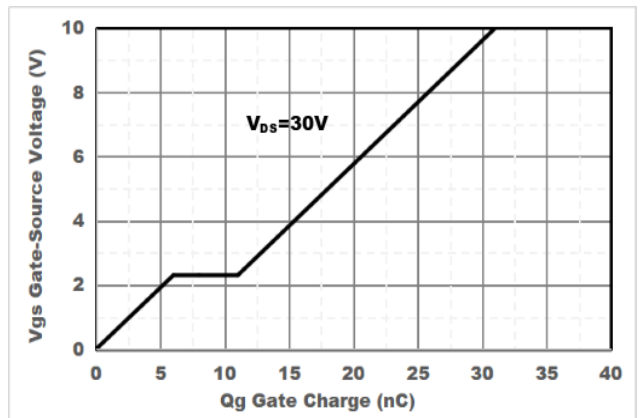


Figure4. Gate Charge

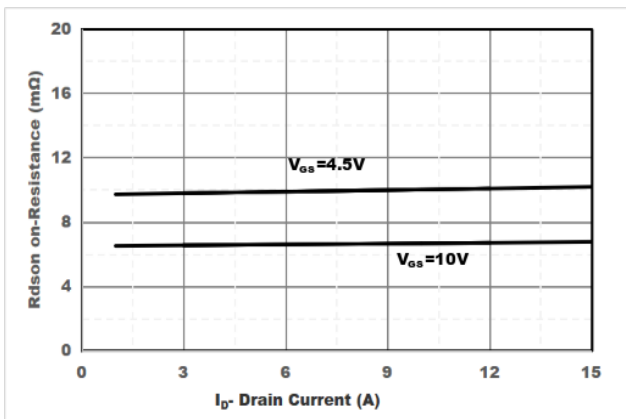


Figure5. Drain-Source on Resistance

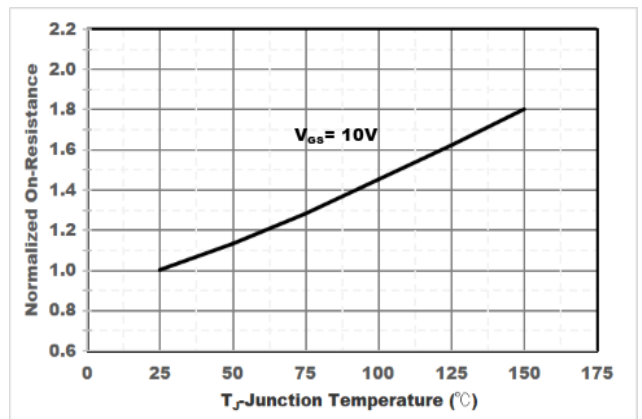


Figure6. Drain-Source on Resistance

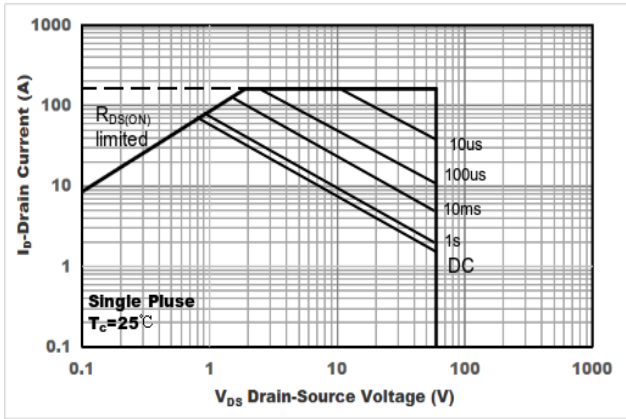


Figure7. Safe Operation Area

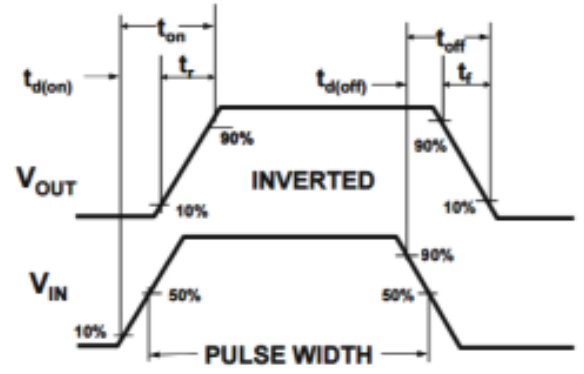
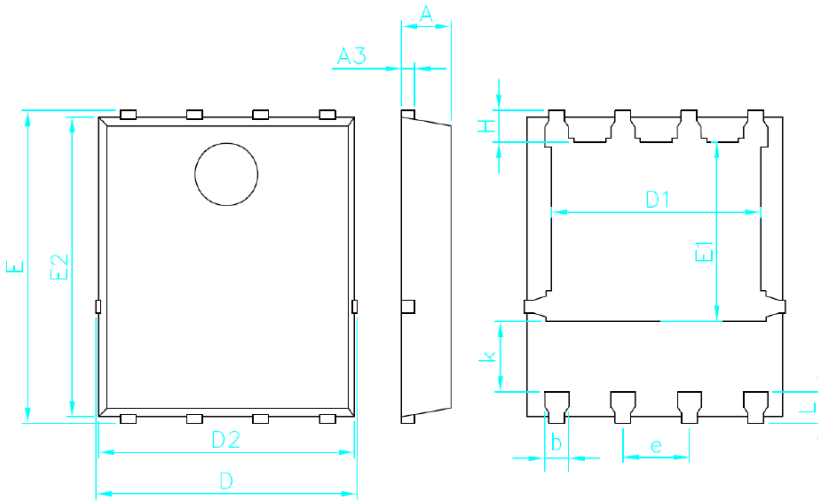


Figure8. Switching wave



# YJG53G06A

## ■ PDFN5060-8L Package information



Symbol	Min	Typ.	Max
A	0.900	0.950	1.000
A3	0.254REF.		
D	4.900	5.000	5.100
E	5.900	6.000	6.100
D1	3.750	3.950	4.150
E1	3.300	3.450	3.600
D2	4.800	4.900	5.000
E2	5.650	5.750	5.850
k	1.200	1.350	1.500
b	0.350	0.400	0.450
e	1.220	1.270	1.320
L	0.510	0.610	0.710
H	0.510	0.610	0.710



## YJG53G06A

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