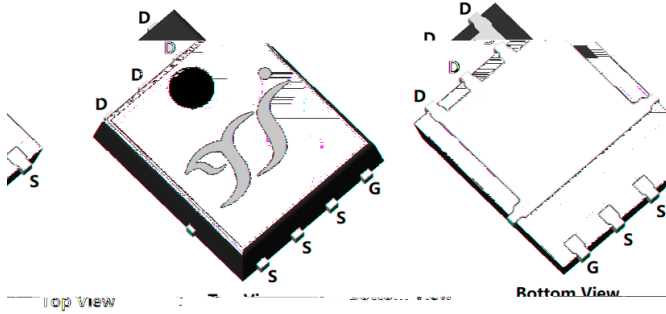
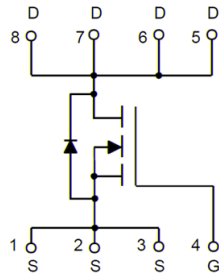


## N-Channel Enhancement Mode Field Effect Transistor



DFN5060-8L

PI



### Product Summary

$V_{DS}$	100V
$I_D$	40A
$R_{DS(ON)}$ (at $V_{GS}=10V$ )	17.5 mohm
$R_{DS(ON)}$ (at $V_{GS}=4.5V$ )	21.5 mohm
100% EAS Tested	
100% $V_{DS}$ Tested	

### General Description

Split gate trench MOSFET technology  
 Excellent package for heat dissipation  
 High density cell design for low  $R_{DS(ON)}$   
 Moisture Sensitivity Level 1  
 Epoxy Meets UL 94 V-0 Flammability Rating  
 Halogen Free

### Applications

Power switching application  
 Hard switched and high frequency circuits  
 Uninterruptible power supply

### 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	$T_A=25$	$I_D$	7.5	A
	$T_A=100$		4.5	
	$T_C=25$		40	
	$T_C=100$		25.3	
Pulsed Drain Current <sup>A</sup>		$I_{DM}$	160	A
Avalanche energy <sup>B</sup>		EAS	81	mJ
Total Power Dissipation <sup>C</sup>	$T_A=25$	$P_D$	2.5	W
	$T_A=100$		1	
	$T_C=25$		60	
	$T_C=100$		24	
Junction and Storage Temperature Range		$T_J, T_{STG}$	-55 +150	

### Thermal resistance

Parameter		Symbol	Typ	Max	Units
Thermal Resistance Junction-to-Ambient <sup>D</sup>	t 10S	R	15	20	/W
Thermal Resistance Junction-to-Ambient <sup>D</sup>	Steady-State		40	50	
Thermal Resistance Junction-to-Case	Steady-State	R	1.7	2.1	

### Ordering Information (Example)

PREFERRED P/N	PACKING CODE	Marking	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
YJG40G10A	F1	YJG40G10A	5000	10000	100000	13 reel



# YJG40G10A

## Electrical Characteristics (T<sub>J</sub>=25 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> =250	100			V
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =100V, V <sub>GS</sub> =0V			1	
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> =250	1.0	1.8	2.5	V
Static Drain-Source On-Resistance	R <sub>DS(on)</sub>	V <sub>GS</sub> =10V, I <sub>D</sub> =20A		14	17.5	m
		V <sub>GS</sub> =4.5V, I <sub>D</sub> =20A		17	21.5	
Diode Forward Voltage	V <sub>SD</sub>	I <sub>S</sub> =20A, V <sub>GS</sub> =0V			1.3	V
Maximum Body-Diode Continuous Current	I <sub>S</sub>				40	A
Gate resistance	R <sub>G</sub>	f=1MHz		1		
<b>Dynamic Parameters</b>						
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =-50V, V <sub>GS</sub> =0V, f=1MHz		1051		pF
Output Capacitance	C <sub>oss</sub>			399		
Reverse Transfer Capacitance	C <sub>rss</sub>			18		
<b>Switching Parameters</b>						
Total Gate Charge	Q <sub>g</sub>	V <sub>GS</sub> =10V, V <sub>DS</sub> =50V, I <sub>D</sub> =25A		16		nC
Gate-Source Charge	Q <sub>gs</sub>			5.6		
Gate-Drain Charge	Q <sub>gd</sub>			2.4		
Reverse Recovery Charge	Q <sub>rr</sub>	I <sub>r</sub> =20A, di/dt=100A/us		42		
Reverse Recovery Time	t <sub>rr</sub>			39.8		
Turn-on Delay Time	t <sub>D(on)</sub>	V <sub>GS</sub> =10V, V <sub>DD</sub> =50V, I <sub>DS</sub> =25A R <sub>GEN</sub> =2.2		39.2		ns
Turn-on Rise Time	t <sub>r</sub>			11		
Turn-off Delay Time	t <sub>D(off)</sub>			53.2		
Turn-off fall Time	t <sub>f</sub>			15.8		

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

B. V<sub>DD</sub>=50V, R<sub>G</sub> 2mH, I<sub>AS</sub>=9A

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

D. -4 board with 2oz. Copper, in a still air environment with TA =25 C. The C. The value in any given

application depends on the user's specific board design.



# YJG40G10A

## Typical Performance Characteristics

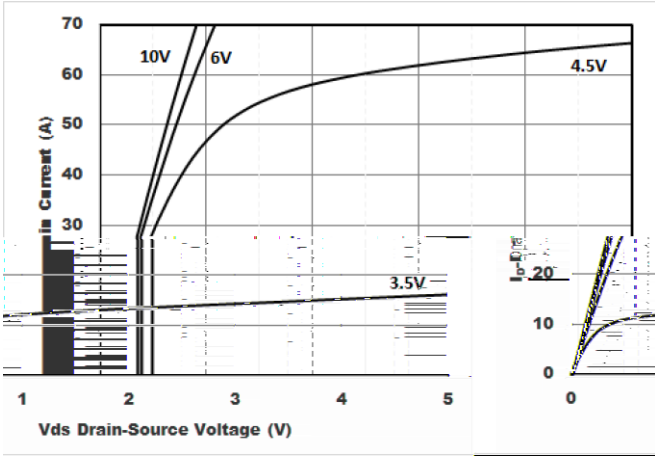


Figure1. Output Characteristics

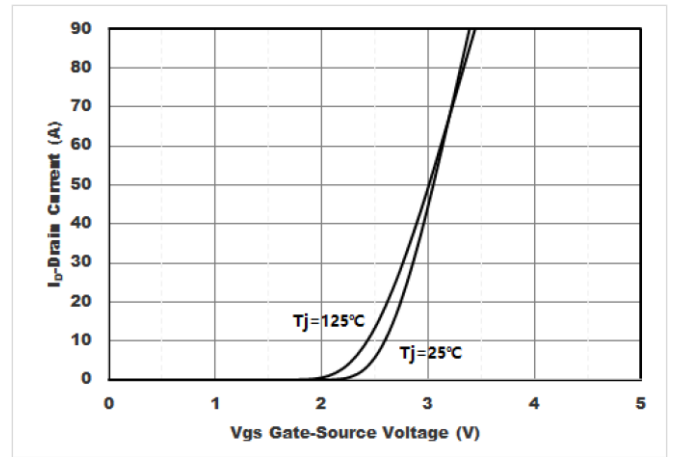


Figure2. Transfer Characteristics

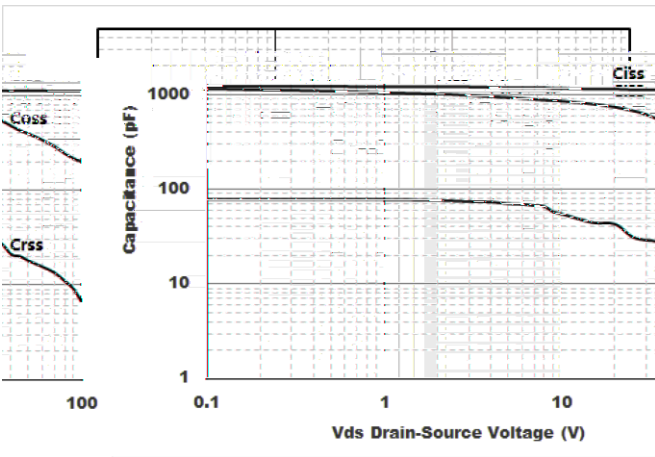


Figure3. Capacitance Characteristics

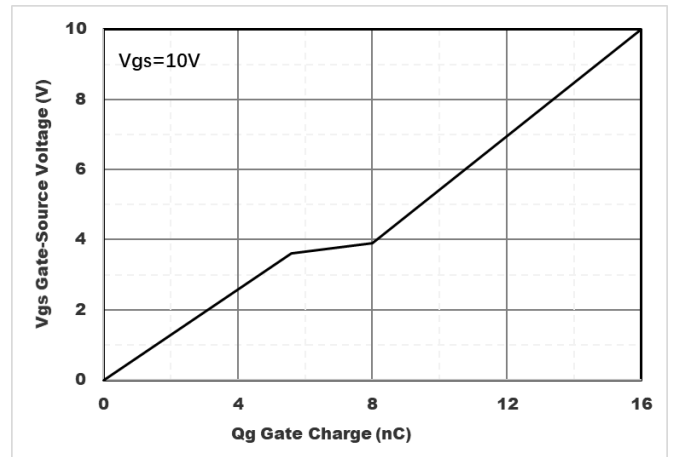


Figure4. Gate Charge

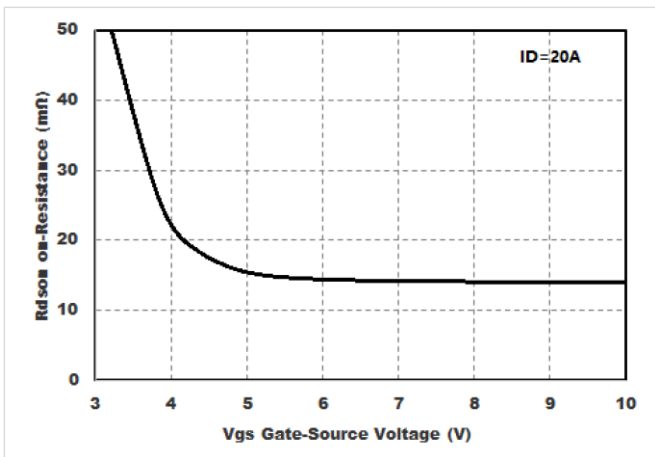


Figure5. : On-Resistance vs. Gate to Source Voltage

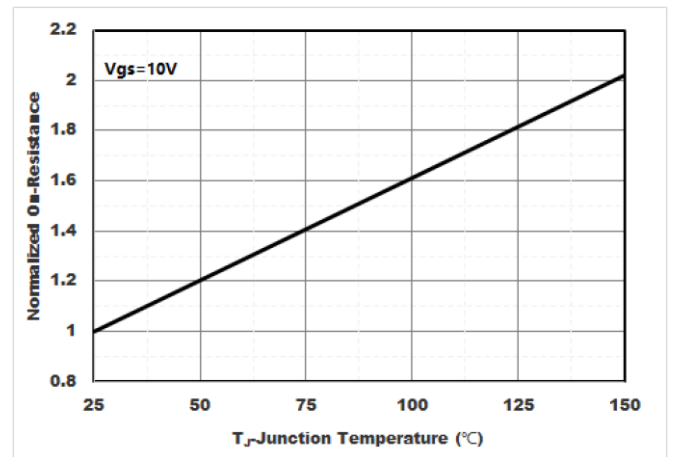


Figure6. Normalized On-Resistance



# YJG40G10A

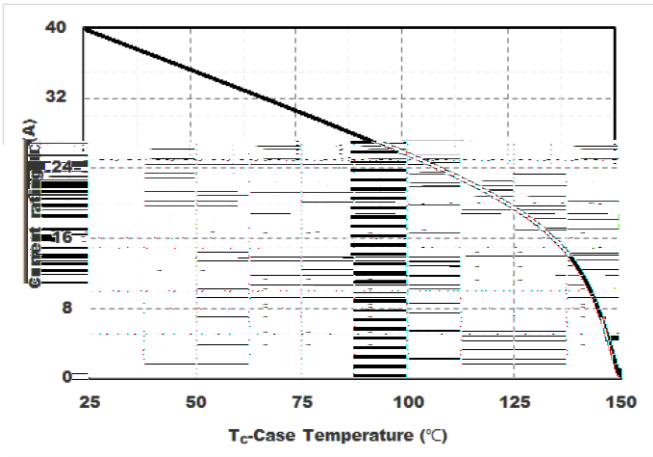


Figure7. Drain current



Figure8.Safe Operation Area

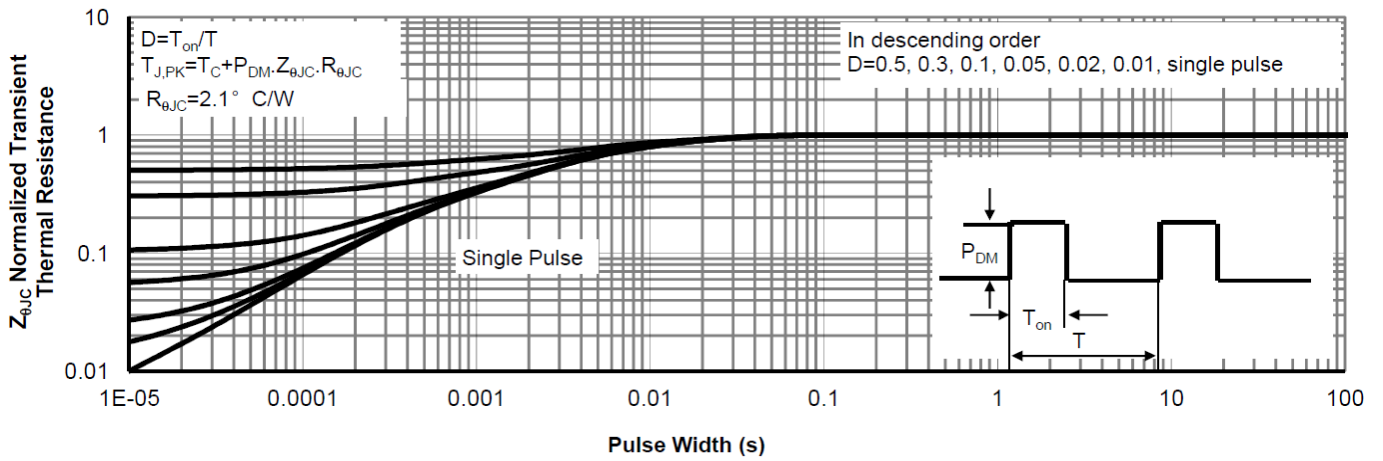
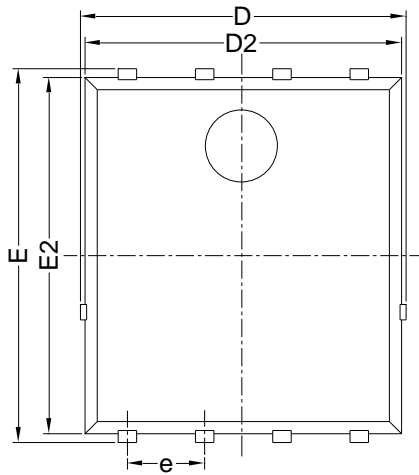


Figure9.Normalized Maximum Transient thermal impedance

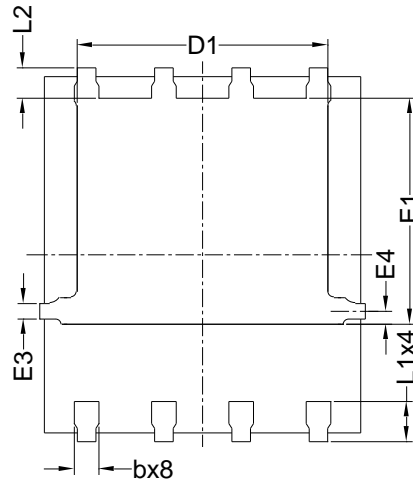


# YJG40G10A

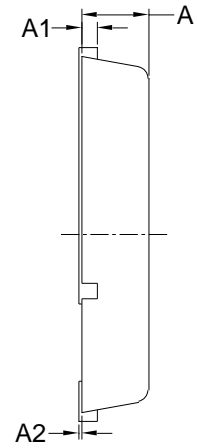
## PDFN5060-8L-B-1.1MM Package Information



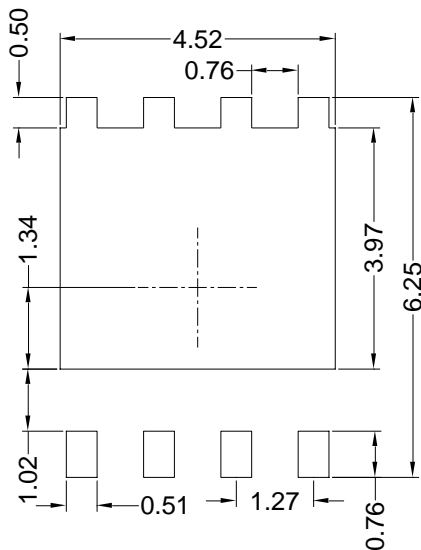
Top View



Bottom View



Side View



Suggested Solder Pad Layout  
Top View

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:  $\pm 0.10$ mm.
3. The pad layout is for reference purposes only.



# YJG40G10A

---

## Disclaimer

The information presented in this document is for reference only. Yangzhou Yangjie Electronic Technology Co., Ltd. reserves the right to make changes without notice for the specification of the products displayed herein to improve reliability, function or design or otherwise.

The product listed herein is designed to be used with ordinary electronic equipment or devices, and not designed to be used with equipment or devices which require high level of reliability and the malfunction of which would directly endanger human life (such as medical instruments, transportation equipment, aerospace machinery, nuclear-reactor controllers, fuel controllers and other safety devices), Yangjie or anyone on its behalf, assumes no responsibility or liability for any damages resulting from such improper use of sale.

This publication supersedes & replaces all information previously supplied. For additional information, please visit our website [http:// www.21yangjie.com](http://www.21yangjie.com)