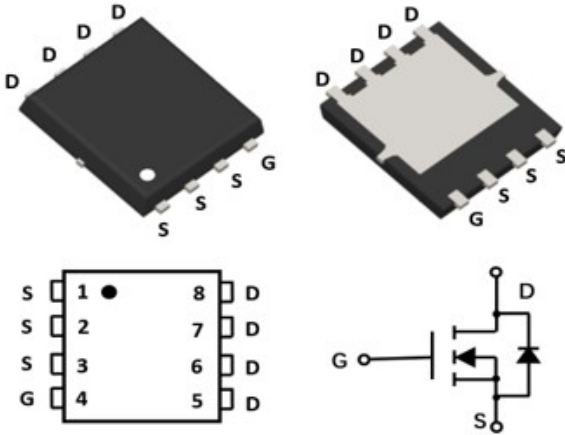


N-Channel Enhancement Mode Field Effect Transistor

PDFN 5X6



Product Summary

- V_{DS} 40 V
- I_D 100 A
- $R_{DS(ON)}$ (at $V_{GS}=10V$) <3.5 mohm
- $R_{DS(ON)}$ (at $V_{GS}=4.5V$) <4.8 mohm
- 100% UIS Tested
- 100% ∇V_{DS} Tested

General Description

- Trench Power LV MOSFET technology
- Excellent package for heat dissipation
- High density cell design for low $R_{DS(ON)}$

Applications

- DC-DC Converters
- Power management functions
- Backlighting

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

Parameter		Symbol	Limit	Unit
Drain-source Voltage		V_{DS}	40	V
Gate-source Voltage		V_{GS}	± 20	V
Drain Current	$T_C=25^\circ\text{C}$	I_D	100	A
	$T_C=100^\circ\text{C}$		63	
Pulsed Drain Current ^A		I_{DM}	360	A
Total Power Dissipation @ $T_C=25^\circ\text{C}$ ^B		P_D	83	W
Total Power Dissipation @ $T_C=100^\circ\text{C}$ ^B		P_D	30	W
Total Power Dissipation @ $T_A=25^\circ\text{C}$ ^C		P_D	6.2	W
Single Pulse Avalanche Energy ^D		E_{AS}	400	mJ
Thermal Resistance Junction-to-Case		$R_{\theta JC}$	1.67	$^\circ\text{C}/\text{W}$
Thermal Resistance Junction-to-Ambient		$R_{\theta JA}$	20	$^\circ\text{C}/\text{W}$
Junction and Storage Temperature Range		T_J, T_{STG}	-55~+150	$^\circ\text{C}$

■ Ordering Information (Example)

PREFERRED P/N	PACKING CODE	Marking	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
YJG100N04A	F1	YJG100N04A	5000	10000	100000	13" reel



YJG100N04A

■ 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	40			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =40V, 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	1.5	2.5	V
Static Drain-Source On-Resistance	R _{DS(ON)}	V _{GS} = 10V, I _D =20A		2.8	3.5	mΩ
		V _{GS} = 4.5V, I _D =20A		4.0	4.8	
Diode Forward Voltage	V _{SD}	I _S =20A, V _{GS} =0V		0.80	1.2	V
Maximum Body-Diode Continuous Current	I _S				100	A
Gate resistance	R _g	f=1 MHz, Open drain		3.5		Ω
Dynamic Parameters						
Input Capacitance	C _{iss}	V _{DS} =20V, V _{GS} =0V, f=1MHZ		4645		pF
Output Capacitance	C _{oss}			436		
Reverse Transfer Capacitance	C _{rss}			360		
Switching Parameters						
Total Gate Charge	Q _g (10V)	V _{GS} =10V, V _{DS} =20V, I _D =20A		102		nC
Total Gate Charge	Q _g (4.5V)			49		
Gate-Source Charge	Q _{gs}			15.8		
Gate-Drain Charge	Q _{gd}			21.9		
Reverse Recovery Charge	Q _{rr}	I _F =20A, di/dt=100A/us		7.4		
Reverse Recovery Time	t _{rr}			22.3		
Turn-on Delay Time	t _{D(on)}	V _{GS} =10V, V _{DD} =20V, I _D =20A R _{GEN} =3Ω		12		ns
Turn-on Rise Time	t _r			54		
Turn-off Delay Time	t _{D(off)}			120		
Turn-off fall Time	t _f			80		

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

B. The power dissipation P_D is based on T_{J(MAX)}=150°C, using junction-to-case thermal resistance, and is more useful in setting the upper dissipation limit for cases where additional heatsinking is used.

C. The value of R_{θJA} is measured with the device mounted on 1in2 FR-4 board with 2oz. Copper, in a still air environment with T_A=25°C.

D. T_J=25°C, V_{DD}=40V, V_G=10V, L=2mH.



■ Typical Performance Characteristics

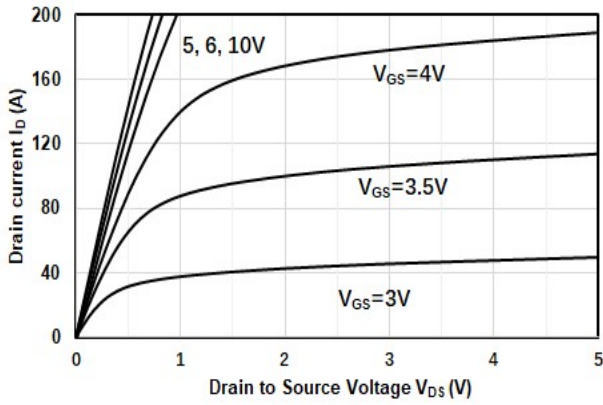


Figure1. Output Characteristics

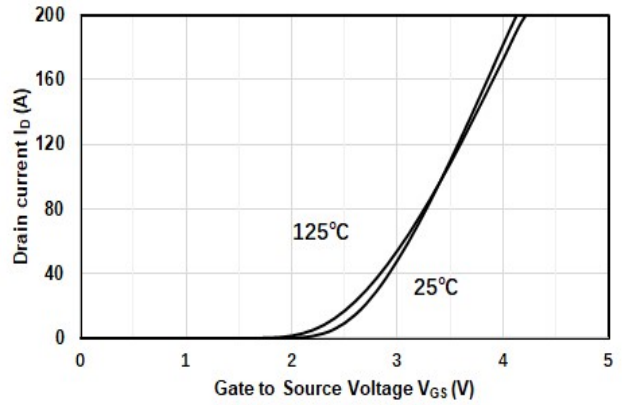


Figure2. Transfer Characteristics

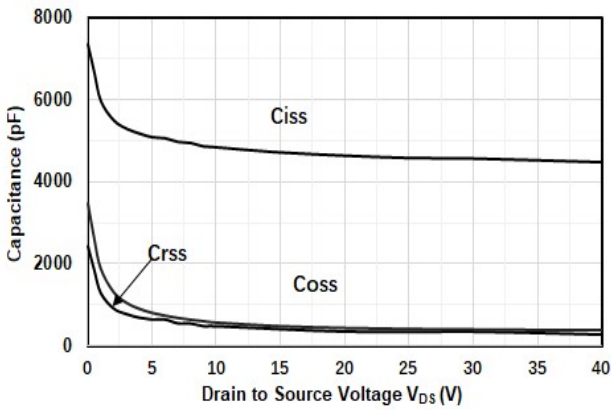


Figure3. Capacitance Characteristics

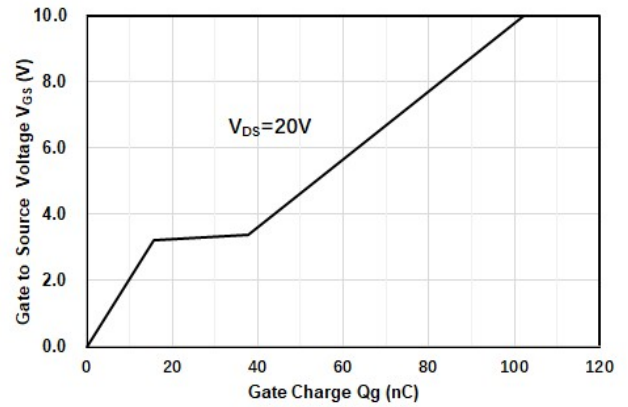


Figure4. Gate Charge

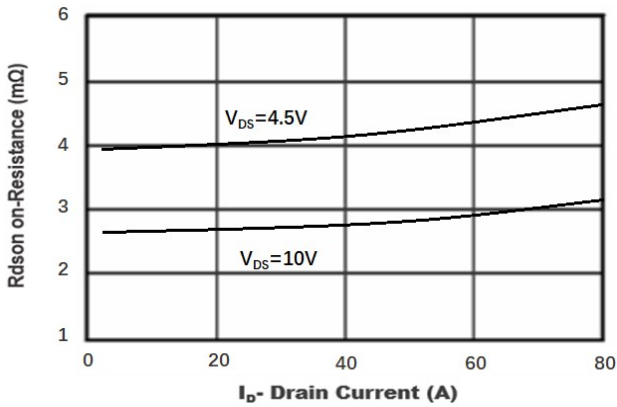


Figure5. Drain-Source on Resistance

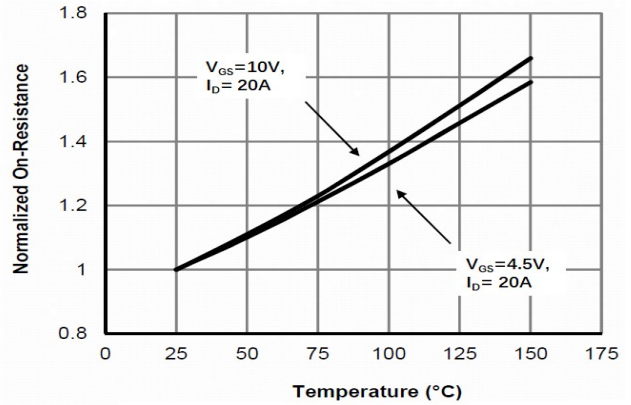


Figure6. Drain-Source on Resistance



YJG100N04A

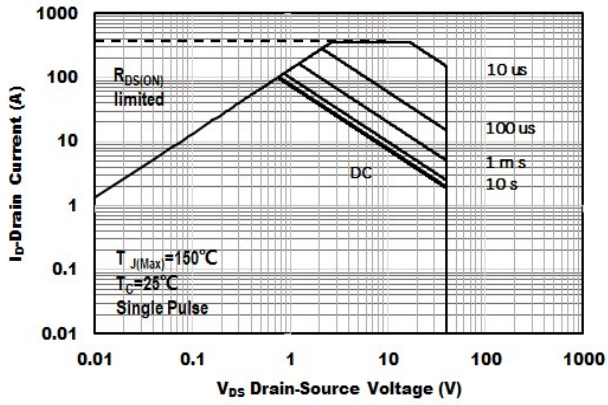


Figure7. Safe Operation Area

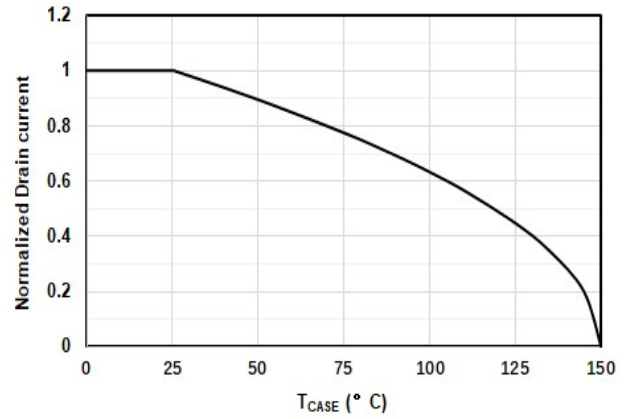


Figure8. Drain current vs. Case Temperature

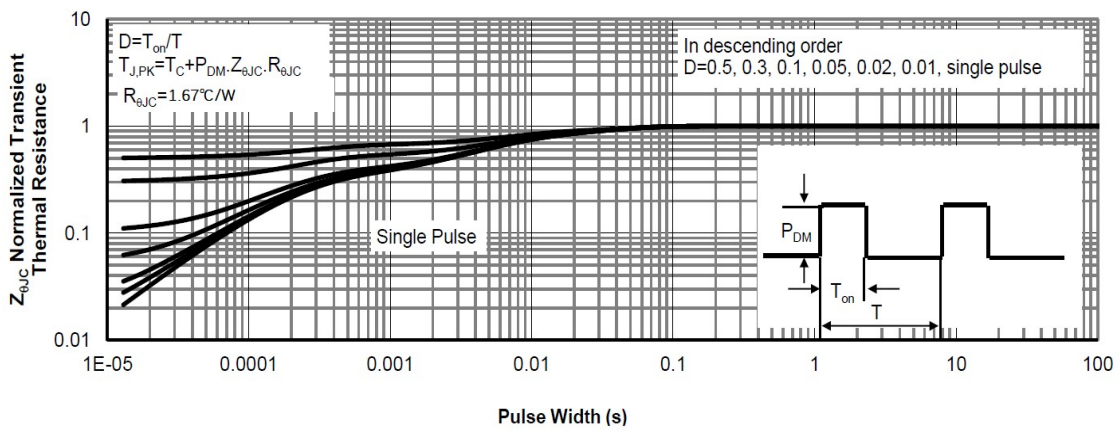
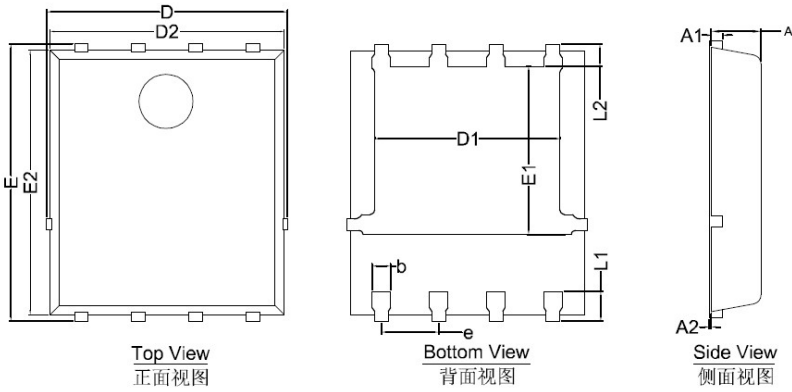


Figure9. Normalized Maximum Transient Thermal Impedance

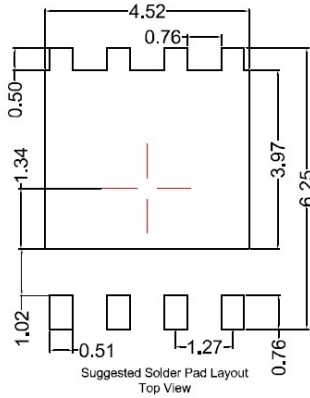


YJG100N04A

■PDFN5x6 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
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: ± 0.10 mm.
 3. The pad layout is for reference purposes only.



YJG100N04A

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