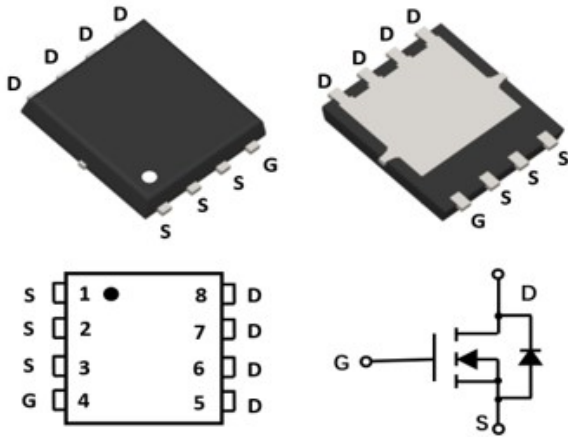


N-Channel Enhancement Mode Field Effect Transistor

PDFN 5X6



Product Summary

- V_{DS} 60V
- I_D 30A
- $R_{DS(ON)}$ (at $V_{GS}=10V$) $<20m\Omega$
- $R_{DS(ON)}$ (at $V_{GS}=4.5V$) $<23m\Omega$

General Description

- Trench Power MV MOSFET technology
- High density cell design for Low $R_{DS(ON)}$
- High Speed switching

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}	60	V
Gate-source Voltage		V_{GS}	± 20	V
Drain Current	$T_C=25^\circ\text{C}$	I_D	30	A
	$T_C=100^\circ\text{C}$		19	
Pulsed Drain Current ^A		I_{DM}	130	A
Total Power Dissipation @ $T_C=25^\circ\text{C}$		P_D	30	W
Single Pulse Avalanche Energy ^B		E_{AS}	100	mJ
Thermal Resistance Junction-to-Case		$R_{\theta JC}$	5	$^\circ\text{C}/\text{W}$
Junction and Storage Temperature Range		T_J, T_{STG}	$-55\sim+150$	$^\circ\text{C}$

■ Ordering Information (Example)

PREFERED P/N	PACKING CODE	Marking	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
YJG30N06A	F1	YJG30N06A	5000	10000	100000	13" reel



YJG30N06A

■ Electrical Characteristics (T_J=25℃ 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	1.5	2.5	V
Static Drain-Source On-Resistance	R _{DS(ON)}	V _{GS} = 10V, I _D =15A		16	20	mΩ
		V _{GS} = 4.5V, I _D =10A		17.5	23	
Diode Forward Voltage	V _{SD}	I _S =10A,V _{GS} =0V		0.85	1.2	V
Maximum Body-Diode Continuous Current	I _S				30	A
Dynamic Parameters						
Input Capacitance	C _{iss}	V _{DS} =30V,V _{GS} =0V,f=1MHZ		2027		pF
Output Capacitance	C _{oss}			132		
Reverse Transfer Capacitance	C _{rss}			116		
Switching Parameters						
Total Gate Charge	Q _g	V _{GS} =10V,V _{DS} =30V,I _D =10A		51		nC
Gate-Source Charge	Q _{gs}			8.1		
Gate-Drain Charge	Q _{gd}			11.4		
Reverse Recovery Charge	Q _{rr}	I _F =20A, di/dt=500A/us		11.4		
Reverse Recovery Time	t _{rr}			22		
Turn-on Delay Time	t _{D(on)}	V _{GS} =10V, V _{DD} =30V, I _D =2A, R _{GEN} =3Ω		11		ns
Turn-on Rise Time	t _r			21		
Turn-off Delay Time	t _{D(off)}			40		
Turn-off fall Time	t _f			23		

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

B. R_{θJA} is the sum of the junction-to-case and case-to-ambient thermal resistance, where the case thermal reference is defined as the solder mounting surface of the drain pins. R_{θJC} is guaranteed by design, while R_{θJA} is determined by the board design. The maximum rating presented here is based on mounting on a 1 in 2 pad of 2oz copper.

■ Typical Performance Characteristics

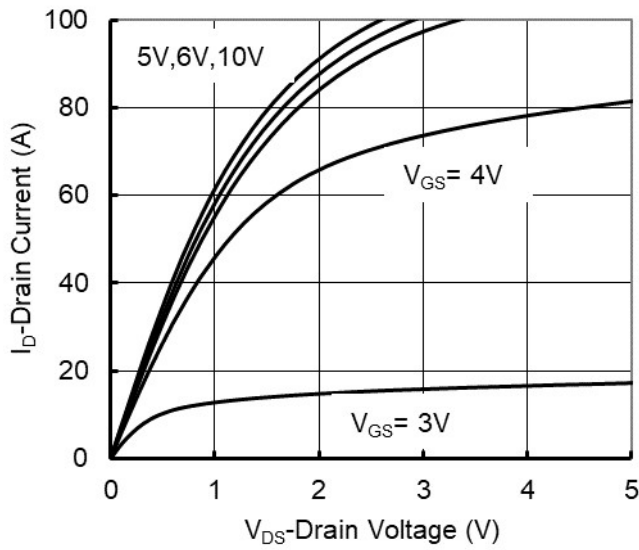


Figure 1. Output Characteristics

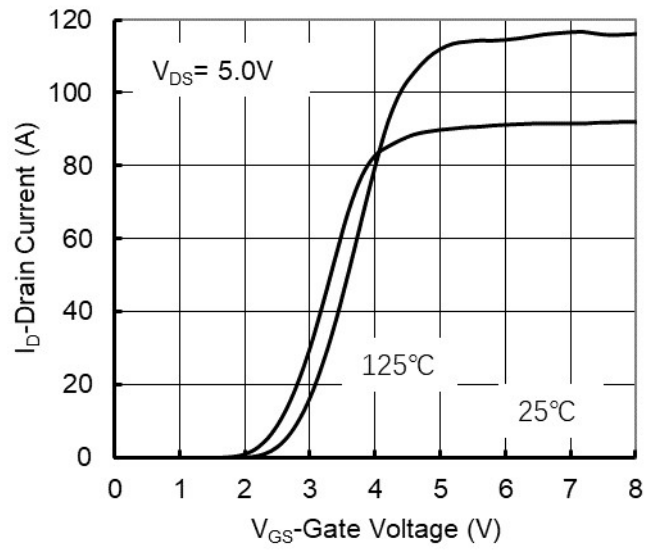


Figure 2. Transfer Characteristics

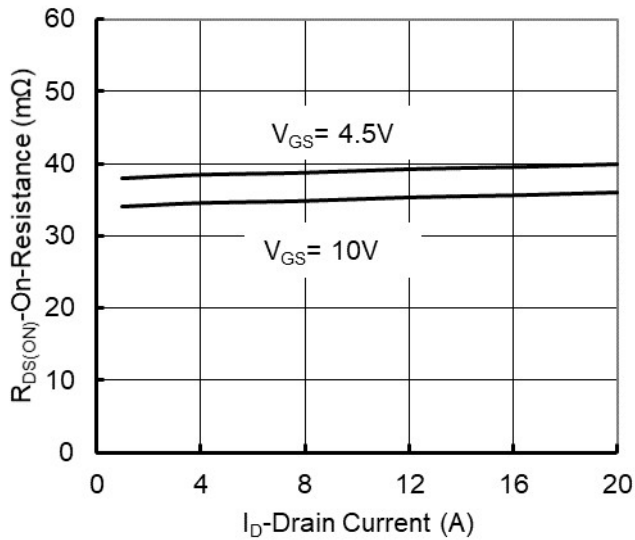


Figure 3. On-Resistance vs. Drain Current and Gate Voltage

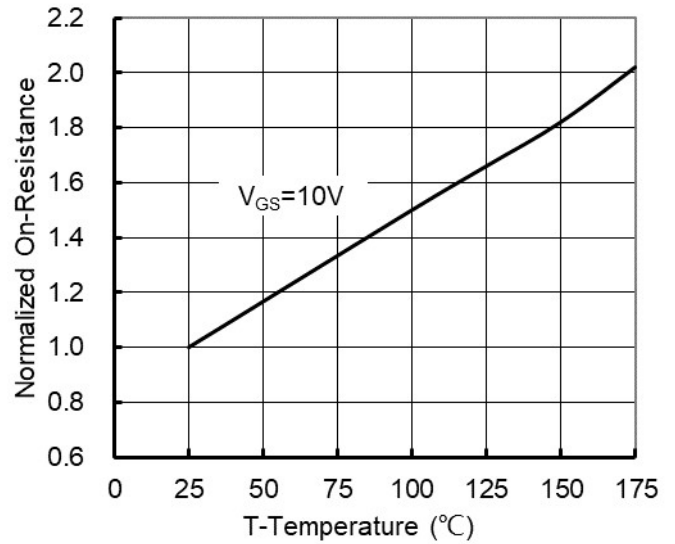


Figure 4. On-Resistance vs. Junction Temperature

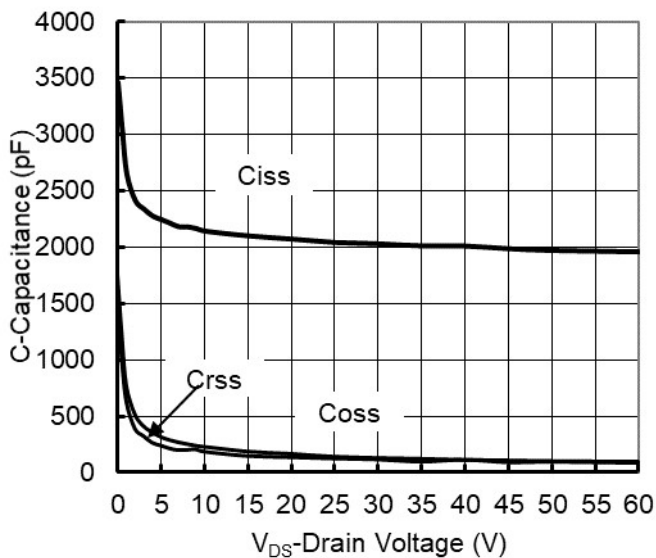


Figure 5. Capacitance Characteristics

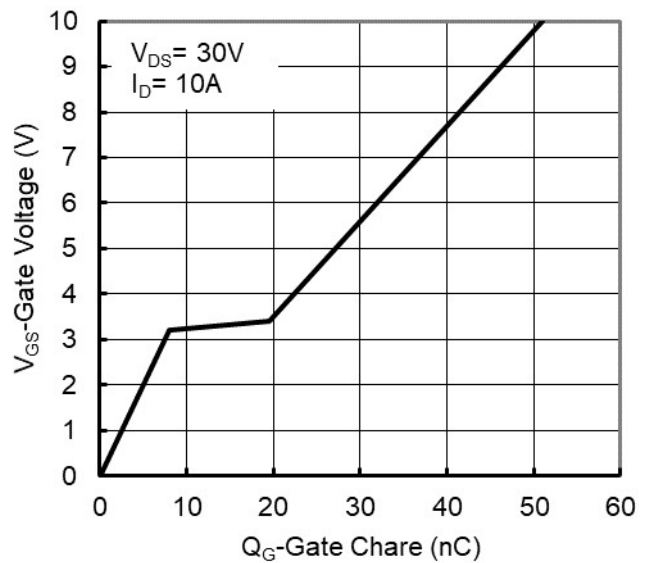


Figure 6. Gate Charge

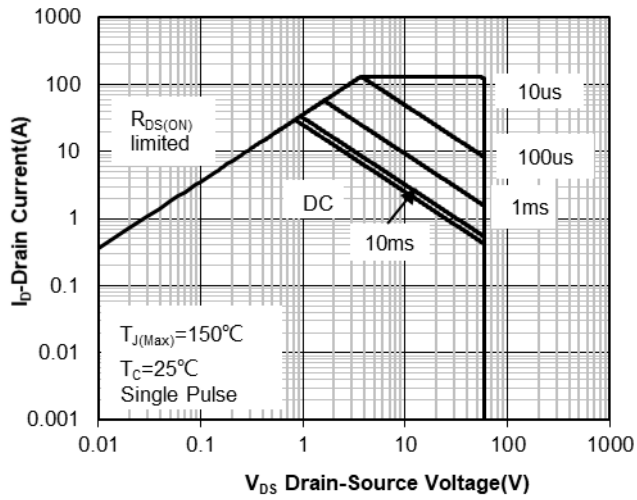


Figure 7. Safe Operation Area

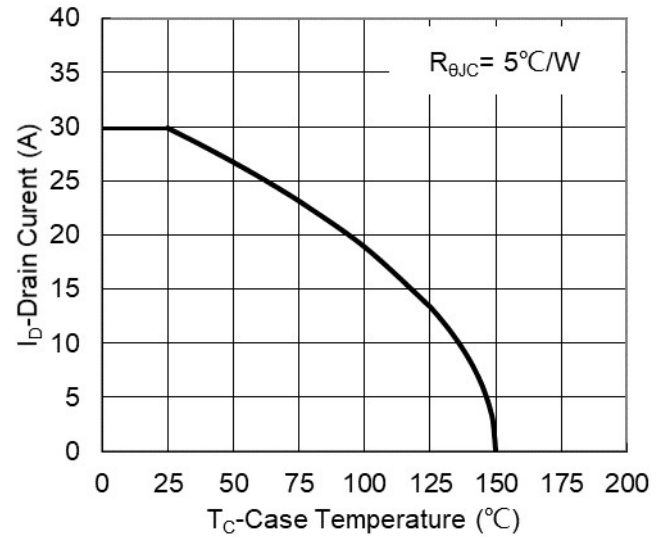


Figure 8. Maximum Continuous Drain Current vs Case Temperature

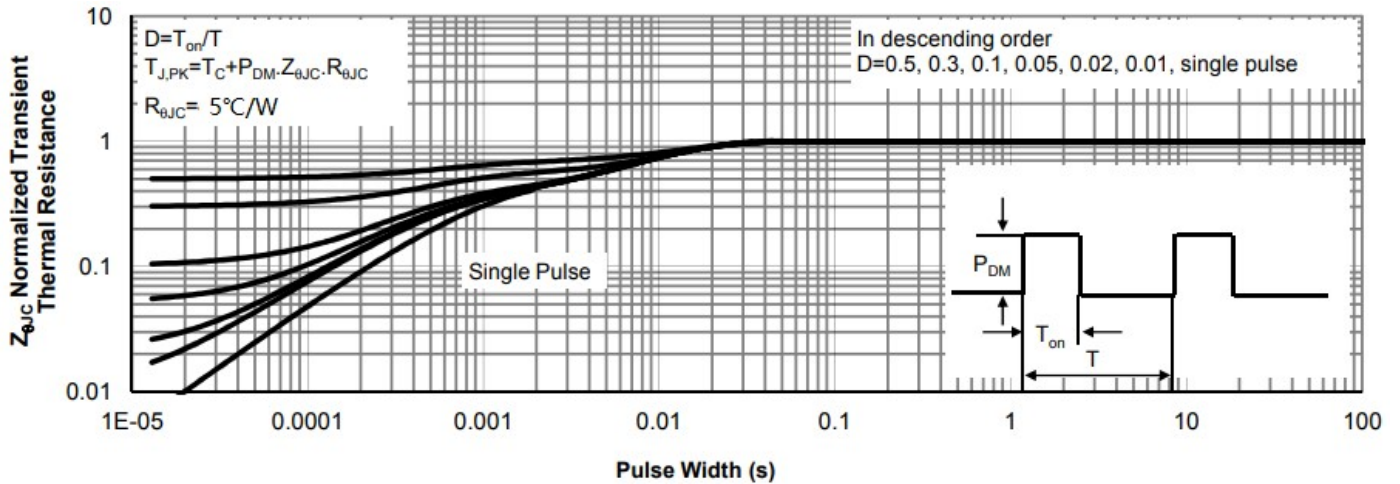
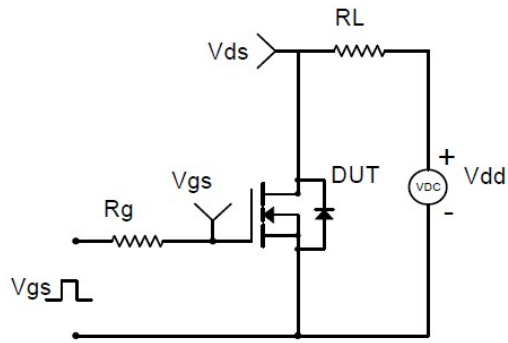
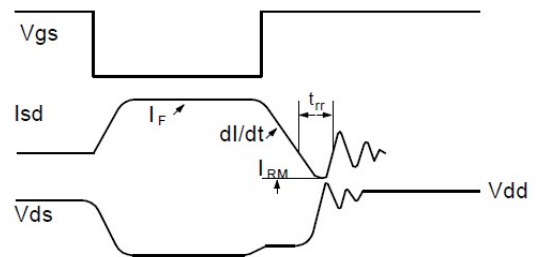
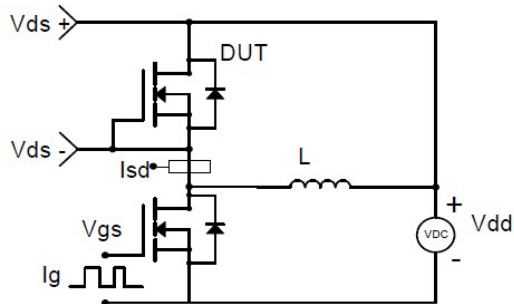


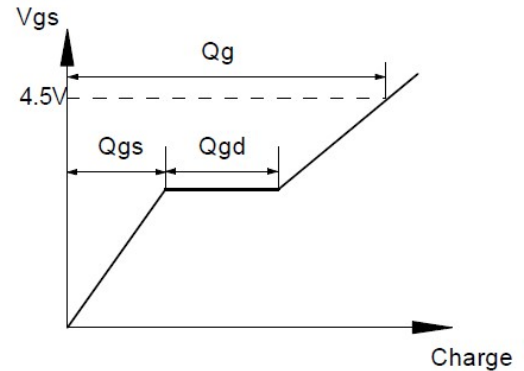
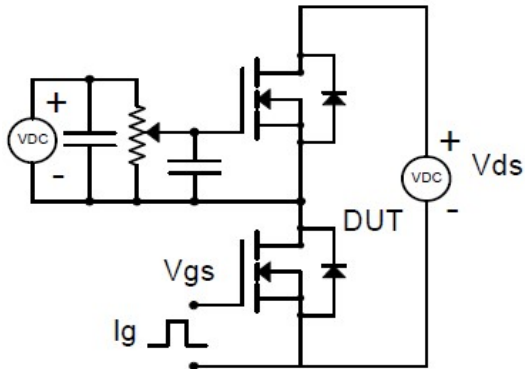
Figure 9. Normalized Maximum Transient Thermal Impedance



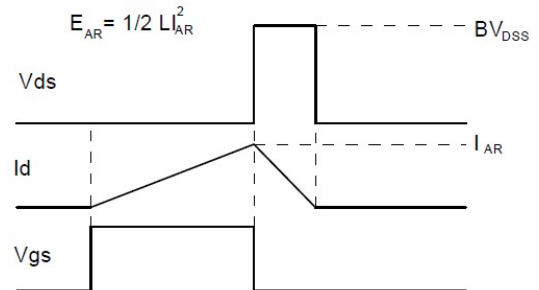
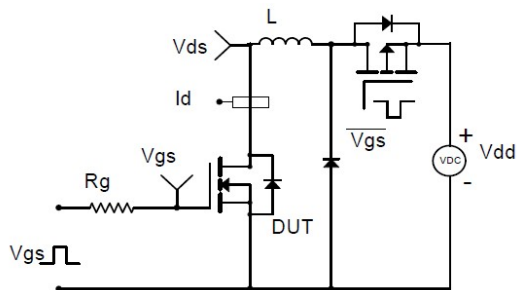
Resistive Switching Test Circuit & Waveforms



Diode Recovery Test Circuit & Waveforms



Gate Charge Test Circuit & Waveform

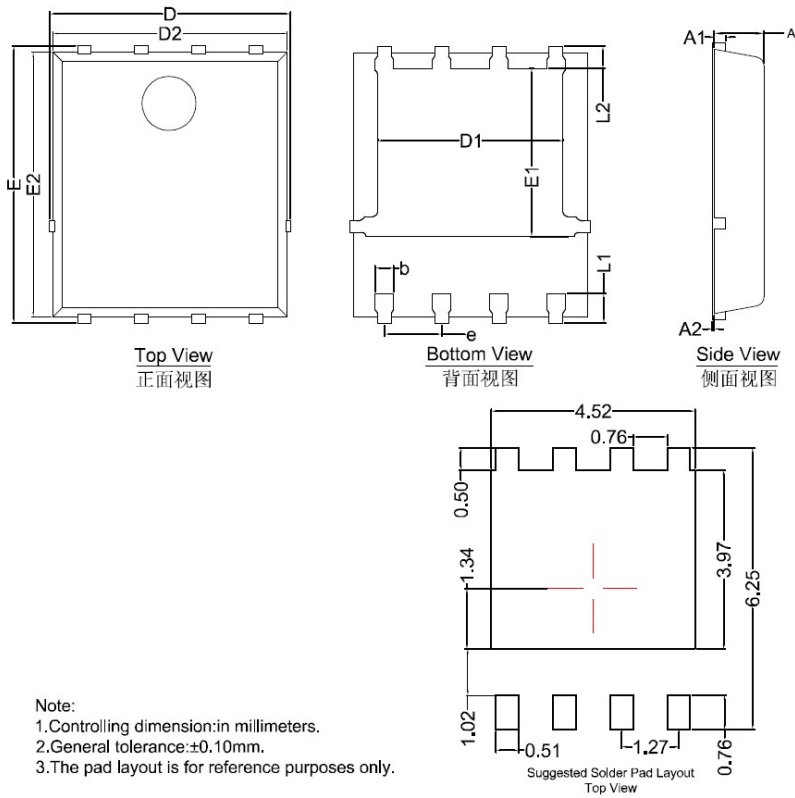


Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



YJG30N06A

■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.



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