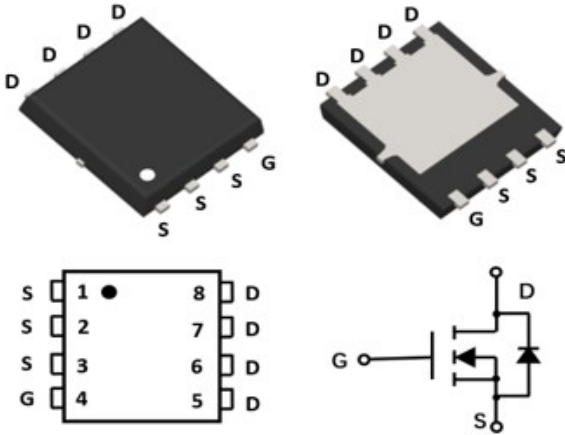


N-Channel Enhancement Mode Field Effect Transistor

PDFN 5X6



Product Summary

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

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	I_D	$T_C=25^\circ\text{C}$	30
		$T_C=100^\circ\text{C}$	19
Pulsed Drain Current ^A	I_{DM}	130	A
Total Power Dissipation @ $T_C=25^\circ\text{C}$	P_D	45	W
Single Pulse Avalanche Energy ^B	E_{AS}	100	mJ
Thermal Resistance Junction-to-Case	$R_{\theta JC}$	2.8	$^\circ\text{C}/\text{W}$
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
YJG30N06A	F1	YJG30N06A	5000	10000	100000	13" reel



YJG30N06A

■ 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	1.5	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		ns
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

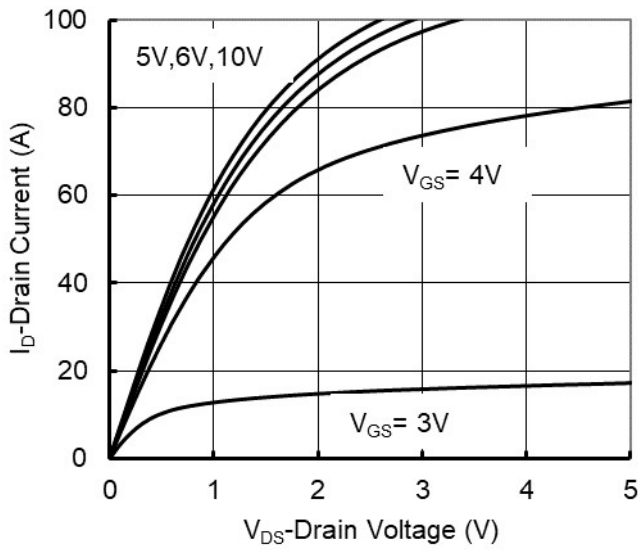


Figure 1. Output Characteristics

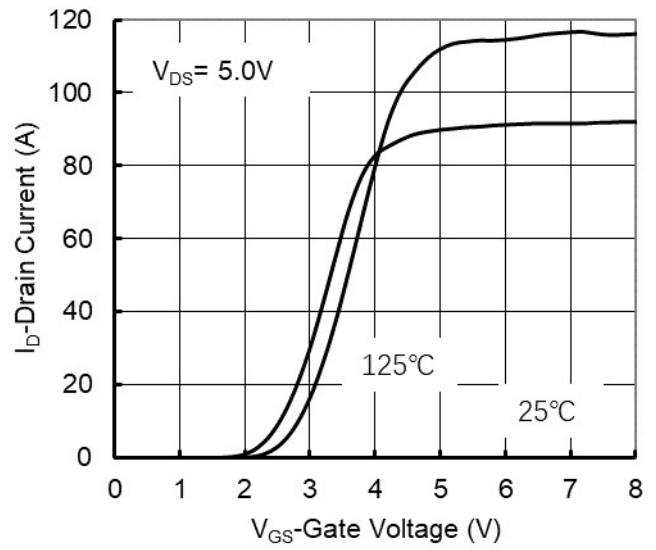


Figure 2. Transfer Characteristics

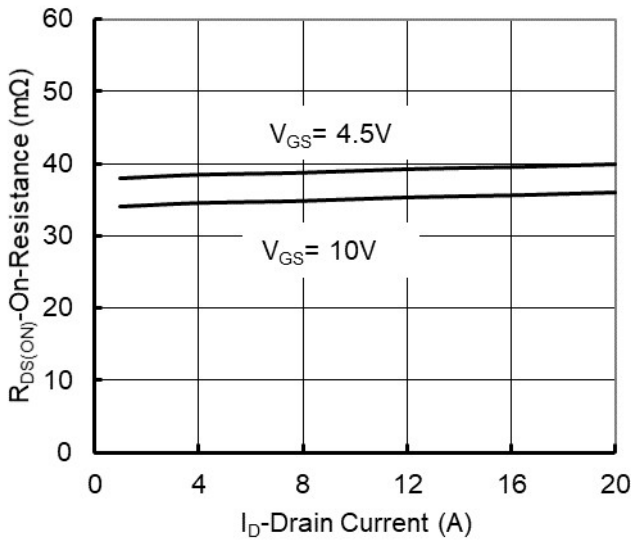


Figure 3. On-Resistance vs. Drain Current and Gate Voltage

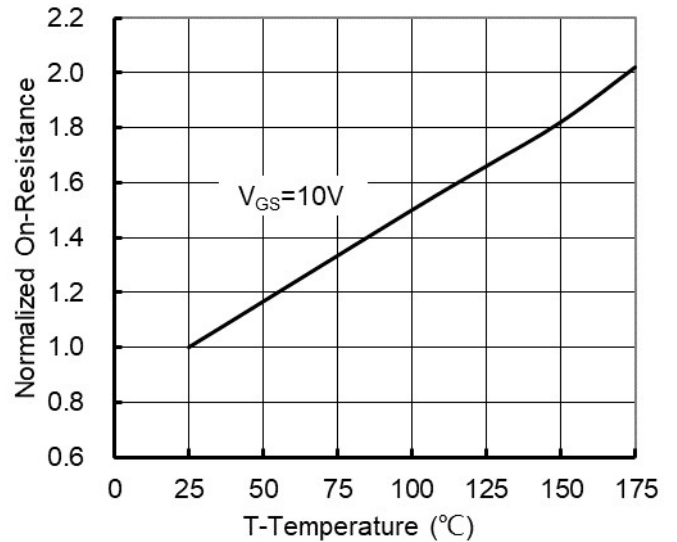


Figure 4. On-Resistance vs. Junction Temperature

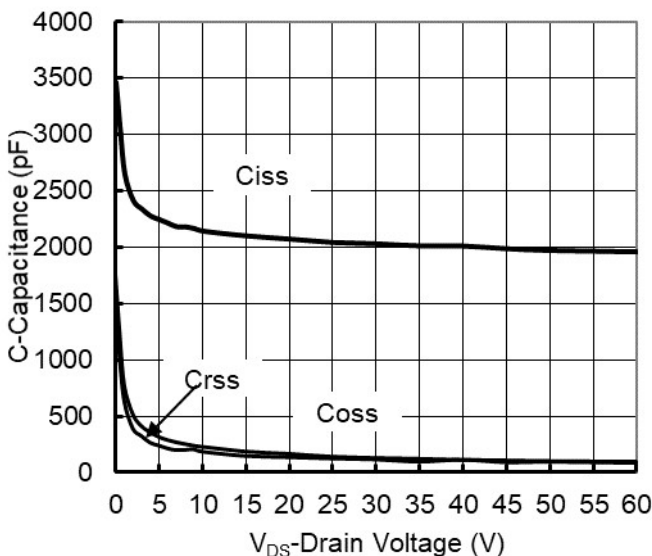


Figure 5. Capacitance Characteristics

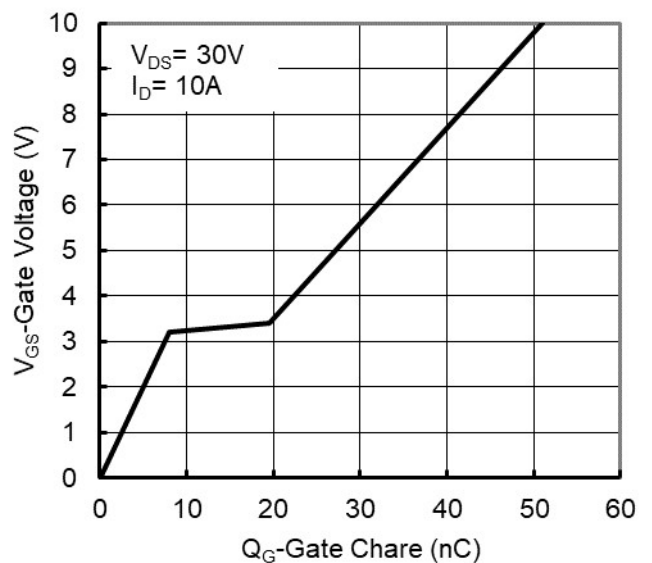


Figure 6. Gate Charge



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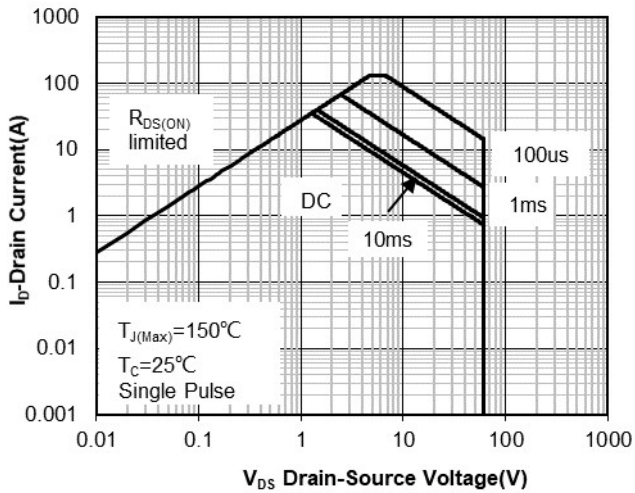


Figure 7. Safe Operation Area

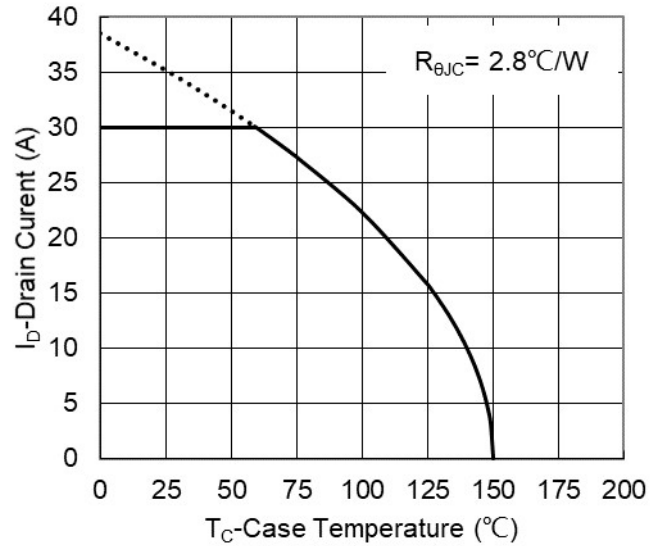


Figure 8. Maximum Continuous Drain Current vs Case Temperature

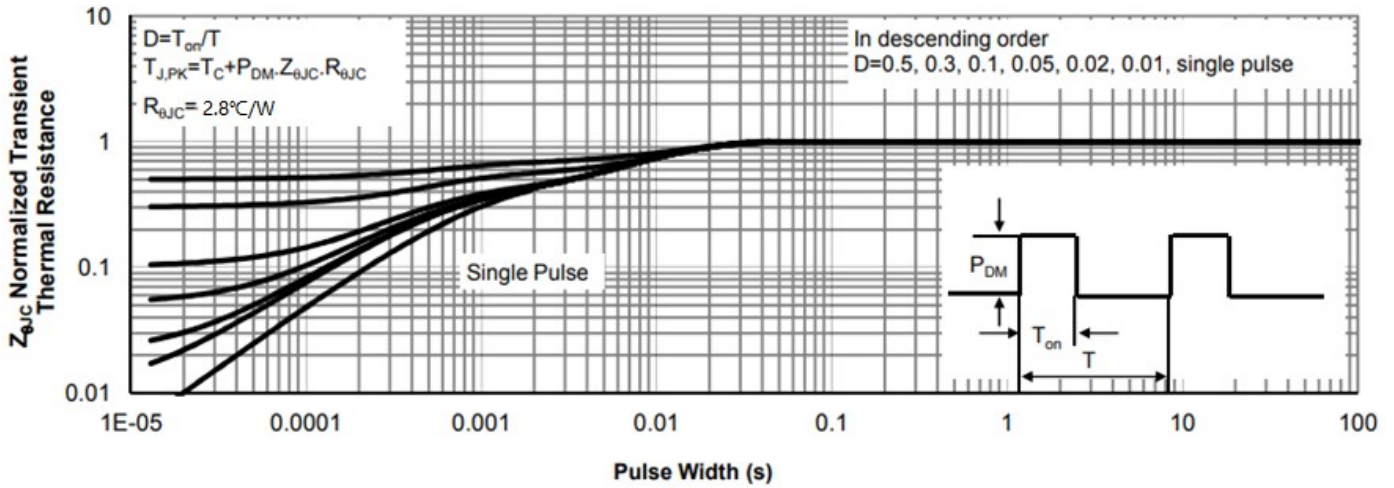
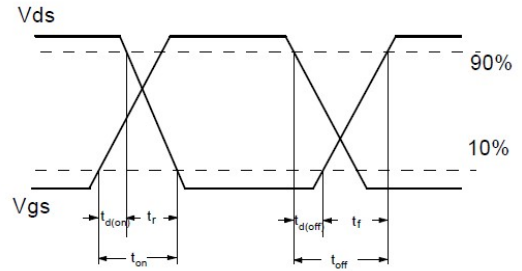
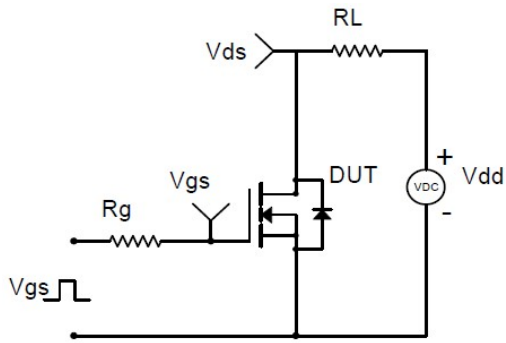
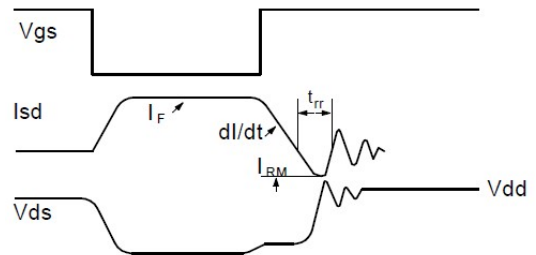
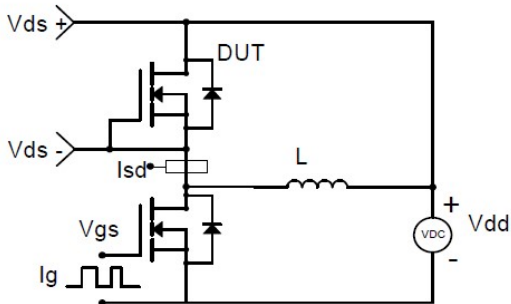


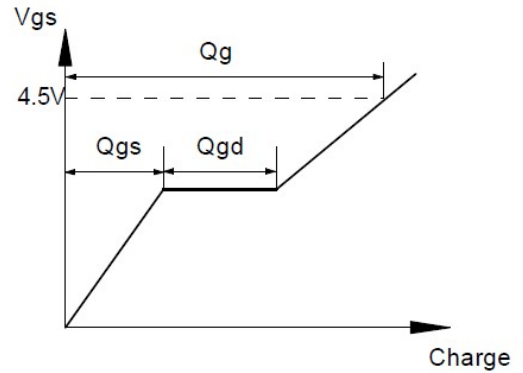
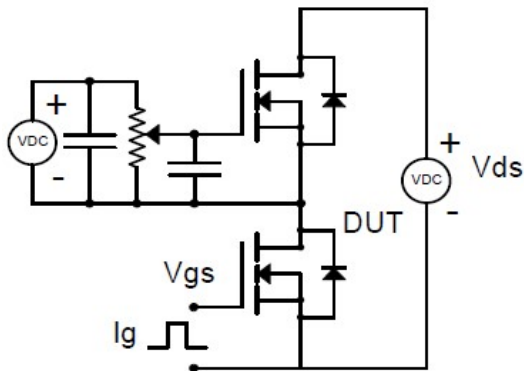
Figure 9. Normalized Maximum Transient Thermal Impedance



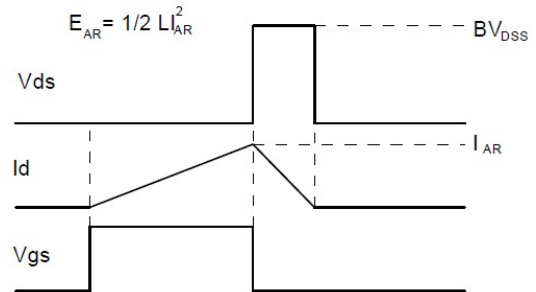
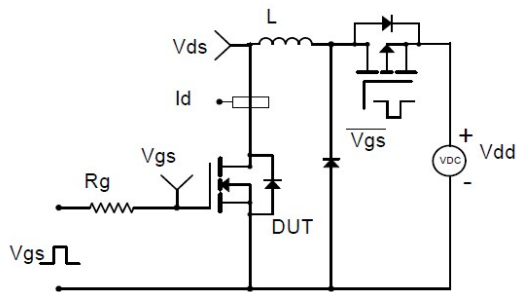
Resistive Switching Test Circuit & Waveforms



Diode Recovery Test Circuit & Waveforms



Gate Charge Test Circuit & Waveform

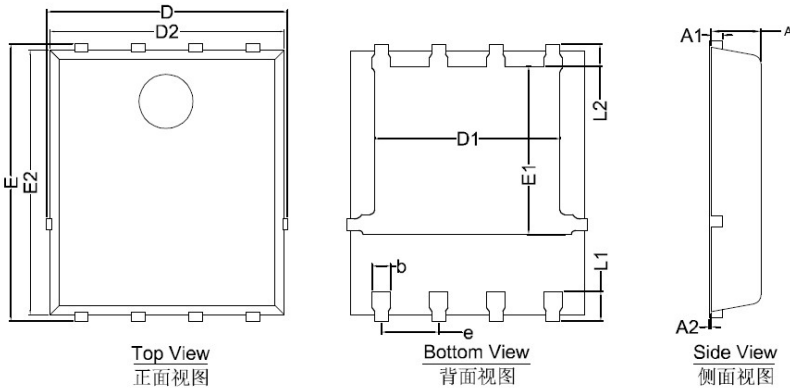


Unclamped Inductive Switching (UIS) Test Circuit & Waveforms

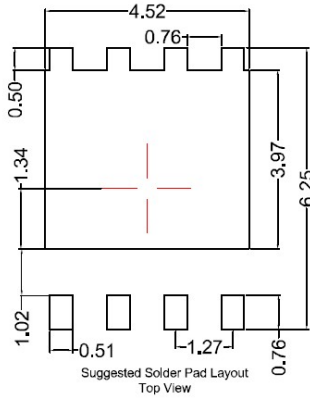


YJG30N06A

■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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