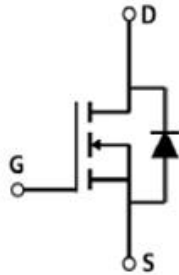
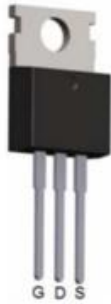


N-Channel Enhancement Mode Field Effect Transistor



Product Summary

- V_{DS} 60V
- I_D 150A
- $R_{DS(ON)}$ (at $V_{GS}=10V$) <5.5mohm
- 100% UIS Tested
- 100% ∇V_{DS} Tested

General Description

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

TO-220

Applications

- DC-DC Converters
- Power management functions
- Industrial and Motor Drive applications

■ 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	150	A
	$T_C=100^\circ\text{C}$		105	
Pulsed Drain Current ^A		I_{DM}	500	A
Total Power Dissipation	$T_C=25^\circ\text{C}$	P_D	225	W
	$T_C=100^\circ\text{C}$		112	W
Single Pulse Avalanche Energy		E_{AS}	550	mJ
Thermal Resistance Junction-to-Case ^B		$R_{\theta JC}$	0.67	$^\circ\text{C}/\text{W}$
Junction and Storage Temperature Range		T_J, T_{STG}	-55~+175	$^\circ\text{C}$

■ Ordering Information (Example)

PREFERRED P/N	PACKING CODE	Marking	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
YJP150N06AQ	B1	YJP150N06AQ	50	1000	5000	Tube



YJP150N06AQ

■ 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
					5	uA
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	2.0	3.0	4.0	V
Static Drain-Source On-Resistance	R _{DS(ON)}	V _{GS} = 10V, I _D =75A		4.6	5.5	mΩ
Diode Forward Voltage	V _{SD}	I _S =40A, V _{GS} =0V		0.8	1.2	V
Maximum Body-Diode Continuous Current	I _S				150	A
Dynamic Parameters						
Input Capacitance	C _{iss}	V _{DS} =30V, V _{GS} =0V, f=1MHZ		3135		pF
Output Capacitance	C _{oss}			521		
Reverse Transfer Capacitance	C _{rss}			306		
Switching Parameters						
Total Gate Charge	Q _g	V _{GS} =10V, V _{DS} =30V, I _D =55A		77		nC
Gate-Source Charge	Q _{gs}			18		
Gate-Drain Charge	Q _{gd}			30		
Reverse Recovery Charge	Q _{rr}	I _F =55A, di/dt=100A/us		31		
Reverse Recovery Time	t _{rr}			32		
Turn-on Delay Time	t _{D(on)}	V _{GS} =10V, V _{DD} =30V, R _{GEN} =3Ω		15		ns
Turn-on Rise Time	t _r			89		
Turn-off Delay Time	t _{D(off)}			36		
Turn-off fall Time	t _f			91		

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

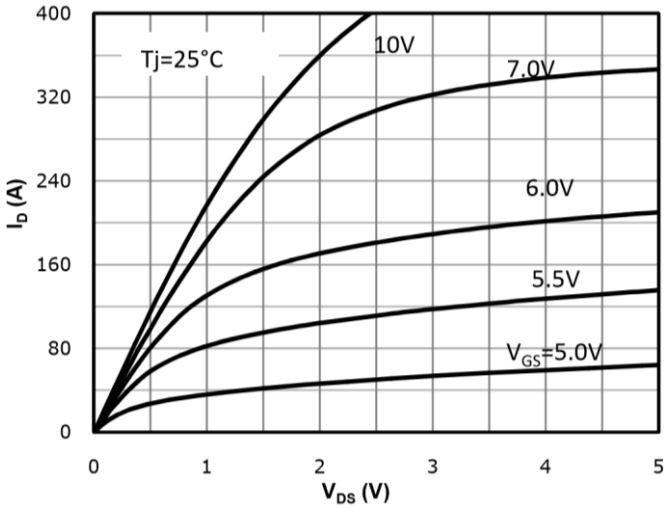


Figure 1. Output Characteristics

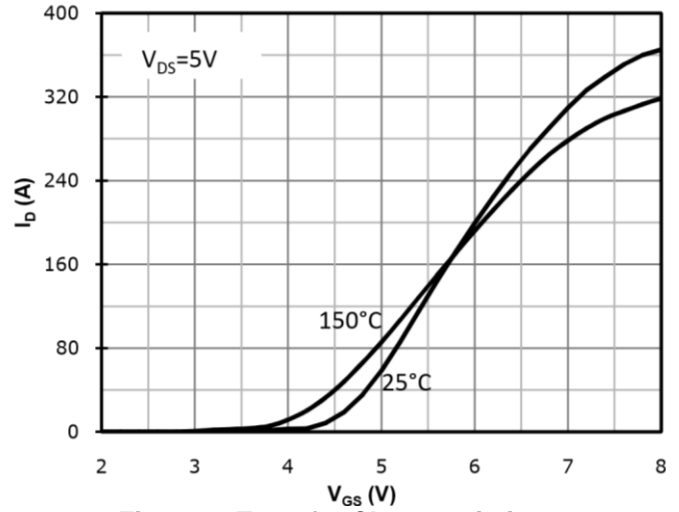


Figure 2. Transfer Characteristics

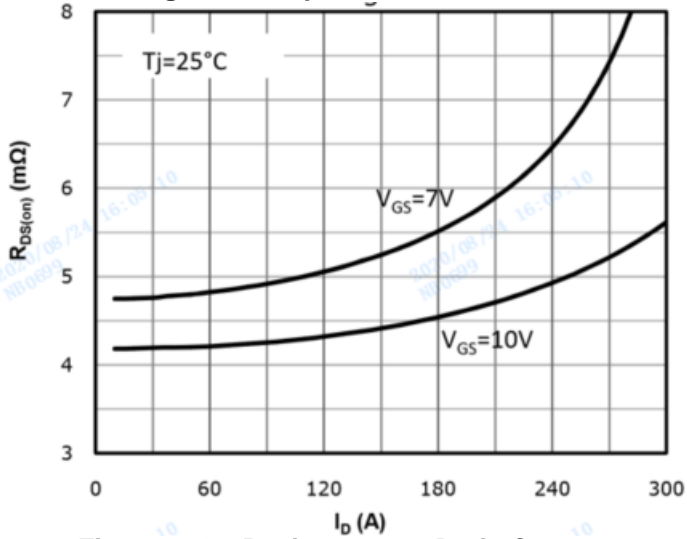


Figure 3. On-Resistance vs. Drain Current and Gate Voltage

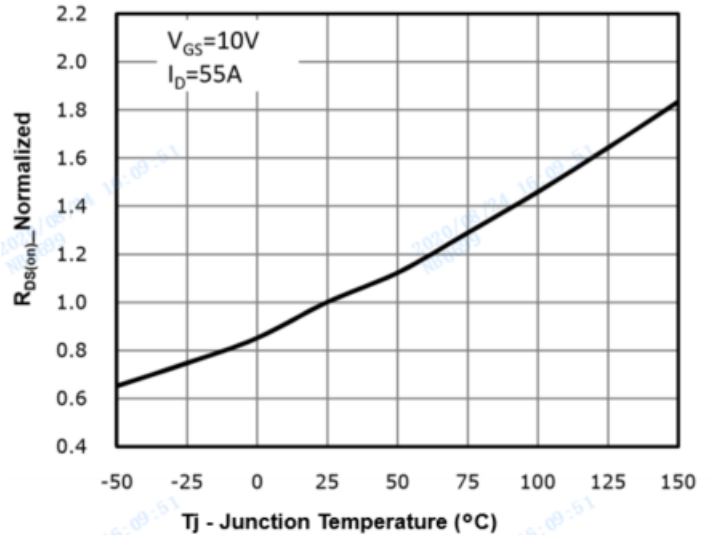


Figure 4. On-Resistance vs. Junction Temperature

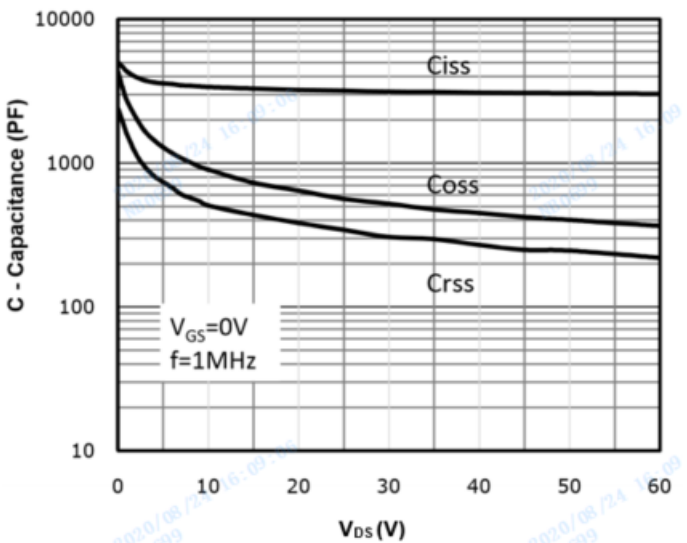


Figure 5. Capacitance Characteristics

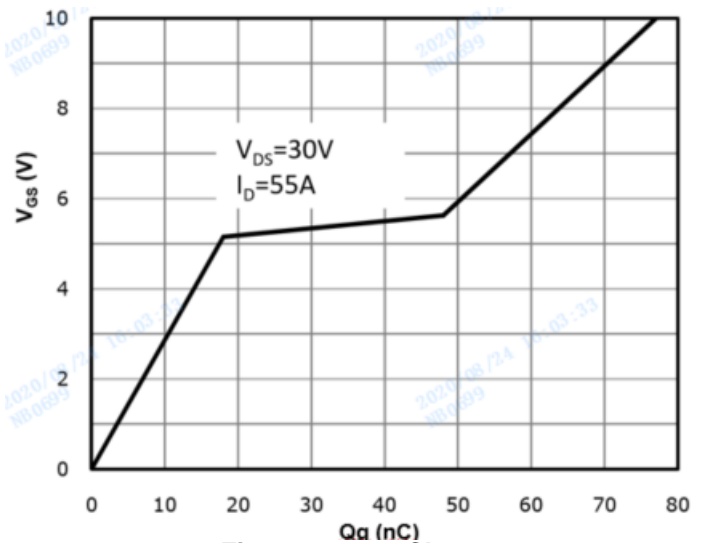


Figure 6. Gate Charge



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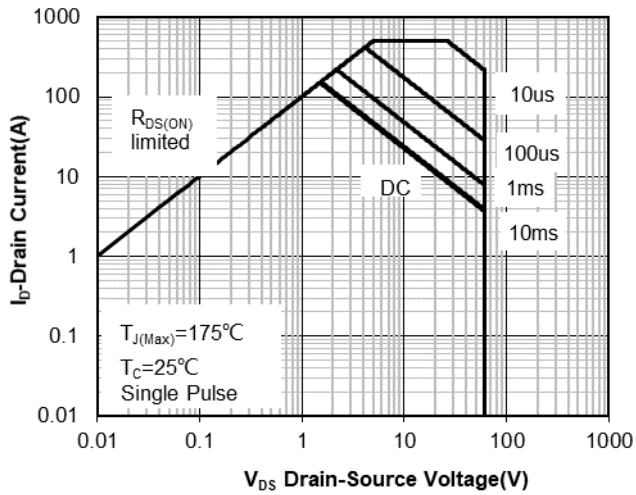


Figure 7. Safe Operation Area

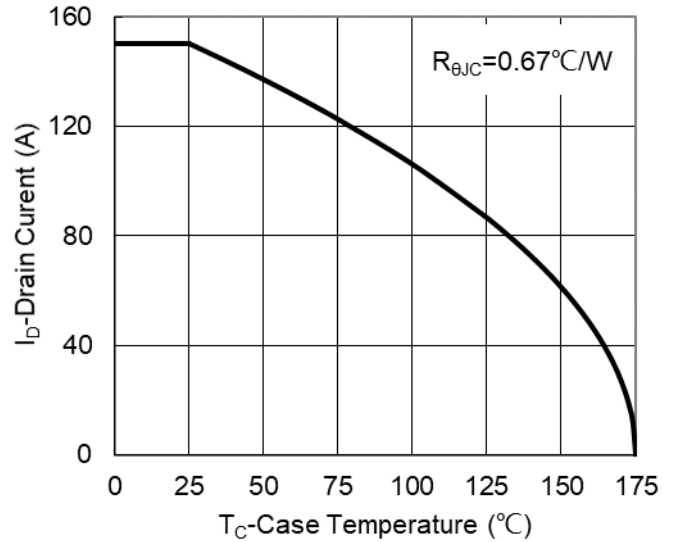


Figure 8. Maximum Continuous Drain Current vs Case Temperature

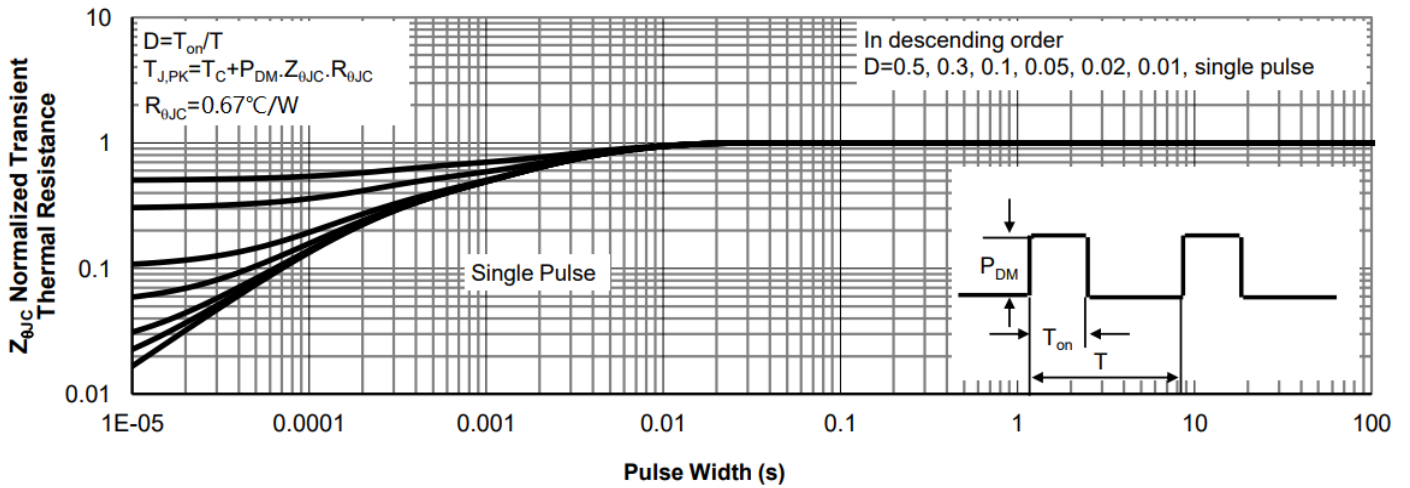
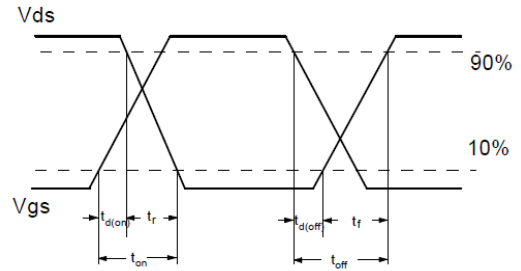
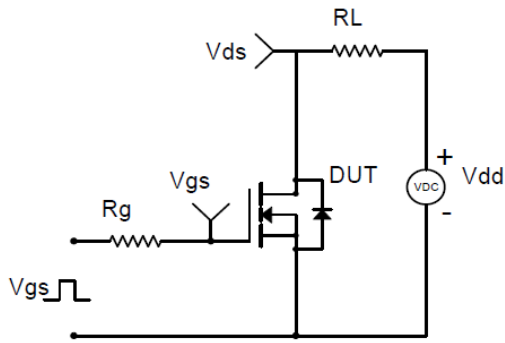
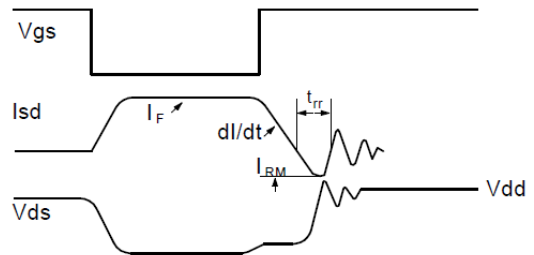
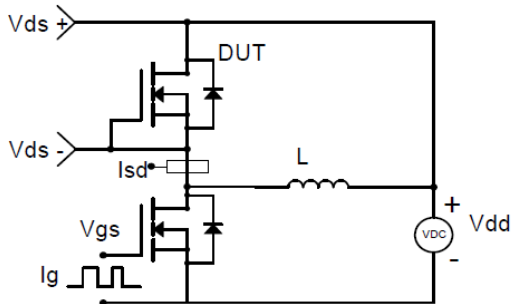


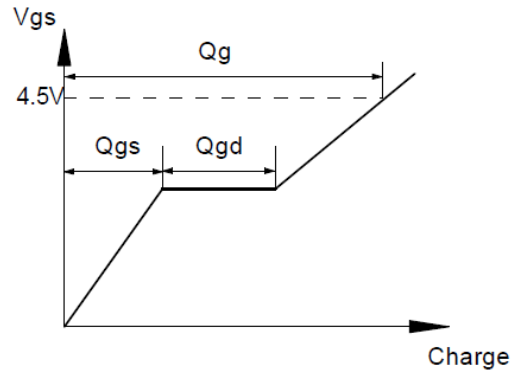
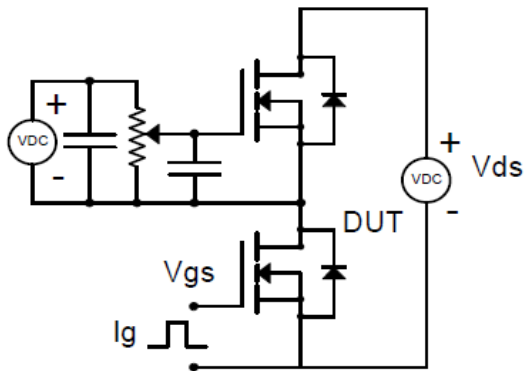
Figure 9. Normalized Maximum Transient Thermal Impedance



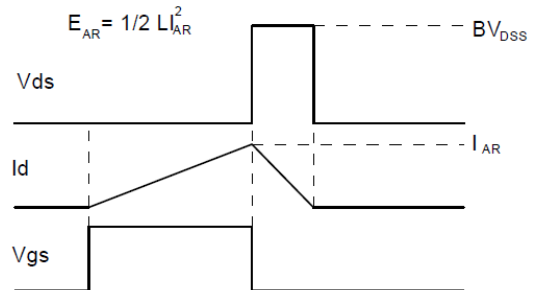
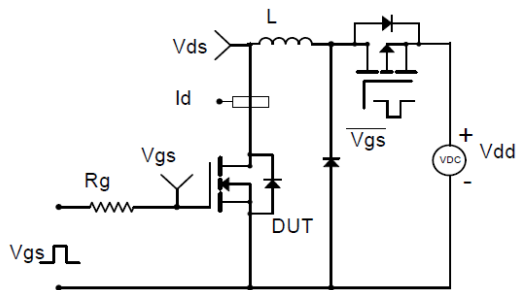
Resistive Switching Test Circuit & Waveforms



Diode Recovery Test Circuit & Waveforms



Gate Charge Test Circuit & Waveform

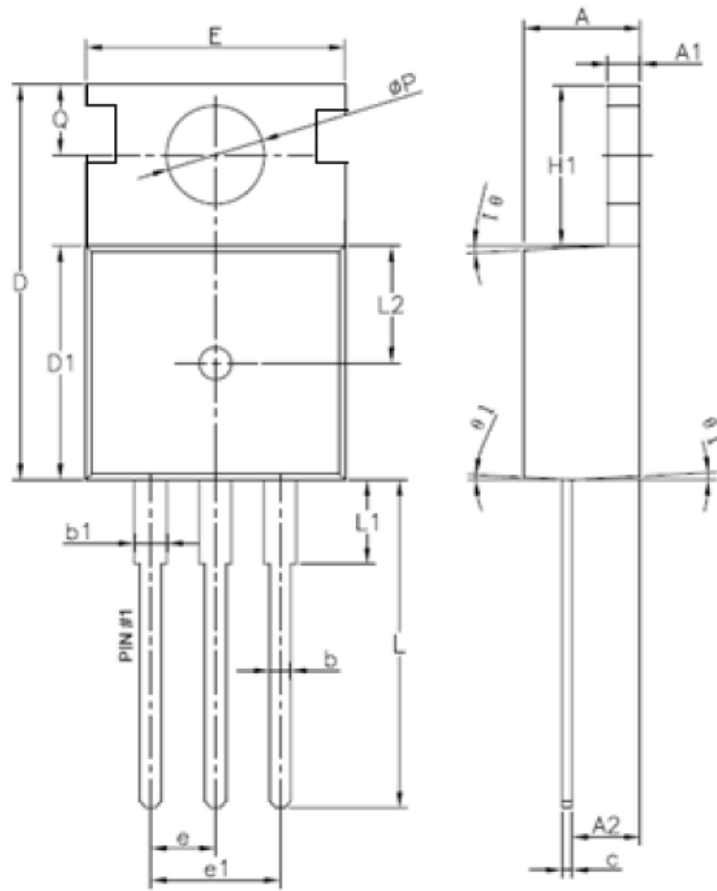


Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



YJP150N06AQ

■ TO-220 Package information



Symbol	Min	Normal	Max	Symbol	Min	Normal	Max
A	4.4	4.5	4.6	e		2.54	
A1	1.27	1.3	1.33	e1		5.08	
A2	2.3	2.4	2.5	H1	6.3	6.5	6.7
b	0.7	/	0.9	L	13.0	13.38	13.5
b1	1.25	/	1.42	L1	/	/	3.5
c	0.45	0.5	0.6	L2		4.6	
D	15.3	15.7	16.1	ΦP	3.55	3.6	3.65
D1	9.1	9.2	9.3	Q	2.73	/	2.87
E	9.7	9.9	10.2	θ1(°)	1	3	5



YJP150N06AQ

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