



N-Channel Enhancement Mode Field Effect Transistor

Product Summary

V_{DS}	30V
I_D	240A
$R_{DS(ON)}$ (at $V_{GS}=10V$)	1.1m
$R_{DS(ON)}$ (at $V_{GS}=4.5V$)	1.7m
100%	



YJG240G03A

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 =1mA	30	-	-	V
		V _{GS} = 0V, I _D =10mA	30	-	-	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =30V, V _{GS} =0V	-	-	1	μA
		V _{DS} =30V, V _{GS} =0V, T _J =100°C	-	-	100	
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	1.2	1.8	2.5	V
Static Drain-Source On-Resistance	R _{DS(ON)}	V _{GS} =10V, I _D =50A	-	0.85	1.1	m
		V _{GS} =4.5V, I _D =20A	-	1.3	1.7	
Diode Forward Voltage	V _{SD}	I _S =50A, V _{GS} =0V	-	-	1.2	V
Gate resistance	R _G	f=1MHz	-	2.1	-	
Maximum Body-Diode Continuous Current	I _S		-	-	240	A
Dynamic Parameters						
Input Capacitance	C _{iss}	V _{DS} =15V, V _{GS} =0V, f=1MHz	-	6315	-	pF
Output Capacitance	C _{oss}		-	4260	-	
Reverse Transfer Capacitance	C _{rss}		-	340	-	
Switching Parameters						
Total Gate Charge	Q _g	V _{GS} =10V, V _{DS} =15V, I _D =50A	-	114	-	nC
Gate-Source Charge	Q _{gs}		-	25	-	
Gate-Drain Charge	Q _{gd}		-	27	-	
Reverse Recovery Charge	Q _{rr}	I _F =30A, di/dt=100A/us	-	82	-	nC
Reverse Recovery Time	t _{rr}		-	73	-	ns
Turn-on Delay Time	t _{D(on)}	V _{GS} =10V, V _{DD} =15V, I _D =50A R _{GEN} =3	-	17	-	ns
Turn-on Rise Time	t _r		-	42	-	
Turn-off Delay Time	t _{D(off)}		-	82	-	
Turn-off fall Time	t _f		-	54	-	

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

B. T_J=25°C, V_{GS}=10V, R_G=25 Ω, L=0.5mH, I_{AS}=50A.

C. P_g is based on max. junction temperature, using junction-case and junction-ambient thermal resistance.

D. The value of R_{JA} is measured with the device mounted on the 40mm*40mm*1.1mm FR-4 PCB board with 1 in² pad of 2oz. Copper, in the still air environment with TA =25 °C. The maximum allowed junction temperature of 175 °C. The value in any given application depends on the user's specific board design.



Typical Electrical and Thermal Characteristics Diagrams

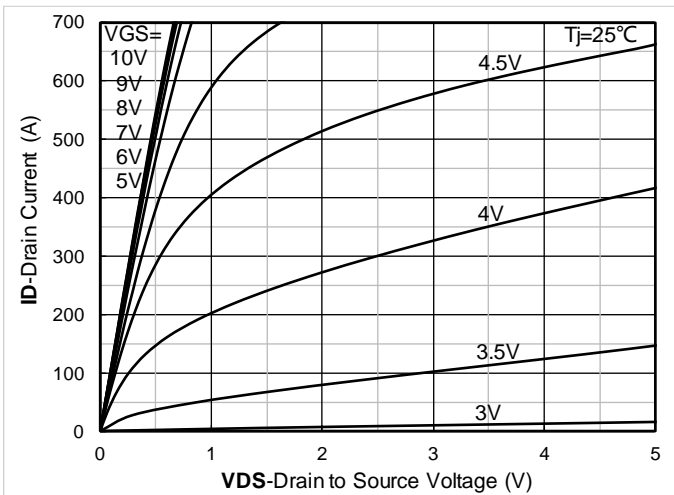


Figure 1. Output Characteristics

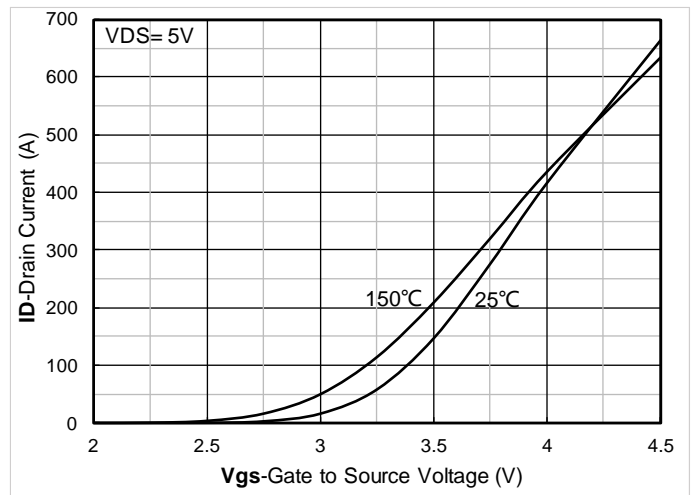


Figure 2. Transfer Characteristics

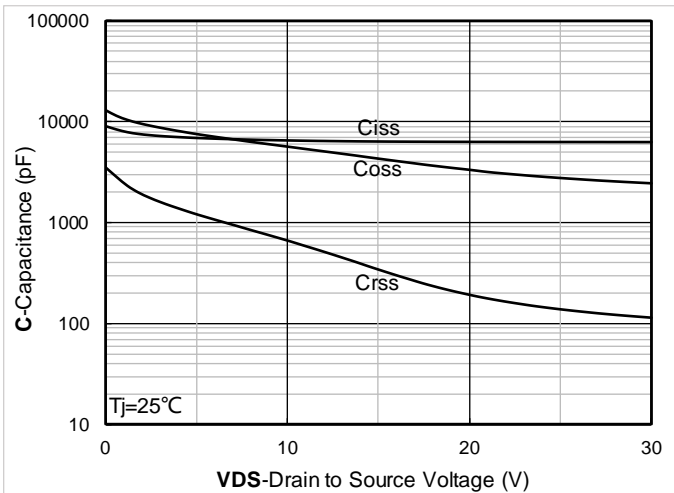


Figure 3. Capacitance Characteristics

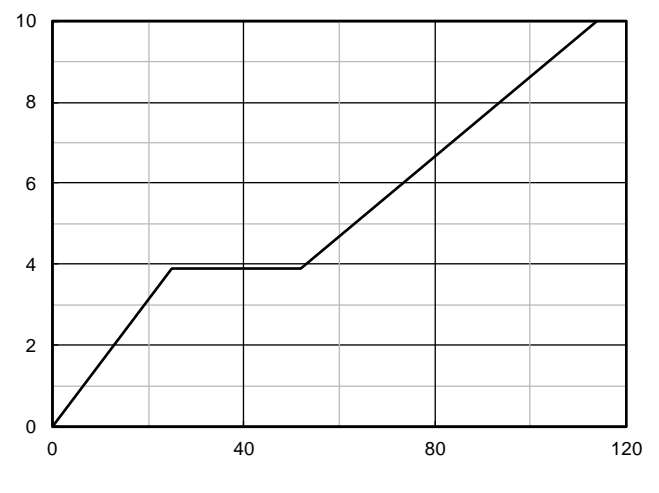


Figure 4. Gate Charge

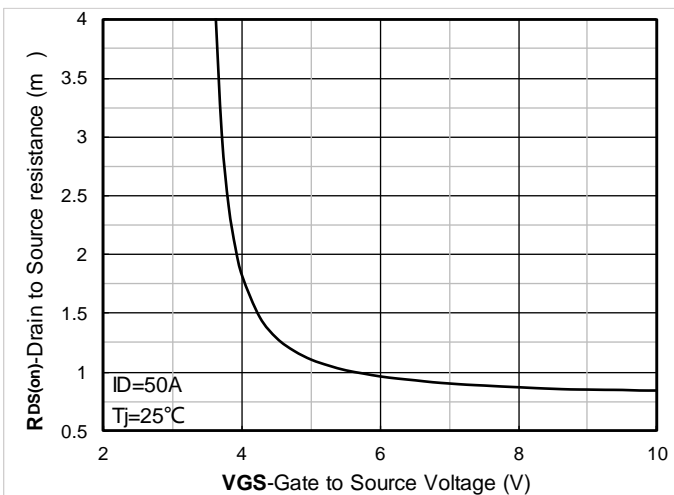


Figure 5. On-Resistance vs Gate to Source Voltage

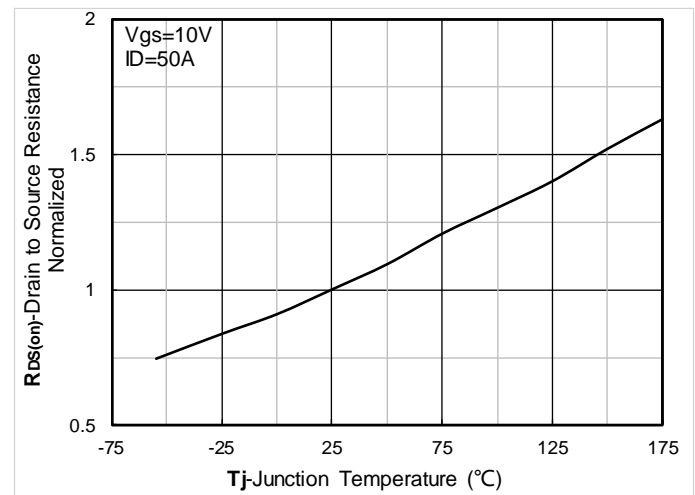


Figure 6. Normalized On-Resistance

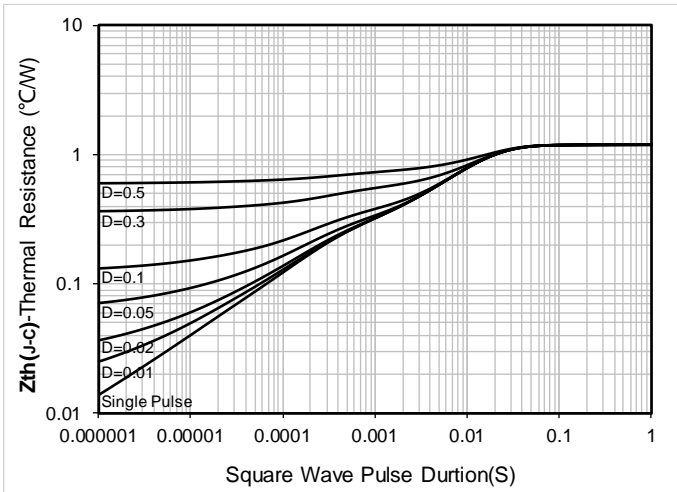


Figure 13. Maximum Transient Thermal Impedance

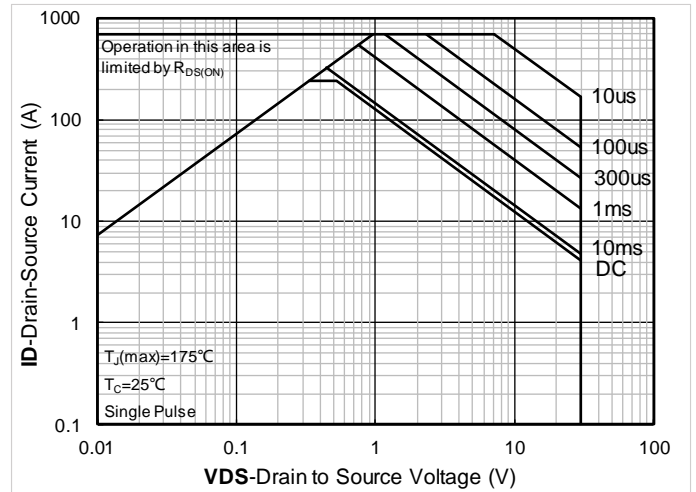


Figure 14. Safe Operation Area

Test Circuits & Waveforms

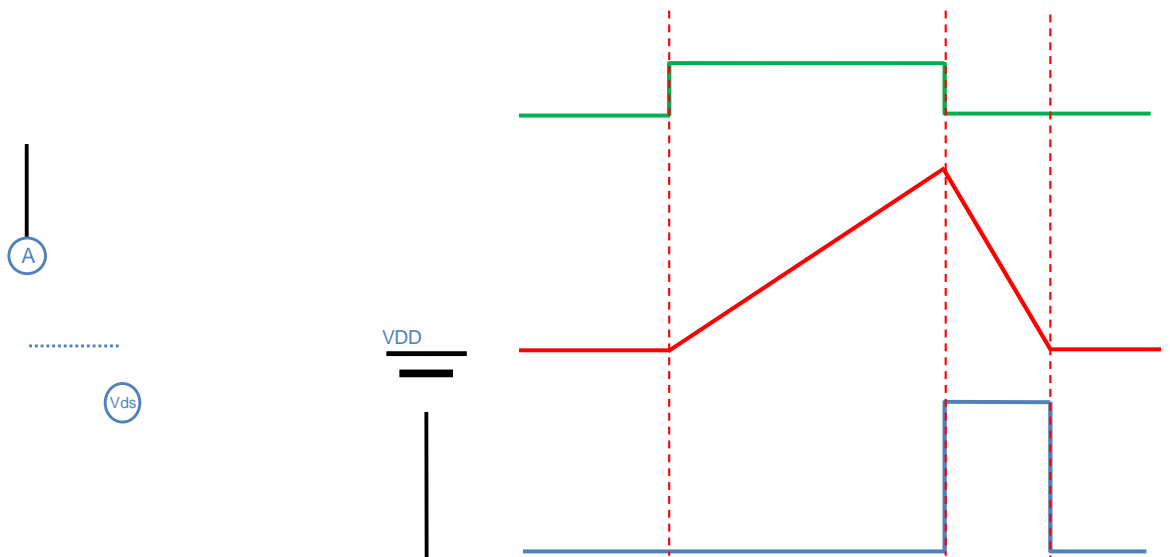


Figure A. Unclamped Inductive Switching (UIS) Test Circuit & Waveform

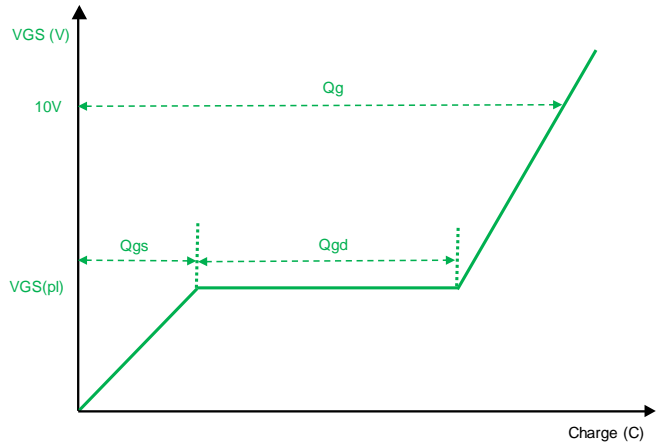
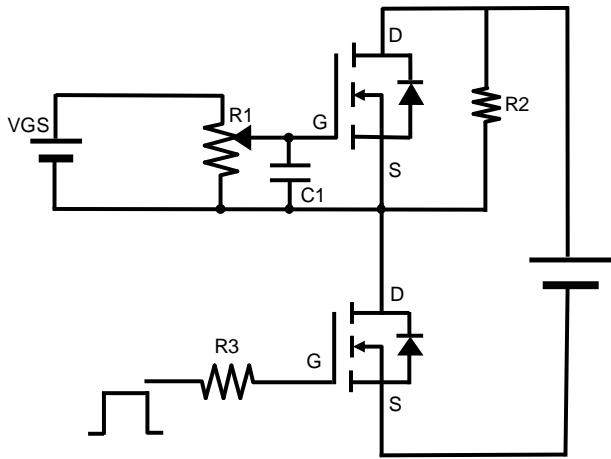


Figure B. Gate Charge Test Circuit & Waveform

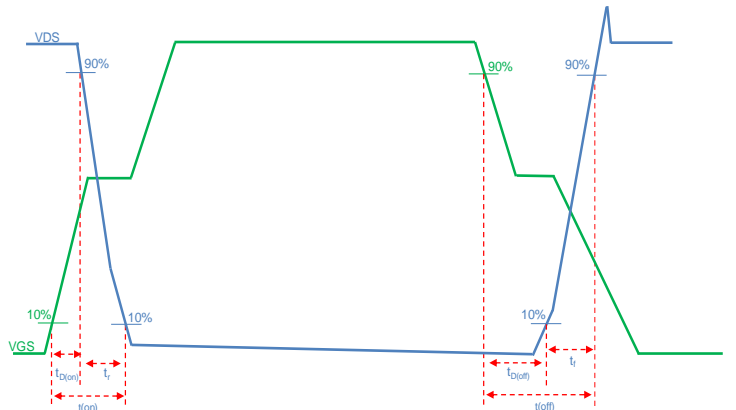
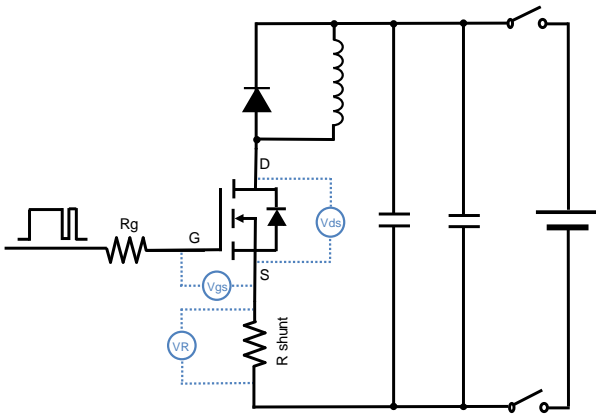


Figure C. Resistive Switching Test Circuit & Waveform

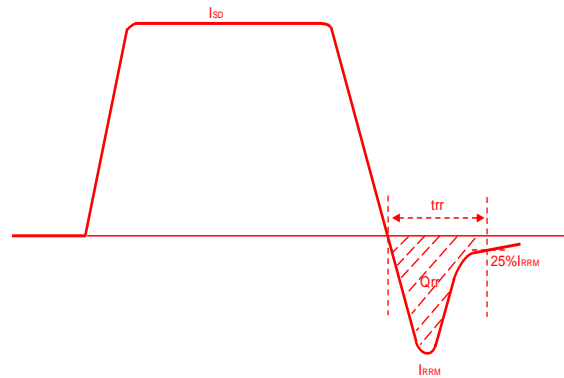
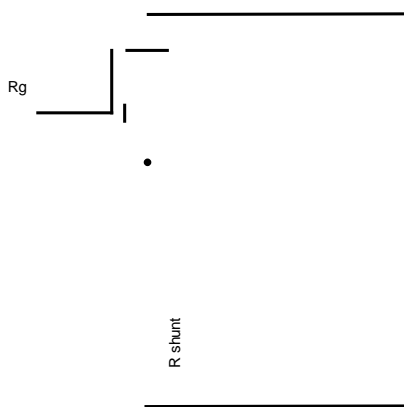


Figure D. Diode Recovery Test Circuit & Waveform



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