



N-Channel and N-Channel Complementary MOSFET

Product Summary

V_{DS}	100V
I_D	20A
$R_{DS(ON)}$ (at $V_{GS}=10V$)	19m
$R_{DS(ON)}$ (at $V_{GS}=4.5V$)	23m
100% EAS Tested	
100% V_{DS} Tested	

General Description

Split gate trench MOSFET technology
High density cell design for low $R_{DS(ON)}$
High Speed switching
Moisture Sensitivity Level 1
Epoxy Meets UL 94 V-0 Flammability Rating
Halogen Free

Applications

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

Absolute Maximum Ratings ($T_A=25$



YJGD20G10B

Electrical Characteristics ($T_J=25$ unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Static Parameter						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=250\mu A$	100	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=100V, V_{GS}=0V$	-	-	1	μA
		$V_{DS}=100V, V_{GS}=0V, T_J=150$	-	-	100	
Gate-Body Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	± 100	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	1.0	1.8	2.5	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=20A$	-	15	19	m
		$V_{GS}=4.5V, I_D=7A$	-	18	23	
Diode Forward Voltage	V_{SD}	$I_S=20A, V_{GS}=0V$	-	-	1.2	V
Gate resistance	R_G	$f=1MHz$	-	1.5	-	
Maximum Body-Diode Continuous Current	I_S		-	-	20	A
Dynamic Parameters						
Input Capacitance	C_{iss}	$V_{DS}=50V, V_{GS}=0V, f=1MHz$	-	1150	-	pF
Output Capacitance	C_{oss}		-	430	-	
Reverse Transfer Capacitance	C_{rss}		-	8	-	
Switching Parameters						
Total Gate Charge	Q_g	$V_{GS}=10V, V_{DS}=50V, I_D=20A$	-	20	-	nC
Gate-Source Charge	Q_{gs}		-	5.6	-	
Gate-Drain Charge	Q_{gd}		-	2.8	-	
Reverse Recovery Charge	Q_{rr}	$I_F=20A, di/dt=100A/us$	-	32	-	nC
Reverse Recovery Time	t_{rr}		-	41	-	ns

Typical Electrical and Thermal Characteristics Diagrams

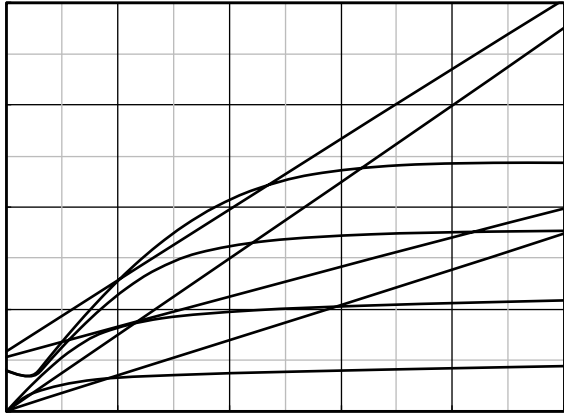
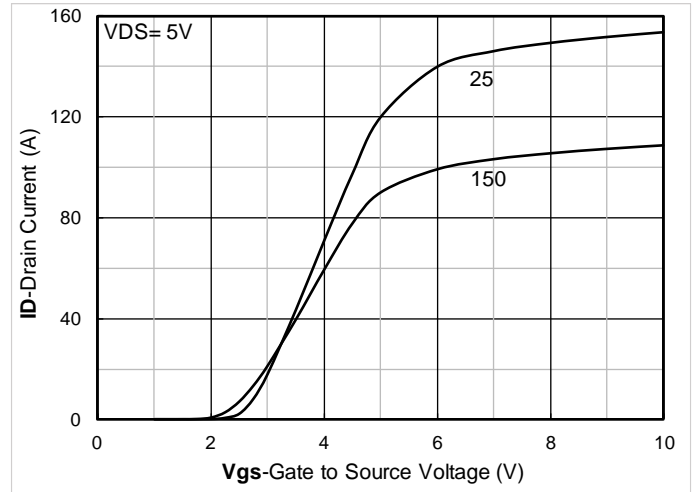


Figure 1. Output Characteristics



Figure



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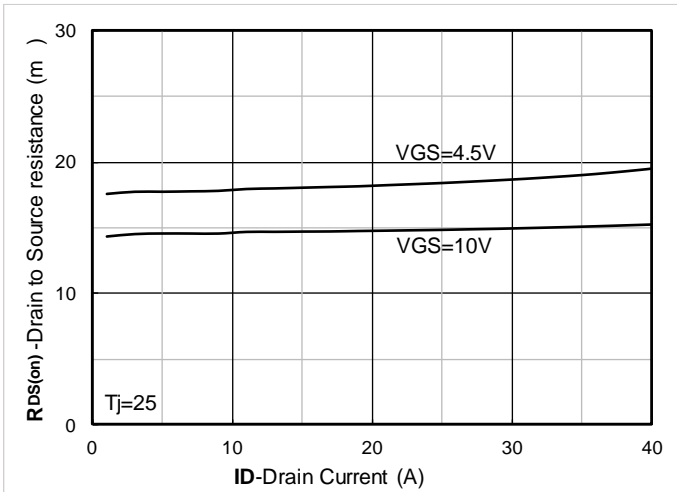


Figure 7. $R_{DS(on)}$ VS Drain Current

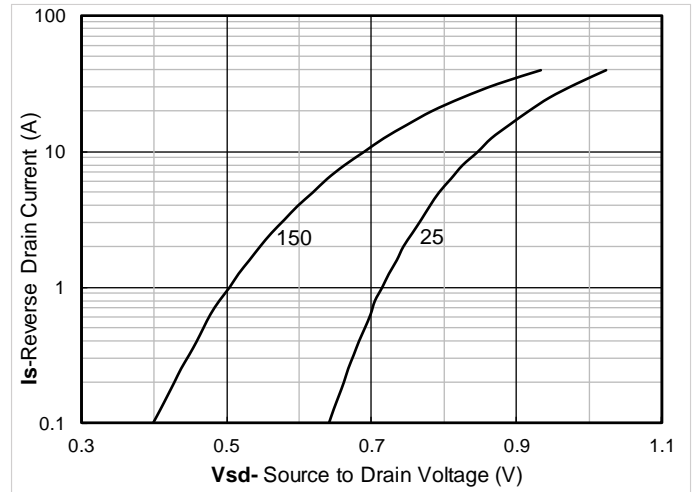


Figure 8. Forward characteristics of reverse diode

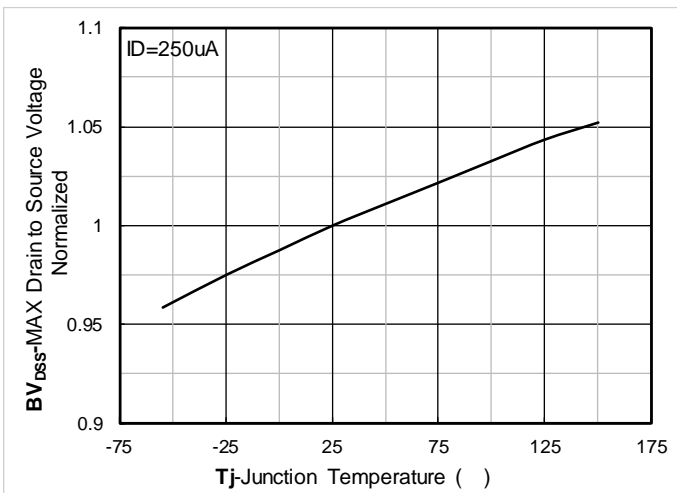


Figure 9. Normalized breakdown voltage

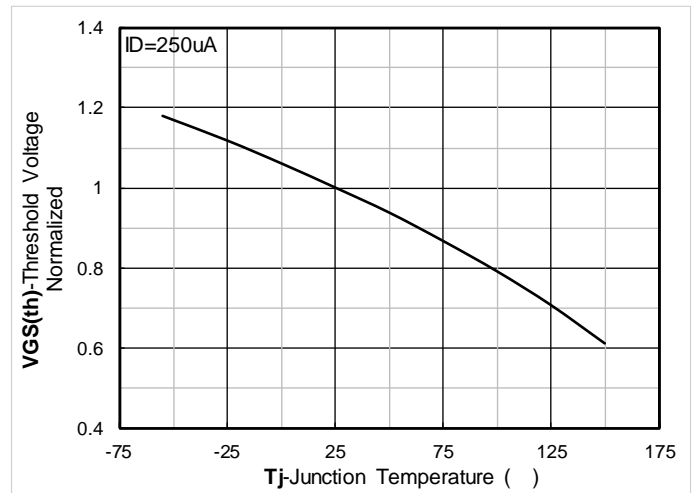


Figure 10. Normalized Threshold voltage

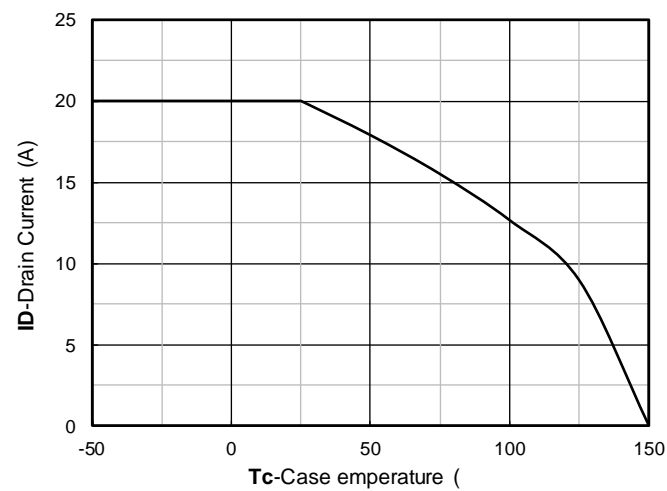


Figure 11. Current dissipation

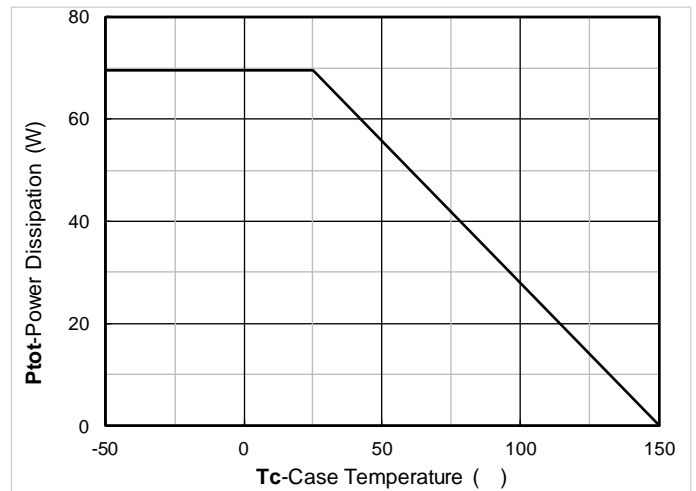


Figure 12. Power dissipation

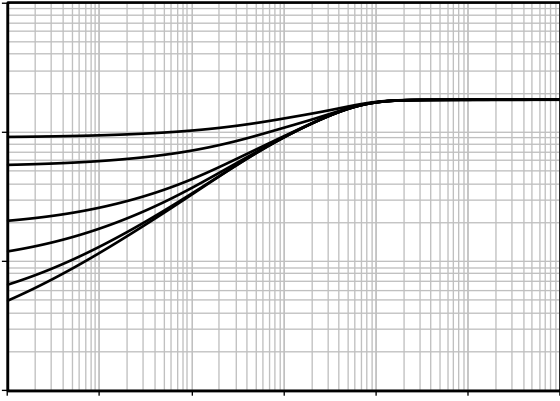


Figure 13. Maximum Transient Thermal Impedance

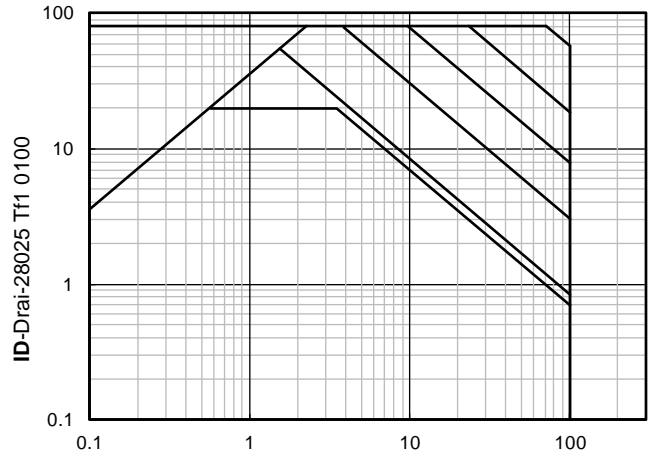


Figure 14. Safe Operation Area

Test Circuits & Waveforms

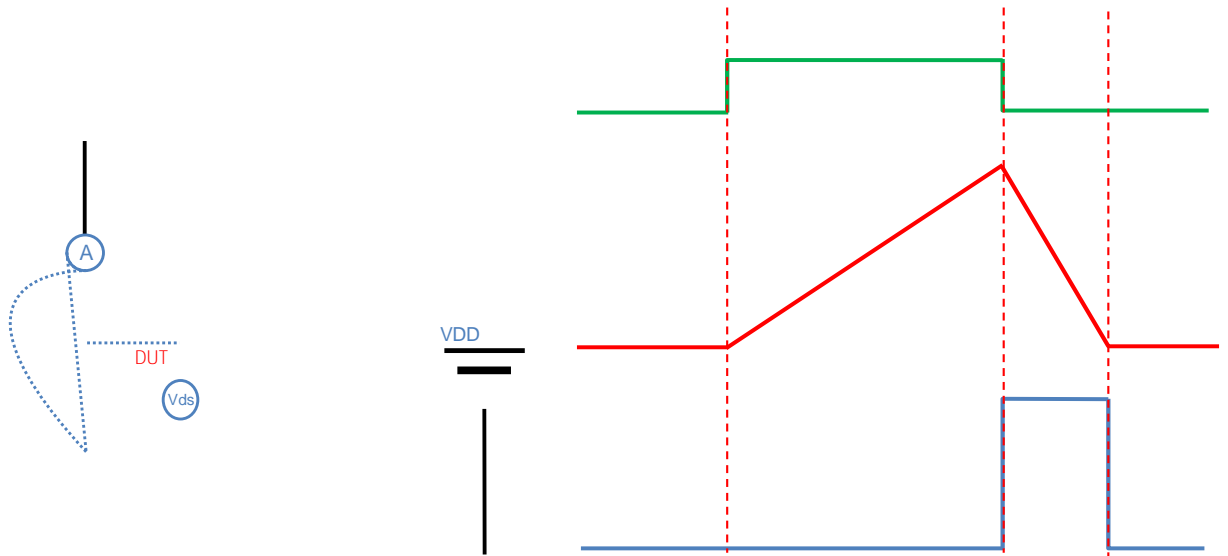


Figure A. Unclamped Inductive Switching (UIS) Test Circuit & Waveform

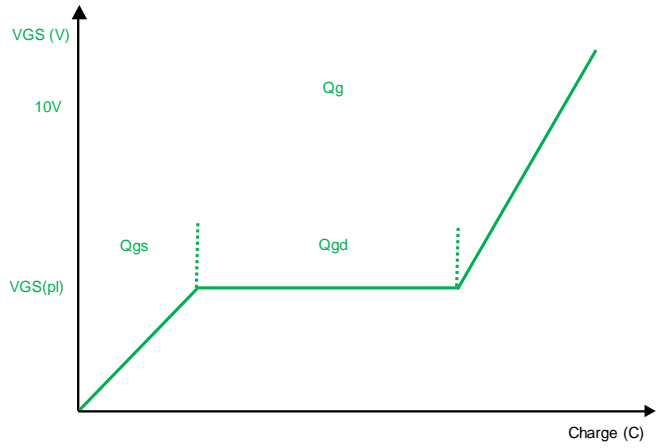
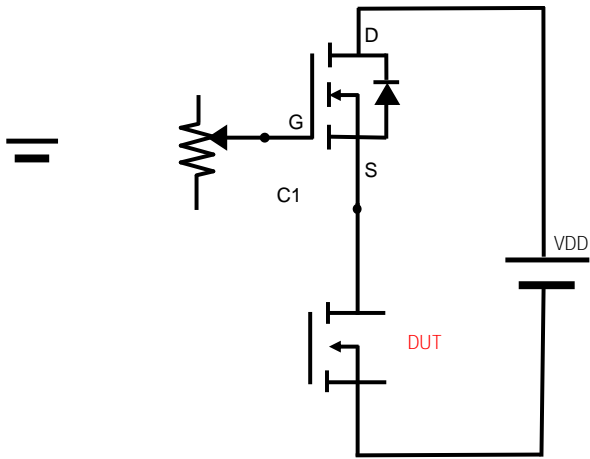


Figure B. Gate Charge Test Circuit & Waveform

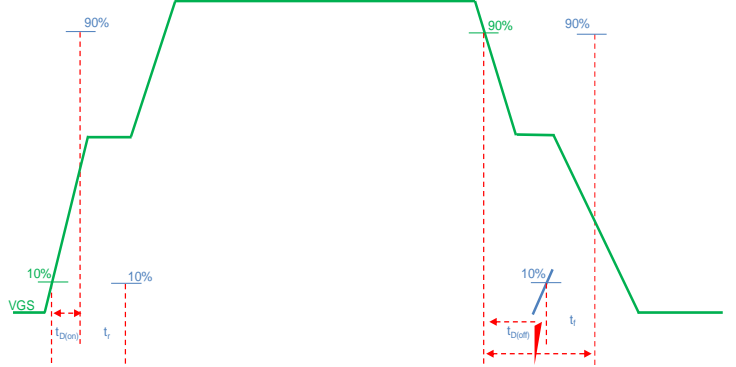
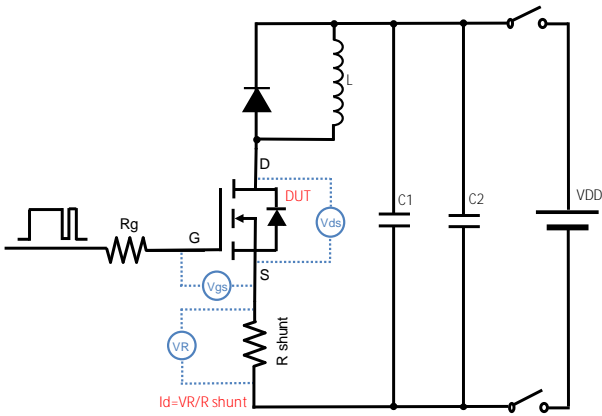


Figure C. Resistive Switching Test Circuit & Waveform

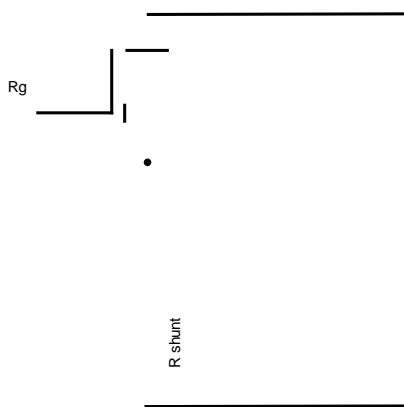


Figure D. Diode Recovery Test Circuit & Waveform



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