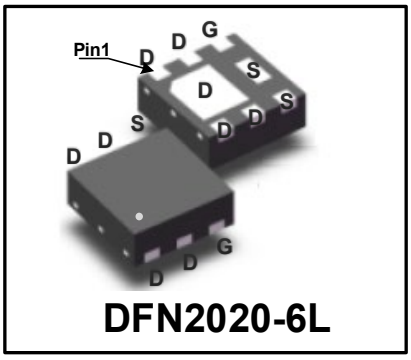
WMR05N10TS

100V N-Channel Enhancement Mode Power MOSFET



DFN2020-6L

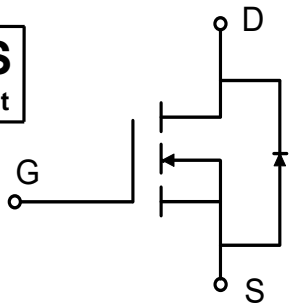
Description

WMR05N10TS uses advanced power trench technology that has been especially tailored to minimize the on-state resistance and yet maintain superior switching performance.

Features

- V_{DS} =100V, I_D = 5A
  $R_{DS(on)}$ < 260mΩ @ V_{GS} = 10V
  $R_{DS(on)}$ < 280mΩ @ V_{GS} = 4.5V
- Green Device Available
- Super Low Gate Charge
- 100% EAS Guaranteed

RoHS compliant



Applications

- Load Switches
- DC/DC Converter

Absolute Maximum Ratings (T_A = 25°C, unless otherwise noted)

Parameter		Symbol	Value	Unit
Drain-Source Voltage		V_{DS}	100	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current	T_C=25°C	I_D	5	A
	T_C=100°C		3.8	
Pulsed Drain Current[1]		I_{DM}	24	A
Single Pulse Avalanche Energy[2]		EAS	3.2	mJ
Total Power Dissipation	T_C=25°C	P_D	15	W
Operating Junction and Storage Temperature Range		T_J, T_{STG}	-55 to 150	°C

Thermal Characteristics

Parameter	Symbol	Value	Unit
Thermal Resistance from Junction-to-Ambient[3]	$R_{\theta JA}$	41.6	°C/W
Thermal Resistance from Junction-to-Case	$R_{\theta JC}$	8.3	°C/W

Electrical Characteristics (T_J = 25°C, unless otherwise noted)

Parameter		Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Static Characteristics							
Drain-Source Breakdown Voltage		$V_{(BR)DSS}$	V_{GS} = 0V, I_D = 250μA	100	-	-	V
Gate-body Leakage current		I_{GSS}	V_{DS} = 0V, V_{GS} = ±10V	-	-	±100	nA
Zero Gate Voltage Drain Current	T_J=25°C	I_{DSS}	V_{DS} = 100V, V_{GS} = 0V	-	-	1	μA
	T_J=100°C			-	-	100	
Gate-Threshold Voltage		$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250μA	1	1.5	2	V
Drain-Source on-Resistance[4]		$R_{DS(on)}$	V_{GS} = 10V, I_D = 4A	-	210	260	mΩ
			V_{GS} = 4.5V, I_D = 2A	-	220	280	
Forward Transconductance[4]		g_{fs}	V_{DS} = 10V, I_D = 4A	-	7	-	S
Dynamic Characteristics[5]							
Input Capacitance		C_{iss}	V_{DS} = 50V, V_{GS} = 0V, f =1MHz	-	440	-	pF
Output Capacitance		C_{oss}		-	14	-	
Reverse Transfer Capacitance		C_{rss}		-	10	-	
Gate Resistance		R_G	f =1MHz	-	1.7	-	Ω
Switching Characteristics[5]							
Total Gate Charge		Q_g	V_{GS} = 10V,V_{DS} = 50V, I_D=4A	-	9.5	-	nC
Gate-Source Charge		Q_{gs}		-	1.7	-	
Gate-Drain Charge		Q_{gd}		-	1.5	-	
Turn-On Delay Time		$t_{d(on)}$	V_{GS} =10V, V_{DD} =50V, R_G = 3Ω, I_D= 4A	-	4.5	-	ns
Rise Time		t_r		-	1.5	-	
Turn-Off Delay Time		$t_{d(off)}$		-	12.2	-	
Fall Time		t_f		-	1.3	-	
Drain-Source Body Diode Characteristics							
Diode Forward Voltage[4]		V_{SD}	I_S = 4A, V_{GS} = 0V	-	-	1.2	V
Continuous Source Current	T_A=25°C	I_S	-	-	-	5	A

Notes:

1. Repetitive rating, pulse width limited by junction temperature $T_{J(MAX)}$=150°C.
2. The test condition is V_{DD}= 25V, V_{GS}= 10V, L= 0.4mH, I_{AS}= 4A.
3. The data tested by surface mounted on a 1 inch2 FR-4 board with 2OZ copper, The value in any given application depends on the user's specific board design.
4. The data tested by pulsed , pulse width ≤ 300us , duty cycle ≤ 2%.
5. This value is guaranteed by design hence it is not included in the production test.

Typical Characteristics

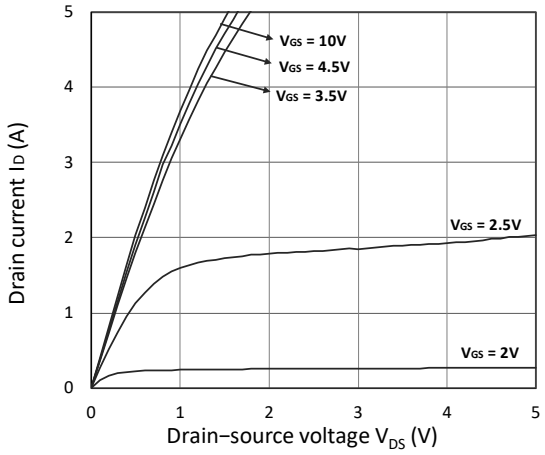


Figure 1. Output Characteristics

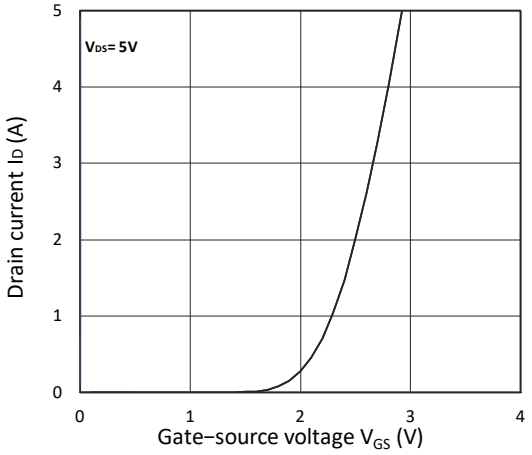


Figure 2. Transfer Characteristics

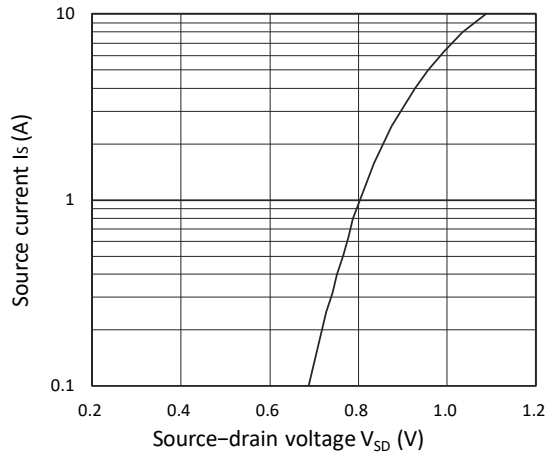


Figure 3. Forward Characteristics of Reverse

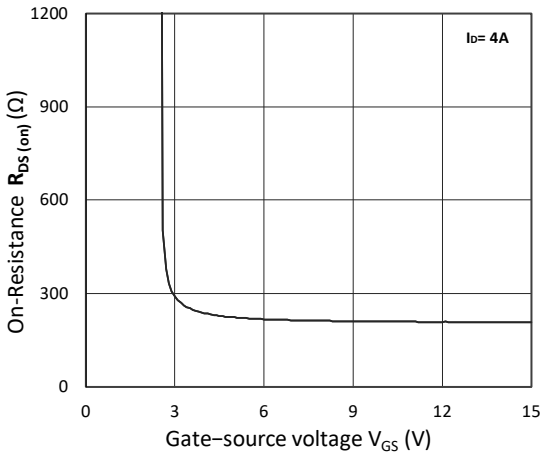


Figure 4. $R_{DS(ON)}$ vs. V_{GS}

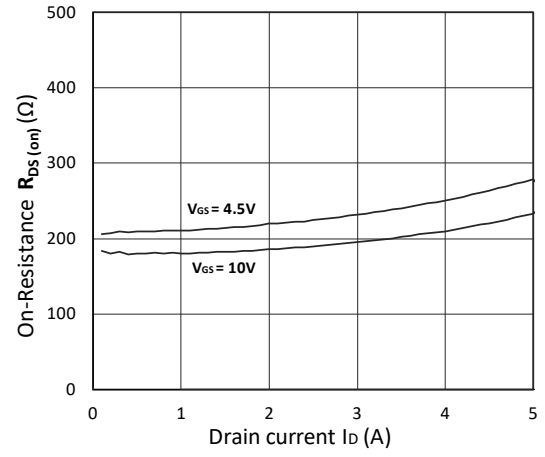


Figure 5. $R_{DS(ON)}$ vs. I_D

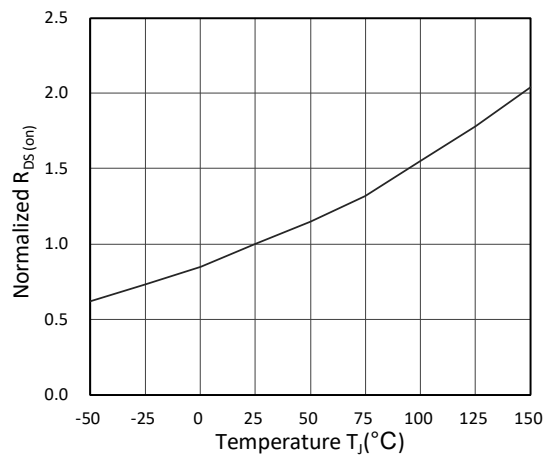


Figure 6. Normalized $R_{DS(on)}$ vs. Temperature

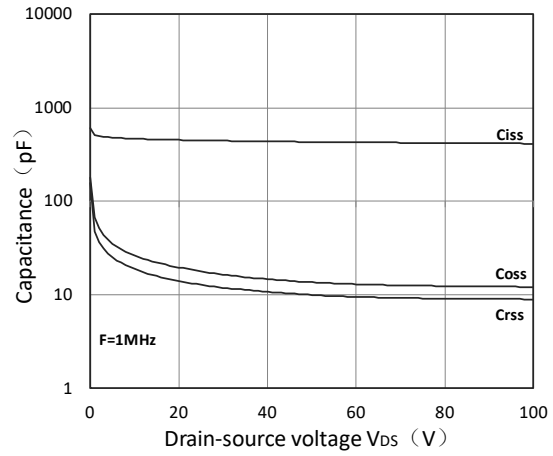


Figure 7. Capacitance Characteristics

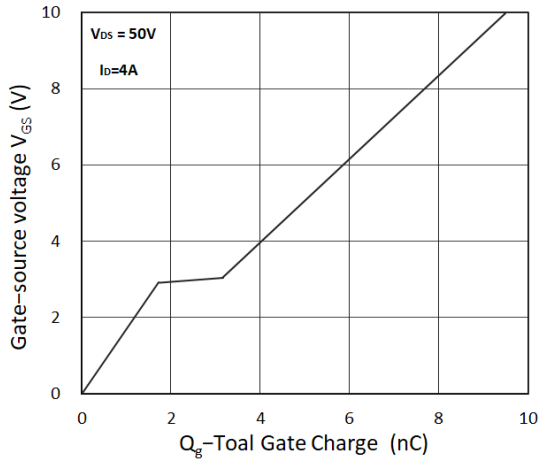


Figure 8. Gate Charge Characteristics

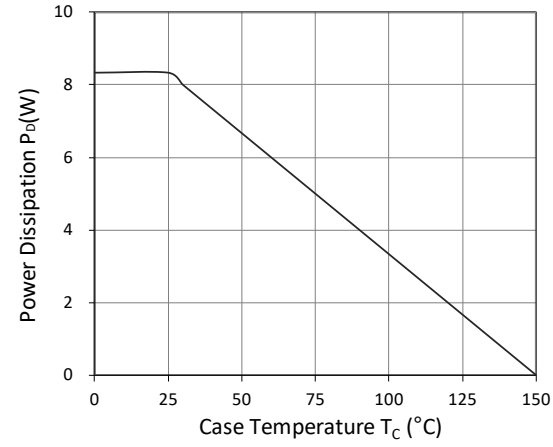


Figure 9. Power Dissipation

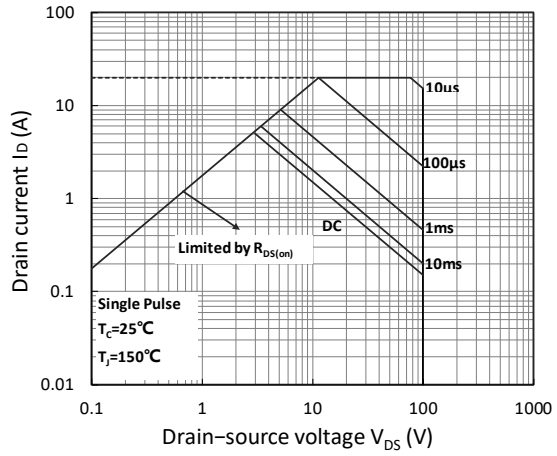


Figure10. Safe Operating Area

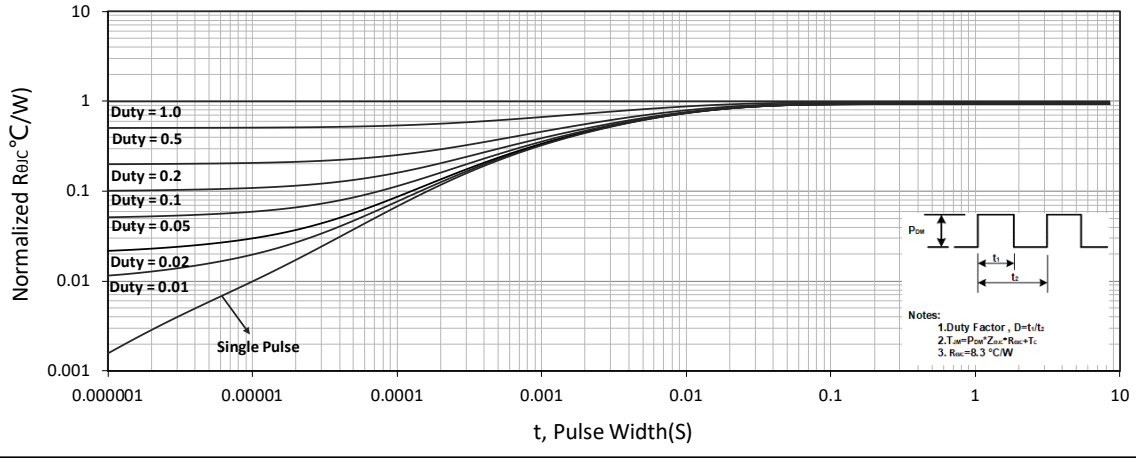


Figure 11. Normalized Maximum Transient Thermal Impedance

Test Circuit

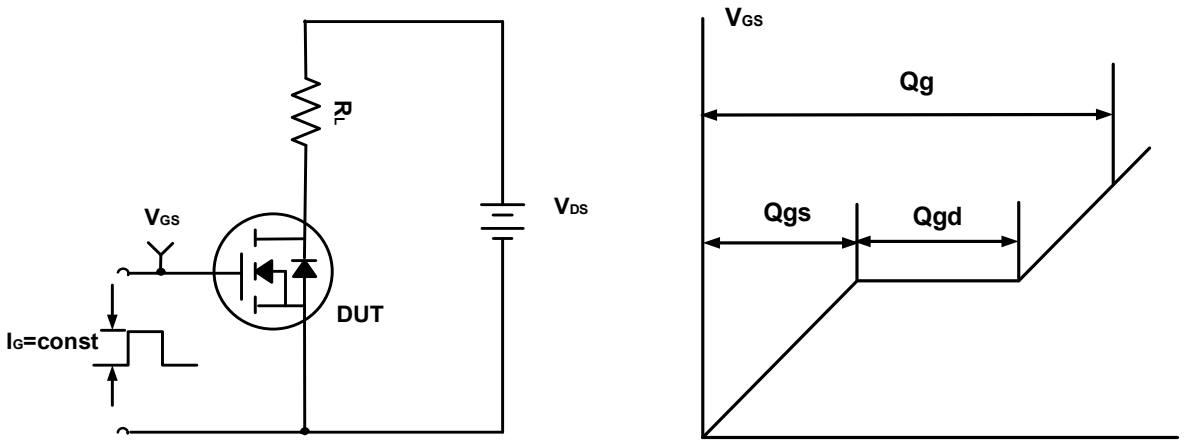


Figure A. Gate Charge Test Circuit & Waveforms

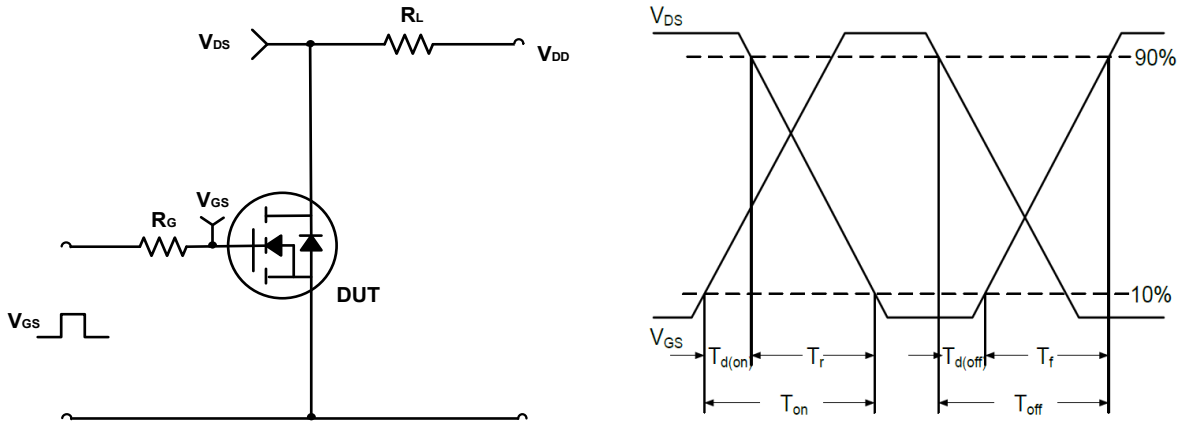


Figure B. Switching Test Circuit & Waveforms

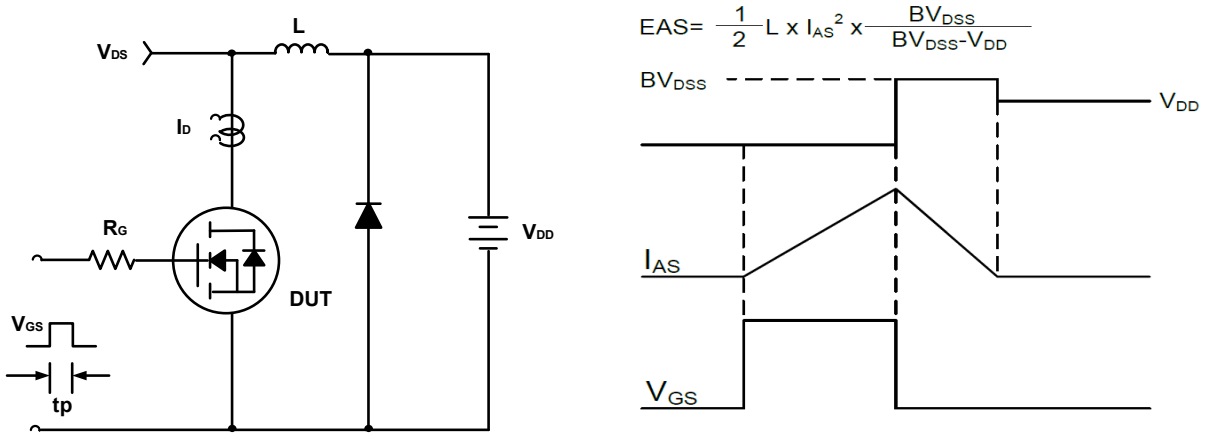
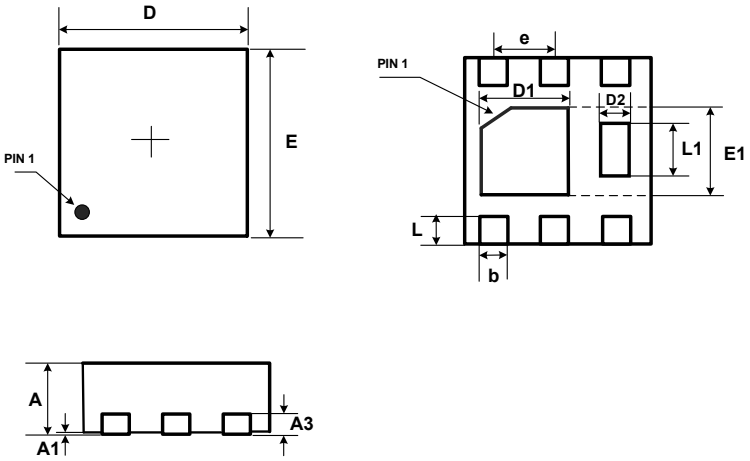


Figure C. Unclamped Inductive Switching Circuit & Waveforms

Mechanical Dimensions for DFN2020-6L



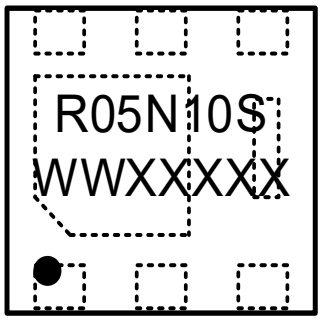
COMMON DIMENSIONS

SYMBOL	MM	
	MIN	MAX
A	0.50	0.60
A1	0.00	0.05
A3	0.152REF	
b	0.25	0.35
D	1.90	2.10
D1	0.80	1.00
E	1.90	2.10
E1	0.80	1.00
L1	0.46	0.66
e	0.65BSC	
D2	0.25	0.35
L	0.25	0.35

Ordering Information

Part	Package	Marking	Packing method
WMR05N10TS	DFN2020-6L	R05N10S	Tape and Reel

Marking Information



R05N10S = Device code

WWXXXXX= Date code

Contact Information

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