

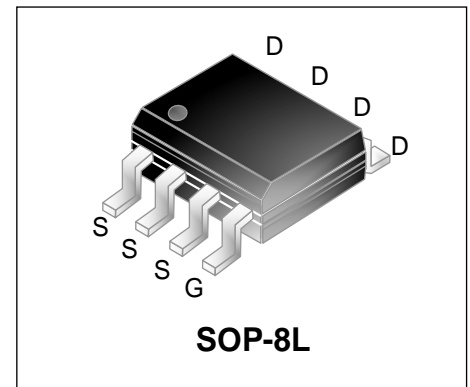
80V N-Channel Enhancement Mode Power MOSFET

Description

WMS18N08T2 uses advanced power trench technology that has been especially tailored to minimize the on-state resistance and yet maintain superior switching performance.

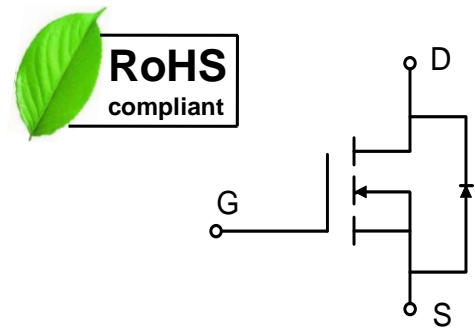
Features

- $V_{DS} = 80V$, $I_D = 17.5A$
 $R_{DS(on)} < 7m\Omega @ V_{GS} = 10V$
 $R_{DS(on)} < 9m\Omega @ V_{GS} = 4.5V$
- Low $R_{DS(on)}$
- Low Gate Charge
- 100% EAS Guaranteed



Applications

- Power Management Switches
- Synchronous Rectification for AC/DC Quick Charger



Absolute Maximum Ratings

Parameter		Symbol	Value	Unit
Drain-Source Voltage		V_{DS}	80	V
Gate-Source Voltage		V_{GS}	± 20	V
Continuous Drain Current@10V ¹	$T_A = 25^\circ C$	I_D	17.5	A
	$T_A = 70^\circ C$		14	
Pulsed Drain Current ²		I_{DM}	68	A
Single Pulse Avalanche Energy ³		EAS	57.8	mJ
Avalanche Current		I_{AS}	34	A
Total Power Dissipation ⁴	$T_A = 25^\circ C$	P_D	3.1	W
Operating Junction and Storage Temperature Range		T_J, T_{STG}	-55 to +150	$^\circ C$

Thermal Characteristics

Parameter	Symbol	Value	Unit
Thermal Resistance from Junction-to-Ambient ¹	$R_{\theta JA}$	75	$^\circ C/W$
Thermal Resistance from Junction-to-Case ¹	$R_{\theta JC}$	24	$^\circ C/W$

Electrical Characteristics $T_c = 25^\circ\text{C}$, unless otherwise noted

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	80	-	-	V
Gate-body Leakage current	I_{GSS}	$V_{DS} = 0V, V_{GS} = \pm 20V$	-	-	± 100	nA
Zero Gate Voltage Drain Current	$T_J=25^\circ\text{C}$	$V_{DS} = 64V, V_{GS} = 0V$	-	-	1	μA
	$T_J=55^\circ\text{C}$		-	-	5	
Gate-Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	1.2	1.75	2.3	V
Drain-Source On-Resistance ²	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 15A$	-	4.8	7	m Ω
		$V_{GS} = 4.5V, I_D = 10A$	-	6.5	9	
Dynamic Characteristics						
Input Capacitance	C_{iss}	$V_{DS} = 40V, V_{GS} = 0V, f = 1\text{MHz}$	-	3045	-	pF
Output Capacitance	C_{oss}		-	832	-	
Reverse Transfer Capacitance	C_{rss}		-	38	-	
Switching Characteristics						
Gate Resistance	R_g	$V_{DS}=0V, V_{GS}=0V, f=1\text{MHz}$	-	0.5	-	Ω
Total Gate Charge	Q_g	$V_{GS} = 10V, V_{DS} = 40V, I_D = 15A$	-	40	-	nC
Gate-Source Charge	Q_{gs}		-	7.2	-	
Gate-Drain Charge	Q_{gd}		-	6.5	-	
Turn-On Delay Time	$t_{d(on)}$	$V_{GS} = 10V, V_{DD} = 40V, R_G = 3\Omega, I_D = 15A$	-	8.3	-	nS
Rise Time	t_r		-	4.2	-	
Turn-Off Delay Time	$t_{d(off)}$		-	36	-	
Fall Time	t_f		-	6.9	-	
Drain-Source Body Diode Characteristics						
Diode Forward Voltage ²	V_{SD}	$I_S = 1A, V_{GS} = 0V$	-	-	1.0	V
Continuous Source Current ^{1,5}	I_S	$V_G=V_D=0V$, Force Current	-	-	48	A
Body Diode Reverse Recovery Time	t_{rr}	$I_F = 15A, di/dt = 100A/\mu s$	-	23	-	nS
Body Diode Reverse Recovery Charge	Q_{rr}		-	75	-	nC

Notes:

- The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper.
- The data tested by pulsed, pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$
- The EAS data shows Max. rating. The test condition is $V_{DD}=25V, V_{GS}=10V, L=0.1\text{mH}, I_{AS}=34A$
- The power dissipation is limited by 150°C junction temperature
- The data is theoretically the same as I_D and I_{DM} , in real applications, should be limited by total power dissipation.

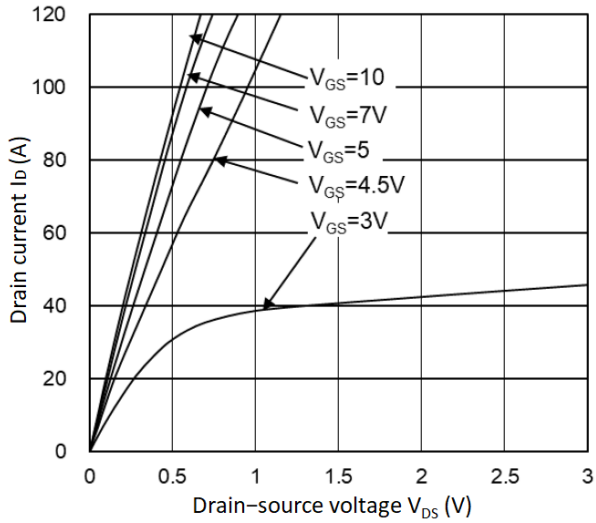


Figure1. Typical Output Characteristics

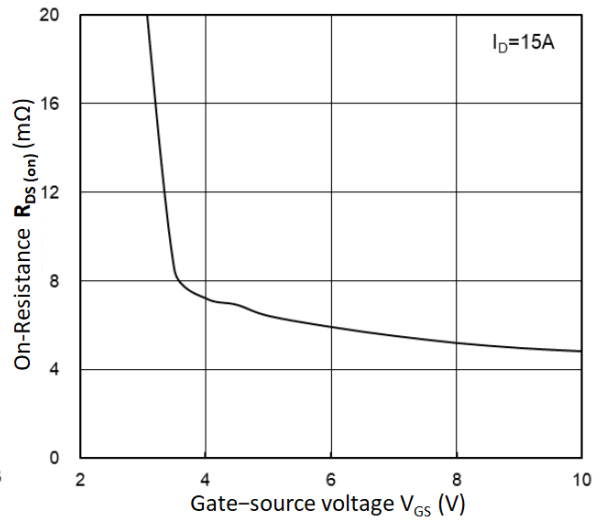


Figure2. $R_{DS(on)}$ vs. V_{GS}

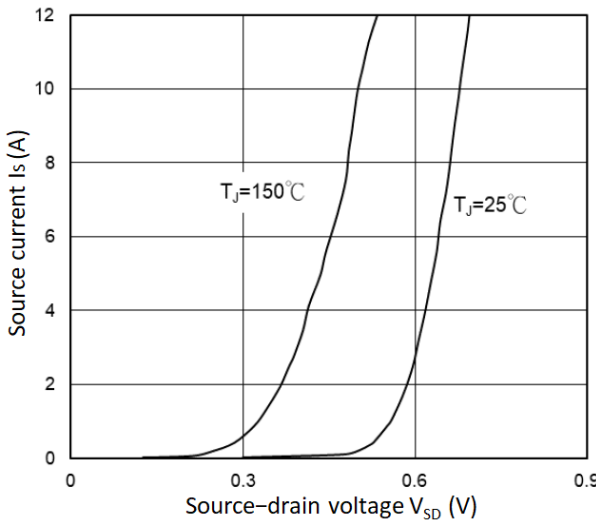


Figure3. Forward Characteristics Of Reverse

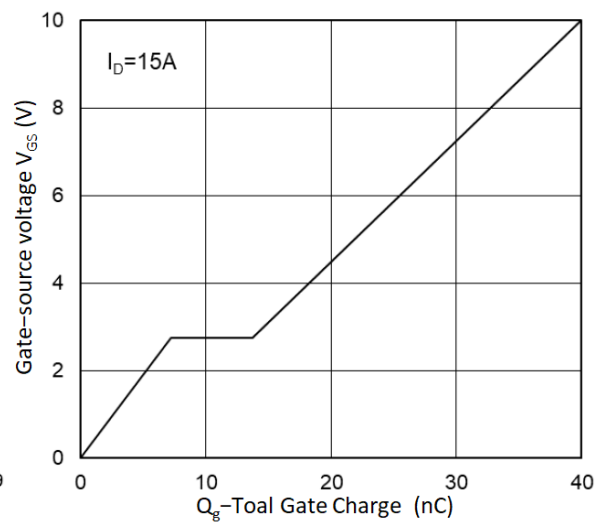


Figure4. Gate Charge Characteristics

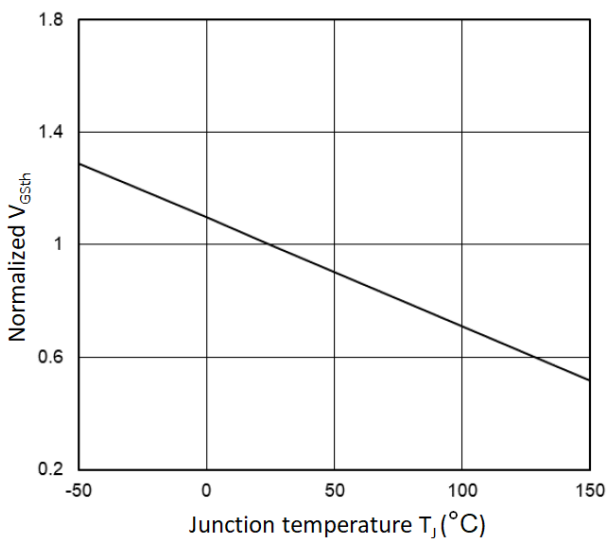


Figure5. Normalized $V_{GS(th)}$ vs. T_J

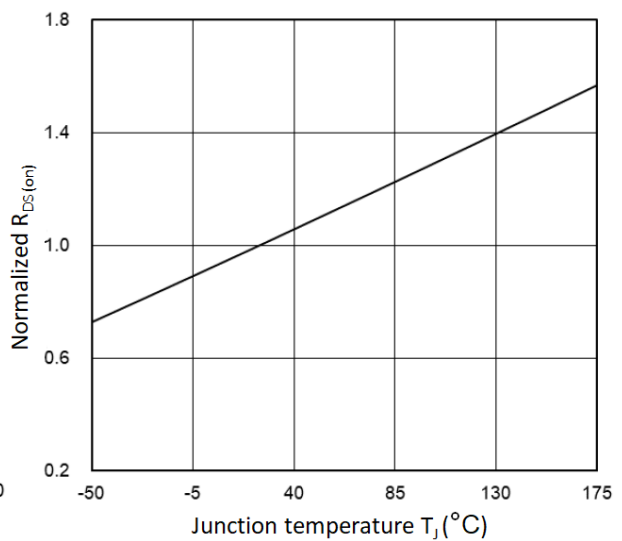


Figure6. Normalized $R_{DS(on)}$ vs. T_J

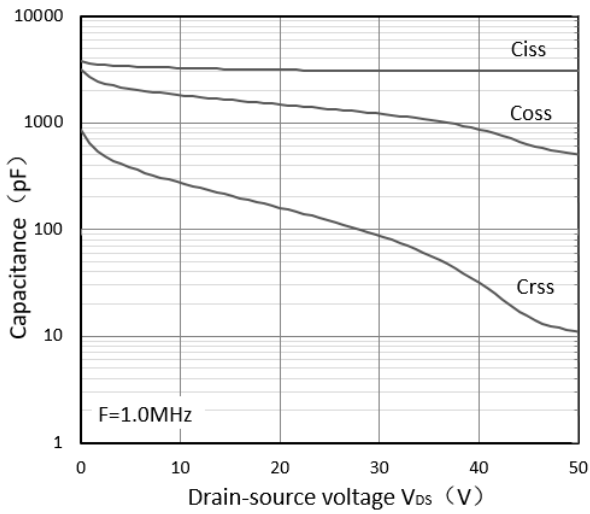


Figure7. Capacitance Characteristics

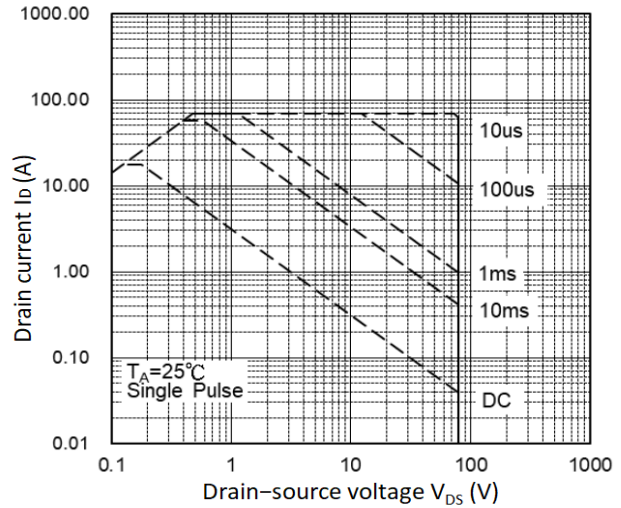


Figure8. Safe Operating Area

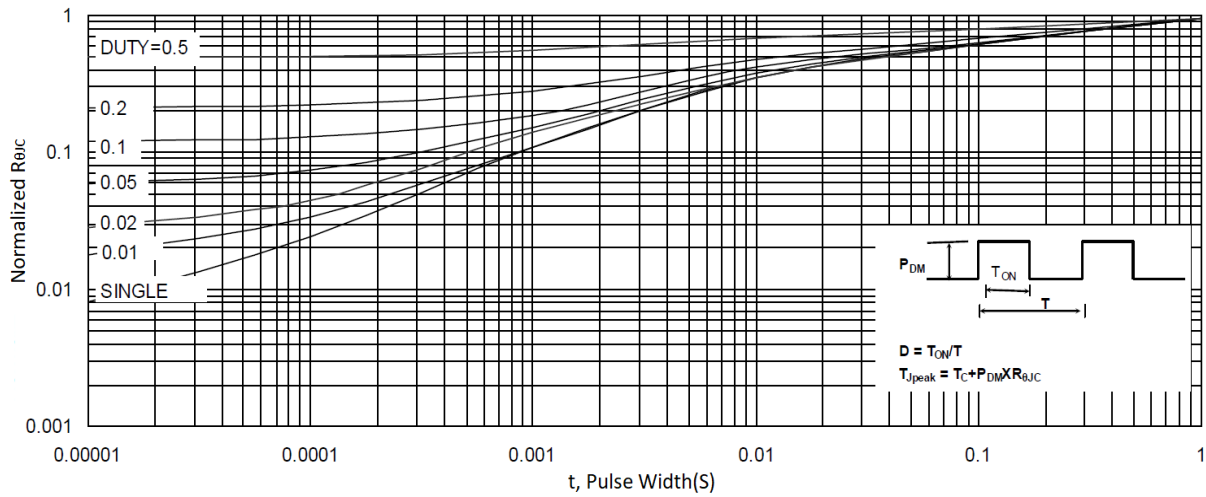


Figure9. Normalized Maximum Transient Thermal Impedance

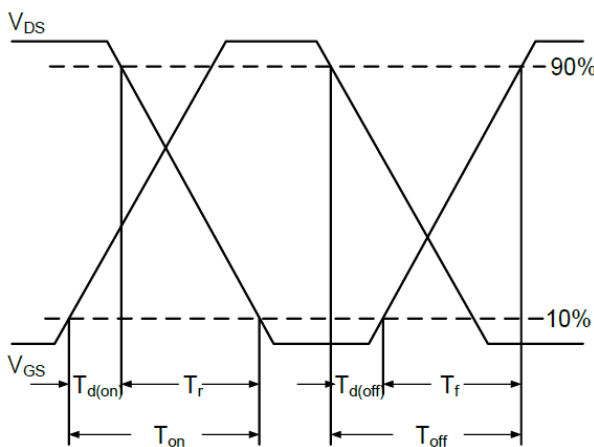


Figure 10. Switching Time Waveform

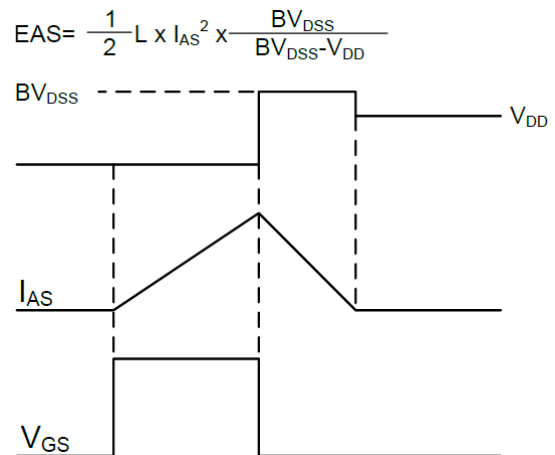
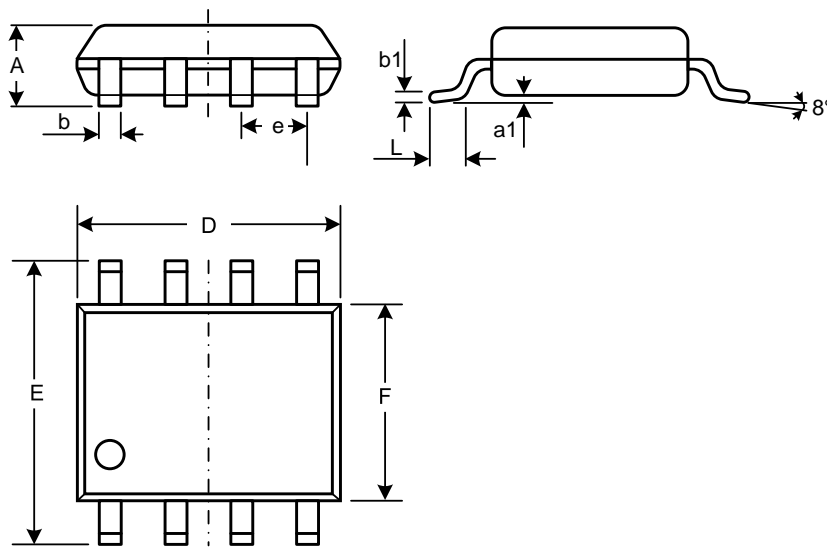


Figure 11. Unclamped Inductive Switching Waveform

Mechanical Dimensions for SOP-8L



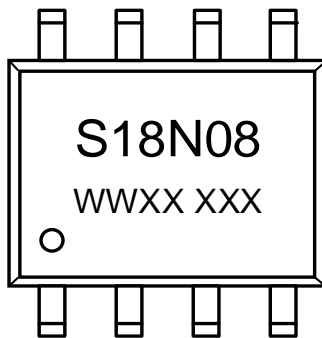
COMMON DIMENSIONS

SYMBOL	MM	
	MIN	MAX
A	1.23	1.75
a1	0.05	0.25
b	0.31	0.51
b1	0.16	0.25
D	4.70	5.15
E	5.75	6.25
e	1.07	1.47
F	3.70	4.10
L	0.4	1.27

Ordering Information

Part	Package	Marking	Packing method
WMS18N08T2	SOP-8L	S18N08	Tape and Reel

Marking Information



S18N08 = Device code

WWXX XXX= Date code

Contact Information

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