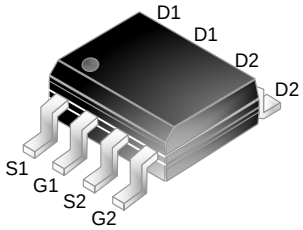
30V Dual N-Channel Enhancement Mode Power MOSFET

Description

WMS10DN03T1 uses advanced power trench technology that has been especially tailored to minimize the on-state resistance and yet maintain superior switching performance.

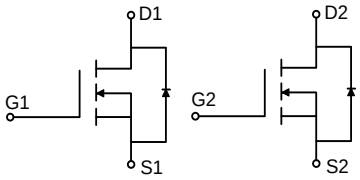


SOP-8L

Features

- V_{DS}= 30V, I_D = 10A
  $R_{DS(on)}$ < 18mΩ @ V_{GS} = 10V
  $R_{DS(on)}$ < 30mΩ @ V_{GS} = 4.5V
- Green Device Available
- Low Gate Charge
- 100% EAS Guaranteed

RoHS compliant



Applications

- Power Management Switches
- DC/DC Converter

Absolute Maximum Ratings

Parameter		Symbol	Value	Unit
Drain-Source Voltage		V_{DS}	30	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current[1]	T_C=25℃	I_D	10	A
	T_C=100℃		7.5	
Pulsed Drain Current[2]		I_{DM}	40	A
Single Pulse Avalanche Energy[3]		EAS	12.8	mJ
Avalanche Current		I_{AS}	16	A
Total Power Dissipation[4]	T_A=25℃	P_D	3	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[1]	$R_{\theta JA}$	41.6	°C/W

Electrical Characteristics T_c = 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	30	-	-	V
Gate-Body Leakage current	I_{GSS}	V_{DS} = 0V, V_{GS} = ±20V	-	-	±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 30V, V_{GS} = 0V	-	-	1	μA
Gate-Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250μA	1.2	1.8	2.5	V
Drain-Source on-Resistance[2]	$R_{DS(on)}$	V_{GS} = 10V, I_D = 8A	-	14.5	18	mΩ
		V_{GS} = 4.5V, I_D = 6A		22	30	
Dynamic Characteristics						
Input Capacitance	C_{iss}	V_{DS} = 15V, V_{GS} =0V, f =1MHz	-	500	-	pF
Output Capacitance	C_{oss}		-	70	-	
Reverse Transfer Capacitance	C_{rss}		-	46	-	
Switching Characteristics						
Gate Resistance	R_g	V_{DS} = 0V, V_{GS} =0V, f =1MHz	-	2.6	-	Ω
Total Gate Charge	Q_g	V_{GS} = 4.5V, V_{DS} = 20V, I_D= 10A	-	8	-	
Gate-Source Charge	Q_{gs}		-	2	-	
Gate-Drain Charge	Q_{gd}		-	2.8	-	
Turn-on Delay Time	$t_{d(on)}$	V_{GS} =10V, V_{DS} = 15V, R_G = 3.3Ω, I_D= 5A, R_L = 1.5Ω	-	5	-	nS
Rise Time	t_r		-	12	-	
Turn-off Delay Time	$t_{d(off)}$		-	17.5	-	
Fall Time	t_f		-	7.2	-	
Drain-Source Body Diode Characteristics						
Diode Forward Voltage[2]	V_{SD}	I_S = 1A, V_{GS} = 0V	-	-	1.2	V
Continuous Source Current[1,5]	I_S	V_G=V_D=0V , Force Current	-	-	10	A

Notes:

1.The data tested by surface mounted on a 1 inch2 FR-4 board with 2OZ copper.

2.The data tested by pulsed , pulse width ≤ 300us , duty cycle ≤ 2%

3. The EAS data shows Max. rating . The test condition is V_{DD}=25V, V_{GS}=10V, L=0.1mH, I_{AS}=16A

4.The power dissipation is limited by 150℃ junction temperature

5. The data is theoretically the same as I_D and I_{DM} , in real applications , should be limited by total power dissipation.

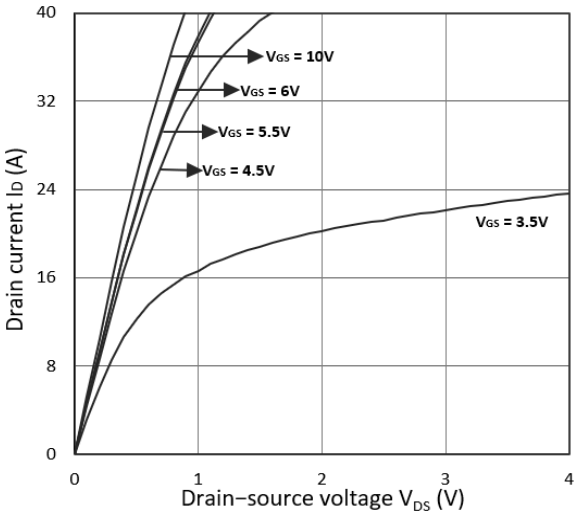


Figure 1. Output Characteristics

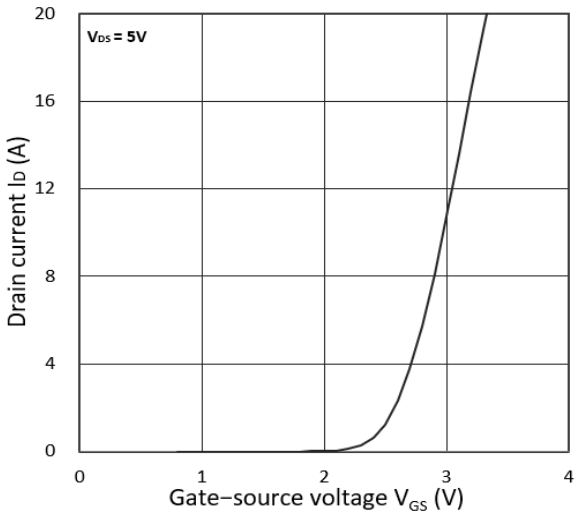


Figure 2. Transfer Characteristics

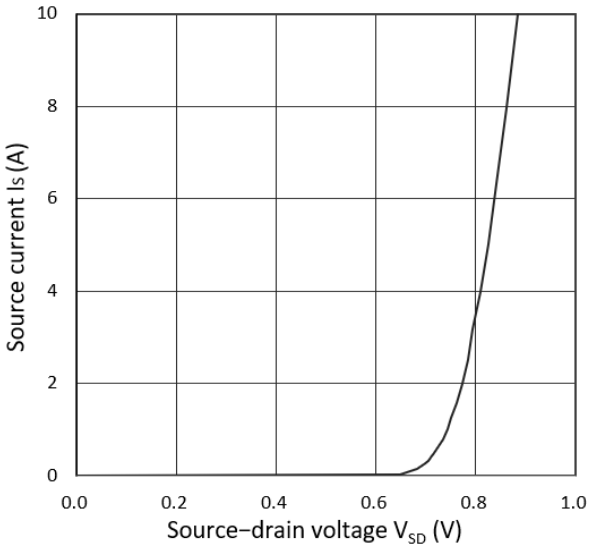


Figure 3. Forward Characteristics of Reverse

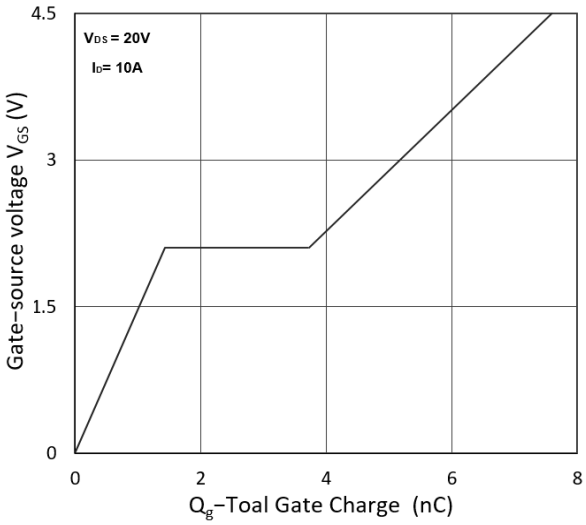


Figure 4. Gate Charge Characteristics

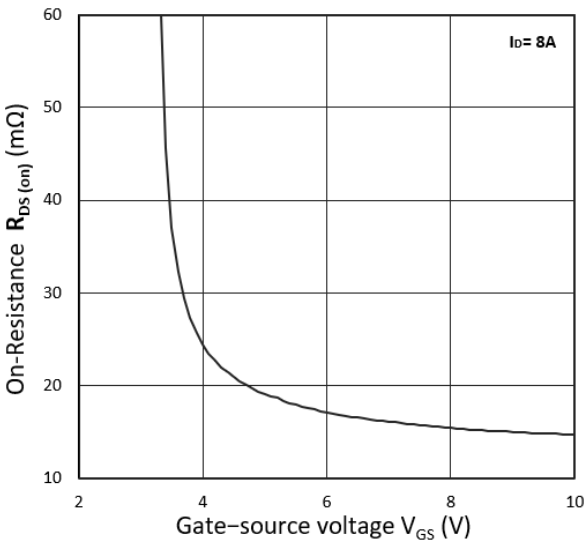


Figure 5. $R_{DS(on)}$ vs. V_{GS}

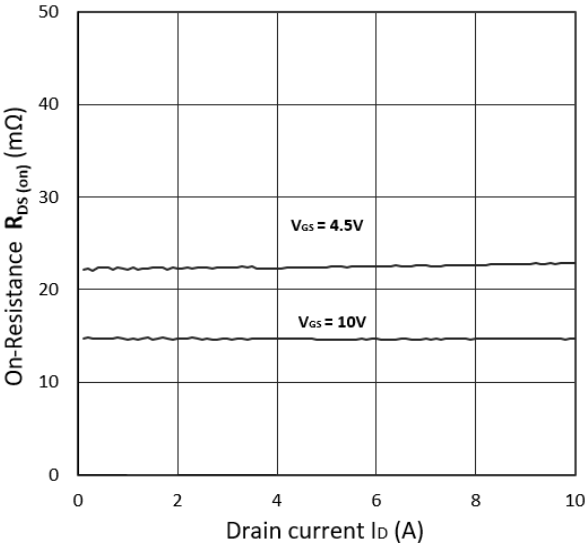


Figure 6. $R_{DS(on)}$ vs. I_D

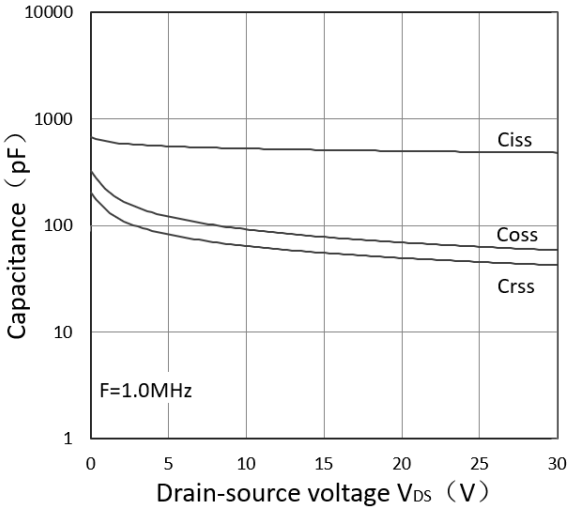


Figure 7. Capacitance Characteristics

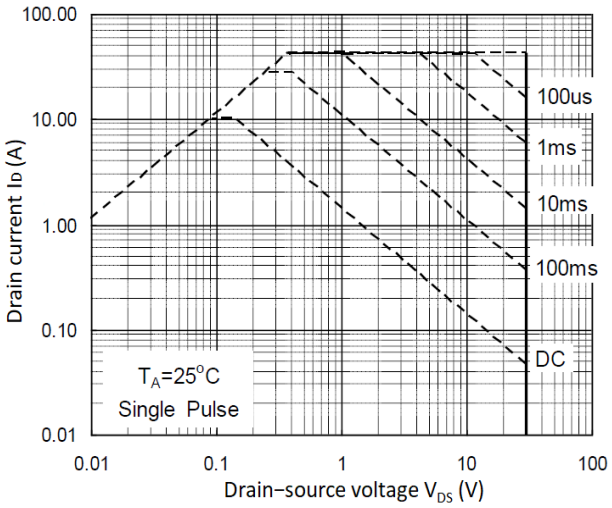


Figure 8. Safe Operating Area

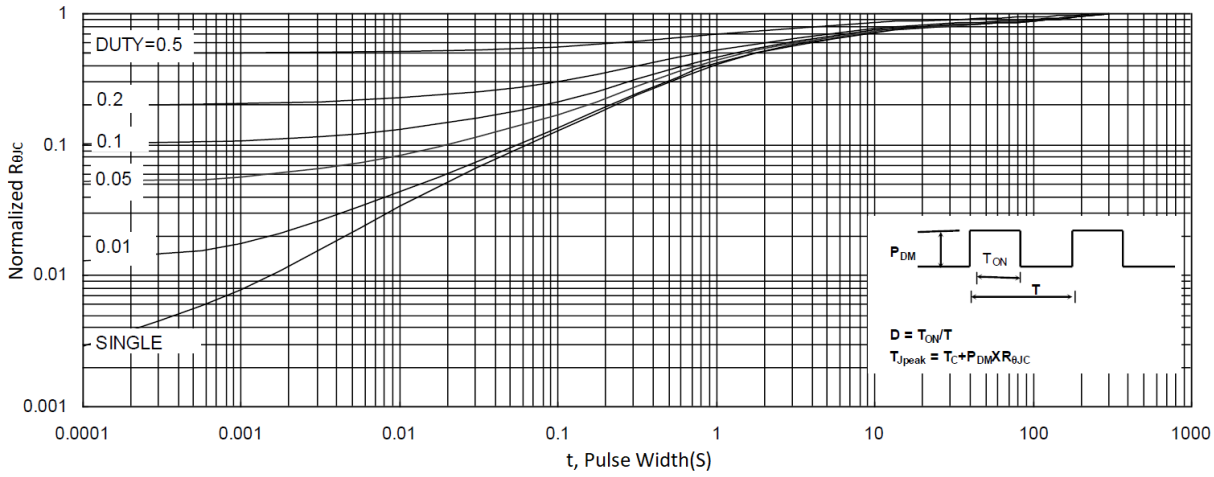


Figure 9. Normalized Maximum Transient Thermal Impedance

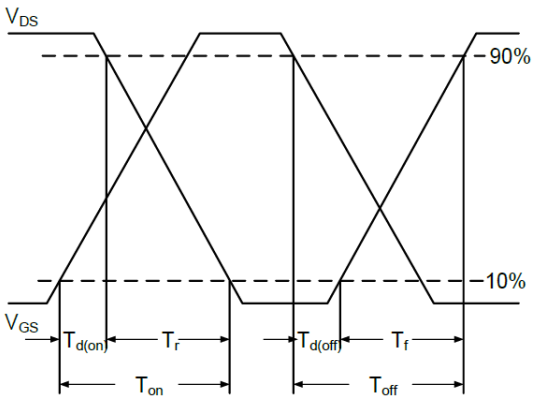


Figure 10. Switching Time Waveform

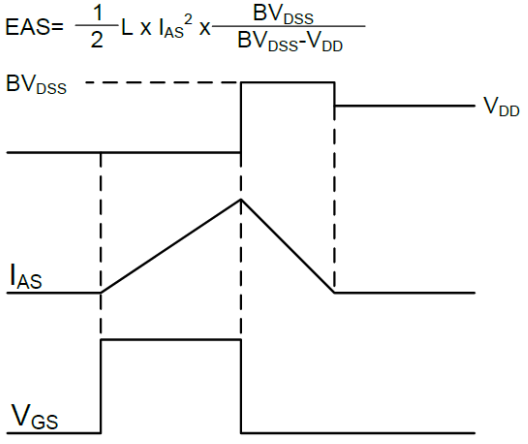
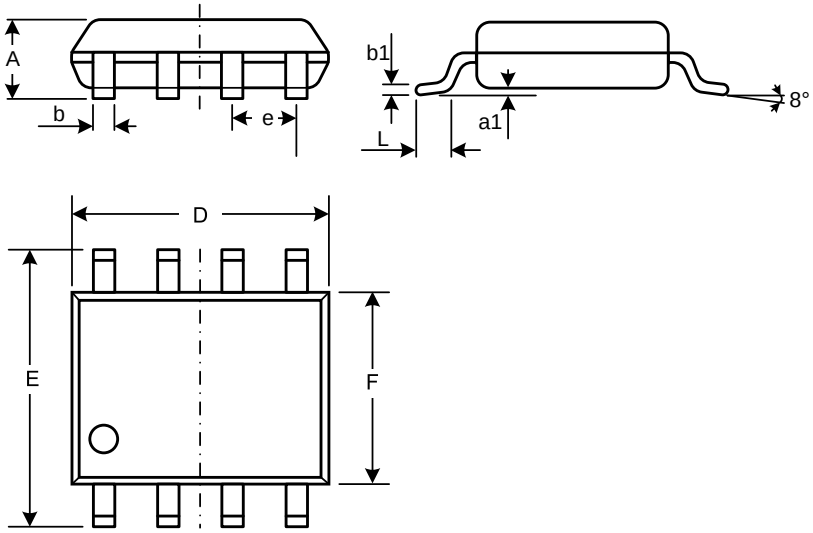


Figure 11. Unclamped Inductive Switching Waveform

Mechanical Dimensions for SOP-8L



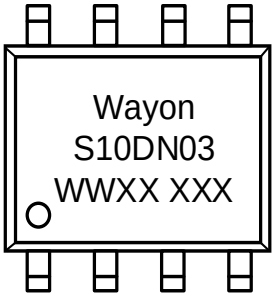
COMMON DIMENSIONS

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
WMS10DN03T1	SOP-8L	S10DN03	Tape and Reel

Marking Information



S10DN03 = Device code

WWXX XXX= Date code

Contact Information

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