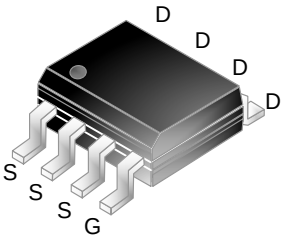
WMS048NV6LG2

65V N-Channel Enhancement Mode Power MOSFET



SOP-8L

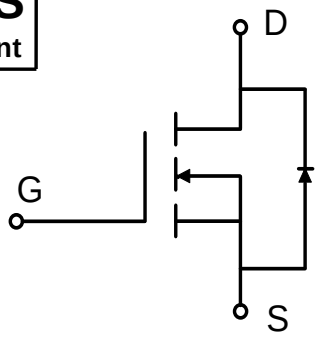
Description

WMS048NV6LG2 uses Wayon's 2nd generation POWERTRENCH MOSFET technology that has been especially tailored to minimize the on-state resistance and yet maintain superior switching performance. This device is well suited for high efficiency fast switching applications.

Features

- V_{DS}= 65V, I_D = 17.5A(Silicon Limited)
  $R_{DS(on)}$ < 5.5mΩ @ V_{GS} = 10V
  $R_{DS(on)}$ < 7.6mΩ @ V_{GS} = 4.5V
- High Speed Power Switching
- Low Gate Charge
- Low $R_{DS(ON)}$
- 100% EAS Guaranteed

RoHS compliant



Applications

- Synchronous Rectification in SMPS
- Hard Switching and High Speed Circuit
- DC/DC Converter

Absolute Maximum Ratings

Parameter		Symbol	Value	Unit
Drain-Source voltage		V_{DS}	65	V
Gate-Source voltage		V_{GS}	±20	V
Continuous Drain Current@10V[1]	T_C=25℃	I_D	17.5	A
	T_C=100℃		10.9	
Continuous Drain Current1(Package Limited)	T_C=25℃		35	
Pulsed Drain Current[2]		I_{DM}	181	A
Single Pulse Avalanche Energy[3]		EAS	26.5	mJ
Avalanche Current		I_{AS}	23	A
Total Power Dissipation[4]	T_C=25℃	P_D	3.1	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]	$R_{\theta JA}$	73	°C/W
Thermal Resistance from Junction-to-Lead[1]	$R_{\theta JL}$	24.3	

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	65	-	-	V
Gate-body Leakage current		I_{GSS}	V_{DS} = 0V, V_{GS} = ±20V	-	-	±100	nA
Zero Gate Voltage Drain Current	T_J=25℃	I_{DSS}	V_{DS} = 60V, V_{GS} = 0V	-	-	1	μA
	T_J=100℃			-	-	100	
Gate-Threshold Voltage		$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250μA	1.0	1.6	2.4	V
Drain-Source On-Resistance[2]		$R_{DS(on)}$	V_{GS} = 10V, I_D = 20A	-	4.2	5.5	mΩ
			V_{GS} = 4.5V, I_D = 10A	-	6.2	7.6	
Forward Transconductance		g_{fs}	V_{DS} = 5V, I_D =20 A	-	58	-	S
Dynamic Characteristics							
Input Capacitance		C_{iss}	V_{DS} = 30V, V_{GS} =0V, f =1MHz	-	1900	-	pF
Output Capacitance		C_{oss}		-	785	-	
Reverse Transfer Capacitance		C_{rss}		-	50	-	
Switching Characteristics							
Gate Resistance		R_g	V_{DS}=0V , V_{GS}=0V , f=1MHz	-	1.33	-	Ω
Total Gate Charge		Q_g	V_{GS} = 4.5V,V_{DD} = 30V, I_D= 20A		24		
Total Gate Charge		Q_g	V_{GS} = 10V,V_{DD} = 30V, I_D= 20A	-	39	-	nC
Gate-Source Charge		Q_{gs}		-	4.3	-	
Gate-Drain Charge		Q_{gd}		-	10.5	-	
Turn-On Delay Time		$t_{d(on)}$	V_{GS} =10V, V_{DD} = 30V,R_G = 10Ω, I_D= 20A	-	9.6	-	nS
Rise Time		t_r		-	7.6	-	
Turn-Off Delay Time		$t_{d(off)}$		-	32.5	-	
Fall Time		t_f		-	9.6	-	
Drain-Source Body Diode Characteristics							
Diode Forward Voltage[2]		V_{SD}	I_S = 30A, V_{GS} = 0V	-	0.9	1.2	V
Body Diode Reverse Recovery Time		t_{rr}	V_R = 30V I_F = 20A, dI/dt = 400A/μs	-	29.1	-	nS
Body Diode Reverse Recovery Charge		Q_{rr}		-	66	-	nC

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}=23A

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

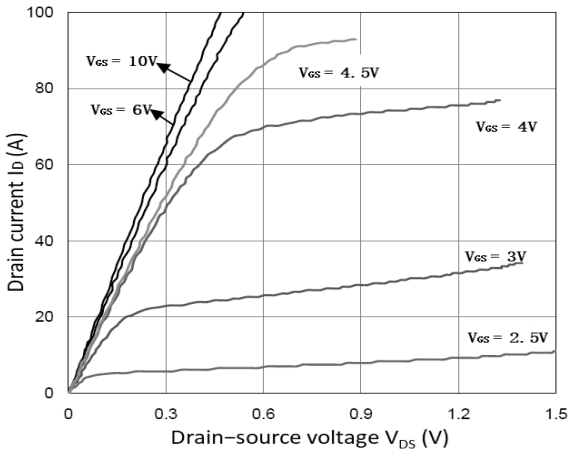


Figure 1. Output Characteristics

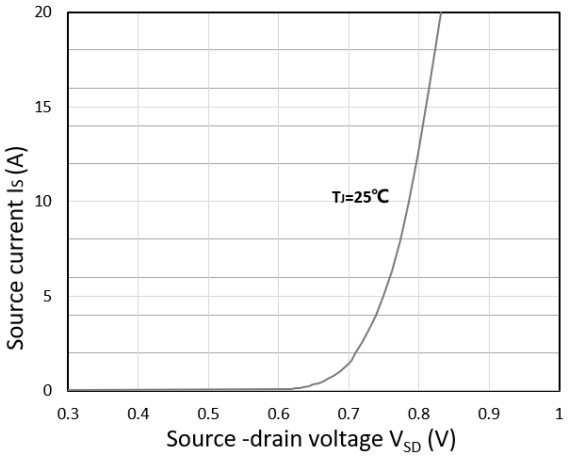


Figure 2. Forward Characteristics of Reverse

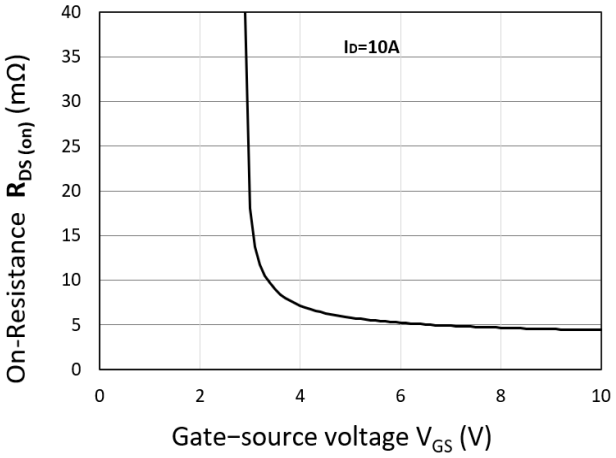


Figure 3. $R_{DS(ON)}$ vs. V_{GS}

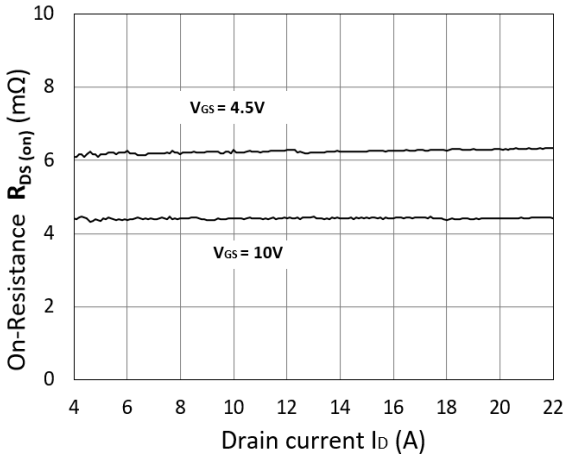


Figure 4. $R_{DS(ON)}$ vs. I_D

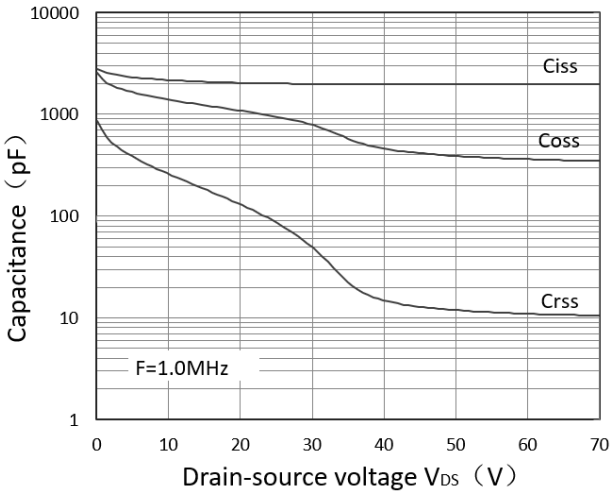


Figure 5. Capacitance Characteristics

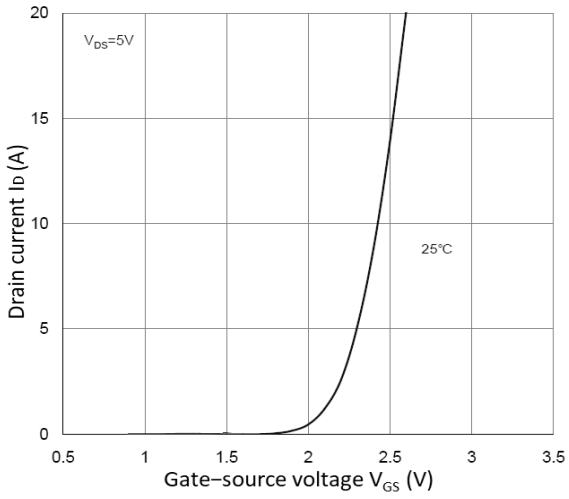


Figure 6. Transfer Characteristics

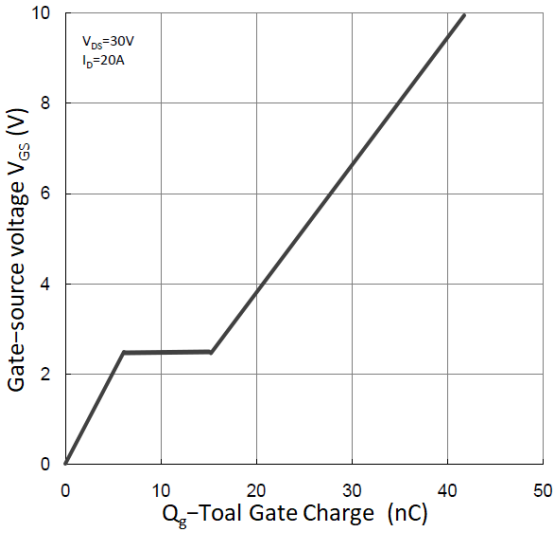


Figure 7.Gate Charge Characteristics

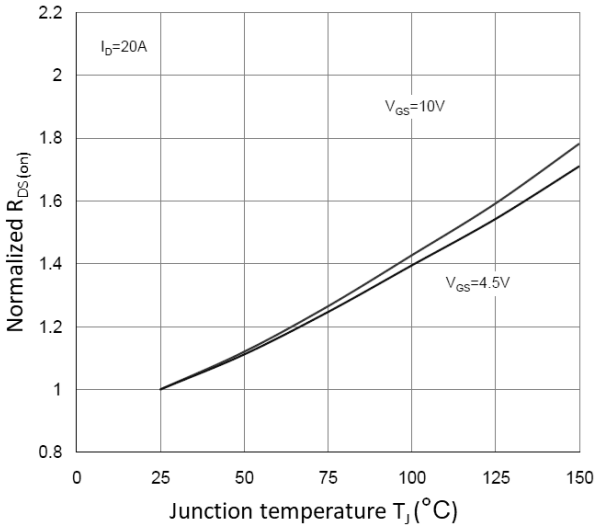


Figure 8. Normalized $R_{DS(on)}$ vs. T_J

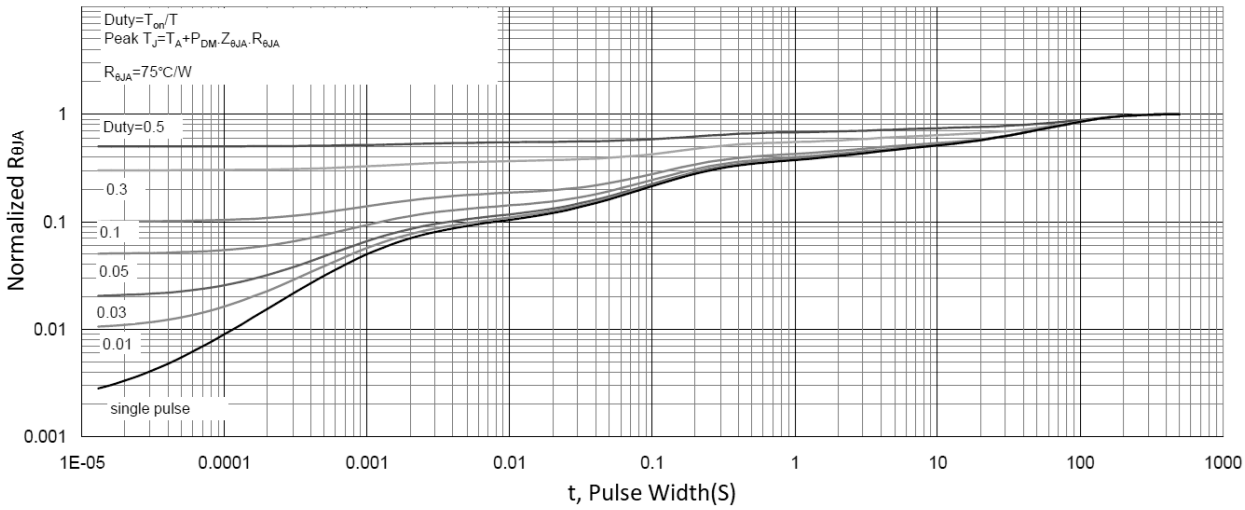


Figure 9. Normalized Maximum Transient Thermal Impedance

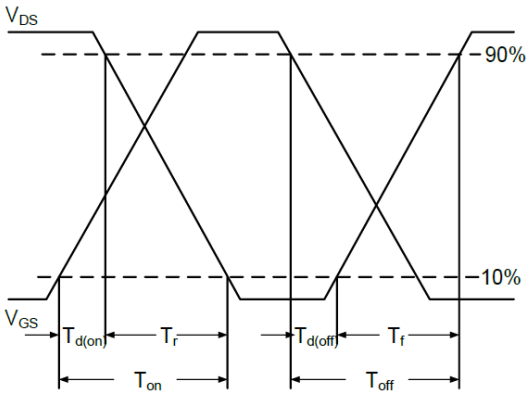


Figure 10. Switching Time Waveform

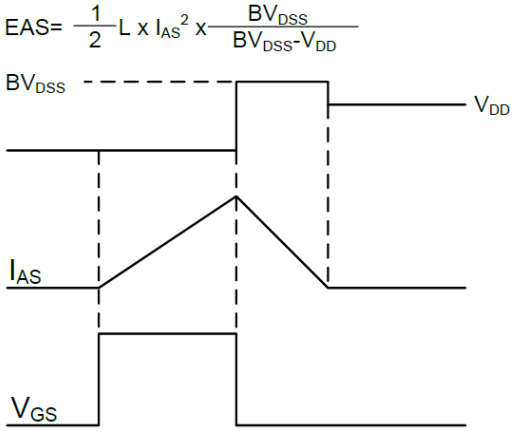
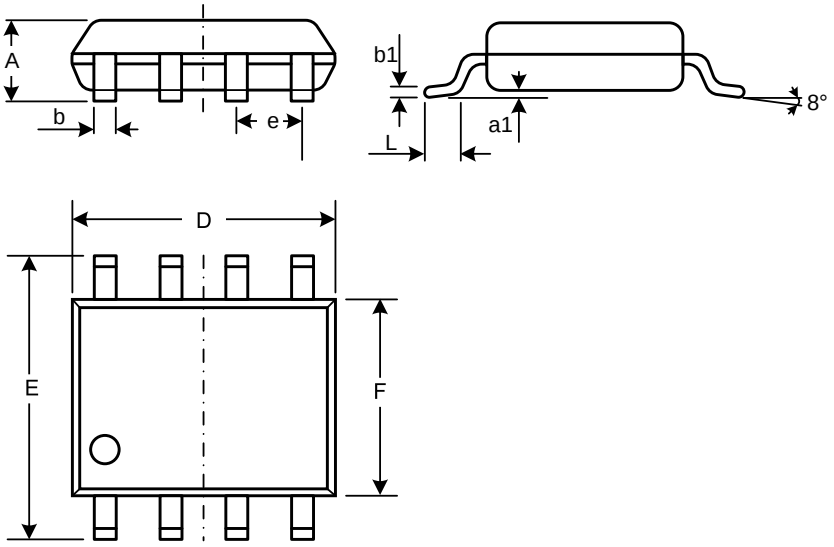


Figure 11. Unclamped Inductive Switching Waveform

Mechanical Dimensions for SOP-8L



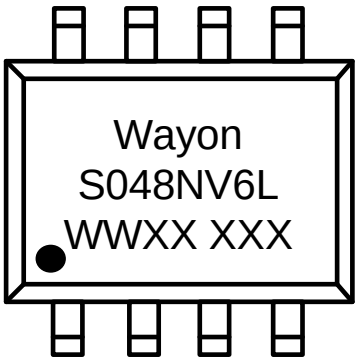
COMMON DIMENSIONS

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
WMS048NV6LG2	SOP-8L	S048NV6L	Tape and Reel

Marking Information



S048NV6L = Device code

WWXX XXX= Date code

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