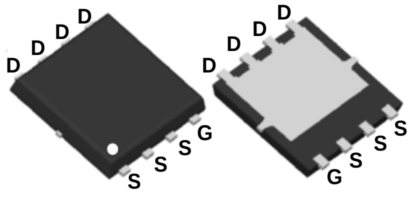
65V N-Channel Enhancement Mode Power MOSFET



PDFN3030-8L

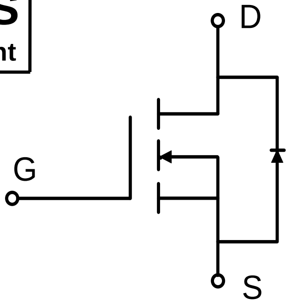
Description

WMQ048NV6LG2 uses Wayon's 2nd generation power trench 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 = 60A
  $R_{DS(on)}$ < 5.1 mΩ @ V_{GS} = 10V
  $R_{DS(on)}$ < 7.6mΩ @ V_{GS} = 4.5V
- Low $R_{DS(ON)}$
- High Speed Power Switching
- Low Gate Charge
- 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	60	A
	T_C=100℃		37	
Pulsed Drain Current[2]		I_{DM}	110	A
Single Pulse Avalanche Energy[3]		EAS	100	mJ
Avalanche Current		I_{AS}	20	A
Total Power Dissipation[4]	T_C=25℃	P_D	75	W
	T_C=100℃		31	
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]	$R_{θJA}$	52	°C/W
Thermal Resistance from Junction-to-Case[1]	$R_{θJC}$	2.8	°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	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=55℃			-	-	5	
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	-	4.4	5.1	mΩ
			V_{GS} = 4.5V, I_D = 10A	-	6.2	7.6	
Forward Transconductance		g_{fs}	V_{DS} = 5V, I_D = 20A	-	58	-	S
Dynamic Characteristics							
Input Capacitance		C_{iss}	V_{DS} = 30V, V_{GS} =0V, f =1MHz	-	1995	-	pF
Output Capacitance		C_{oss}		-	785	-	
Reverse Transfer Capacitance		C_{rss}		-	51	-	
Switching Characteristics							
Gate Resistance		R_g	V_{DS} = 0V, V_{GS} =0V, f =1MHz	-	1.4	-	Ω
Total Gate Charge		Q_g	V_{GS} = 4.5V,V_{DS} = 30V, I_D= 20A	-	24.9	-	nC
Total Gate Charge		Q_g	V_{GS} = 10V,V_{DS} = 30V, I_D= 20A		40		
Gate-Source Charge		Q_{gs}		-	5.9	-	
Gate-Drain Charge		Q_{gd}		-	10.6	-	
Turn-On Delay Time		$t_{d(on)}$	V_{GS} =10V, V_{DS} = 30V, I_D= 20A R_G = 10Ω,	-	9.6	-	nS
Rise Time		t_r		-	8.1	-	
Turn-Off Delay Time		$t_{d(off)}$		-	32	-	
Fall Time		t_f		-	9.5	-	
Drain-Source Body Diode Characteristics							
Diode Forward Voltage[2]		V_{SD}	I_S = 1A, V_{GS} = 0V	-	-	1	V
Continuous Source Current[1,5]		I_S	V_G=V_D=0V , Force Current	-	-	60	A
Body Diode Reverse Recovery Time		t_{rr}	I_F = 20A, dI/dt = 400A/μs	-	28	-	nS
Body Diode Reverse Recovery Charge		Q_{rr}		-	65	-	nC

Note :

1.The data tested by surface mounted on a 1 inch^2 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=0.5mH.,I_{AS}=20A

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.

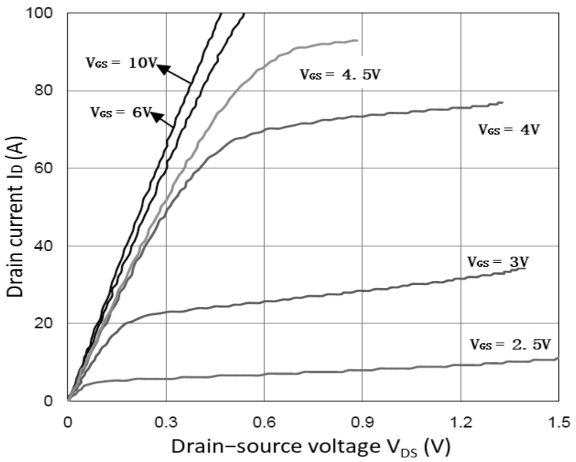


Figure 1. Output Characteristics

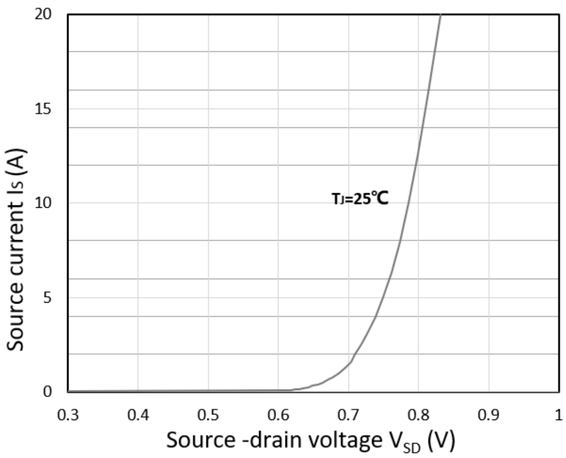


Figure 2. Forward Characteristics of Reverse

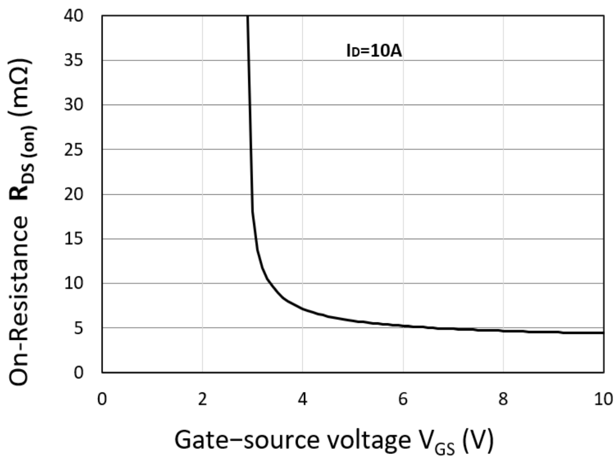


Figure 3. $R_{DS(ON)}$ vs. V_{GS}

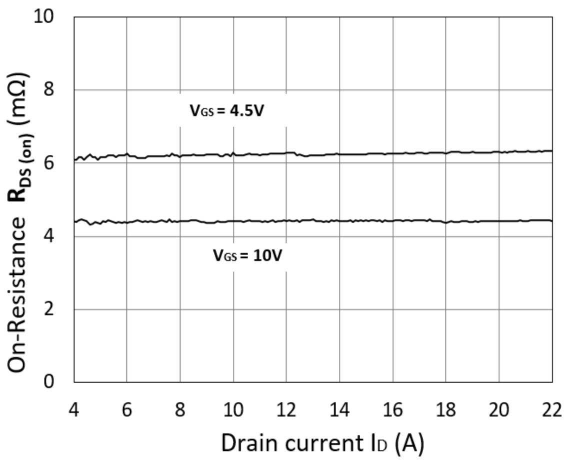


Figure 4. $R_{DS(ON)}$ vs. I_D

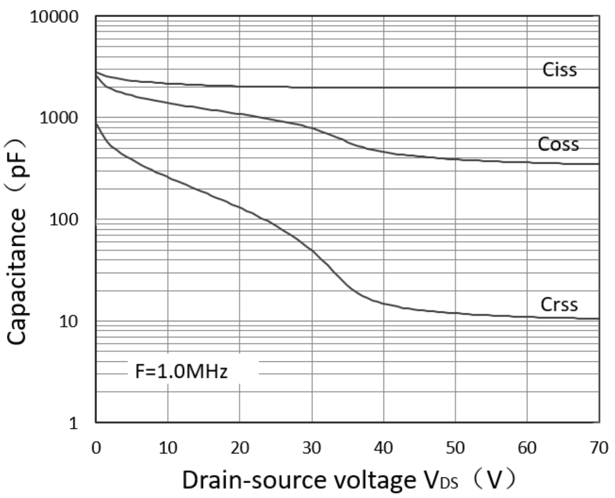


Figure 5. Capacitance Characteristics

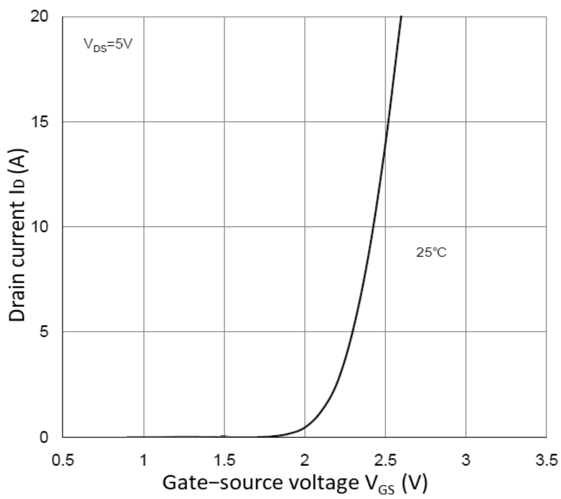


Figure 6. Transfer Characteristics

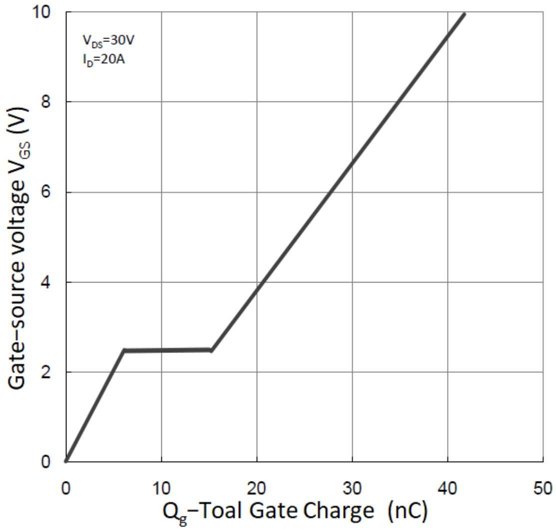


Figure 7. Gate Charge Characteristics

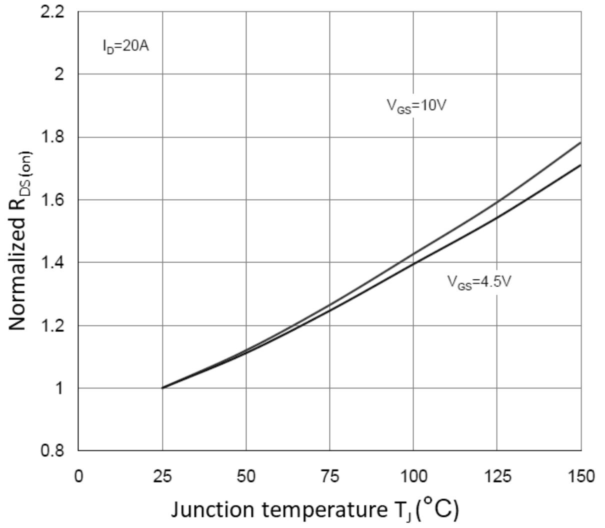


Figure 8. Normalized $R_{DS(on)}$ vs. T_J

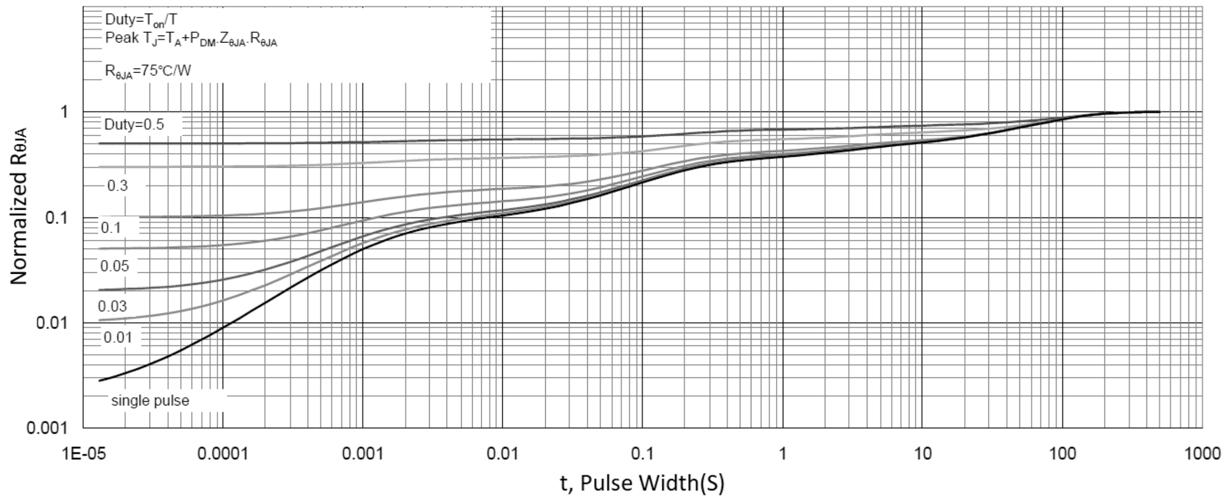


Figure 9. Normalized Maximum Transient Thermal Impedance

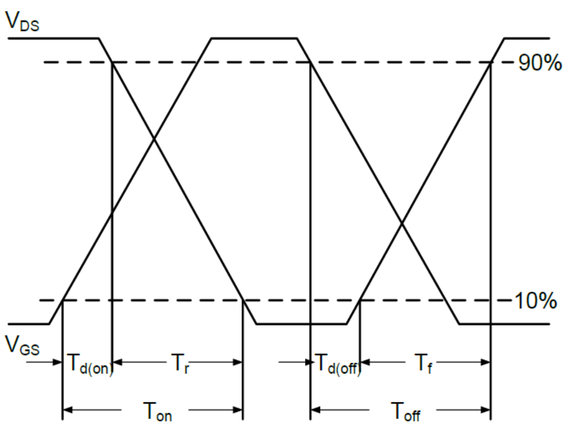


Figure 10. Switching Time Waveform

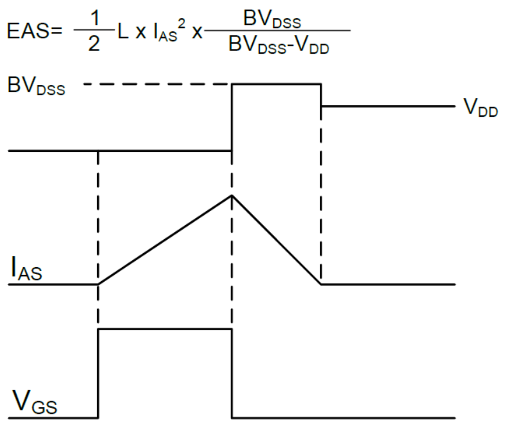
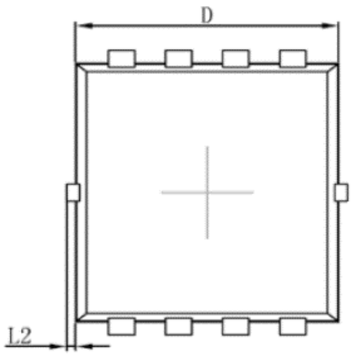


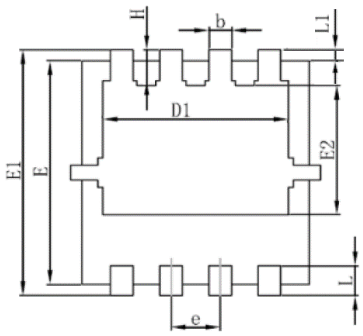
Figure 11. Unclamped Inductive Switching

Waveform

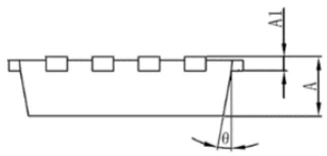
Mechanical Dimensions for PDFN3030-8L



Top View



Bottom View



Side View

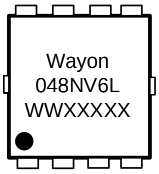
COMMON DIMENSIONS

SYMBOL	MM	
	MIN	MAX
A	0.70	0.85
A1	0.10	0.25
D	2.90	3.25
D1	2.25	2.65
E	2.90	3.20
E1	3.10	3.45
E2	1.54	1.98
b	0.20	0.40
e	0.60	0.70
L	0.30	0.50
L1	0.13BSC	
L2	0.00	0.15
H	0.20	0.65
θ	0°	14°

Ordering Information

Part	Package	Marking	Packing method
WMQ048NV6LG2	PDFN3030-8L	048NV6L	Tape and Reel

Marking Information



048NV6L = Device code

WWXXXXX= Date code

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