

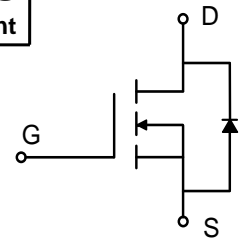
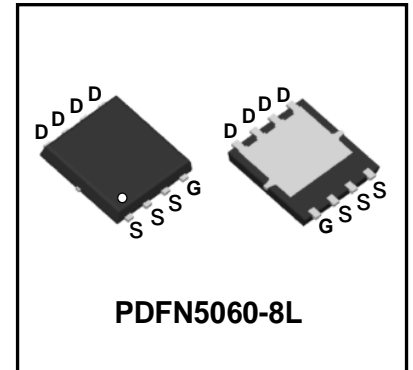
## 65V N-Channel Enhancement Mode Power MOSFET

### Description

WMB048NV6LG2 uses Wayon's 2<sup>nd</sup> 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

- $V_{DS} = 65V$ ,  $I_D = 95A$ (Silicon Limited)  
 $R_{DS(on)} < 4.8m\Omega @ V_{GS} = 10V$   
 $R_{DS(on)} < 7m\Omega @ V_{GS} = 4.5V$
- Green Device Available
- 100% EAS Guaranteed
- High Speed Power Switching, Logic Level



### 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		$V_{GS}$	$\pm 20$	V
Continuous Drain Current <sup>1</sup> (Silicon Limited)	$T_C=25^\circ C$	$I_D$	95	A
	$T_C=100^\circ C$		61	
Continuous Drain Current <sup>1</sup> (Package Limited)	$T_C=25^\circ C$		45	
Pulsed Drain Current <sup>2</sup>		$I_{DM}$	341	A
Single Pulse Avalanche Energy <sup>3</sup>		<b>EAS</b>	24	mJ
Avalanche Current		$I_{AS}$	22	A
Total Power Dissipation <sup>4</sup>	$T_C=25^\circ C$	$P_D$	75	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 <sup>1</sup>	$R_{\theta JA}$	49	$^\circ C/W$
Thermal Resistance from Junction-to-Case <sup>1</sup>	$R_{\theta JC}$	1.66	$^\circ C/W$

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

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit	
<b>Static Characteristics</b>							
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	65	-	-	V	
Gate-body Leakage Current	$I_{GSS}$	$V_{DS} = 0V, V_{GS} = \pm 20V$	-	-	$\pm 100$	nA	
Zero Gate Voltage Drain Current	$T_J=25^\circ\text{C}$	$I_{DSS}$	$V_{DS} = 60V, V_{GS} = 0V$	-	-	1	$\mu A$
	$T_J=100^\circ\text{C}$			-	-	100	
Gate-Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	1.0	1.6	2.4	V	
Drain-Source On-Resistance <sup>2</sup>	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 20A$	-	3.8	4.8	m $\Omega$	
		$V_{GS} = 4.5V, I_D = 10A$	-	5.7	7		
Forward Transconductance <sup>2</sup>	$g_{fs}$	$V_{DS} = 5V, I_D = 20A$	-	61	-	S	
<b>Dynamic Characteristics</b>							
Input Capacitance	$C_{iss}$	$V_{DS} = 30V, V_{GS} = 0V, f = 1\text{MHz}$	-	1995	-	pF	
Output Capacitance	$C_{oss}$		-	785	-		
Reverse Transfer Capacitance	$C_{rss}$		-	51	-		
<b>Switching Characteristics</b>							
Gate Resistance	$R_g$	$V_{DS}=0V, V_{GS}=0V, f=1\text{MHz}$	-	1.3	-	$\Omega$	
Total Gate Charge	$Q_g$	$V_{GS} = 4.5V, V_{DS} = 30V, I_D = 20A$	-	25.5	-	nC	
Total Gate Charge	$Q_g$	$V_{GS} = 10V, V_{DS} = 50V, I_D = 20A$	-	40	-		
Gate-Source Charge	$Q_{gs}$		-	5.2	-		
Gate-Drain Charge	$Q_{gd}$		-	10.5	-		
Turn-On Delay Time	$t_{d(on)}$	$V_{GS} = 10V, V_{DS} = 30V, R_G = 10\Omega, I_D = 20A$	-	9.8	-	nS	
Rise Time	$t_r$		-	8.1	-		
Turn-Off Delay Time	$t_{d(off)}$		-	35	-		
Fall Time	$t_f$		-	9.7	-		
<b>Drain-Source Body Diode Characteristics</b>							
Diode Forward Voltage <sup>2</sup>	$V_{SD}$	$I_S = 30A, V_{GS} = 0V$	-	-	1.2	V	
Reverse Recovery Time	$t_{rr}$	$V_R = 30V, I_F = 20A, di_F/dt = 400A/\mu s$	-	30.5	-	ns	
Reverse Recovery Charge	$Q_{rr}$		-	67	-	nC	

## Notes:

- The data tested by surface mounted on a 1 inch<sup>2</sup> 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  $V_{DD}=25V, V_{GS}=10V, L=0.1\text{mH}, I_{AS}=22A$
- The power dissipation is limited by  $150^\circ\text{C}$  junction temperature

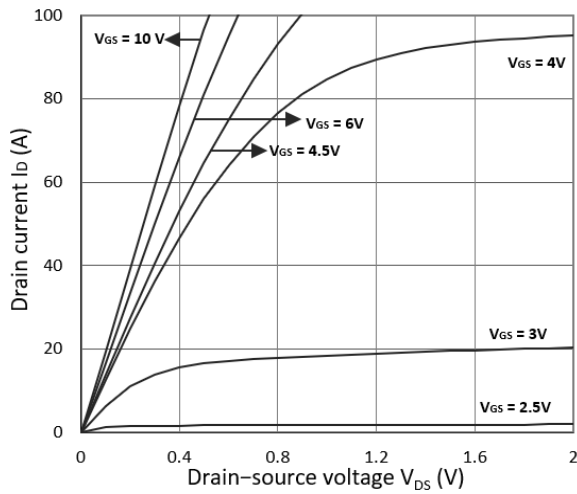


Figure 1. Output Characteristics

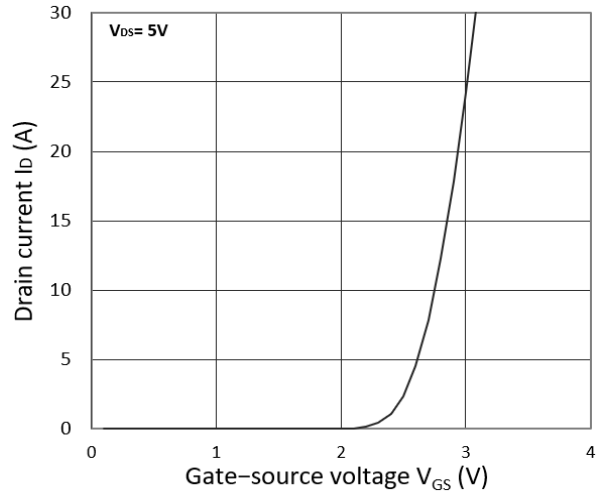


Figure 2. Transfer Characteristics

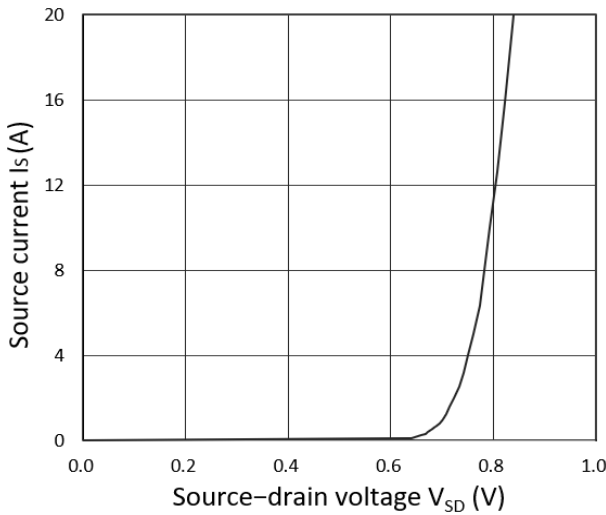


Figure 3. Forward Characteristics of Reverse

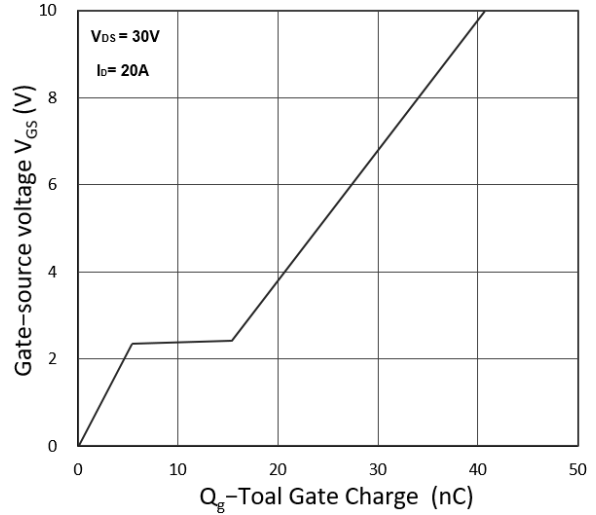


Figure 4. Gate Charge Characteristics

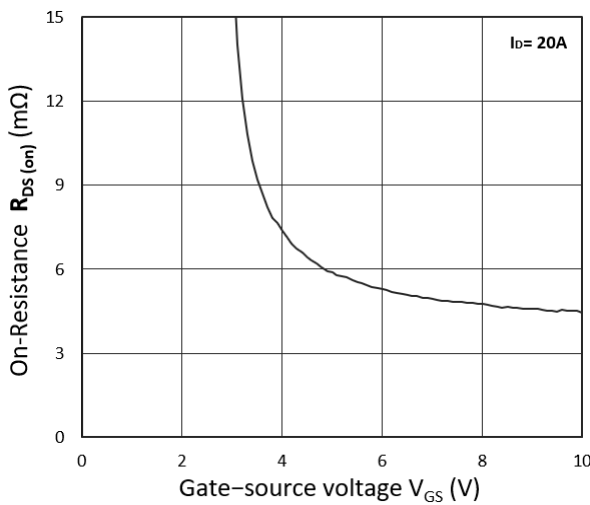


Figure 5.  $R_{DS(ON)}$  Vs.  $V_{GS}$

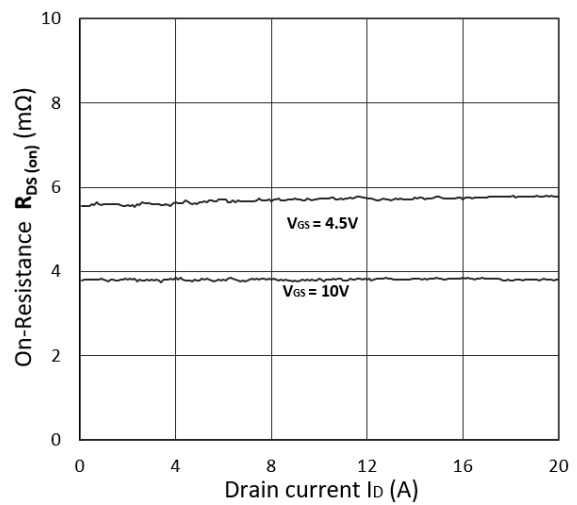


Figure 6.  $R_{DS(ON)}$  Vs.  $I_D$

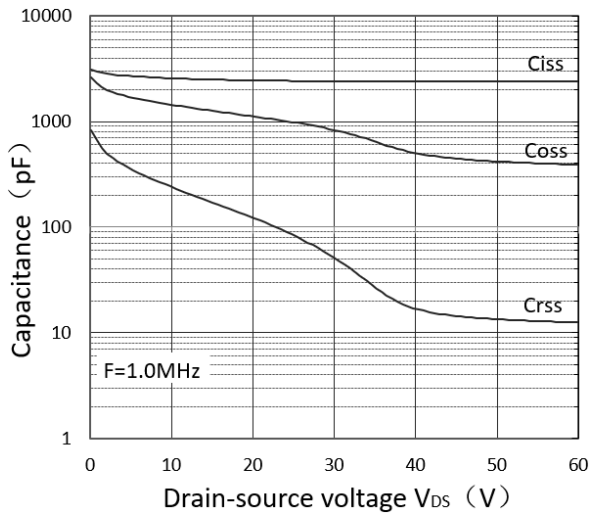


Figure 7. Capacitance Characteristics

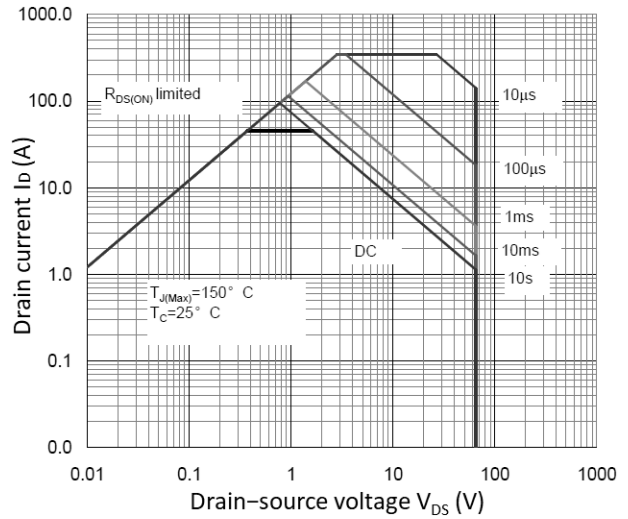


Figure 8. Safe Operating Area

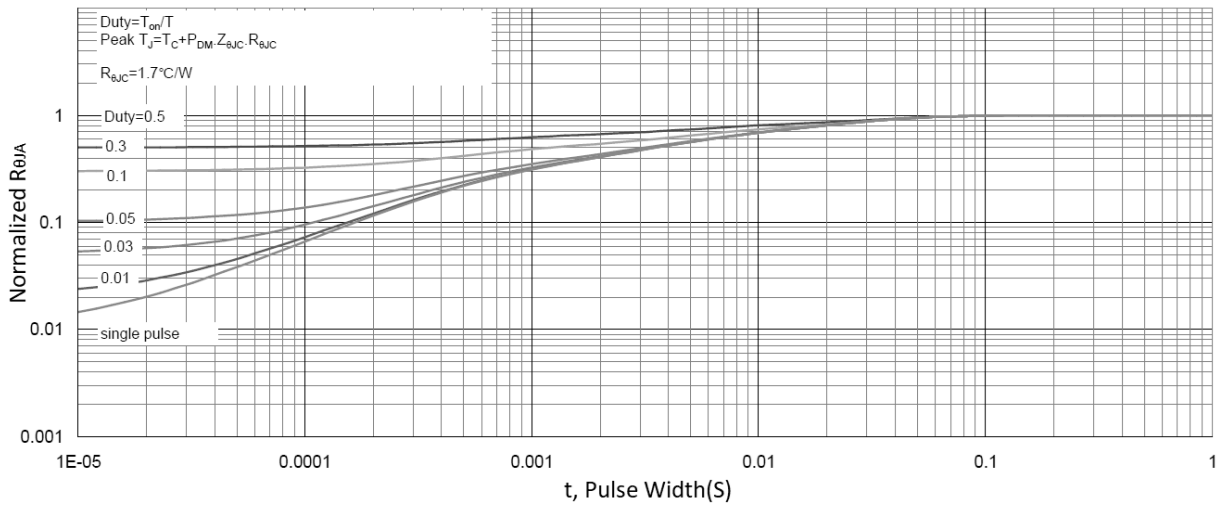


Figure 9. Normalized Maximum Transient Thermal Impedance

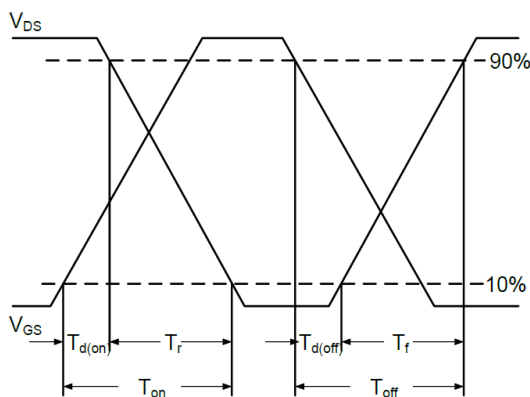


Figure 10. Switching Time Waveform

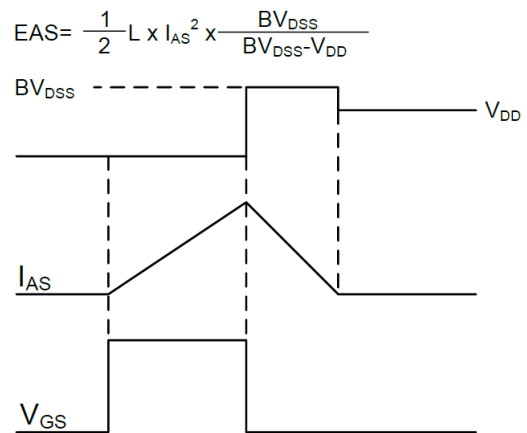
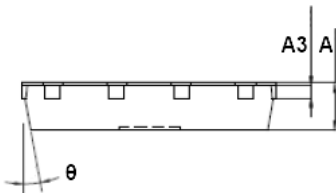
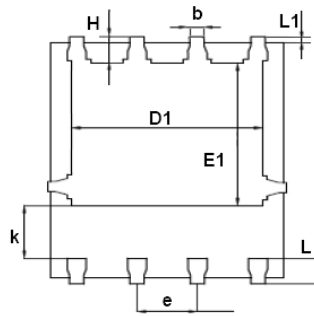
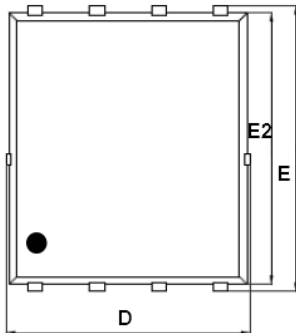


Figure 11. Unclamped Inductive Switching Waveform

## Mechanical Dimensions for PDFN5060-8L



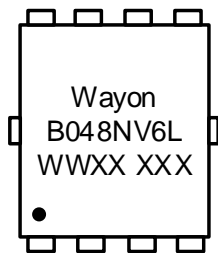
## COMMON DIMENSIONS

SYMBOL	MM	
	MIN	MAX
A	0.90	1.20
A3	0.15	0.35
D	4.80	5.40
E	5.90	6.35
D1	3.61	4.31
E1	3.30	3.92
E2	5.65	6.06
k	1.10	-
b	0.30	0.51
e	1.27BSC	
L	0.38	0.71
L1	0.05	0.36
H	0.38	0.61
$\theta$	0°	12°

## Ordering Information

Part	Package	Marking	Packing method
WMB048NV6LG2	PDFN5060-8L	B048NV6L	Tape and Reel

## Marking Information



B048NV6L = Device code

WWXX XXX= Date code

## Contact Information

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