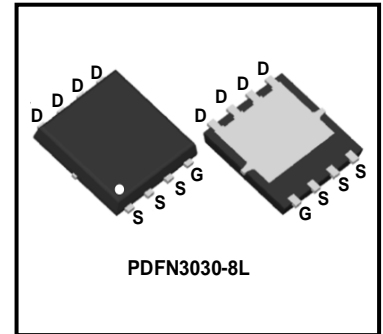


60V N-Channel Enhancement Mode Power MOSFET

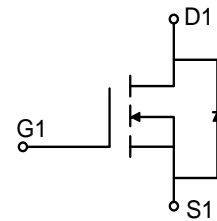
Description

WMQ098N06LG2 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

- $V_{DS} = 60V$, $I_D = 42A$
 $R_{DS(on)} < 9.8m\Omega @ V_{GS} = 10V$
 $R_{DS(on)} < 15m\Omega @ V_{GS} = 4.5V$
- Green Device Available
- Low Gate Charge
- 100% EAS Guaranteed



Applications

- Synchronous Rectification
- DC/DC Converter

Absolute Maximum Ratings

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current ¹	I_D	$T_C = 25^\circ C$	42
		$T_C = 100^\circ C$	25
Pulsed Drain Current ²	I_{DM}	150	A
Single Pulse Avalanche Energy ³	EAS	64.8	mJ
Avalanche Current	I_{AS}	36	A
Total Power Dissipation ⁴	P_D	35.7	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	$R_{\theta JC}$	3.5	$^\circ C/W$

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	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	60	-	-	V
Gate-Body Leakage current	I_{GSS}	$V_{DS} = 0V, V_{GS} = \pm 20V$	-	-	± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$T_J = 25^\circ\text{C}$ $V_{DS} = 60V, V_{GS} = 0V$	-	-	1	μA
Gate-Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	1.0	1.7	2.5	V
Drain-Source on-Resistance ²	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 10A$	-	7.8	9.8	m Ω
		$V_{GS} = 4.5V, I_D = 6A$		11.5	15	
Dynamic Characteristics						
Input Capacitance	C_{iss}	$V_{DS} = 30V, V_{GS} = 0V, f = 1\text{MHz}$	-	937	-	pF
Output Capacitance	C_{oss}		-	428	-	
Reverse Transfer Capacitance	C_{rss}		-	31	-	
Switching Characteristics						
Gate Resistance	R_g	$V_{DS} = 0V, V_{GS} = 0V, f = 1\text{MHz}$	-	2.0	-	Ω
Total Gate Charge	Q_g	$V_{GS} = 10V, V_{DS} = 30V,$ $I_D = 13A$	-	17.9	-	nC
Gate-Source Charge	Q_{gs}		-	6.7	-	
Gate-Drain Charge	Q_{gd}		-	3.1	-	
Turn-on Delay Time	$t_{d(on)}$	$V_{GS} = 10V, V_{DS} = 30V, R_G = 3\Omega,$ $I_D = 13A$	-	6.9	-	nS
Rise Time	t_r		-	51	-	
Turn-off Delay Time	$t_{d(off)}$		-	17.3	-	
Fall Time	t_f		-	7.6	-	
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	-	-	42	A

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 $V_{DD} = 25V, V_{GS} = 10V, L = 0.1\text{mH}, I_{AS} = 36A$
- 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.

Typical Characteristics

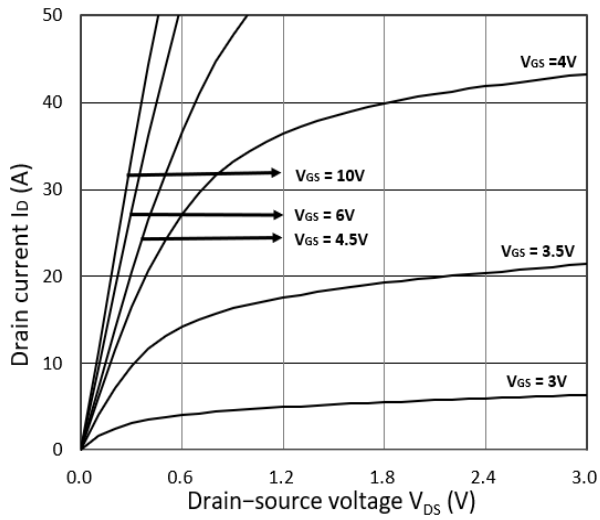


Figure 1. Output Characteristics

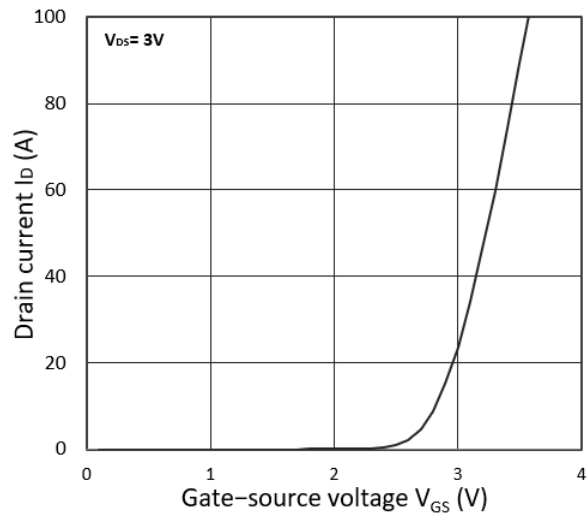


Figure 2. Transfer Characteristics

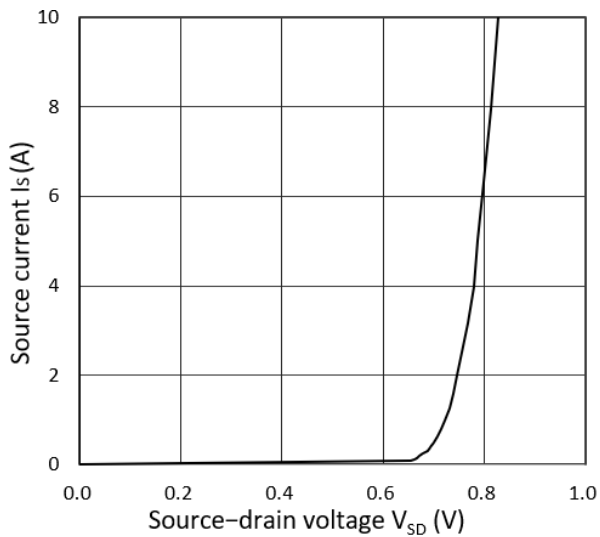


Figure 3. Forward Characteristics of Reverse

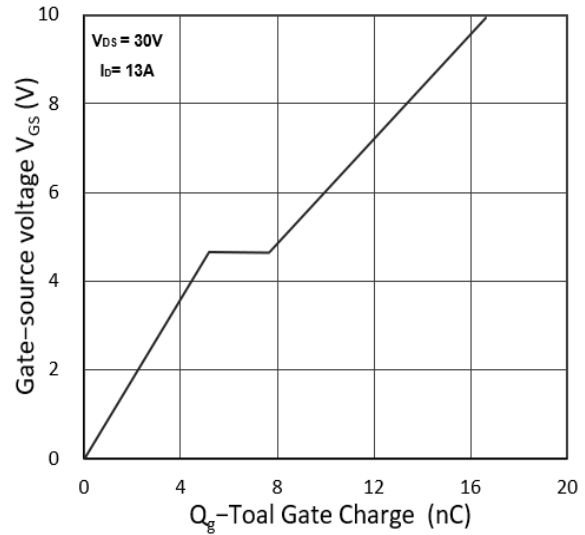


Figure 4. Gate Charge Characteristics

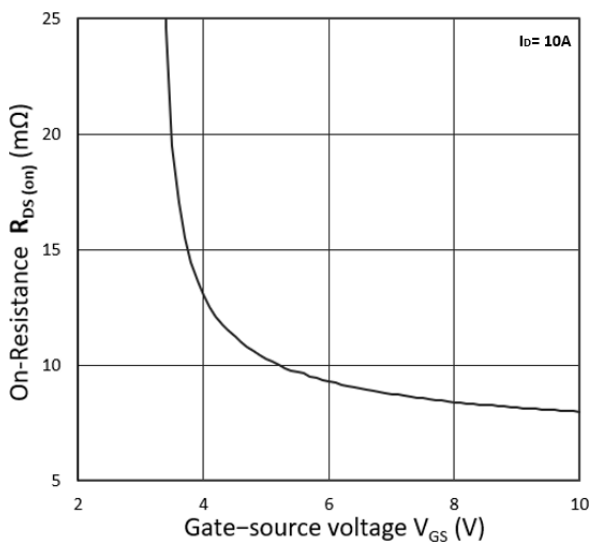


Figure 5. $R_{DS(on)}$ vs. V_{GS}

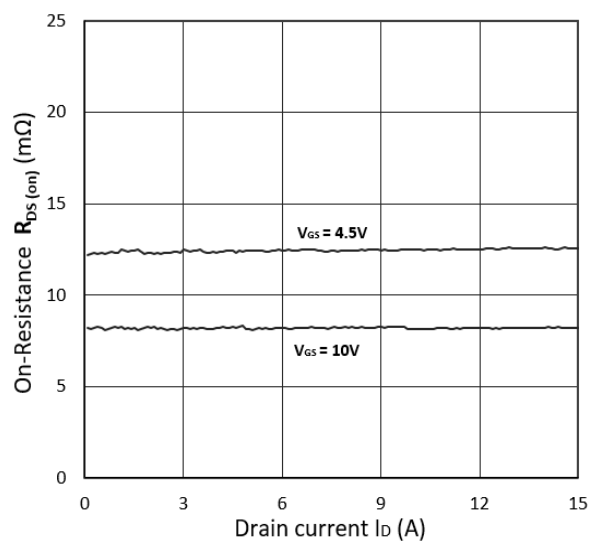


Figure 6. $R_{DS(on)}$ vs. I_D

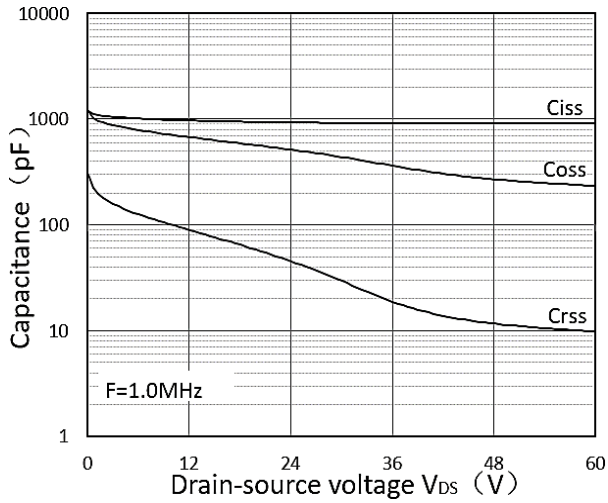


Figure 7. Capacitance Characteristics

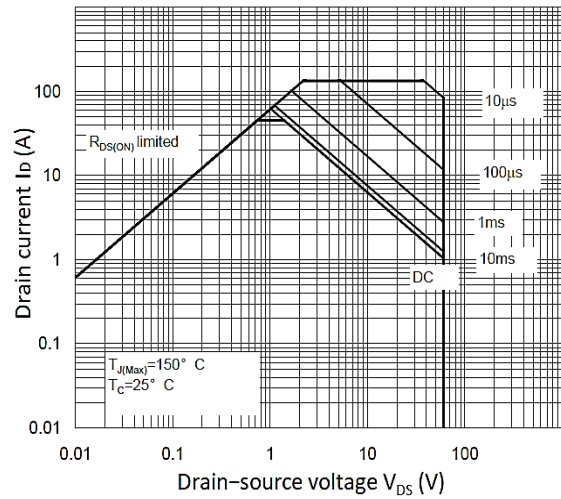


Figure 8. Safe Operating Area

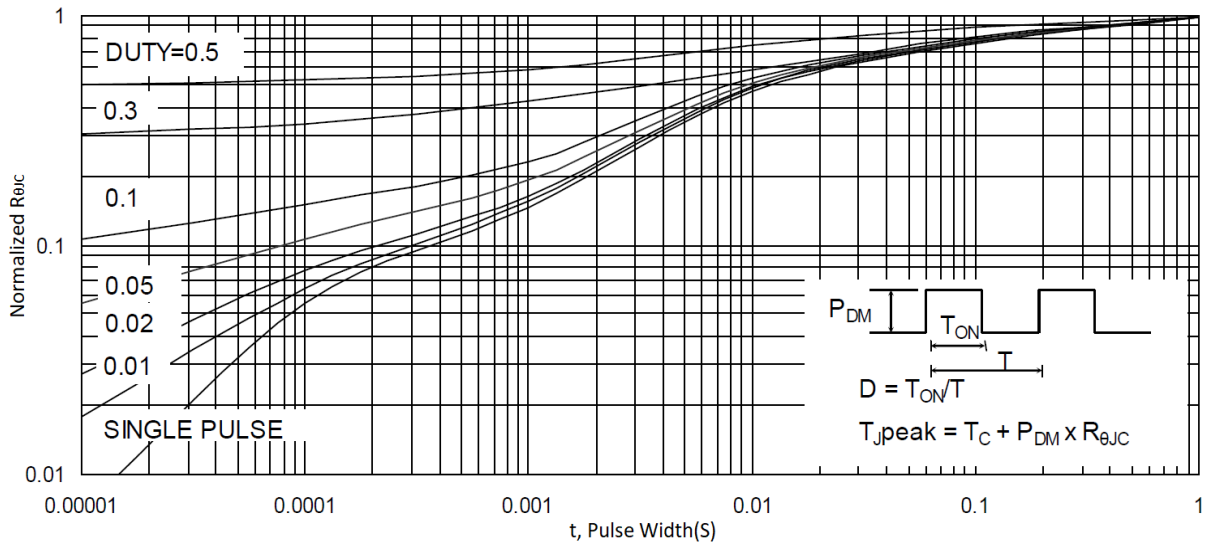


Figure 9. Normalized Maximum Transient Thermal Impedance

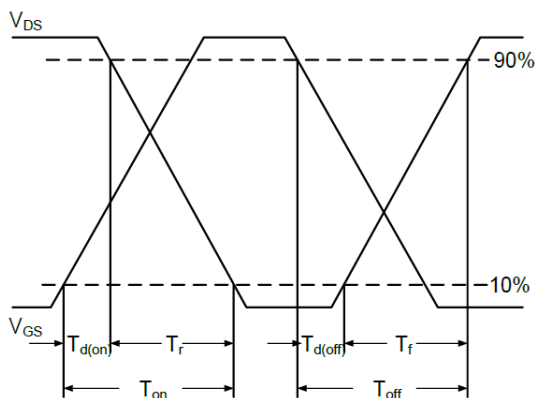


Figure 10. Switching Time Waveform

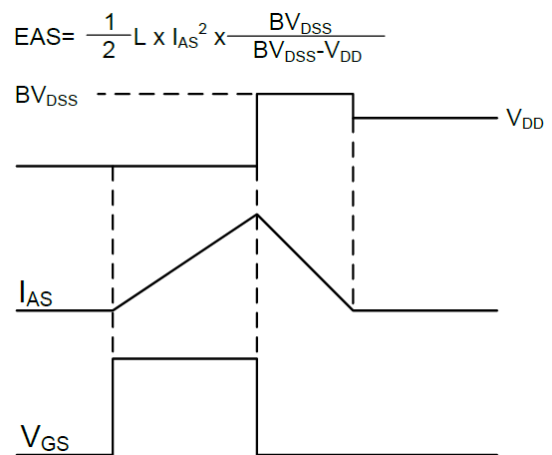
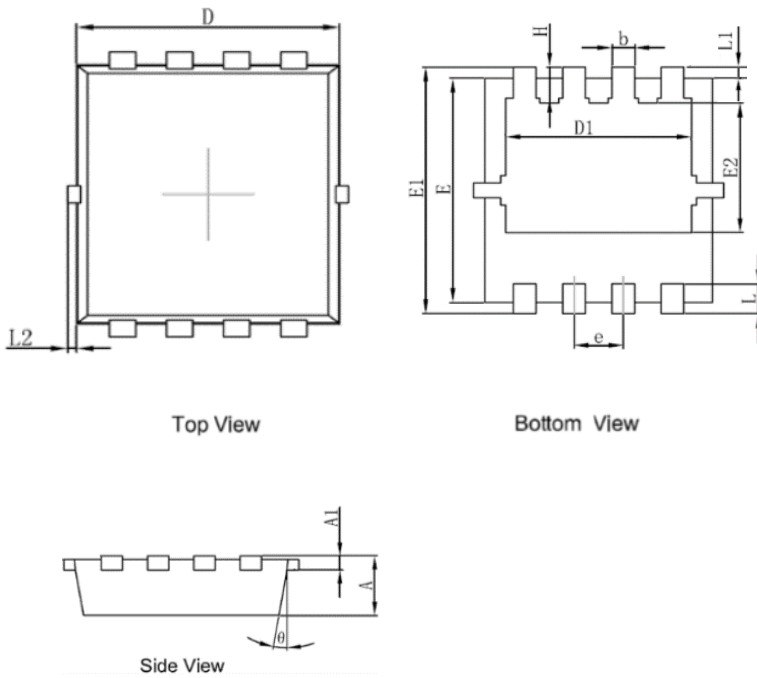


Figure 11. Unclamped Inductive Switching Waveform

Mechanical Dimensions for PDFN3030-8L

COMMON DIMENSIONS

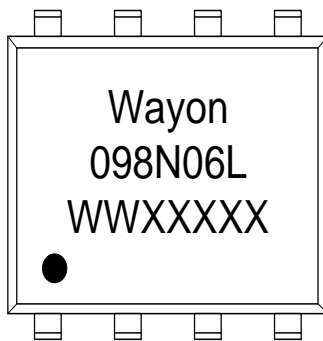


SYMBOL	MM	
	MIN	MAX
A	0.65	0.90
A1	0.10	0.25
D	2.90	3.25
D1	2.25	2.69
E	2.90	3.20
E1	3.00	3.60
E2	1.35	2.20
b	0.20	0.40
e	0.65BSC	
L	0.15	0.50
L1	0.13BSC	
L2	0.00	0.20
H	0.15	0.65
θ	0°	14°

Ordering Information

Part	Package	Marking	Packing method
WMQ098N06LG2	PDFN3030-8L	098N06L	Tape and Reel

Marking Information



098N06L = Device code

WWXXXXX= Date code


Contact Information

No.1001, Shiwan(7) Road, Pudong District, Shanghai, P.R.China.201207

Tel: 86-21-50310888 Fax: 86-21-50757680 Email: market@way-on.com

WAYON website: <http://www.way-on.com>

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