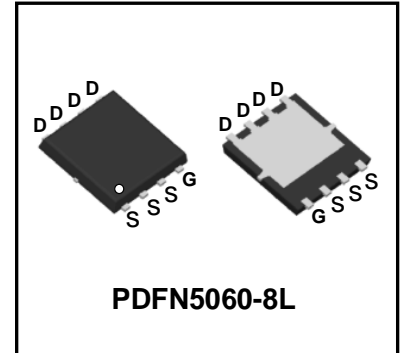


100V N-Channel Enhancement Mode Power MOSFET

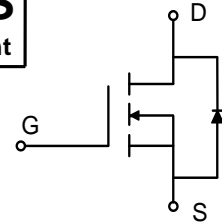
Description

WMB080N10HG2 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

- $V_{DS} = 100V$, $I_D = 74A$ (Silicon Limited)
 $R_{DS(on)} < 8m\Omega @ V_{GS} = 10V$
- Green Device Available
- 100% EAS Guaranteed
- Optimized for High Speed Smooth Switching



Applications

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

Absolute Maximum Ratings

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	100	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current ¹ (Silicon Limited)	I_D	$T_C=25^\circ C$	74
		$T_C=100^\circ C$	47
Pulsed Drain Current ²	I_{DM}	260	A
Single Pulse Avalanche Energy ³	EAS	204.8	mJ
Avalanche Current	I_{AS}	32	A
Total Power Dissipation ⁴	P_D	$T_C=25^\circ C$	80.6
Operating Junction and Storage Temperature Range		T_J, T_{STG}	-55 to 150

Thermal Characteristics

Parameter	Symbol	Value	Unit
Thermal Resistance from Junction-to-Ambient ¹	$R_{\theta JA}$	51	$^\circ C/W$
Thermal Resistance from Junction-to-Case ¹	$R_{\theta JC}$	1.55	$^\circ C/W$

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	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	100	-	-	V	
Gate-Body Leakage Current	I_{GSS}	$V_{DS} = 0V, V_{GS} = \pm 20V$	-	-	± 100	nA	
Zero Gate Voltage Drain Current	$T_J=25^\circ\text{C}$	I_{DSS}	$V_{DS} = 100V, V_{GS} = 0V$	-	-	1	μA
	$T_J=100^\circ\text{C}$			-	-	100	
Gate-Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	2	3	4	V	
Drain-Source on-Resistance ²	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 20A$	-	7	8	m Ω	
Forward Transconductance ²	g_{fs}	$V_{DS} = 5V, I_D = 20A$	-	40	-	S	
Dynamic Characteristics							
Input Capacitance	C_{iss}	$V_{DS} = 50V, V_{GS} = 0V, f = 1\text{MHz}$	-	2250	-	μF	
Output Capacitance	C_{oss}		-	370	-		
Reverse Transfer Capacitance	C_{rss}		-	8.5	-		
Switching Characteristics							
Gate Resistance	R_G	$V_{DS} = 0V, V_{GS} = 0V, f = 1\text{MHz}$	-	1.2	-	Ω	
Total Gate Charge	Q_g	$V_{GS} = 10V, V_{DS} = 50V, I_D = 20A$	-	21	-	nC	
Gate-Source Charge	Q_{gs}		-	4.8	-		
Gate-Drain Charge	Q_{gd}		-	6.8	-		
Turn-on Delay Time	$t_{d(on)}$	$V_{GS} = 10V, V_{DS} = 50V, R_G = 10\Omega, I_D = 20A$	-	6	-	nS	
Rise Time	t_r		-	3.6	-		
Turn-off Delay Time	$t_{d(off)}$		-	15.5	-		
Fall Time	t_f		-	2.6	-		
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	-	-	74	A	
Reverse Recovery Time	t_{rr}	$V_R = 50V, I_F = 20A, dI_F/dt = 500A/\mu s$	-	43	-	nS	
Reverse Recovery Charge	Q_{rr}		-	202	-	nC	

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 $V_{DD} = 25V, V_{GS} = 10V, L = 0.4\text{mH}, I_{AS} = 32A$
- 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.

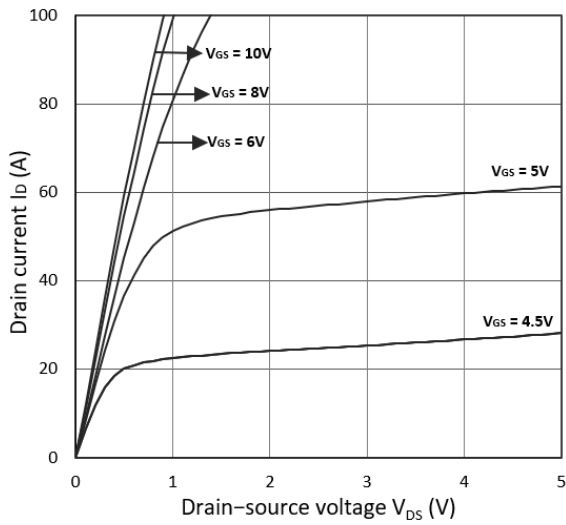


Figure 1. Output Characteristics

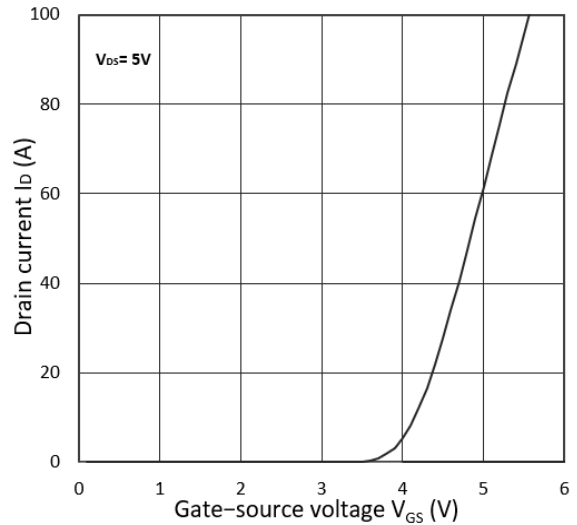


Figure 2. Transfer Characteristics

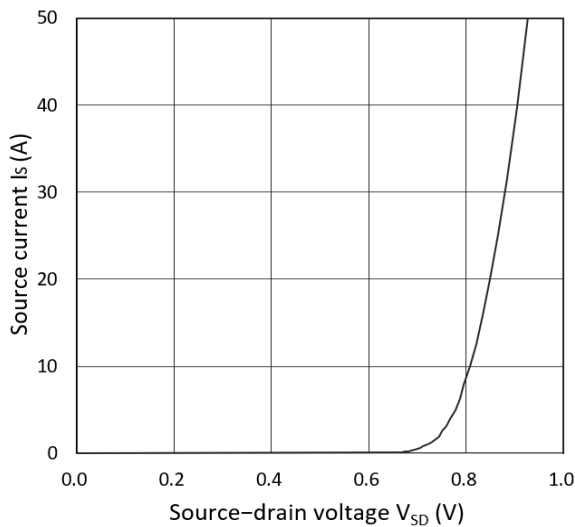


Figure 3. Forward Characteristics of Reverse

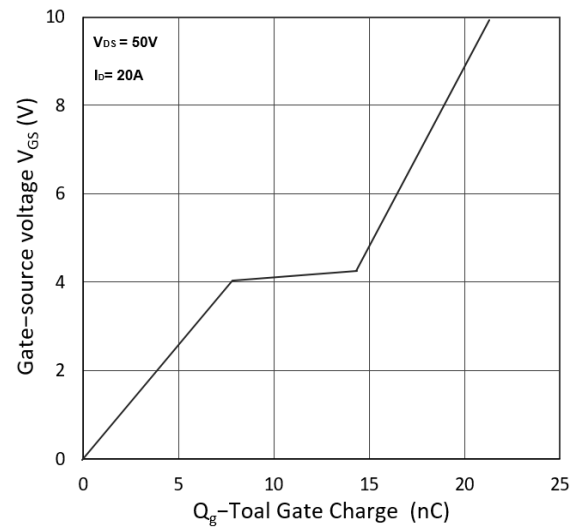


Figure 4. Gate Charge Characteristics

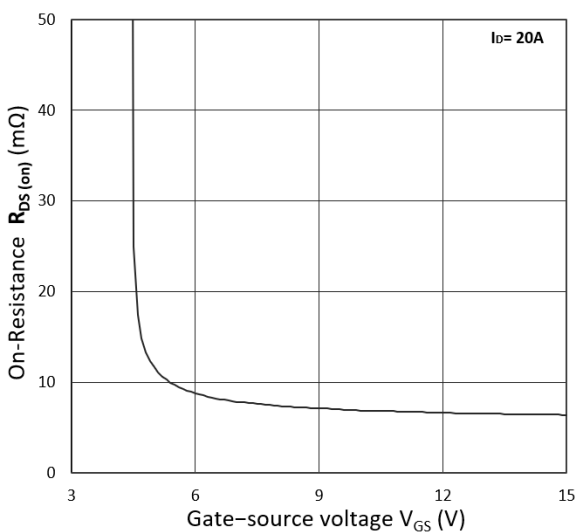


Figure 5. $R_{DS(ON)}$ vs. V_{GS}

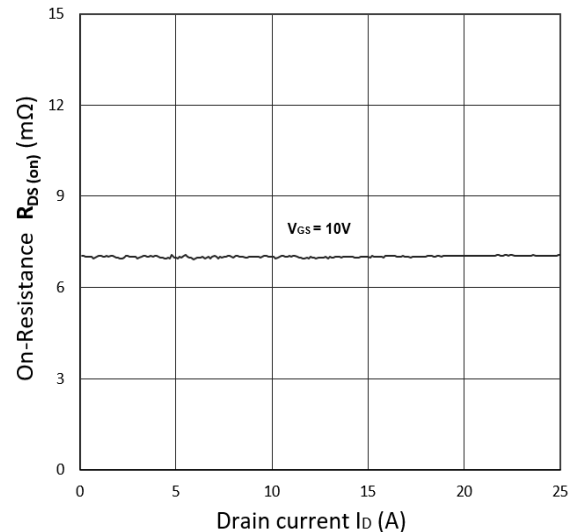


Figure 6. $R_{DS(ON)}$ vs. I_D

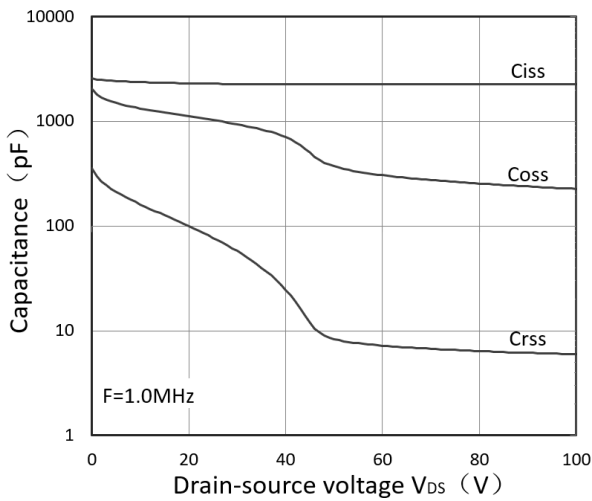


Figure 7. Capacitance Characteristics

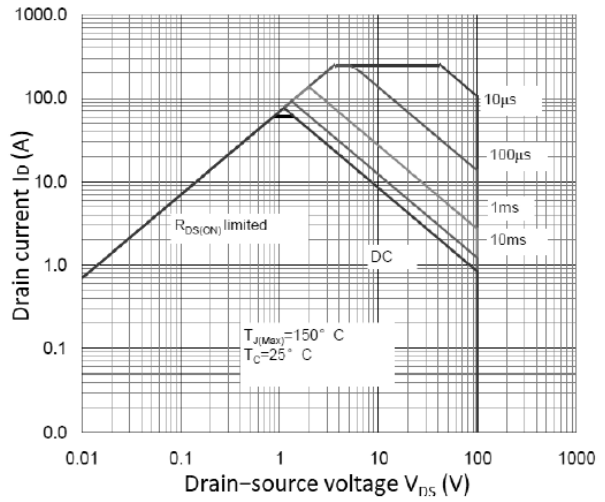


Figure 8. Safe Operating Area

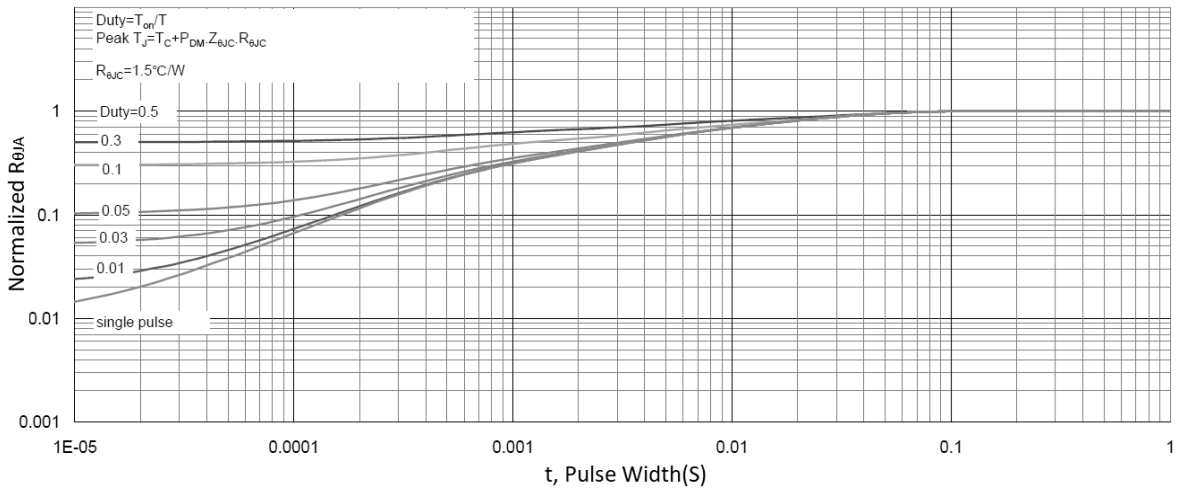


Figure 9. Normalized Maximum Transient Thermal Impedance

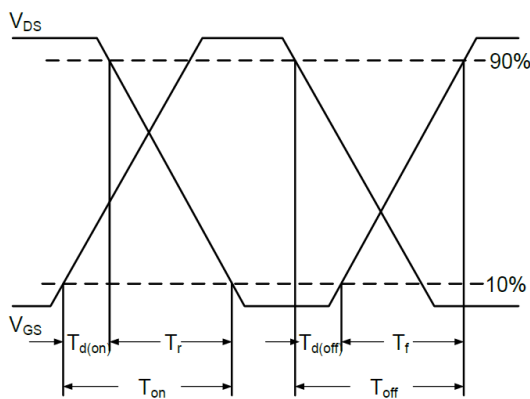


Figure 10. Switching Time Waveform

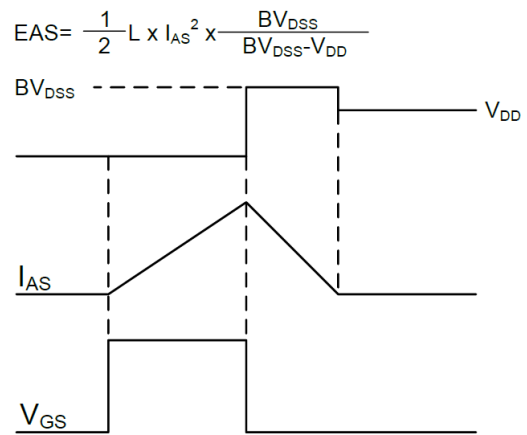
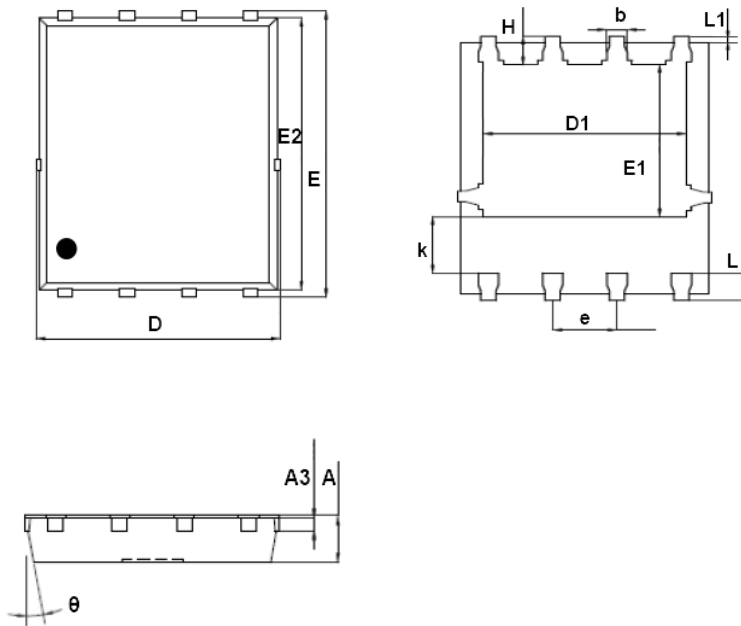


Figure 11. Unclamped Inductive Switching Waveform

$$EAS = \frac{1}{2} L \times I_{AS}^2 \times \frac{BV_{DSS}}{BV_{DSS} - V_{DD}}$$

Mechanical Dimensions for PDFN5060-8L

COMMON DIMENSIONS

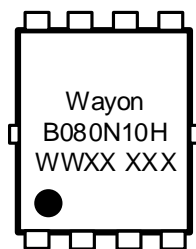


SYMBOL	MM	
	MIN	MAX
A	0.90	1.20
A3	0.15	0.35
D	4.80	5.40
E	5.90	6.35
D1	3.61	4.31
E1	3.30	3.92
E2	5.65	6.06
k	1.10	-
b	0.30	0.51
e	1.27BSC	
L	0.38	0.71
L1	0.05	0.36
H	0.38	0.61
θ	0°	12°

Ordering Information

Part	Package	Marking	Packing method
WMB080N10HG2	PDFN5060-8L	B080N10H	Tape and Reel

Marking Information



B080N10H = Device code

WWXX XXX= Date code


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