

100V N-Channel Enhancement Mode Power MOSFET

Description

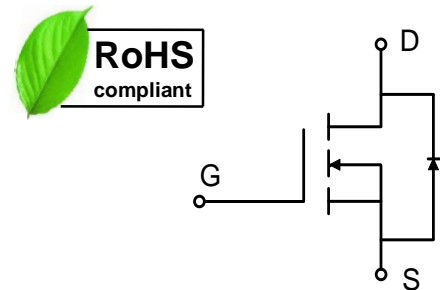
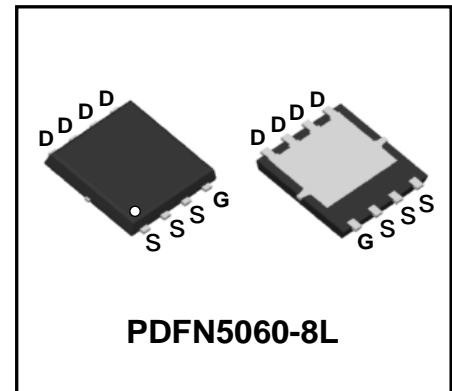
WMB34N10T2 uses advanced power trench technology that has been especially tailored to minimize the on-state resistance and yet maintain superior switching performance.

Features

- $V_{DS} = 100\text{ V}$, $I_D = 34\text{ A}$
 $R_{DS(on)} < 11.5\text{ m}\Omega @ V_{GS} = 10\text{ V}$
 $R_{DS(on)} < 15\text{ m}\Omega @ V_{GS} = 4.5\text{ V}$
- Low $R_{DS(on)}$
- 100% EAS Guaranteed
- Low Gate Charge

Applications

- Power Management Switches
- Synchronous Rectification for AC/DC Quick Charger



Absolute Maximum Ratings

Parameter	Symbol	Value	Unit
Drain-Source voltage	V_{DS}	100	V
Gate-Source voltage	V_{GS}	± 20	V
Continuous Drain Current@10V ¹	I_D	$T_C=25^\circ\text{C}$	34
		$T_C=100^\circ\text{C}$	31
Pulsed Drain Current ²	I_{DM}	120	A
Single Pulse Avalanche Energy ³	EAS	33	mJ
Avalanche Current	I_{AS}	15	A
Total Power Dissipation ⁴	P_D	$T_C=25^\circ\text{C}$	56.5
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	$R_{\theta JA}$	50	$^\circ\text{C/W}$
Thermal Resistance from Junction-to-Case ¹	$R_{\theta JC}$	2.2	$^\circ\text{C/W}$

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}	$V_{DS} = 80V, V_{GS} = 0V$	-	-	1	μA
	$T_J=55^\circ\text{C}$			-	-	5	
Gate-Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	1.2	-	2.4	V	
Drain-Source On-Resistance ²	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 20A$	-	7.5	11.5	m Ω	
		$V_{GS} = 4.5V, I_D = 10A$	-	9.6	15		
Dynamic Characteristics							
Input Capacitance	C_{iss}	$V_{DS} = 50V, V_{GS} = 0V, f = 1\text{MHz}$	-	2197	-	μF	
Output Capacitance	C_{oss}		-	325	-		
Reverse Transfer Capacitance	C_{rss}		-	10	-		
Switching Characteristics							
Total Gate Charge (10V)	Q_g	$V_{GS} = 10V, V_{DS} = 50V, I_D = 20A$	-	43	-	nC	
Total Gate Charge(4.5V)	Q_g		-	18.5	-		
Gate-Source Charge	Q_{gs}		-	8.5	-		
Gate-Drain Charge	Q_{gd}		-	10.3	-		
Turn-On Delay Time	$t_{d(on)}$	$V_{GS} = 10V, V_{DD} = 50V, R_G = 3.3\Omega, I_D = 20A$	-	10	-	nS	
Rise Time	t_r		-	7	-		
Turn-Off Delay Time	$t_{d(off)}$		-	50	-		
Fall Time	t_f		-	11	-		
Drain-source body diode Characteristics							
Diode Forward Voltage ²	V_{SD}	$I_S = 1A, V_{GS} = 0V$	-	-	1.2	V	
Continuous Source Current ^{1,5}	I_S	$V_G=V_D=0V$, Force Current	-	-	34	A	
Body Diode Reverse Recovery Time	t_{rr}	$I_F = 20A, di/dt = 100A/\mu s$	-	45	-	nS	
Body Diode Reverse Recovery Charge	Q_{rr}		-	165	-	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 $V_{DD}=25V, V_{GS}=10V, L=0.3mH, I_{AS}=15A$
- The power dissipation is limited by 150 $^\circ\text{C}$ junction temperature
- The data is theoretically the same as I_D and I_{DM} , in real applications , should be limited by total power dissipation.

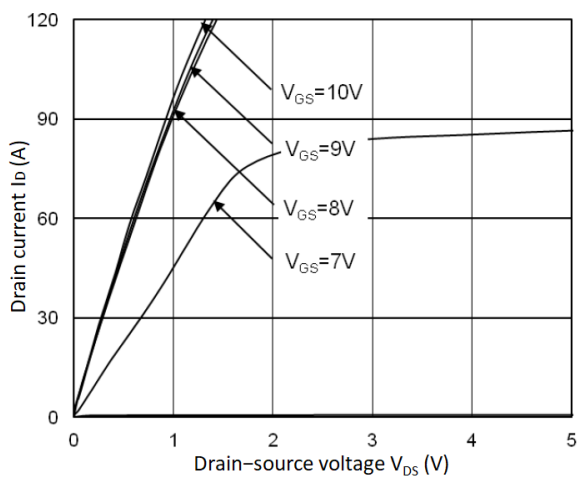


Figure 1. Output Characteristics

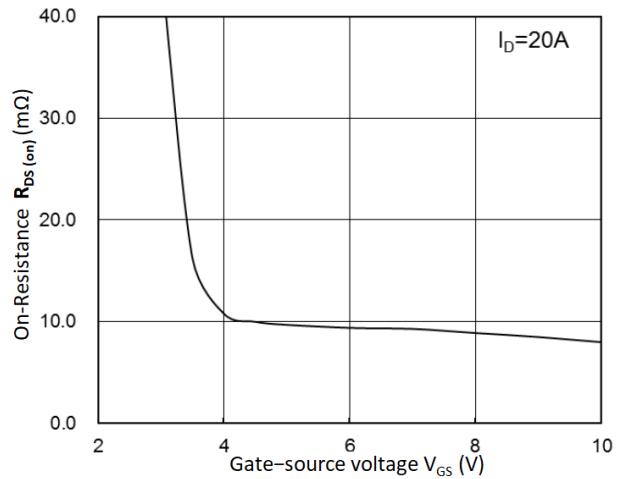


Figure 2. $R_{DS(on)}$ vs. V_{GS}

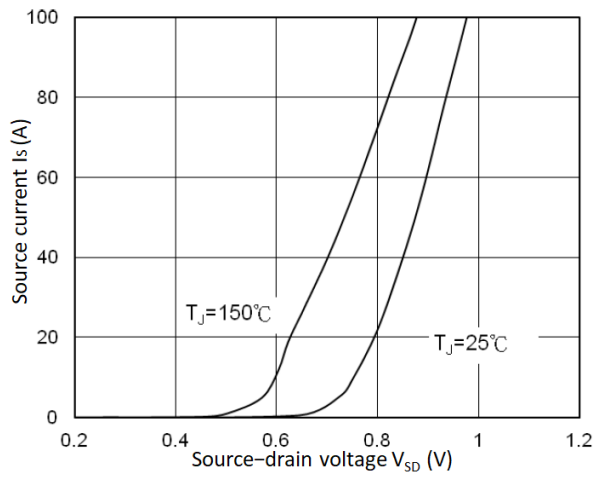


Figure 3. Forward Characteristics of Reverse

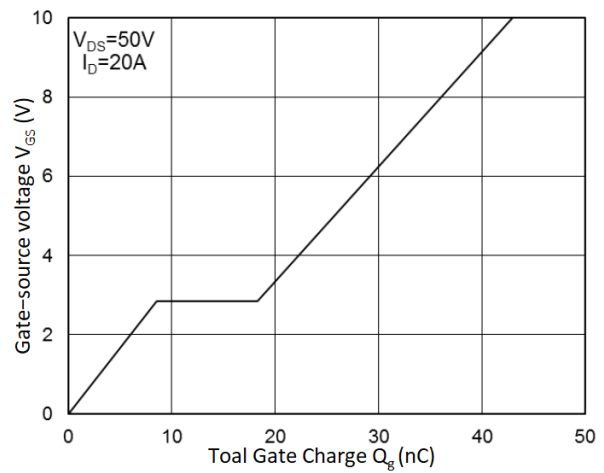


Figure 4. Gate Charge Characteristics

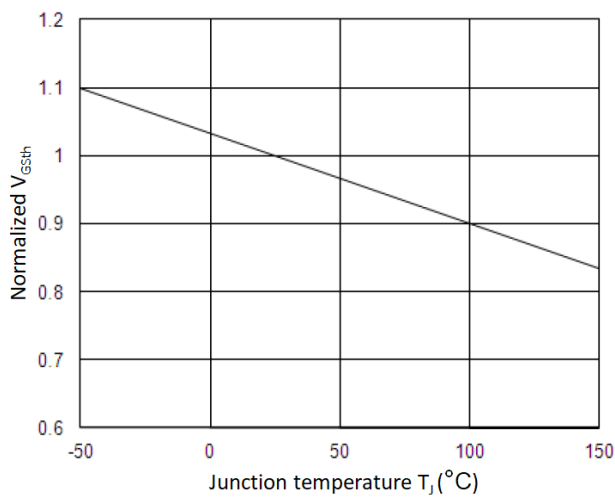


Figure 5. Normalized $V_{GS(th)}$ vs. T_J

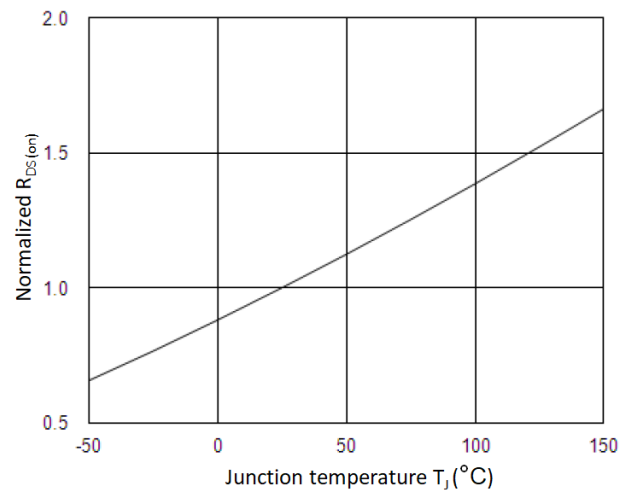


Figure 6. Normalized $R_{DS(on)}$ vs. T_J

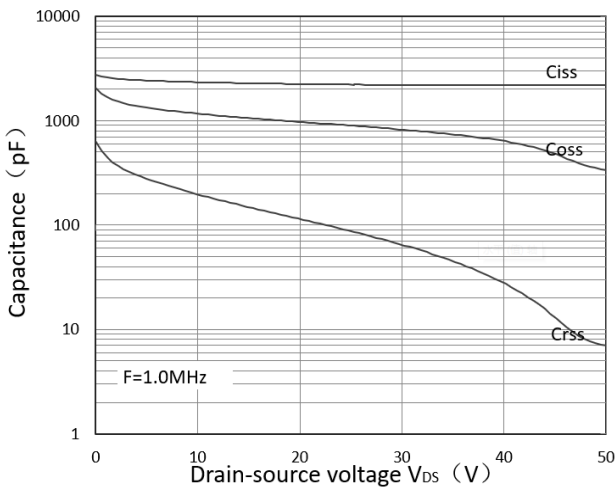


Figure 7. Capacitance Characteristics

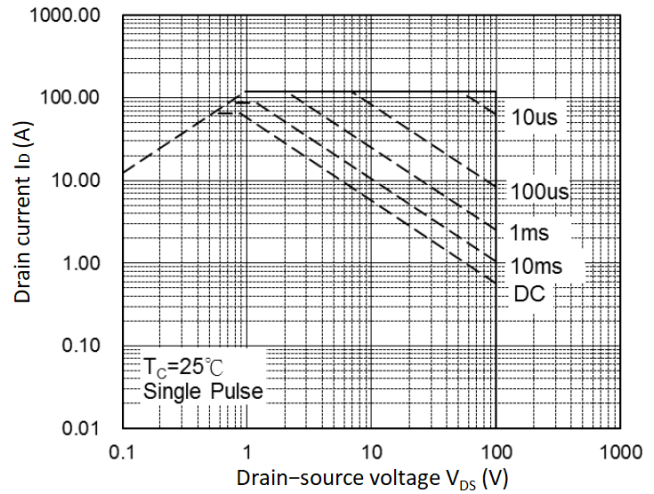


Figure 8. Safe Operating Area

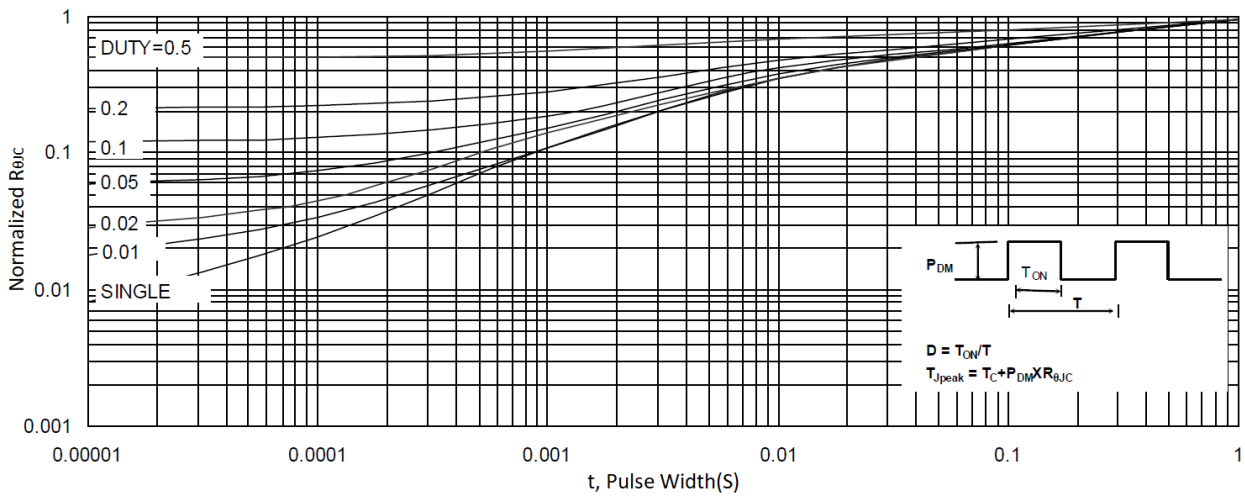


Figure 9. Normalized Maximum Transient Thermal Impedance

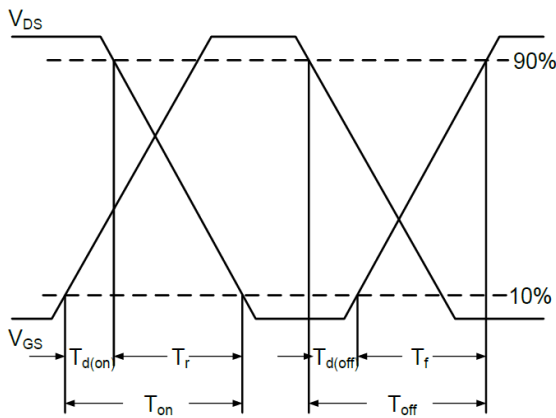


Figure 10. Switching Time Waveform

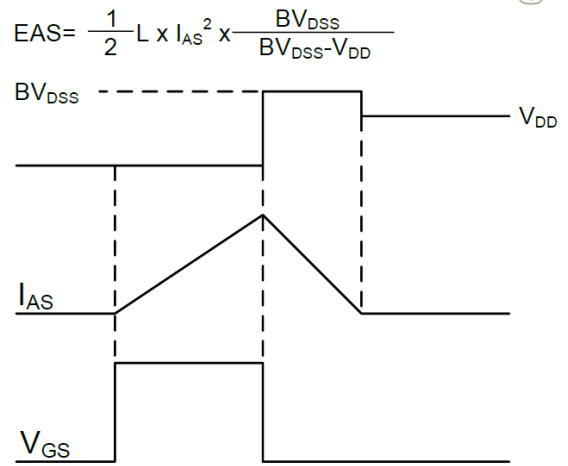
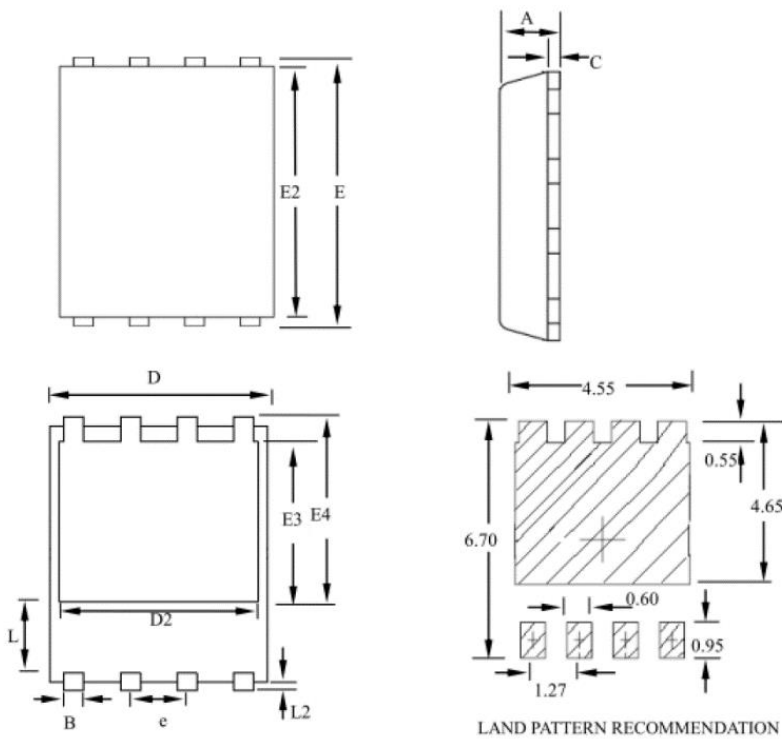


Figure 11. Unclamped Inductive Switching Waveform

Mechanical Dimensions for PDFN5060-8L

COMMON DIMENSIONS

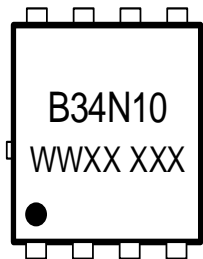


SYMBOL	MM	
	MIN	MAX
A	0.80	1.20
B	0.30	0.51
C	0.15	0.35
D	4.80	5.30
D2	3.61	4.35
E	5.90	6.35
E2	5.42	5.90
E3	3.23	3.90
E4	3.69	4.55
L	0.61	1.80
L2	0.05	0.36
e	1.27 BSC	

Ordering Information

Part	Package	Marking	Packing method
WMB34N10T2	PDFN5060-8L	B34N10	Tape and Reel

Marking Information



B34N10 = Device code

WWXX XXX= 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>

For additional information, please contact your local Sales Representative.

 is registered trademarks of Wayon Corporation.

Disclaimer

WAYON reserves the right to make changes without further notice to any Products herein to improve reliability, function, or design. The Products are not designed for use in hostile environments, including, without limitation, aircraft, nuclear power generation, medical appliances, and devices or systems in which malfunction of any Product can reasonably be expected to result in a personal injury. The information given in this document shall in no event be regarded as a guarantee of conditions or characteristics. WAYON does not assume any liability for infringement of patents, copyrights, or other intellectual property rights of third parties by or arising from the use of Products or technical information described in this document.