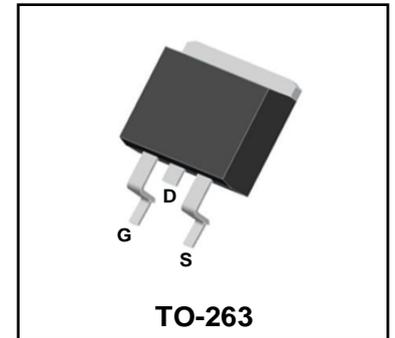


100V N-Channel Enhancement Mode Power MOSFET

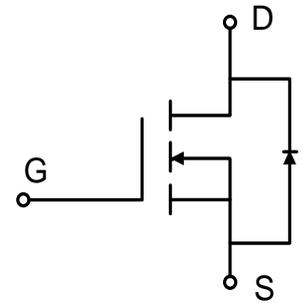
Description

WMM028N10HG2 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

- $V_{DS} = 100V$, $I_D = 245A$ (Silicon Limited)
 $R_{DS(on)} < 2.8m\Omega @ V_{GS} = 10V$
- High Speed Power Switching
- Low $R_{DS(on)}$
- Low Gate Charge
- 100% EAS Guaranteed



Applications

- Hard Switching and High Speed Circuit
- DC/DC Converters
- 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	$T_C=25^\circ C$	245
		$T_C=100^\circ C$	170
Continuous Drain Current ¹ (Package Limited)		$T_C=25^\circ C$	175
Pulsed Drain Current ²	I_{DM}	780	A
Single Pulse Avalanche Energy ³	EAS	845	mJ
Avalanche Current	I_{AS}	65	A
Total Power Dissipation ⁴	P_D	$T_C=25^\circ C$	278
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	$R_{\theta JA}$	61	$^\circ C/W$
Thermal Resistance from Junction-to-Case ¹	$R_{\theta JC}$	0.45	$^\circ C/W$

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	$T_J=25^\circ\text{C}$	$V_{DS} = 100V, V_{GS} = 0V$	-	-	10	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	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 20A$	-	2.3	2.8	m Ω
Forward Transconductance ²	g_{fs}	$V_{DS} = 5V, I_D = 20A$	-	70	-	S
Dynamic Characteristics						
Input Capacitance	C_{iss}	$V_{DS} = 50V, V_{GS} = 0V, f = 1MHz$	-	7735	-	μF
Output Capacitance	C_{oss}		-	1190	-	
Reverse Transfer Capacitance	C_{rss}		-	25	-	
Switching Characteristics						
Gate Resistance	R_g	$V_{GS} = 0V, V_{DS} = 0V, f = 1MHz$	-	1.4	-	Ω
Total Gate Charge	Q_g	$V_{GS} = 10V, V_{DS} = 50V, I_D = 20A$	-	98	-	nC
Gate-Source Charge	Q_{gs}		-	20	-	
Gate-Drain Charge	Q_{gd}		-	18	-	
Turn-on Delay Time	$t_{d(on)}$	$V_{GS} = 10V, V_{DS} = 50V, R_G = 10\Omega, I_D = 20A$	-	25	-	nS
Rise Time	t_r		-	20	-	
Turn-off Delay Time	$t_{d(off)}$		-	50	-	
Fall Time	t_f		-	11	-	
Drain-Source Body Diode Characteristics						
Diode Forward Voltage ²	V_{SD}	$I_S = 20A, V_{GS} = 0V$	-	-	1.2	V
Continuous Source Current ^{1,5}	I_S	$V_G = V_D = 0V, \text{Force Current}$	-	-	245	A
Reverse Recovery Time	t_{rr}	$V_R = 50V, I_F = 20A, di/dt = 500A/\mu s$	-	60	-	nS
Reverse Recovery Charge	Q_{rr}		-	438	-	nC

Notes:

1. The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper.
2. The data tested by pulsed, pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$
3. The EAS data shows Max. rating. The test condition is $V_{DD} = 25V, V_{GS} = 10V, L = 0.4mH, I_{AS} = 65A$
4. The power dissipation is limited by 150°C 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.

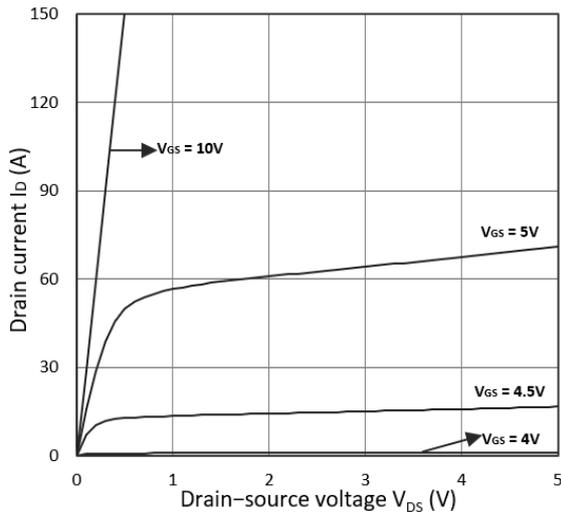


Figure 1. Output Characteristics

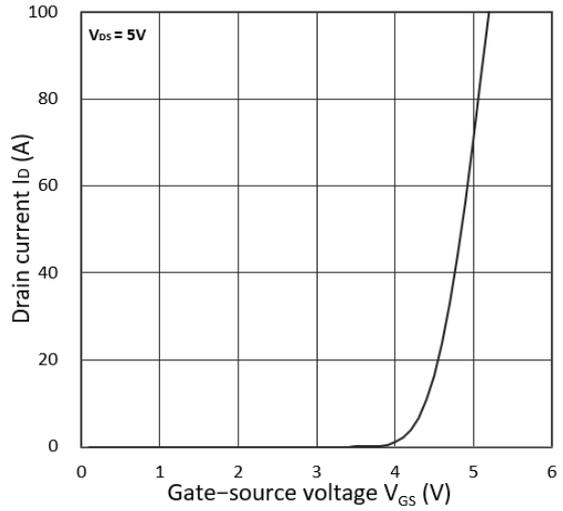


Figure 2. Transfer Characteristics

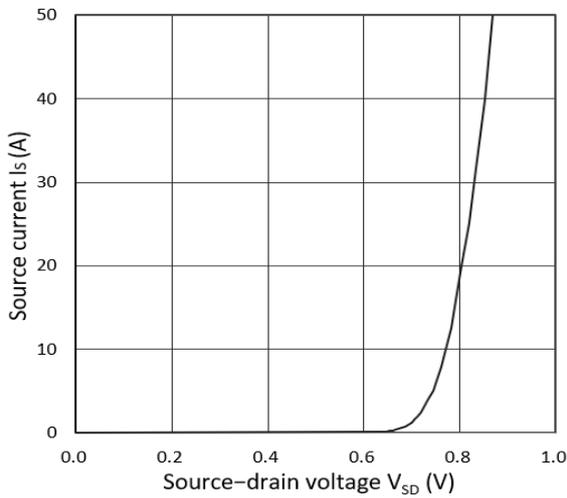


Figure 3. Forward Characteristics of Reverse

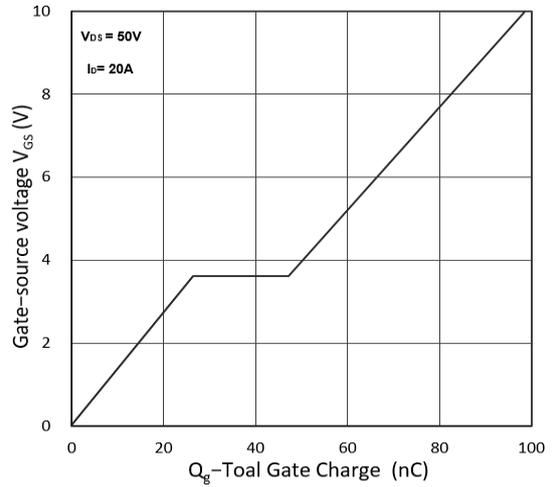


Figure 4. Gate Charge Characteristics

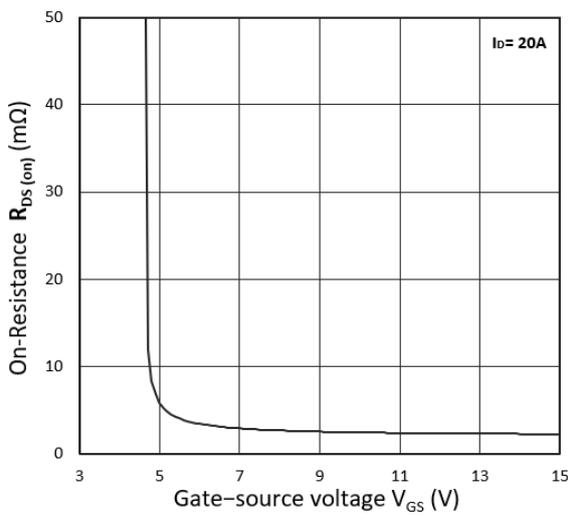


Figure 5. $R_{DS(on)}$ vs. V_{GS}

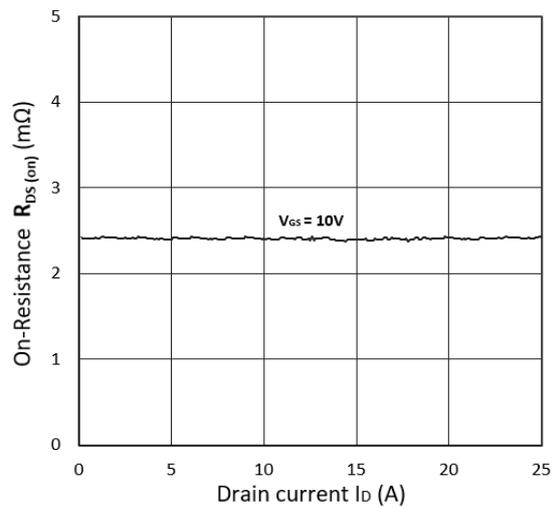


Figure 6. $R_{DS(on)}$ vs. I_D

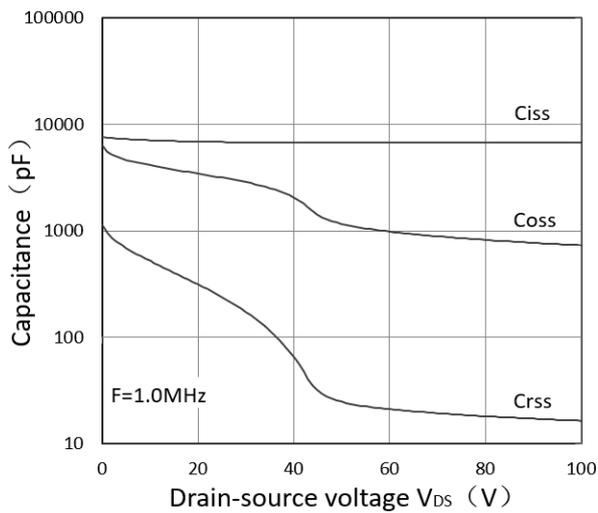


Figure 7. Capacitance Characteristics

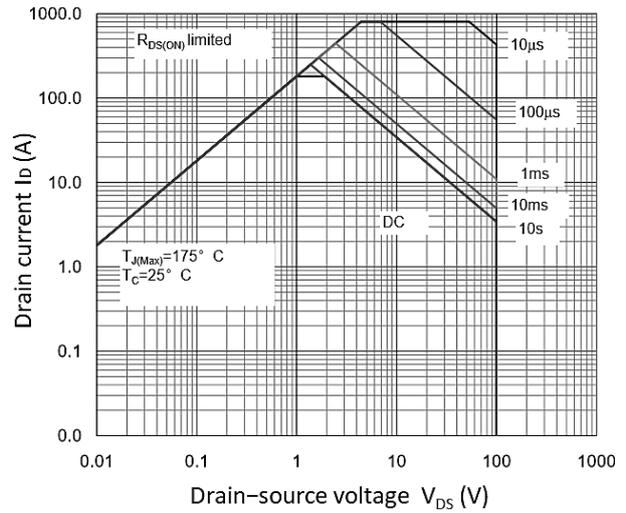


Figure 8. Safe Operating Area

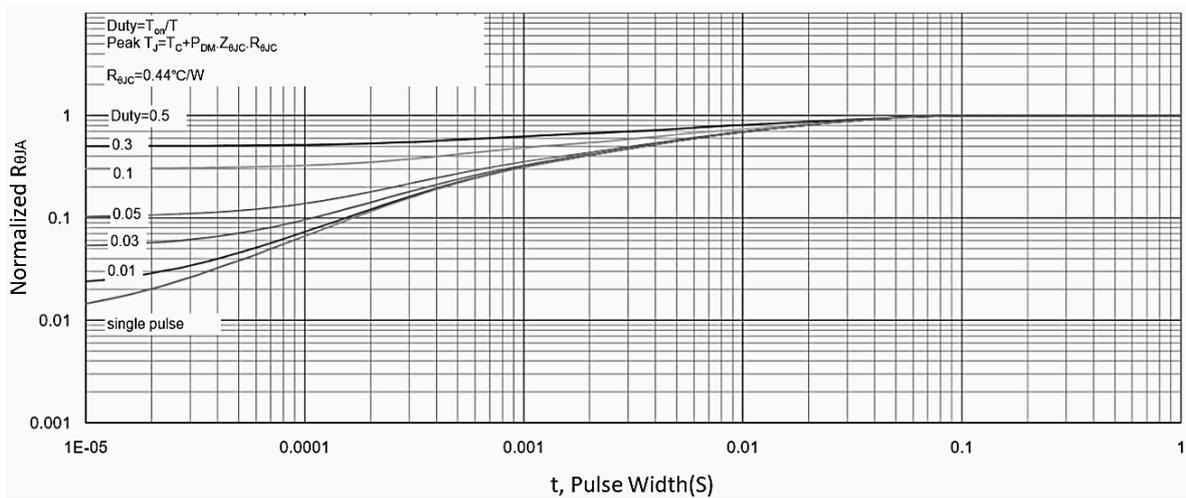


Figure 9. Normalized Maximum Transient Thermal Impedance

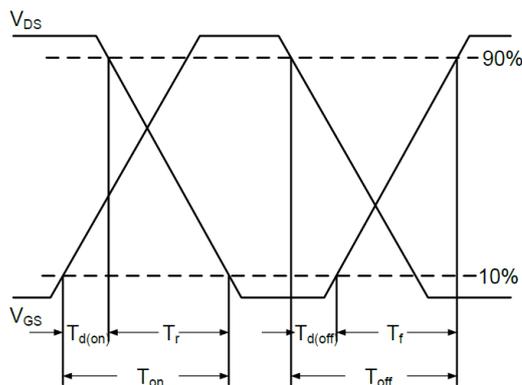


Figure 10. Switching Time Waveform

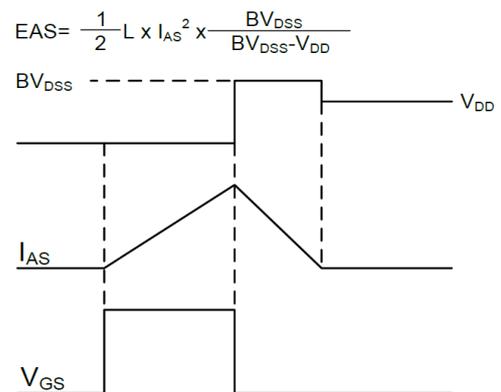
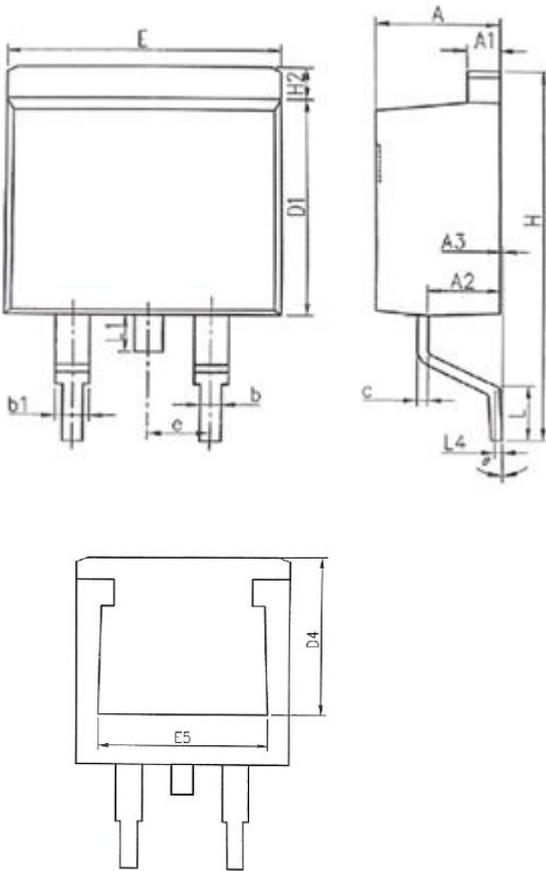


Figure 11. Unclamped Inductive Switching Waveform

Mechanical Dimensions for TO-263

COMMON DIMENSIONS

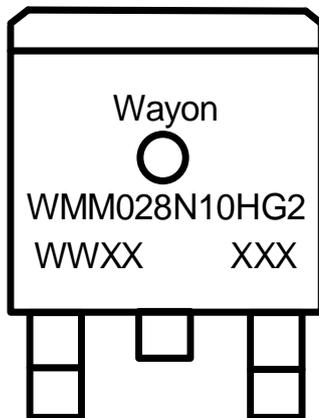


SYMBOL	MM	
	MIN	MAX
A	4.37	4.77
A1	1.22	1.42
A2	2.20	2.90
A3	0.00	0.25
b	0.70	0.96
b1	1.17	1.47
c	0.30	0.60
D1	8.50	9.30
D4	6.60	-
E	9.80	10.36
E5	7.06	-
e	2.54BSC	
H	14.70	15.70
H2	1.07	1.47
L	2.00	2.60
L1	-	1.75
L4	0.254BSC	
θ	0°	9°

Ordering Information

Part	Package	Marking	Packing method
WMM028N10HG2	TO-263	WMM028N10HG2	Tape and Reel

Marking Information



WMM028N10HG2 = Device code
 WWXX XXX = Date code

Contact Information

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

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