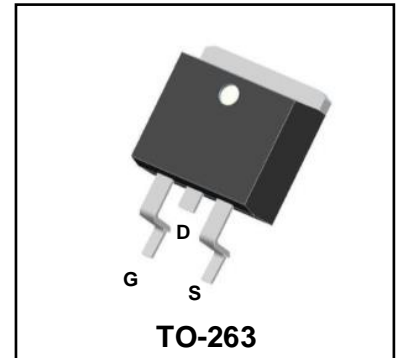


## 150V N-Channel Enhancement Mode Power MOSFET

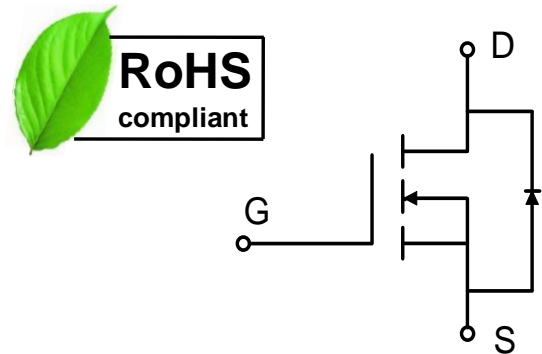
### Description

WMM071N15HG2 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

- $V_{DS} = 150V$ ,  $I_D = 135A$   
 $R_{DS(on)} < 7.1m\Omega @ V_{GS} = 10V$
- High Speed Power Switching
- Low Gate Charge
- Low  $R_{DS(on)}$
- 100% EAS Guaranteed



### Applications

- Synchronous Rectification in SMPS
- Hard Switching and High Speed Circuit
- UPS
- Motor Control
- Power Tools

### Absolute Maximum Ratings

Parameter	Symbol	Value	Unit
Drain-Source Voltage	$V_{DS}$	150	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V
Continuous Drain Current <sup>1</sup>	$I_D$	$T_C = 25^\circ C$	135
		$T_C = 100^\circ C$	96
Pulsed Drain Current <sup>2</sup>	$I_{DM}$	430	A
Single Pulse Avalanche Energy <sup>3</sup>	<b>EAS</b>	180	mJ
Avalanche Current	$I_{AS}$	60	A
Total Power Dissipation <sup>4</sup>	$P_D$	306	W
Operating Junction and Storage Temperature Range	$T_J, T_{STG}$	-55 to 175	$^\circ C$

### Thermal Characteristics

Parameter	Symbol	Value	Unit
Thermal Resistance from Junction-to-Ambient <sup>1</sup>	$R_{\theta JA}$	59.5	$^\circ C/W$
Thermal Resistance from Junction-to-Case <sup>1</sup>	$R_{\theta JC}$	0.49	

**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	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	150	-	-	V
Gate-body Leakage current	$I_{GSS}$	$V_{DS} = 0V, V_{GS} = \pm 20V$	-	-	$\pm 100$	nA
Zero Gate Voltage Drain Current	$T_J=25^\circ\text{C}$	$V_{DS} = 150V, V_{GS} = 0V$	-	-	1	$\mu A$
	$T_J=100^\circ\text{C}$		-	-	100	
Gate-Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	2	3	4	V
Drain-Source on-Resistance <sup>2</sup>	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 20A$	-	6.2	7.1	m $\Omega$
Forward Transconductance <sup>2</sup>	$g_{fs}$	$V_{DS} = 5V, I_D = 20A$	-	76	-	S
<b>Dynamic Characteristics</b>						
Input Capacitance	$C_{iss}$	$V_{DS} = 75V, V_{GS} = 0V, f = 1\text{MHz}$	-	5470	-	pF
Output Capacitance	$C_{oss}$		-	389	-	
Reverse Transfer Capacitance	$C_{rss}$		-	13	-	
<b>Switching Characteristics</b>						
Gate Resistance	$R_g$	$V_{DS}=0V, V_{GS}=0V, f=1\text{MHz}$	-	2.75	-	$\Omega$
Total Gate Charge	$Q_g$	$V_{GS} = 10V, V_{DS} = 75V, I_D = 20A$	-	65	-	nC
Gate-Source Charge	$Q_{gs}$		-	20.5	-	
Gate-Drain Charge	$Q_{gd}$		-	8.8	-	
Turn-on Delay Time	$t_{d(on)}$	$V_{GS} = 10V, V_{DS} = 75V, R_G = 10\Omega, I_D = 20A$	-	23.5	-	nS
Rise Time	$t_r$		-	21.5	-	
Turn-off Delay Time	$t_{d(off)}$		-	33	-	
Fall Time	$t_f$		-	14.5	-	
<b>Drain-Source Body Diode Characteristics</b>						
Diode Forward Voltage <sup>2</sup>	$V_{SD}$	$I_S = 1A, V_{GS} = 0V$	-	-	1.0	V
Continuous Source Current <sup>1,5</sup>	$I_S$	$V_G = V_D = 0V, \text{Force Current}$	-	-	135	A
Body Diode Reverse Recovery Time	$t_{rr}$	$V_R = 75V, I_F = 20A, \text{di/dt} = 100A/\mu s$	-	76	-	nS
Body Diode Reverse Recovery Charge	$Q_{rr}$		-	151	-	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  $V_{DD}=25V, V_{GS}=10V, L=0.1\text{mH}, I_{AS}=60A$
- The power dissipation is limited by  $175^\circ\text{C}$  junction temperature
- The data is theoretically the same as  $I_D$  and  $I_{DM}$  , in real applications , should be limited by total power dissipation.

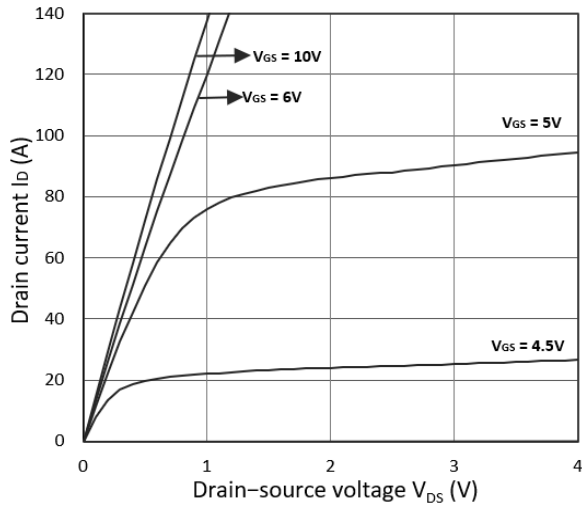


Figure 1. Output Characteristics

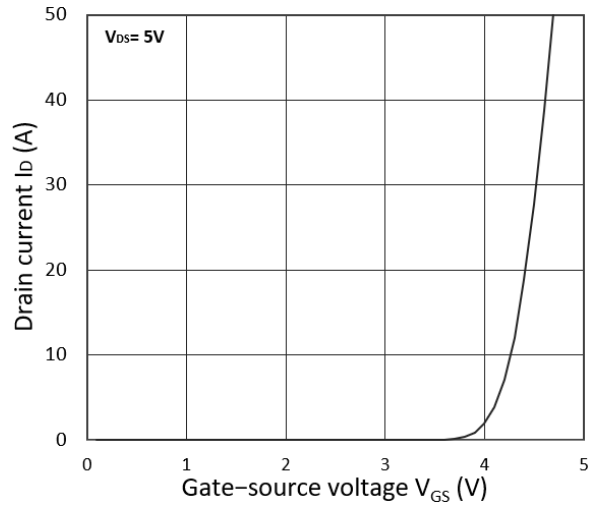


Figure 2. Transfer Characteristics

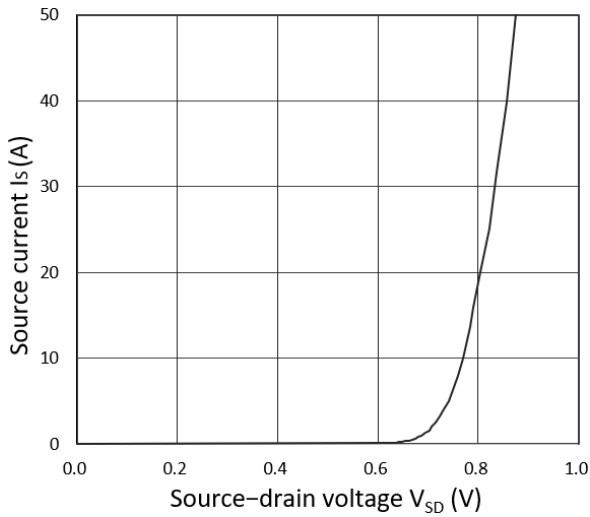


Figure 3. Forward Characteristics of Reverse

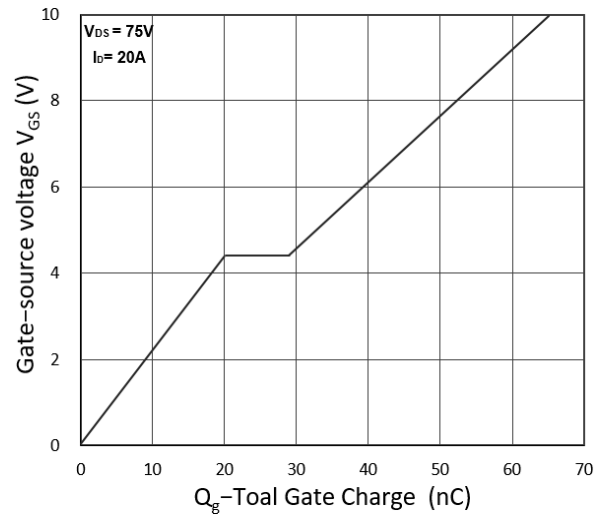


Figure 4. Gate Charge Characteristics

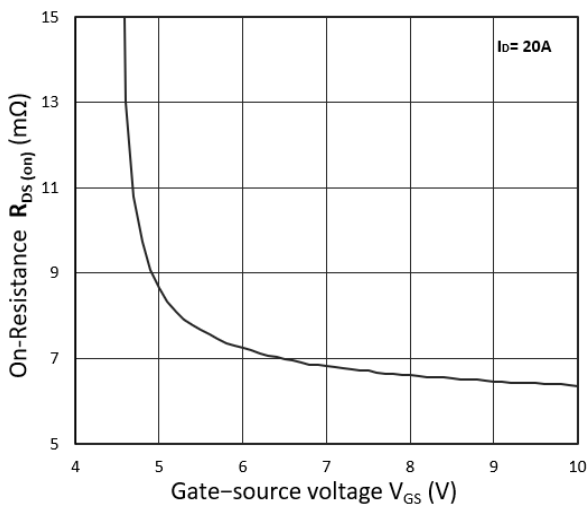


Figure 5.  $R_{DS(ON)}$  vs.  $V_{GS}$

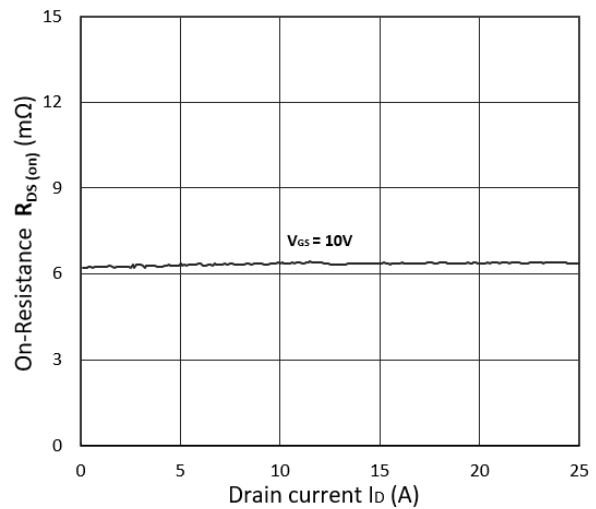


Figure 6.  $R_{DS(ON)}$  vs.  $I_D$

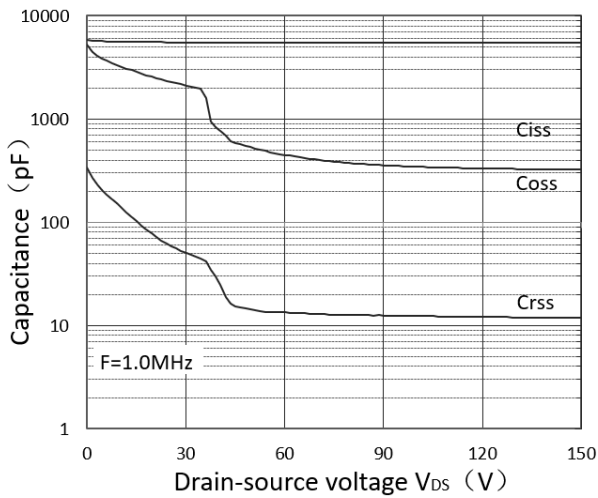


Figure 7. Capacitance Characteristics

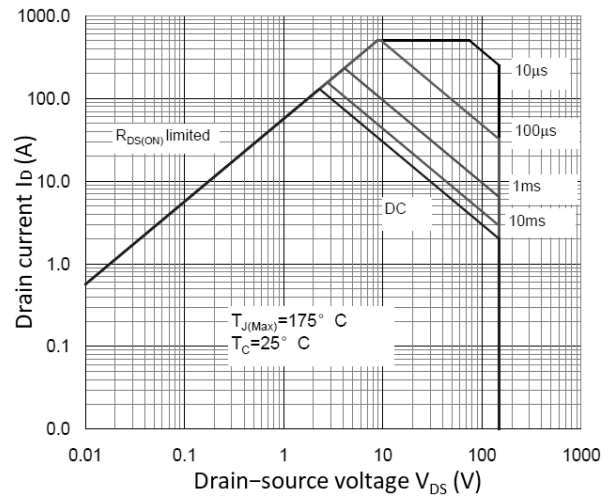


Figure 8. Safe Operating Area

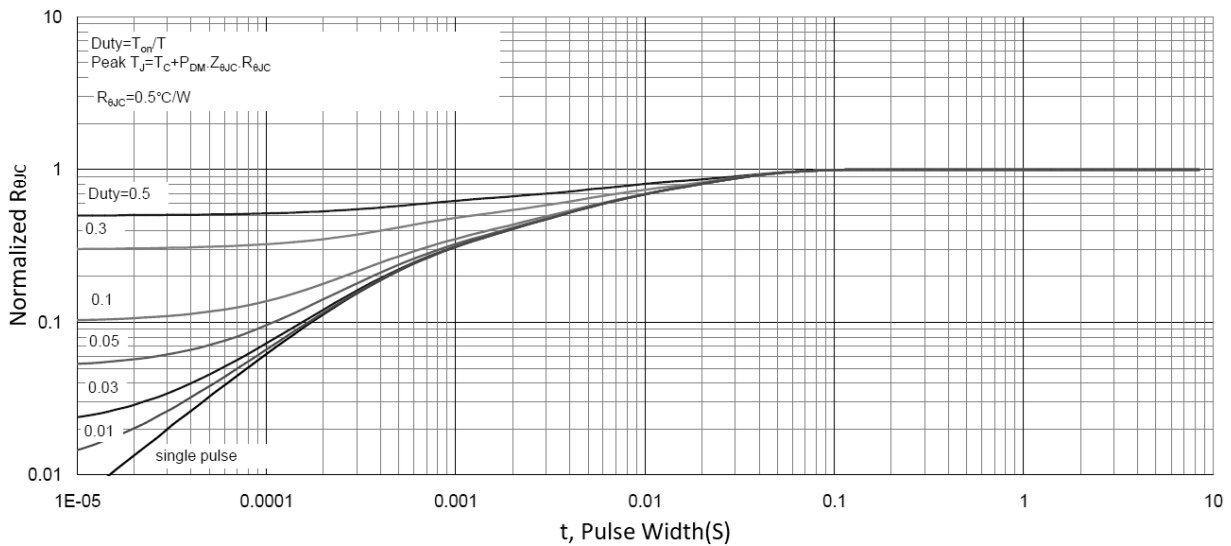


Figure 9. Normalized Maximum Transient Thermal Impedance

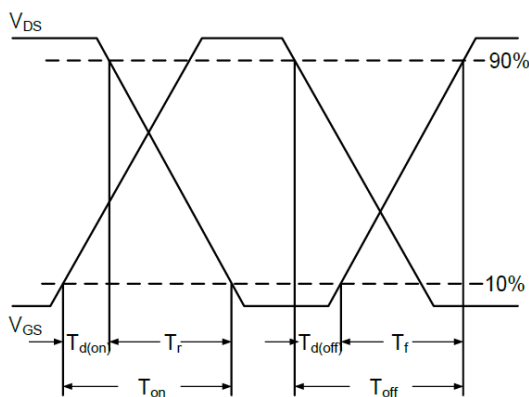


Figure 10. Switching Time Waveform

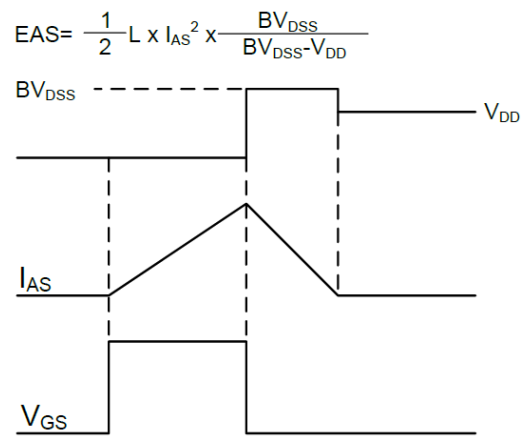
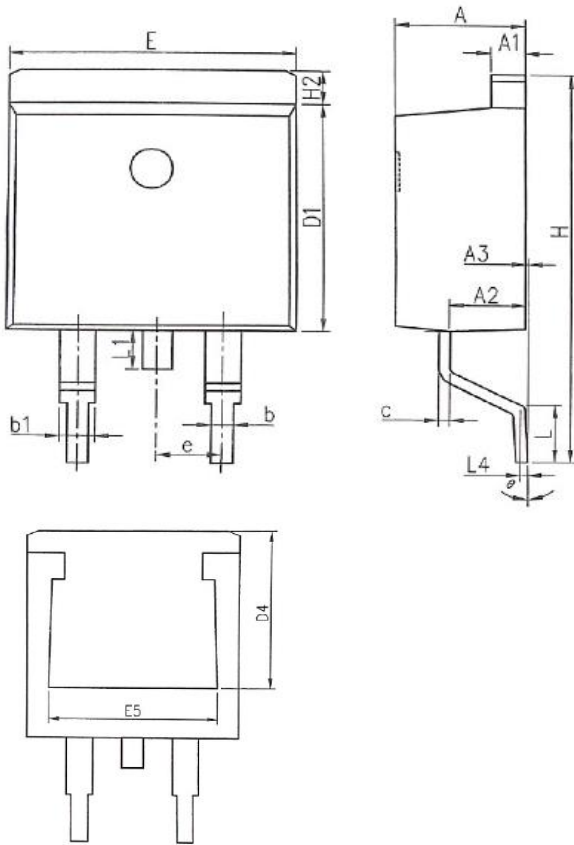


Figure 11. Unclamped Inductive Switching Waveform

## Mechanical Dimensions for TO-263



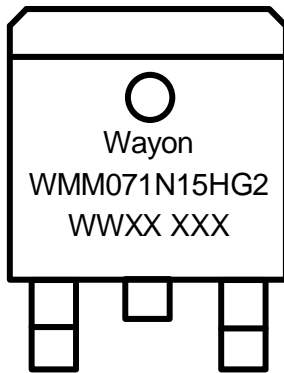
## COMMON DIMENSIONS

SYMBOL	MM	
	MIN	MAX
A	4.064	4.826
A1	1.143	1.651
A2	2.49	2.89
A3	0.00	0.254
b	0.508	0.991
b1	1.143	1.778
c	0.381	0.737
D1	8.382	9.652
D4	6.858	-
E	9.652	10.668
E5	6.223	-
e	2.540BSC	
H	14.605	15.875
H2	-	1.676
L	1.778	2.794
L1	-	1.778
L4	0.254BSC	
$\theta$	0°	8°

## Ordering Information

Part	Package	Marking	Packing method
WMM071N15HG2	TO-263	WMM071N15HG2	Tape and Reel

## Marking Information



WMM071N15HG2 = Device code

WWXX XXX= Date code

## Contact Information

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

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