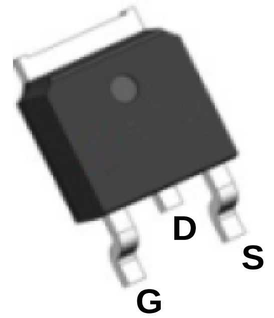
WMO28N15T2

150V N-Channel Enhancement Mode Power MOSFET



TO-252

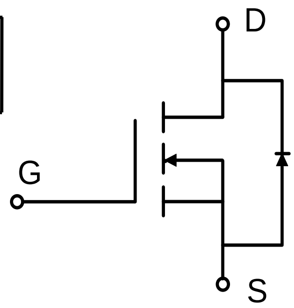
Description

WMO28N15T2 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}= 150V, I_D = 28A
  $R_{DS(on)}$ < 48mΩ @ V_{GS} = 10V
- Green Device Available
- Low Gate Charge
- 100% EAS Guaranteed

RoHS compliant



Applications

- LED Backlighting
- Synchronous Rectification
- Motor Control

Absolute Maximum Ratings (T_A= 25°C, unless otherwise noted)

Parameter		Symbol	Value	Unit
Drain-Source Voltage		V_{DS}	150	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current	T_C=25°C	I_D	28	A
	T_C=100°C		19.5	
Pulsed Drain Current[1]		I_{DM}	112	A
Single Pulse Avalanche Energy[2]		EAS	20	mJ
Total Power Dissipation	T_C=25°C	P_D	73.5	W
Operating Junction and Storage Temperature Range		T_J, T_{STG}	-55 to 150	°C

Thermal Characteristics

Parameter	Symbol	Value	Unit
Thermal Resistance from Junction-to-Ambient[3]	$R_{\theta JA}$	64	°C/W
Thermal Resistance from Junction-to-Case	$R_{\theta JC}$	1.7	°C/W

Electrical Characteristics (T_J = 25°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 = 250µA	150	-	-	V
Gate-body Leakage current		I_{GSS}	V_{DS} = 0V, V_{GS} = ±20V	-	-	±100	nA
Zero Gate Voltage Drain Current	T_J=25°C	I_{DSS}	V_{DS} = 150V, V_{GS} = 0V	-	-	1	µA
	T_J=100°C			-	-	100	
Gate-Threshold Voltage		$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250µA	2	3.2	4	V
Drain-Source on-Resistance[4]		$R_{DS(on)}$	V_{GS} = 10V, I_D = 10A	-	40	48	mΩ
Forward Transconductance[4]		g_{fs}	V_{DS} = 5V, I_D = 10A	-	16.3	-	S
Dynamic Characteristics[5]							
Input Capacitance		C_{iss}	V_{DS} = 75V, V_{GS} =0V, f =1MHz	-	512	-	pF
Output Capacitance		C_{oss}		-	75	-	
Reverse Transfer Capacitance		C_{rss}		-	11	-	
Gate Resistance		R_g	f =1MHz	-	5.1	-	Ω
Switching Characteristics[5]							
Total Gate Charge		Q_g	V_{GS} = 10V, V_{DS} = 75V, I_D=10A	-	12	-	nC
Gate-Source Charge		Q_{gs}		-	4	-	
Gate-Drain Charge		Q_{gd}		-	5.2	-	
Turn-on Delay Time		$t_{d(on)}$	V_{GS} =10V, V_{DD} =75V, R_G = 10Ω, I_D= 10A	-	13.5	-	ns
Rise Time		t_r		-	7.8	-	
Turn-off Delay Time		$t_{d(off)}$		-	15	-	
Fall Time		t_f		-	3.8	-	
Drain-Source Body Diode Characteristics							
Diode Forward Voltage[4]		V_{SD}	I_S = 20A, V_{GS} = 0V	-	-	1.2	V
Continuous Source Current	T_C=25°C	I_S	-	-	-	28	A

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 ≤ 300us , duty cycle ≤ 2%

3.The EAS data shows Max. rating . The test condition is V_{DD}=25V, V_{GS}=10V, L=0.4mH, I_{AS}=10A

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.

Typical Characteristics

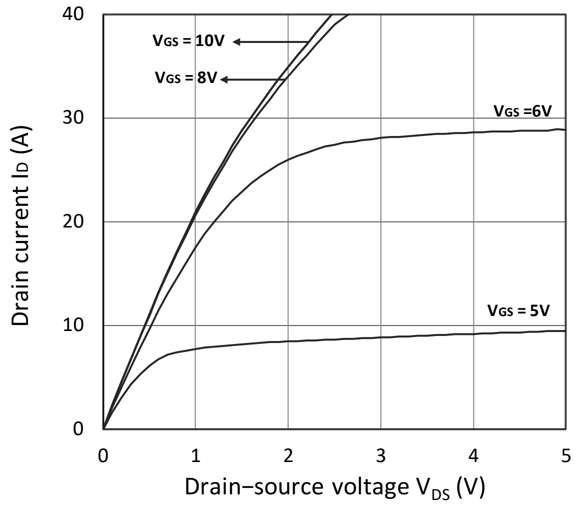


Figure 1. Output Characteristics

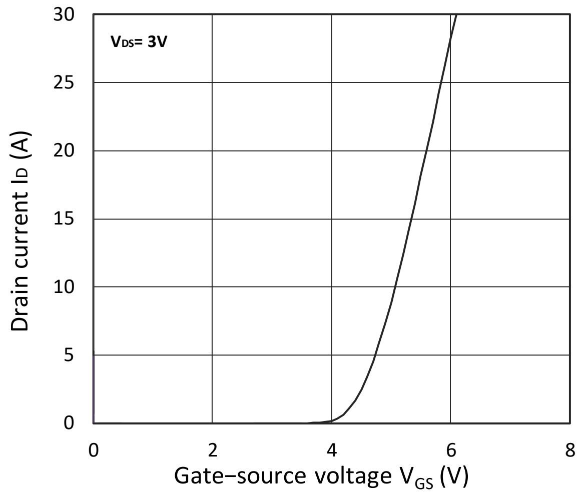


Figure 2. Transfer Characteristics

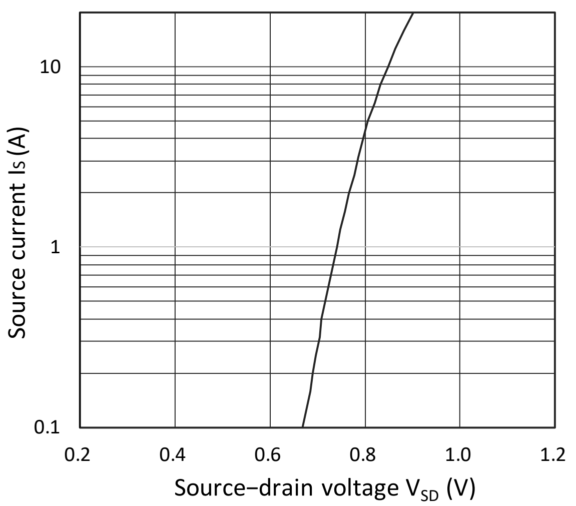


Figure 3. Forward Characteristics of Reverse

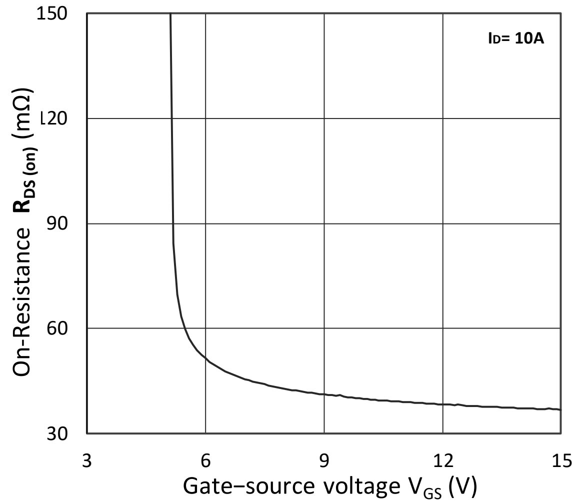


Figure 4. $R_{DS(ON)}$ vs. V_{GS}

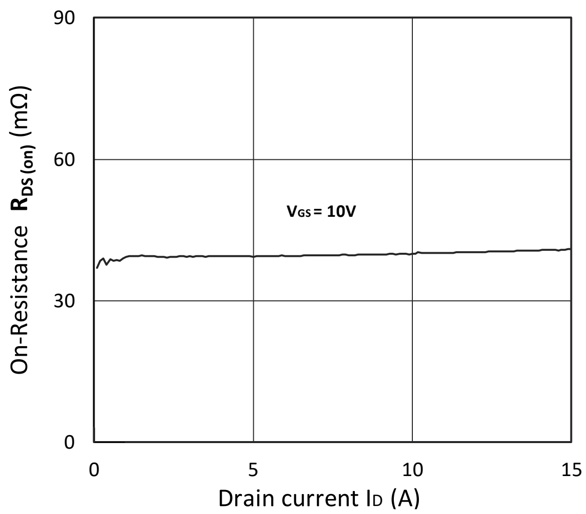


Figure 5. $R_{DS(ON)}$ vs. I_D

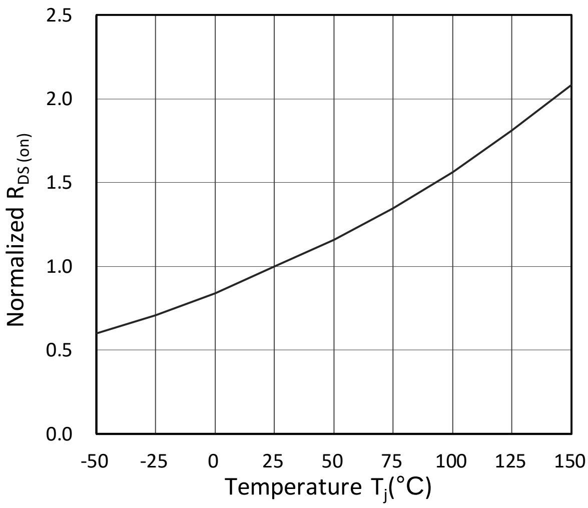


Figure 6. Normalized $R_{DS(on)}$ vs. Temperature

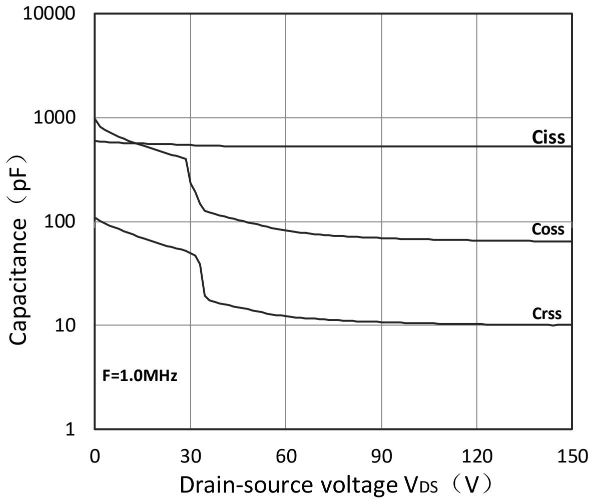


Figure 7. Capacitance Characteristics

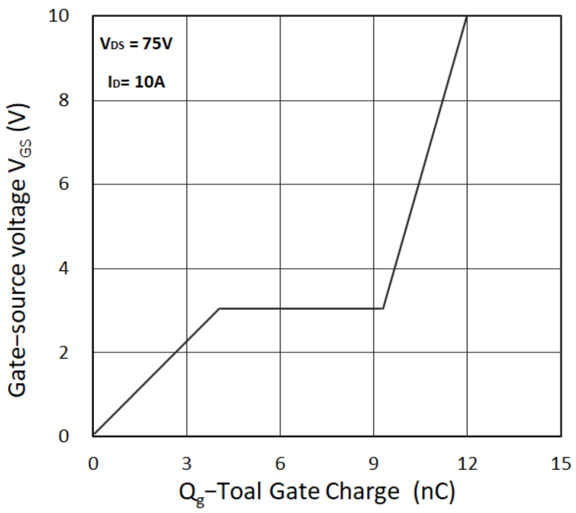


Figure 8. Gate Charge Characteristics

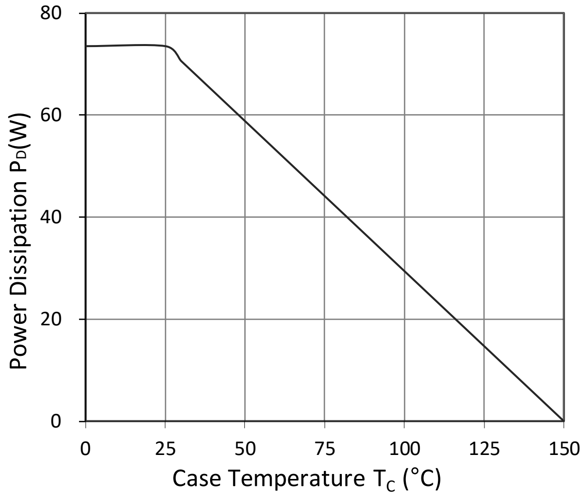


Figure 9. Power Dissipation

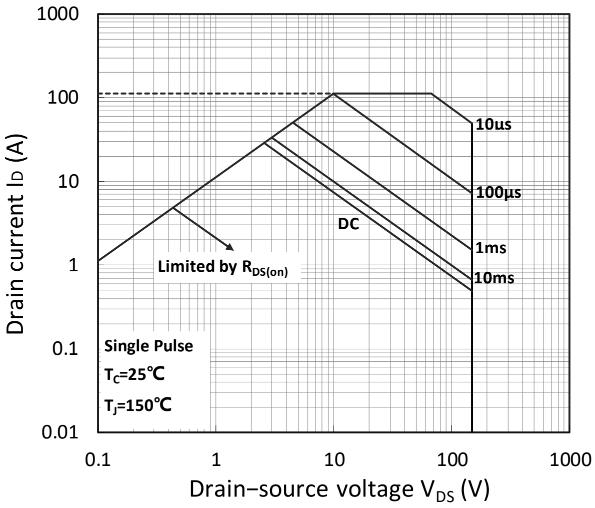


Figure10. Safe Operating Area

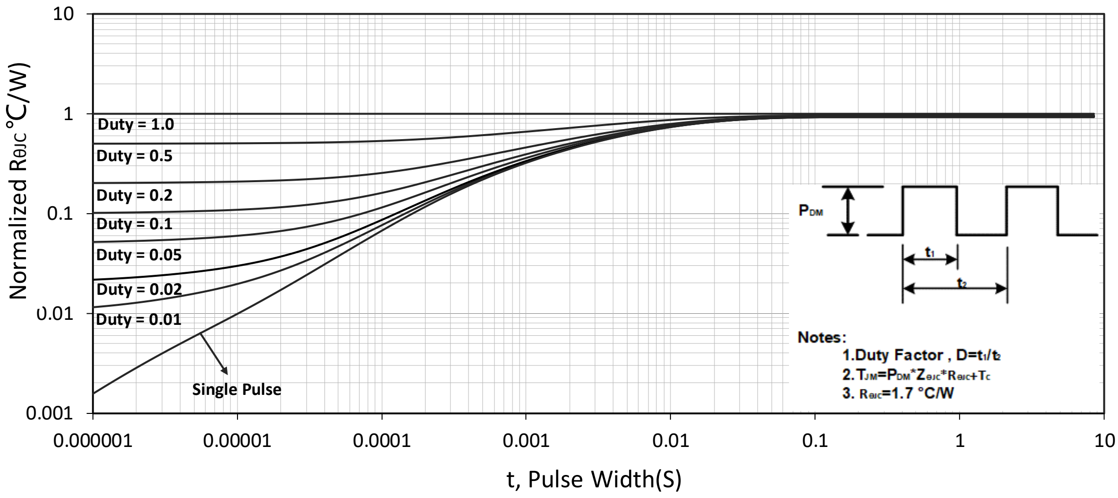


Figure 11. Normalized Maximum Transient Thermal Impedance

Test Circuit

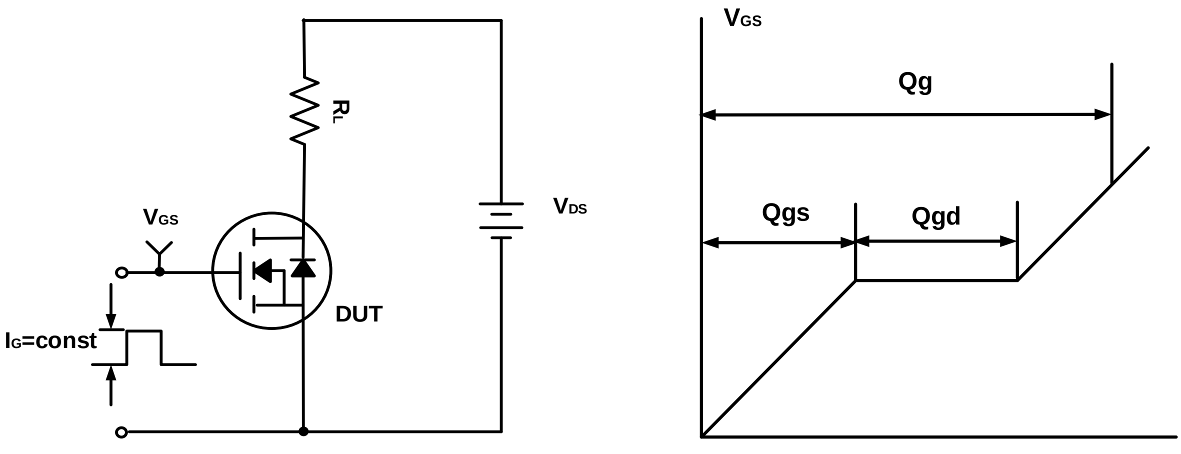


Figure A. Gate Charge Test Circuit & Waveforms

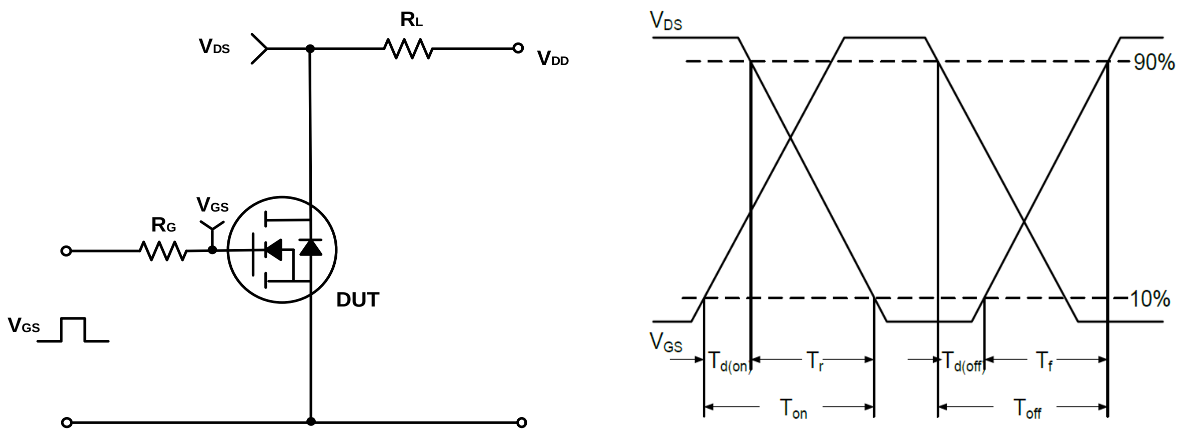
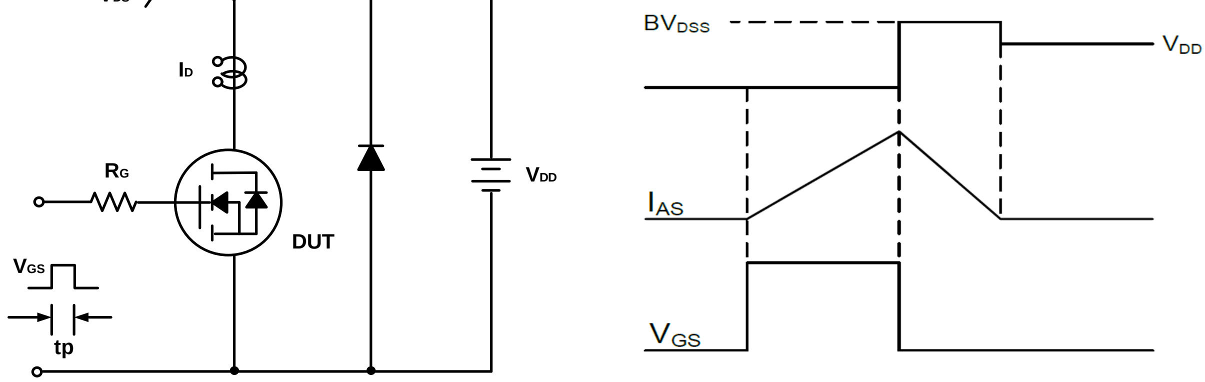


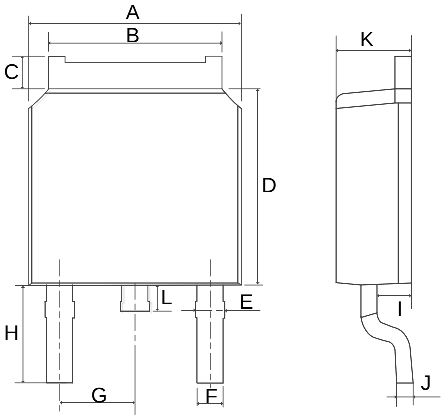
Figure B. Switching Test Circuit & Waveforms



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

Figure C. Unclamped Inductive Switching Circuit & Waveforms

Mechanical Dimensions for TO-252



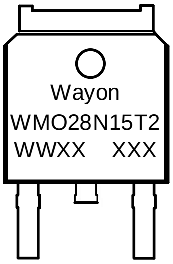
COMMON DIMENSIONS

SYMBOL	MM	
	MIN	MAX
A	6.40	6.80
B	5.13	5.50
C	0.88	1.28
D	5.90	6.22
E	0.68	1.10
F	0.68	0.91
G	2.29REF	
H	2.90REF	
I	0.85	1.17
J	0.51REF	
K	2.10	2.50
L	0.40	1.00

Ordering Information

Part	Package	Marking	Packing method
WMO28N15T2	TO-252	WMO28N15T2	Tape and Reel

Marking Information



WMO28N15T2 = 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.

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