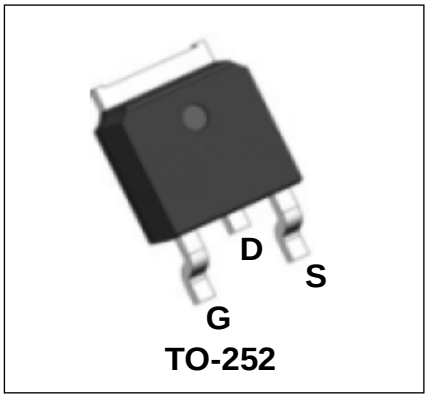
WMO20N15T2

150V N-Channel Enhancement Mode Power MOSFET



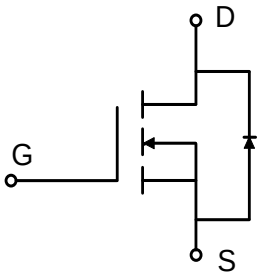
Description

WMO20N15T2 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 = 20A
  $R_{DS(on)}$ < 70mΩ @ V_{GS} = 10V
  $R_{DS(on)}$ < 88mΩ @ V_{GS} = 4.5V
- High Speed Power Switching,Logic Level
- Low Gate Charge
- 100% EAS Guaranteed
- Lead Free

RoHS compliant



Applications

- Synchronous Rectification in SMPS
- DC/DC Converters

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	20	A
	T_C= 100°C		12.6	
Pulsed Drain Current[1]		I_{DM}	80	A
Single Pulse Avalanche Energy[2]		EAS	3.75	mJ
Total Power Dissipation	T_C= 25°C	P_D	56.8	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]	$R_{\theta JA}$	52	°C/W
Thermal Resistance from Junction-to-Case	$R_{\theta JC}$	2.2	°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	1	2	3	V
Drain-Source on-Resistance[4]		$R_{DS(on)}$	V_{GS} = 10V, I_D = 10A	-	55	70	mΩ
			V_{GS} = 4.5V, I_D = 8A		63	88	
Transconductance[4]		g_{fs}	V_{DS}= 5V, I_D= 10A	-	24	-	S
Dynamic Characteristics[5]							
Input Capacitance		C_{iss}	V_{DS} = 75V, V_{GS} = 0V, f = 1MHz	-	605	-	pF
Output Capacitance		C_{oss}		-	45.5	-	
Reverse Transfer Capacitance		C_{rss}		-	3	-	
Gate Resistance		R_g	f = 1MHz	-	3	-	Ω
Switching Characteristics[5]							
Total Gate Charge		Q_g	V_{GS} = 10V, V_{DS} = 75V, I_D= 10A	-	7.8	-	nC
Gate-Source Charge		Q_{gs}		-	2.1	-	
Gate-Drain Charge		Q_{gd}		-	0.6	-	
Turn-on Delay Time		$t_{d(on)}$	V_{GS} = 10V, V_{DS} = 75V, R_G = 3Ω, I_D= 10A	-	7.5	-	ns
Rise Time		t_r		-	3.8	-	
Turn-off Delay Time		$t_{d(off)}$		-	10.5	-	
Fall Time		t_f		-	2.6	-	
Body Diode Reverse Recovery Time		t_{rr}	I_F = 10A, dI/dt= 100A/μs	-	46	-	ns
Body Diode Reverse Recovery Charge		Q_{rr}		-	50	-	nC
Drain-Source Body Diode Characteristics							
Diode Forward Voltage[4]		V_{SD}	I_S = 1A, V_{GS} = 0V	-	-	1.2	V
Continuous Source Current	T_C= 25°C	I_S	-	-	-	20	A

Notes:

1. Repetitive rating, pulse width limited by junction temperature $T_{J(MAX)}$=150°C.
2. The EAS data shows Max. rating . The test condition is V_{DD}=30V, V_{GS}=10V, L=0.3mH, I_{AS}=5A.
3. The data tested by surface mounted on a 1 inch2 FR-4 board with 2OZ copper, The value in any given application depends on the user's specific board design.
4. The data tested by pulsed , pulse width ≤ 300us , duty cycle ≤ 2%.
5. This value is guaranteed by design hence it is not included in the production test.

Typical Characteristics

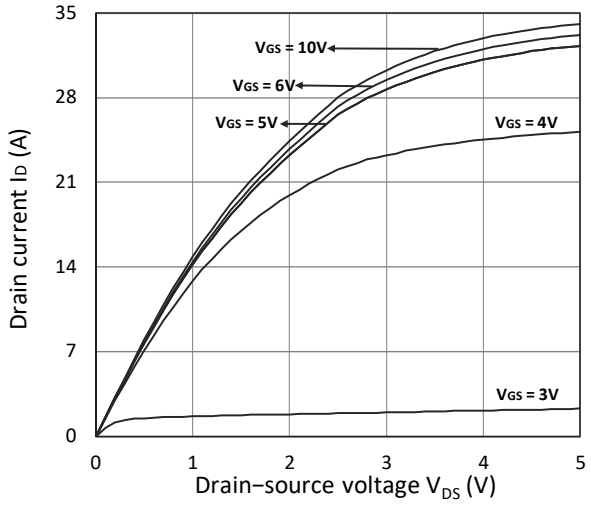


Figure 1. Output Characteristics

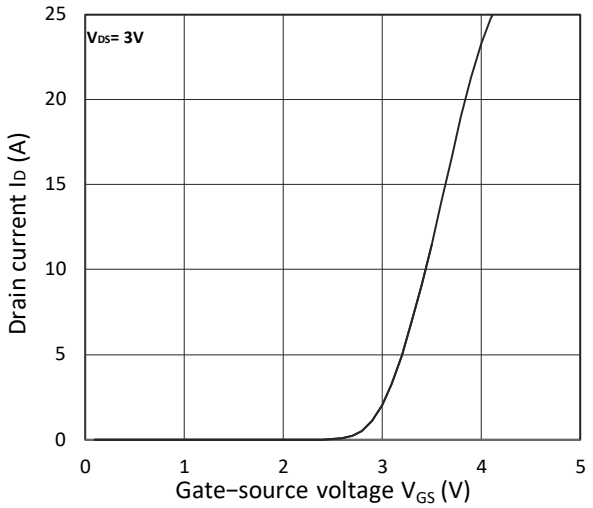


Figure 2. Transfer Characteristics

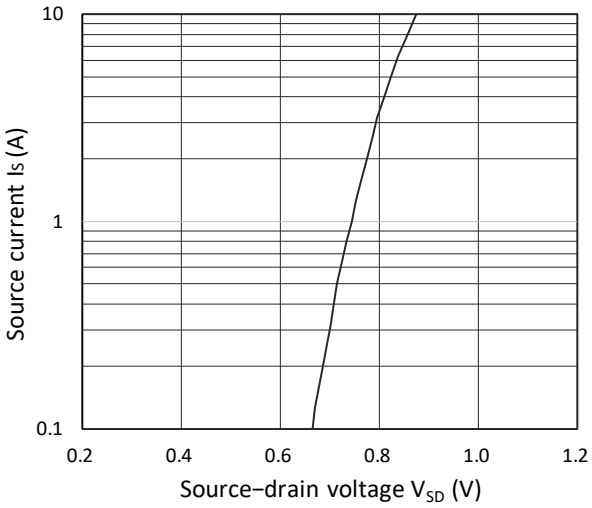


Figure 3. Forward Characteristics of Reverse

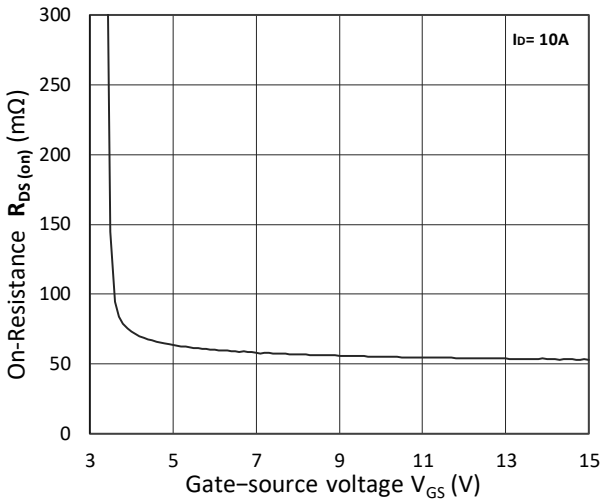


Figure 4. $R_{DS(ON)}$ vs. V_{GS}

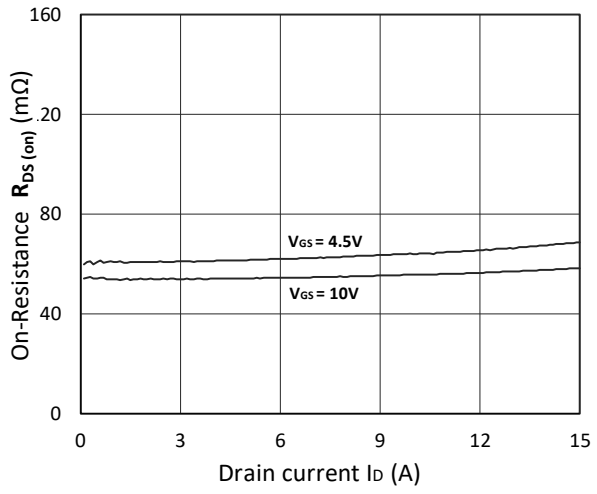


Figure 5. $R_{DS(ON)}$ vs. I_D

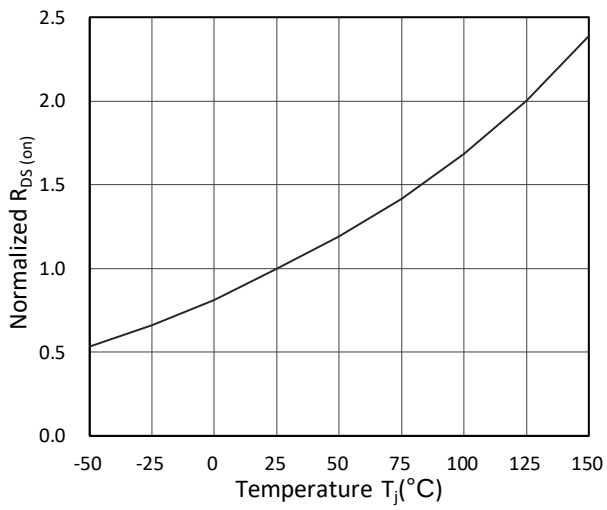


Figure 6. Normalized $R_{DS(on)}$ vs. Temperature

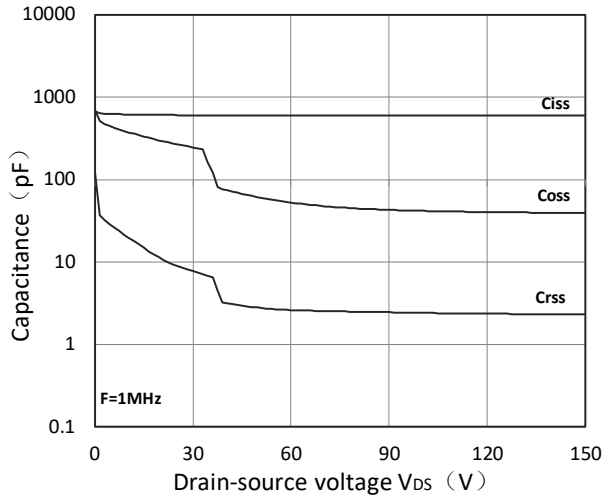


Figure 7. Capacitance Characteristics

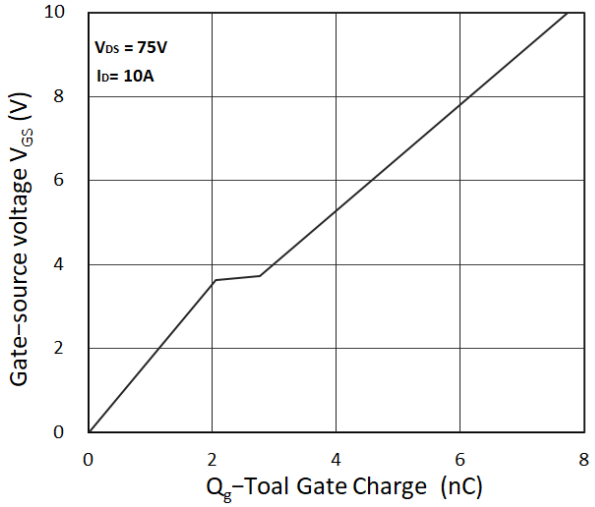


Figure 8. Gate Charge Characteristics

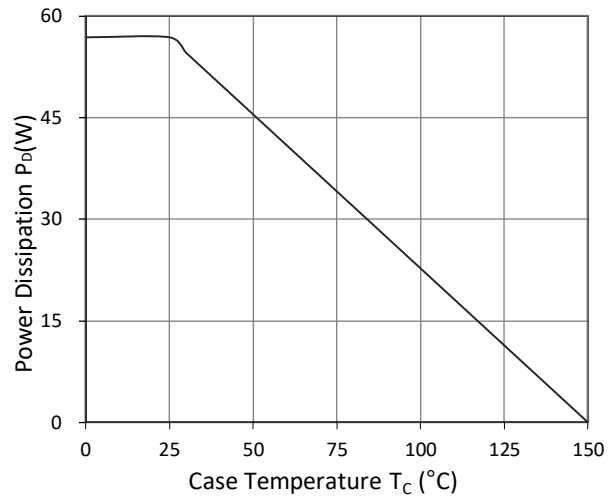


Figure 9. Power Dissipation

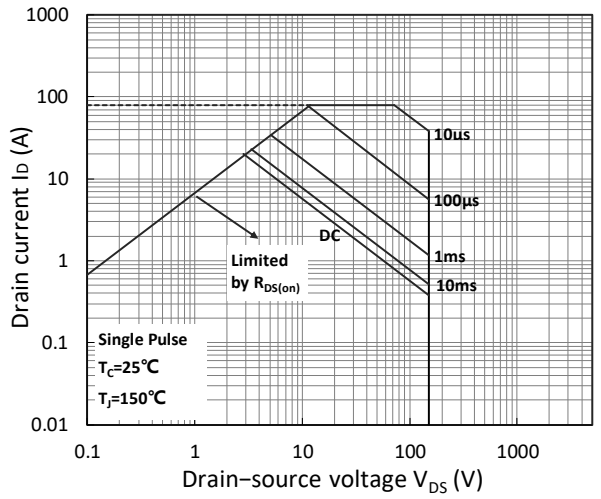


Figure10. Safe Operating Area

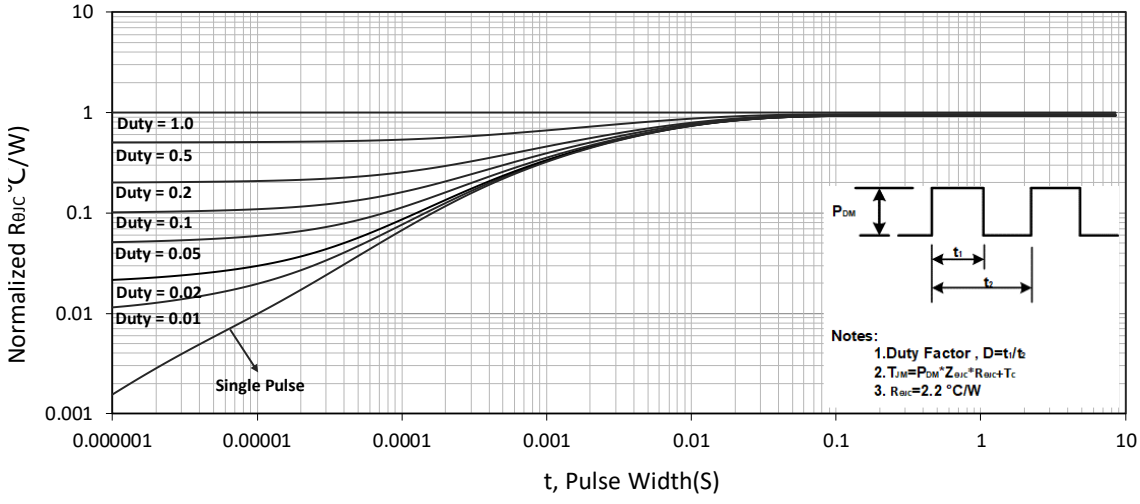
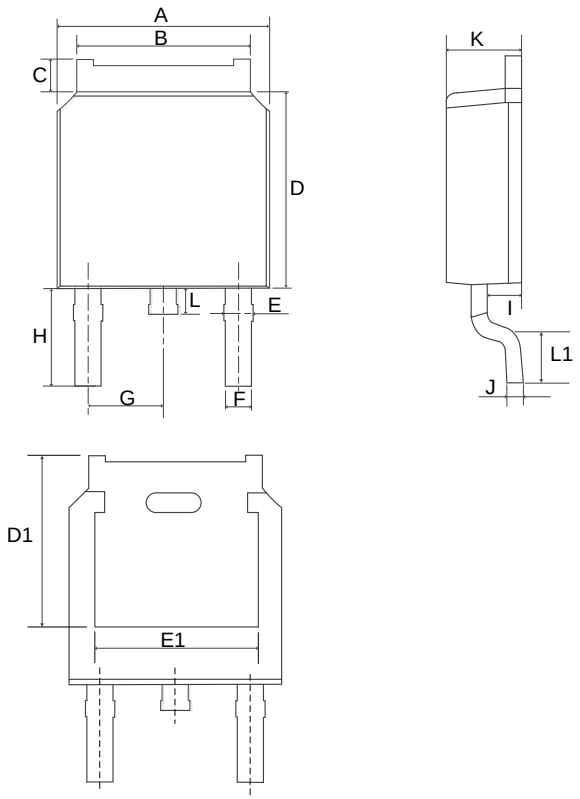


Figure 11. Normalized Maximum Transient Thermal Impedance

Mechanical Dimensions for TO-252



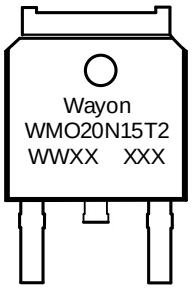
COMMON DIMENSIONS

SYMBOL	MM	
	MIN	MAX
A	6.40	6.80
B	5.13	5.50
C	0.88	1.28
D	5.90	6.22
D1	5.35REF	
E	0.68	1.10
E1	4.83REF	
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
L1	1.50REF	

Ordering Information

Part	Package	Marking	Packing method
WMO20N15T2	TO-252	WMO20N15T2	Tape and Reel

Marking Information



WMO20N15T2 = Device code

WWXX XXX= Date code

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