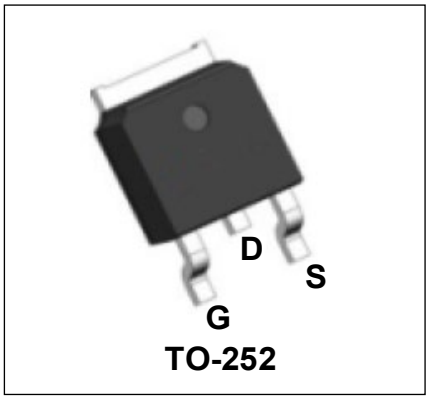
WMO18P10T1

100V P-Channel Enhancement Mode Power MOSFET

Description

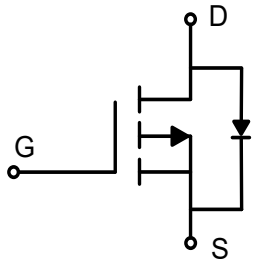
WMO18P10T1 uses advanced power trench technology that has been especially tailored to minimize the on-state resistance and yet maintain superior switching performance.



Features

- V_{DS} = -100V, I_D = -18A
  $R_{DS(on)}$ < 110mΩ @ V_{GS} = -10V
  $R_{DS(on)}$ < 120mΩ @ V_{GS} = -4.5V
- Extremely Low Switching Loss
- Excellent Stability and Uniformity
- Low Gate Charge
- 100% EAS Guaranteed

RoHS compliant



Applications

- Power Management
- Portable Equipment

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]	T_C= 25°C	I_D	-18	A
	T_C= 100°C		-11	
Pulsed Drain Current[2]		I_{DM}	-72	A
Single Pulse Avalanche Energy[3]		EAS	36.5	mJ
Total Power Dissipation[4]	T_C= 25°C	P_D	65.8	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[1]	$R_{\theta JA}$	95	°C/W
Thermal Resistance from Junction-to-Case[1]	$R_{\theta JC}$	1.9	°C/W

Electrical Characteristics T_c = 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	-100	-	-	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} = -100V, V_{GS} = 0V	-	-	-1	μA
	T_J= 55°C			-	-	-5	
Gate-Threshold Voltage		$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = -250μA	-1	-1.7	-2.5	V
Drain-Source On-Resistance[2]		$R_{DS(on)}$	V_{GS} = -10V, I_D = -10A	-	85	110	mΩ
			V_{GS} = -4.5V, I_D = -6A		95	120	
Dynamic Characteristics							
Input Capacitance		C_{iss}	V_{DS} = -50V, V_{GS} = 0V, f = 1MHz	-	1080	-	pF
Output Capacitance		C_{oss}		-	112	-	
Reverse Transfer Capacitance		C_{rss}		-	9	-	
Switching Characteristics							
Total Gate Charge		Q_g	V_{GS} = -10V, V_{DS} = -50V, I_D= -10A	-	23	-	nC
Gate-Source Charge		Q_{gs}		-	4.2	-	
Gate-Drain Charge		Q_{gd}		-	4	-	
Turn-On Delay Time		$t_{d(on)}$	V_{GS} = -10V, V_{DS} = -50V, R_G = 6Ω, I_D= -10A	-	12	-	ns
Rise Time		t_r		-	33	-	
Turn-Off Delay Time		$t_{d(off)}$		-	75	-	
Fall Time		t_f		-	78.5	-	
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	-	-	-18	A
Body Diode Reverse Recovery Time		t_{rr}	V_R = -50V, I_F = -5A, dI/dt= 100A/μs	-	75	-	ns
Body Diode Reverse Recovery Charge		Q_{rr}		-	135	-	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 ≤ 300us , duty cycle ≤ 2%

3.The EAS data shows Max. rating . The test condition is V_{DD}= -35V, V_{GS}= -10V, L= 0.1mH, I_{AS}= -27A

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

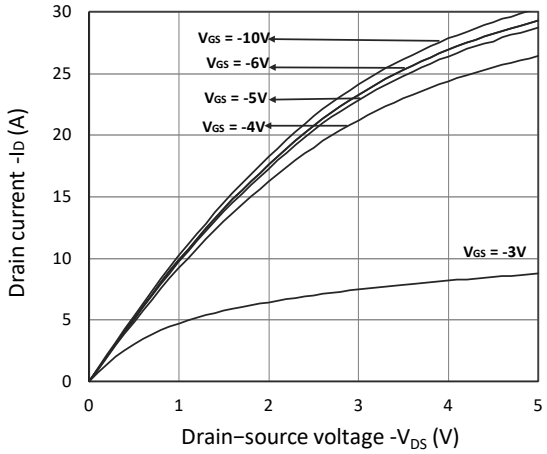


Figure 1. Output Characteristics

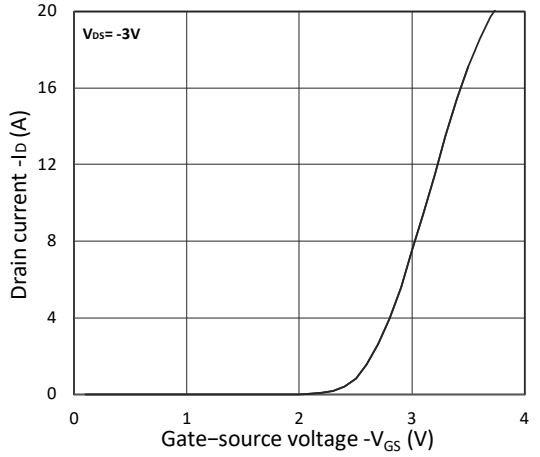


Figure 2. Transfer Characteristics

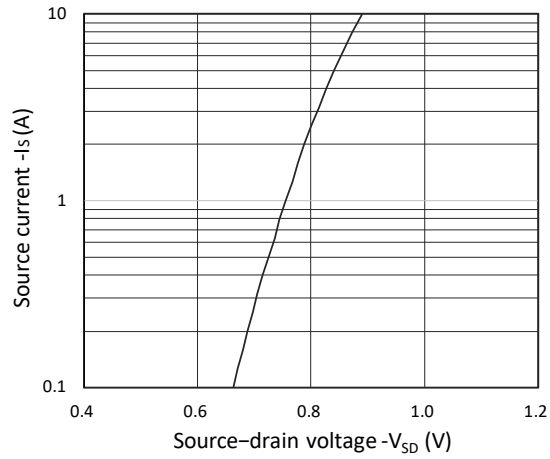


Figure 3. Forward Characteristics of Reverse

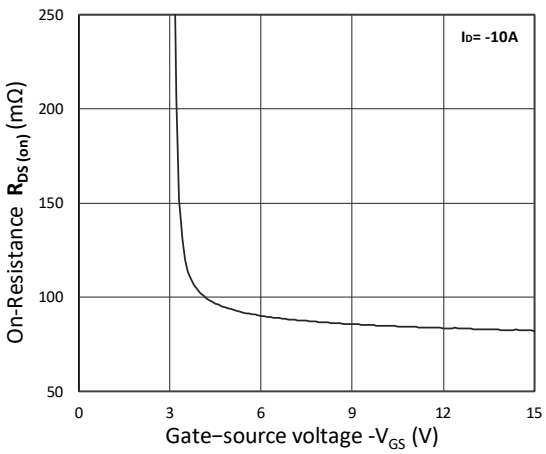


Figure 4. $R_{DS(ON)}$ vs. V_{GS}

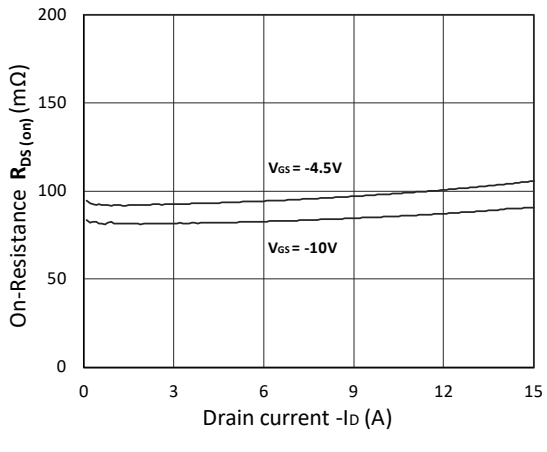


Figure 5. $R_{DS(ON)}$ vs. I_D

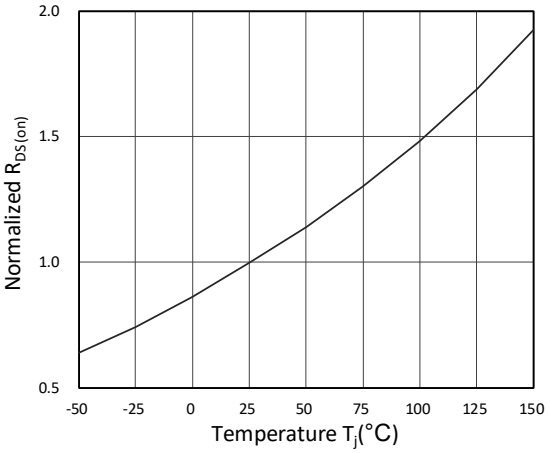


Figure 6. Normalized $R_{DS(on)}$ vs. Temperature

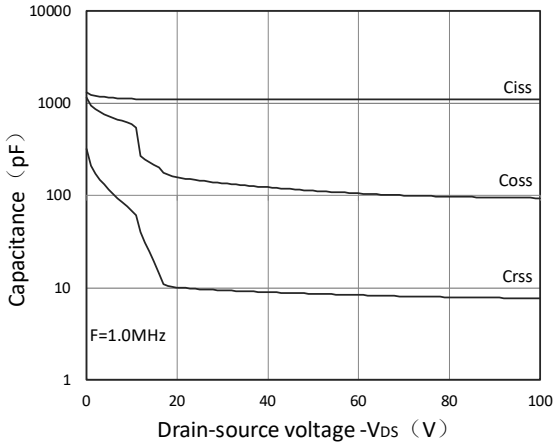


Figure 7. Capacitance Characteristics

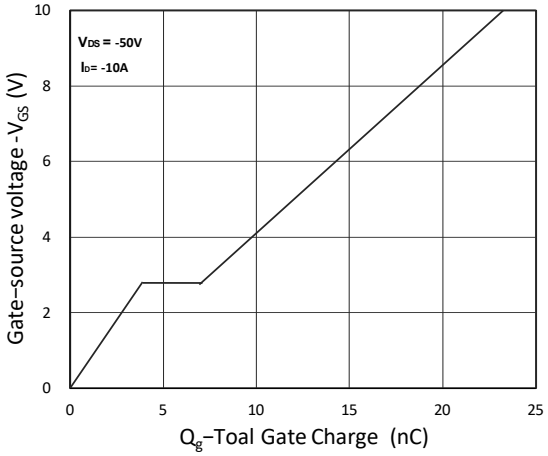


Figure 8. Gate Charge Characteristics

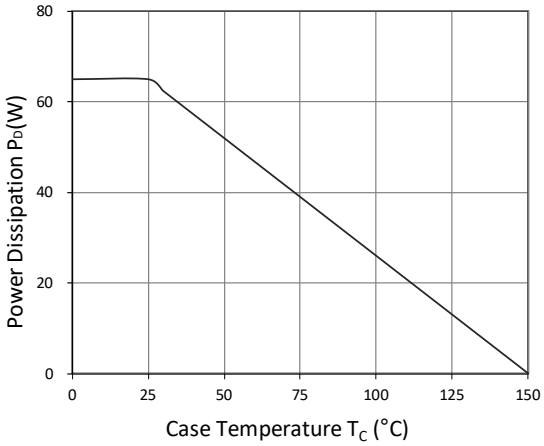


Figure 9. Power Dissipation

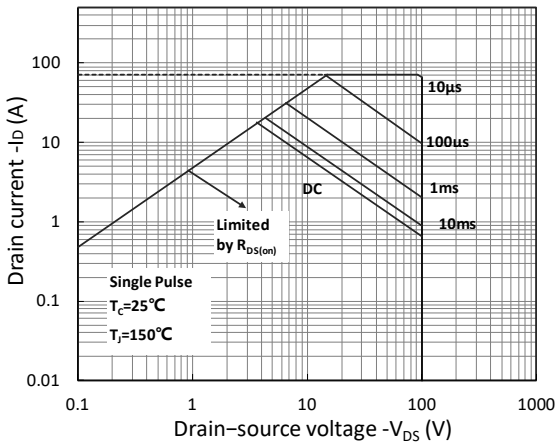


Figure10. Safe Operating Area

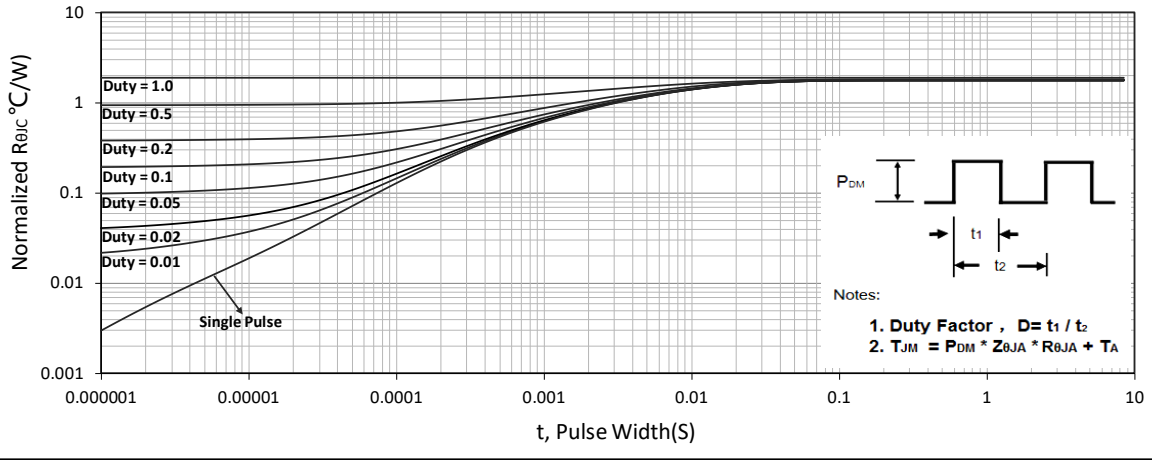
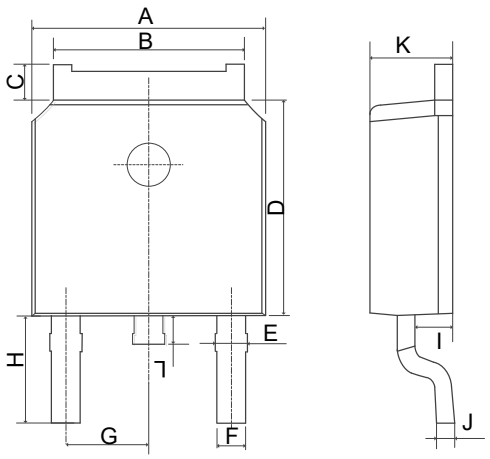


Figure 11. Normalized Maximum Transient Thermal Impedance

Mechanical Dimensions for TO-252



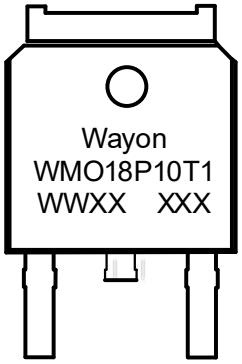
COMMON DIMENSIONS

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
WMO18P10T1	TO-252	WMO18P10T1	Tape and Reel

Marking Information



WMO18P10T1= Device code

WWXX XXX= Date code

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