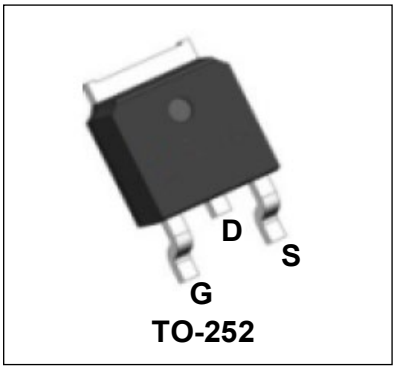
# WMO100N07T1

## 70V N-Channel Enhancement Mode Power MOSFET



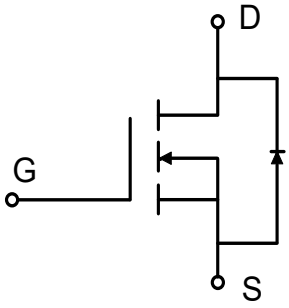

## Description

WMO100N07T1 uses advanced power trench technology that has been especially tailored to minimize the on-state resistance and yet maintain superior switching performance.

## Features

- $V_{DS}$= 70V, $I_D$ = 100A
  $R_{DS(on)}$ < 7.4mΩ @ $V_{GS}$ = 10V
- Green Device Available
- Low Gate Charge
- Advanced High Cell Density Trench Technology
- 100% EAS Guaranteed

RoHS compliant




## Applications

- Synchronous Rectification
- DC/DC Converters
- Moto Control

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

| Parameter | | Symbol | Value | Unit |
|---|---|---|---|---|
| Drain-Source Voltage | | $V_{DS}$ | 70 | V |
| Gate-Source Voltage | | $V_{GS}$ | ±20 | V |
| Continuous Drain Current | $T_C$=25°C | $I_D$ | 100 | A |
| | $T_C$=100°C | | 63 | |
| Pulsed Drain Current[4] | | $I_{DM}$ | 400 | A |
| Single Pulse Avalanche Energy[3] | | EAS | 217.8 | mJ |
| Total Power Dissipation | $T_C$=25°C | $P_D$ | 133 | 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] | $R_{\theta JA}$ | 42 | °C/W |
| Thermal Resistance from Junction-to-Case[1] | $R_{\theta JC}$ | 0.94 | °C/W |

## Electrical Characteristics（Tc = 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 | 70 | - | - | V |
| Gate-body Leakage current | | $I_{GSS}$ | $V_{DS}$ = 0V, $V_{GS}$ = ±20V | - | - | ±100 | nA |
| Zero Gate Voltage Drain Current | $T_J$=25°C | $I_{DSS}$ | $V_{DS}$ =70V, $V_{GS}$ = 0V | - | - | 1 | μA |
| | $T_J$=55°C | | | - | - | 100 | |
| Gate-Threshold Voltage | | $V_{GS(th)}$ | $V_{DS}$ = $V_{GS}$, $I_D$ = 250μA | 2 | 3 | 4 | V |
| Drain-Source on-Resistance[2] | | $R_{DS(on)}$ | $V_{GS}$ = 10V, $I_D$ = 20A | - | 5.7 | 7.4 | mΩ |
| Forward Transconductance[2] | | $g_{fs}$ | $V_{DS}$=5V , $I_D$=20A | - | 76 | - | S |
| **Dynamic Characteristics** | | | | | | | |
| Input Capacitance | | $C_{iss}$ | $V_{DS}$ = 35V, $V_{GS}$ =0V, f =1MHz | - | 4030 | - | pF |
| Output Capacitance | | $C_{oss}$ | | - | 271 | - | |
| Reverse Transfer Capacitance | | $C_{rss}$ | | - | 189 | - | |
| **Switching Characteristics** | | | | | | | |
| Gate Resistance | | $R_g$ | $V_{DS}$ = 0V, $V_{GS}$ =0V, f =1MHz | - | 1.1 | - | Ω |
| Total Gate Charge(10V) | | $Q_g$ | $V_{GS}$ = 10V, $V_{DS}$ = 35V, $I_D$=20A | - | 92 | - | nC |
| Gate-Source Charge | | $Q_{gs}$ | | - | 22 | - | |
| Gate-Drain Charge | | $Q_{gd}$ | | - | 31 | - | |
| Turn-On Delay Time | | $t_{d(on)}$ | $V_{GS}$ =10V, $V_{DD}$ =35V, $R_G$ = 4.7Ω, $I_D$= 20A | - | 36 | - | ns |
| Rise Time | | $t_r$ | | - | 77 | - | |
| Turn-Off Delay Time | | $t_{d(off)}$ | | - | 92 | - | |
| Fall Time | | $t_f$ | | - | 34 | - | |
| **Drain-Source Body Diode Characteristics** | | | | | | | |
| Diode Forward Voltage[2] | | $V_{SD}$ | $I_S$ = 1A, $V_{GS}$ = 0V | - | - | 1 | V |
| Continuous Source Current[1,5] | | $I_S$ | $V_G$=$V_D$=0V, Force Current | | | 100 | A |

Notes:

1.The data tested by surface mounted on a 1 inch$^2$ 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, $I_{AS}$=33A

4.Repetitive rating, pulse width limited by junction temperature $T_{J(MAX)}$=150°C.

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

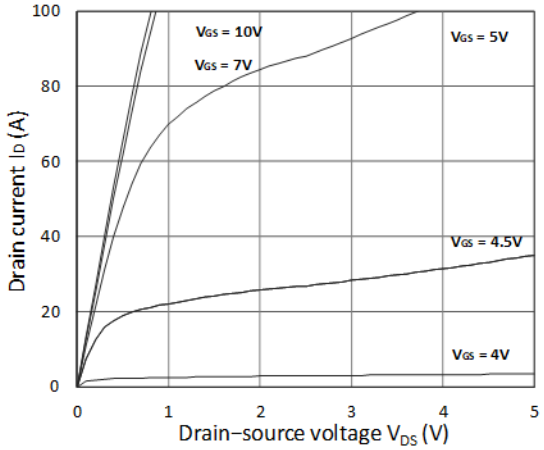



Figure 1. Output Characteristics

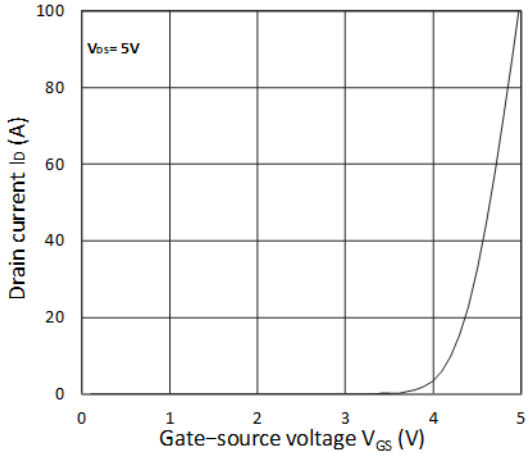



Figure 2. Transfer Characteristics

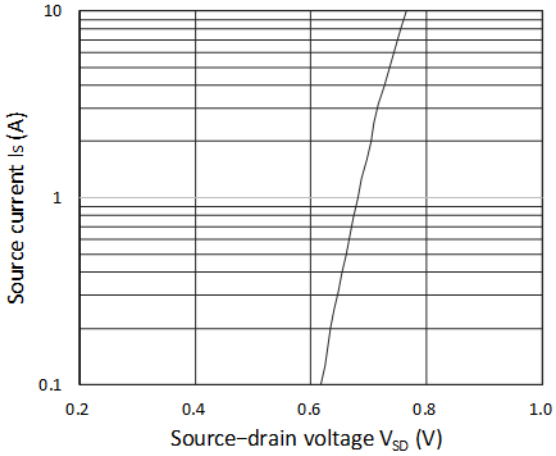



Figure 3. Forward Characteristics of Reverse

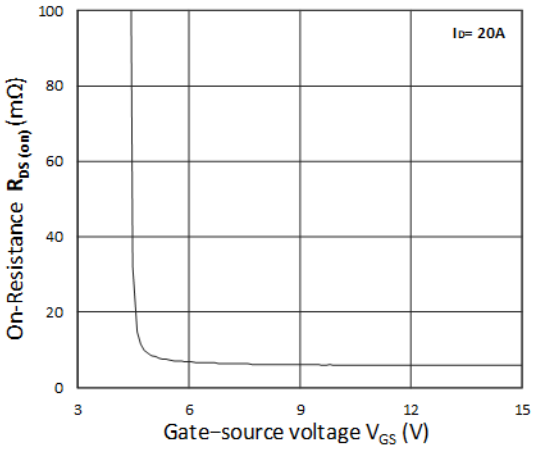



Figure 4. $R_{DS(ON)}$ vs. $V_{GS}$

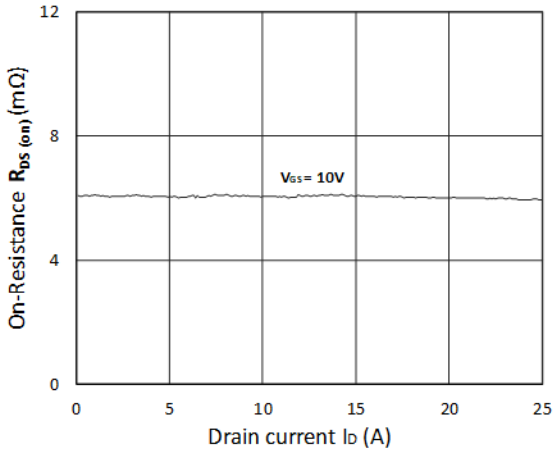



Figure 5. $R_{DS(ON)}$ vs. $I_D$

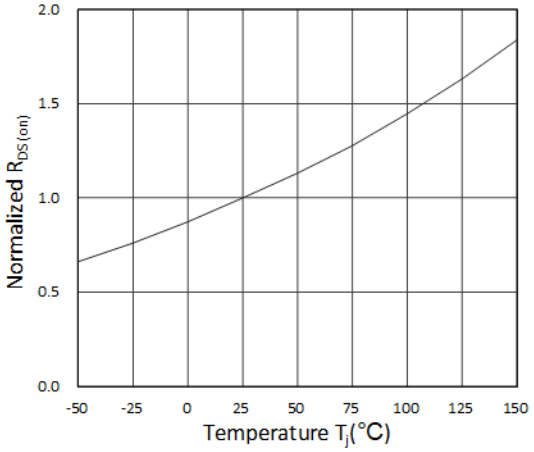



Figure 6. Normalized $R_{DS(on)}$ vs. Temperature

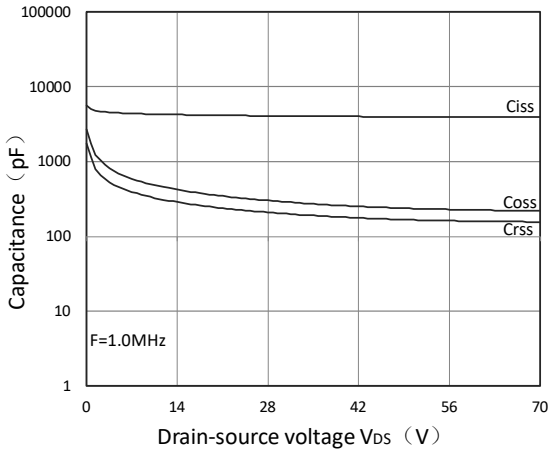



Figure 7. Capacitance Characteristics

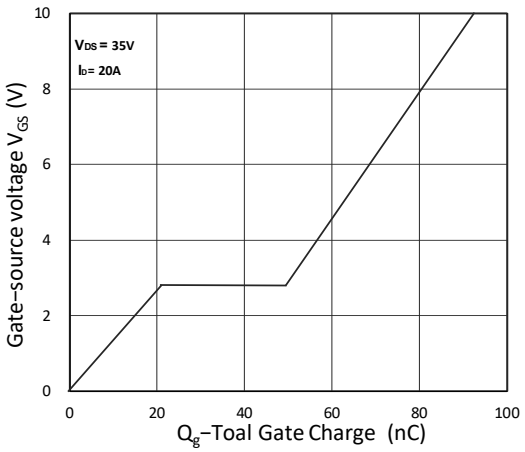



Figure 8. Gate Charge Characteristics

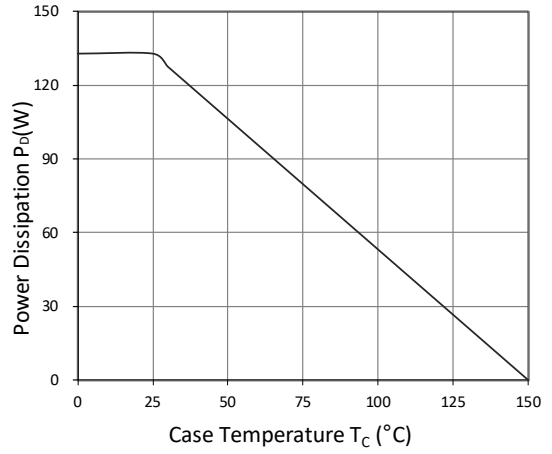



Figure 9. Power Dissipation

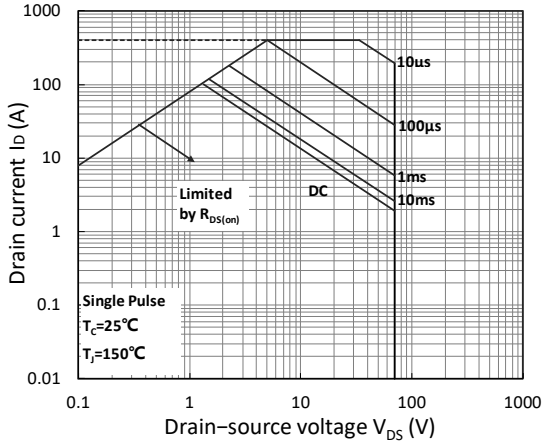



Figure10. Safe Operating Area

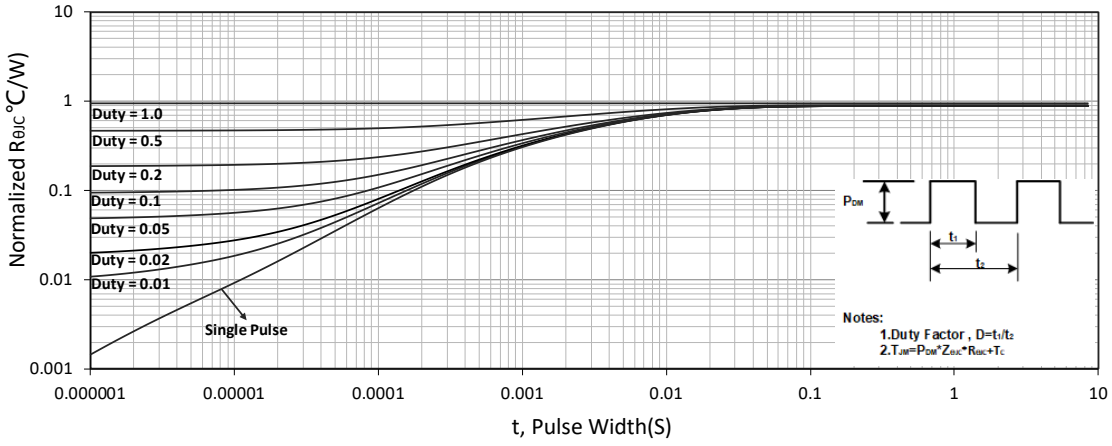



Figure 11. Normalized Maximum Transient Thermal Impedance

## Test Circuit

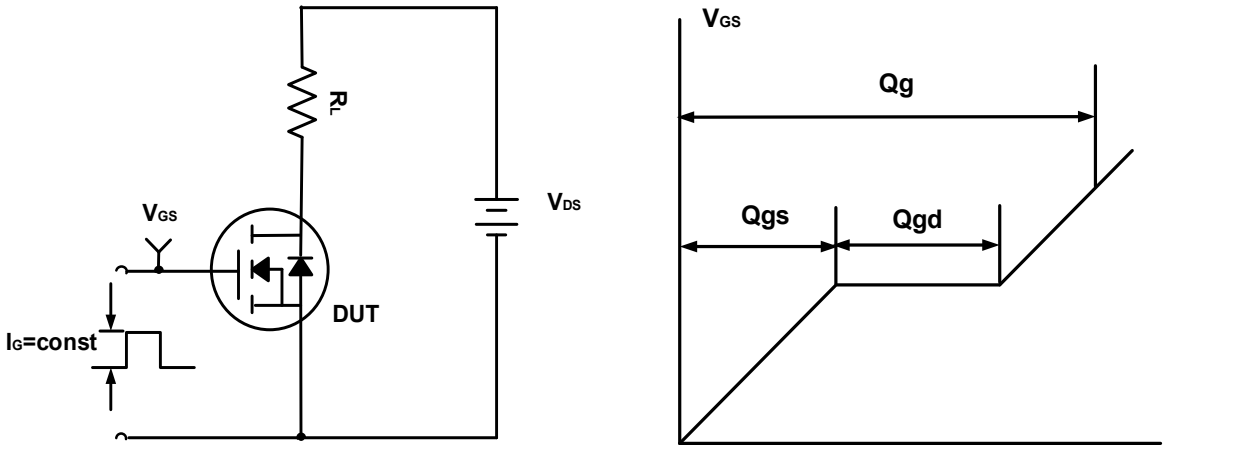



**Figure A. Gate Charge Test Circuit & Waveforms**

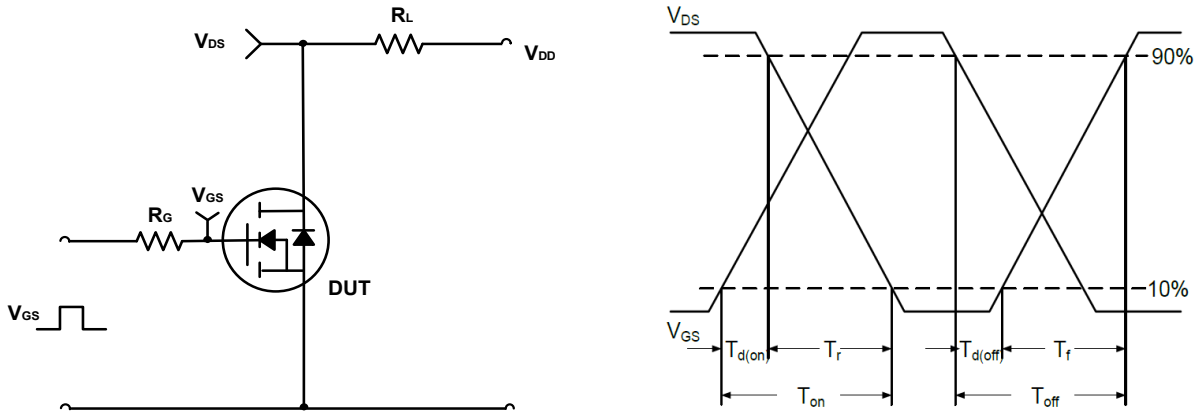



**Figure B. Switching Test Circuit & Waveforms**

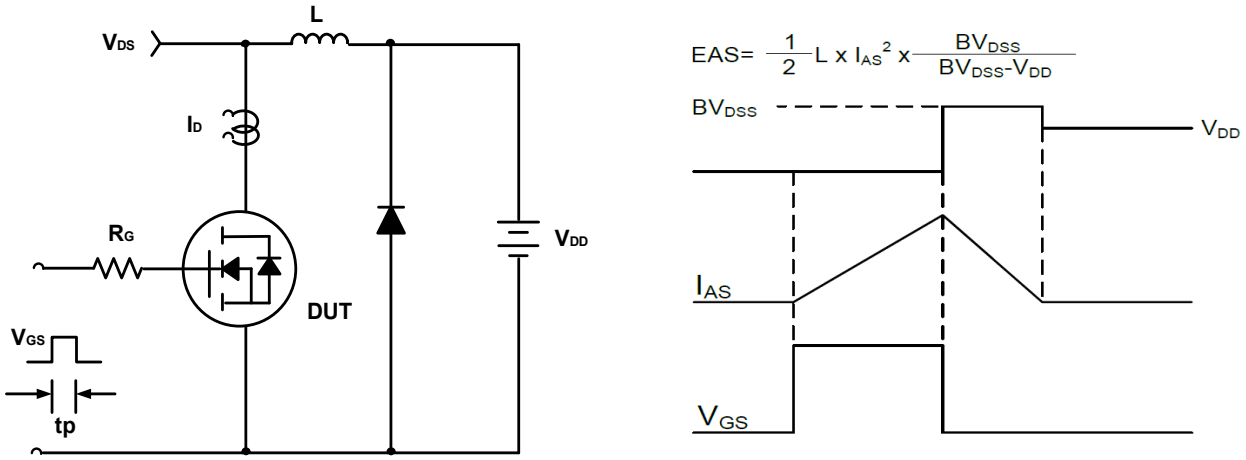
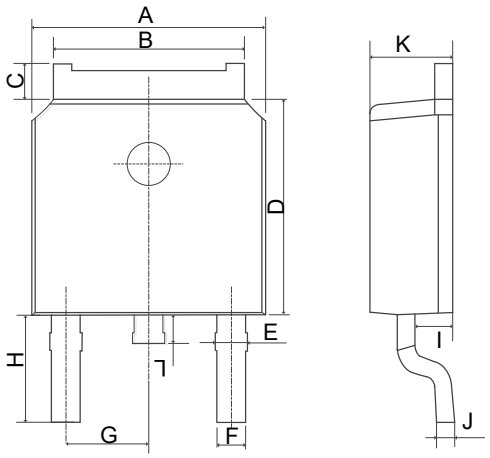



**Figure C. Unclamped Inductive Switching Circuit & Waveforms**

**Mechanical Dimensions for TO-252**



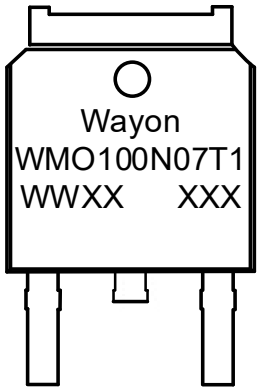

COMMON DIMENSIONS

| 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 |
|---|---|---|---|
| WMO100N07T1 | TO-252 | WMO100N07T1 | Tape and Reel |

## Marking Information




WMO100N07T1 = Device code

WWXX XXX= Date code

## Contact Information

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