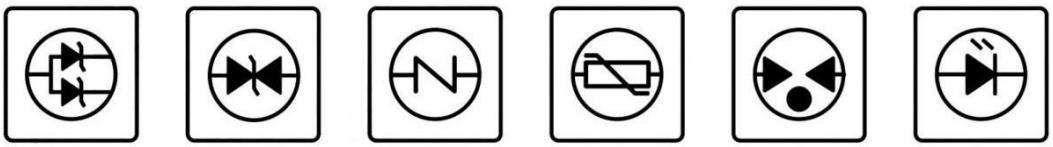
MSKSEMI 美森科
SEMICONDUCTOR




# WPM2015-MS

**Product specification**

## Features

- TrenchFET Power MOSFET

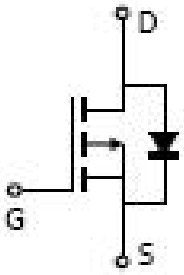
## APPLICATION

- Load Switch for Portable Devices
- DC/DC Converter

## P-Channel 20-V(D-S) MOSFET

| $V_{(BR)DSS}$ | $R_{DS(on)}$ MAX | $I_D$ |
|---|---|---|
| -20 V | 90 mΩ@-4.5V | -3 A |
| | 110 mΩ@-2.5V | |

## Reference News

| PACKAGE OUTLINE | PIN Configuration | Marking |
|---|---|---|
|  1. GATE 2. SOURCE 3. DRAIN |  | AFCP 18. |
| SOT-23-3 | | |

## Maximum ratings ($T_a$=25℃ unless otherwise noted)

| Parameter | Symbol | Value | Unit |
|---|---|---|---|
| Drain-Source Voltage | $V_{DS}$ | -20 | V |
| Gate-Source Voltage | $V_{GS}$ | ±8 | |
| Continuous Drain Current | $I_D$ | -3 | A |
| Pulsed Drain Current | $I_{DM}$ | -10 | |
| Continuous Source-Drain Diode Current | $I_S$ | -0.72 | |
| Maximum Power Dissipation | $P_D$ | 0.4 | W |
| Thermal Resistance from Junction to Ambient(t ≤5s) | $R_{\theta JA}$ | 312.5 | ℃/W |
| Junction Temperature | $T_J$ | 150 | ℃ |
| Storage Temperature | $T_{stg}$ | -55 ~+150 | |

## $T_a$=25℃ unless otherwise specified

| Parameter | Symbol | Test Condition | Min | Typ | Max | Units |
|---|---|---|---|---|---|---|
| **Static** | | | | | | |
| Drain-source breakdown voltage | $V_{(BR)DSS}$ | $V_{GS}$ = 0V, $I_D$ =-250μA | -20 | | | V |
| Gate-source threshold voltage | $V_{GS(th)}$ | $V_{DS}$ =$V_{GS}$, $I_D$ =-250μA | -0.4 | | -1 | |
| Gate-source leakage | $I_{GSS}$ | $V_{DS}$ =0V, $V_{GS}$ =±8V | | | ±100 | nA |
| Zero gate voltage drain current | $I_{DSS}$ | $V_{DS}$ =-20V, $V_{GS}$ =0V | | | -1 | μA |
| Drain-source on-state resistance [a] | $R_{DS(on)}$ | $V_{GS}$ =-4.5V, $I_D$ =-2.8A | | 0.080 | 0.90 | Ω |
| | | $V_{GS}$ =-2.5V, $I_D$ =-2.0A | | 0.90 | 0.110 | |
| Forward transconductance [a] | $g_{fs}$ | $V_{DS}$ =-5V, $I_D$ =-2.8A | | 6.5 | | S |
| **Dynamic**[b] | | | | | | |
| Input capacitance | $C_{iss}$ | $V_{DS}$ =-10V,$V_{GS}$ =0V,f =1MHz | | 405 | | pF |
| Output capacitance | $C_{oss}$ | | | 75 | | |
| Reverse transfer capacitance | $C_{rss}$ | | | 55 | | |
| Total gate charge | $Q_g$ | $V_{DS}$ =-10V,$V_{GS}$ =-4.5V,$I_D$ =-3A | | 5.5 | 10 | nC |
| | | $V_{DS}$ =-10V,$V_{GS}$ =-2.5V,$I_D$ =-3A | | 3.3 | 6 | |
| Gate-source charge | $Q_{gs}$ | | | 0.7 | | |
| Gate-drain charge | $Q_{gd}$ | | | 1.3 | | |
| Gate resistance | $R_g$ | f =1MHz | | 6.0 | | Ω |
| Turn-on delay time | $t_{d(on)}$ | $V_{DD}$=-10V, $R_L$=10Ω, $I_D$ =-1A, $V_{GEN}$=-4.5V,Rg=1Ω | | 11 | 20 | ns |
| Rise time | $t_r$ | | | 35 | 60 | |
| Turn-off delay time | $t_{d(off)}$ | | | 30 | 50 | |
| Fall time | $t_f$ | | | 10 | 20 | |
| **Drain-source body diode characteristics** | | | | | | |
| Continuous source-drain diode current | $I_S$ | $T_C$=25℃ | | | -1.3 | A |
| Pulse diode forward current [a] | $I_{SM}$ | | | | -10 | |
| Body diode voltage | $V_{SD}$ | $I_S$=-0.7A | | -0.8 | -1.2 | V |

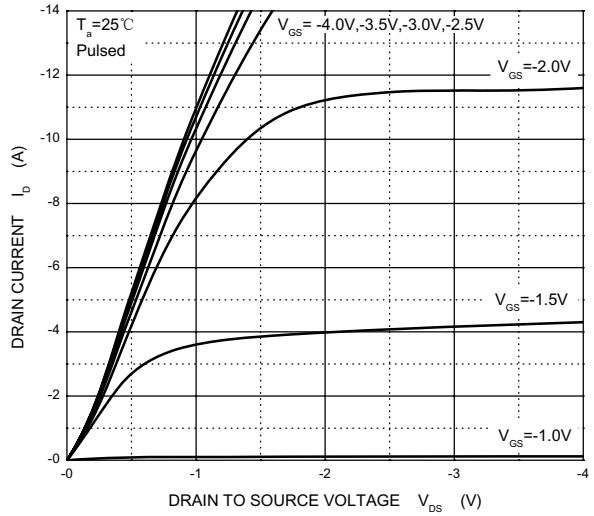
**Notes :**

a.Pulse Test : Pulse Width < 300μs, Duty Cycle ≤2%.

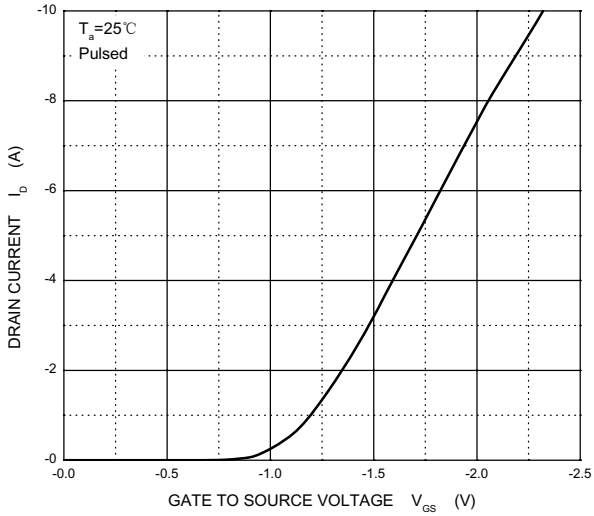
b.Guaranteed by design, not subject to production testing.

## Typical Characteristics

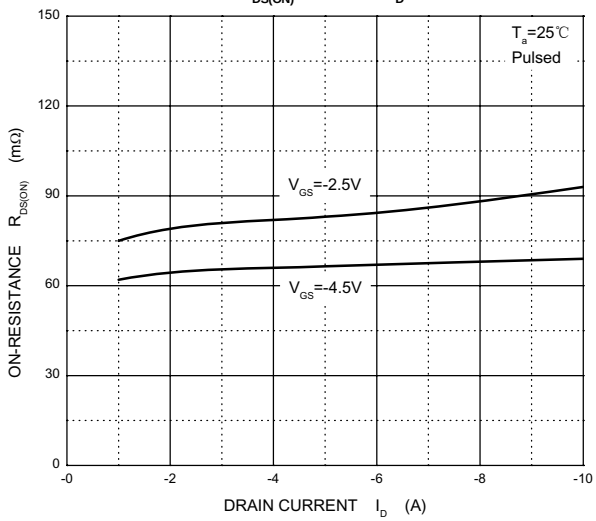
**Output Characteristics**



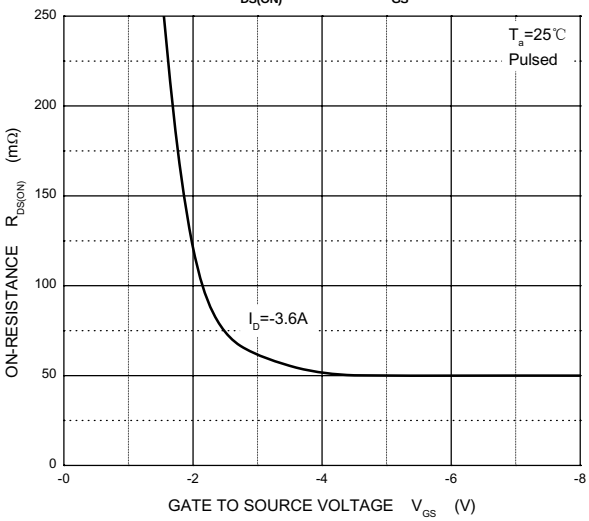

**Transfer Characteristics**



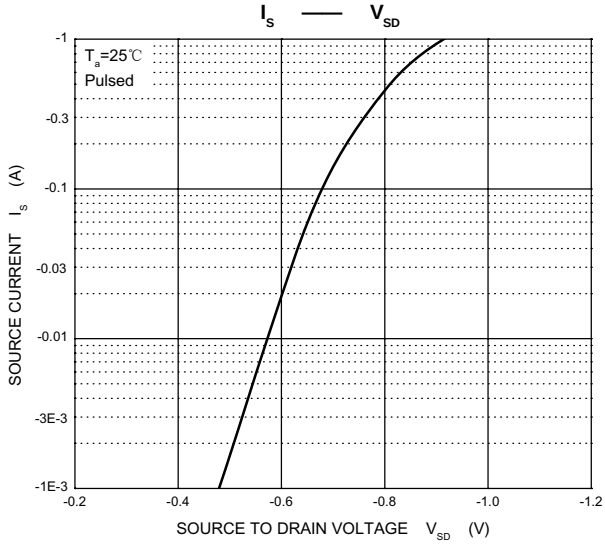

**$R_{DS(ON)}$ —— $I_D$**



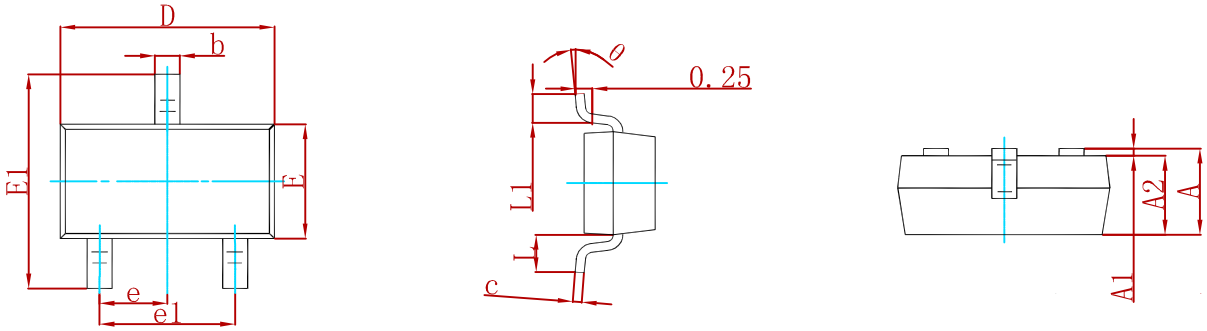

**$R_{DS(ON)}$ —— $V_{GS}$**




**$I_S$ —— $V_{SD}$**

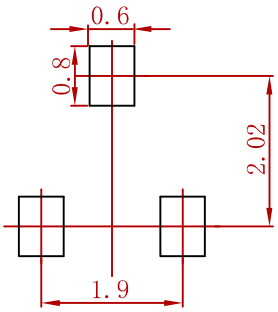


## PACKAGE MECHANICAL DATA




| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|---|---|---|---|---|
| | Min | Max | Min | Max |
| A | 0.900 | 1.150 | 0.035 | 0.045 |
| A1 | 0.000 | 0.100 | 0.000 | 0.004 |
| A2 | 0.900 | 1.050 | 0.035 | 0.041 |
| b | 0.300 | 0.500 | 0.012 | 0.020 |
| c | 0.080 | 0.150 | 0.003 | 0.006 |
| D | 2.800 | 3.000 | 0.110 | 0.118 |
| E | 1.200 | 1.400 | 0.047 | 0.055 |
| E1 | 2.250 | 2.550 | 0.089 | 0.100 |
| e | 0.950 TYP | | 0.037 TYP | |
| e1 | 1.800 | 2.000 | 0.071 | 0.079 |
| L | 0.550 REF | | 0.022 REF | |
| L1 | 0.300 | 0.500 | 0.012 | 0.020 |
| θ | 0° | 8° | 0° | 8° |

## Suugested Pad Layout




Note:
1.Controlling dimension:in millimeters.
2.General tolerance:± 0.05mm.
3.The pad layout is for reference purposes only.

## REELSPECIFICATION

| P/N | PKG | QTY |
|---|---|---|
| WPM2015-MS | SOT-23-3 | 3000 |

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