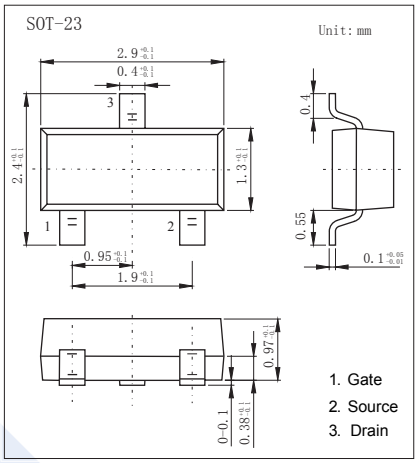
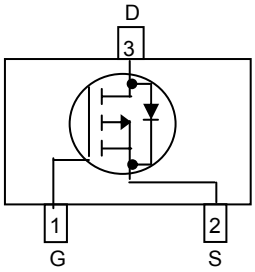
# P-Channel MOSFET

# WPM2015 (KPM2015)




## ■ Features

- $V_{DS\ (V)}$ =-20V
- $I_D$ =-2.4 A
- $R_{DS(ON)}$ < 110mΩ ($V_{GS}$ =-4.5V)
- $R_{DS(ON)}$ < 150mΩ ($V_{GS}$ =-2.5V)
- Supper high density cell design




## ■ Absolute Maximum Ratings Ta = 25℃

| Parameter | | Symbol | 10 S | Steady State | Unit |
|---|---|---|---|---|---|
| Drain-Source Voltage | | $V_{DS}$ | -20 | | V |
| Gate-Source Voltage | | $V_{GS}$ | ±8 | | |
| Continuous Drain Current (Note.1) | Ta=25°C | $I_D$ | -2.4 | -2.2 | A |
| | Ta=70°C | | -1.9 | -1.7 | |
| Power Dissipation (Note.1) | Ta=25°C | $P_D$ | 0.9 | 0.8 | W |
| | Ta=70°C | | 0.5 | 0.5 | |
| Continuous Drain Current (Note.2) | Ta=25°C | $I_D$ | -2.2 | -2 | A |
| | Ta=70°C | | -1.7 | -1.6 | |
| Power Dissipation (Note.2) | Ta=25°C | $P_D$ | 0.7 | 0.6 | W |
| | Ta=70°C | | 0.5 | 0.4 | |
| Pulsed Drain Current (Note.3) | | $I_{DM}$ | -10 | | A |
| Thermal Resistance.Junction- to-Ambient | (Note.1) | $R_{thJA}$ | 135 | 155 | ℃/W |
| | (Note.2) | | 160 | 190 | |
| Thermal Resistance.Junction- to-Case | | $R_{thJC}$ | — | 75 | |
| Junction Temperature | | $T_J$ | 150 | | ℃ |
| Lead Temperature | | $T_L$ | 260 | | |
| Junction Storage Temperature Range | | $T_{stg}$ | -55 to 150 | | |

Note.1: Surface mounted on FR-4 Board using 1 square inch pad size, 1oz copper

Note.2: Surface mounted on FR-4 board using minimum pad size, 1oz copper

Note.3: Pulse width<380μs, Duty Cycle<2%

# P-Channel MOSFET

# WPM2015 (KPM2015)

■ Electrical Characteristics Ta = 25℃

| Parameter | Symbol | Test Conditions | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| Drain-Source Breakdown Voltage | $V_{DSS}$ | $I_D$=-250μA, $V_{GS}$=0V | -20 | | | V |
| Zero Gate Voltage Drain Current | $I_{DSS}$ | $V_{DS}$=-16V, $V_{GS}$=0V | | | -1 | uA |
| Gate-Body leakage current | $I_{GSS}$ | $V_{DS}$=0V, $V_{GS}$=±8V | | | ±100 | nA |
| Gate Threshold Voltage | $V_{GS(th)}$ | $V_{DS}$=$V_{GS}$, $I_D$=-250μA | -0.4 | | -0.81 | V |
| Static Drain-Source On-Resistance | $R_{DS(ON)}$ | $V_{GS}$=-4.5V, $I_D$=-2.7A | | | 110 | mΩ |
| | | $V_{GS}$=-2.5V, $I_D$=-2.2A | | | 150 | |
| Input Capacitance | $C_{iss}$ | $V_{GS}$=0V, $V_{DS}$=-10V, f=1MHz | | 534 | | pF |
| Output Capacitance | $C_{oss}$ | | | 62 | | |
| Reverse Transfer Capacitance | $C_{rss}$ | | | 54 | | |
| Total Gate Charge | $Q_g$ | $V_{GS}$=-4.5V, $V_{DS}$=-10V, $I_D$=-2.7A | | 7.3 | | nC |
| Threshold Gate Charge | $Q_{g(th)}$ | | | 0.5 | | |
| Gate Source Charge | $Q_{gs}$ | | | 1.25 | | |
| Gate Drain Charge | $Q_{gd}$ | | | 1.15 | | |
| Turn-On DelayTime | $t_{d(on)}$ | $V_{GS}$=-4.5V, $V_{DS}$=-10V, $I_D$=-1.2A, $R_G$=6Ω | | 8 | | ns |
| Turn-On Rise Time | $t_r$ | | | 6.4 | | |
| Turn-Off DelayTime | $t_{d(off)}$ | | | 41 | | |
| Turn-Off Fall Time | $t_f$ | | | 7 | | |
| Maximum Body-Diode Continuous Current | $I_S$ | | | | -0.9 | A |
| Diode Forward Voltage | $V_{SD}$ | $I_S$=-0.9A,$V_{GS}$=0V | | | -1.5 | V |

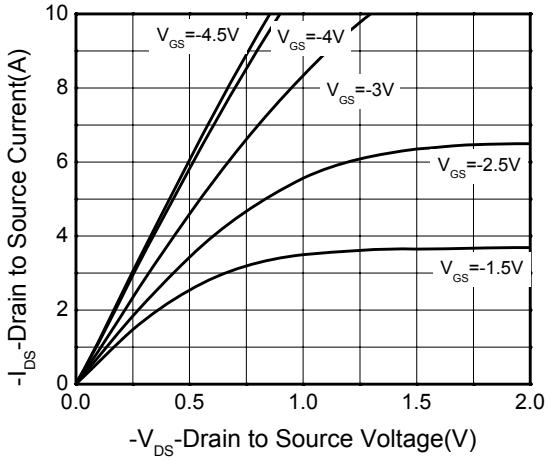
■ Marking

| Marking | A1SHB |
|---|---|

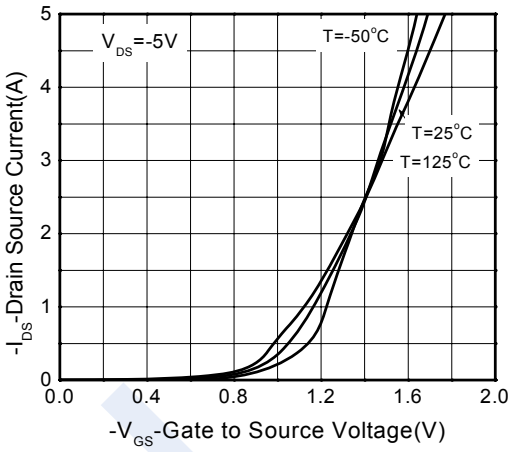
# P-Channel MOSFET

# WPM2015 (KPM2015)

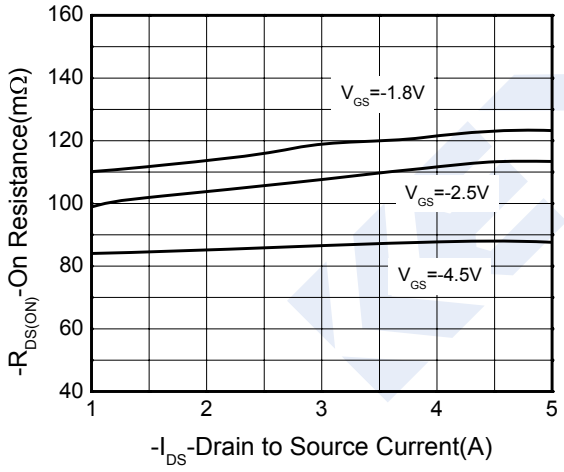
■ Typical Characterisitics



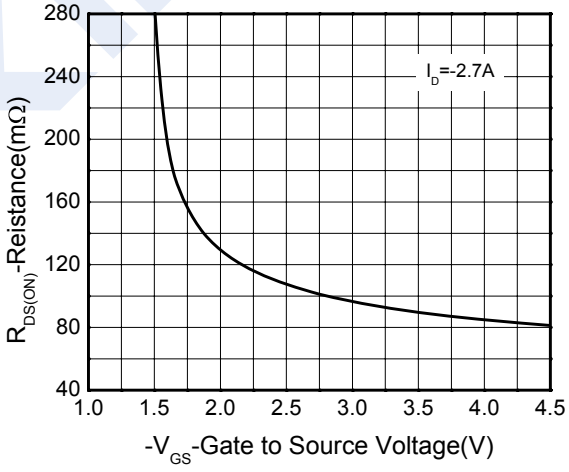

**Output characteristics**



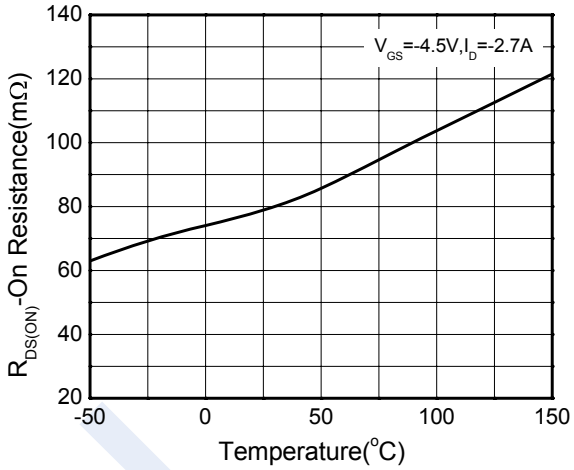

**Transfer characteristics**



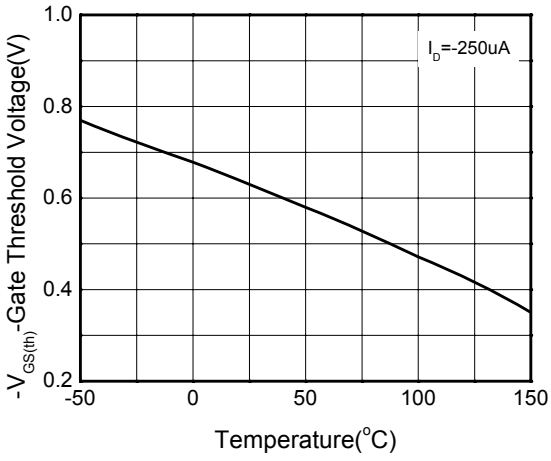

**On-Resistance vs. Drain current**




**On-Resistance vs. Gate-to-Source voltage**




**On-Resistance vs. Junction temperature**

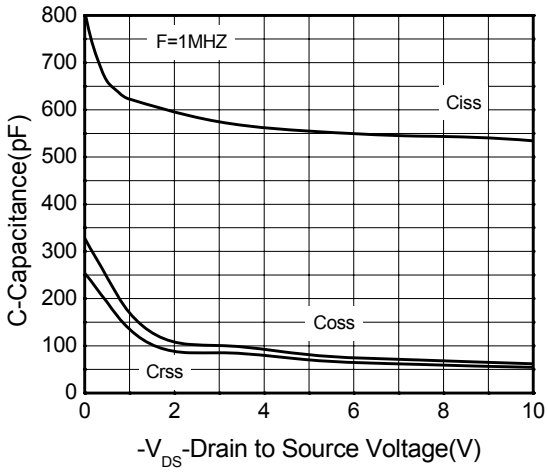



**Threshold voltage vs. Temperature**

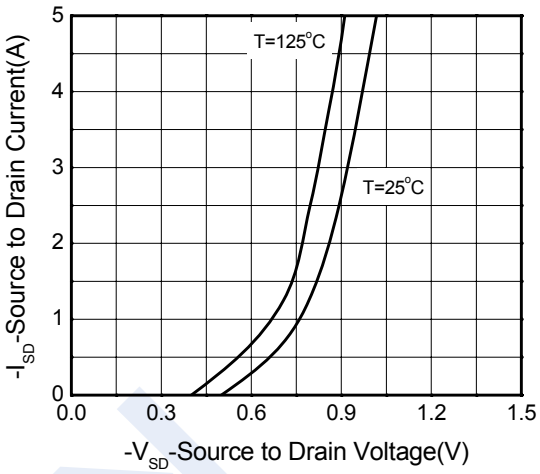
# P-Channel MOSFET

# WPM2015 (KPM2015)

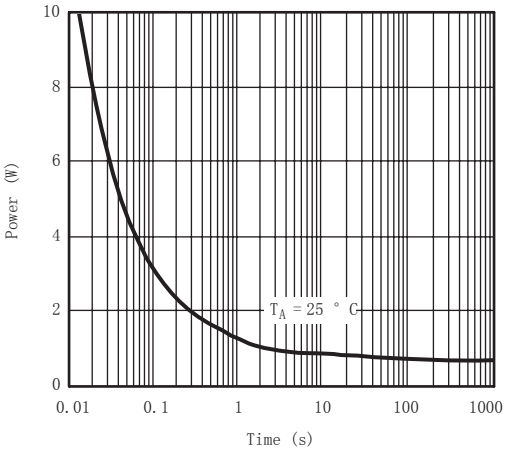
■ Typical Characterisitics



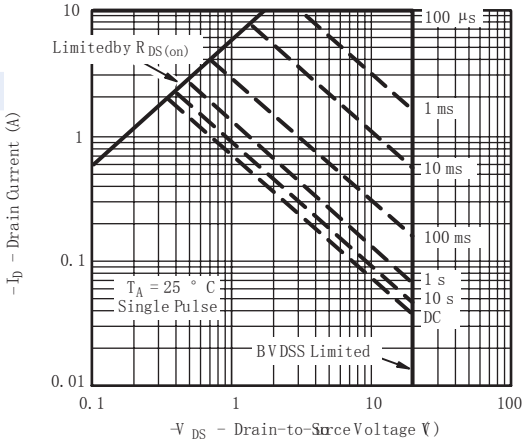

**Capacitance**



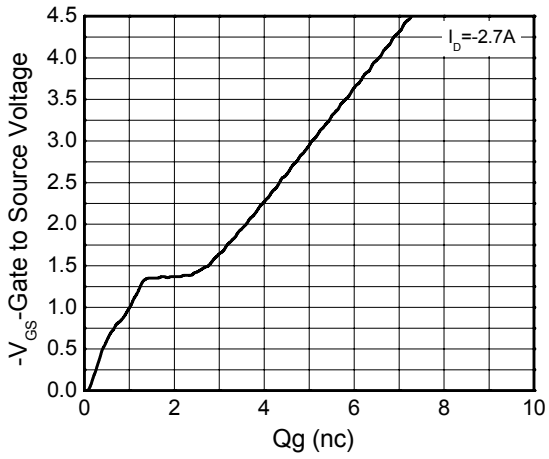

**Body diode forward voltage**




**Single pulse power**




**Safe operating power**

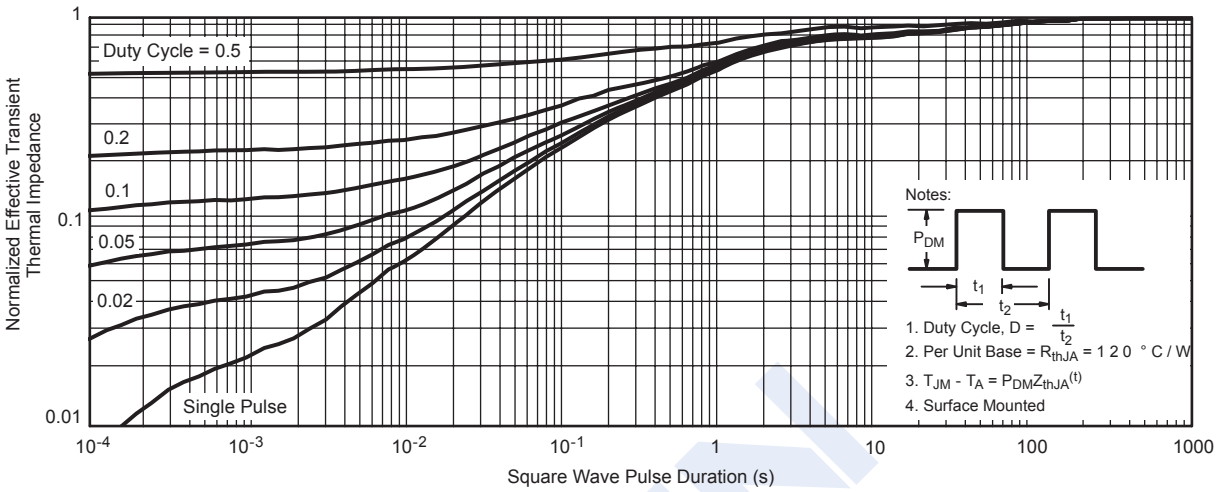



**Gate Charge Characteristics**

# P-Channel MOSFET

# WPM2015 (KPM2015)

■ Typical Characterisitics




**Transient thermal response (Junction-to-Ambient)**