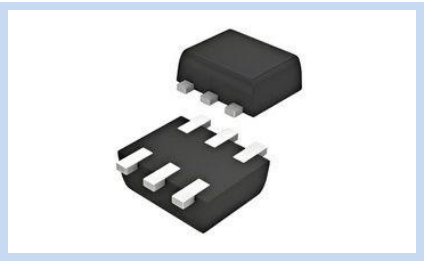
# Dual P-Channel MOSFET
# 60V 0.2A 0.3W SOT-563

MFT62PA20S563

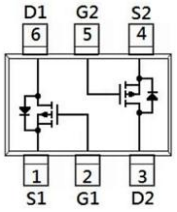
MERITEK

## FEATURES



- $R_{DS(ON)}$ ≤ 4Ω at $V_{GS}$=10V
- Low On-Resistance and Minimized Gate Charge for Efficient Small-Signal Performance
- Fast Switching Performance, Low Switching Losses and High-Frequency Efficiency
- Low Gate Threshold Voltage Allowing Direct Drive from Low-Voltage Logic
- Miniature Footprint and Low-Profile Packaging

## APPLICATIONS




RoHS

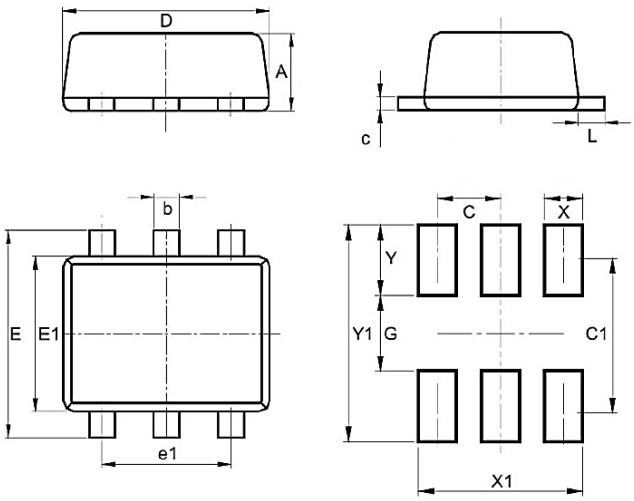
- Load Switching, Signal Routing, Level Translation, Logic-Controlled Power Management Circuits
- Consumer Electronics, Portable Devices, Industrial Controls, and IoT Equipment

## MAXIMUM RATINGS

| Parameter | | Symbol | Value | Unit |
|---|---|---|---|---|
| Drain-Source Voltage | | $V_{DS}$ | -60 | V |
| Gate-Source Voltage | | $V_{GS}$ | ±20 | V |
| Continuous Drain Current | | $I_D$ | -200 | mA |
| Pulsed Drain Current | | $I_{DM}$ | -800 | mA |
| Power Dissipation | $T_A$=25°C | $P_D$ | 300 | mW |
| | Derate above 25°C | | 2.4 | mW/°C |
| Thermal Resistance Junction to Ambient | | $R_{\theta JA}$ | 417 | °C/W |
| Operating Junction and Storage Temperature Range | | $T_J$, $T_{STG}$ | -55 to +150 | °C |

## DIMENSIONS

| Item | Min (mm) | Max (mm) |
|---|---|---|
| A | 0.50 | 0.60 |
| b | 0.17 | 0.27 |
| c | 0.07 | 0.17 |
| D | 1.50 | 1.70 |
| E | 1.50 | 1.70 |
| E1 | 1.10 | 1.30 |
| e1 | 0.90 | 1.10 |
| L | 0.10 | 0.30 |
| X | 0.34 | |
| X1 | 1.34 | |
| Y | 0.55 | |
| Y1 | 2.00 | |
| C | 0.50 | |
| C1 | 1.45 | |
| G | 0.90 | |



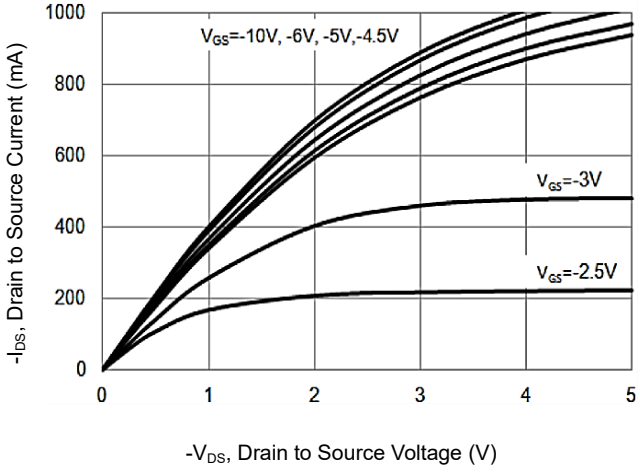
## ELECTRICAL CHARACTERISTICS

| Off Characteristics | Conditions | Symbol | Min | Typ. | Max | Unit |
|---|---|---|---|---|---|---|
| Drain-Source Breakdown Voltage | $V_{GS}$=0V, $I_D$=-250μA | $BV_{DSS}$ | -60 | -- | -- | V |
| Drain-Source Leakage Current | $V_{DS}$=-48V, $V_{GS}$=0V | $I_{DSS}$ | -- | -- | -1 | μA |
| Gate-Source Leakage Current | $V_{GS}$=±20V, $V_{DS}$=0V | $I_{GSS}$ | -- | -- | ±100 | nA |
| **On Characteristics** | **Conditions** | **Symbol** | **Min** | **Typ.** | **Max** | **Unit** |
| Static Drain-Source On-Resistance | $V_{GS}$=-10V, $I_D$=-500mA | $R_{DS(ON)}$ | -- | 2.4 | 4 | Ω |
| | $V_{GS}$=-4.5V, $I_D$=-200mA | | -- | 2.65 | 6 | |
| | $V_{GS}$=-2.5V, $I_D$=-50mA | | -- | 4.5 | 13 | |
| Gate Threshold Voltage | $V_{GS}$=$V_{DS}$, $I_D$=-250μA | $V_{GS(th)}$ | -1.0 | -1.5 | -2.5 | V |
| **Dynamic Characteristics** | **Conditions** | **Symbol** | **Min** | **Typ.** | **Max** | **Unit** |
| Total Gate Charge | $V_{DS}$=-25V, $V_{GS}$=-4.5V, $I_D$=-100mA | $Q_g$ | -- | 1.1 | -- | nC |
| Gate-Source Charge | | $Q_{gs}$ | -- | 0.3 | -- | |
| Gate-Drain Charge | | $Q_{gd}$ | -- | 0.2 | -- | |
| Turn-On Delay Time | $V_{DD}$=-25V, $V_{GS}$=-10V, $R_G$=6Ω, $I_D$=-100mA | $t_{d(on)}$ | -- | 4.8 | -- | nS |
| Turn-On Rise Time | | $t_r$ | -- | 19 | -- | |
| Turn-Off Delay Time | | $t_{d(off)}$ | -- | 52 | -- | |
| Turn-Off Fall Time | | $t_f$ | -- | 32 | -- | |
| Input Capacitance | $V_{DS}$=-25V, $V_{GS}$=0V, F=1MHz | $C_{iss}$ | -- | 51 | -- | pF |
| Output Capacitance | | $C_{oss}$ | -- | 15 | -- | |
| Reverse Transfer Capacitance | | $C_{rss}$ | -- | 2.2 | -- | |
| **Drain-Source Body Diode** | **Conditions** | **Symbol** | **Min** | **Typ.** | **Max** | **Unit** |
| Diode Forward Current | -- | $I_S$ | -- | -- | -200 | mA |
| Diode Forward Voltage | $V_{GS}$=0V, $I_S$=-500mA | $V_{SD}$ | -- | -0.95 | -1.3 | V |

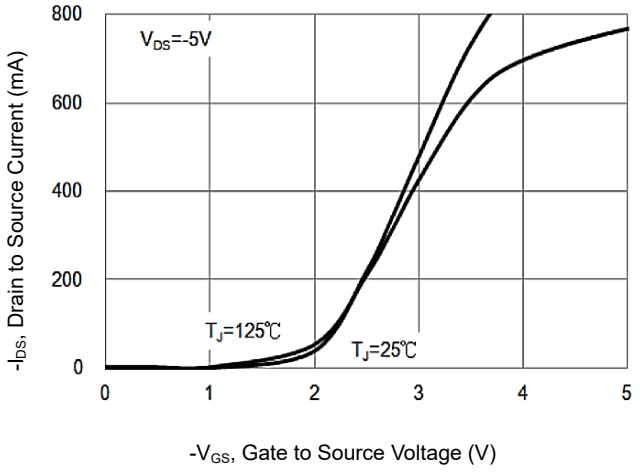
Note:
1. $T_A$=25°C, unless otherwise noted.
2. Pulse width≤ 300μs, duty cycle≤2%.
3. Essentially independent of operating temperature typical characteristics.
4. $R_{\Theta JA}$ is the sum of the junction to case to ambient thermal resistance where the case thermal reference is defined as the solder mounting surface of the drain pins mounted on a 1inch square pad of copper.

## CHARACTERISTIC CURVES

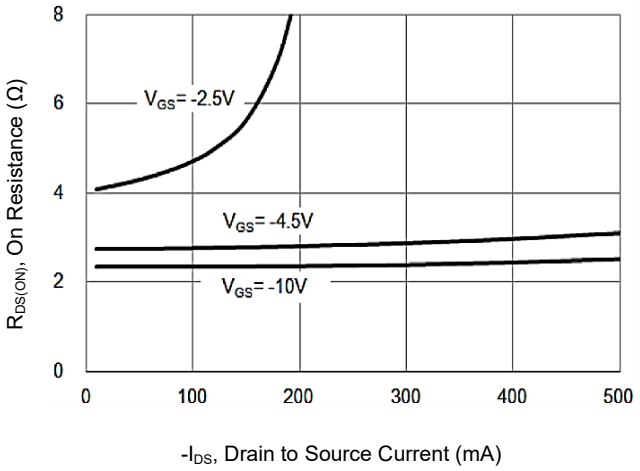
**On-Region Characteristics**



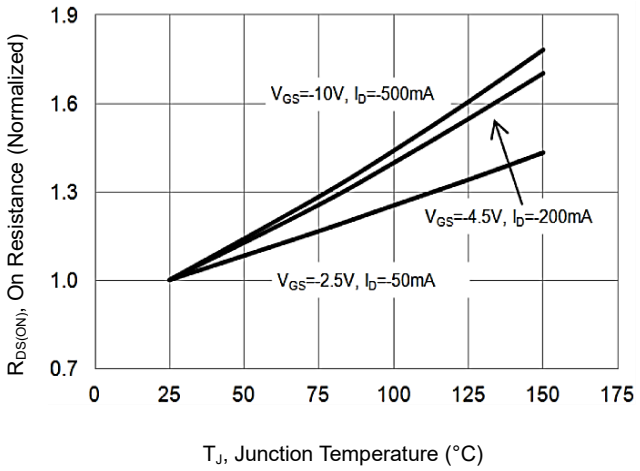

**Transfer Characteristics**



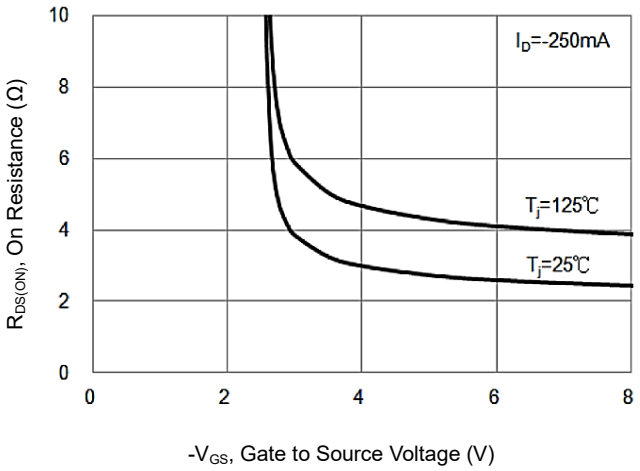

**On-Resistance vs. Drain Current**



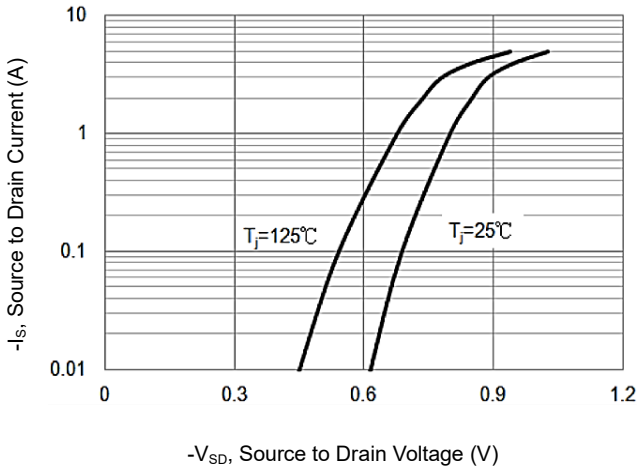

**On-Resistance vs. Junction Temperature**




**On-Resistance Variation with Gate-Source Voltage**

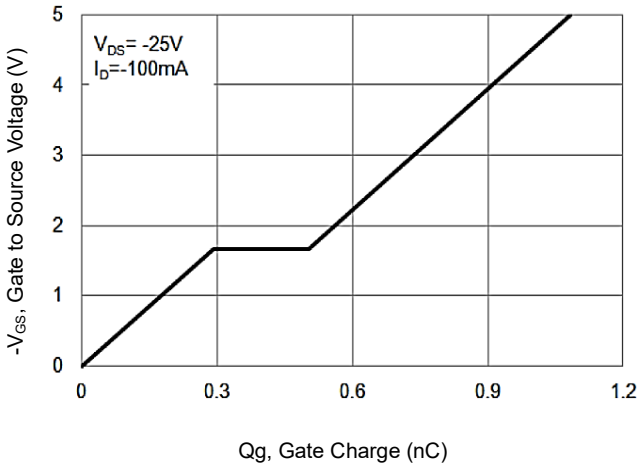



**Body Diode Forward Voltage**

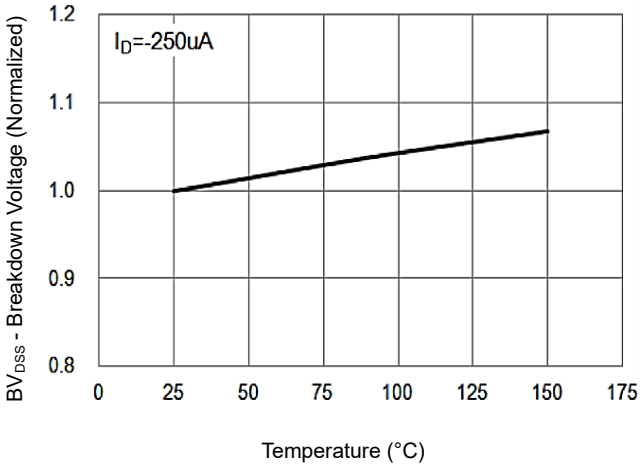


## CHARACTERISTIC CURVES

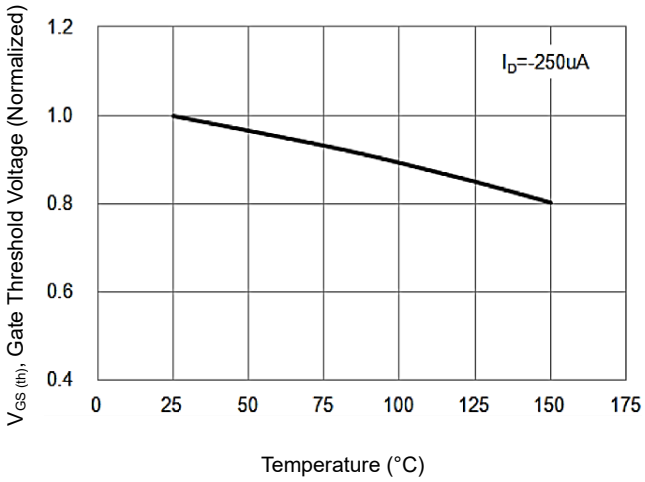
**Gate Charge Waveform**




**Breakdown Voltage vs. Temperature**




**Gate Threshold Voltage vs. Temperature**




**Capacitance vs. Drain-Source Voltage**

