



WG3400
30V N-Channel MOSFET

Features:

- Low Intrinsic Capacitances.
- Excellent Switching Characteristics.
- Extended Safe Operating Area.
- Unrivalled Gate Charge :Qg= 10nC (Typ.).
- BVDSS=30V, I_D=5.8A
- R_{DS(on)} : 42mΩ (Max) @V_G=4.5V
- 100% Avalanche Tested

SOT-23 



MARKING: **A09T** **Schematic diagram**

Absolute Maximum Ratings (T_A=25°C unless otherwise noted)

| Parameter | Symbol | Limit | Unit |
|--|-----------------------------------|------------|------|
| Drain-Source Voltage | V _{DS} | 30 | V |
| Gate-Source Voltage | V _{GS} | ±12 | V |
| Drain Current-Continuous | I _D | 5.8 | A |
| Drain Current-Pulsed ^(Note 1) | I _{DM} | 30 | A |
| Maximum Power Dissipation | P _D | 1.4 | W |
| Operating Junction and Storage Temperature Range | T _J , T _{STG} | -55 To 150 | °C |

Thermal Characteristic

| | | | |
|---|------------------|----|------|
| Thermal Resistance, Junction-to-Ambient ^(Note 2) | R _{θJA} | 89 | °C/W |
|---|------------------|----|------|

Electrical Characteristics ($T_A=25^{\circ}\text{C}$ unless otherwise noted)

| Parameter | Symbol | Condition | Min | Typ | Max | Unit |
|---|--------------|--|-----|-----|-----------|------------|
| Off Characteristics | | | | | | |
| Drain-Source Breakdown Voltage | BV_{DSS} | $V_{GS}=0V, I_D=250\mu A$ | 30 | 33 | - | V |
| Zero Gate Voltage Drain Current | I_{DSS} | $V_{DS}=30V, V_{GS}=0V$ | - | - | 1 | μA |
| Gate-Body Leakage Current | I_{GSS} | $V_{GS}=\pm 12V, V_{DS}=0V$ | - | - | ± 100 | nA |
| On Characteristics (Note 3) | | | | | | |
| Gate Threshold Voltage | $V_{GS(th)}$ | $V_{DS}=V_{GS}, I_D=250\mu A$ | 0.7 | 0.9 | 1.4 | V |
| Drain-Source On-State Resistance | $R_{DS(ON)}$ | $V_{GS}=2.5V, I_D=4A$ | - | 41 | 55 | m Ω |
| | | $V_{GS}=4.5V, I_D=5A$ | - | 28 | 42 | m Ω |
| | | $V_{GS}=10V, I_D=5.8A$ | - | 24 | 40 | m Ω |
| Forward Transconductance | g_{FS} | $V_{DS}=5V, I_D=5A$ | 10 | - | - | S |
| Dynamic Characteristics (Note 4) | | | | | | |
| Input Capacitance | C_{ISS} | $V_{DS}=15V, V_{GS}=0V,$ $F=1.0MHz$ | - | 825 | - | PF |
| Output Capacitance | C_{OSS} | | - | 100 | - | PF |
| Reverse Transfer Capacitance | C_{RSS} | | - | 78 | - | PF |
| Switching Characteristics (Note 4) | | | | | | |
| Turn-on Delay Time | $t_{d(on)}$ | $V_{DD}=15V, R_L=2.7\Omega$ $V_{GS}=10V, R_{GEN}=3\Omega$ | - | 3.3 | - | nS |
| Turn-on Rise Time | t_r | | - | 4.8 | - | nS |
| Turn-Off Delay Time | $t_{d(off)}$ | | - | 26 | - | nS |
| Turn-Off Fall Time | t_f | | - | 4 | - | nS |
| Total Gate Charge | Q_g | $V_{DS}=15V, I_D=5.8A,$ $V_{GS}=4.5V$ | - | 10 | - | nC |
| Gate-Source Charge | Q_{gs} | | - | 1.6 | - | nC |
| Gate-Drain Charge | Q_{gd} | | - | 3.1 | - | nC |
| Drain-Source Diode Characteristics | | | | | | |
| Diode Forward Voltage (Note 3) | V_{SD} | $V_{GS}=0V, I_S=5.8A$ | - | - | 1.2 | V |
| Diode Forward Current (Note 2) | I_S | | - | - | 5.8 | A |

Typical Characteristics

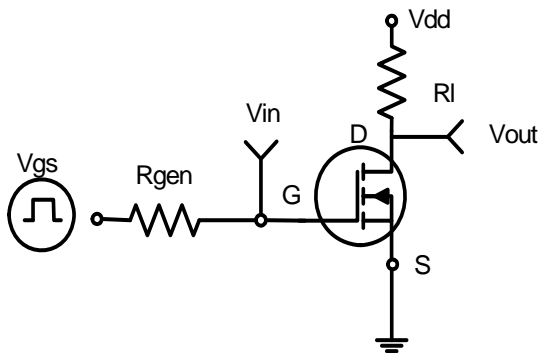


Figure 1: Switching Test Circuit

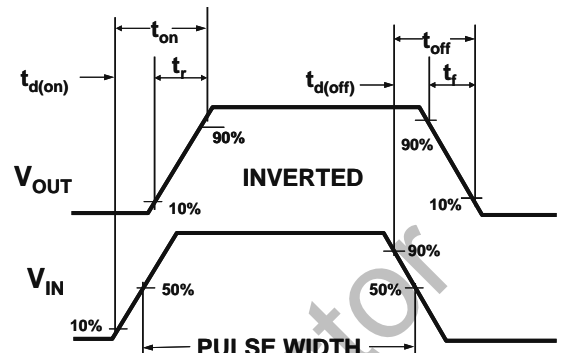


Figure 2: Switching Waveforms

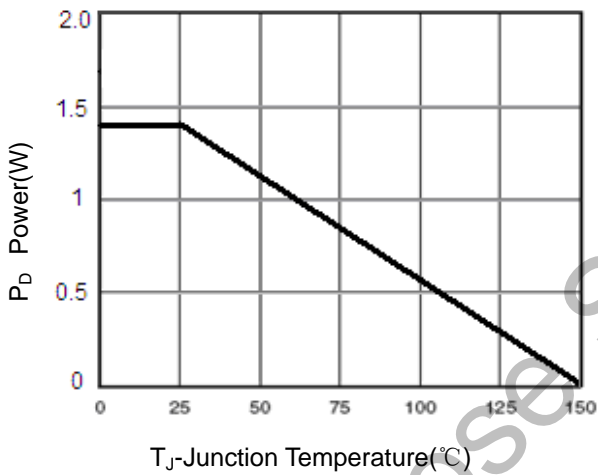


Figure 3 Power Dissipation

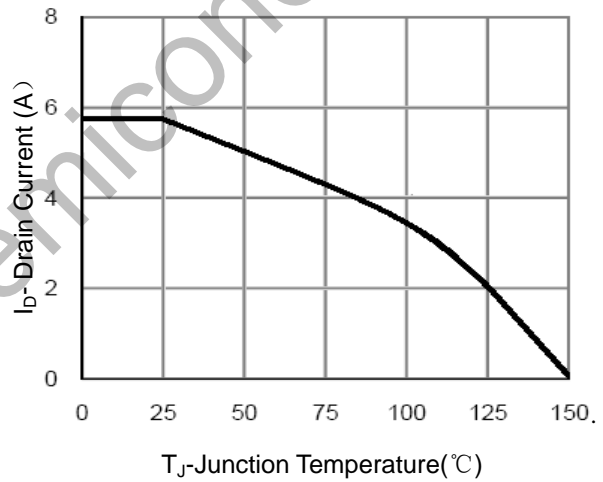


Figure 4 Drain Current

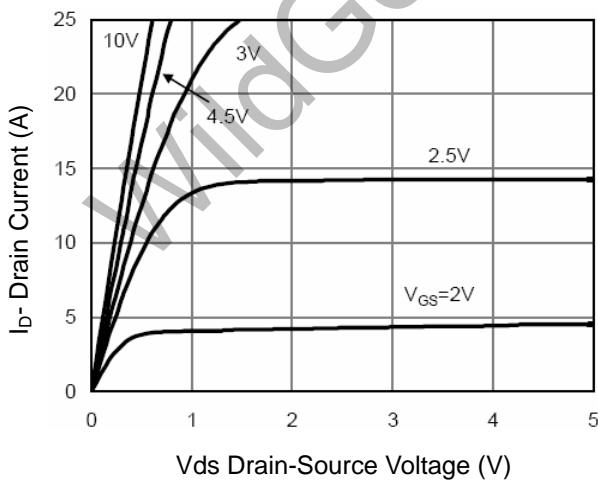


Figure 5 Output Characteristics

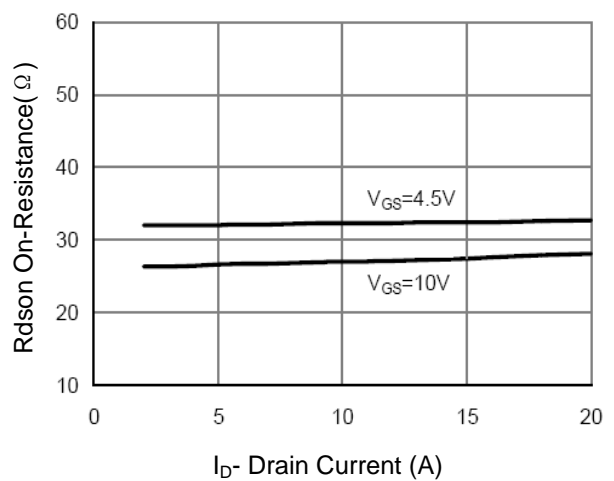


Figure 6 Drain-Source On-Resistance

Typical Characteristics (Continued)

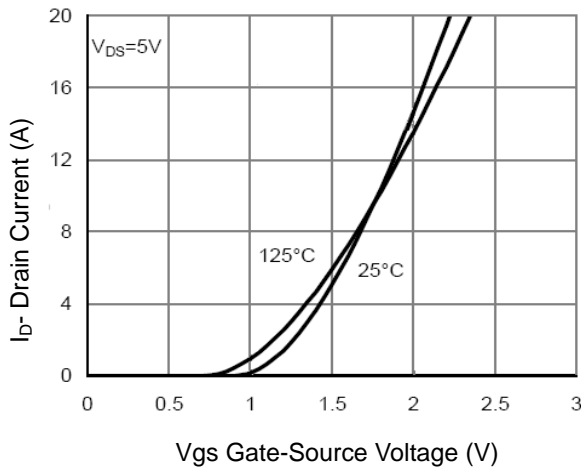


Figure 7 Transfer Characteristics

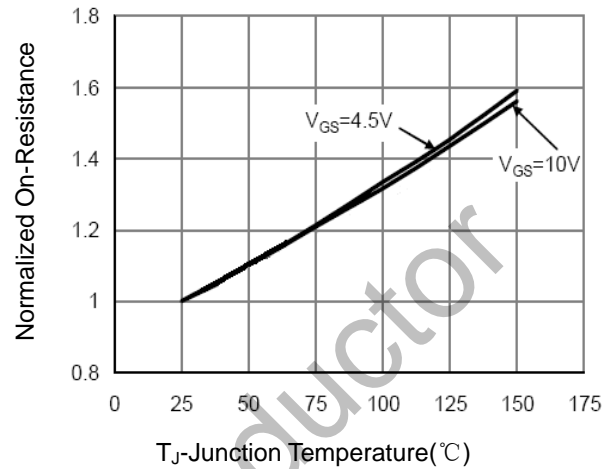


Figure 8 Drain-Source On-Resistance

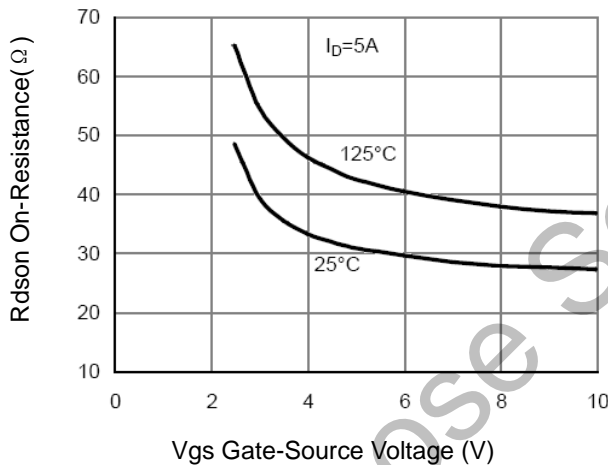


Figure 9 Rds(on) vs Vgs

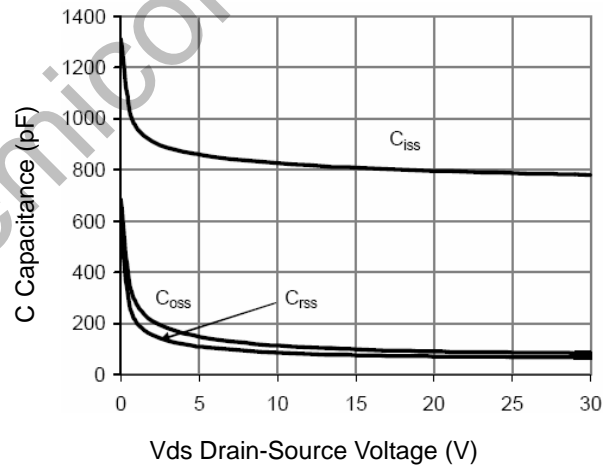


Figure 10 Capacitance vs Vds

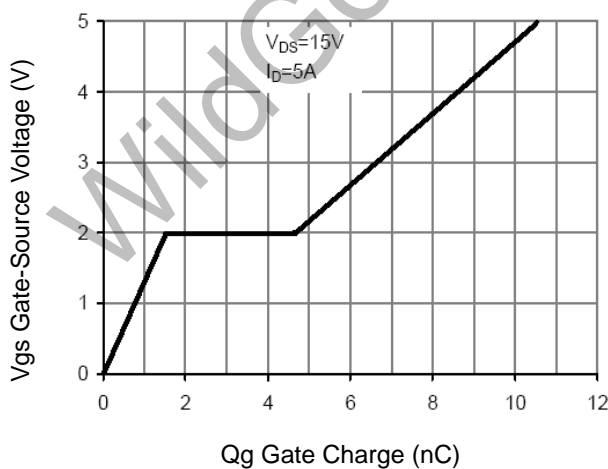


Figure 11 Gate Charge

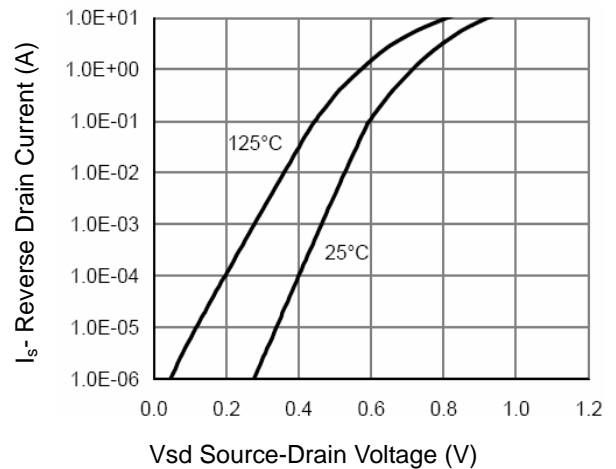


Figure 12 Source- Drain Diode Forward

Typical Characteristics (Continued)

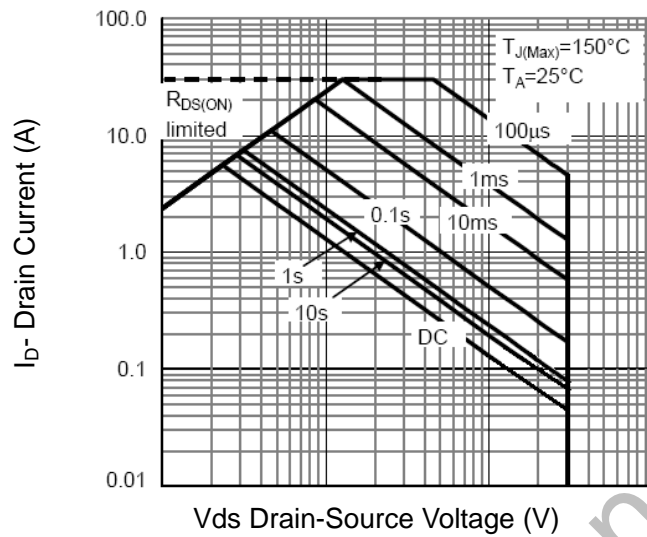


Figure 13 Safe Operation Area

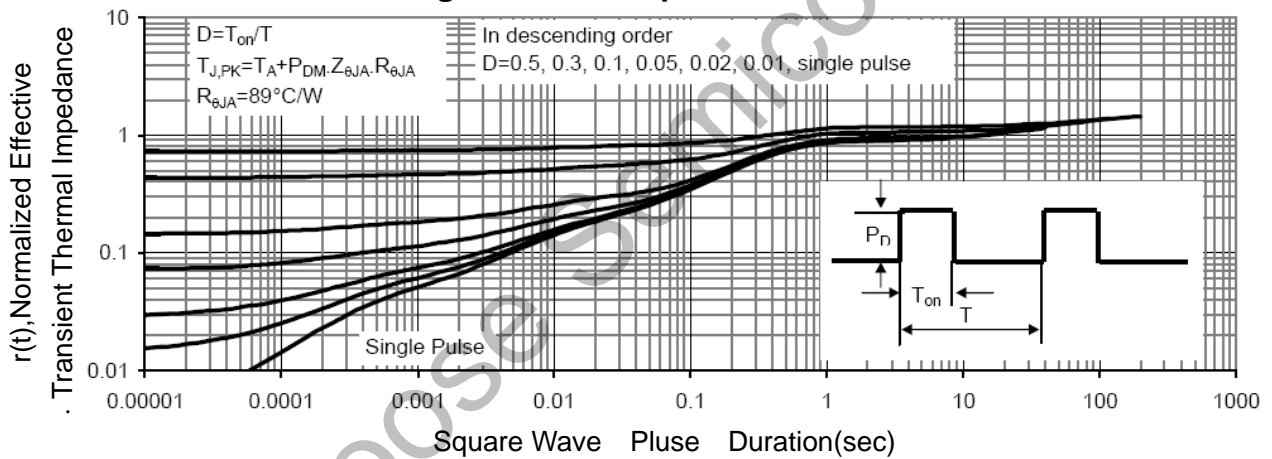


Figure 14 Normalized Maximum Transient Thermal Impedance

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