

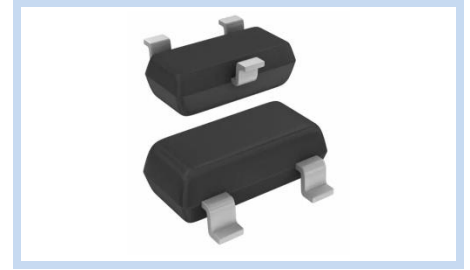
N-Channel MOSFET 100V 2A SOT-23

MFT101N2R0S23

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FEATURE

- Operating temperature: -55 ~ 150 °C
- Low On-Resistance
- Low Gate Drive
- Application: DC-DC Converters, Switch Load, PWM, Motor Control.

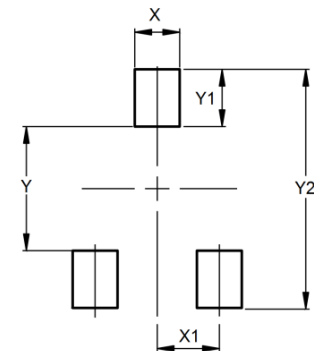
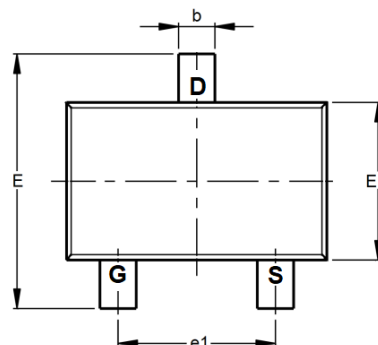
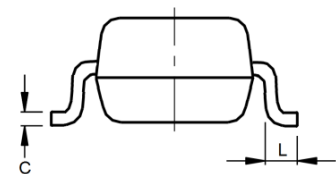
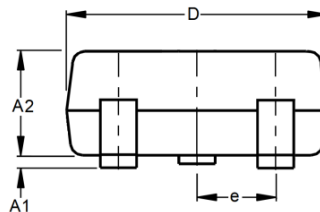


MAXIMUM RATINGS

| Parameter | Symbol | Value | Unit | |
|--|-----------------|--------------------|------|---|
| Drain-Source Voltage | V_{DS} | 100 | V | |
| Gate-Source Voltage | V_{GS} | ± 20 | V | |
| Drain Current – Continuous, $V_{GS}=10V$ | I_D | $T_C= 25^\circ C$ | 2.4 | A |
| | | $T_C= 100^\circ C$ | 1.5 | A |
| Drain Current – Pulsed | I_{DM} | 8.5 | A | |
| Power Dissipation | P_D | $T_C= 25^\circ C$ | 1.00 | W |
| | | Derate above 25°C | 1.56 | W |
| Thermal Resistance, Junction-to-Ambient | $R_{\theta JA}$ | 125 | °C/W | |
| Thermal Resistance, Junction-to-Case | $R_{\theta JC}$ | 80 | °C/W | |
| Operating Junction Temperature Range | T_J, T_{stg} | -55 to 150 | °C | |

DIMENSIONS AND RECOMMENDED LAND PATTERN

| Item | Min (mm) | Max (mm) |
|------|----------|----------|
| A1 | 0.90 | 1.15 |
| A2 | 0.90 | 1.05 |
| b | 0.30 | 0.50 |
| C | -- | 0.13 |
| D | 2.80 | 3.00 |
| e | 0.95 | 0.95 |
| e1 | 1.80 | 2.00 |
| E | 2.25 | 2.55 |
| E1 | 1.20 | 1.40 |
| L | 0.30 | 0.50 |
| X | 0.80 | 0.80 |
| X1 | 1.35 | 1.35 |
| Y | 2.00 | 2.00 |
| Y1 | 0.90 | 0.90 |
| Y2 | 2.90 | 2.90 |



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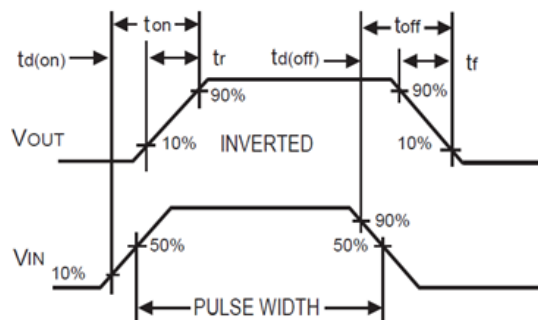
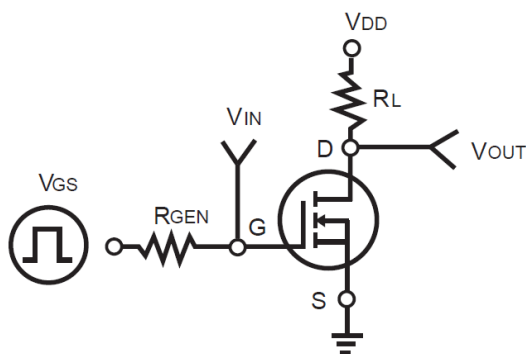
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ELECTRICAL CHARACTERISTICS

| Static Characteristics | Conditions | Symbol | Min | Typ. | Max | Unit |
|---------------------------------|---|--------------|-----|------|-----------|------------|
| Drain-Source Breakdown Voltage | $V_{GS}=0V, I_D=250\mu A$ | BV_{DSS} | 100 | -- | -- | V |
| Gate Threshold Voltage | $V_{GS}=V_{DS}, I_D=250\mu A$ | $V_{GS(th)}$ | 1.0 | 1.8 | 3.0 | V |
| Gate Leakage Current | $V_{DS}=0V, V_{GS}=\pm 20V$ | I_{GSS} | -- | -- | ± 100 | μA |
| Zero Gate Voltage Drain Current | $V_{DS}=100V, V_{GS}=0V$ | I_{DSS} | -- | -- | 1 | μA |
| Drain-Source On-Resistance | $V_{GS}=10V, I_D=2.4A$ | $R_{DS(on)}$ | -- | 105 | 130 | m Ω |
| | $V_{GS}=4.5V, I_D=1.0A$ | | -- | 115 | 150 | |
| Dynamic Characteristics | Conditions | Symbol | Min | Typ. | Max | Unit |
| Input Capacitance | $V_{DS}=25V, V_{GS}=0V$ $F=1.0MHz$ | C_{iss} | -- | 820 | 1230 | pF |
| Output Capacitance | | C_{oss} | -- | 35 | 52.5 | |
| Reverse Transfer Capacitance | | C_{rss} | -- | 23 | 34.5 | |
| Turn-On Delay Time | $V_{DS}=50V, I_D=1A$ $R_G=6\Omega, V_{GEN}=3.3V$ | $T_{d(on)}$ | -- | 11 | -- | nS |
| Rise Time | | T_r | -- | 4.5 | -- | |
| Turn-Off Delay Time | | $T_{d(off)}$ | -- | 32 | -- | |
| Fall Time | | T_f | -- | 10 | -- | |
| Total Gate Charge | $V_{DS}=10V, V_{GS}=4.5V,$ $I_D=500mA$ | Q_g | -- | 16.8 | 35.6 | nC |
| Gate-Source Charge | | Q_{gs} | -- | 4.4 | 9.0 | |
| Gate-Drain Charge | | Q_{gd} | -- | 5.3 | 10.6 | |
| Diode Forward Voltage | $I_S=1A, V_{GS}=0V$ | V_{SD} | -- | -- | 1.3 | V |
| Reverse Recovery Time | $I_{SD}=1A, dI_{SD}/dt=100A/\mu s$ | t_{rr} | -- | 120 | -- | ns |
| Reverse Recovery Charge | | Q_{rr} | -- | 520 | -- | nC |

Note:

1. Pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$
2. Guarantee by design, not test in mass production



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CHARACTERISTIC CURVES

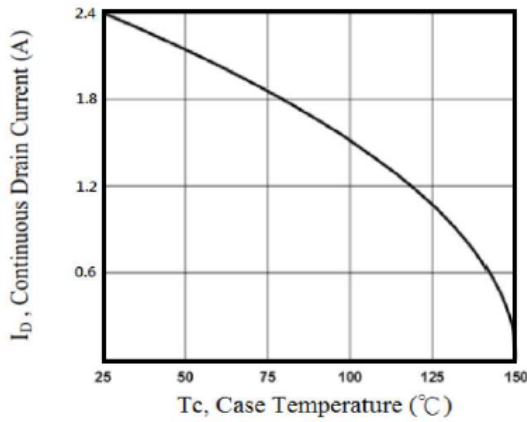


Fig.1 Continuous Drain Current vs. T_c

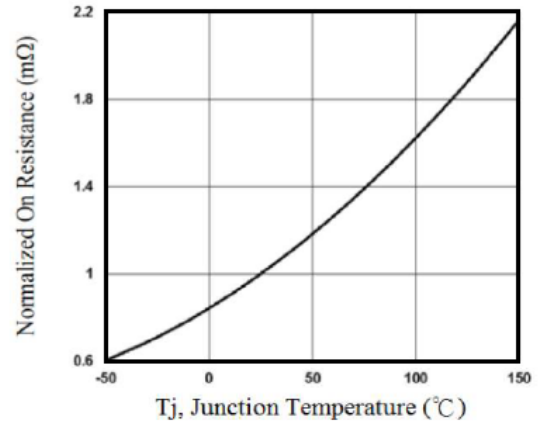


Fig.2 Normalized $R_{DS(on)}$ vs. T_j

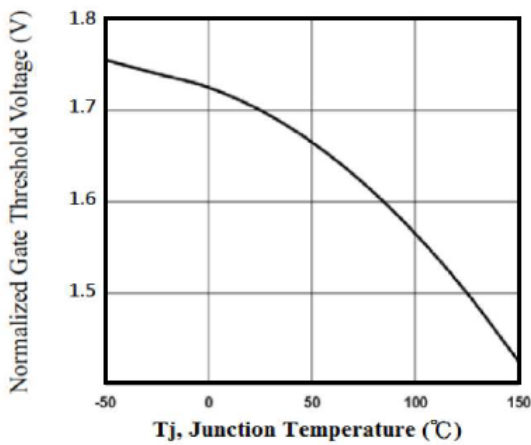


Fig.3 Normalized V_{th} vs. T_j

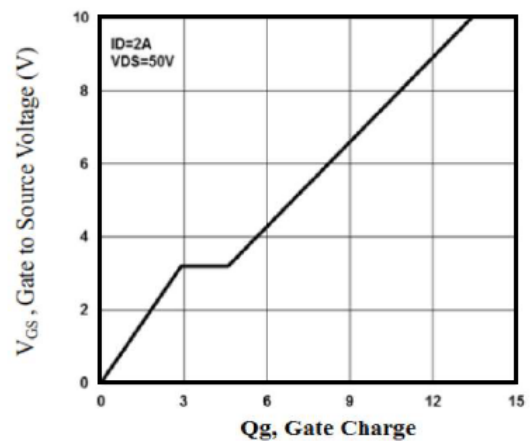


Fig.4 Gate Charge Waveform

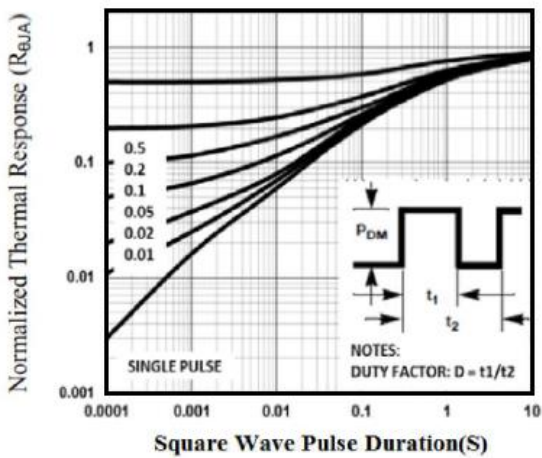


Fig.5 Normalized Transient Impedance

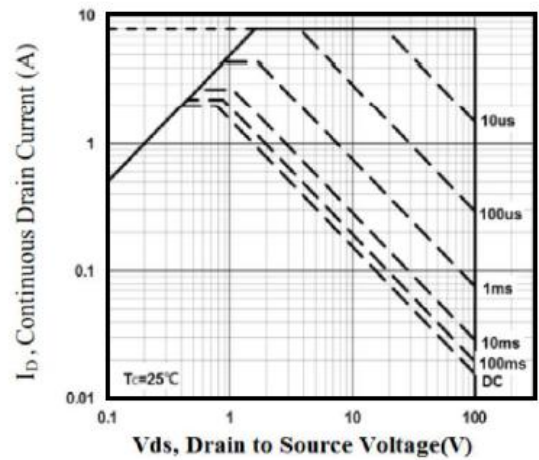


Fig.6 Maximum Safe Operation Area

*Specifications subject to change without notice.