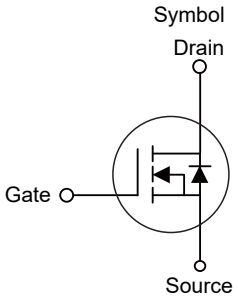
## ■ PRODUCT CHARACTERISTICS

| | |
|---|---|
| $V_{DSS}$ | 100V |
| $R_{DS(on)}$ Typ(@$V_{GS}$=4.5V) | 100mΩ |
| $R_{DS(on)}$ Typ(@$V_{GS}$=10V) | 68mΩ |
| $I_D$ | 7A |

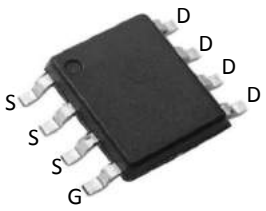



## ■ APPLICATIONS

DC/DC converter
Ideal for high-frequency switching
and synchronous rectification

## ■ FEATURES

Very low on-resistance $R_{DS(on)}$
Good stability and uniformity with high $E_{AS}$
Pb-free lead plating




SOP8

## ■ ORDER INFORMATION

| Order codes | | Package | Packing |
|---|---|---|---|
| Halogen-free | Halogen | | |
| N/A | MOT1592S | SOP-8L | 4000pieces/Reel |

## ■ ABSOLUTE MAXIMUM RATINGS($T_C$=25℃,unless otherwise specified)

| Parameter | Symbol | Value | Unit |
|---|---|---|---|
| Drain-source voltage | $V_{DSS}$ | 100 | V |
| Gate-source voltage | $V_{GSS}$ | ±20 | V |
| Drain current | $I_D$ | 7 | A |
| Pulsed drain currentcurrent | $I_{DM}$ | 28 | A |
| Avalanche energy single pulsed | $E_{AS}$ | 20 | mJ |
| Power dissipation | $P_D$ | 2.5 | W |
| Junction temperature | $T_J$ | +150 | ℃ |
| Storage temperature | $T_{STG}$ | -55~+150 | ℃ |

■ ELECTRICAL CHARACTERISTICS ($T_C$=25℃,unless otherwise specified)

| Parameter | Symbol | Condition | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| Off characteristics | | | | | | |
| Drain-source breakdown voltage | $BV_{DSS}$ | $V_{GS}$=0V,$I_{DS}$=250μA | 100 | - | - | V |
| Drain-source leakage current | $I_{DSS}$ | $V_{DS}$=100V,$V_{GS}$=0V | - | - | 1 | μA |
| Gate-source leakage current | $I_{GSS}$ | $V_{GS}$= ±20V,$V_{DS}$=0V | - | - | 100 | nA |
| On characteristics | | | | | | |
| Gate threshold voltage | $V_{GS(th)}$ | $V_{DS}$=$V_{GS}$,$I_{DS}$=250μA | 1 | - | 2.5 | V |
| On-state characteristics | $R_{DS(ON)}$ | $V_{GS}$=10V,$I_D$=7A | - | 68 | 92 | mΩ |
| | | $V_{GS}$=4.5V,$I_D$=7A | - | 100 | 150 | mΩ |
| Forward transconductance | $g_{FS}$ | $V_{DS}$=5V,$I_D$=7A | 3 | - | - | S |
| Dynamic characteristics | | | | | | |
| Input capacitance | $C_{iss}$ | $V_{GS}$=0V,$V_{DS}$=50V f=1MHz | - | 443 | - | pF |
| Out capacitance | $C_{oss}$ | | - | 80 | - | pF |
| Reverse transfer capacitance | $C_{rss}$ | | - | 15.4 | - | pF |
| Switching characteristics | | | | | | |
| Total gate charge | $Q_g$ | $V_{GS}$=10V,$V_{DS}$=50V $I_D$=7A | - | 7.2 | - | nC |
| Gate-source charge | $Q_{gs}$ | | - | 1.3 | - | nC |
| Gate-drain charge | $Q_{gd}$ | | - | 1 | - | nC |
| Turn-on delay time | $t_{d(on)}$ | $V_{DD}$=50V,$I_D$=7A $R_G$=2.5Ω,$V_{GS}$=10V | - | 6 | - | nS |
| Turn-on rise time | $t_r$ | | - | 2.5 | - | nS |
| Turn-off delay time | $t_{d(off)}$ | | - | 18 | - | nS |
| Turn-off fall time | $t_f$ | | - | 2.5 | - | nS |
| Source-drain diode ratings and characteristics | | | | | | |
| Continuous diode forward current | $I_{SD}$ | | - | - | 7 | A |
| Diode forward current | $V_{SD}$ | $V_{GS}$=0V,$I_{SD}$=7A | - | - | 1.2 | V |
| Reverse recovery time | $t_{rr}$ | $I_F$=3.5A di/dt=100A/us | - | 31.2 | - | nS |
| Reverse recovery charge | $Q_{rr}$ | | - | 41.2 | - | nC |

■ TYPICAL CHARACTERISTICS

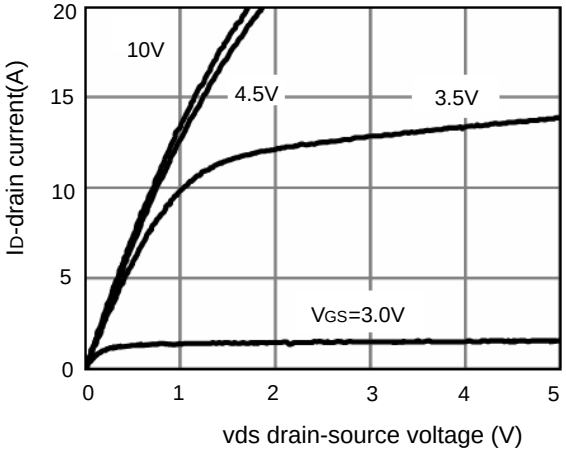



Fig.1 output characteristics

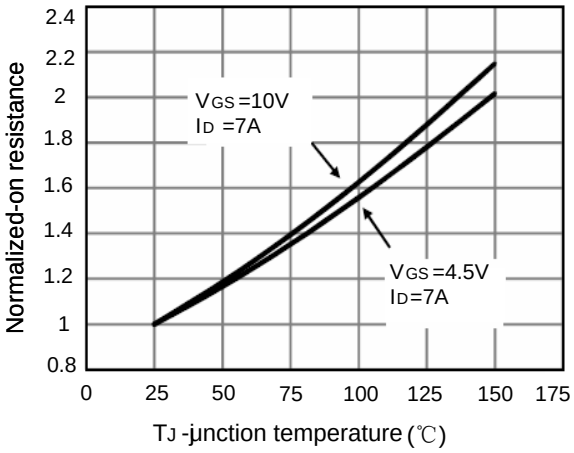



Fig.2 rdson-junction temperature

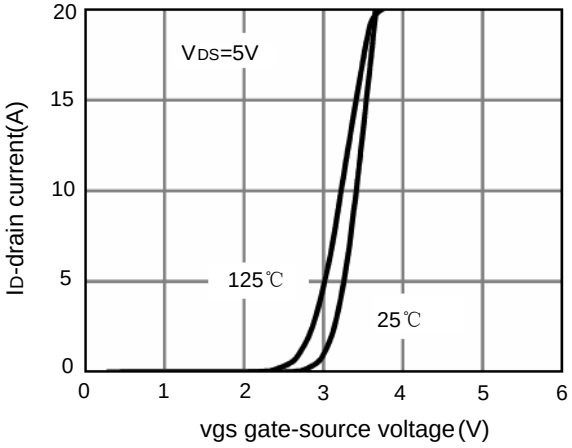



Fig.3 transfer characteristics

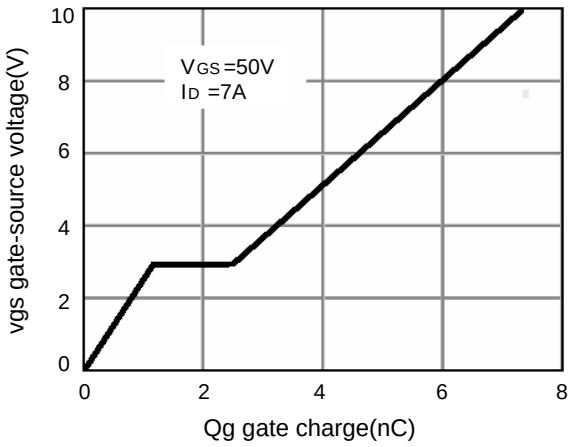



Fig.4 gare charge

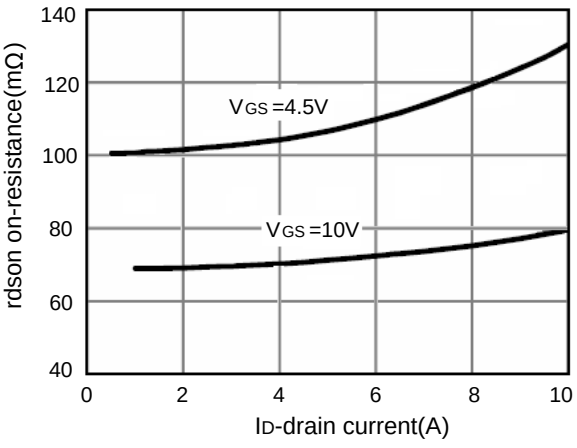



Fig.5 rdson-drain current

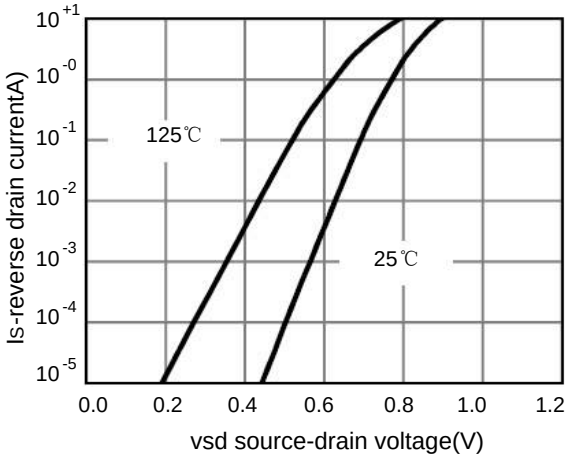



Fig.6 source-drain diode forward

■ TYPICAL CHARACTERISTICS(cCont.)

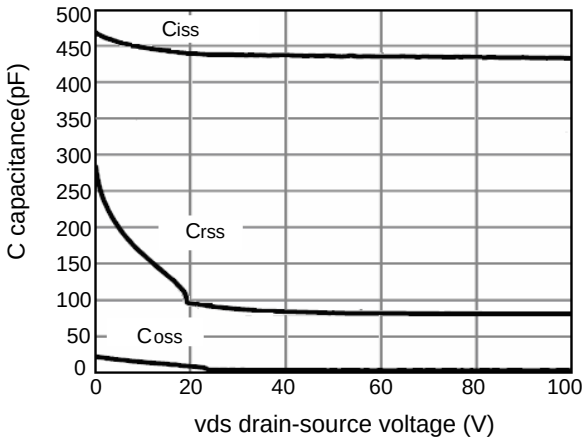



Fig.7 capacitance vs vds

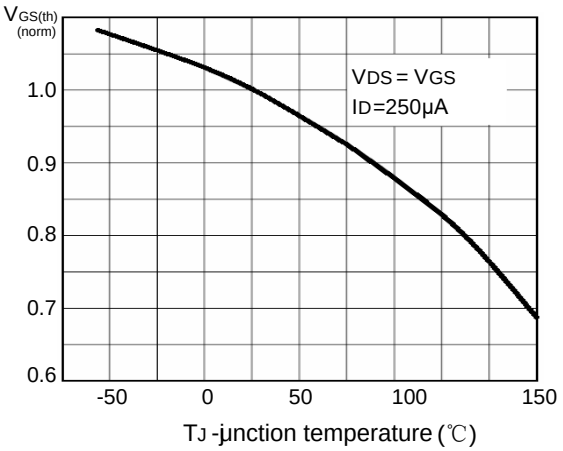



Fig.8 $V_{GS(th)}$ vs junction temperature

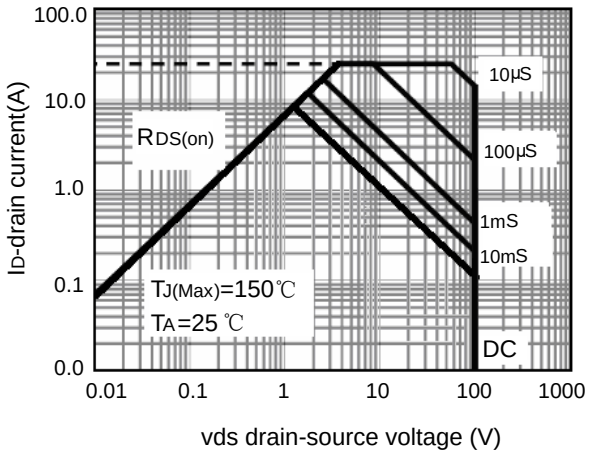



Fig.9 safe operation area

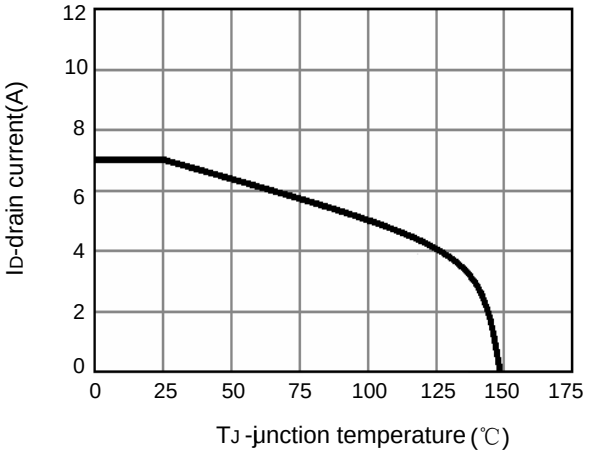



Fig.10 current de-ratina