

■ PRODUCT CHARACTERISTICS

| | |
|-----------------------------|------|
| VDSS | 500V |
| $R_{DS(on)typ}(V_{GS}=10V)$ | 2.4Ω |
| Qg@type | 18nC |
| ID | 5A |

■ APPLICATIONS

- High frequency switching mode power supply
- Electronic ballast
- LED power supply

■ FEATURES

- * Fast Switching Capability
- * Avalanche Energy Specified
- * Improved dv/dt Capability, High Ruggedness

■ ORDER INFORMATION

| Order codes | | Package | Packing |
|--------------|-----------|---------|-------------------|
| Halogen-Free | Halogen | | |
| N/A | MOT5N50BD | TO-252 | 2500 pieces /Reel |

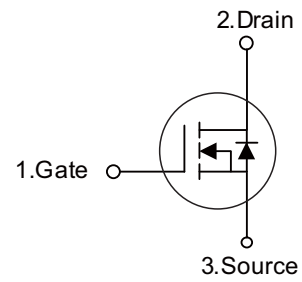
■ ABSOLUTE MAXIMUM RATINGS ($T_C = 25^{\circ}C$, unless otherwise specified)

| PARAMETER | SYMBOL | RATINGS | UNIT | |
|----------------------|---------------|----------|------|----|
| Drain-Source Voltage | V_{DS} | 500 | V | |
| Gate-Source Voltage | V_{GS} | ±30 | V | |
| Drain Current | Continuous | I_D | 5 | A |
| | Pulse | I_{DM} | 15 | A |
| Avalanche Energy | Single Pulsed | E_{AS} | 60 | mJ |
| Power Dissipation | P_D | 32.9 | W | |
| Junction Temperature | T_J | +150 | °C | |
| Storage Temperature | T_{STG} | -55~+150 | °C | |

■ THERMAL DATA

| PARAMETER | SYMBOL | RATINGS | UNIT |
|---------------------|---------------|---------|------|
| Junction to Ambient | θ_{JA} | 62.5 | °C/W |
| Junction to Case | θ_{JC} | 6.25 | °C/W |

Symbol

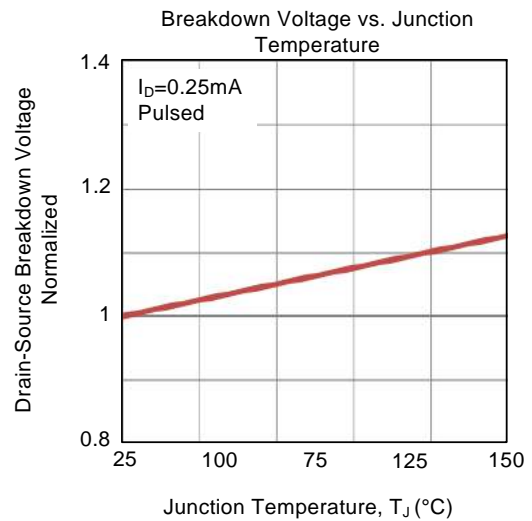
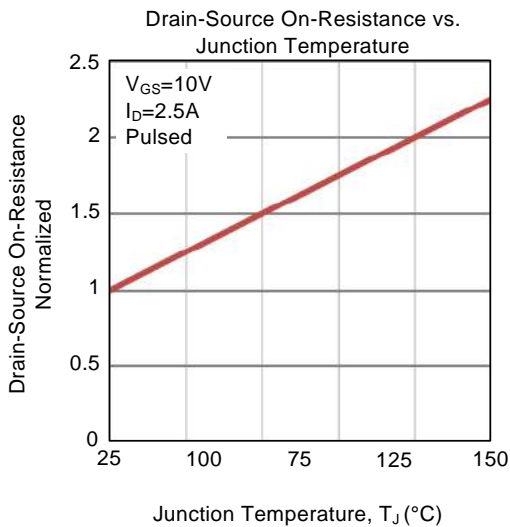
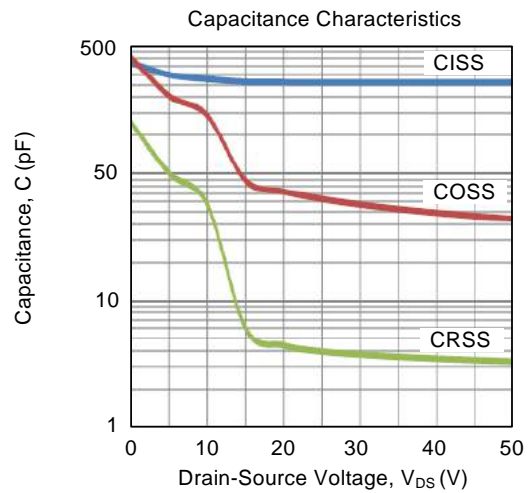
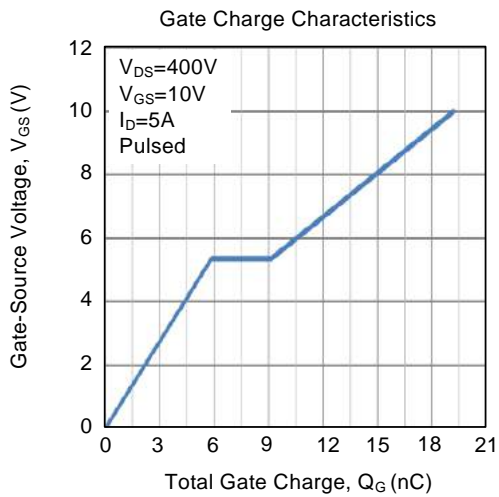
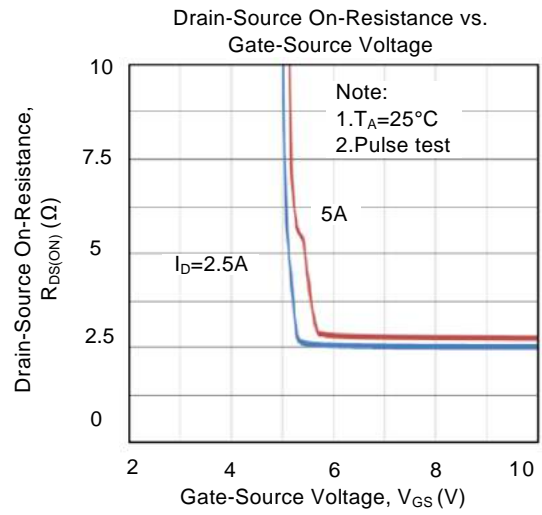
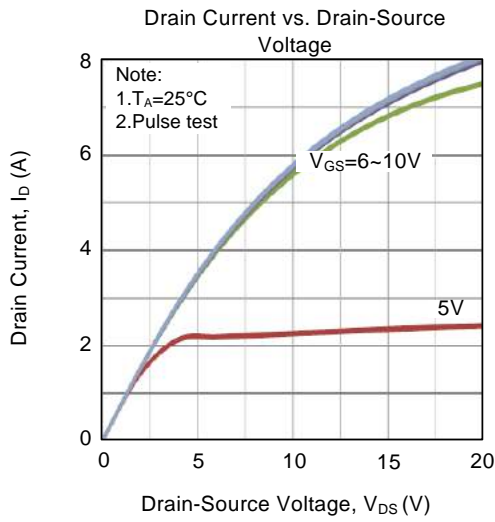


■ ELECTRICAL CHARACTERISTICS ($T_c = 25^\circ\text{C}$, unless otherwise specified)

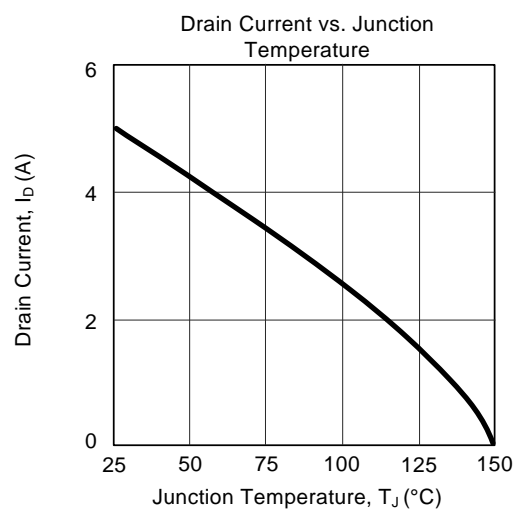
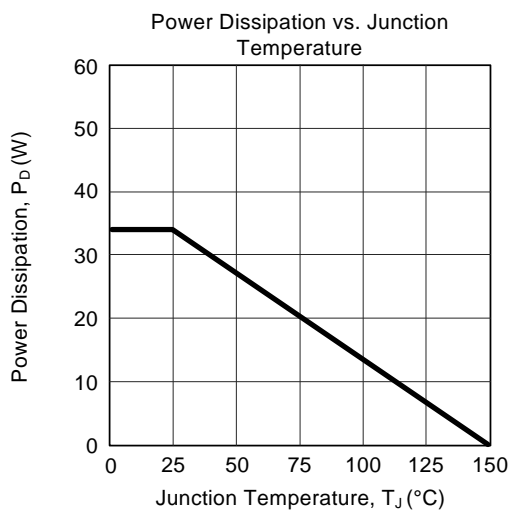
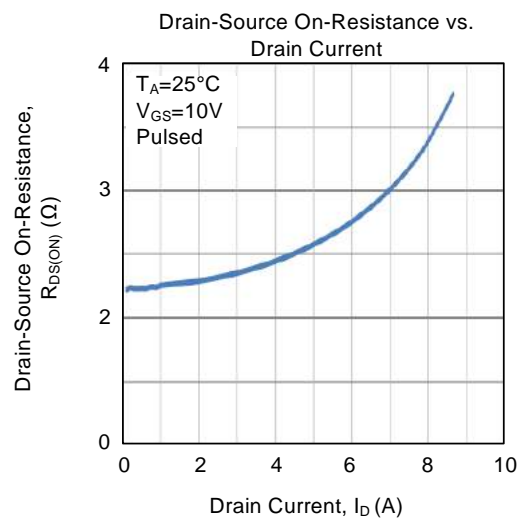
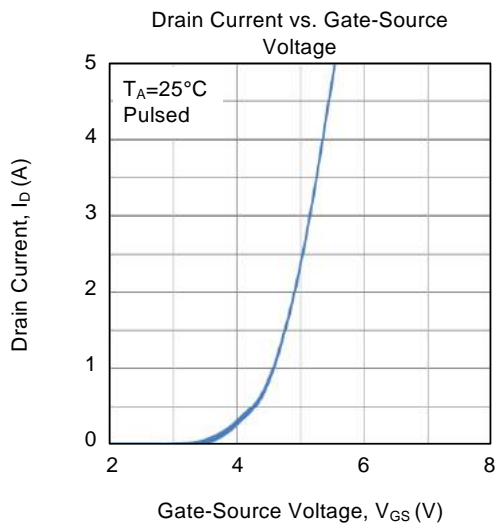
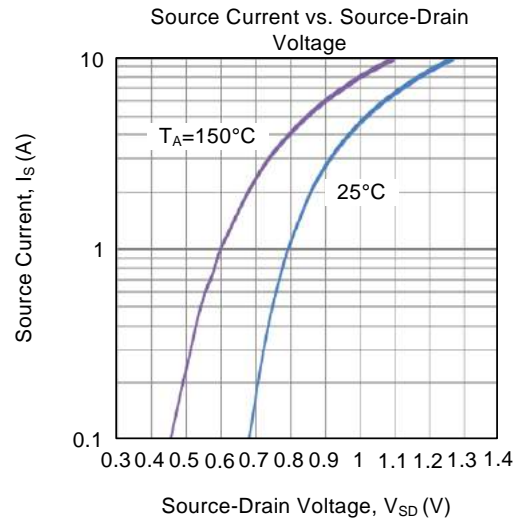
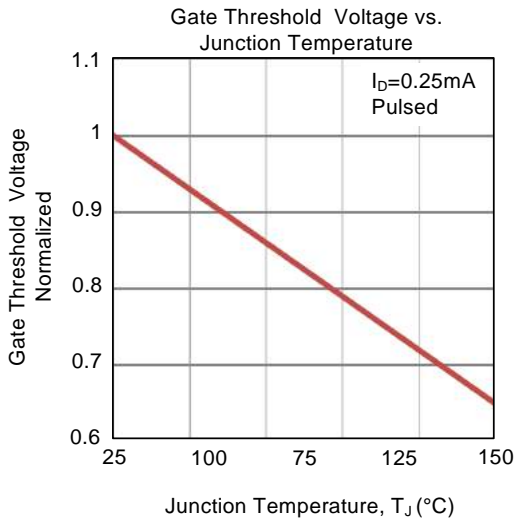
| PARAMETER | SYMBOL | TEST CONDITIONS | MIN | TYP | MAX | UNIT |
|---|------------------------------|---|-----|------|------|---------------------------|
| OFF CHARACTERISTICS | | | | | | |
| Drain-Source Breakdown Voltage | BV_{DSS} | $I_D=250\mu\text{A}, V_{GS}=0\text{V}$ | 500 | - | - | V |
| Breakdown Voltage Temperature Coefficient | $\Delta BV_{DSS}/\Delta T_J$ | Reference to 25°C , $I_D=250\mu\text{A}$ | - | 0.5 | - | $\text{V}/^\circ\text{C}$ |
| Drain-Source Leakage Current | I_{DSS} | $V_{DS}=500\text{V}, V_{GS}=0\text{V}$ | - | - | 1 | μA |
| | | $V_{DS}=400\text{V}, T_c=125^\circ\text{C}$ | - | - | 10 | |
| Gate- Source Leakage Current | Forward | I_{GSS} | - | - | 100 | nA |
| | Reverse | | | | -100 | |
| ON CHARACTERISTICS | | | | | | |
| Gate Threshold Voltage | $V_{GS(TH)}$ | $V_{DS}=V_{GS}, I_D=250\mu\text{A}$ | 2.0 | - | 4.0 | V |
| Static Drain-Source On-State Resistance | $R_{DS(ON)}$ | $V_{GS}=10\text{V}, I_D=2.5\text{A}$ | - | 2.4 | 3.2 | Ω |
| DYNAMIC CHARACTERISTICS | | | | | | |
| Input Capacitance | C_{ISS} | $V_{GS}=0\text{V}, V_{DS}=25\text{V},$ $f=1.0\text{MHz}$ | - | 320 | - | pF |
| Output Capacitance | C_{OSS} | | - | 40 | - | pF |
| Reverse Transfer Capacitance | C_{RSS} | | - | 8 | - | pF |
| SWITCHING CHARACTERISTICS | | | | | | |
| Total Gate Charge | Q_G | $V_{GS}=10\text{V}, V_{DS}=400\text{V},$ $I_D=5\text{A}$ | - | 18 | - | nC |
| Gate to Source Charge | Q_{GS} | | - | 2.2 | - | nC |
| Gate to Drain Charge | Q_{GD} | | - | 9.7 | - | nC |
| Turn-ON Delay Time | $t_{D(ON)}$ | $V_{DD}=250\text{V}, I_D=5\text{A},$ $R_G=25\Omega$ | - | 12 | - | ns |
| Rise Time | t_R | | - | 46 | - | ns |
| Turn-OFF Delay Time | $t_{D(OFF)}$ | | - | 50 | - | ns |
| Fall-Time | t_F | | - | 48 | - | ns |
| SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS | | | | | | |
| Maximum Continuous Drain-Source Diode Forward Current | I_S | | - | - | 5 | A |
| Maximum Pulsed Drain-Source Diode Forward Current | I_{SM} | | - | - | 15 | A |
| Drain-Source Diode Forward Voltage | V_{SD} | $I_S=5\text{A}, V_{GS}=0\text{V}$ | - | - | 1.4 | V |
| Reverse Recovery Time | t_{rr} | $I_S=5\text{A}, V_{GS}=0\text{V},$ | - | 193 | - | ns |
| Reverse Recovery Charge | Q_{RR} | $di_F/dt=100\text{A}/\mu\text{s}$ (Note 1) | - | 0.25 | - | μC |

Note: 1. Pulse Test: Pulse width 300 μs , Duty cycle 2%

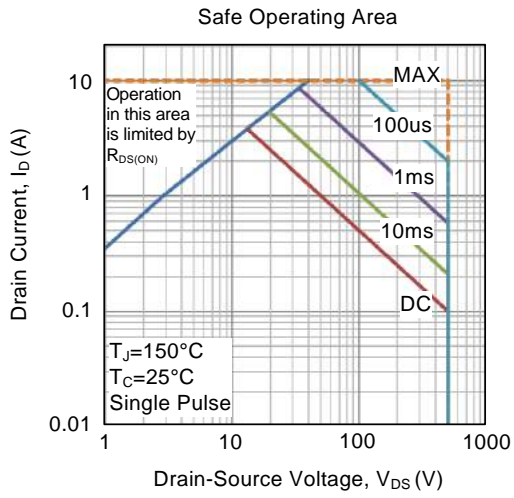
■ TYPICAL CHARACTERISTICS



■ TYPICAL CHARACTERISTICS(Cont.)



■ TYPICAL CHARACTERISTICS(Cont.)



■ TO-252 PACKAGE OUTLINE DIMENSIONS

