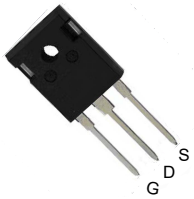
# N-Channel Enhancement Mode MOSFET

## Features

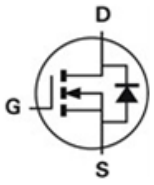
- Low Rdson for low conduction loss
- Reliable and Rugged
- ROHS Compliant & Halogen-Free

## Pin Description

TO-247




Symbol




## Applications

- Power Management in Desktop Computer
- DC/DC Converters

| | | |
|---|---|---|
| $V_{DSS}$ | 100 | V |
| $R_{DS(ON)-Typ}$ | 1.4 | mΩ |
| $I_D$ | 300 | A |

## Absolute Maximum Ratings($T_C$=25℃, unless otherwise noted)

| Parameter | | Symbol | Rating | Units |
|---|---|---|---|---|
| Drain-Source Voltage | | $V_{DS}$ | 100 | V |
| Gate-Source Voltage | | $V_{GS}$ | ±20 | V |
| Continuous Drain Current[1] | | $I_D$ | 300 | A |
| Continuous Drain Current[1] | $T_C$=100℃ | $I_D$ | 186 | A |
| Pulsed Drain Current[2] | | $I_{DM}$ | 1200 | A |
| Single Pulse Avalanche Energy[3] | | $E_{AS}$ | 605 | mJ |
| Total Power Dissipation[4] | | $P_D$ | 227 | W |
| Storage Temperature Range | | $T_{STG}$ | -55 to 175 | ℃ |
| Operating Junction Temperature Range | | $T_J$ | -55 to 175 | ℃ |

## Thermal Characteristics

| Parameter | Symbol | Typ | Max | Unit |
|---|---|---|---|---|
| Thermal Resistance Junction-Ambient[1] | $R_{\theta JA}$ | --- | 62.5 | ℃/W |
| Thermal Resistance Junction-Case[1] | $R_{\theta JC}$ | --- | 0.3 | ℃/W |

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## Electrical Characteristics ($T_J$=25℃, unless otherwise noted)

| Parameter | Symbol | Conditions | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| Drain-Source Breakdown Voltage | $BV_{DSS}$ | $V_{GS}$=0V , $I_D$=250uA | 100 | --- | --- | V |
| Static Drain-Source On-Resistance | $R_{DS(ON)}$ | $V_{GS}$=10V , $I_D$=50A | --- | 1.4 | 1.7 | mΩ |
| Gate Threshold Voltage | $V_{GS(th)}$ | $V_{GS}$=$V_{DS}$ , $I_D$ =250uA | 2 | --- | 4 | V |
| Drain-Source Leakage Current | $I_{DSS}$ | $V_{DS}$=80V, $V_{GS}$=0V | --- | --- | 1 | uA |
| Gate-Source Leakage Current | $I_{GSS}$ | $V_{GS}$=±20V , $V_{DS}$=0V | --- | --- | ±100 | nA |
| Total Gate Charge | $Q_g$ | $V_{DS}$=50V , $V_{GS}$=10V , $I_D$=50A | --- | 244 | --- | nC |
| Gate-Source Charge | $Q_{gs}$ | | --- | 46 | --- | |
| Gate-Drain Charge | $Q_{gd}$ | | --- | 67 | --- | |
| Turn-On Delay Time | $T_{d(on)}$ | $V_{DS}$=50V , $V_{GS}$=10V , $R_G$=4.5Ω, $I_D$=50A | --- | 30 | --- | ns |
| Rise Time | $T_r$ | | --- | 120 | --- | |
| Turn-Off Delay Time | $T_{d(off)}$ | | --- | 190 | --- | |
| Fall Time | $T_f$ | | --- | 170 | --- | |
| Input Capacitance | $C_{iss}$ | $V_{DS}$=50V , $V_{GS}$=0V , f=1MHz | --- | 11800 | --- | pF |
| Output Capacitance | $C_{oss}$ | | --- | 2000 | --- | |
| Reverse Transfer Capacitance | $C_{rss}$ | | --- | 105 | --- | |

## Drain-Source Diode Characteristics

| Parameter | Symbol | Conditions | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| Continuous Source Current[1] | $I_S$ | | --- | --- | 300 | A |
| Diode Forward Voltage[2] | $V_{SD}$ | $V_{GS}$=0V , $I_S$=50A , $T_J$=25℃ | --- | --- | 1.3 | V |

**Note:**

1.The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper.

2.The data tested by pulsed , pulse width ≦ 300us , duty cycle ≦ 2%

3.The EAS data shows Max. rating . The test condition is $V_{DD}$=100V,$R_G$=25Ω,L=0.1mH

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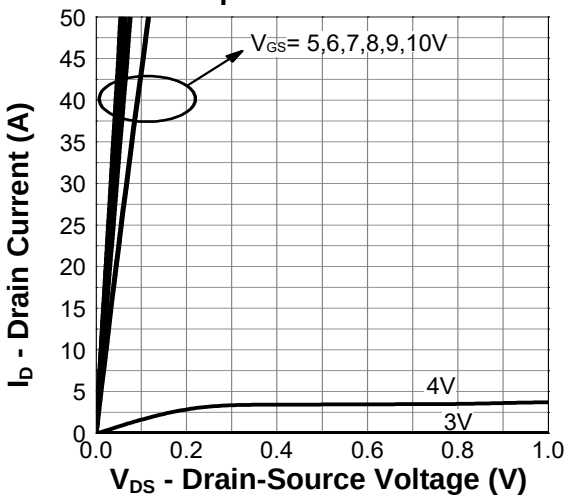
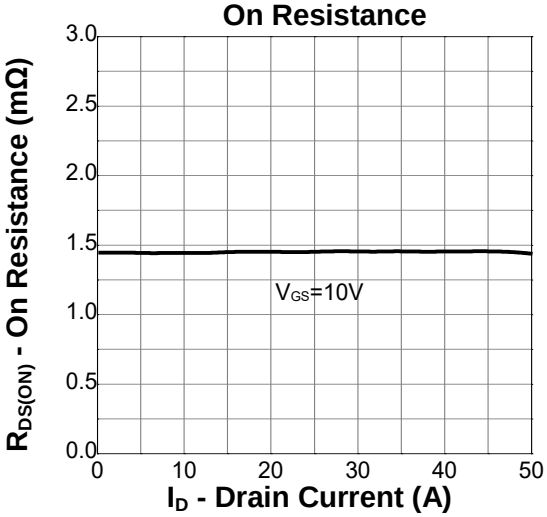
## Typical Characteristics

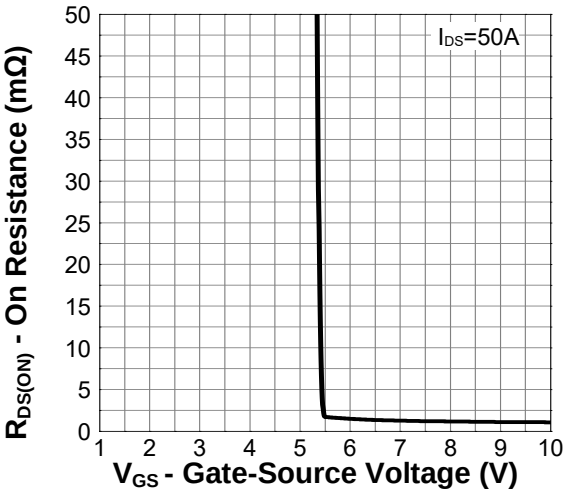
Output Characteristics



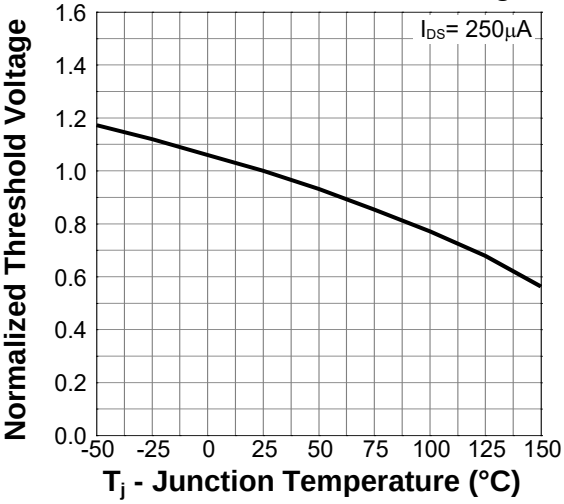

On Resistance



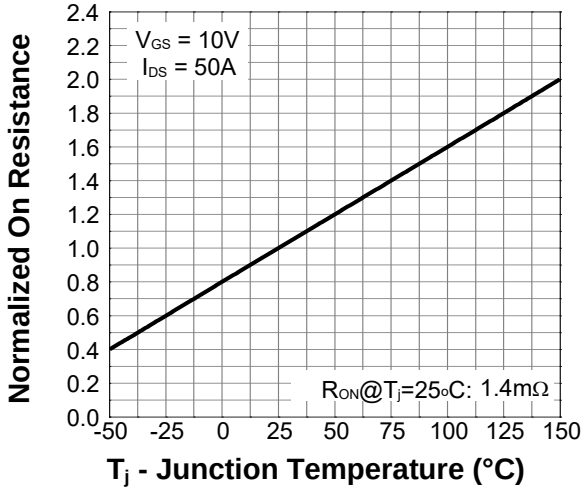

Transfer Characteristics



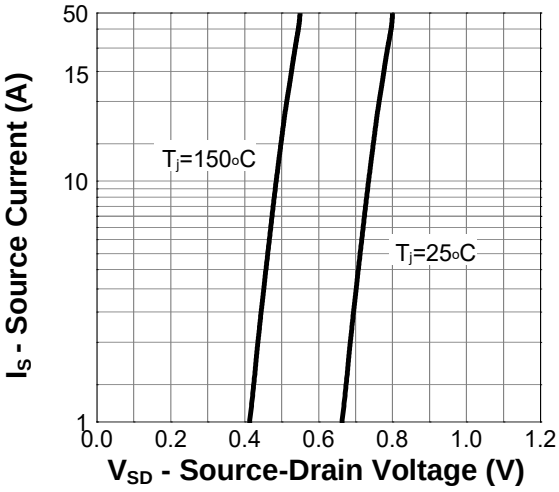

Normalized Threshold Voltage




Normalized On Resistance

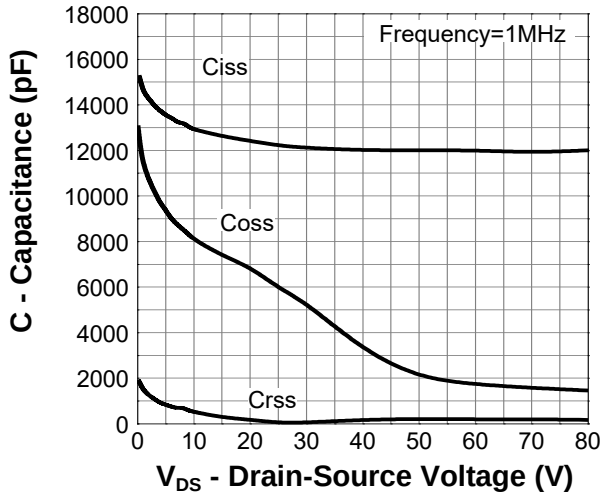



Diode Forward Current

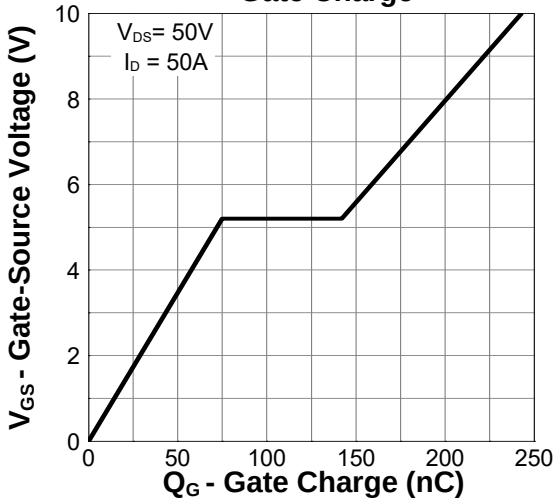


# N-Channel Enhancement Mode MOSFET

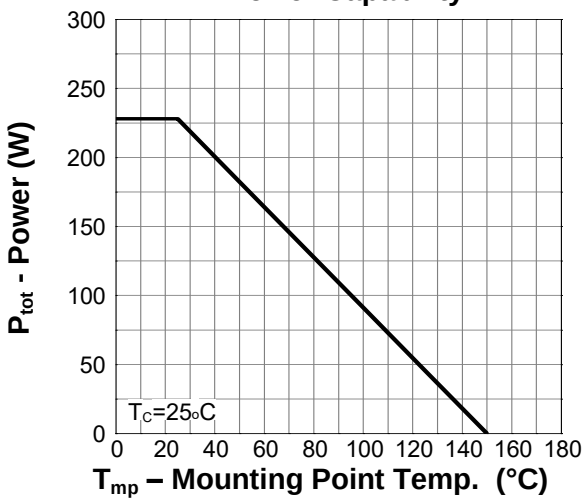
## Capacitance



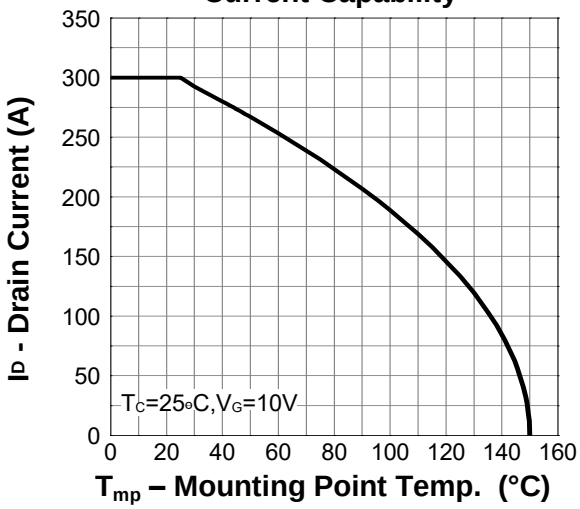

## Gate Charge



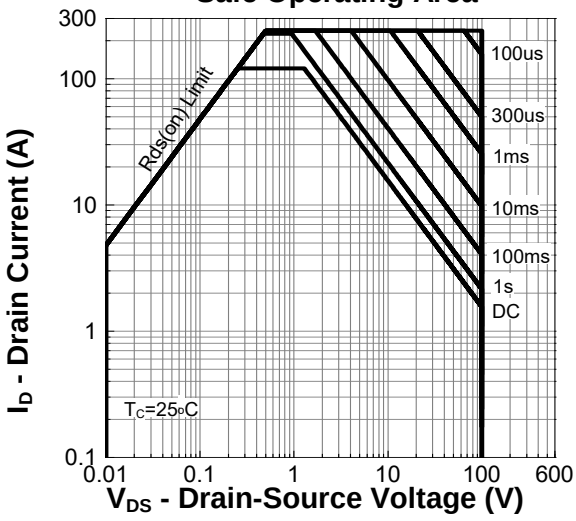

## Power Capability



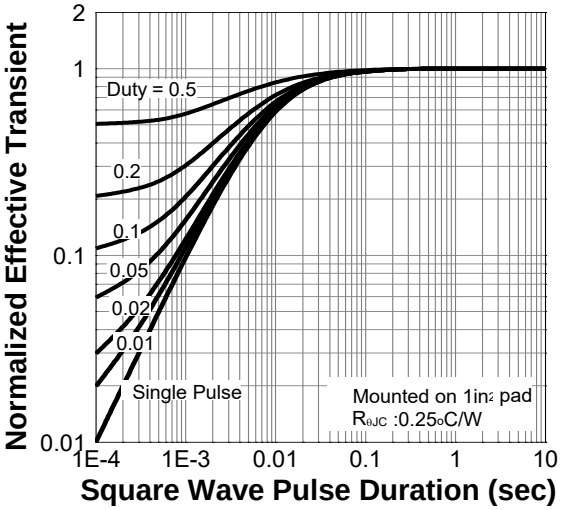

## Current Capability




## Safe Operating Area

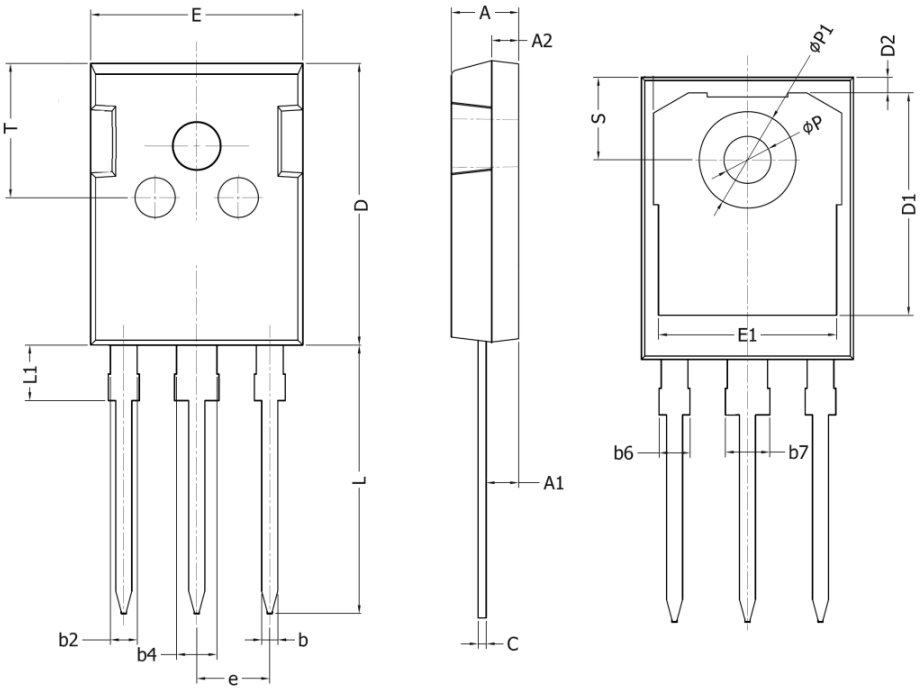



## Transient Thermal Impedance



# N-Channel Enhancement Mode MOSFET

## TO-247 Package Outline Dimensions




| Symbol | Dimensions In Millimeters | |
|---|---|---|
| | Min. | Max. |
| A | 4.90 | 5.20 |
| A1 | 2.31 | 2.51 |
| A2 | 1.9 | 2.1 |
| b | 1.16 | 1.26 |
| b2 | 1.96 | 2.06 |
| b4 | 2.96 | 3.06 |
| b6 | - | 2.25 |
| b7 | - | 3.25 |
| C | 0.59 | 0.66 |
| D | 20.90 | 21.20 |
| D1 | 16.25 | 16.85 |
| D2 | 1.05 | 1.35 |
| E | 15.75 | 16.10 |
| E1 | 13.00 | 13.60 |
| e | 5.436 BSC | |
| L | 19.80 | 20.20 |
| L1 | - | 4.30 |
| P | 3.40 | 3.60 |
| P1 | 7.00 | 7.40 |
| S | 6.05 | 6.25 |
| T | 9.80 | 10.20 |