# N Channel Enhancement Mode Power MOSFET

## GENERAL DESCRIPTION

The product utilizes the latest trench processing techniques to achieve the high celldensity and reduces the on-resistance with high repetitive avalanche rating. Thesefeatures combine to make this design an extremely efficient and reliable device foruse in power switching application and a wide variety of other applications.

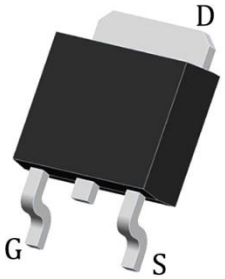
## FEATURES

- 100V/30A, RDS(ON) =30mΩ@VGS=10V
- Fast switching and reverse body recovery
- Fully characterized avalanche voltage and current
- Excellent package for good heat dissipation

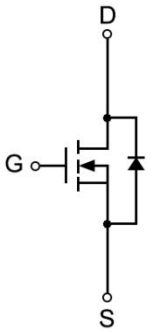
## APPLICATIONS

- Power Switching application
- Hard switched and high frequency circuits
- Boost for LED Backlight

## PIN DESCRIPTION




TO-252




N-Channel MOSFET

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## Absolute Maximum Ratings(Tc=25ºC Unless Otherwise Noted)

| Symbol | Parameter | | Limit | Unit |
|---|---|---|---|---|
| $V_{DS}$ | Drain-Source Voltage | | 100 | V |
| $V_{GS}$ | Gate-Source Voltage | | ±20 | V |
| $I_D$ | Continuous Drain Current | Tc=25° C | 30 | A |
| | | Tc=100° C | 20 | |
| $I_{DM}$ | Pulsed Drain Current | | 78 | A |
| $P_D$ | Maximum Power Dissipation | | 81 | W |
| $T_J$ $T_{STG}$ | Operating Junction and Storage Temperature Range | | -55+150 | ℃ |
| $R_{\theta JC}$ | Thermal Resistance-Junction to Case | | 1.85 | ℃/W |

## Electrical Characteristics(Ta=25ºC Unless Otherwise Noted)

| Symbol | Parameter | Conditions | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| **Static Characteristics** | | | | | | |
| $BV_{DSS}$ | Drain-Source Breakdown Voltage | $V_{GS}$=0V,$I_{DS}$=250uA | 100 | | | V |
| $I_{DSS}$ | Zero Gate Voltage Drain Current | $V_{DS}$=100V,$V_{GS}$=0V | | | 1 | uA |
| $I_{GSS}$ | Gate-Body Leakage Current | $V_{GS}$=±20V,$V_{DS}$=0V | | | ±100 | nA |
| $V_{GS(th)}$ | Gate Threshold Voltage | $V_{DS}$= $V_{GS}$, $I_{DS}$=250uA | 1 | | 2.5 | V |
| $R_{DS(ON)}$ | Drain-Source On-state Resistance | $V_{GS}$=10V,$I_{DS}$=15A | | 30 | 38 | mΩ |

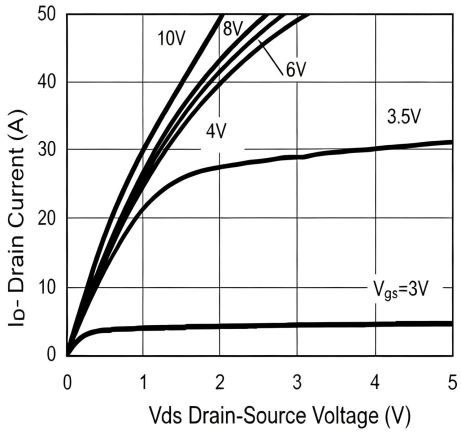
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## Electrical Characteristics(Ta=25ºC Unless Otherwise Noted)

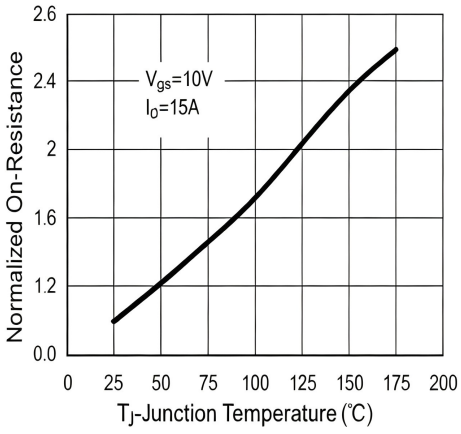
| Symbol | Parameter | Conditions | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| **Drain-Source Diode Characteristics** | | | | | | |
| $V_{SD}$ | Diode Forward Voltage | $V_{GS}$=0V,$I_{SD}$=15A | | | 1.2 | V |
| Trr | Reverse Recovery Time | $I_{SD}$=15A di/dt=100A/us | | 33 | | ns |
| Qrr | Reverse Recovery Charge | | | 50 | | nC |
| **Dynamic Characteristics** | | | | | | |
| $T_{d(on)}$ | Turn-on Delay Time | $V_{DS}$=50V, $R_G$=3Ω, $I_{DS}$=15A,$V_{GS}$=10V , | | 7 | | ns |
| Tr | Turn-on Rise Time | | | 6.5 | | |
| $T_{d(off)}$ | Turn-off Delay Time | | | 28 | | |
| $T_f$ | Turn-off Fall Time | | | 6 | | |
| $C_{ISS}$ | Input Capacitance | $V_{GS}$=0V, $V_{DS}$=25V, f=1.0MHz | | 2000 | 2200 | pF |
| $C_{OSS}$ | Output Capacitance | | | 455 | | |
| $C_{RSS}$ | Reverse Transfer Capacitance | | | 250 | | |
| $Q_g$ | Total Gate Charge | $V_{DS}$=50V,$I_D$=15A, $V_{GS}$=10V | | 55 | 63 | nC |
| $Q_{gs}$ | Gate-Source Charge | | | 13 | | |
| $Q_{gd}$ | Gate-Drain Charge | | | 11 | | |

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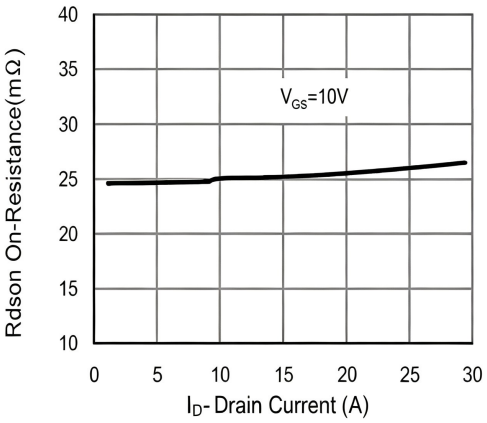
## Typical electrical and thermal characteristics



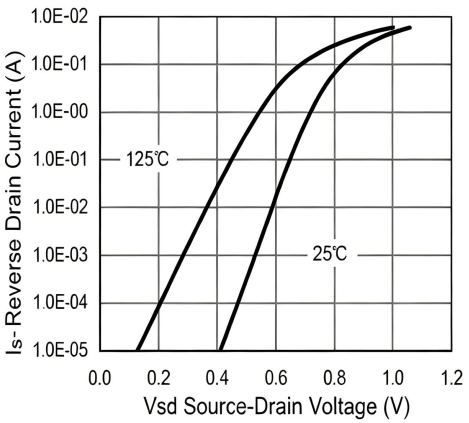

**Output Characteristics**



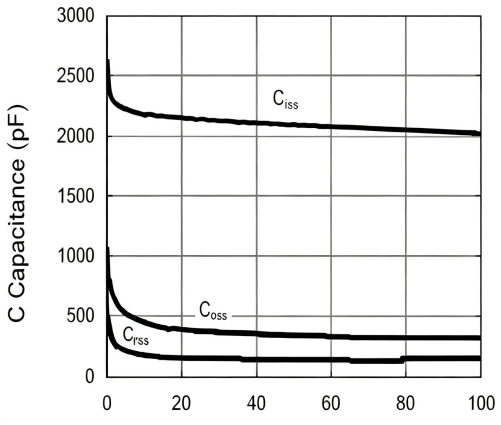

**Rdson-Jonction Temperatura**



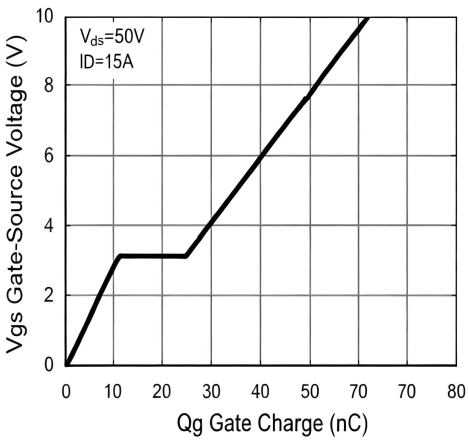

**Rdson- Drain Current**




**Source- Drain Diode Forward**

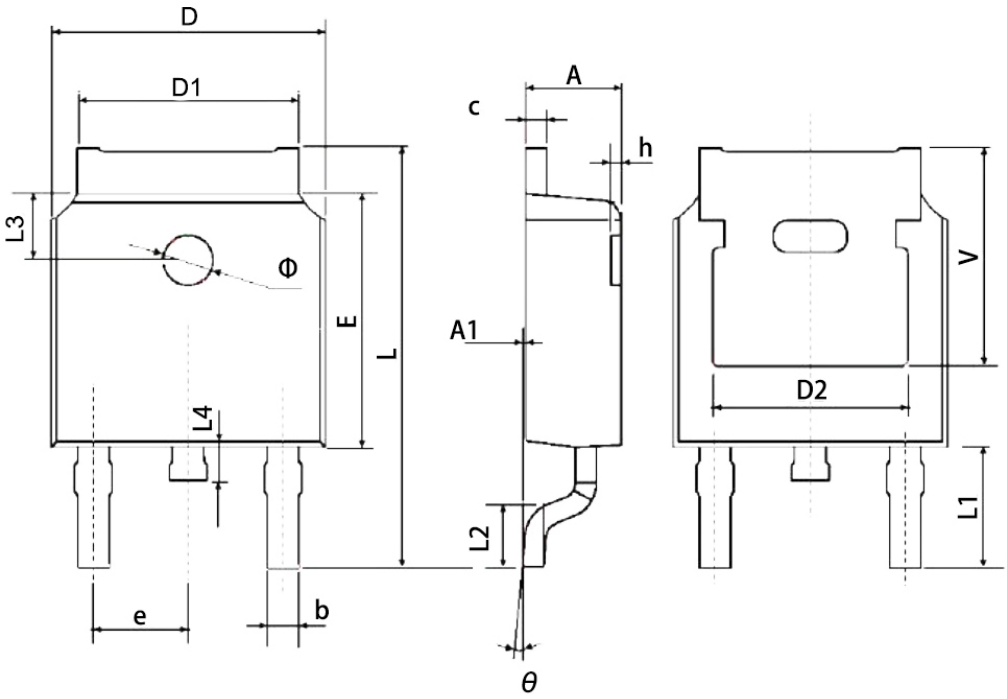



**Capacitance vs Vds**




**Gate Charge**

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| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|---|---|---|---|---|
| | Min. | Max. | Min. | Max. |
| A | 2.200 | 2.400 | 0.087 | 0.094 |
| A1 | 0.000 | 0.127 | 0.000 | 0.005 |
| b | 0.660 | 0.860 | 0.026 | 0.034 |
| c | 0.460 | 0.580 | 0.018 | 0.023 |
| D | 6.500 | 6.700 | 0.256 | 0.264 |
| D1 | 5.100 | 5.460 | 0.201 | 0.215 |
| D2 | 0.483 TYP. | | | |
| E | 6.000 | 6.200 | 0.236 | 0.244 |
| e | 2.186 | 2.386 | 0.086 | 0.094 |
| L | 9.800 | 10.400 | 0.386 | 0.409 |
| L1 | 2.900 TYP. | | 0.114 TYP. | |
| L2 | 1.400 | 1.700 | 0.055 | 0.067 |
| L3 | 1.600 TYP. | | 0.063 TYP | |
| L4 | 0.600 | 1.000 | 0.024 | 0.039 |
| Φ | 1.100 | 1.300 | 0.043 | 0.051 |
| θ | 0° | 8° | 0° | 8° |
| h | 0.000 | 0.300 | 0.000 | 0.012 |
| V | 5.350 TYP. | | 0.211TYP. | |