
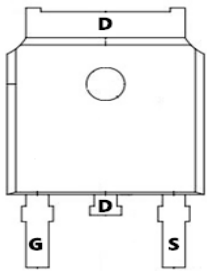


TM15N10D

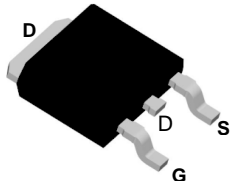
N-Channel Enhancement Mosfet

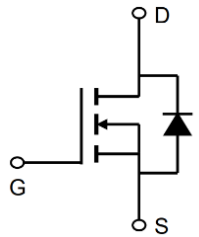
| | |
|---|--|
| <p>General Description</p> <ul style="list-style-type: none"> • Low R_{DS(ON)} • RoHS and Halogen-Free Compliant <p>Applications</p> <ul style="list-style-type: none"> • Load switch • PWM | <p>General Features</p> <p>V_{DS} = 100V I_D = 15A</p> <p>R_{DS(ON)} = 75mΩ (typ.) @ V_{GS} = 10V</p> <p>100% UIS Tested</p> <p>100% R_g Tested</p>  |
|---|--|



Marking: 15N10

D: TO-252-3L





| ABSOLUTE MAXIMUM RATINGS (T_A = 25°C Unless otherwise noted) | | | | |
|---|---|-----------------------|------|---|
| Symbol | Parameter | Rating | Unit | |
| Common Ratings (T_A = 25°C Unless Otherwise Noted) | | | | |
| V _{DSS} | Drain-Source Voltage | 100 | V | |
| V _{GSS} | Gate-Source Voltage | ±20 | | |
| T _J | Maximum Junction Temperature | 175 | °C | |
| T _{STG} | Storage Temperature Range | -55 to 175 | °C | |
| I _S | Diode Continuous Forward Current | 15 | A | |
| I _{DP} | 300µs Pulse Drain Current Tested | T _C =25°C | 64 | A |
| | | T _C =100°C | 44 | |
| I _D | Continuous Drain Current | T _C =25°C | 15 | A |
| | | T _C =100°C | 11 | |
| P _D | Maximum Power Dissipation | T _C =25°C | 60 | W |
| | | T _C =100°C | 30 | |
| R _{θJC} | Thermal Resistance-Junction to Case | 2.5 | °C/W | |
| R _{θJA} | Thermal Resistance-Junction to Ambient | 50 | °C/W | |
| E _{AS} | Avalanche Energy, Single Pulsed (L=0.3mH) | 30 | mJ | |

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress rating only and functional device operation is not implied

TM15N10D

N-Channel Enhancement Mosfet

ELECTRICAL CHARACTERISTICS($T_A=25^{\circ}\text{C}$ Unless otherwise noted)

| Symbol | Parameter | Test Conditions | UT15N10 | | | Unit |
|---|----------------------------------|---|---------|------|----------|------------|
| | | | Min. | Typ. | Max. | |
| Static Characteristics | | | | | | |
| BV_{DSS} | Drain-Source Breakdown Voltage | $V_{GS}=0V, I_{DS}=250\mu A$ | 100 | - | - | V |
| I_{DSS} | Zero Gate Voltage Drain Current | $V_{DS}=80V, V_{GS}=0V$ | - | - | 1 | μA |
| | | $T_J=85^{\circ}\text{C}$ | - | - | 30 | |
| $V_{GS(th)}$ | Gate Threshold Voltage | $V_{DS}=V_{GS}, I_{DS}=250\mu A$ | 0.5 | 1.5 | 2.5 | V |
| I_{GSS} | Gate Leakage Current | $V_{GS}=\pm 16V, V_{DS}=0V$ | - | - | ± 10 | μA |
| $R_{DS(ON)}^a$ | Drain-Source On-state Resistance | $V_{GS}=10V, I_{DS}=15A$ | - | 75 | 96 | m Ω |
| | | $V_{GS}=4.5V, I_{DS}=8A$ | - | 97 | 130 | |
| Diode Characteristics | | | | | | |
| V_{SD}^a | Diode Forward Voltage | $I_{SD}=5A, V_{GS}=0V$ | 0.6 | 0.8 | 1.1 | V |
| t_{rr} | Reverse Recovery Time | $I_{DS}=5A, di_{SD}/dt=100A/\mu s$ | 33 | 47 | 61 | ns |
| Q_{rr} | Reverse Recovery Charge | | 61 | 87 | 113 | nC |
| Dynamic Characteristics | | | | | | |
| C_{iss} | Input Capacitance | $V_{GS}=0V,$ $V_{DS}=30V,$ Frequency=1.0MHz | 730 | 940 | 1250 | pF |
| C_{oss} | Output Capacitance | | 45 | 80 | 115 | |
| C_{rss} | Reverse Transfer Capacitance | | 25 | 50 | 75 | |
| $t_{d(ON)}$ | Turn-on Delay Time | $V_{DD}=30V, R_L=30\Omega,$ $I_{DS}=1A, V_{GEN}=10V,$ $R_G=6\Omega$ | - | 13 | 24 | ns |
| t_r | Turn-on Rise Time | | - | 10 | 19 | |
| $t_{d(OFF)}$ | Turn-off Delay Time | | - | 32 | 60 | |
| t_f | Turn-off Fall Time | | - | 16 | 30 | |
| Gate Charge Characteristics ^b | | | | | | |
| Q_g | Total Gate Charge | $V_{DS}=50V, V_{GS}=10V,$ $I_{DS}=5A$ | 12 | 21 | 30 | nC |
| Q_{gs} | Gate-Source Charge | | 3.4 | 4.9 | 6.4 | |
| Q_{gd} | Gate-Drain Charge | | 2.9 | 5.8 | 8.7 | |

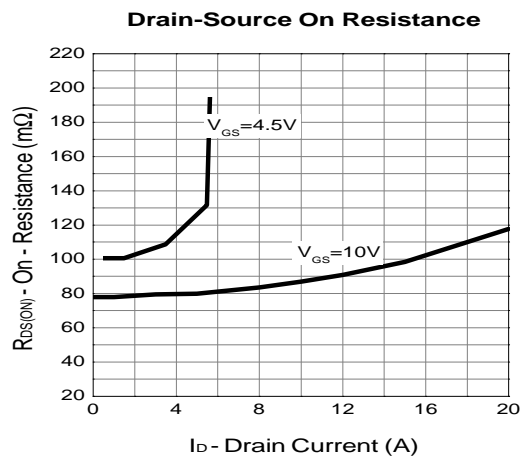
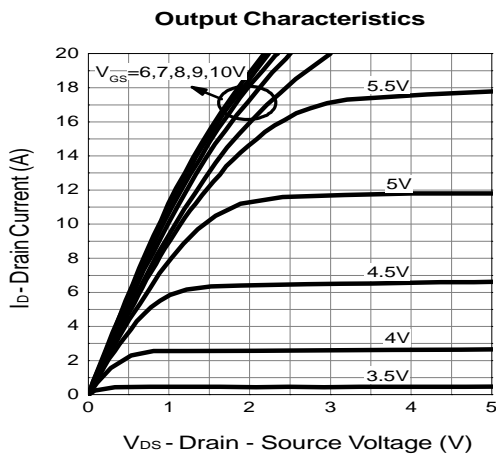
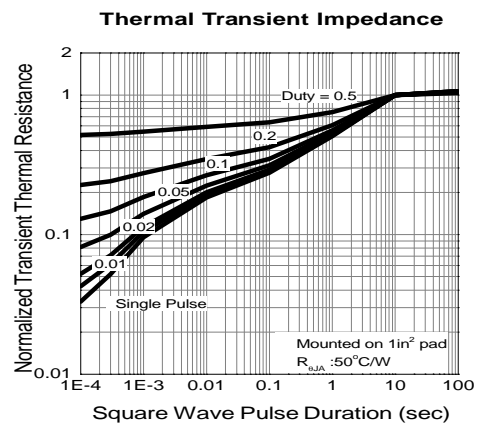
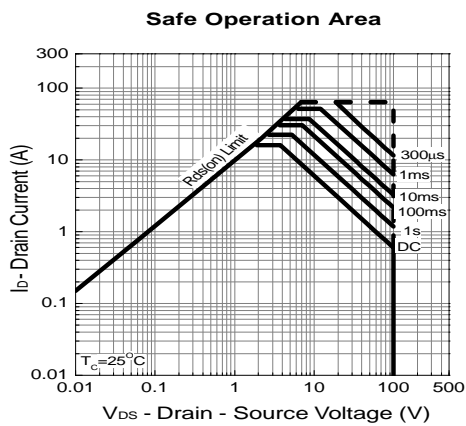
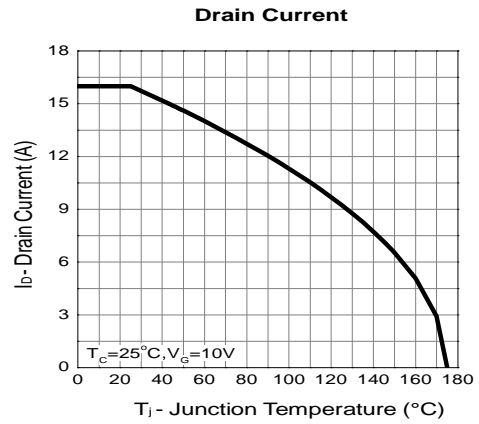
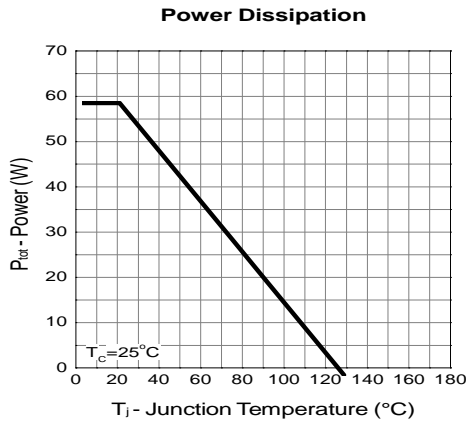
Note a : Pulse test ; pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.

Note b : Guaranteed by design, not subject to production testing.

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TYPICAL CHARACTERISTICS (25°C Unless Note)

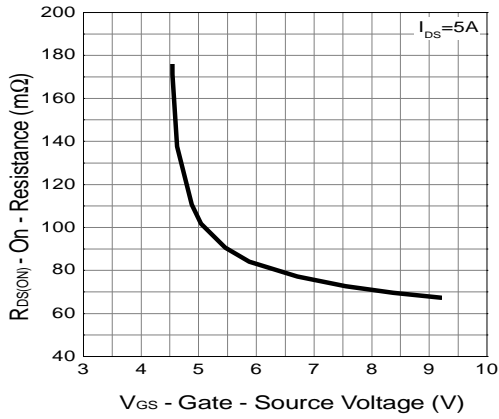




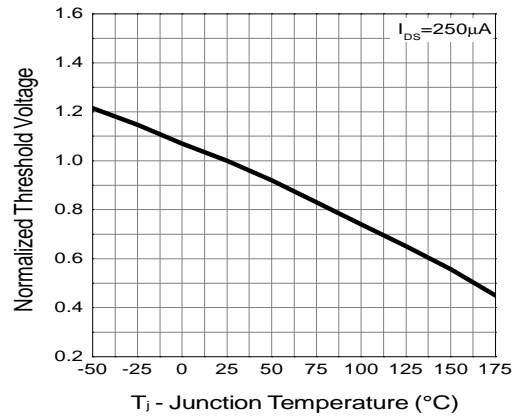
TM15N10D

N-Channel Enhancement Mosfet

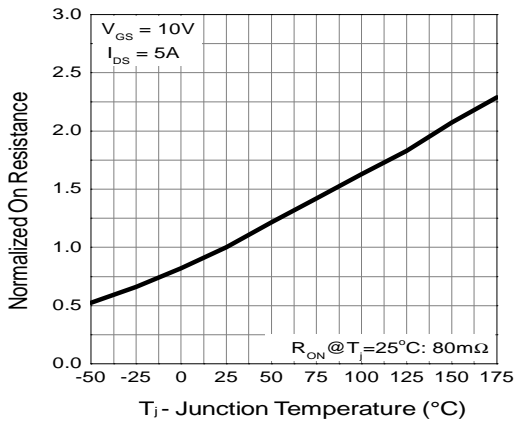
Gate-Source On Resistance



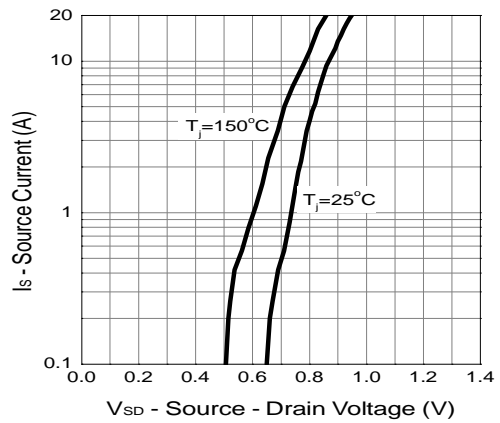
Gate Threshold Voltage



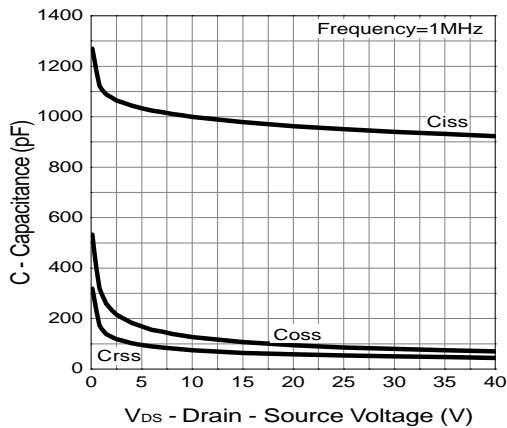
Drain-Source On Resistance



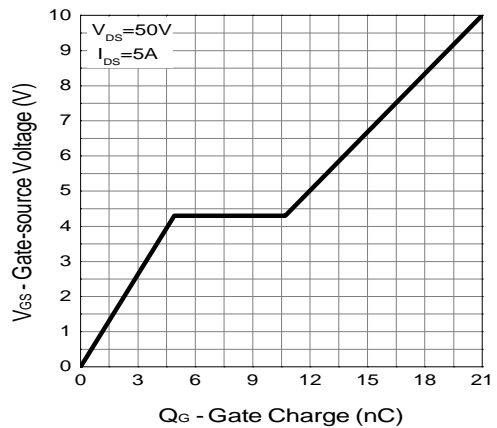
Source-Drain Diode Forward



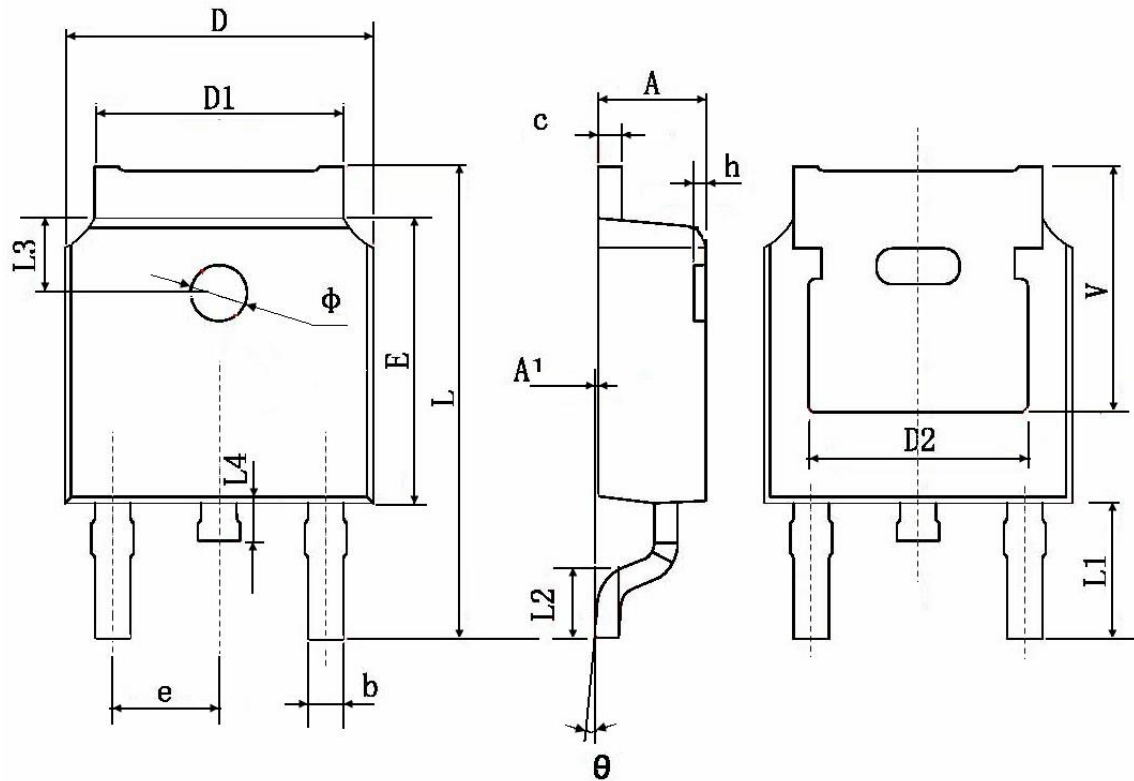
Capacitance



Gate Charge



Package Information : TO-252-3L



| 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 | 4.830 TYP. | | 0.190 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 |
| phi | 1.100 | 1.300 | 0.043 | 0.051 |
| theta | 0° | 8° | 0° | 8° |
| h | 0.000 | 0.300 | 0.000 | 0.012 |
| v | 5.350 TYP. | | 0.211 TYP. | |

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