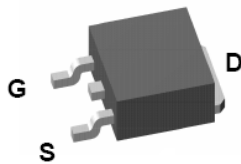


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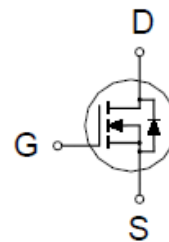
N-Channel Enhancement Mode MOSFET

PRODUCT SUMMARY

| | | |
|---------------|------------------------------|-------|
| $V_{(BR)DSS}$ | $R_{DS(ON)}$ | I_D |
| 40V | 7m Ω @ $V_{GS} = 10V$ | 64A |



TO-252



ABSOLUTE MAXIMUM RATINGS ($T_A = 25\text{ }^\circ\text{C}$ Unless Otherwise Noted)

| PARAMETERS/TEST CONDITIONS | | SYMBOL | LIMITS | UNITS |
|--|-----------------------------------|----------------|------------|------------------|
| Drain-Source Voltage | | V_{DS} | 40 | V |
| Gate-Source Voltage | | V_{GS} | ± 20 | |
| Continuous Drain Current | $T_C = 25\text{ }^\circ\text{C}$ | I_D | 64 | A |
| | $T_C = 100\text{ }^\circ\text{C}$ | | 40 | |
| Pulsed Drain Current ¹ | | I_{DM} | 150 | |
| Avalanche Current | | I_{AS} | 50 | |
| Avalanche Energy | $L = 0.1\text{mH}$ | E_{AS} | 125 | mJ |
| Power Dissipation | $T_C = 25\text{ }^\circ\text{C}$ | P_D | 50 | W |
| | $T_C = 100\text{ }^\circ\text{C}$ | | 20 | |
| Operating Junction & Storage Temperature Range | | T_J, T_{STG} | -55 to 150 | $^\circ\text{C}$ |

THERMAL RESISTANCE RATINGS

| THERMAL RESISTANCE | SYMBOL | TYPICAL | MAXIMUM | UNITS |
|---------------------|-----------------|---------|---------|-----------------------------|
| Junction-to-Case | $R_{\theta JC}$ | | 2.5 | $^\circ\text{C} / \text{W}$ |
| Junction-to-Ambient | $R_{\theta JA}$ | | 65 | |

¹Pulse width limited by maximum junction temperature.

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N-Channel Enhancement Mode MOSFET

ELECTRICAL CHARACTERISTICS (T_J = 25 °C, Unless Otherwise Noted)

| PARAMETER | SYMBOL | TEST CONDITIONS | LIMITS | | | UNIT |
|---|----------------------|--|--------|------|------|------|
| | | | MIN | TYP | MAX | |
| STATIC | | | | | | |
| Drain-Source Breakdown Voltage | V _{(BR)DSS} | V _{GS} = 0V, I _D = 250μA | 40 | | | V |
| Gate Threshold Voltage | V _{GS(th)} | V _{DS} = V _{GS} , I _D = 250μA | 1.7 | 2.2 | 3.0 | |
| Gate-Body Leakage | I _{GSS} | V _{DS} = 0V, V _{GS} = ±20V | | | ±250 | nA |
| Zero Gate Voltage Drain Current | I _{DSS} | V _{DS} = 32V, V _{GS} = 0V | | | 1 | μA |
| | | V _{DS} = 30V, V _{GS} = 0V, T _C = 125 °C | | | 10 | |
| On-State Drain Current ¹ | I _{D(ON)} | V _{DS} = 10V, V _{GS} = 10V | 150 | | | A |
| Drain-Source On-State Resistance ¹ | R _{DS(ON)} | V _{GS} = 4.5V, I _D = 15A | | 7.8 | 13 | mΩ |
| | | V _{GS} = 10V, I _D = 20A | | 6 | 7 | |
| Forward Transconductance ¹ | g _{fs} | V _{DS} = 10V, I _D = 20A | | 40 | | S |
| DYNAMIC | | | | | | |
| Input Capacitance | C _{iss} | V _{GS} = 0V, V _{DS} = 20V, f = 1MHz | | 2040 | | pF |
| Output Capacitance | C _{oss} | | | 378 | | |
| Reverse Transfer Capacitance | C _{rss} | | | 244 | | |
| Gate Resistance | R _g | V _{GS} = 0V, V _{DS} = 0V, f = 1MHz | | 2.11 | | Ω |
| Total Gate Charge ² | Q _g | V _{DS} = 0.5V _{(BR)DSS} , V _{GS} = 10V, I _D = 20A | | 47 | | nC |
| Gate-Source Charge ² | Q _{gs} | | | 10 | | |
| Gate-Drain Charge ² | Q _{gd} | | | 12 | | |
| Turn-On Delay Time ² | t _{d(on)} | V _{DS} = 20V, R _L = 1Ω I _D ≅ 20A, V _{GS} = 10V, R _{GEN} = 6Ω | | 20 | | nS |
| Rise Time ² | t _r | | | 12 | | |
| Turn-Off Delay Time ² | t _{d(off)} | | | 45 | | |
| Fall Time ² | t _f | | | 25 | | |
| SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T_J = 25 °C) | | | | | | |
| Continuous Current | I _S | | | | 50 | A |
| Forward Voltage ¹ | V _{SD} | I _F = 20A, V _{GS} = 0V | | | 1.3 | V |
| Reverse Recovery Time | t _{rr} | I _F = 20A, dI _F /dt = 100A / μS | | 51 | | nS |
| Reverse Recovery Charge | Q _{rr} | | | 60 | | nC |

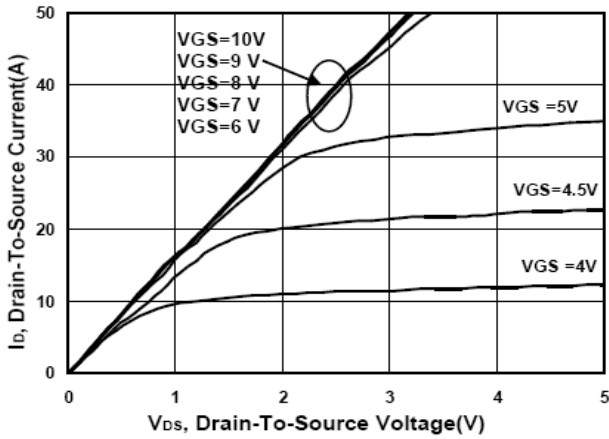
¹Pulse test : Pulse Width ≤ 300 μsec, Duty Cycle ≤ 2%.

²Independent of operating temperature.

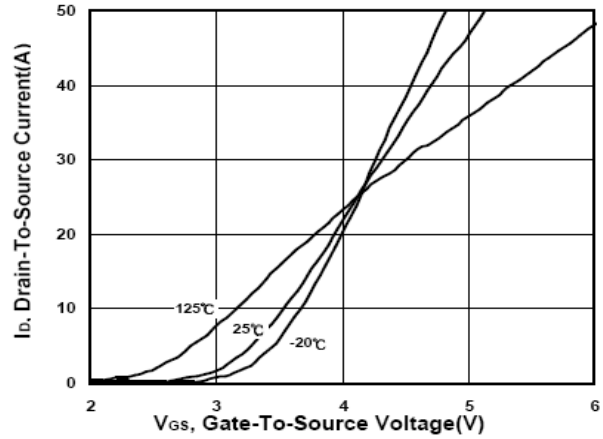
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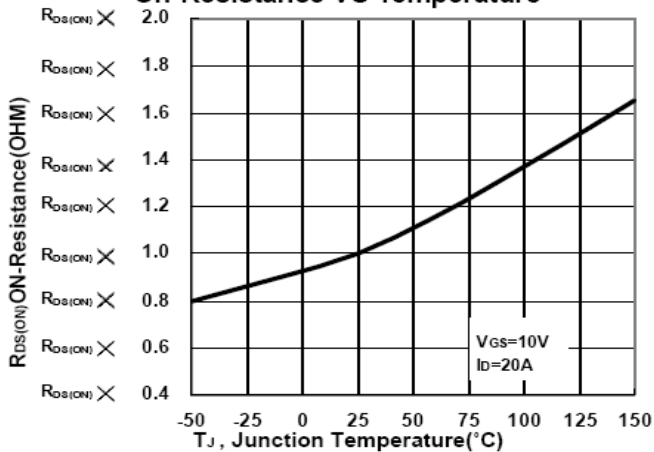
Output Characteristics



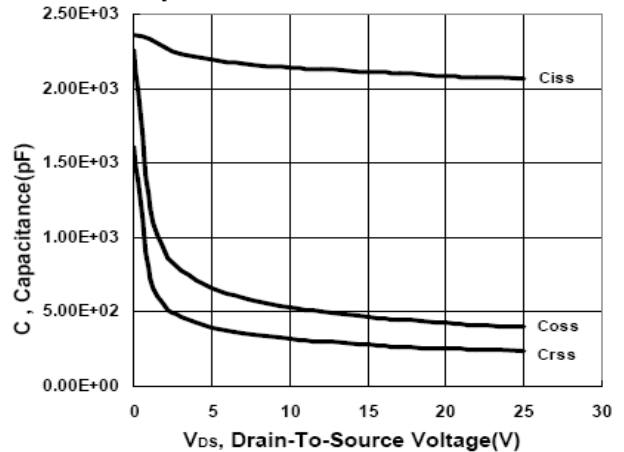
Transfer Characteristics



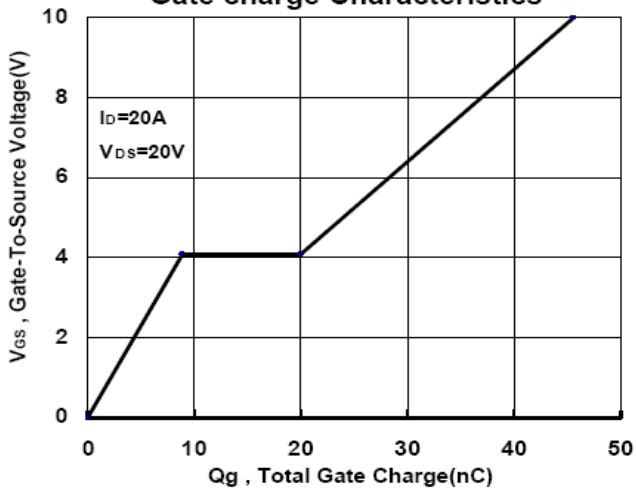
On-Resistance VS Temperature



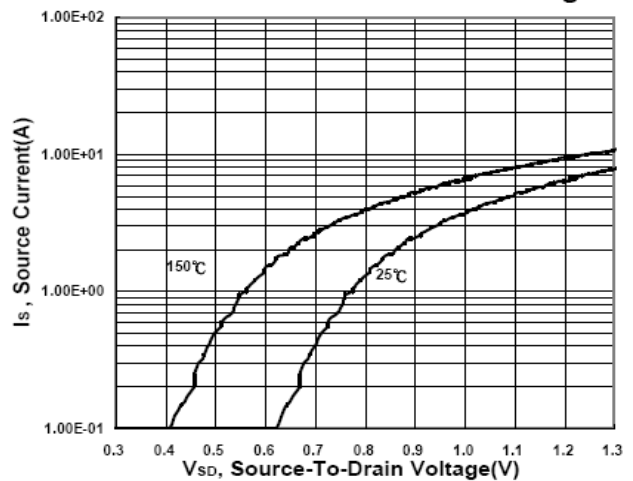
Capacitance Characteristic



Gate charge Characteristics



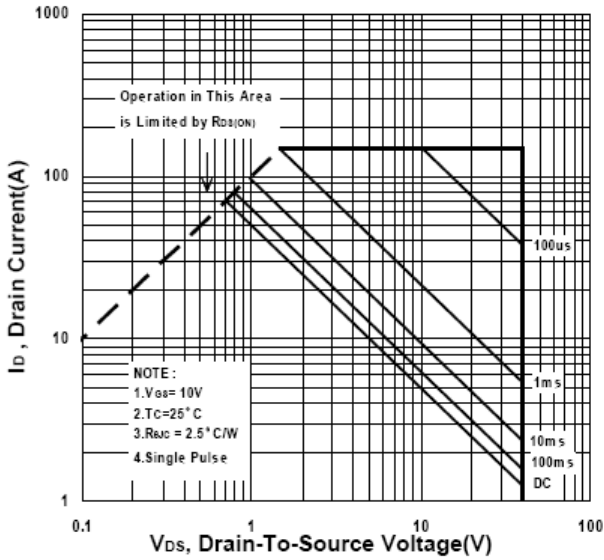
Source-Drain Diode Forward Voltage



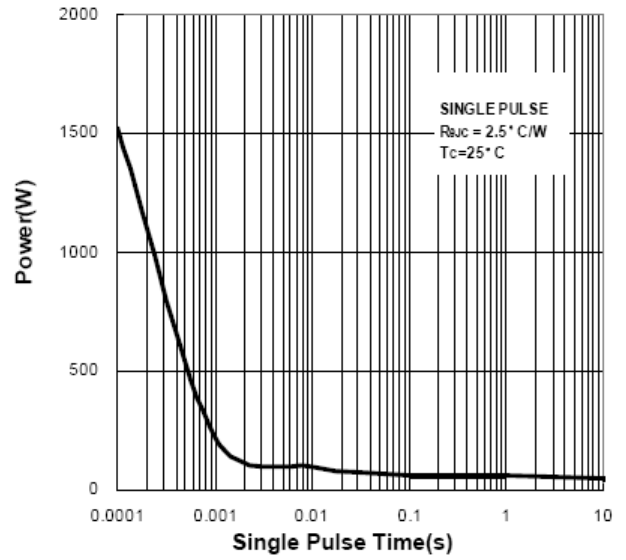
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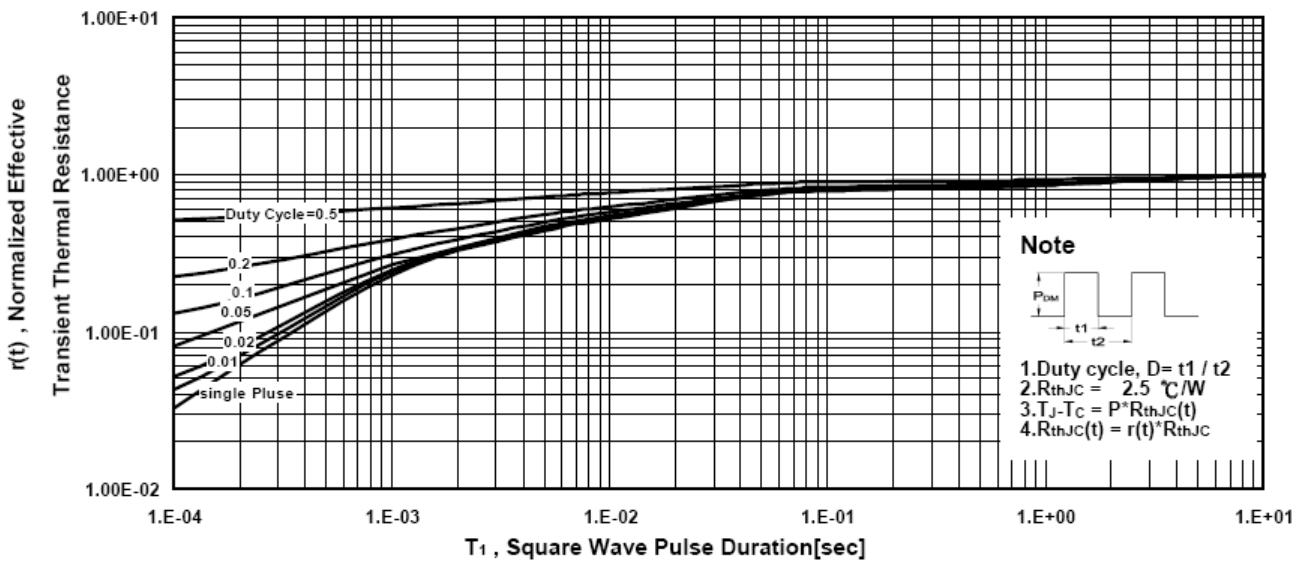
Safe Operating Area



Single Pulse Maximum Power Dissipation



Transient Thermal Response Curve



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N-Channel Enhancement Mode MOSFET

Package Dimension

TO-252 (DPAK) MECHANICAL DATA

| Dimension | mm | | | Dimension | mm | | |
|-----------|------|------|-------|-----------|------|------|------|
| | Min. | Typ. | Max. | | Min. | Typ. | Max. |
| A | 8.9 | 10 | 10.41 | J | 4.8 | | 5.64 |
| B | 2.1 | 2.2 | 2.5 | K | 0.15 | | 1.49 |
| C | 0.4 | 0.5 | 0.61 | L | 0.4 | 0.76 | 0.91 |
| D | 0.82 | 1.2 | 1.5 | M | 4.2 | 4.58 | 5 |
| E | 0.35 | 0.5 | 0.65 | S | 4.57 | 5.1 | 5.52 |
| F | 0 | | 0.2 | T | 3.81 | 4.75 | 5.24 |
| G | 5.3 | 6.1 | 6.3 | U | 1.4 | | 1.78 |
| H | 0.5 | | 1.7 | V | 0.55 | 1.25 | 1.7 |
| I | 6.3 | 6.5 | 6.8 | | | | |

