

4.0A



TO-220

- Robust High Voltage Termination
- Avalanche Energy Specified
- Source-to-Drain Diode Recovery Time Comparable to a Discrete Fast Recovery Diode

MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS (Ta=25)

| PARAMETERS | SYMBOL | MIN | TYP | MAX | UNITS | CONDITION |
|---|----------------|-----|-----|------------|----------|--|
| Continuous Drain Current | I_D | | | 3.6 | A | $V_{GS} = 10\text{ V}$, $T_a = 25$ |
| Drain-Source Breakdown Voltage | $V_{(BR)DSS}$ | 600 | | | V | $V_{GS} = 0\text{ V}$, $I_D = 250\ \mu\text{ A}$ |
| Drain-Source Leakage Current | I_{DSS} | | | 0.1 0.5 | mA | $V_{DS} = 600\text{ V}$, $V_{GS} = 0\text{ V}$ $V_{DS} = 480\text{ V}$, $V_{GS} = 0\text{ V}$, $T_J = 125$ |
| Gate-Source Leakage Current-Forward | I_{GSSF} | | | 100 | nA | $V_{gsf} = 20\text{ V}$, $V_{DS} = 0\text{ V}$ |
| Gate-Source Leakage Current-Reverse | I_{GSSR} | | | 100 | nA | $V_{gsr} = 20\text{ V}$, $V_{DS} = 0\text{ V}$ |
| Gate Threshold Voltage | $V_{GS(th)}$ | 2.0 | | 4.0 | V | $V_{DS} = V_{GS}$, $I_D = 250\ \mu\text{ A}$ |
| Static Drain-Source On-Resistance | $R_{DS(on)}$ | | | 2.2 | Ω | $V_{GS} = 10\text{ V}$, $I_D = 2.2\text{ A}$ * |
| Forward Transconductance | g_{FS} | 2.5 | | | S | $V_{DS} = 50\text{ V}$, $I_D = 2.2\text{ A}$ * |
| Input Capacitance | C_{iss} | | 660 | | pF | $V_{DS} = 25\text{ V}$, $V_{GS} = 0\text{ V}$, $f = 1.0\text{ MHz}$ |
| Output Capacitance | C_{oss} | | 86 | | pF | |
| Reverse Transfer Capacitance | C_{rss} | | 19 | | pF | |
| Turn-On Delay Time | $t_{d(on)}$ | | 11 | | ns | $V_{DD} = 300\text{ V}$, $I_D = 3.6\text{ A}$, $V_{GS} = 10\text{ V}$, $R_G = 12\Omega$ * |
| Rise Time | t_r | | 13 | | ns | |
| Turn-Off Delay Time | $t_{d(off)}$ | | 35 | | ns | |
| Fall Time | t_f | | 14 | | ns | |
| Total Gate Charge | Q_g | | | 31 | nC | $V_{DS} = 360\text{ V}$, $I_D = 3.6\text{ A}$, $V_{GS} = 10\text{ V}$ * |
| Gate-Source Charge | Q_{gs} | | | 4.6 | nC | |
| Gate-Drain Charge | Q_{gd} | | | 17 | nC | |
| Internal Drain Inductance | L_D | | 4.5 | | nH | Measured from the drain lead 0.25" from package to center of die |
| Internal Drain Inductance | L_S | | 7.5 | | nH | Measured from the source lead 0.25" from package to source bond pad |
| Total Power Disipation | P_D | | | 74 | W | |
| Thermal Resistance – Junction to Case | θ_{JC} | | | 1.7 | /W | |
| Operating and Storage Temperature | T_J, T_{STG} | -55 | | 150 | | |
| SOURCE-DRAIN DIODE CHARACTERISTICS | | | | | | |
| Forward On-Voltage(1) | V_{SD} | | | 1.6 | V | $I_S = 3.6\text{ A}$, $V_{GS} = 0\text{ V}$, $d_{is}/d_t = 100\text{ A}/\mu\text{s}$ |
| Forward Turn-On Time | t_{on} | | ** | | ns | |
| Reverse Recovery Time | t_{rr} | | 370 | | ns | |

* Pulse Test: Pulse Width 300 μs , Duty Cycle 2%

** Negligible, Dominated by circuit inductance

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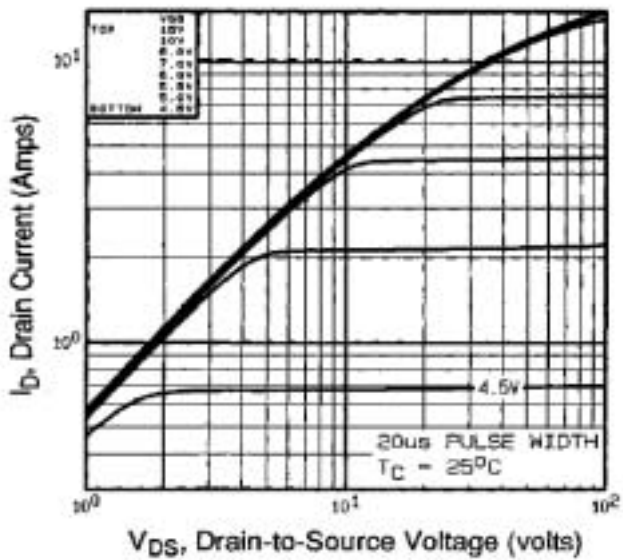


Fig 1. Typical Output Characteristics,
T_C=25°C

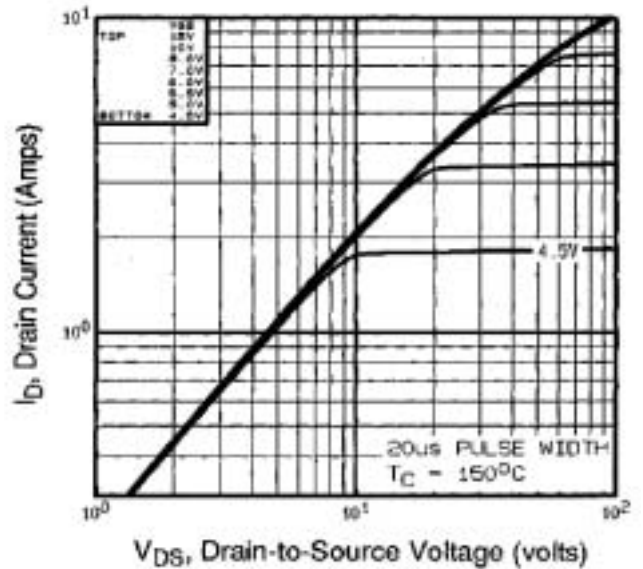


Fig 2. Typical Output Characteristics,
T_C=150°C

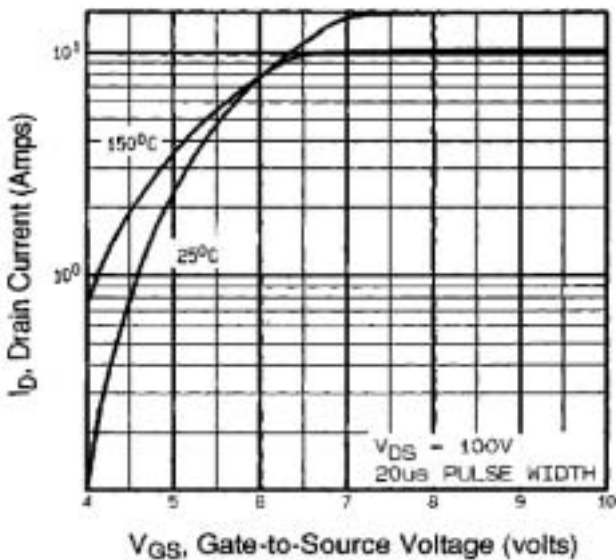


Fig 3. Typical Transfer Characteristics

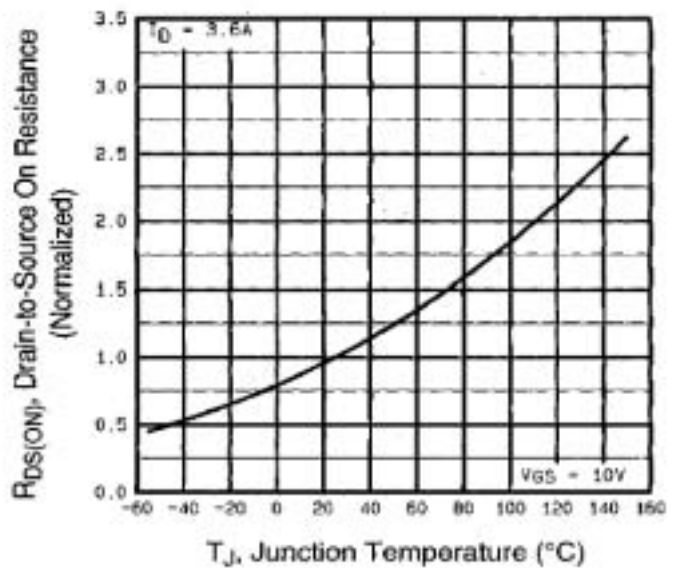


Fig 4. Normalized On-Resistance
Vs. Temperature



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