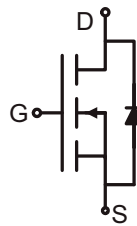


N-CHANNEL MOSFET in a TO-251 Package.

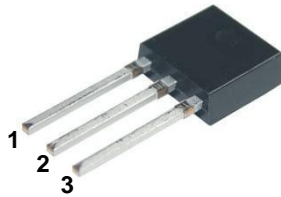
Description

Low gate charge, low crss, fast switching.

These devices are well suited for high efficiency switching DC/DC converters and switch mode power



Schematic diagram



PIN1: G PIN 2: D PIN 3: S

TO-251 Pin assignment

Package Marking and Ordering Information

| Package Type | Units | | | | | Dimension (unit: mm ³) | | |
|--------------|------------|-----------------|-----------------|-----------------------|-----------------|------------------------------------|------------|-------------|
| | Units/Tube | Tubes/Inner Box | Units/Inner Box | Inner Boxes/Outer Box | Units/Outer Box | Tube | Inner Box | Outer Box |
| TO-251/252 | 75 | 48 | 3,600 | 5 | 18,000 | 526×20.5×5.25 | 555×164×50 | 575×290×180 |

Rev.D Nov.-2015

RI4N70

Absolute Maximum Ratings(Ta=25°C)

| Parameter | Symbol | Rating | Unit |
|-------------------------------------|------------------------------|---------|------|
| Drain-Source Voltage | V_{DS} | 700 | V |
| Gate-Source Voltage | V_{GS} | ±30 | V |
| Drain Current | $I_D(T_c=25^\circ\text{C})$ | 4.0 | A |
| Drain Current | $I_D(T_c=100^\circ\text{C})$ | 2.5 | A |
| Drain Current - Pulsed | $I_{DM}^{①}$ | 16 | A |
| Single Pulsed Avalanche Energy | $E_{AS}^{②}$ | 260 | mJ |
| Power Dissipation | P_{tot} | 106 | W |
| Junction Temperature Range | T_j | 150 | °C |
| Storage Temperature Range | T_{stg} | -55~150 | °C |
| Thermal Resistance Junction-case | $R_{\theta-JC}$ | 1.18 | °C/W |
| Thermal Resistance Junction-ambient | $R_{\theta-JA}$ | 62.5 | °C/W |

Electrical Characteristics(Ta=25°C)

| Parameter | Symbol | Test Conditions | Min | Typ | Max | Unit |
|------------------------------------|--------------|--|-----|------|------|----------|
| Drain-Source Breakdown Voltage | BV_{DSS} | $V_{GS}=0V$ $I_D=250\mu A$ | 700 | | | V |
| Zero Gate Voltage Drain Current | I_{DSS} | $V_{DS}=700V$ $V_{GS}=0V$ $T_j=25^\circ\text{C}$ | | | 1 | μA |
| | | $V_{DS}=560V$ $V_{GS}=0V$ $T_j=125^\circ\text{C}$ | | | 10 | μA |
| Gate-Body Leakage Current, Forward | I_{GSS} | $V_{GS}=\pm 30V$ | | | ±100 | nA |
| Continuous Diode Forward Current | I_S | | | | 4.0 | A |
| Drain-Source Diode Forward Voltage | V_{SD} | $I_S=4.0A$ $V_{GS}=0V^{③}$ $T_j=25^\circ\text{C}$ | | | 1.4 | V |
| Static Drain-Source On-Resistance | $R_{DS(on)}$ | $V_{GS}=10V$ $I_D=2.0A^{③}$ | | | 2.8 | Ω |
| Gate Threshold Voltage | $V_{GS(TH)}$ | $V_{GS}=V_{DS}$ $I_D=250\mu A$ | 2.0 | | 4.0 | V |
| Reverse Recovery Time | t_{rr} | $I_f=4.0A$ $T_j=25^\circ\text{C}$ | | 250 | | nS |
| Reverse Recovery Charge | Q_{rr} | $di/dt=100A/\mu s^{③}$ | | 1.5 | | μC |
| Input Capacitance | C_{iss} | $V_{GS}=0V$ $V_{DS}=25V$ $V_F=1.0MHz$ | | 520 | | pF |
| Turn-Off Delay Time | $t_{d(off)}$ | $V_{DD}=350V$ $I_D=4.0A$ $R_G=25\Omega^{③}$ | | 25 | | ns |
| Forward Transconductance | g_{fs} | $V_{DS}=40V$ $I_D=2.0A^{③}$ | | 4.0 | | S |
| Total Gate Charge | Q_g | $I_D=4.0A$ $V_{DS}=560V$ $V_{GS}=10V^{③}$ | | 17.4 | | nC |
| Gate-to-Source Charge | Q_{gs} | | | 4.8 | | nC |
| Gate-to-Drain Charge | Q_{gd} | | | 5.4 | | nC |

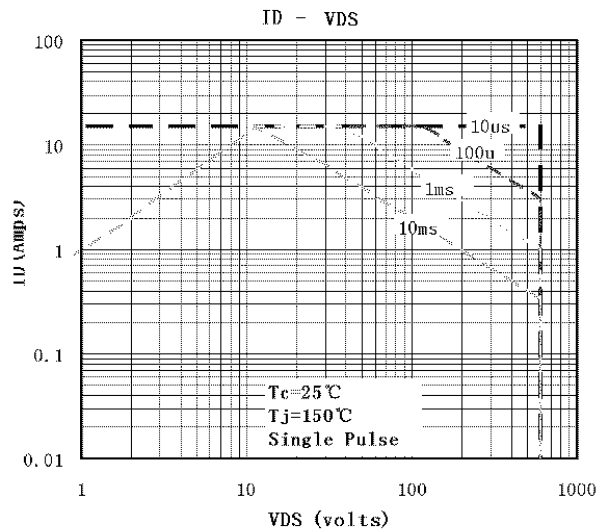
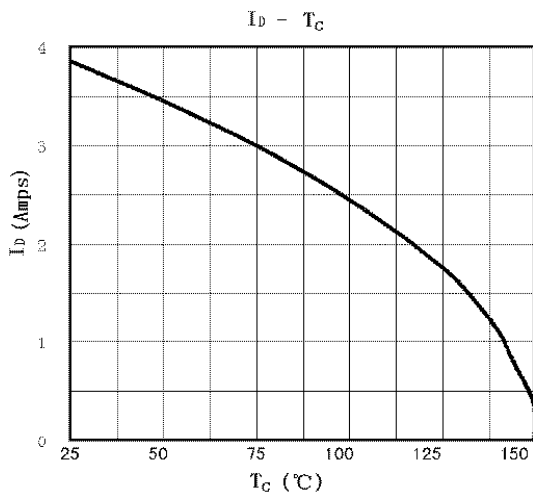
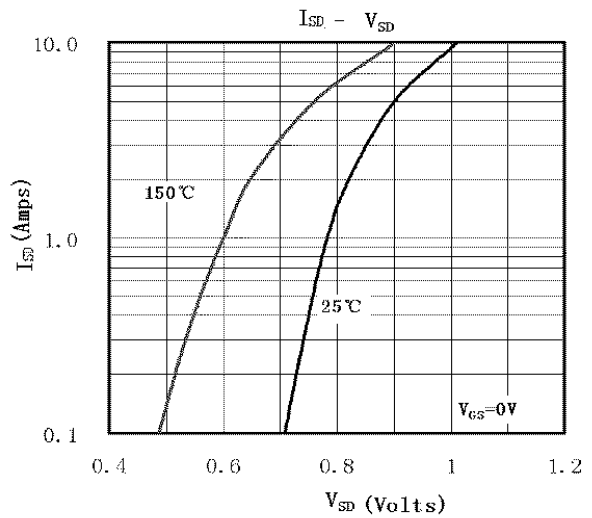
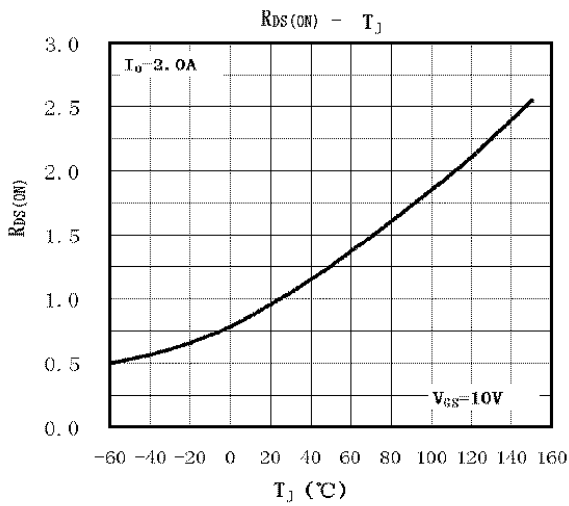
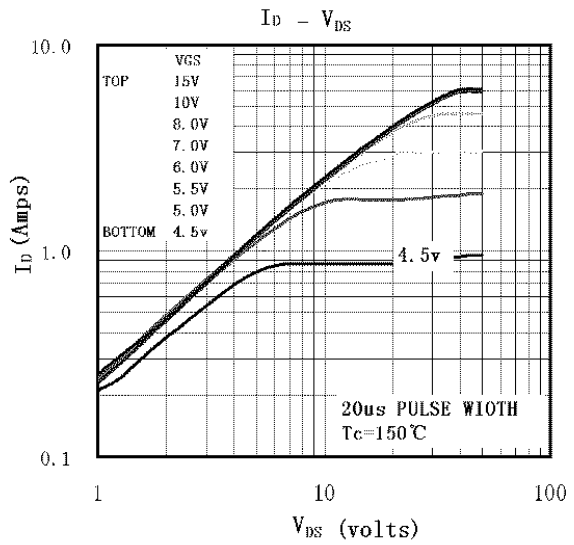
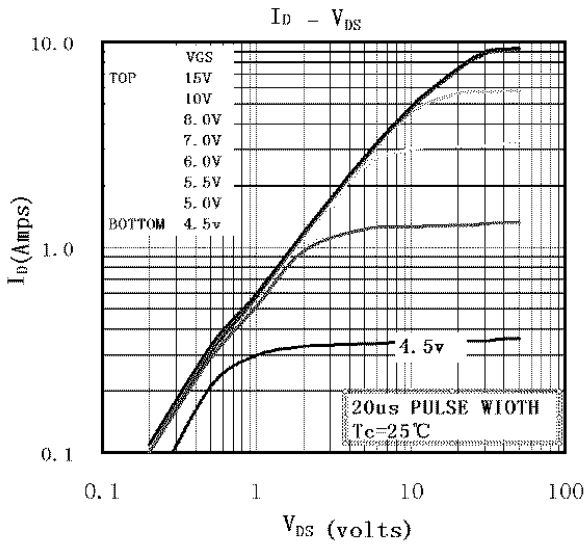
① : Repetitive rating: Pulse width limited by maximum junction temperature

② : Starting $T_j=25^\circ\text{C}$, $V_{DD}=50V$, $L=30mH$, $R_G=25\Omega$, $I_{AS}=4.0A$

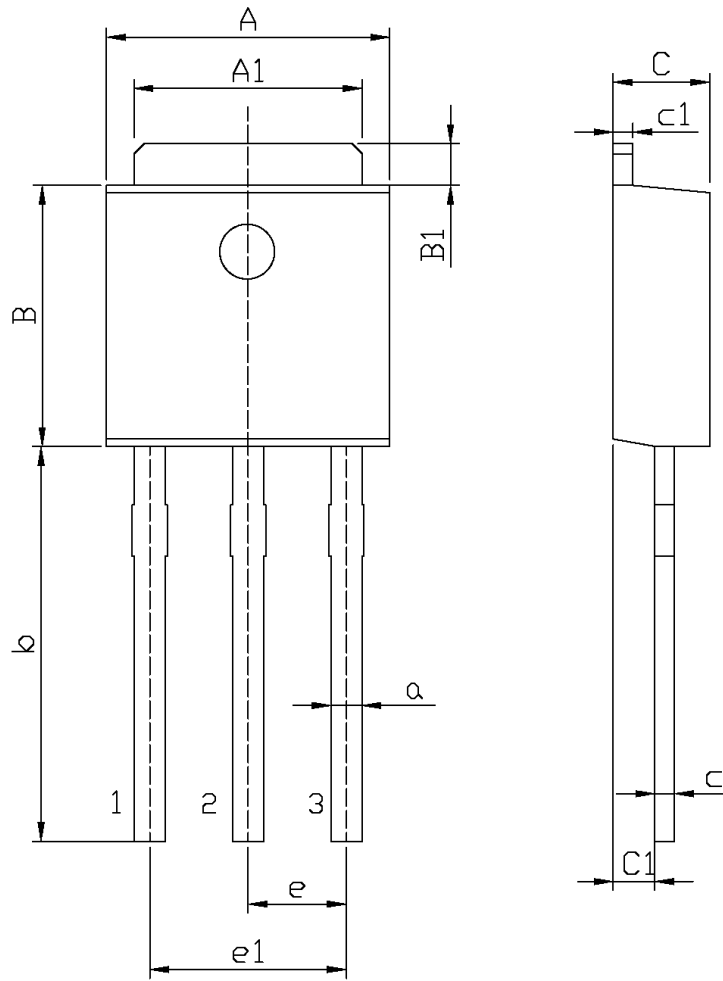
③ : Pulse Test: Pulse width < 300 μs , Duty cycle < 2%

RI4N70

Electrical Characteristic Curve



Package Dimensions



mm

| Symbol | Dimensions In Millimeters | | Symbol | Dimensions In Millimeters | |
|--------|---------------------------|------|--------|---------------------------|------|
| | Min | Max | | Min | Max |
| A | 6.45 | 6.75 | a | 0.50 | 0.70 |
| A1 | 5.10 | 5.50 | b | 9.00 | 9.40 |
| B | 5.95 | 6.25 | c | 0.45 | 0.55 |
| B1 | 0.95 | 1.25 | c1 | 0.45 | 0.55 |
| C | 2.20 | 2.40 | e | 2.24 | 2.34 |
| C1 | 0.95 | 1.15 | e1 | 4.43 | 4.73 |

TO-251

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