



3LN02N

Ultrahigh-Speed Switching Applications

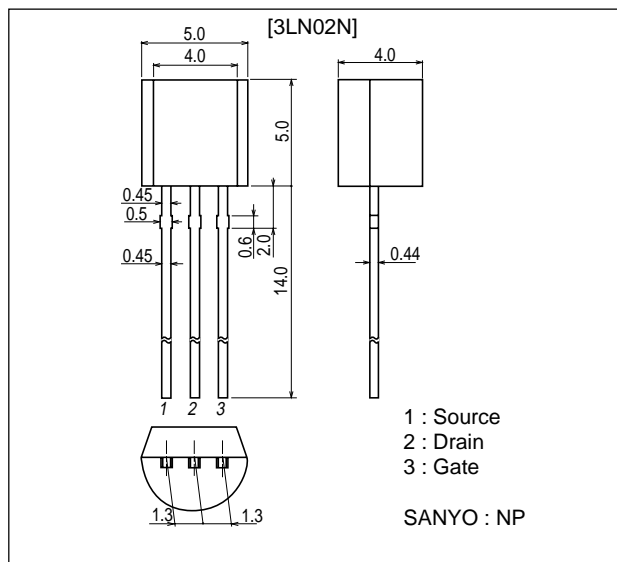
Features

- Low ON resistance.
- Ultrahigh-speed switching.
- 2.5V drive.

Package Dimensions

unit : mm

2178



Specifications

Absolute Maximum Ratings at Ta=25°C

| Parameter | Symbol | Conditions | Ratings | Unit |
|-----------------------------|------------------|------------------------|-------------|------|
| Drain-to-Source Voltage | V _{DSS} | | 30 | V |
| Gate-to-Source Voltage | V _{GSS} | | ±10 | V |
| Drain Current (DC) | I _D | | 0.3 | A |
| Drain Current (Pulse) | I _{DP} | PW≤10μs, duty cycle≤1% | 1.2 | A |
| Allowable Power Dissipation | P _D | | 0.4 | W |
| Channel Temperature | T _{ch} | | 150 | °C |
| Storage Temperature | T _{stg} | | -55 to +150 | °C |

Electrical Characteristics at Ta=25°C

| Parameter | Symbol | Conditions | Ratings | | | Unit |
|-----------------------------------|----------------------|---|---------|------|-----|------|
| | | | min | typ | max | |
| Drain-to-Source Breakdown Voltage | V _{(BR)DSS} | I _D =1mA, V _{GS} =0 | 30 | | | V |
| Zero-Gate Voltage Drain Current | I _{DSS} | V _{DS} =30V, V _{GS} =0 | | | 10 | μA |
| Gate-to-Source Leakage Current | I _{GSS} | V _{GS} =±8V, V _{DS} =0 | | | ±10 | μA |
| Cutoff Voltage | V _{GS(off)} | V _{DS} =10V, I _D =100μA | 0.4 | | 1.3 | V |
| Forward Transfer Admittance | y _{fs} | V _{DS} =10V, I _D =150mA | 0.4 | 0.56 | | S |

Marking : YD

Continued on next page.

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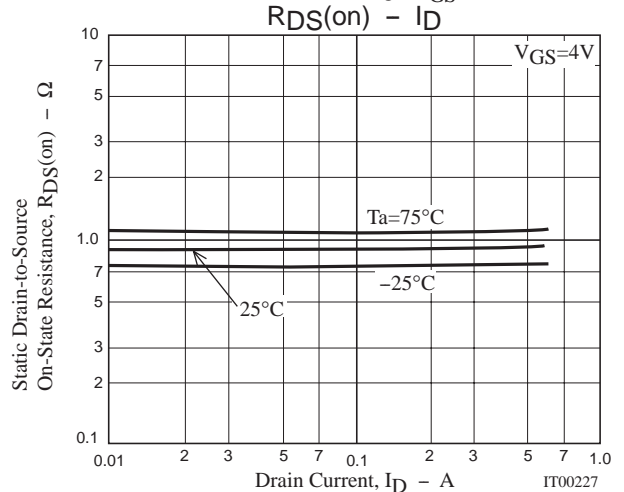
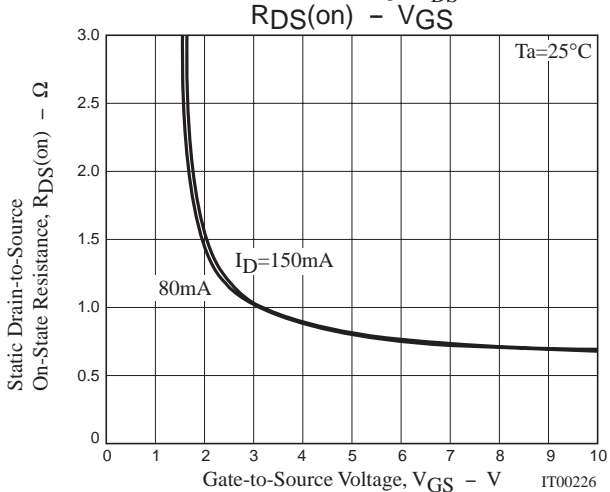
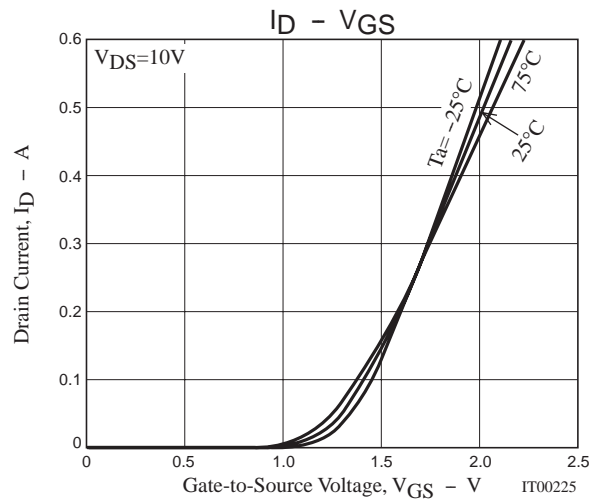
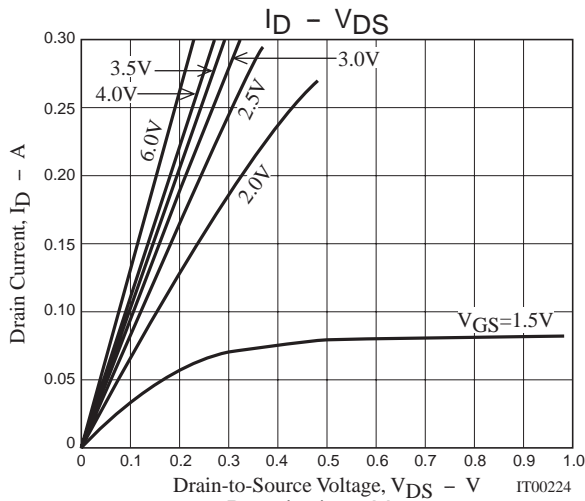
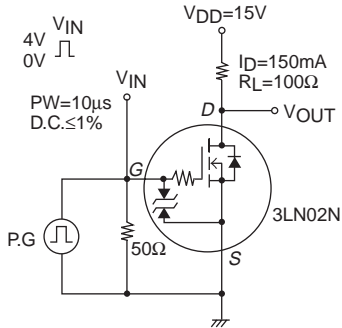
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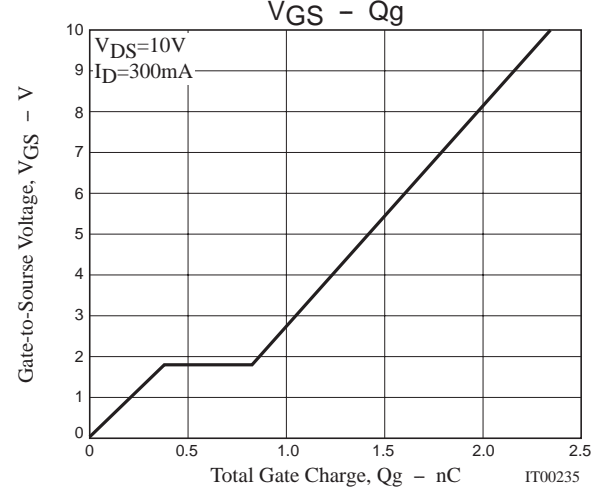
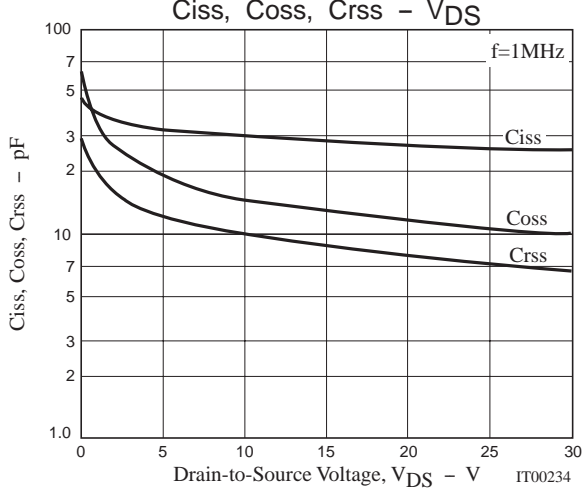
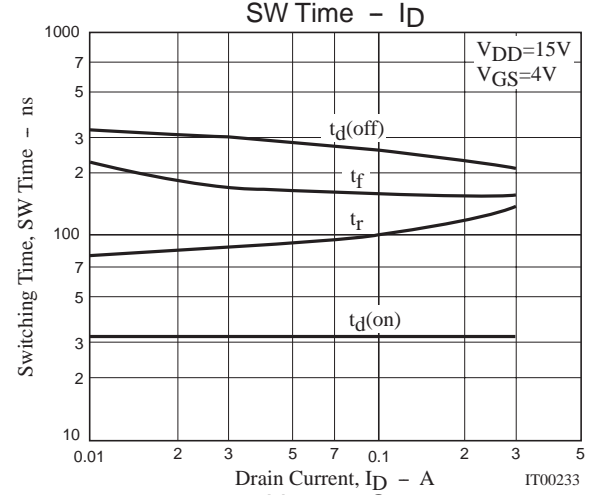
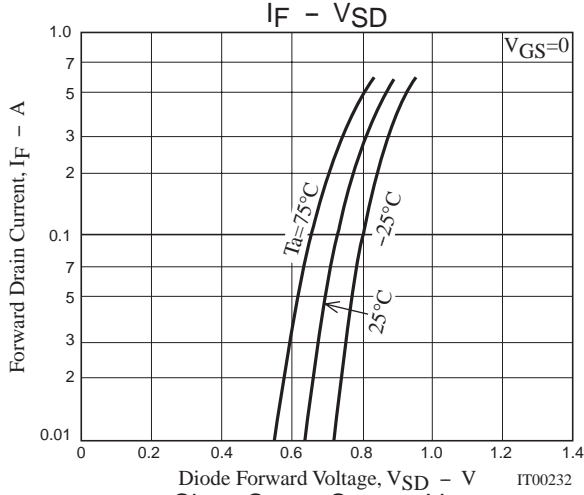
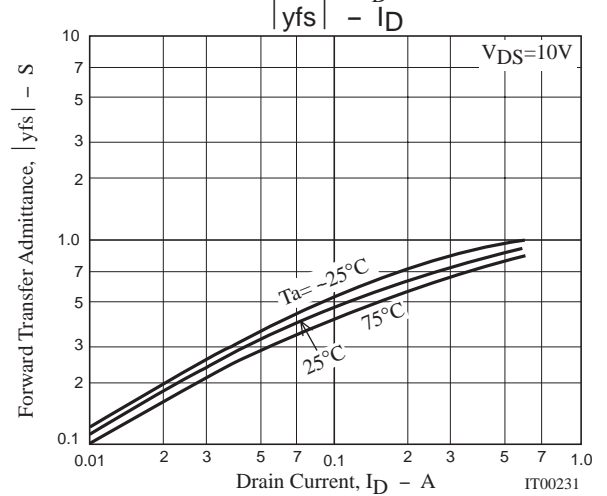
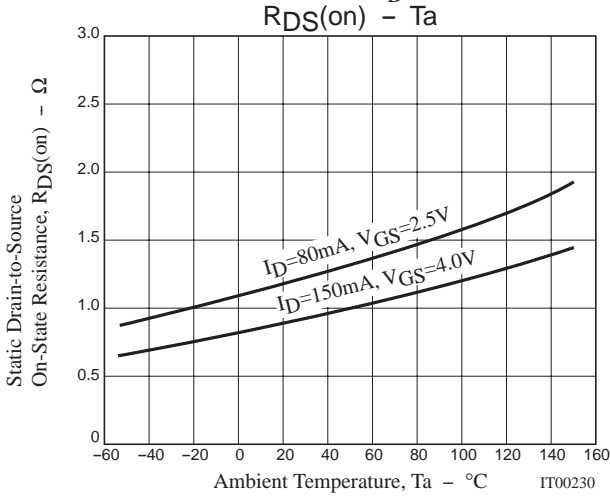
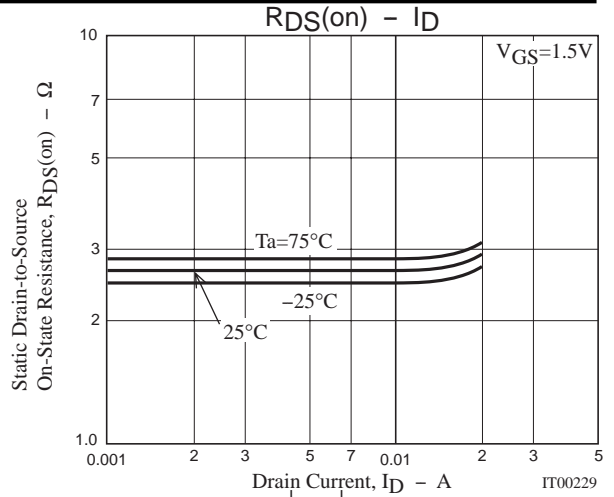
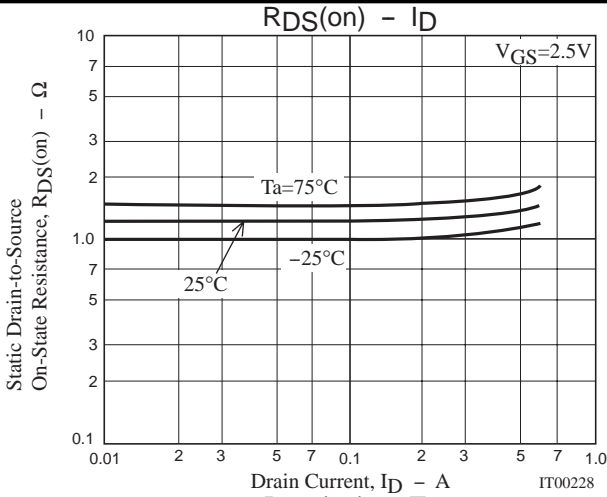
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| Parameter | Symbol | Conditions | Ratings | | | Unit |
|--|---------------|--|---------|------|-----|----------|
| | | | min | typ | max | |
| Static Drain-to-Source on-State Resistance | $R_{DS(on)1}$ | $I_D=150\text{mA}, V_{GS}=4\text{V}$ | | 0.9 | 1.2 | Ω |
| | $R_{DS(on)2}$ | $I_D=80\text{mA}, V_{GS}=2.5\text{V}$ | | 1.2 | 1.7 | Ω |
| | $R_{DS(on)3}$ | $I_D=10\text{mA}, V_{GS}=1.5\text{V}$ | | 2.6 | 5.2 | Ω |
| Input Capacitance | C_{iss} | $V_{DS}=10\text{V}, f=1\text{MHz}$ | | 30 | | pF |
| Output Capacitance | C_{oss} | $V_{DS}=10\text{V}, f=1\text{MHz}$ | | 15 | | pF |
| Reverse Transfer Capacitance | C_{rss} | $V_{DS}=10\text{V}, f=1\text{MHz}$ | | 10 | | pF |
| Turn-ON Delay Time | $t_d(on)$ | See specified Test Circuit | | 32 | | ns |
| Rise Time | t_r | See specified Test Circuit | | 110 | | ns |
| Turn-OFF Delay Time | $t_d(off)$ | See specified Test Circuit | | 250 | | ns |
| Fall Time | t_f | See specified Test Circuit | | 160 | | ns |
| Total Gate Charge | Q_g | $V_{DS}=10\text{V}, V_{GS}=10\text{V}, I_D=300\text{mA}$ | | 2.34 | | nC |
| Gate-to-Source Charge | Q_{gs} | $V_{DS}=10\text{V}, V_{GS}=10\text{V}, I_D=300\text{mA}$ | | 0.38 | | nC |
| Gate-to-Drain "Miller" Charge | Q_{gd} | $V_{DS}=10\text{V}, V_{GS}=10\text{V}, I_D=300\text{mA}$ | | 0.45 | | nC |
| Diode Forward Voltage | V_{SD} | $I_S=300\text{mA}, V_{GS}=0$ | | 0.8 | 1.2 | V |

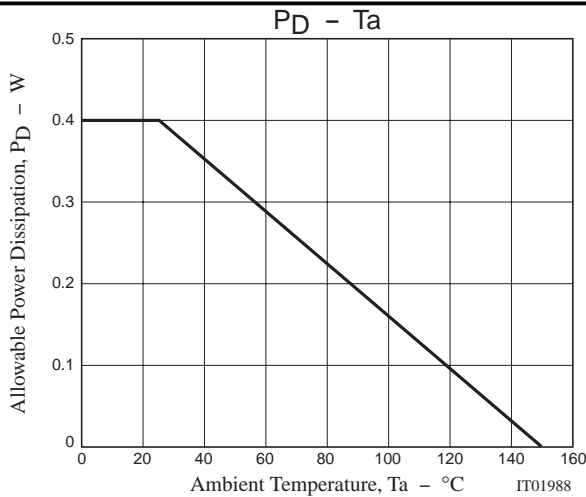
Switching Time Test Circuit



3LN02N



3LN02N



Note on usage : Since the 3LN02N is designed for high-speed switching applications, please avoid using this device in the vicinity of highly charged objects.

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