

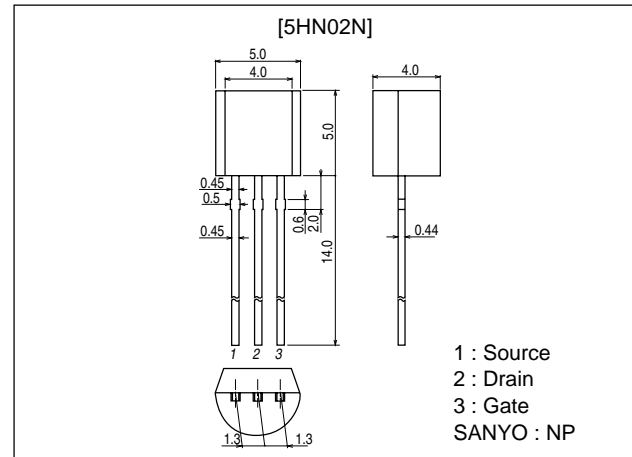
**5HN02N****Ultrahigh-Speed Switching Applications****Features**

- Low ON-resistance.
- Ultrahigh-speed switching.
- 4V drive.

Package Dimensions

unit:mm

2178

**Specifications****Absolute Maximum Ratings** at $T_a = 25^\circ\text{C}$

| Parameter | Symbol | Conditions | Ratings | Unit |
|-----------------------------|-----------|---|-------------|------------------|
| Drain-to-Source Voltage | V_{DSS} | | 50 | V |
| Gate-to-Source Voltage | V_{GSS} | | ± 20 | V |
| Drain Current (DC) | I_D | | 0.2 | A |
| Drain Current (pulse) | I_{DP} | $PW \leq 10\mu\text{s}$, duty cycle $\leq 1\%$ | 0.8 | A |
| Allowable Power Dissipation | P_D | | 0.4 | W |
| Channel Temperature | T_{ch} | | 150 | $^\circ\text{C}$ |
| Storage Temperature | T_{stg} | | -55 to +150 | $^\circ\text{C}$ |

Electrical Characteristics at $T_a = 25^\circ\text{C}$

| Parameter | Symbol | Conditions | Ratings | | | Unit |
|--|---------------|--|---------|------|----------|---------------|
| | | | min | typ | max | |
| Drain-to-Source Breakdown Voltage | $V_{(BR)DSS}$ | $I_D=1\text{mA}$, $V_{GS}=0$ | 50 | | | V |
| Zero-Gate Voltage Drain Current | I_{DSS} | $V_{DS}=50\text{V}$, $V_{GS}=0$ | | | 10 | μA |
| Gate-to-Source Leakage Current | I_{GSS} | $V_{GS}=\pm 16\text{V}$, $V_{DS}=0$ | | | ± 10 | μA |
| Cutoff Voltage | $V_{GS(off)}$ | $V_{DS}=10\text{V}$, $I_D=100\mu\text{A}$ | 1 | | 2.4 | V |
| Forward Transfer Admittance | $ y_{fs} $ | $V_{DS}=10\text{V}$, $I_D=100\text{mA}$ | 0.22 | 0.31 | | S |
| Static Drain-to-Source On-State Resistance | $R_{DS(on)1}$ | $I_D=100\text{mA}$, $V_{GS}=10\text{V}$ | | 1.8 | 2.3 | Ω |
| | $R_{DS(on)2}$ | $I_D=50\text{mA}$, $V_{GS}=4\text{V}$ | | 2.3 | 3.2 | Ω |

Marking : YF

Continued on next page.

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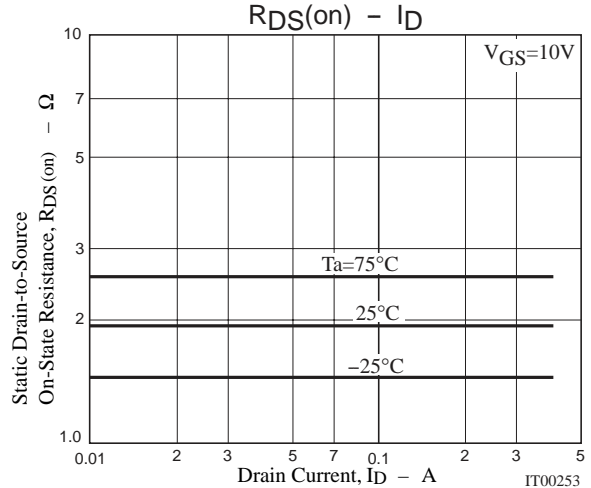
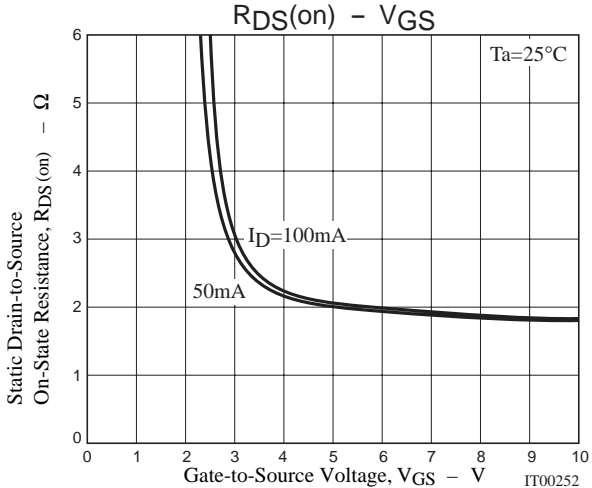
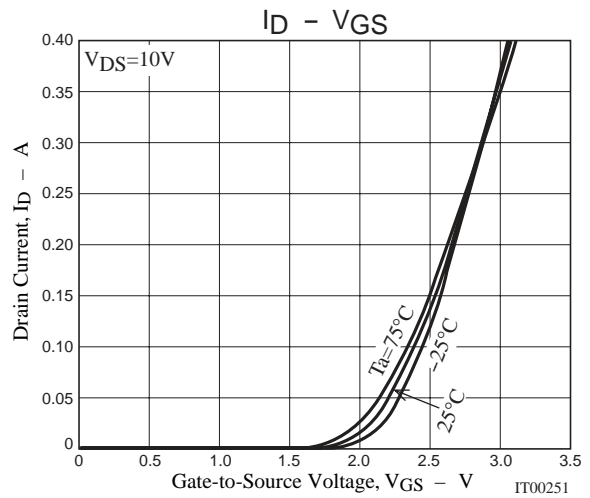
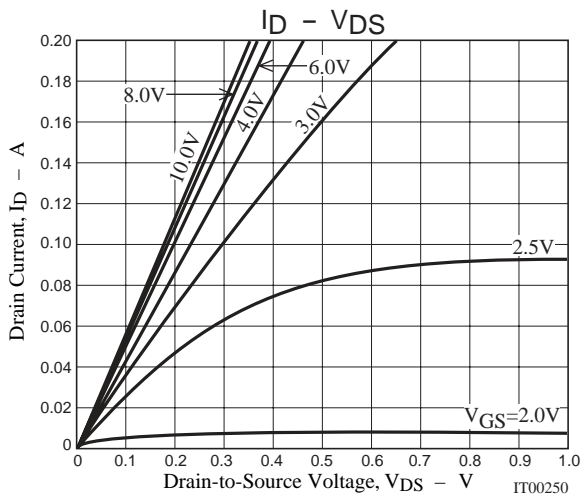
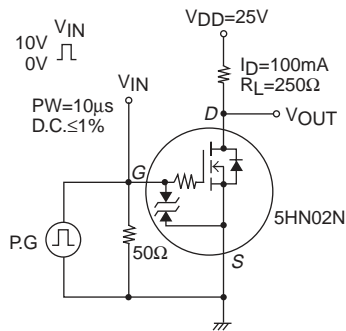
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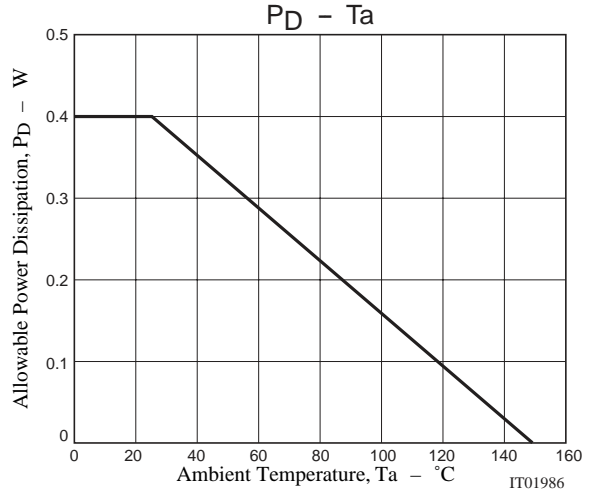
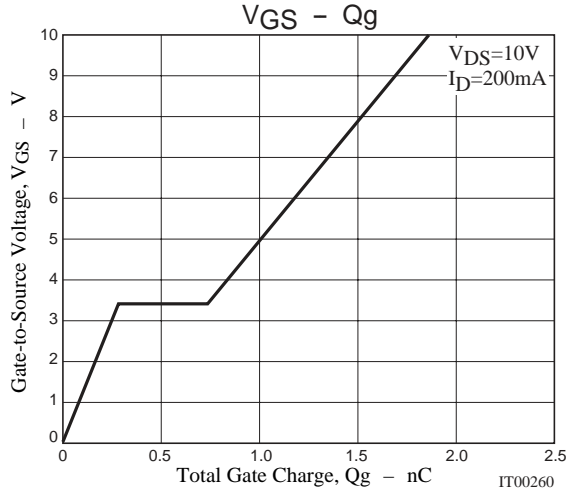
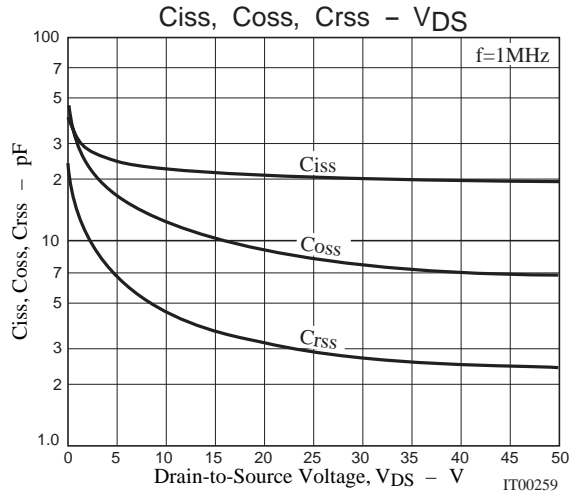
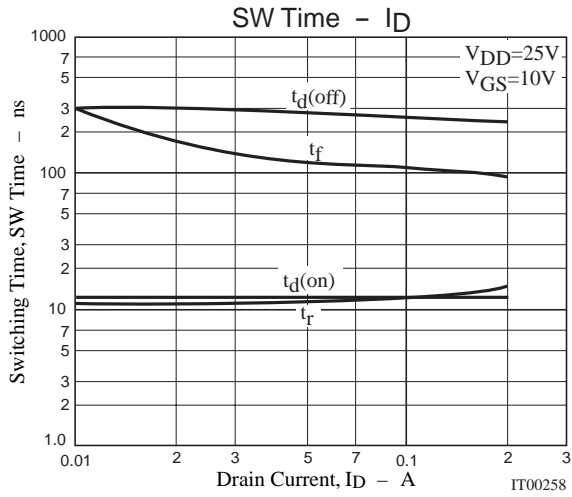
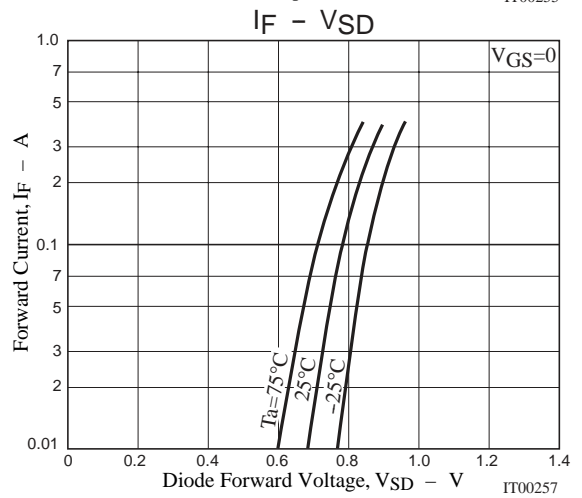
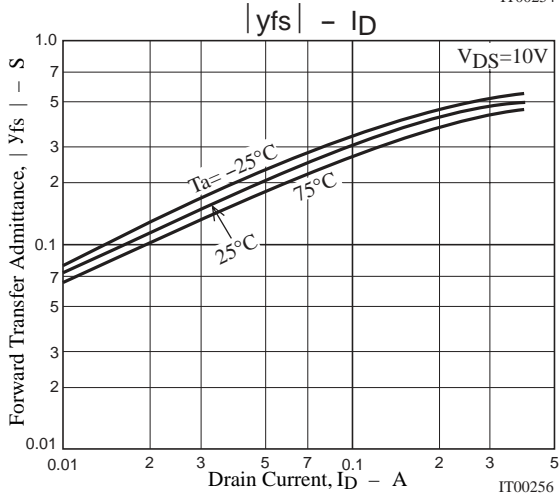
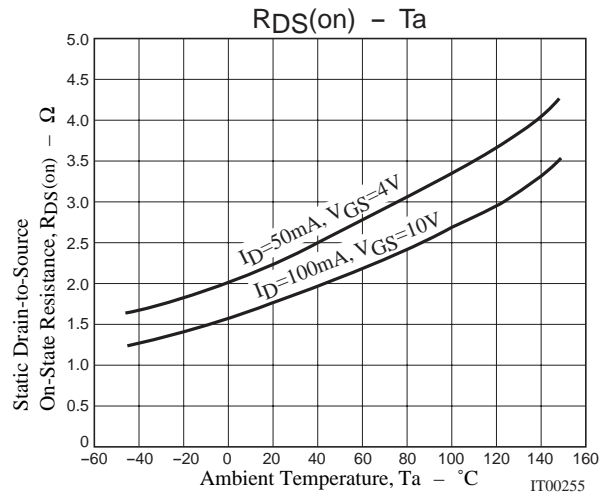
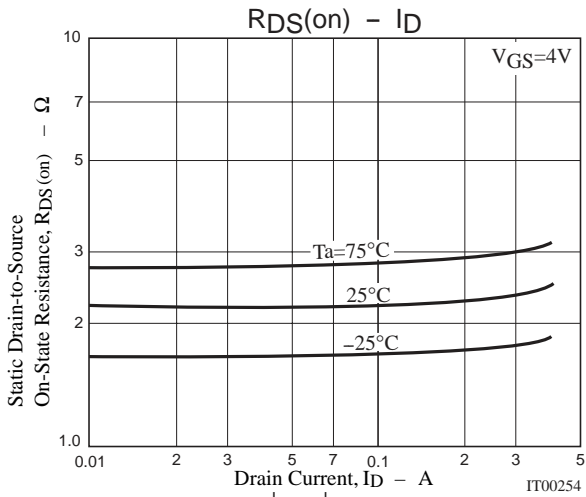
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| Parameter | Symbol | Conditions | Ratings | | | Unit |
|-------------------------------|--------------|-------------------------------------|---------|------|-----|------|
| | | | min | typ | max | |
| Input Capacitance | C_{iss} | $V_{DS}=10V, f=1MHz$ | | 22 | | pF |
| Output Capacitance | C_{oss} | $V_{DS}=10V, f=1MHz$ | | 12 | | pF |
| Reverse Transfer Capacitance | C_{rss} | $V_{DS}=10V, f=1MHz$ | | 4.6 | | pF |
| Turn-ON Delay Time | $t_{d(on)}$ | See specified Test Circuit | | 12 | | ns |
| Rise Time | t_r | See specified Test Circuit | | 12 | | ns |
| Turn-OFF Delay Time | $t_{d(off)}$ | See specified Test Circuit | | 260 | | ns |
| Fall Time | t_f | See specified Test Circuit | | 110 | | ns |
| Total Gate Charge | Q_g | $V_{DS}=10V, V_{GS}=10V, I_D=200mA$ | | 1.86 | | nC |
| Gate-to-Source Charge | Q_{gs} | $V_{DS}=10V, V_{GS}=10V, I_D=200mA$ | | 0.28 | | nC |
| Gate-to-Drain "Miller" Charge | Q_{gd} | $V_{DS}=10V, V_{GS}=10V, I_D=200mA$ | | 0.45 | | nC |
| Diode Forward Voltage | V_{SD} | $I_S=200mA, V_{GS}=0$ | | 0.83 | 1.2 | V |

Switching Time Test Circuit



5HN02N



Note on usage : Since the 5HN02N is designed for high-speed switching applications, please avoid using this device in the vicinity of highly charged objects.

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