

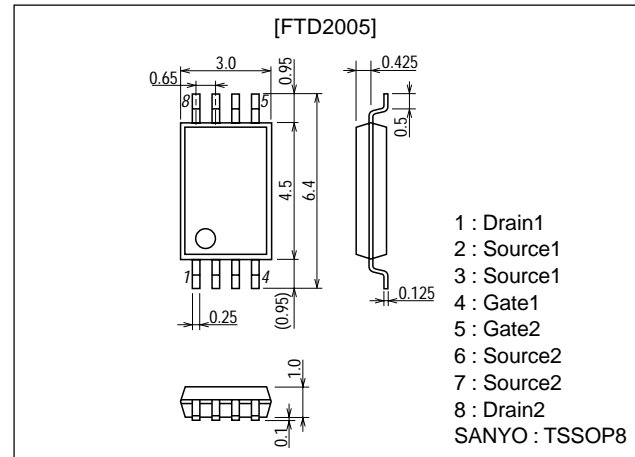
**FTD2005****Ultrahigh-Speed Switching Applications****Features**

- Low ON resistance.
- 2.5V drive.
- Mounting height 1.1mm.
- Composite type, facilitating high-density mounting.

**Package Dimensions**

unit:mm

2155A

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

| Parameter                   | Symbol    | Conditions   | Ratings     | Unit             |
|-----------------------------|-----------|--|-------------|------------------|
| Drain-to-Source Voltage     | $V_{DSS}$ |  | 20          | V                |
| Gate-to-Source Voltage      | $V_{GSS}$ |  | $\pm 10$    | V                |
| Drain Current (DC)          | $I_D$     |  | 1           | A                |
| Drain Current (pulse)       | $I_{DP}$  | $PW \leq 10\mu\text{s}$ , duty cycle $\leq 1\%$                | 4           | A                |
| Allowable Power Dissipation | $P_D$     | Mounted on a ceramic board (1000mm <sup>2</sup> ×0.8mm) 1 unit | 0.8         | W                |
| Total Dissipation           | $P_T$     | Mounted on a ceramic board (1000mm <sup>2</sup> ×0.8mm)        | 1.0         | 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          | $V_{(BR)DSS}$  | $I_D=1\text{mA}$ , $V_{GS}=0$            | 20      |     |          | V                |
| Zero-Gate Voltage Drain Current            | $I_{DSS}$      | $V_{DS}=20\text{V}$ , $V_{GS}=0$         |         |     | 10       | $\mu\text{A}$    |
| Gate-to-Source Leakage Current             | $I_{GSS}$      | $V_{GS}=\pm 8\text{V}$ , $V_{DS}=0$      |         |     | $\pm 10$ | $\mu\text{A}$    |
| Cutoff Voltage                             | $V_{GSS(off)}$ | $V_{DS}=10\text{V}$ , $I_D=1\text{mA}$   | 0.4     |     | 1.3      | V                |
| Forward Transfer Admittance                | $ y_{fs} $     | $V_{DS}=10\text{V}$ , $I_D=1\text{A}$    | 1.8     | 2.6 |          | S                |
| Static Drain-to-Source On-State Resistance | $R_{DS(on)1}$  | $I_D=1\text{A}$ , $V_{GS}=4\text{V}$     |         | 200 | 260      | $\text{m}\Omega$ |
|  | $R_{DS(on)2}$  | $I_D=0.5\text{A}$ , $V_{GS}=2.5\text{V}$ |         | 260 | 360      | $\text{m}\Omega$ |
| Input Capacitance                          | $C_{iss}$      | $V_{DS}=10\text{V}$ , $f=1\text{MHz}$    |         | 90  |          | pF               |
| Output Capacitance                         | $C_{oss}$      | $V_{DS}=10\text{V}$ , $f=1\text{MHz}$    |         | 60  |          | pF               |
| Reverse Transfer Capacitance               | $C_{rss}$      | $V_{DS}=10\text{V}$ , $f=1\text{MHz}$    |         | 28  |          | pF               |

Marking : D2005

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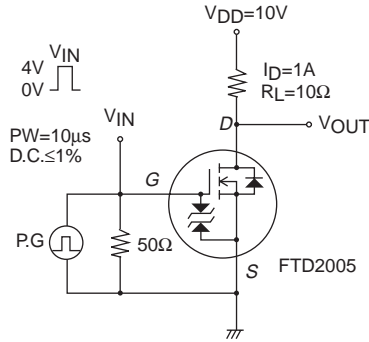
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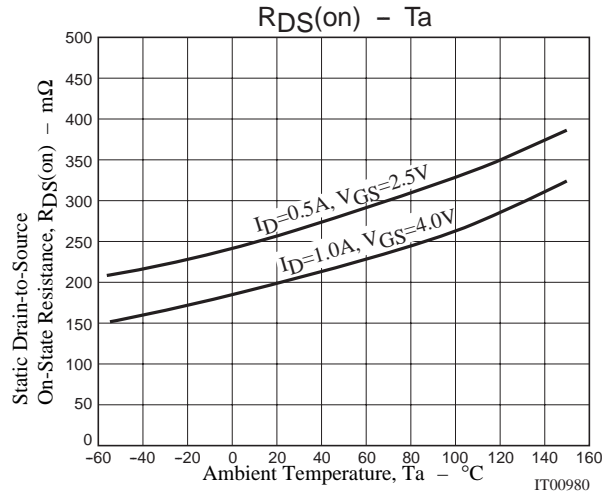
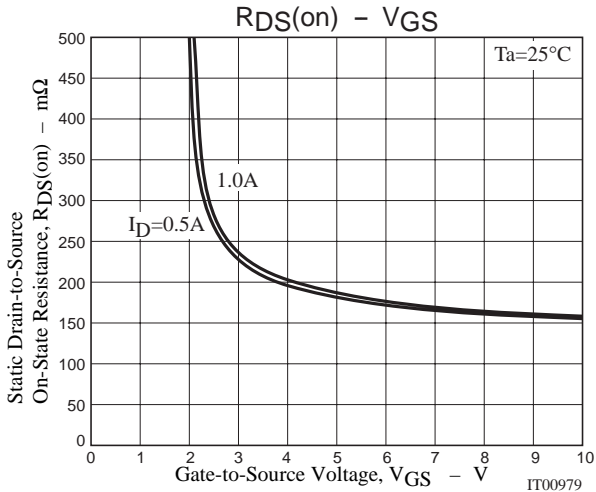
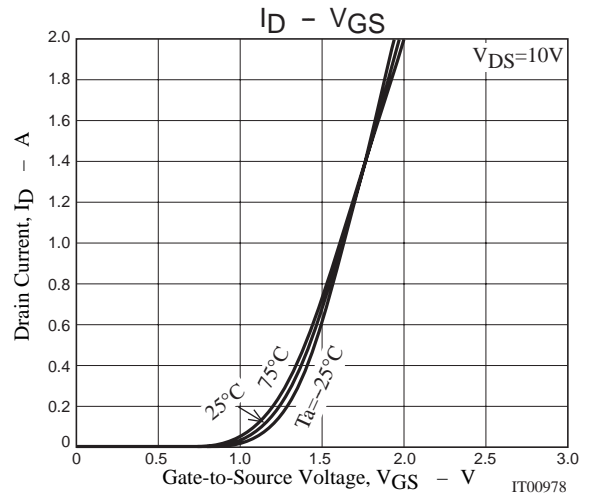
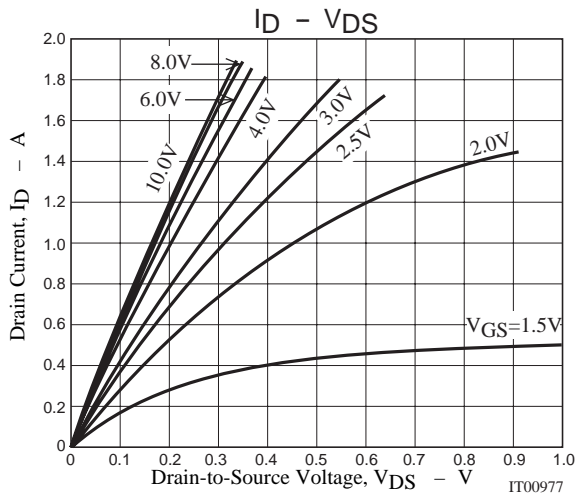
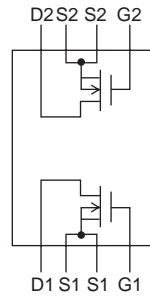
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| Parameter                     | Symbol       | Conditions                       | Ratings |     |     | Unit |
|-------------------------------|--------------|----------------------------------|---------|-----|-----|------|
|                               |              |                                  | min     | typ | max |      |
| Turn-ON Delay Time            | $t_{d(on)}$  | See Specified Test Circuit       |         | 10  |     | ns   |
| Rise Time                     | $t_r$        | See Specified Test Circuit       |         | 22  |     | ns   |
| Turn-OFF Delay Time           | $t_{d(off)}$ | See Specified Test Circuit       |         | 20  |     | ns   |
| Fall Time                     | $t_f$        | See Specified Test Circuit       |         | 19  |     | ns   |
| Total Gate Charge             | $Q_g$        | $V_{DS}=10V, V_{GS}=10V, I_D=1A$ |         | 6   |     | nC   |
| Gate-to-Source Charge         | $Q_{gs}$     |                                  |         | 1   |     | nC   |
| Gate-to-Drain "Miller" Charge | $Q_{gd}$     |                                  |         | 2   |     | nC   |
| Diode Forward Voltage         | $V_{SD}$     | $I_S=1A, V_{GS}=0$               |         | 1.0 | 1.2 | V    |

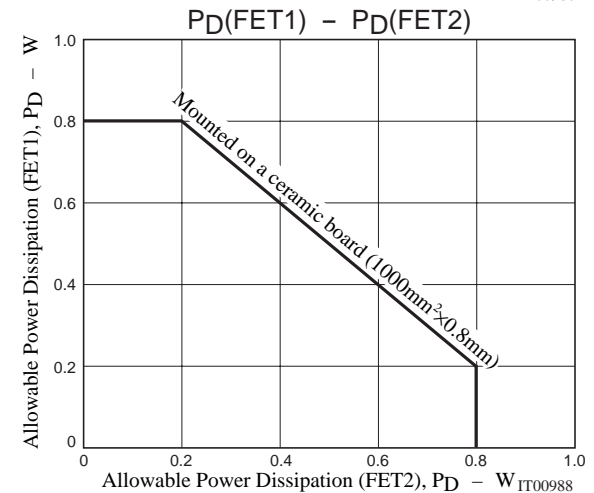
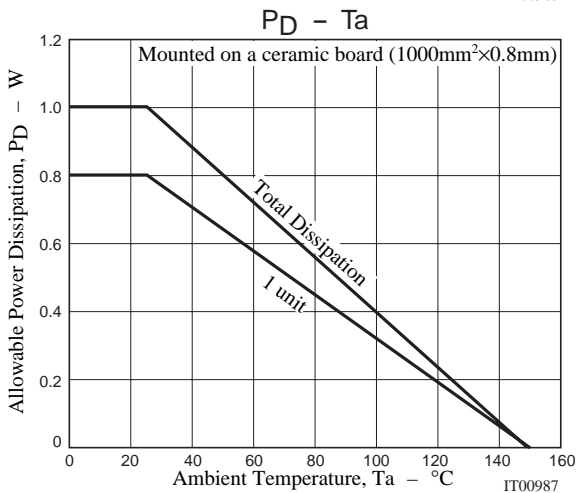
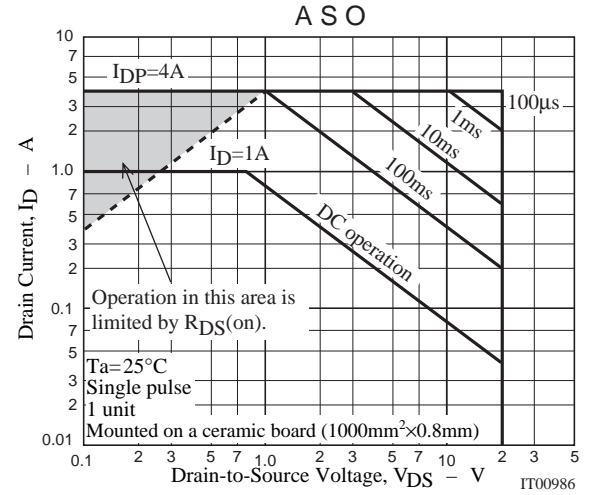
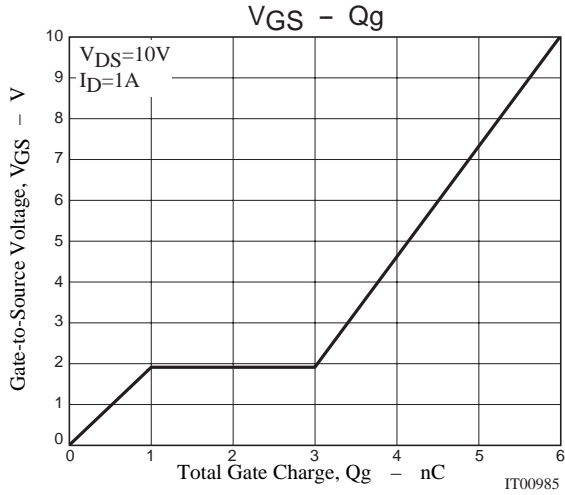
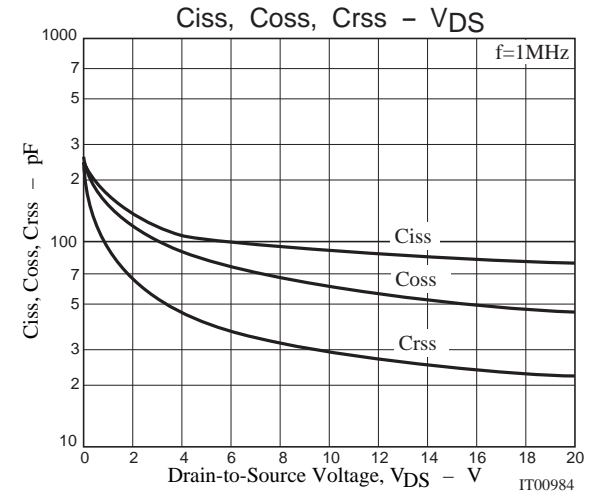
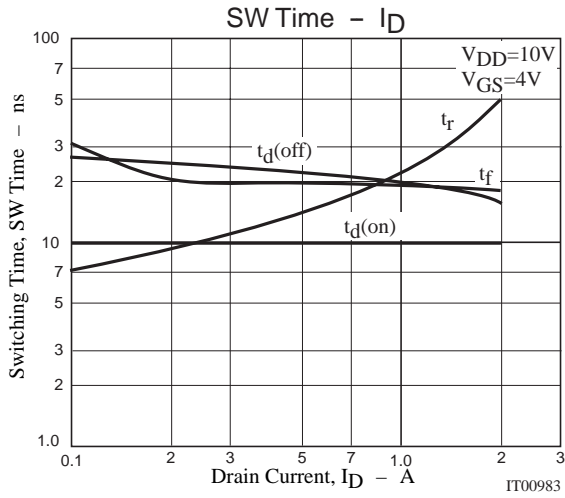
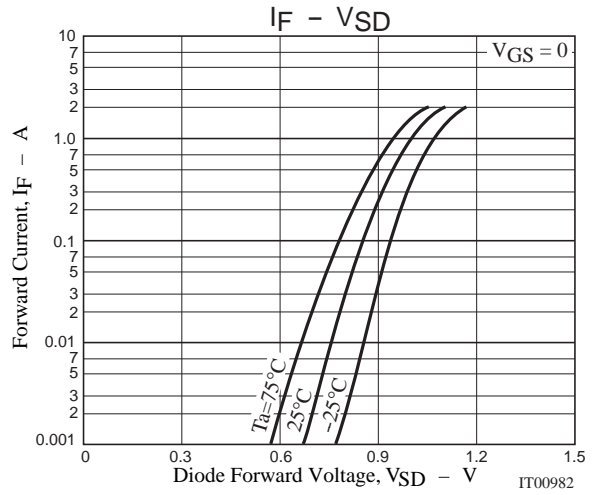
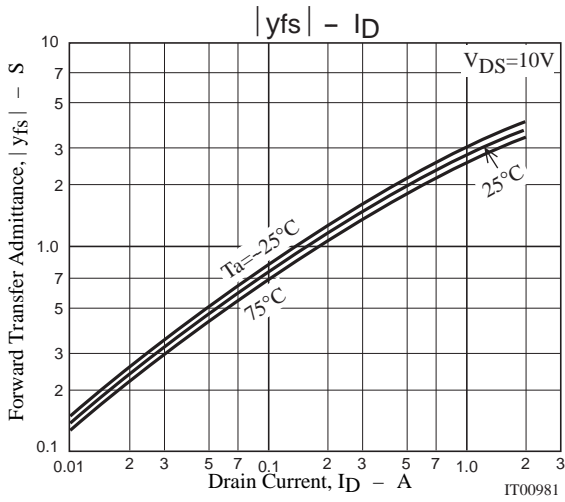
## Switching Time Test Circuit



## Electrical Connection



# FTD2005



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