



# 2SJ520

## Load Switching Applications

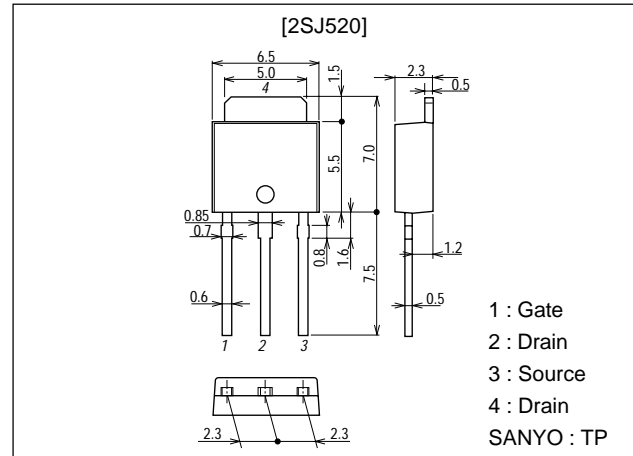
### Features

- Low ON resistance.
- 2.5V drive.

### Package Dimensions

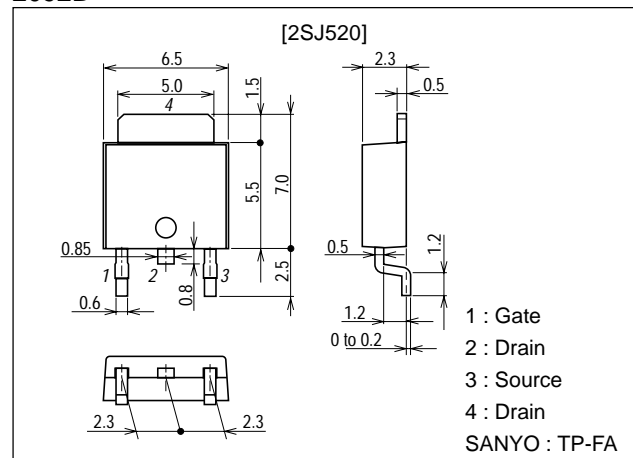
unit:mm

2083B



unit:mm

2092B



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# 2SJ520

## Specifications

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

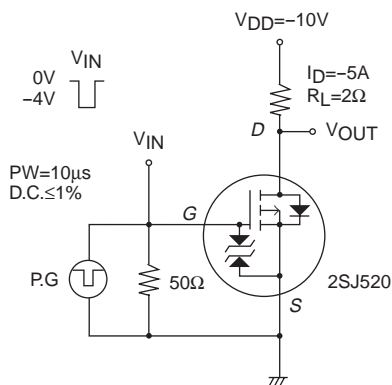
| Parameter                   | Symbol    | Conditions                                      | Ratings     | Unit             |
|-----------------------------|-----------|---|-------------|------------------|
| Drain-to-Source Voltage     | $V_{DSS}$ |   | -20         | V                |
| Gate-to-Source Voltage      | $V_{GSS}$ |   | $\pm 10$    | V                |
| Drain Current (DC)          | $I_D$     |   | -10         | A                |
| Drain Current (Pulse)       | $I_{DP}$  | $PW \leq 10\mu\text{s}$ , duty cycle $\leq 1\%$ | -40         | A                |
| Allowable Power Dissipation | $P_D$     |   | 1           | W                |
|                             |           | $T_c = 25^\circ\text{C}$                        | 20          | W                |
| Channel Temperature         | $T_{ch}$  |   | 150         | $^\circ\text{C}$ |
| Storage Temperature         | $T_{stg}$ |   | -55 to +150 | $^\circ\text{C}$ |

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

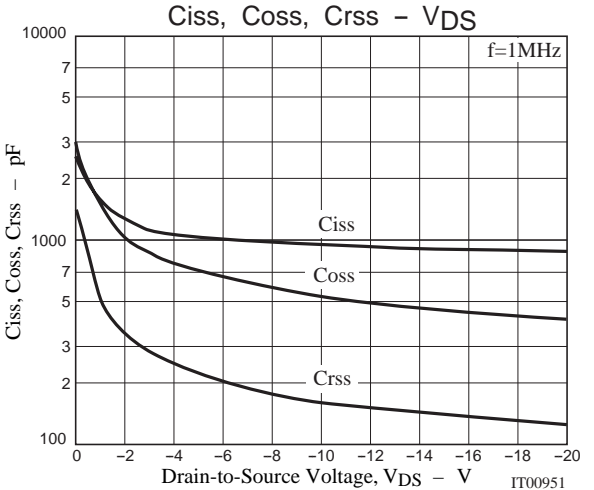
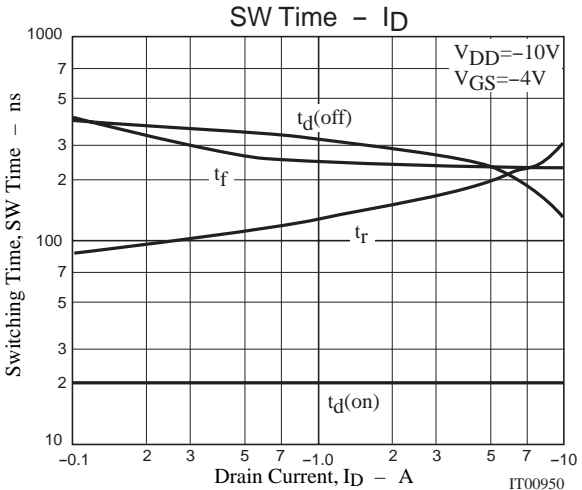
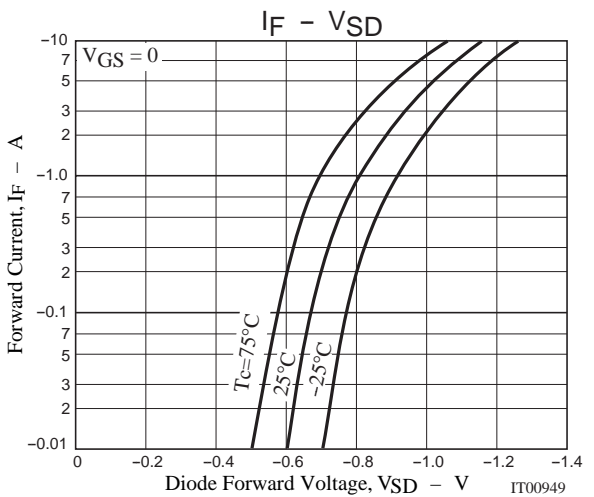
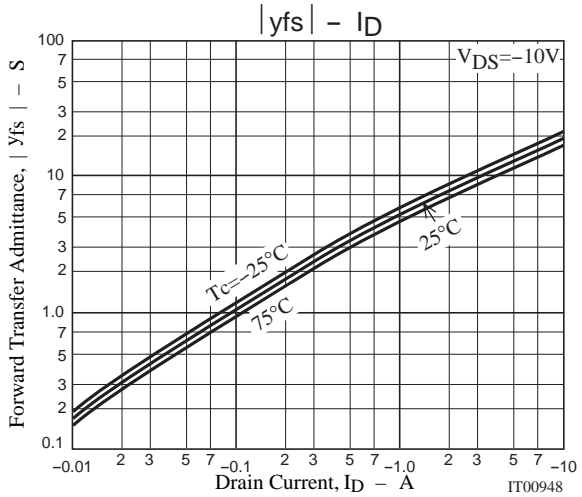
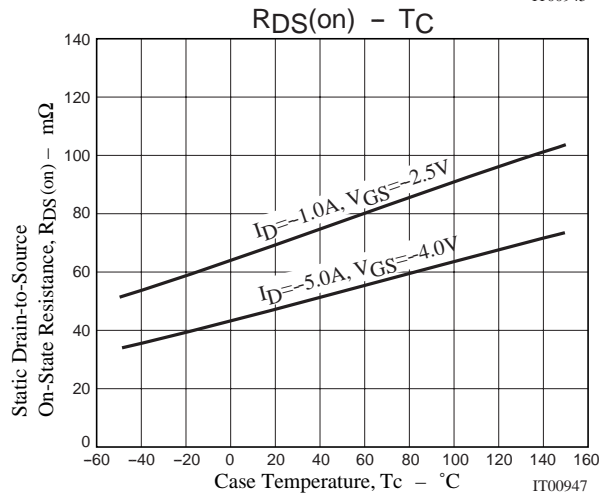
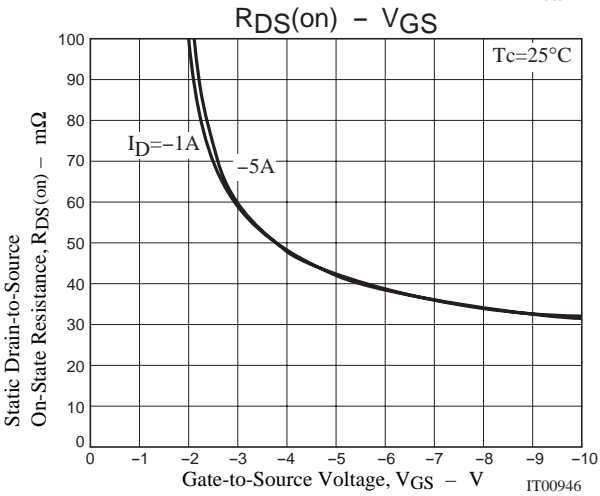
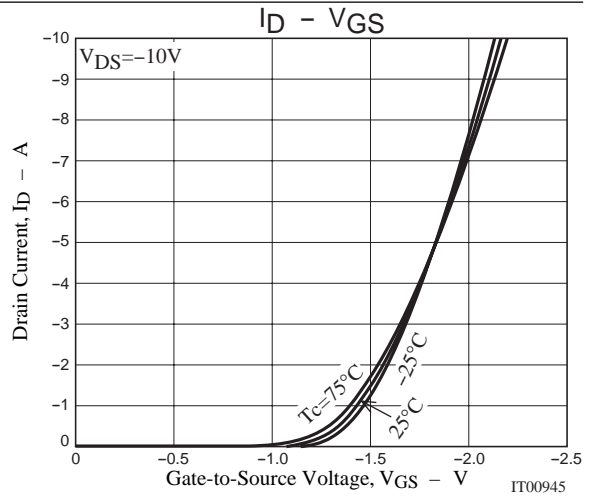
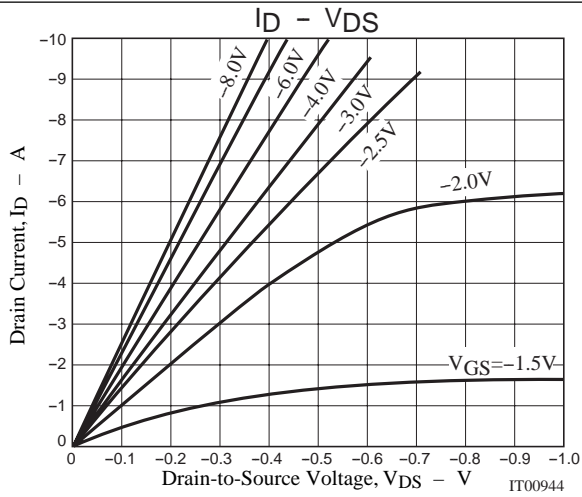
| Parameter                                  | Symbol        | Conditions   | Ratings |      |          | Unit             |
|--|---------------|--|---------|------|----------|------------------|
|  |               |  | min     | typ  | max      |                  |
| Drain-to-Source Breakdown Voltage          | $V_{(BR)DSS}$ | $I_D = -1\text{mA}$ , $V_{GS} = 0$                                   | -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                             | $V_{GS(off)}$ | $V_{DS} = -10\text{V}$ , $I_D = -1\text{mA}$                         | -0.4    |      | -1.3     | V                |
| Forward Transfer Admittance                | $ y_{fs} $    | $V_{DS} = -10\text{V}$ , $I_D = -5\text{A}$                          | 8       | 12   |          | S                |
| Static Drain-to-Source On-State Resistance | $R_{DS(on)1}$ | $I_D = -5\text{A}$ , $V_{GS} = -4\text{V}$                           |         | 48   | 62       | $\text{m}\Omega$ |
|  | $R_{DS(on)2}$ | $I_D = -1\text{A}$ , $V_{GS} = -2.5\text{V}$                         |         | 70   | 100      | $\text{m}\Omega$ |
| Input Capacitance                          | $C_{iss}$     | $V_{DS} = -10\text{V}$ , $f = 1\text{MHz}$                           |         | 950  |          | pF               |
| Output Capacitance                         | $C_{oss}$     | $V_{DS} = -10\text{V}$ , $f = 1\text{MHz}$                           |         | 530  |          | pF               |
| Reverse Transfer Capacitance               | $C_{rss}$     | $V_{DS} = -10\text{V}$ , $f = 1\text{MHz}$                           |         | 160  |          | pF               |
| Turn-ON Delay Time                         | $t_{d(on)}$   | See specified Test Circuit   |         | 20   |          | ns               |
| Rise Time                                  | $t_r$         | See specified Test Circuit   |         | 200  |          | ns               |
| Turn-OFF Delay Time                        | $t_{d(off)}$  | See specified Test Circuit   |         | 230  |          | ns               |
| Fall Time                                  | $t_f$         | See specified Test Circuit   |         | 230  |          | ns               |
| Total Gate Charge                          | $Q_g$         | $V_{DS} = -10\text{V}$ , $V_{GS} = -10\text{V}$ , $I_D = -5\text{A}$ |         | 30   |          | nC               |
| Gate-to-Source Charge                      | $Q_{gs}$      | $V_{DS} = -10\text{V}$ , $V_{GS} = -10\text{V}$ , $I_D = -5\text{A}$ |         | 5    |          | nC               |
| Gate-to-Drain "Miller" Charge              | $Q_{gd}$      | $V_{DS} = -10\text{V}$ , $V_{GS} = -10\text{V}$ , $I_D = -5\text{A}$ |         | 7    |          | nC               |
| Diode Forward Voltage                      | $V_{SD}$      | $I_S = -5\text{A}$ , $V_{GS} = 0$                                    |         | -1.0 | -1.5     | V                |

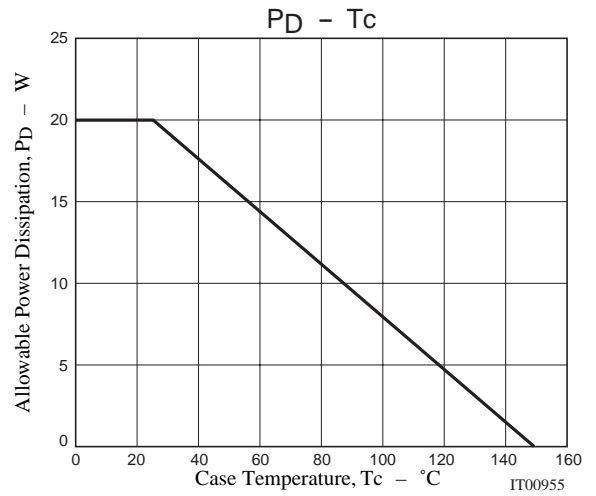
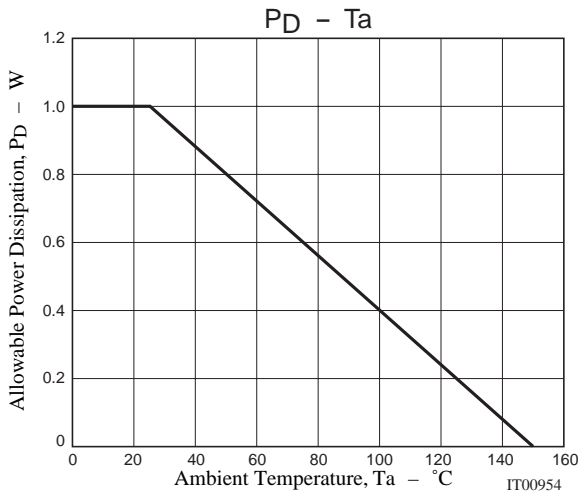
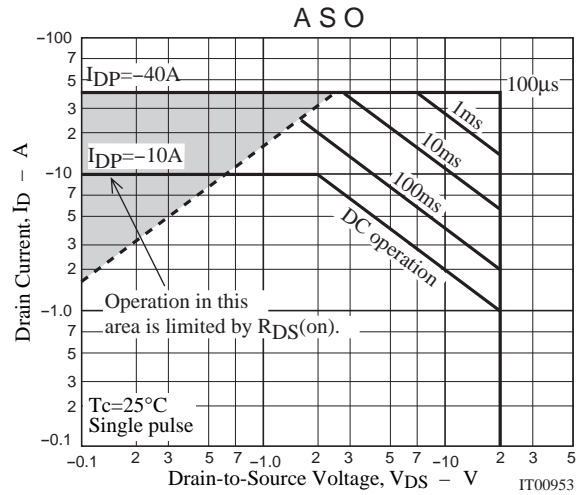
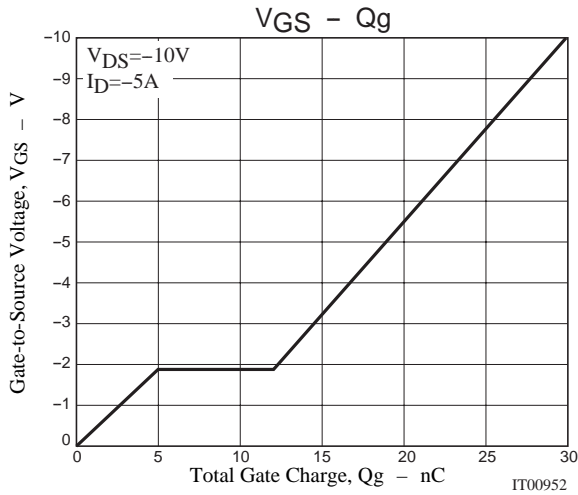
Marking : J520

## Switching Time Test Circuit



# 2SJ520





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