

**2SJ277**

## Ultrahigh-Speed Switching Applications

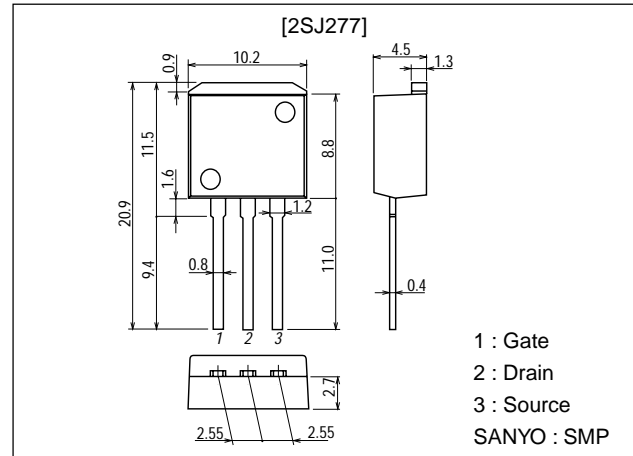
### Features

- Low ON resistance.
- Ultrahigh-speed switching.
- Low-voltage drive.
- Surface mount type device making the following possible.
  - Reduction in the number of manufacturing processes for 2SJ277-applied equipment.
  - High density surface mount applications.
  - Small size of 2SJ277-applied equipment.

### Package Dimensions

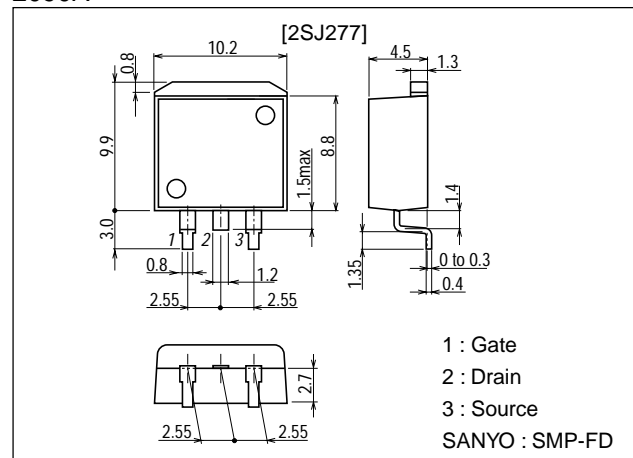
unit:mm

2093A



unit:mm

2090A



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**SANYO Electric Co.,Ltd. Semiconductor Company**

TOKYO OFFICE Tokyo Bldg., 1-10, 1 Chome, Ueno, Taito-ku, TOKYO, 110-8534 JAPAN

42899TH (KT)/51193TH (KOTO) AX-8376 No.4241-1/4

# 2SJ277

## Specifications

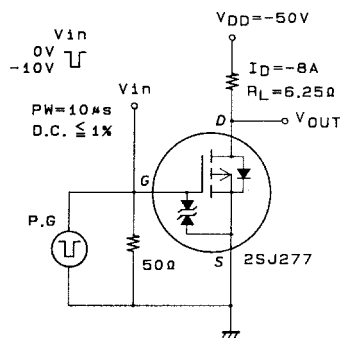
### Absolute Maximum Ratings at $T_a = 25^\circ\text{C}$

| Parameter                   | Symbol    | Conditions                                      | Ratings     | Unit             |
|-----------------------------|-----------|---|-------------|------------------|
| Drain-to-Source Voltage     | $V_{DSS}$ |   | -100        | V                |
| Gate-to-Source Voltage      | $V_{GSS}$ |   | $\pm 15$    | V                |
| Drain Current (DC)          | $I_D$     |   | -15         | A                |
| Drain Current (Pulse)       | $I_{DP}$  | $PW \leq 10\mu\text{s}$ , duty cycle $\leq 1\%$ | -60         | A                |
| Allowable Power Dissipation | $P_D$     |   | 1.65        | W                |
|                             |           | $T_c = 25^\circ\text{C}$                        | 70          | W                |
| Channel Temperature         | $T_{ch}$  |   | 150         | $^\circ\text{C}$ |
| Storage Temperature         | $T_{stg}$ |   | -55 to +150 | $^\circ\text{C}$ |

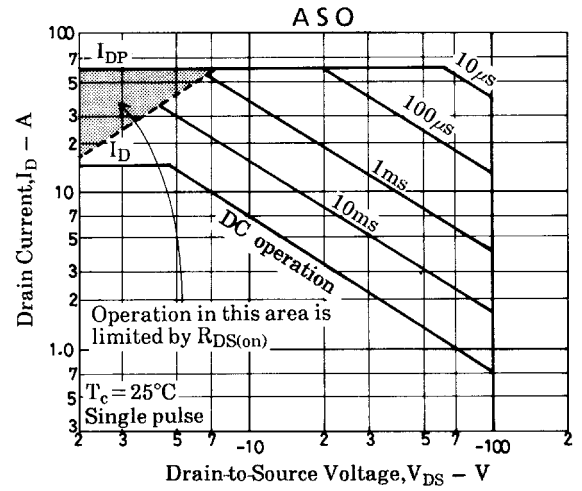
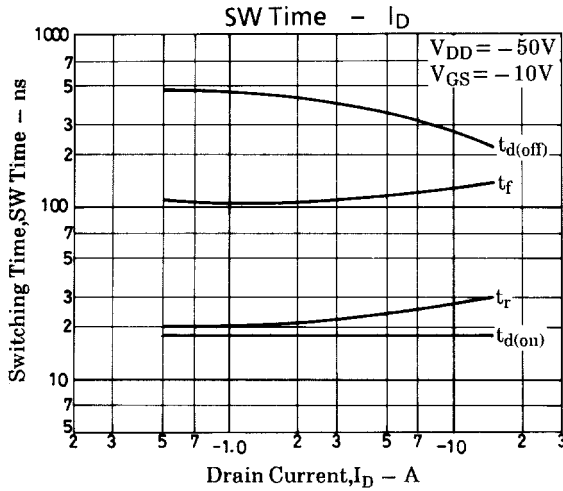
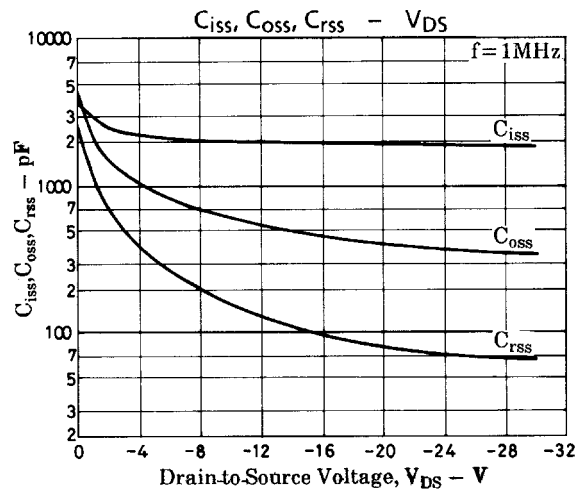
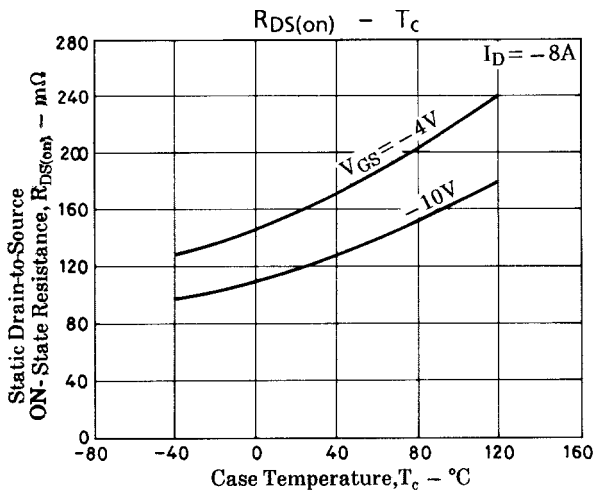
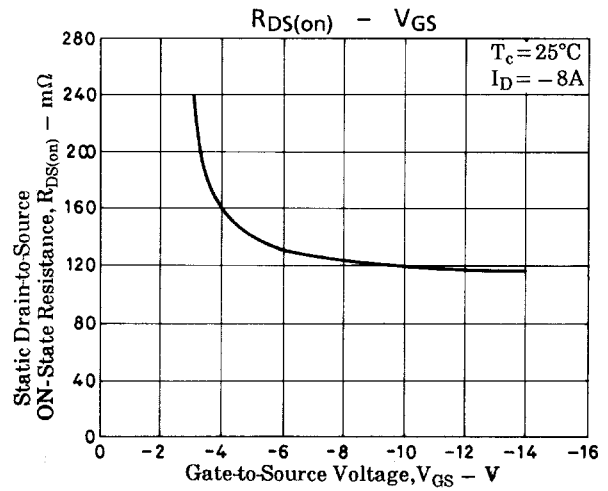
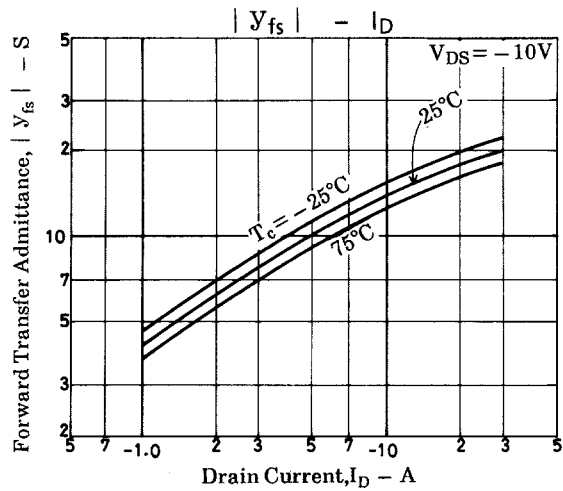
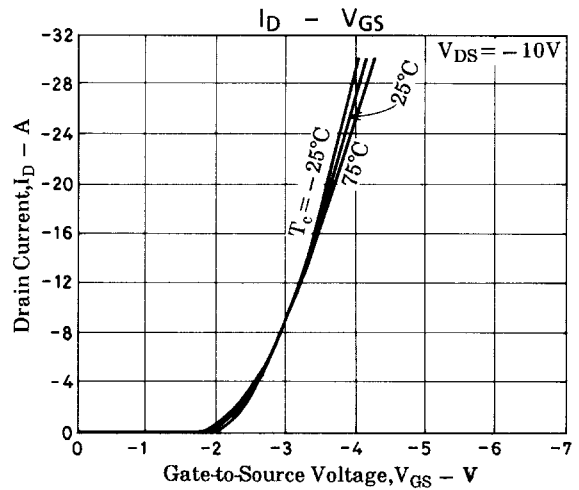
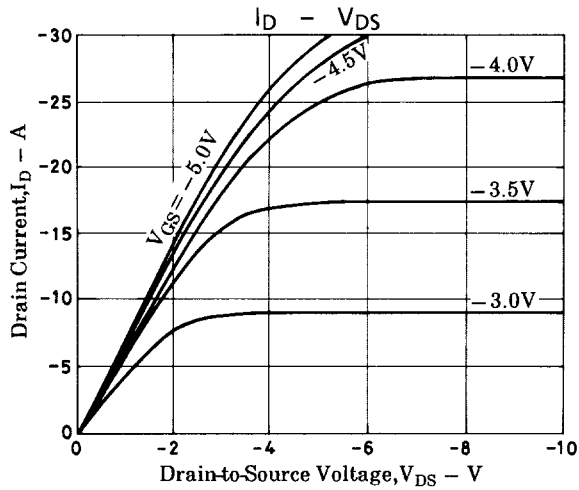
### Electrical Characteristics at $T_a = 25^\circ\text{C}$

| Parameter                                  | Symbol        | Conditions                                   | Ratings  |      |          | Unit             |
|--|---------------|--|----------|------|----------|------------------|
|  |               |  | min      | typ  | max      |                  |
| Drain-to-Source Breakdown Voltage          | $V_{(BR)DSS}$ | $I_D = -1\text{mA}$ , $V_{GS} = 0$           | -100     |      |          | V                |
| Gate-to-Source Breakdown Voltage           | $V_{(BR)GSS}$ | $I_G = \pm 100\mu\text{A}$ , $V_{DS} = 0$    | $\pm 15$ |      |          | V                |
| Zero-Gate Voltage Drain Current            | $I_{DSS}$     | $V_{DS} = -100\text{V}$ , $V_{GS} = 0$       |          |      | -100     | $\mu\text{A}$    |
| Gate-to-Source Leakage Current             | $I_{GSS}$     | $V_{GS} = \pm 12\text{V}$ , $V_{DS} = 0$     |          |      | $\pm 10$ | $\mu\text{A}$    |
| Cutoff Voltage                             | $V_{GS(off)}$ | $V_{DS} = -10\text{V}$ , $I_D = -1\text{mA}$ | -1.0     |      | -2.0     | V                |
| Forward Transfer Admittance                | $ y_{fs} $    | $V_{DS} = -10\text{V}$ , $I_D = -8\text{A}$  | 7.5      | 13   |          | S                |
| Static Drain-to-Source ON-State Resistance | $R_{DS(on)}$  | $I_D = -8\text{A}$ , $V_{GS} = -10\text{V}$  |          | 120  | 160      | $\text{m}\Omega$ |
|  | $R_{DS(on)}$  | $I_D = -8\text{A}$ , $V_{GS} = -4\text{V}$   |          | 160  | 220      | $\text{m}\Omega$ |
| Input Capacitance                          | $C_{iss}$     | $V_{DS} = -20\text{V}$ , $f = 1\text{MHz}$   |          | 1900 |          | pF               |
| Output Capacitance                         | $C_{oss}$     | $V_{DS} = -20\text{V}$ , $f = 1\text{MHz}$   |          | 400  |          | pF               |
| Reverse Transfer Capacitance               | $C_{rss}$     | $V_{DS} = -20\text{V}$ , $f = 1\text{MHz}$   |          | 80   |          | pF               |
| Turn-ON Delay Time                         | $t_{d(on)}$   | See specified Test Circuit                   |          | 18   |          | ns               |
| Rise Time                                  | $t_r$         | See specified Test Circuit                   |          | 25   |          | ns               |
| Turn-OFF Delay Time                        | $t_{d(off)}$  | See specified Test Circuit                   |          | 300  |          | ns               |
| Fall Time                                  | $t_f$         | See specified Test Circuit                   |          | 120  |          | ns               |
| Diode Forward Voltage                      | $V_{SD}$      | $I_S = -15\text{A}$ , $V_{GS} = 0$           |          | -1.0 | -1.5     | V                |

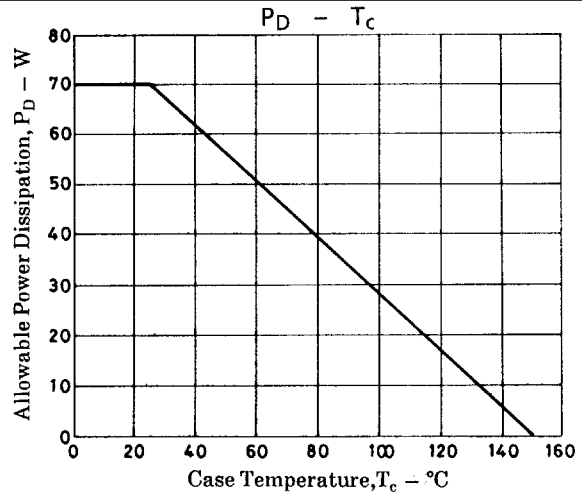
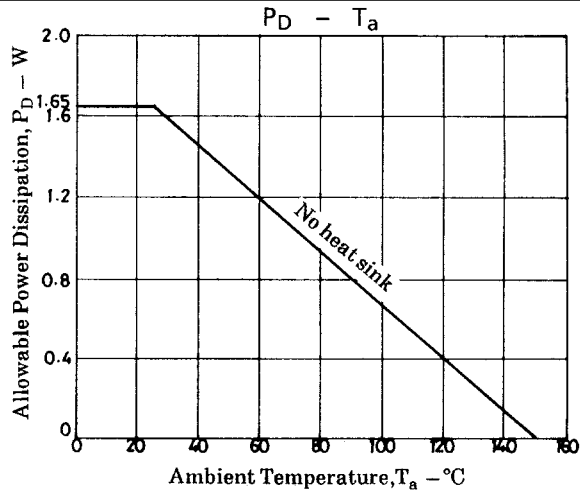
### Switching Time Test Circuit



# 2SJ277



## 2SJ277



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