Ordering number:ENN5932

P-Channel Silicon MOSFET

# 2SJ503

## DC/DC Converter Applications

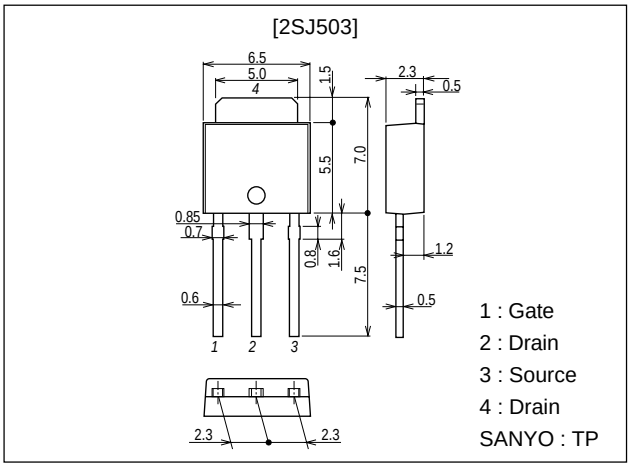
## Features

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

## Package Dimensions

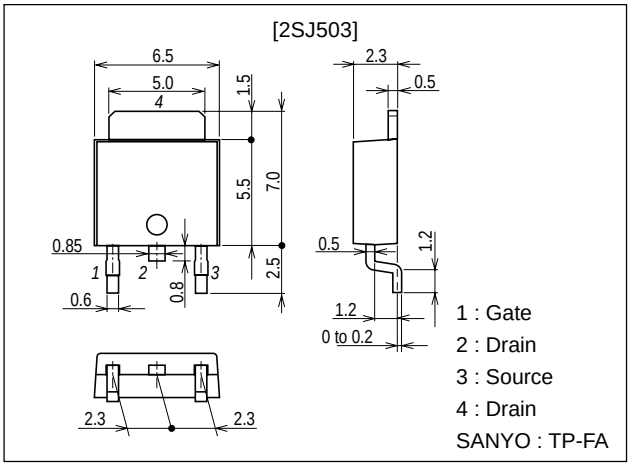
unit:mm

2083B




unit:mm

2092B







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

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

# Specifications

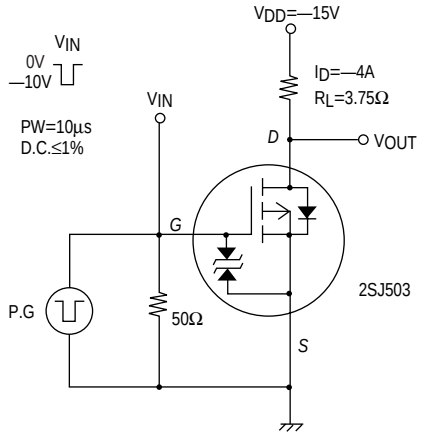
## Absolute Maximum Ratings at Ta = 25˚C

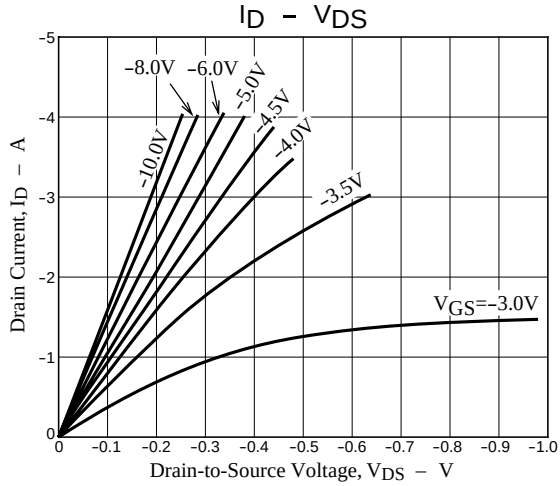
| Parameter | Symbol | Conditions | Ratings | Unit |
|---|---|---|---|---|
| Drain-to-Source Voltage | $V_{DSS}$ | | –30 | V |
| Gate-to-Source Voltage | $V_{GSS}$ | | ±20 | V |
| Drain Current (DC) | $I_D$ | | –4 | A |
| Drain Current (Pulse) | $I_{DP}$ | PW≤10μs, duty cycle≤1% | –16 | A |
| Allowable Power Dissipation | $P_D$ | | 1.0 | W |
| | | Tc=25˚C | 20 | W |
| Channel Temperature | Tch | | 150 | ˚C |
| Storage Temperature | Tstg | | –55 to +150 | ˚C |

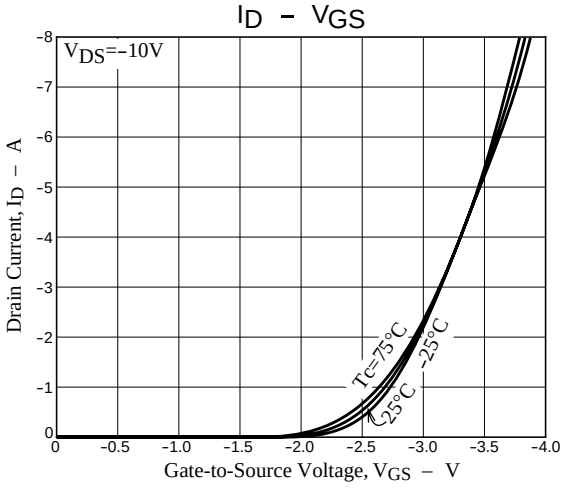
## Electrical Characteristics at Ta = 25˚C

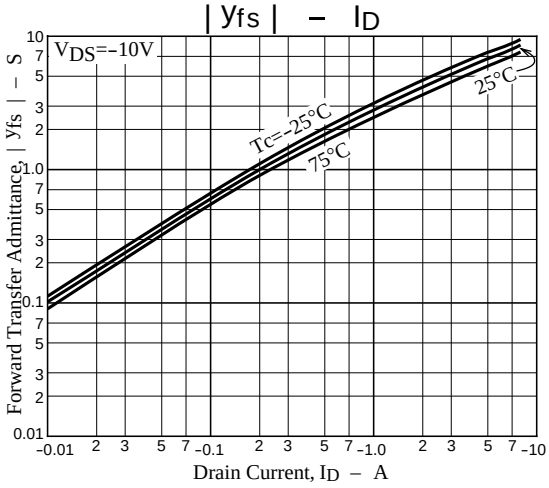
| Parameter | Symbol | Conditions | Ratings | | | Unit |
|---|---|---|---|---|---|---|
| | | | min | typ | max | |
| Drain-to-Source Breakdown Voltage | $V_{(BR)DSS}$ | $I_D$=–1mA, $V_{GS}$=0 | –30 | | | V |
| Zero-Gate Voltage Drain Current | $I_{DSS}$ | $V_{DS}$=–30V, $V_{GS}$=0 | | | –10 | μA |
| Gate-to-Source Leakage Current | $I_{GSS}$ | $V_{GS}$=±16V, $V_{DS}$=0 | | | ±10 | μA |
| Cutoff Voltage | $V_{GS}$(off) | $V_{DS}$=–10V, $I_D$=–1mA | –1.0 | | –2.5 | V |
| Forward Transfer Admittance | \| yfs \| | $V_{DS}$=–10V, $I_D$=–4A | 4 | 6 | | S |
| Static Drain-to-Source On-State Resistance | $R_{DS}$(on)1 | $I_D$=–4A, $V_{GS}$=–10V | | 65 | 85 | mΩ |
| | $R_{DS}$(on)2 | $I_D$=–2A, $V_{GS}$=–4V | | 130 | 180 | mΩ |
| Input Capacitance | Ciss | $V_{DS}$=–10V, f=1MHz | | 470 | | pF |
| Output Capacitance | Coss | $V_{DS}$=–10V, f=1MHz | | 280 | | pF |
| Reverse Transfer Capacitance | Crss | $V_{DS}$=–10V, f=1MHz | | 140 | | pF |
| Turn-ON Delay Time | $t_{d(on)}$ | See specified Test Circuit | | 10 | | ns |
| Rise Time | $t_r$ | See specified Test Circuit | | 35 | | ns |
| Turn-OFF Delay Time | $t_{d(off)}$ | See specified Test Circuit | | 60 | | ns |
| Fall Time | $t_f$ | See specified Test Circuit | | 45 | | ns |
| Total Gate Charge | Qg | $V_{DS}$=–10V, $V_{GS}$=–10V, $I_D$=–4A | | 15 | | nC |
| Gate-to-Source Charge | Qgs | $V_{DS}$=–10V, $V_{GS}$=–10V, $I_D$=–4A | | 3 | | nC |
| Gate-to-Drain "Miller" Charge | Qgd | $V_{DS}$=–10V, $V_{GS}$=–10V, $I_D$=–4A | | 4 | | nC |
| Diode Forward Voltage | $V_{SD}$ | $I_S$=–4A, $V_{GS}$=0 | | –1.0 | –1.5 | V |

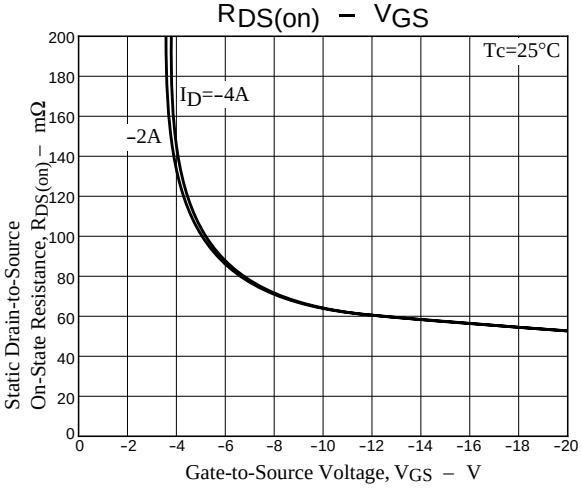
## Switching Time Test Circuit

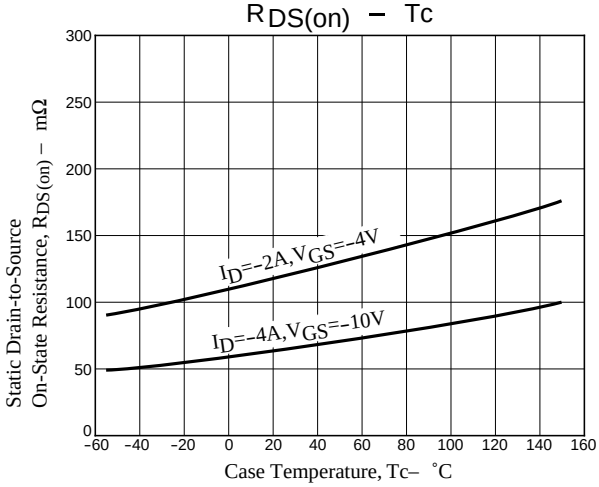


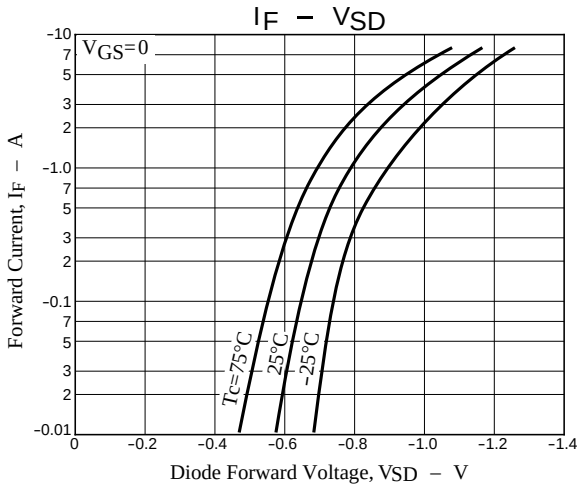

ID – VDS
Drain Current, ID – A
Drain-to-Source Voltage, VDS – V
–8.0V
–6.0V
–5.0V
–4.5V
–4.0V
–10.0V
–3.5V
VGS=–3.0V

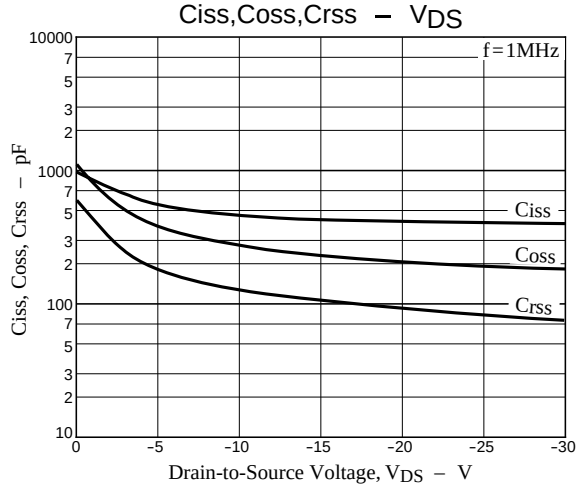

ID – VGS
VDS=–10V
Drain Current, ID – A
Gate-to-Source Voltage, VGS – V
Tc=75°C
25°C
–25°C

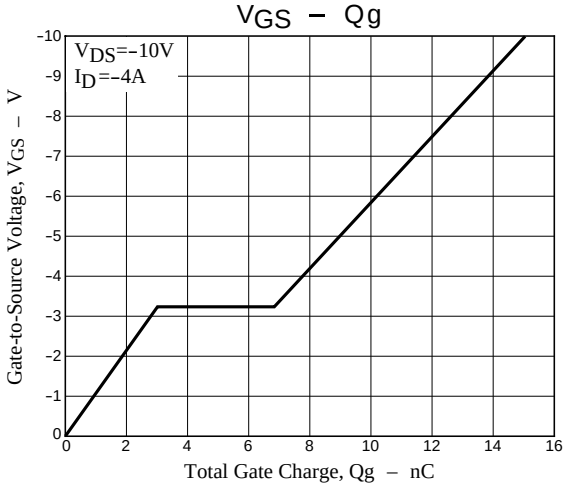

| yfs | – ID
VDS=–10V
Forward Transfer Admittance, | yfs | – S
Drain Current, ID – A
Tc=–25°C
25°C
75°C


RDS(on) – VGS
Tc=25°C
ID=–4A
–2A
Static Drain-to-Source On-State Resistance, RDS(on) – mΩ
Gate-to-Source Voltage, VGS – V

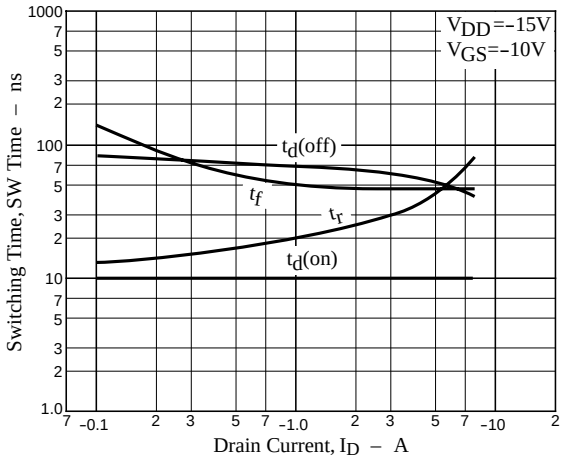

RDS(on) – Tc
Static Drain-to-Source On-State Resistance, RDS(on) – mΩ
Case Temperature, Tc– °C
ID=–2A,VGS=–4V
ID=–4A,VGS=–10V


IF – VSD
VGS=0
Forward Current, IF – A
Diode Forward Voltage, VSD – V
Tc=75°C
25°C
–25°C

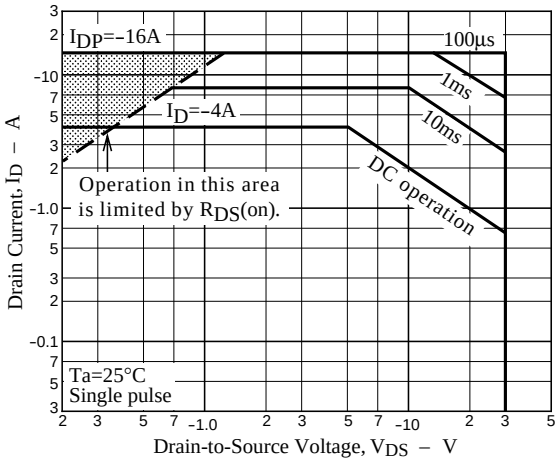

Ciss,Coss,Crss – VDS
f=1MHz
Ciss, Coss, Crss – pF
Drain-to-Source Voltage, VDS – V
Ciss
Coss
Crss


VGS – Qg
VDS=–10V
ID=–4A
Gate-to-Source Voltage, VGS – V
Total Gate Charge, Qg – nC

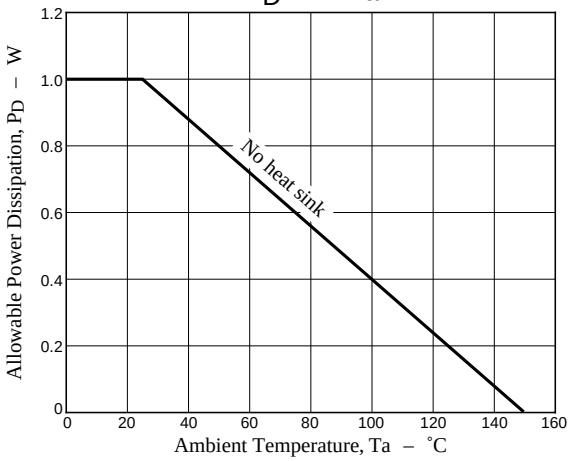
SW Time – $I_D$




A S O




$P_D$ – Ta




$P_D$ – Tc