Ordering number : ENN8112

SANYO Semiconductors
DATA SHEET

N-Channel Silicon MOSFET

# 2SK3617 — General-Purpose Switching Device Applications

## Features

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

## Specifications

### Absolute Maximum Ratings at Ta=25°C

| Parameter | Symbol | Conditions | Ratings | Unit |
|---|---|---|---|---|
| Drain-to-Source Voltage | $V_{DSS}$ | | 100 | V |
| Gate-to-Source Voltage | $V_{GSS}$ | | ±20 | V |
| Drain Current (DC) | $I_D$ | | 6 | A |
| Drain Current (Pulse) | $I_{DP}$ | PW≤10μs, duty cycle≤1% | 24 | A |
| Allowable Power Dissipation | $P_D$ | | 1 | W |
| | | Tc=25°C | 15 | 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 | 100 | | | V |
| Zero-Gate Voltage Drain Current | $I_{DSS}$ | $V_{DS}$=100V, $V_{GS}$=0 | | | 1 | 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 | 1.2 | | 2.6 | V |
| Forward Transfer Admittance | \|yfs\| | $V_{DS}$=10V, $I_D$=3A | 3 | 5 | | S |
| Static Drain-to-Source On-State Resistance | $R_{DS}$(on)1 | $I_D$=3A, $V_{GS}$=10V | | 180 | 225 | mΩ |
| | $R_{DS}$(on)2 | $I_D$=3A, $V_{GS}$=4V | | 225 | 315 | mΩ |
| Input Capacitance | Ciss | $V_{DS}$=20V, f=1MHz | | 530 | | pF |
| Output Capacitance | Coss | $V_{DS}$=20V, f=1MHz | | 45 | | pF |
| Reverse Transfer Capacitance | Crss | $V_{DS}$=20V, f=1MHz | | 35 | | pF |
| Turn-ON Delay Time | $t_d$(on) | See specified Test Circuit. | | 9 | | ns |
| Rise Time | $t_r$ | See specified Test Circuit. | | 5 | | ns |
| Turn-OFF Delay Time | $t_d$(off) | See specified Test Circuit. | | 54 | | ns |
| Fall Time | $t_f$ | See specified Test Circuit. | | 25 | | ns |

Continued on next page.



SANYO Electric Co.,Ltd. Semiconductor Company
TOKYO OFFICE Tokyo Bldg., 1-10, 1 Chome, Ueno, Taito-ku, TOKYO, 110-8534 JAPAN

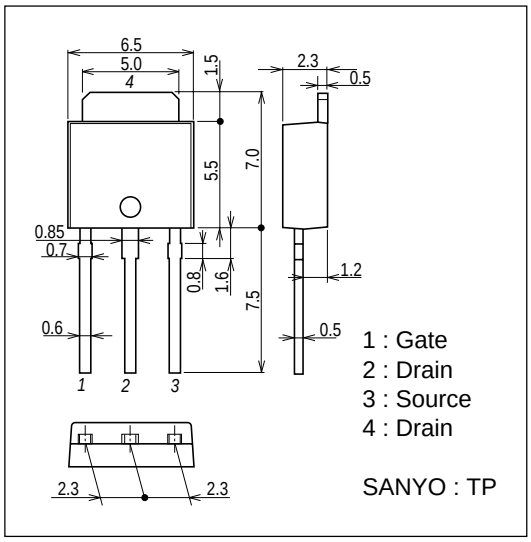
Continued from preceding page.

| Parameter | Symbol | Conditions | Ratings | | | Unit |
|---|---|---|---|---|---|---|
| | | | min | typ | max | |
| Total Gate Charge | Qg | $V_{DS}$=50V, $V_{GS}$=10V, $I_D$=6A | | 13 | | nC |
| Gate-to-Source Charge | Qgs | $V_{DS}$=50V, $V_{GS}$=10V, $I_D$=6A | | 2.1 | | nC |
| Gate-to-Drain “Miller” Charge | Qgd | $V_{DS}$=50V, $V_{GS}$=10V, $I_D$=6A | | 2.8 | | nC |
| Diode Forward Voltage | $V_{SD}$ | $I_S$=6A, $V_{GS}$=0 | | 0.9 | 1.2 | V |

## Package Dimensions

unit : mm

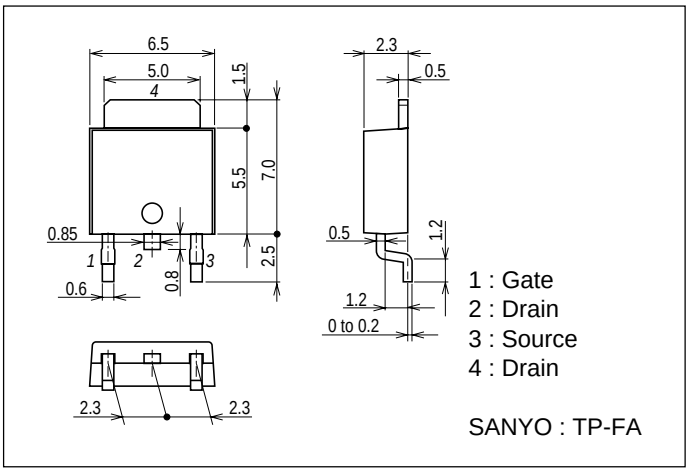
2083B



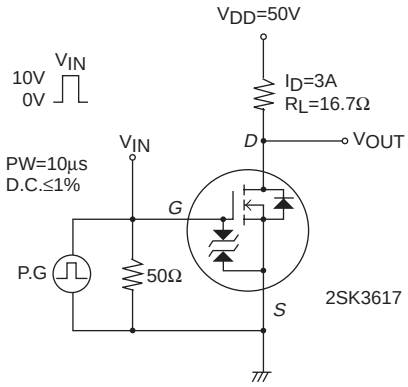

## Package Dimensions

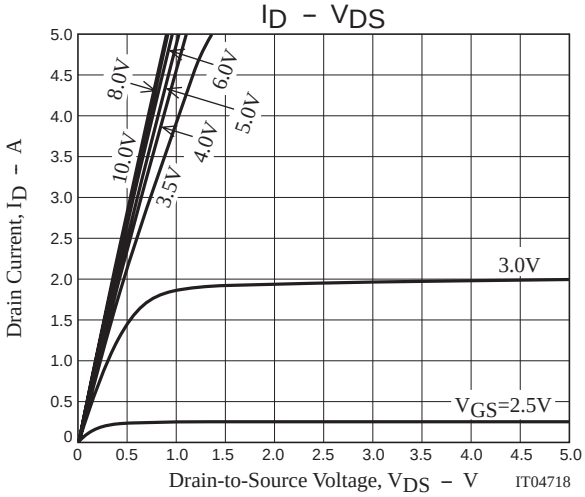
unit : mm

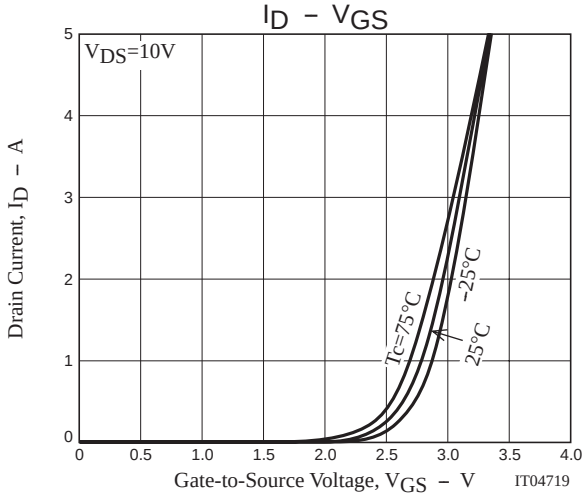
2092B

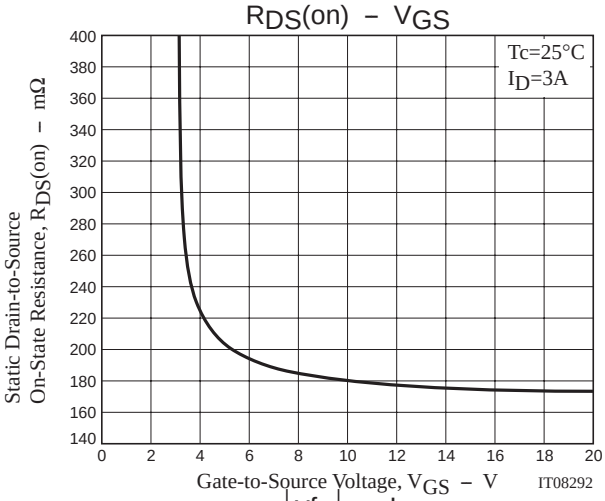


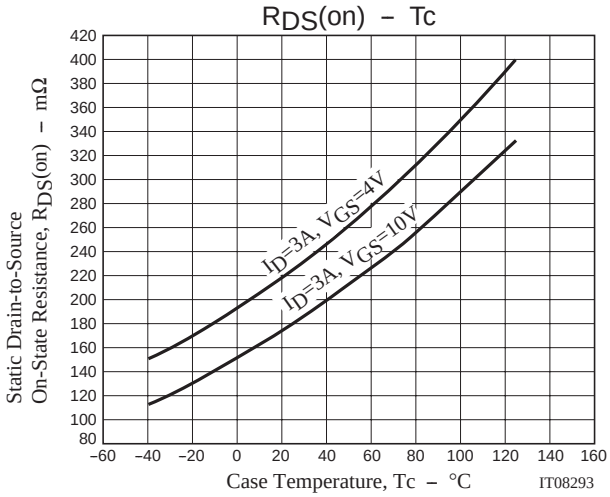

## Switching Time Test Circuit

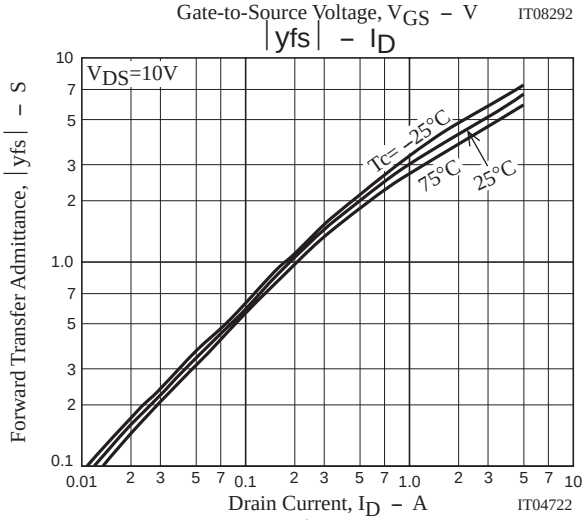


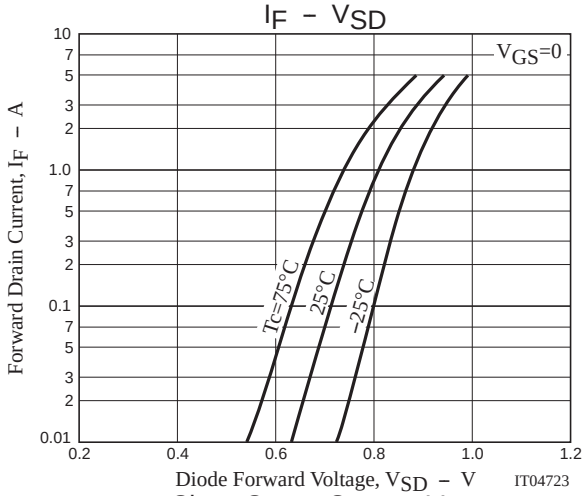



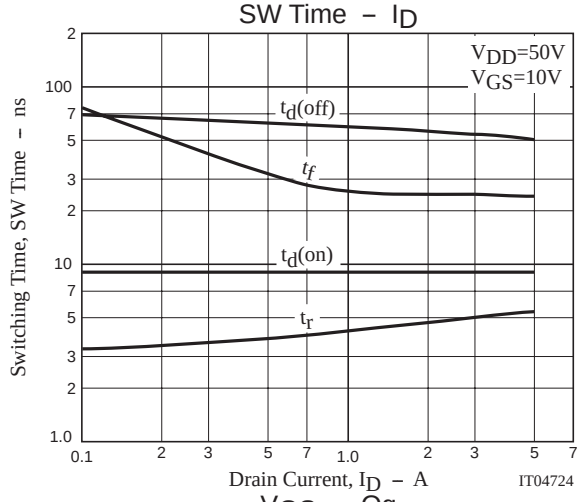



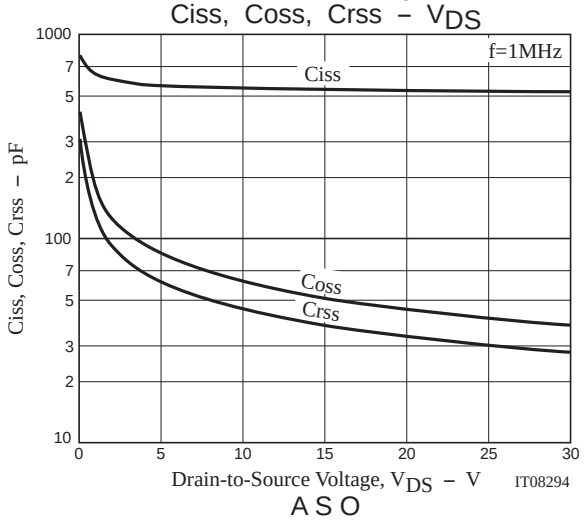

RDS(on) – VGS
Tc=25°C
ID=3A
Static Drain-to-Source On-State Resistance, RDS(on) – mΩ
Gate-to-Source Voltage, VGS – V
IT08292

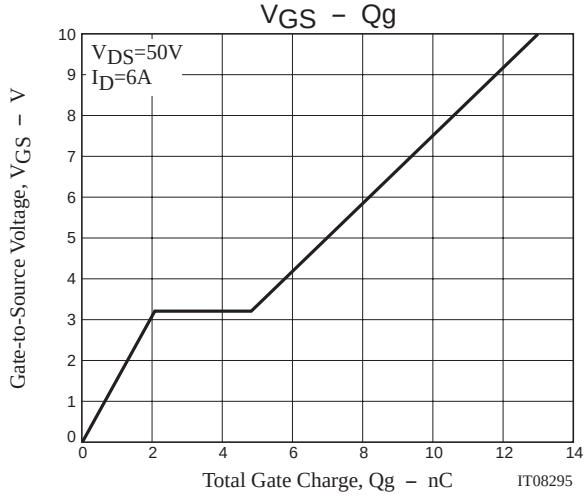

RDS(on) – Tc
ID=3A, VGS=4V
ID=3A, VGS=10V
Static Drain-to-Source On-State Resistance, RDS(on) – mΩ
Case Temperature, Tc – °C
IT08293

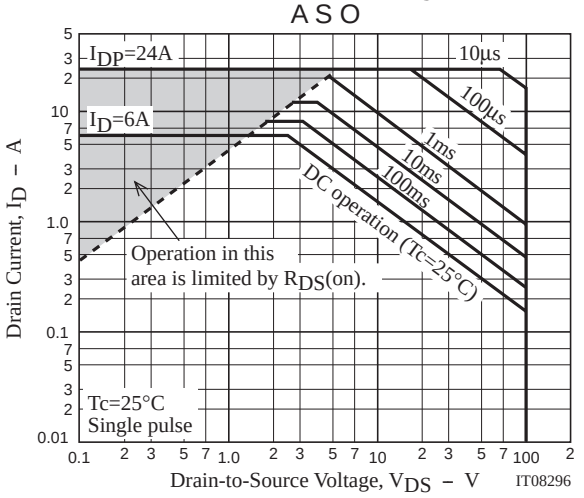

|yfs| – ID
VDS=10V
Tc=–25°C
75°C
25°C
Forward Transfer Admittance, |yfs| – S
Drain Current, ID – A
IT04722

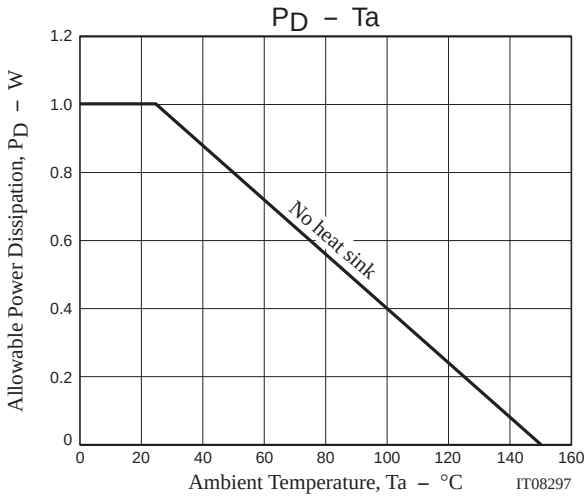

IF – VSD
VGS=0
Tc=75°C
25°C
–25°C
Forward Drain Current, IF – A
Diode Forward Voltage, VSD – V
IT04723

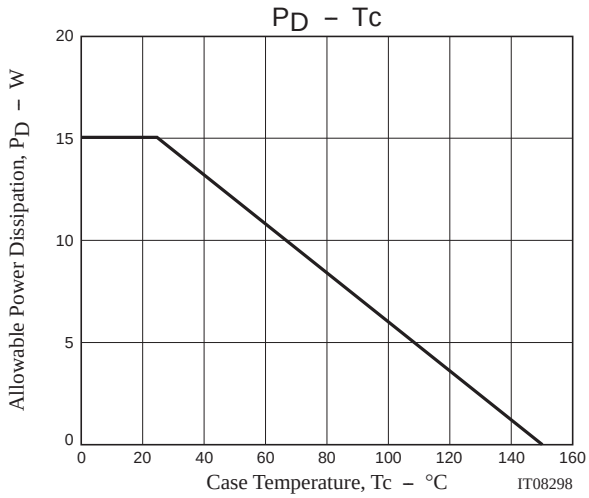

SW Time – ID
VDD=50V
VGS=10V
td(off)
tf
td(on)
tr
Switching Time, SW Time – ns
Drain Current, ID – A
IT04724


Ciss, Coss, Crss – VDS
f=1MHz
Ciss
Coss
Crss
Ciss, Coss, Crss – pF
Drain-to-Source Voltage, VDS – V
IT08294


VGS – Qg
VDS=50V
ID=6A
Gate-to-Source Voltage, VGS – V
Total Gate Charge, Qg – nC
IT08295


A S O
IDP=24A
ID=6A
10µs
100µs
1ms
10ms
100ms
DC operation (Tc=25°C)
Operation in this area is limited by RDS(on).
Tc=25°C
Single pulse
Drain Current, ID – A
Drain-to-Source Voltage, VDS – V
IT08296




Note on usage : Since the 2SK3617 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.