# 2SK1460

N-Channel Silicon MOSFET

**Features**

- Low ON-state resistance.
- Ultrahigh-speed switching.
- Micaless package facilitating mounting.

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

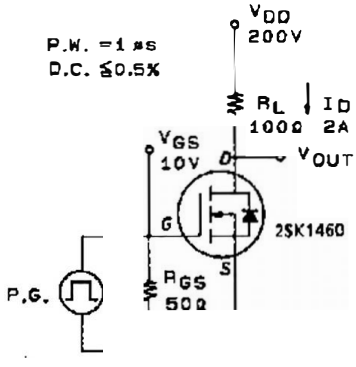
| | | | | unit |
|---|---|---|---|---|
| Drain-to-Source Voltage | $V_{DSS}$ | | 900 | V |
| Gate-to-Source Voltage | $V_{GSS}$ | | ±30 | V |
| Drain Current(DC) | $I_D$ | | 3.5 | A |
| Drain Current(Pulse) | $I_{DP}$ | PW≦10μs, duty cycle≦1% | 7 | A |
| Allowable Power Dissipation | $P_D$ | | 2.0 | W |
| | | Tc = 25°C | 40 | W |
| Channel Temperature | Tch | | 150 | °C |
| Storage Temperature | Tstg | | −55 to +150 | °C |

**Electrical Characteristics** at Ta = 25°C

| | | | min | typ | max | unit |
|---|---|---|---|---|---|---|
| D-S Breakdown Voltage | $V_{(BR)DSS}$ | $I_D$ = 1mA, $V_{GS}$ = 0 | 900 | | | V |
| Zero-Gate Voltage Drain Current | $I_{DSS}$ | $V_{DS}$ = 900V, $V_{GS}$ = 0 | | | 1.0 | mA |
| Gate-to-Source Leakage Current | $I_{GSS}$ | $V_{GS}$ = ±30V, $V_{DS}$ = 0 | | | ±100 | nA |
| Cutoff Voltage | $V_{GS(off)}$ | $V_{DS}$ = 10V, $I_D$ = 1mA | 2.0 | | 3.0 | V |
| Forward Transfer Admittance | $\|y_{fs}\|$ | $V_{DS}$ = 20V, $I_D$ = 2A | 1.0 | 2.0 | | S |
| Static Drain-to-Source ON-State Resistance | $R_{DS(on)}$ | $I_D$ = 2A, $V_{GS}$ = 10V | | 2.8 | 3.6 | Ω |
| Input Capacitance | Ciss | $V_{DS}$ = 20V, f = 1MHz | | 700 | | pF |
| Output Capacitance | Coss | $V_{DS}$ = 20V, f = 1MHz | | 300 | | pF |
| Reverse Transfer Capacitance | Crss | $V_{DS}$ = 20V, f = 1MHz | | 170 | | pF |
| Turn-ON Delay Time | $t_{d(on)}$ | $I_D$ = 2A, $V_{GS}$ = 10V, $V_{DD}$ = 200V, $R_{GS}$ = 50Ω | | 15 | | ns |
| Rise Time | $t_r$ | | | 35 | | ns |
| Turn-OFF Delay Time | $t_{d(off)}$ | | | 200 | | ns |
| Fall Time | $t_f$ | | | 65 | | ns |
| Diode Forward Voltage | $V_{SD}$ | $I_S$ = 3.5A, $V_{GS}$ = 0 | | | 1.8 | V |

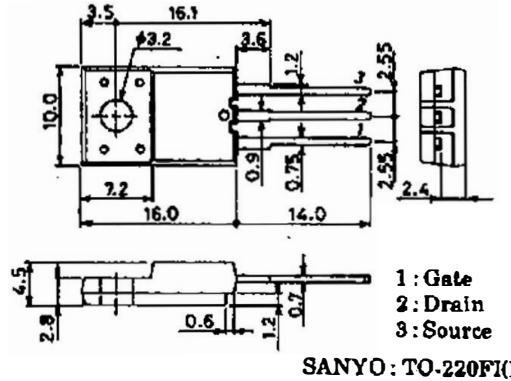
(Note) Be careful in handling the 2SK1460 because it has no protection diode between gate and source.

**Switching Time Test Circuit**



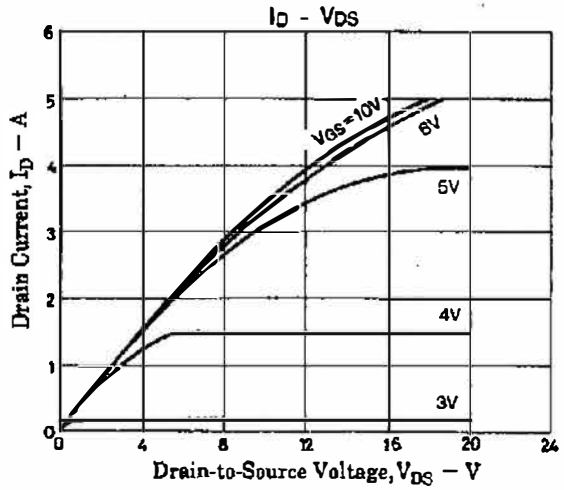

**Package Dimensions** 2078B

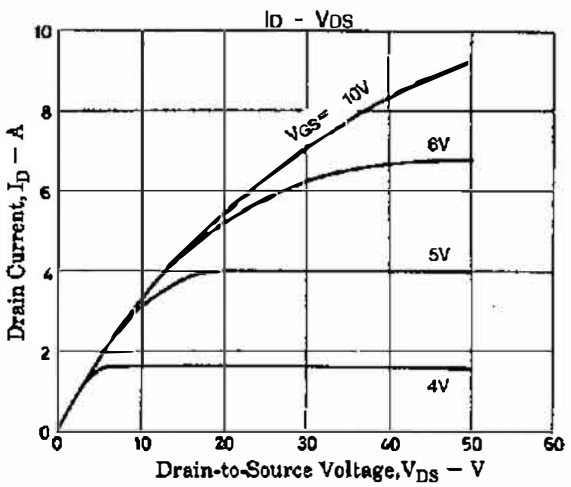
(unit : mm)

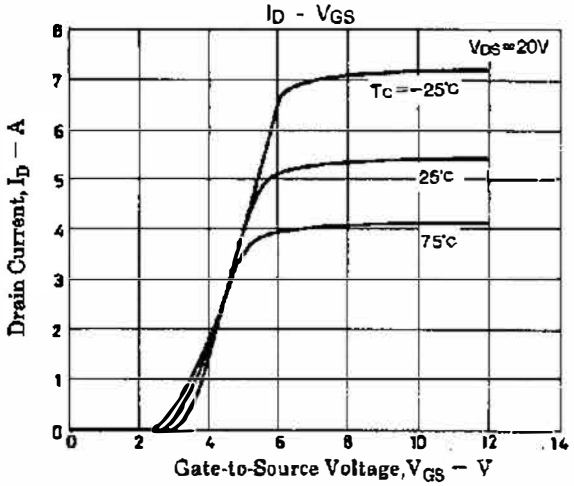


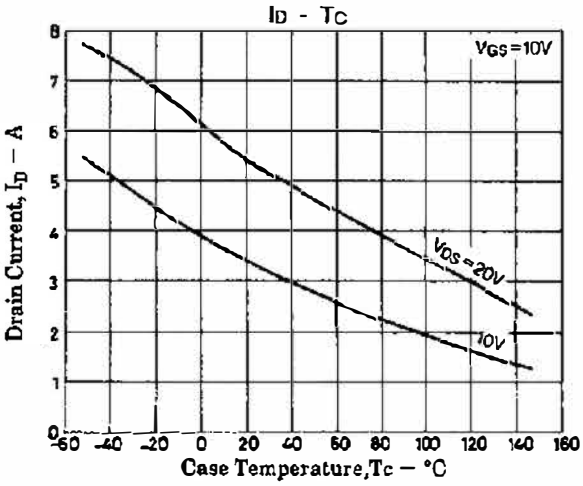

1 : Gate
2 : Drain
3 : Source

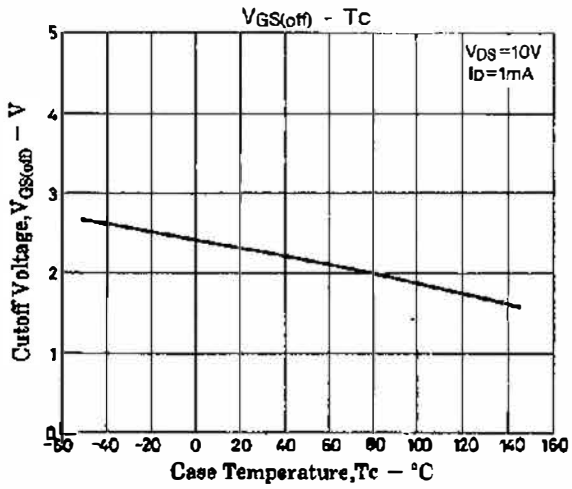
SANYO : TO-220FI(LS)

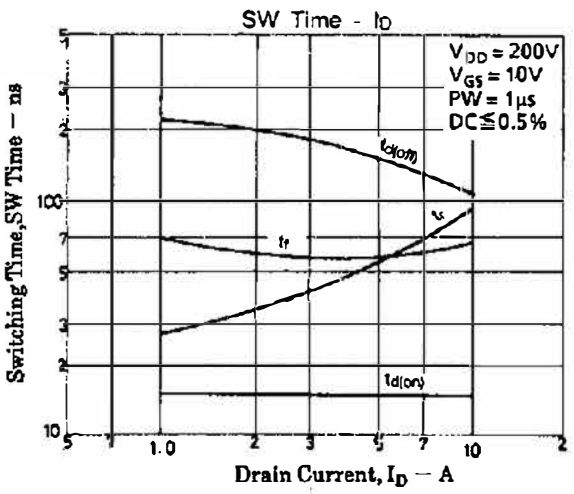

ID - VDS
Drain Current, ID – A
VGS=10V
6V
5V
4V
3V
Drain-to-Source Voltage, VDS – V

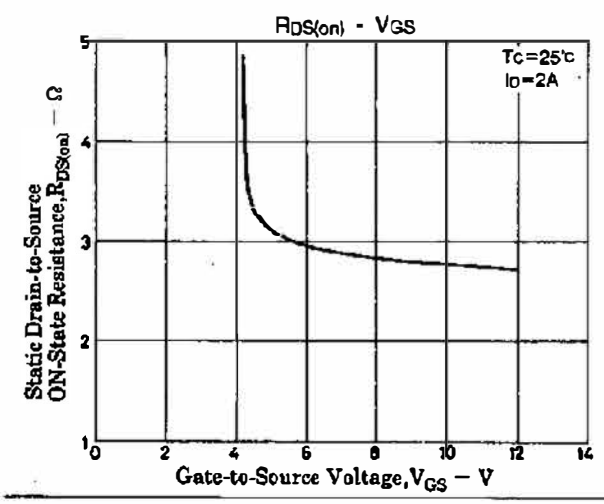

ID - VDS
Drain Current, ID – A
VGS= 10V
6V
5V
4V
Drain-to-Source Voltage, VDS – V

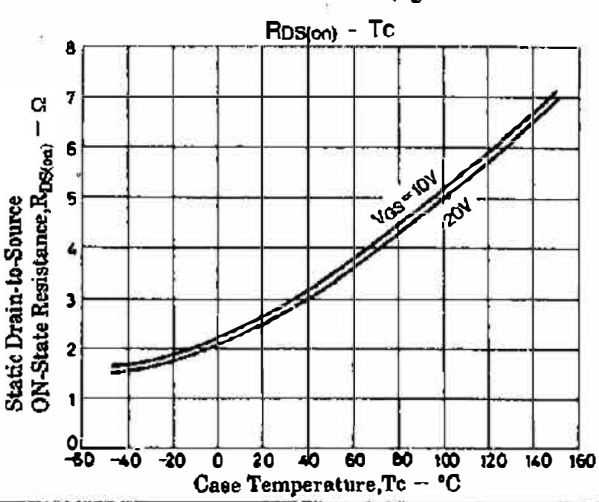

ID - VGS
VDS=20V
Tc=-25°C
25°C
75°C
Drain Current, ID – A
Gate-to-Source Voltage, VGS – V


ID - Tc
VGS=10V
VDS=20V
10V
Drain Current, ID – A
Case Temperature, Tc – °C

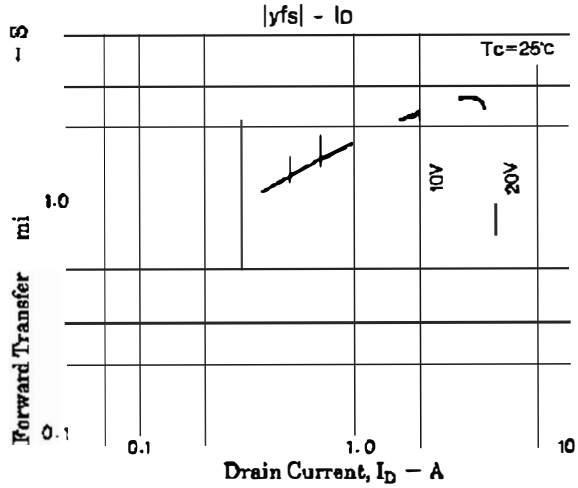

VGS(off) - Tc
VDS=10V
ID=1mA
Cutoff Voltage, VGS(off) – V
Case Temperature, Tc – °C

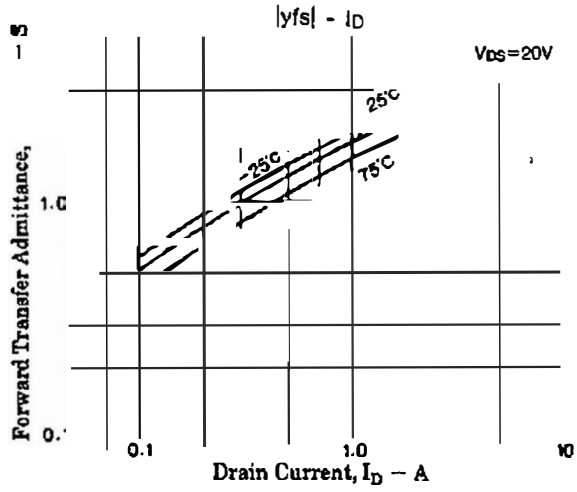

SW Time - ID
VDD = 200V
VGS = 10V
PW = 1μs
DC≦0.5%
td(off)
tf
tr
td(on)
Switching Time, SW Time – ns
Drain Current, ID – A

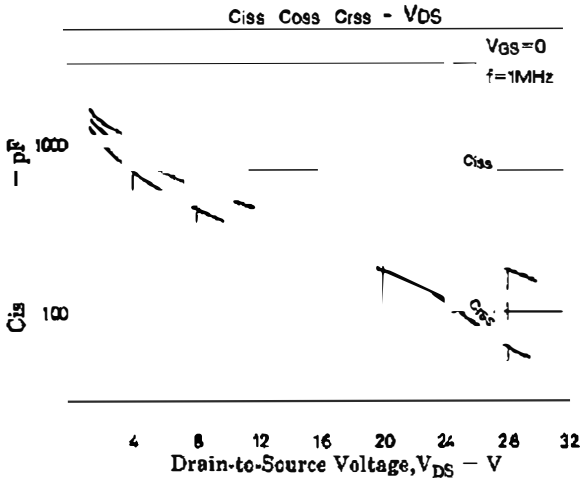

RDS(on) - VGS
Tc=25°C
ID=2A
Static Drain-to-Source ON-State Resistance, RDS(on) – Ω
Gate-to-Source Voltage, VGS – V

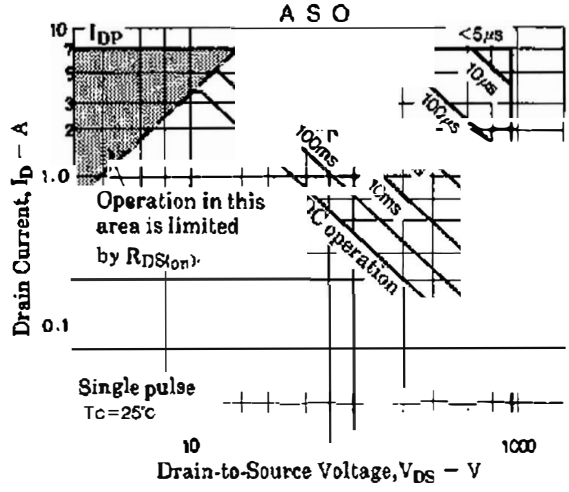

RDS(on) - Tc
VGS=10V
20V
Static Drain-to-Source ON-State Resistance, RDS(on) – Ω
Case Temperature, Tc – °C

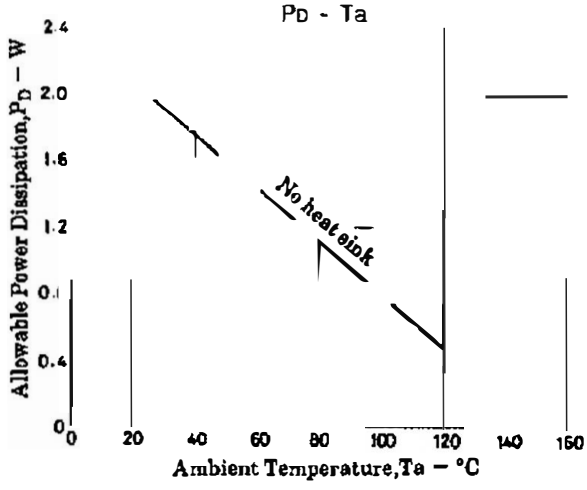
# 2SK1460

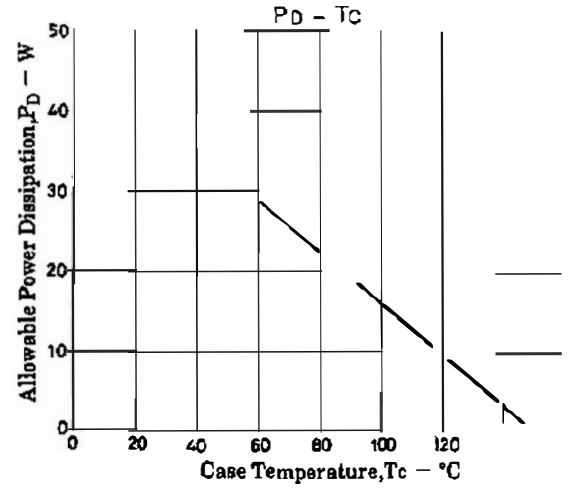

|yfs| - ID
Tc=25°C
10V
20V
Forward Transfer
1.0
0.1
0.1
1.0
10
Drain Current, ID – A


|yfs| - ID
VDS=20V
25°C
-25°C
75°C
Forward Transfer Admittance,
1.0
0.1
1.0
10
Drain Current, ID – A


Ciss Coss Crss - VDS
VGS=0
f=1MHz
Ciss
Crss
1000
100
4
8
12
16
20
24
28
32
Drain-to-Source Voltage, VDS – V


A S O
IDP
<5μs
10μs
100μs
100ms
10ms
DC operation
Operation in this
area is limited
by RDS(on)
Single pulse
Tc=25°C
Drain Current, ID – A
10
1.0
0.1
10
1000
Drain-to-Source Voltage, VDS – V


PD - Ta
No heat sink
Allowable Power Dissipation, PD – W
2.4
2.0
1.6
1.2
0.4
0
0
20
40
60
80
100
120
140
160
Ambient Temperature, Ta – °C


PD – Tc
Allowable Power Dissipation, PD – W
50
40
30
20
10
0
0
20
40
60
80
100
120
Case Temperature, Tc – °C