# SHINDENGEN

## VX-2 Series Power MOSFET

N-Channel Enhancement type

# 2SK2198
## (F30Z50VX2)

## 500V 30A

### FEATURES

- Input capacitance (Ciss) is small. Especially, input capacitance at 0 biass is small.
- The static Rds(on) is small.
- The switching time is fast.

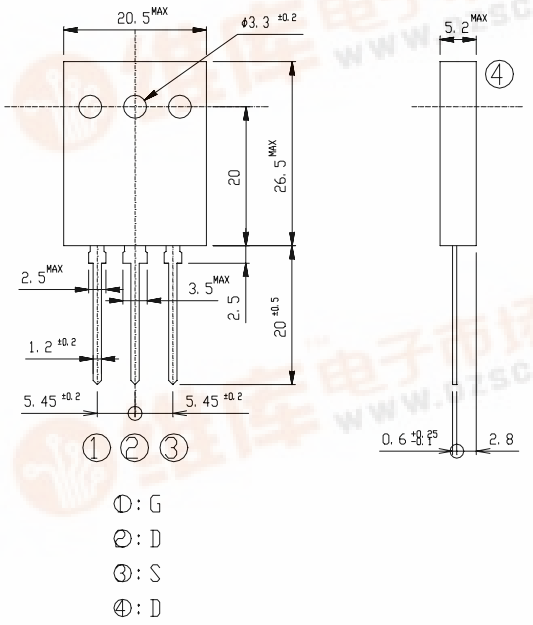
### APPLICATION

- Switching power supply of AC 100V input
- High voltage power supply
- Inverter

### OUTLINE DIMENSIONS

Case : MTO-3L

(Unit : mm)



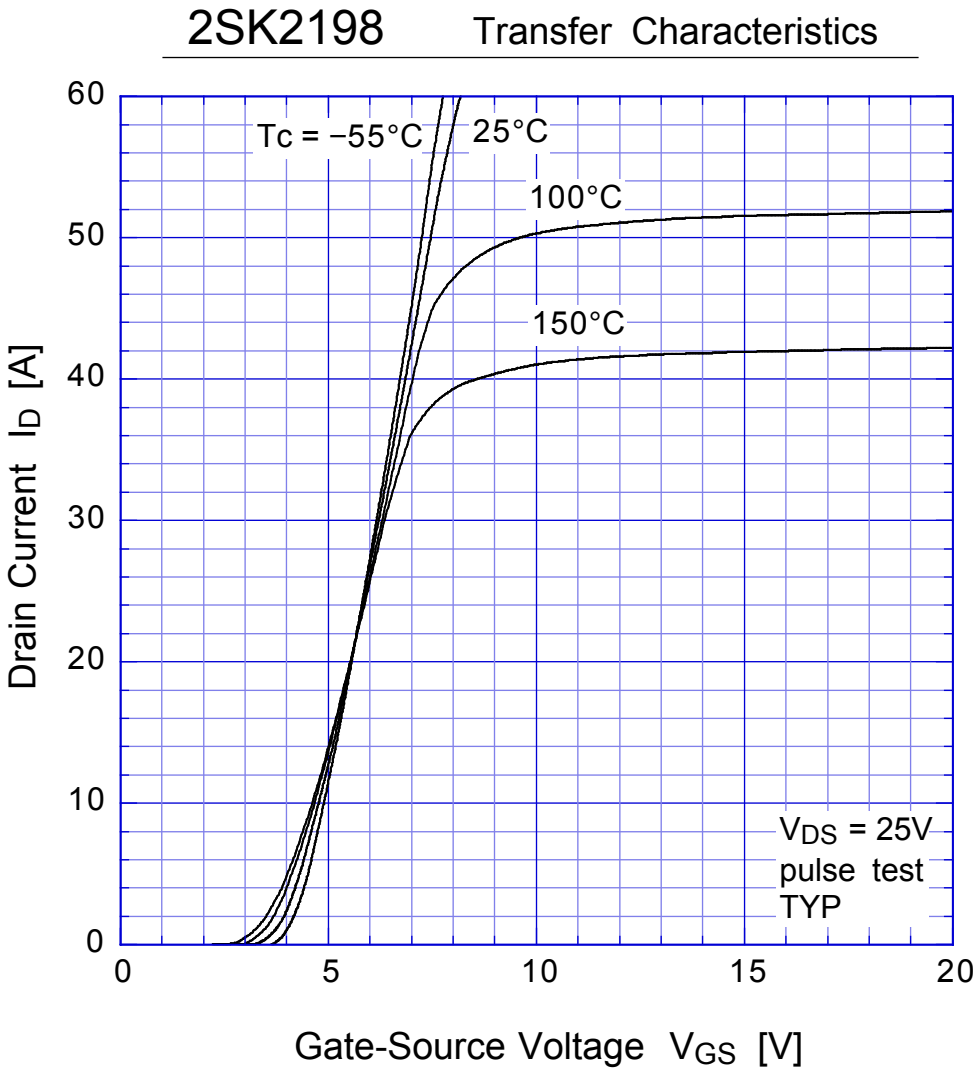

### RATINGS

● Absolute Maximum Ratings （Tc = 25℃）

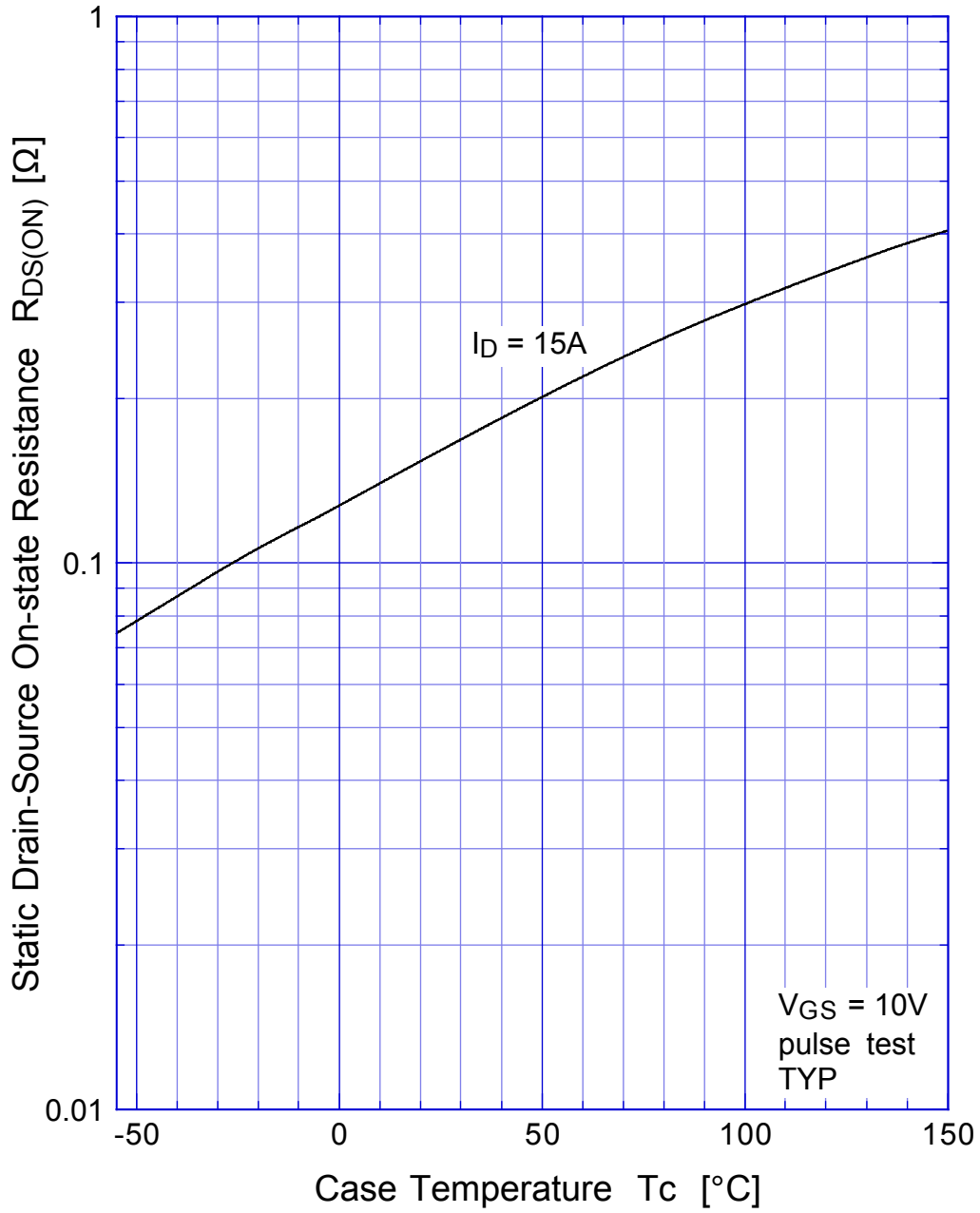
| Item | Symbol | Conditions | Ratings | Unit |
|---|---|---|---|---|
| Storage Temperature | Tstg | | −55～150 | ℃ |
| Channel Temperature | Tch | | 150 | |
| Drain-Source Voltage | VDSS | | 500 | V |
| Gate-Source Voltage | VGSS | | ±30 | |
| Continuous Drain Current (DC) | ID | | 30 | A |
| Continuous Drain Current (Peak) | IDP | | 90 | |
| Continuous Source Current (DC) | IS | | 30 | |
| Total Power Dissipation | PT | | 220 | W |
| Single Pulse Avalanche Current | IAS | Tch = 25℃ | 30 | A |
| Mounting Torque | TOR | ( Recommended torque : 0.5N·m ) | 0.8 | N·m |

●Electrical Characteristics Tc = 25℃

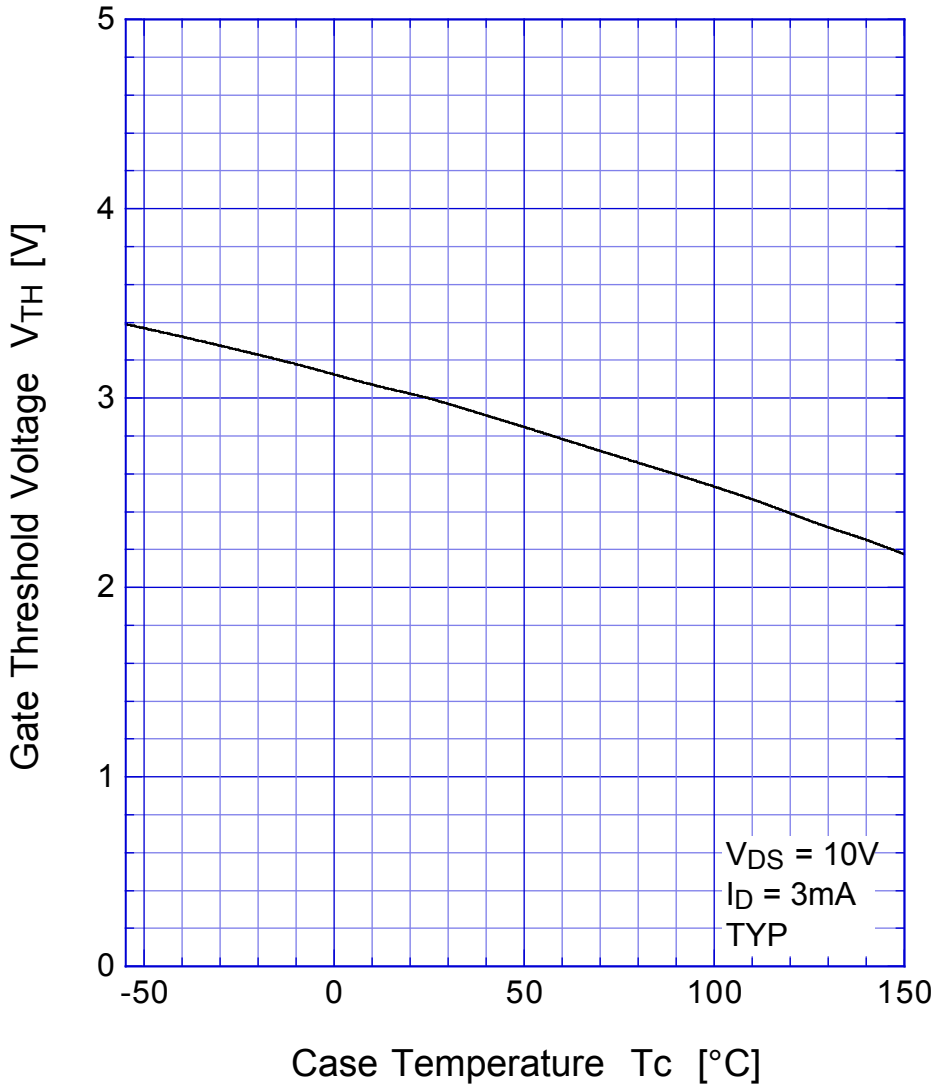
| Item | Symbol | Conditions | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| Drain-Source Breakdown Voltage | $V_{(BR)DSS}$ | $I_D$ = 1mA, $V_{GS}$ = 0V | 500 | | | V |
| Zero Gate Voltage Drain Current | $I_{DSS}$ | $V_{DS}$ = 500V, $V_{GS}$ = 0V | | | 250 | μA |
| Gate-Source Leakage Current | $I_{GSS}$ | $V_{GS}$ = ±30V, $V_{DS}$ = 0V | | | ±0.1 | |
| Forward Transconductance | $g_{fs}$ | $I_D$ = 15A, $V_{DS}$ = 10V | 9 | 20 | | S |
| Static Drain-Source On-state Resistance | $R_{DS(ON)}$ | $I_D$ = 15A, $V_{GS}$ = 10V | | 0.16 | 0.23 | Ω |
| Gate Threshold Voltage | $V_{TH}$ | $I_D$ = 3mA, $V_{DS}$ = 10V | 2.5 | 3.0 | 3.5 | V |
| Source-Drain Diode Forwade Voltage | $V_{SD}$ | $I_S$ = 15A, $V_{GS}$ = 0V | | | 1.5 | |
| Thermal Resistance | θ jc | junction to case | | | 0.568 | ℃/W |
| Total Gate Charge | $Q_g$ | $V_{DD}$ = 400V, $V_{GS}$ = 10V, $I_D$ = 30A | | 125 | | nC |
| Input Capacitance | $C_{iss}$ | $V_{DS}$ = 10V, $V_{GS}$ = 0V, f = 1MHz | | 3700 | | pF |
| Reverse Transfer Capacitance | $C_{rss}$ | | | 230 | | |
| Output Capacitance | $C_{oss}$ | | | 770 | | |
| Turn-On Time | $t_{on}$ | $I_D$ = 15A, $V_{GS}$ = 10V, $R_L$ = 10Ω | | 200 | 375 | ns |
| Turn-Off Time | $t_{off}$ | | | 500 | 900 | |


2SK2198
Transfer Characteristics
Tc = −55°C
25°C
100°C
150°C
VDS = 25V
pulse test
TYP
Drain Current ID [A]
Gate-Source Voltage VGS [V]
0
10
20
30
40
50
60
0
5
10
15
20

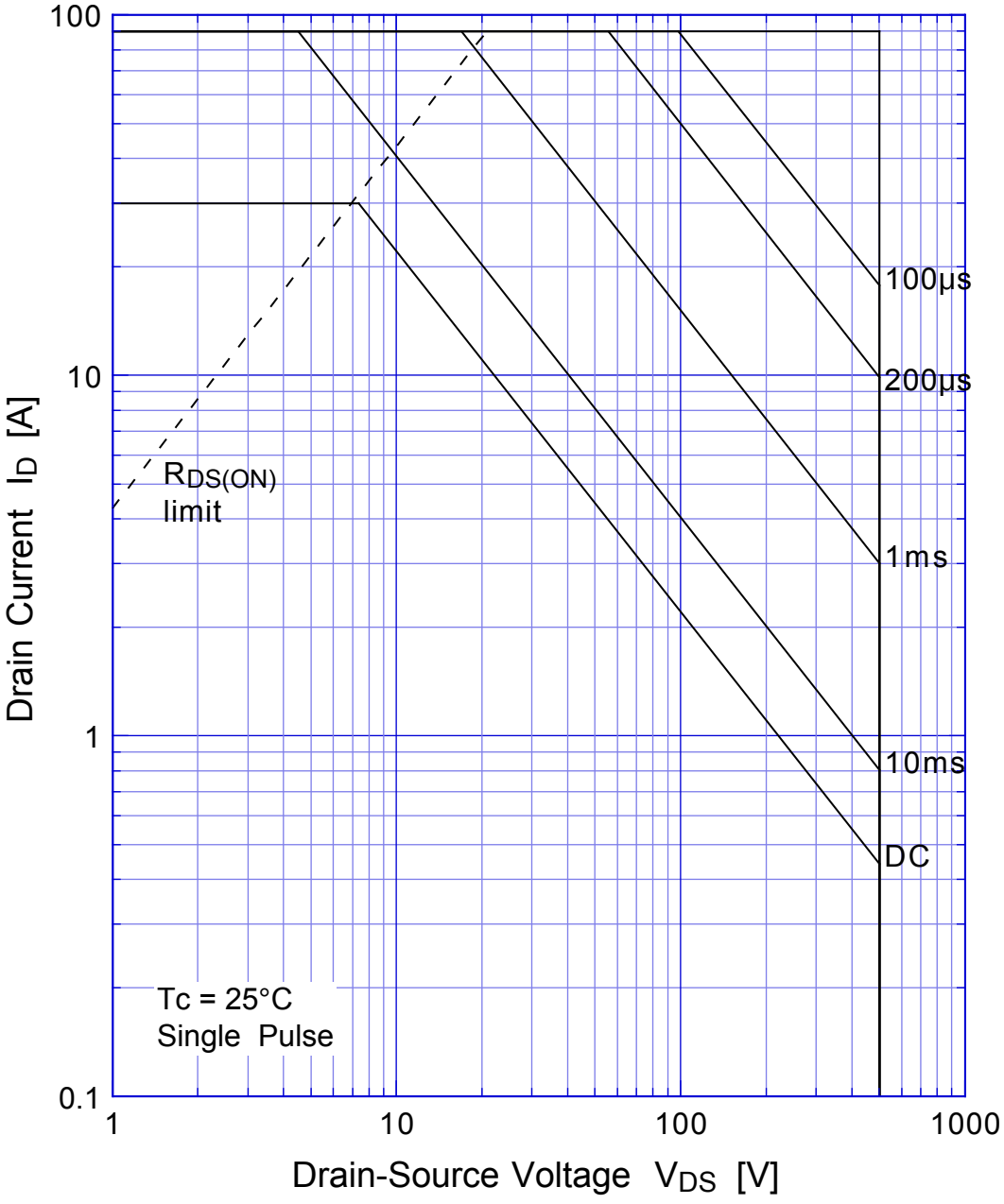
# 2SK2198 Static Drain-Source On-state Resistance



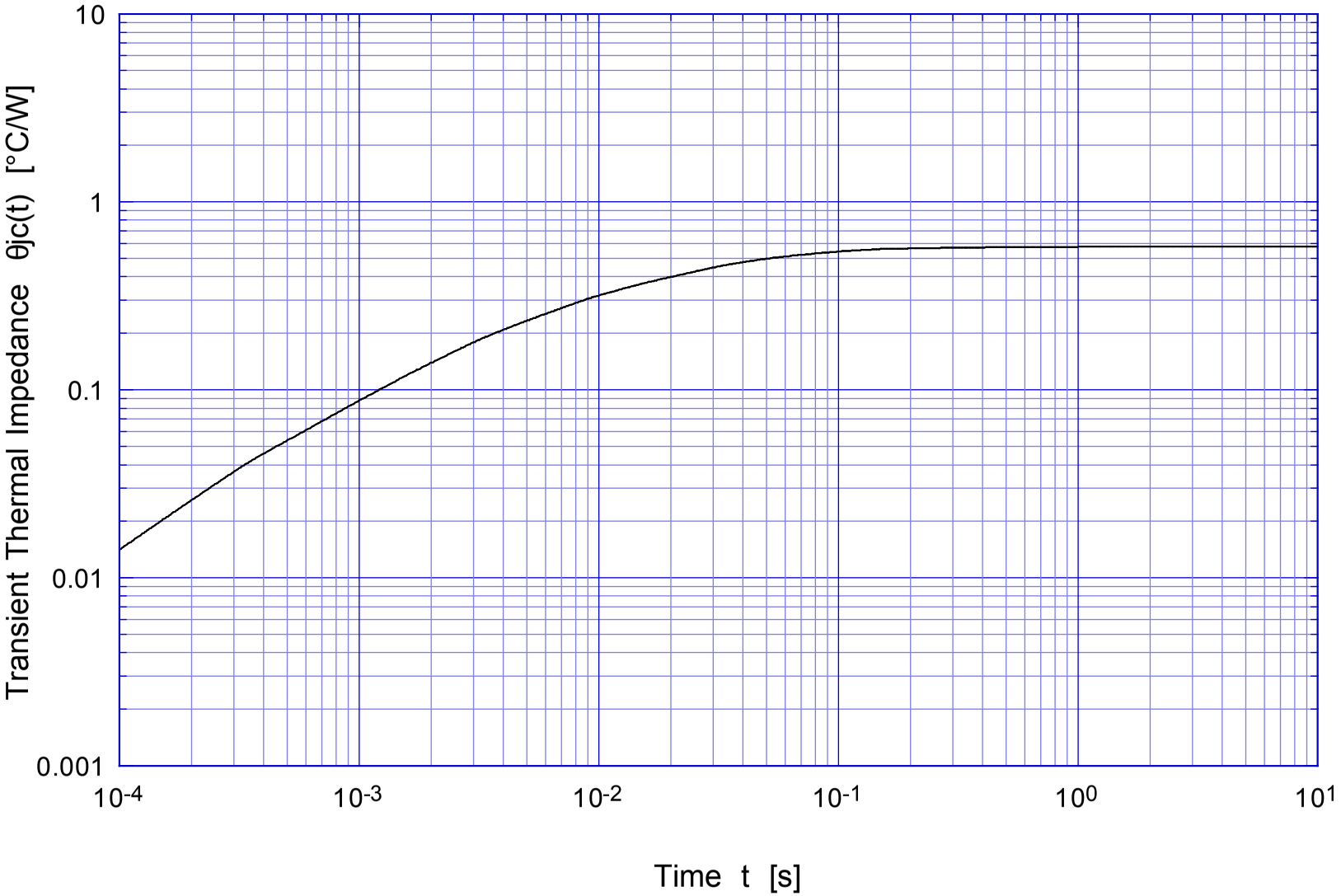
# 2SK2198 Gate Threshold Voltage

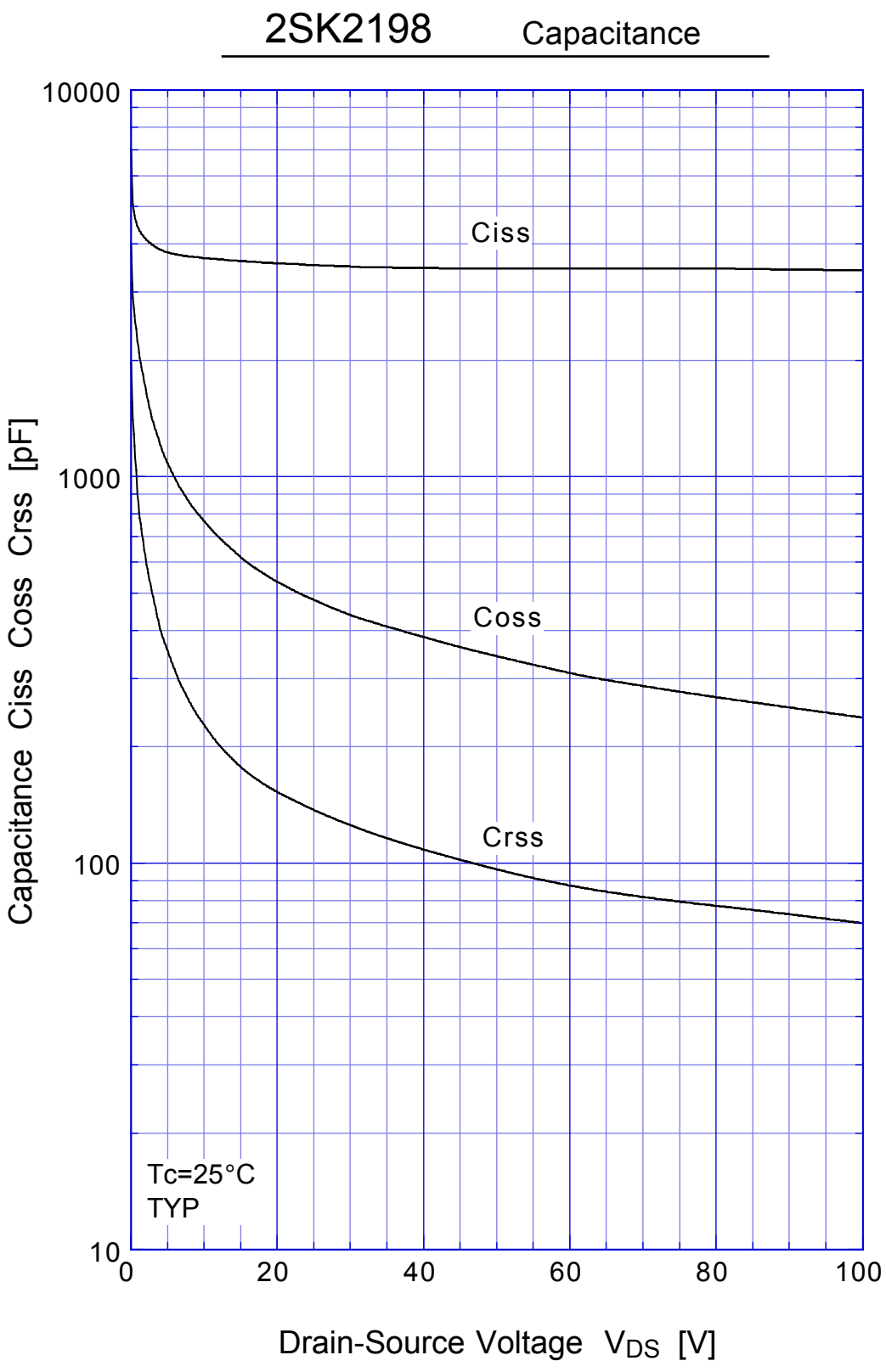


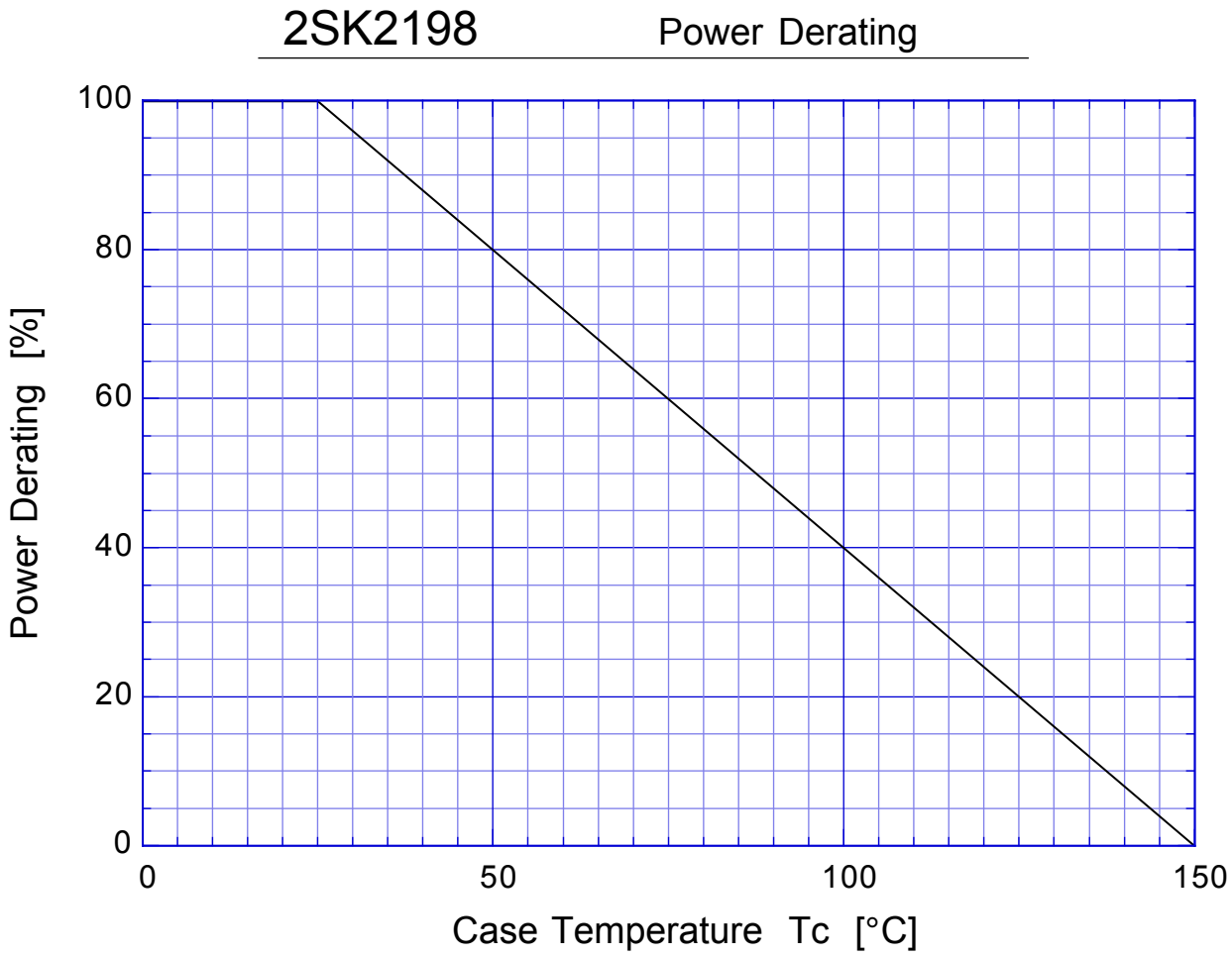
# 2SK2198 Safe Operating Area



# 2SK2198 Transient Thermal Impedance




2SK2198
Capacitance
10000
1000
100
10
Ciss
Coss
Crss
Tc=25°C
TYP
0
20
40
60
80
100
Capacitance Ciss Coss Crss [pF]
Drain-Source Voltage $V_{DS}$ [V]


2SK2198
Power Derating
Power Derating [%]
100
80
60
40
20
0
0
50
100
150
Case Temperature Tc [°C]

# 2SK2198 Gate Charge Characteristics