SHINDENGEN

VZ Series Power MOSFET

N-Channel Enhancement type

2SK2491

(F20S18VZ)

180V 20A

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.

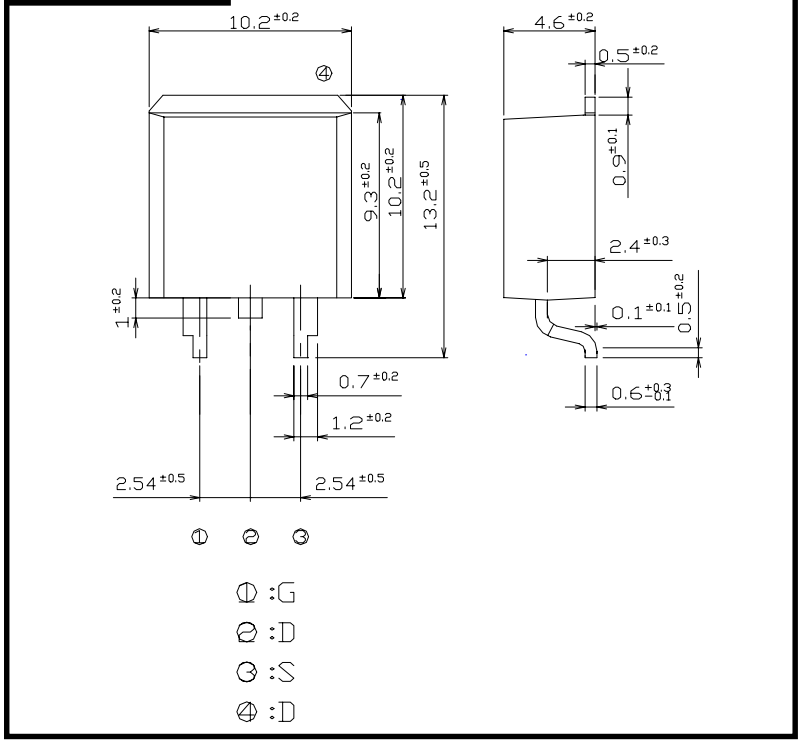
APPLICATION

- DC/DC converters
- Power supplies of DC 12-24V input
- Product related to Integrated Service Digital Network

OUTLINE DIMENSIONS

Case : STO-220

(Unit : mm)



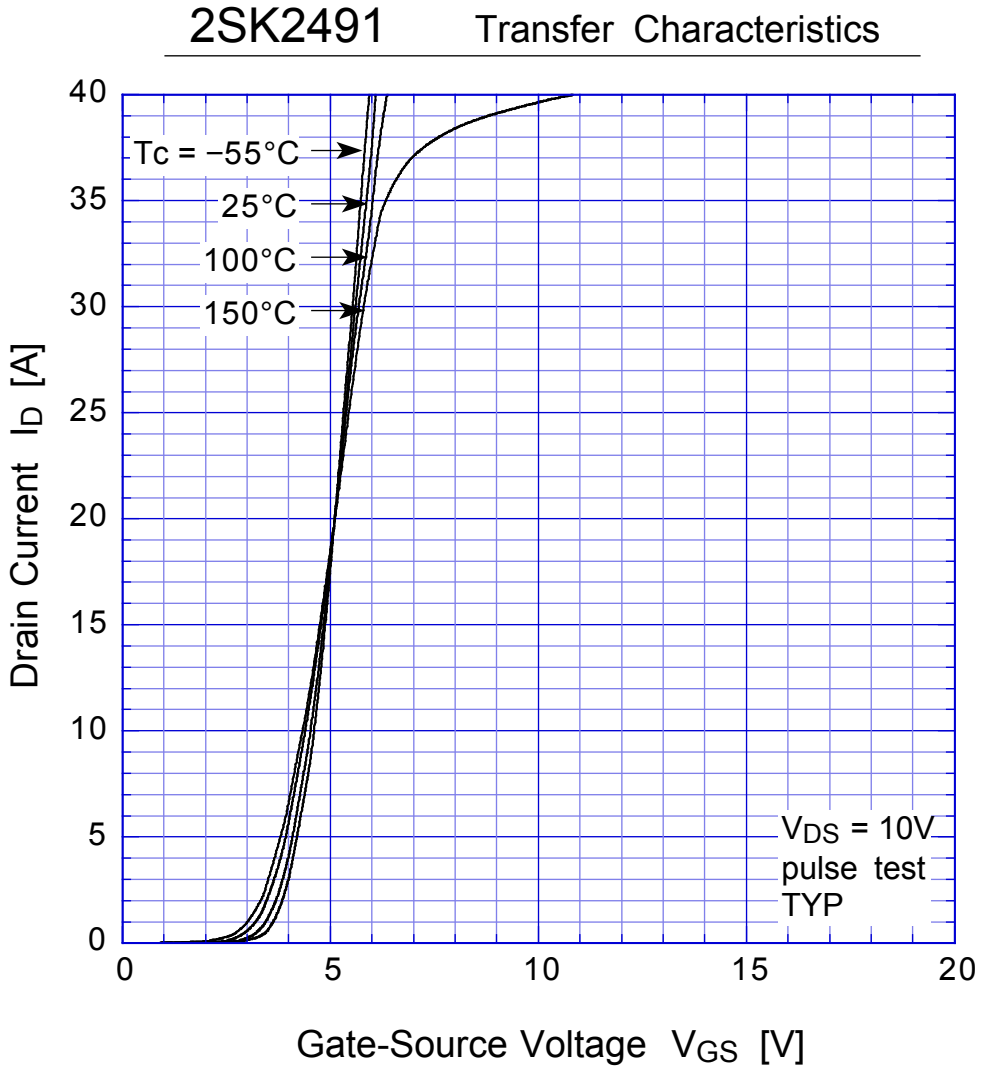
RATINGS

●Absolute Maximum Ratings （Tc = 25℃）

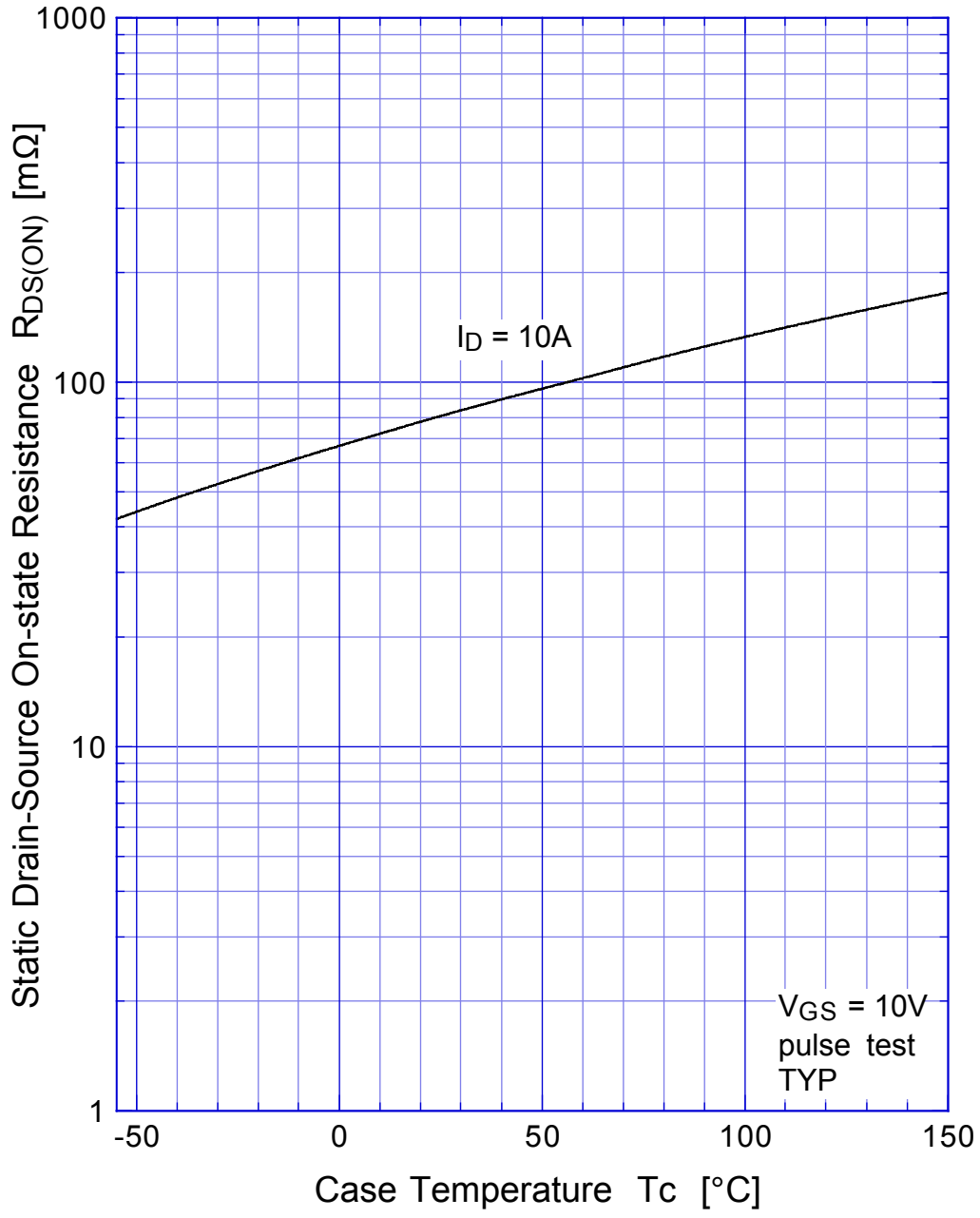
Item	Symbol	Conditions	Ratings	Unit
Storage Temperature	T_{stg}		−55～150	℃
Channel Temperature	T_{ch}		150	
Drain-Source Voltage	V_{DSS}		180	V
Gate-Source Voltage	V_{GSS}		±30	
Continuous Drain Current(DC)	I_D		20	A
Continuous Drain Current(Peak)	I_{DP}		40	
Continuous Source Current(DC)	I_S		20	
Total Power Dissipation	P_T		70	W
Single Pulse Avalanche Current	I_{AS}	T_{ch} = 25℃	20	A

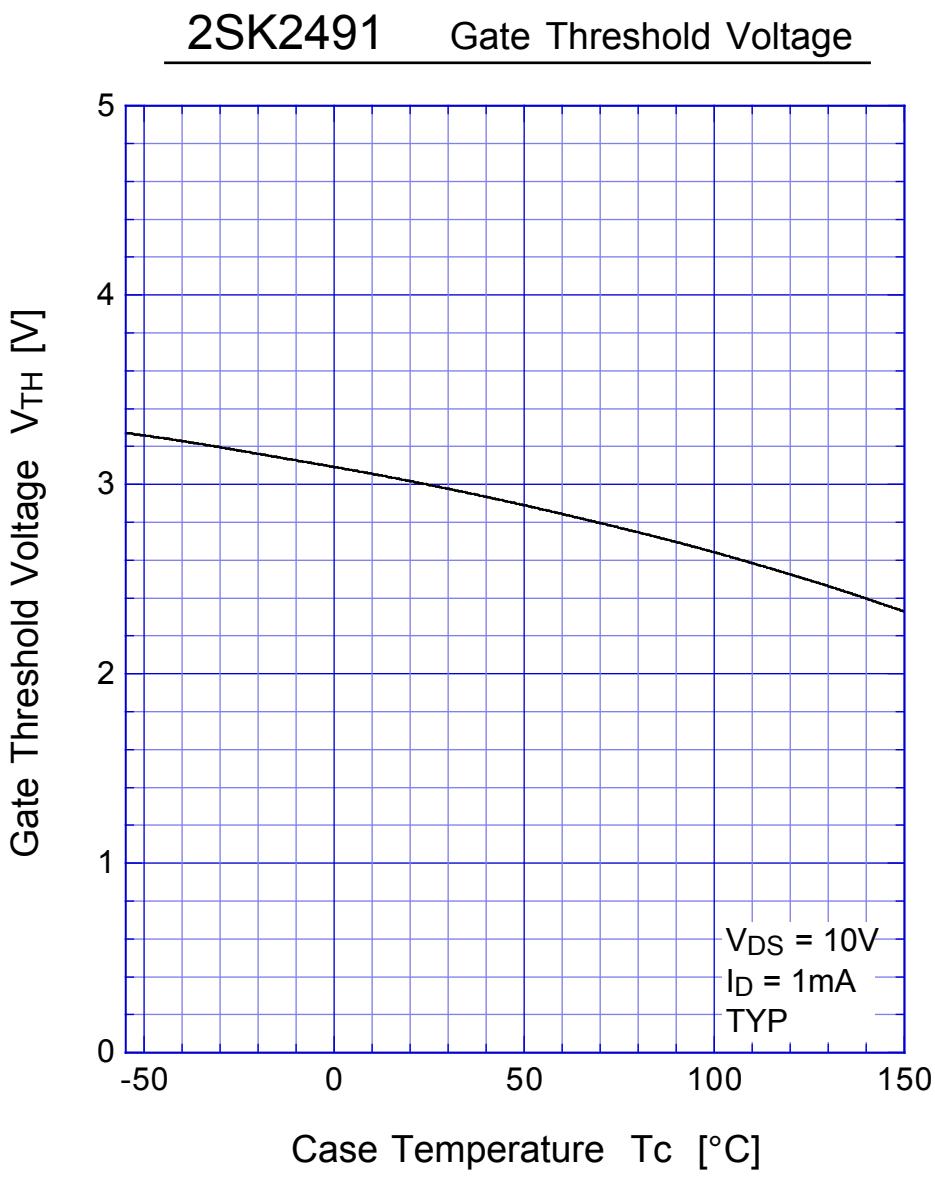
●Electrical Characteristics Tc = 25℃

Item	Symbol	Conditions	Min.	Typ.	Max.	Unit
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	I_D = 1mA, V_{GS} = 0V	180			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 180V, 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 = 10A, V_{DS} = 10V	8.0	15.0		S
Static Drain-Source On-state Resistance	$R_{DS(ON)}$	I_D =10A, V_{GS} = 10V		0.08	0.13	Ω
Gate Threshold Voltage	V_{TH}	I_D = 1mA, V_{DS} = 10V	2.0	3.0	4.0	V
Source-Drain Diode Forward Voltage	V_{SD}	I_S = 10A, V_{GS} = 0V			1.5	
Thermal Resistance	θ jc	junction to case			1.78	℃/W
Total Gate Charge	Q_g	V_{DD} = 150V, V_{GS} = 10V, I_D = 20A		55		nC
Input Capacitance	C_{iss}	V_{DS} = 10V, V_{GS} = 0V, f = 1MHz		1600		pF
Reverse Transfer Capacitance	C_{rss}			190		
Output Capacitance	C_{oss}			650		
Turn-On Time	t_{on}	I_D = 10A, V_{GS} = 10V, R_L = 10Ω		95	190	ns
Turn-Off Time	t_{off}			300	600	

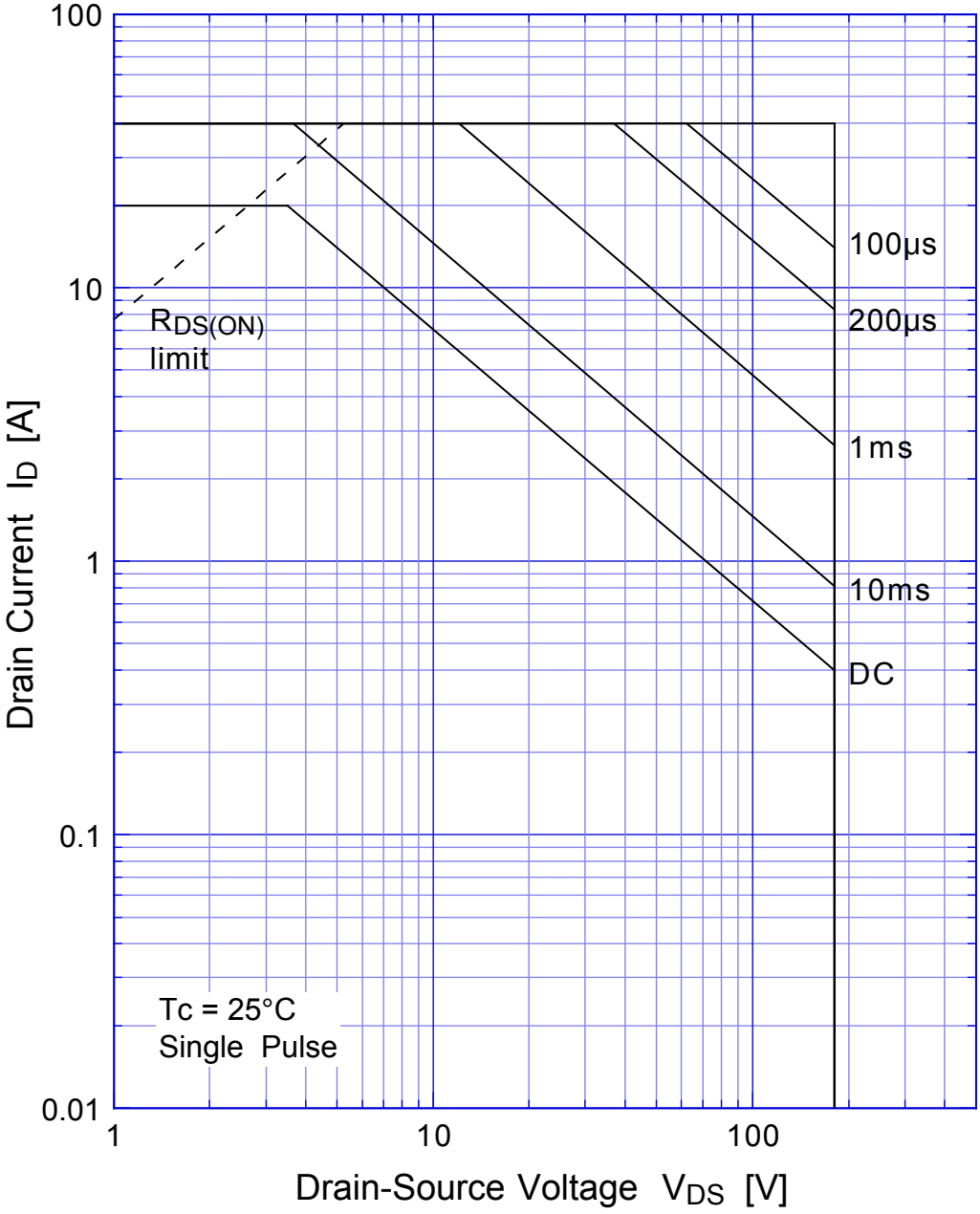

2SK2491
Transfer Characteristics
Tc = −55°C
25°C
100°C
150°C
VDS = 10V
pulse test
TYP
Drain Current ID [A]
Gate-Source Voltage VGS [V]
0
5
10
15
20
25
30
35
40

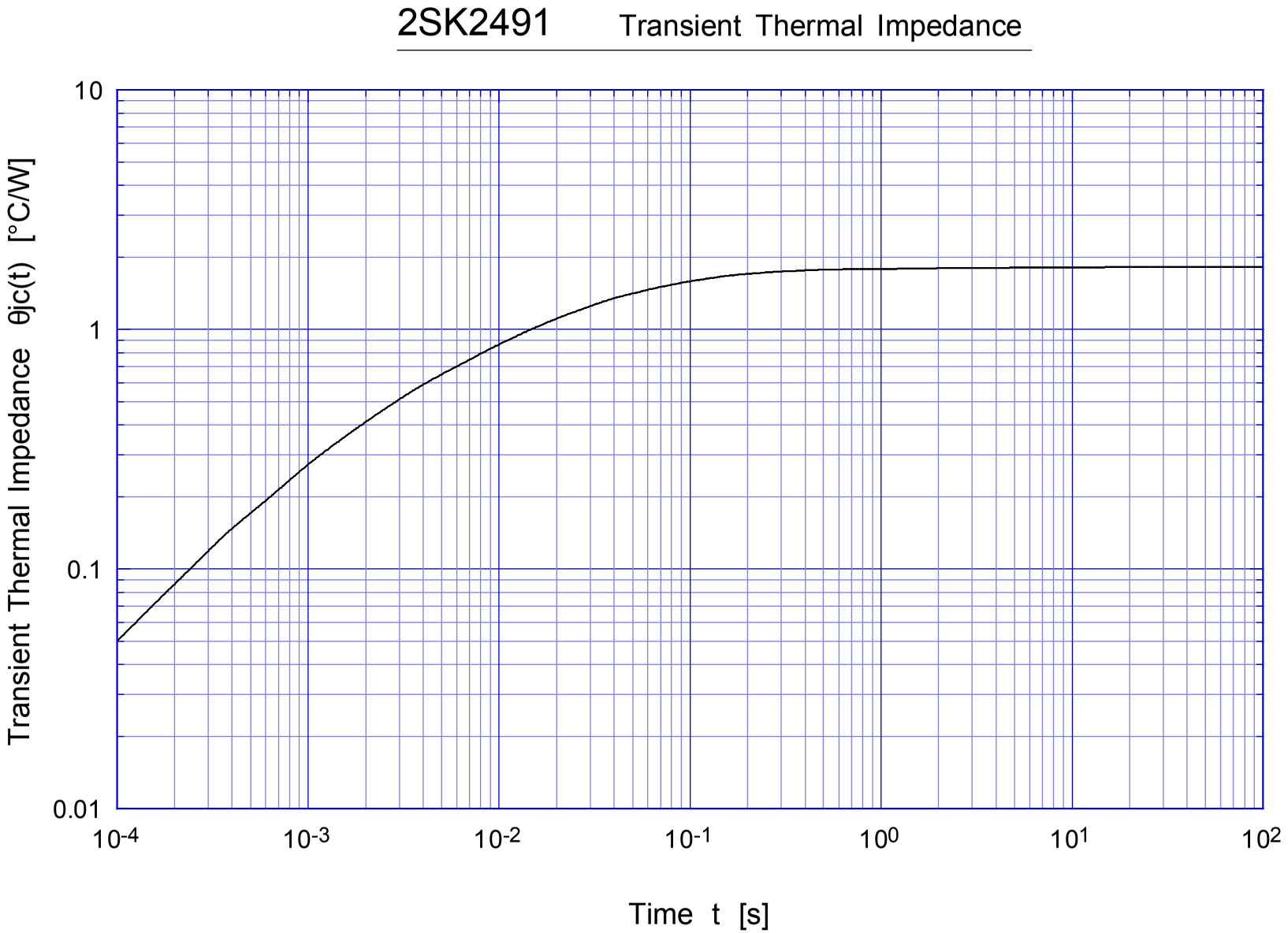
2SK2491 Static Drain-Source On-state Resistance



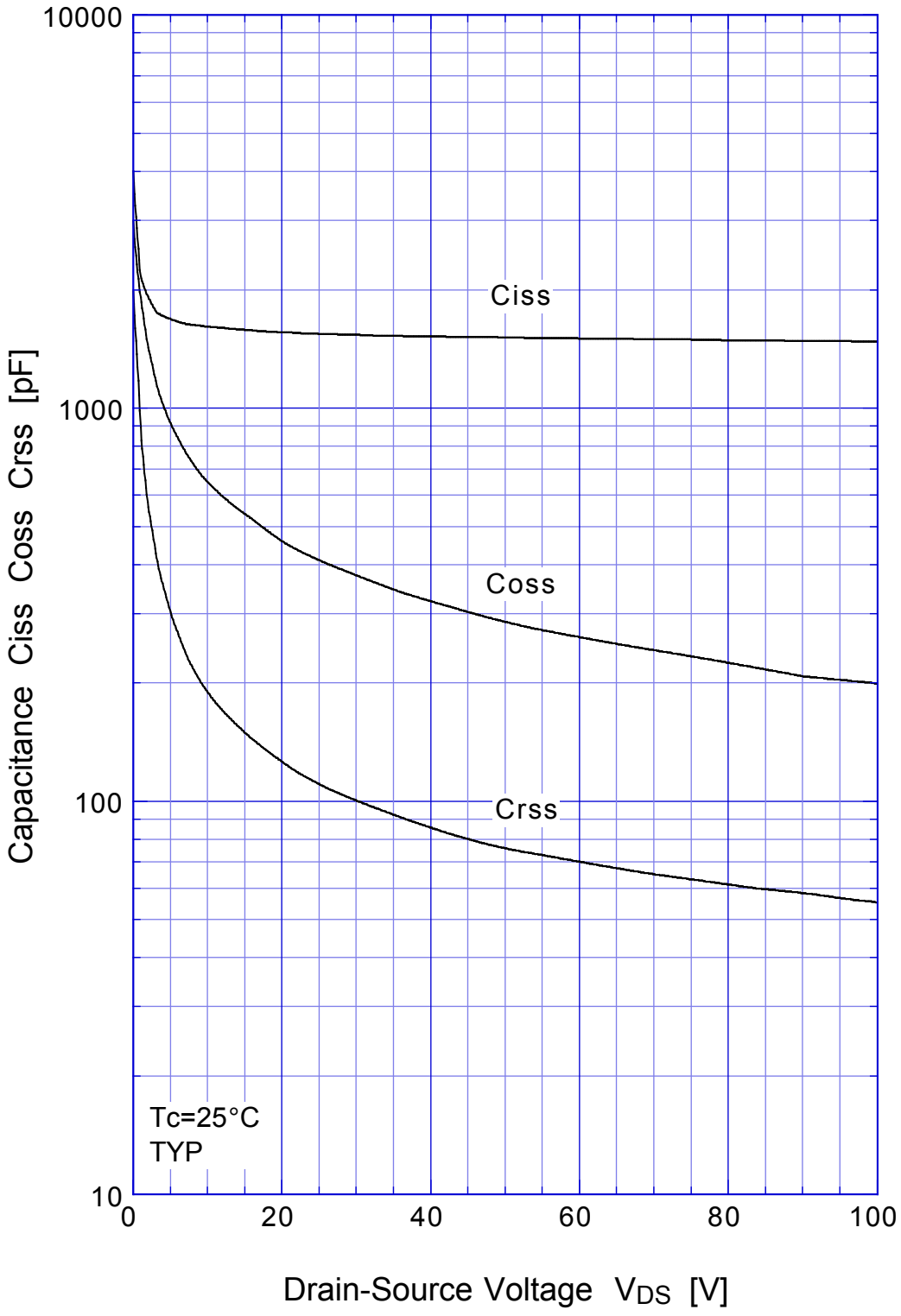

2SK2491 Gate Threshold Voltage
Gate Threshold Voltage V_{TH} [V]
5
4
3
2
1
0
-50
0
50
100
150
Case Temperature Tc [°C]
V_{DS} = 10V
I_D = 1mA
TYP

2SK2491 Safe Operating Area

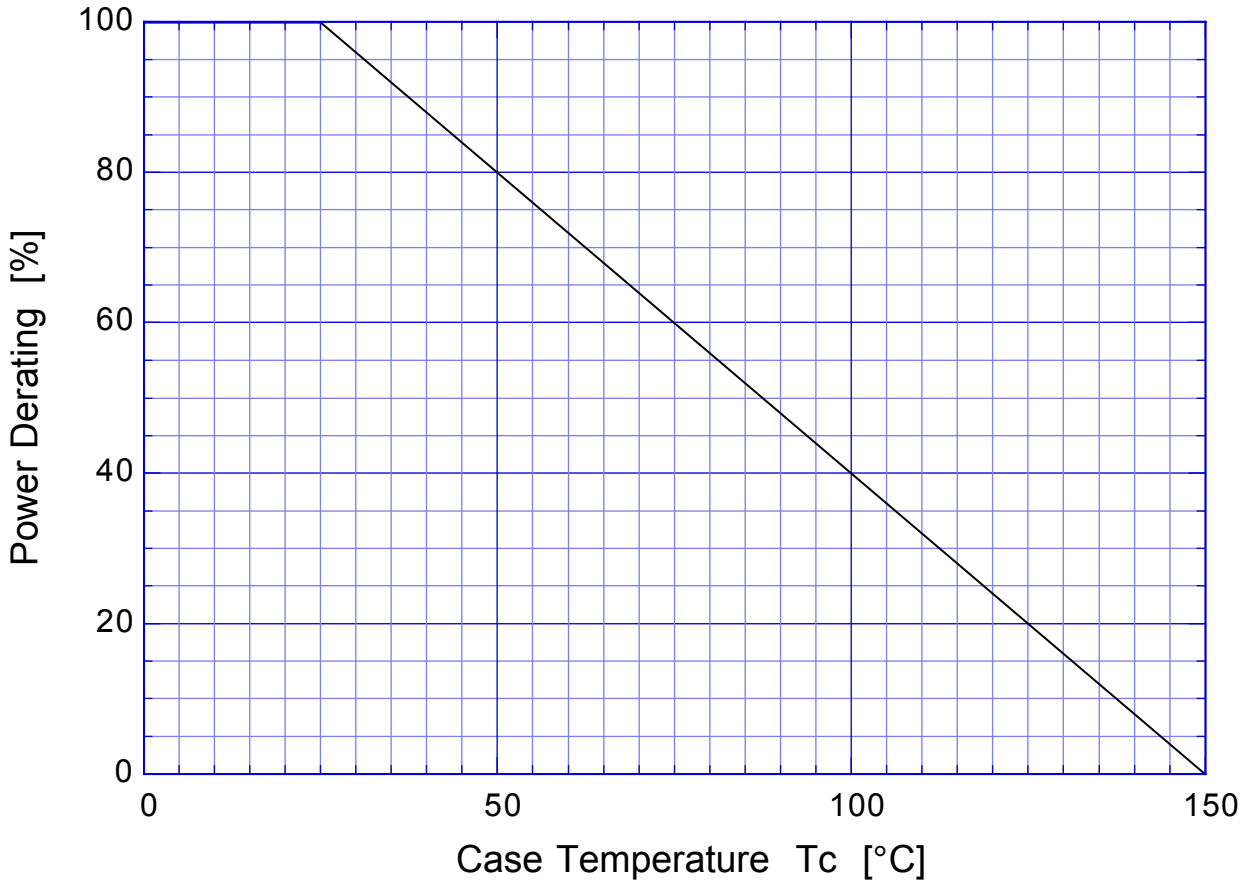



2SK2491
Transient Thermal Impedance
Transient Thermal Impedance θjc(t) [°C/W]
10
1
0.1
0.01
10-4
10-3
10-2
10-1
100
101
102
Time t [s]

2SK2491 Capacitance



2SK2491 Power Derating



2SK2491 Gate Charge Characteristics