SHINDENGEN

VZ Series Power MOSFET

N-Channel Enhancement type

2SK2560

(F20F20VZ)

200V 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.

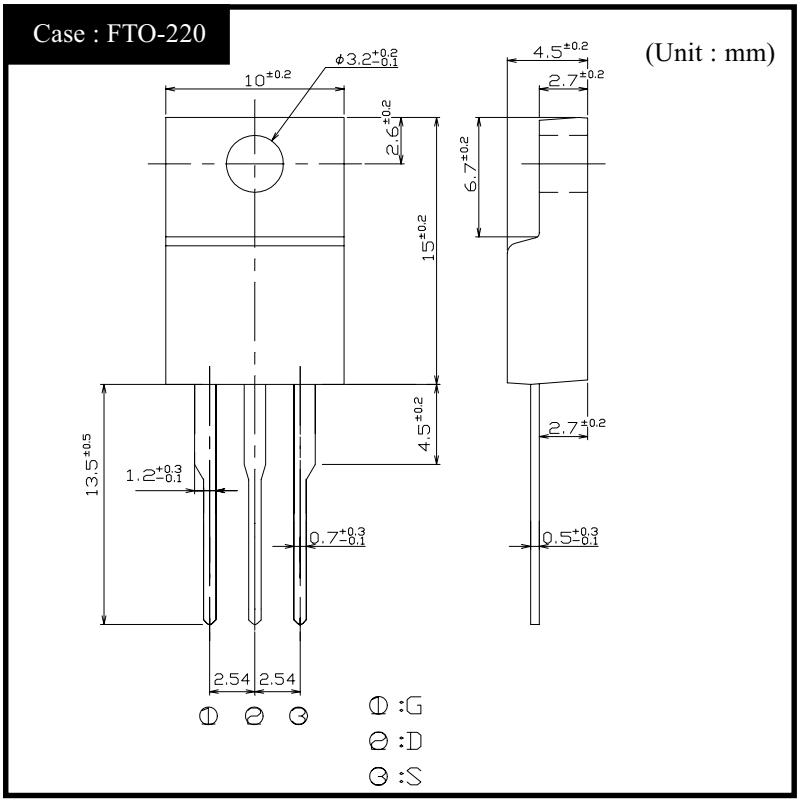
APPLICATION

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

OUTLINE DIMENSIONS

Case : FTO-220

(Unit : mm)



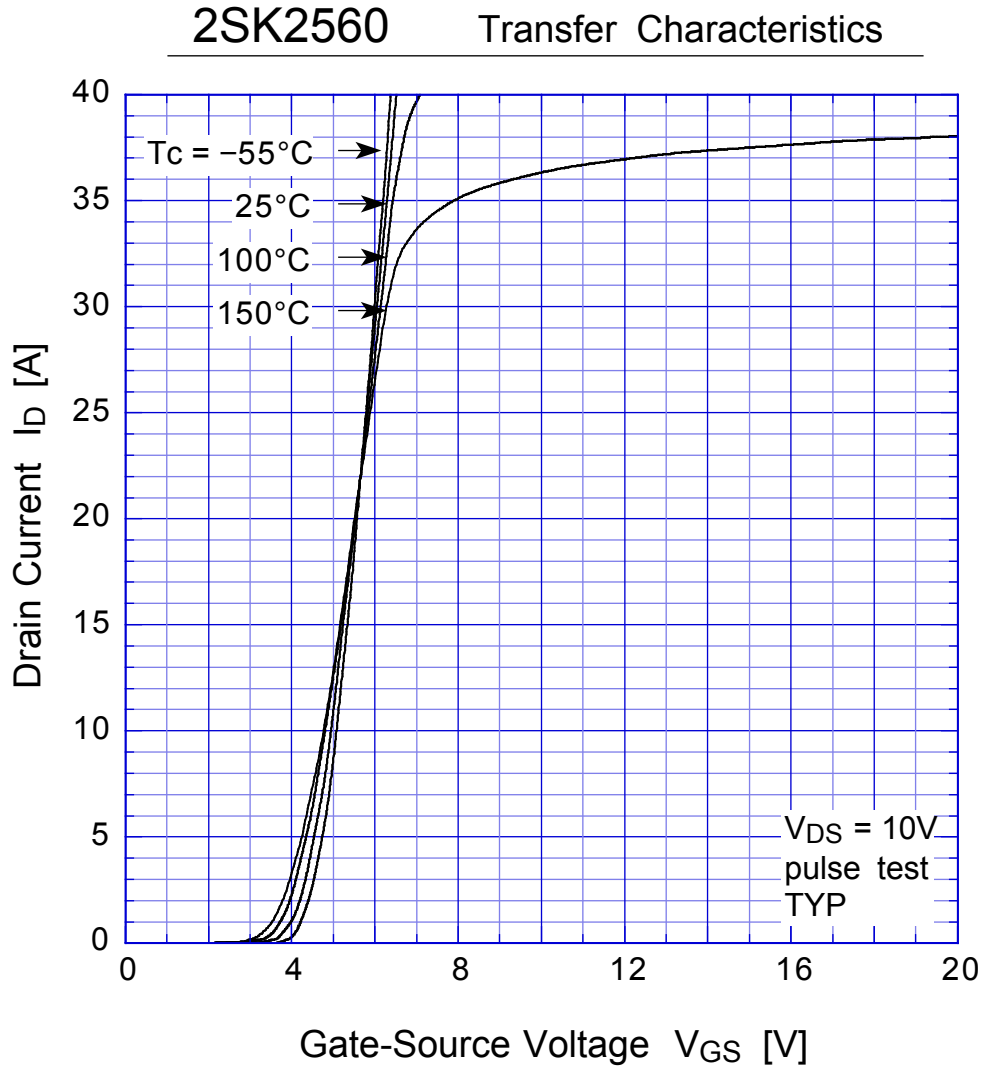
RATINGS

●Absolute Maximum Ratings （Tc = 25℃）

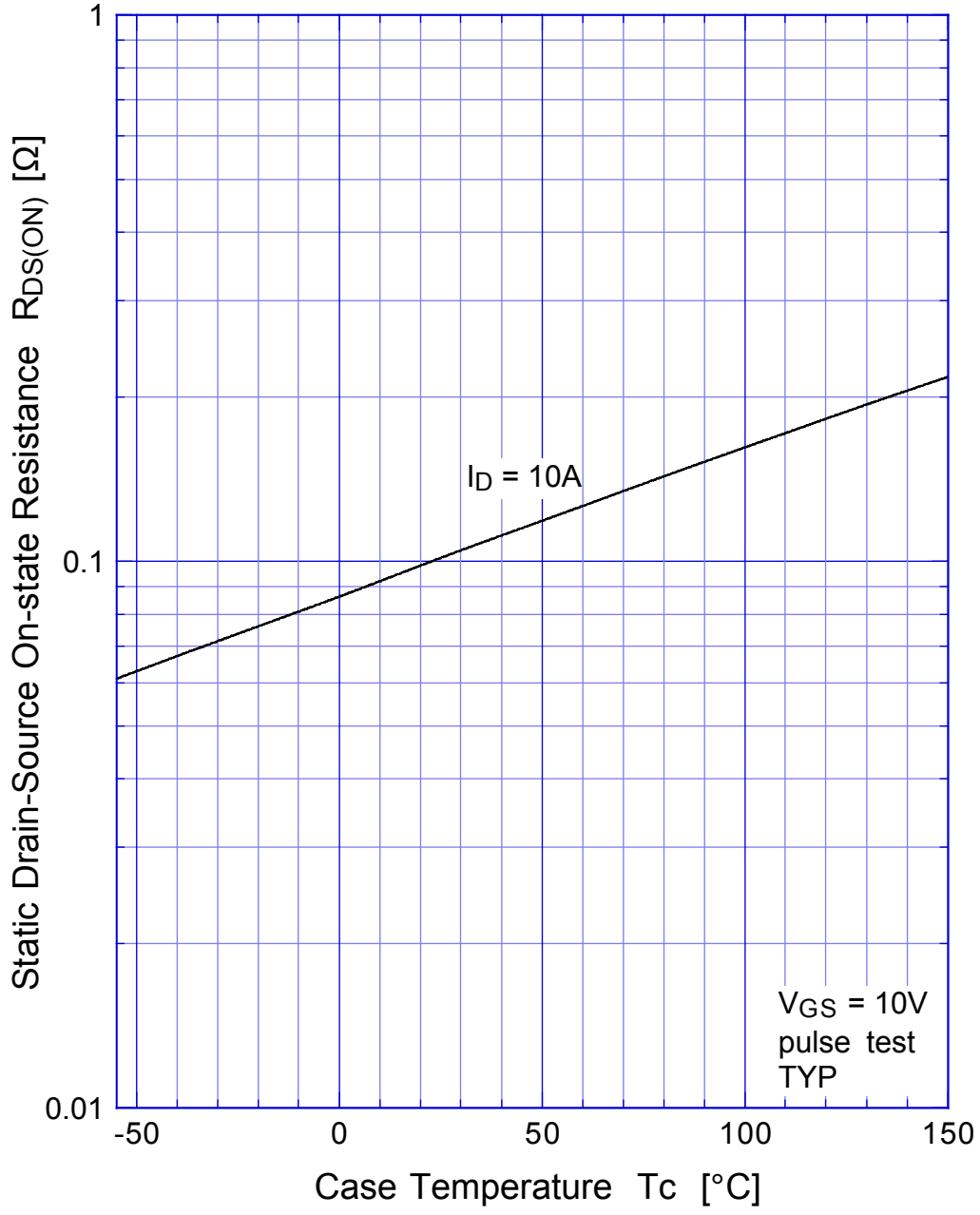
Item	Symbol	Conditions	Ratings	Unit
Storage Temperature	T_{stg}		−55～150	℃
Channel Temperature	T_{ch}		150	
Drain-Source Voltage	V_{DSS}		200	V
Gate-Source Voltage	V_{GSS}		±30	
Continuous Drain Current(DC)	I_D		20	A
Continuous Drain Current(Peak)	I_{DP}		40	
Continuous Source Current(DC)	I_S		20	
Total Power Dissipation	P_T		60	W
Single Pulse Avalanche Current	I_{AS}	Tch = 25℃	20	A
Dielectric Strength	V_{dis}	Terminals to case, AC 1 minute	2	kV
Mounting Torque	TOR	(Recommended torque :0.3 N·m)	0.5	N·m

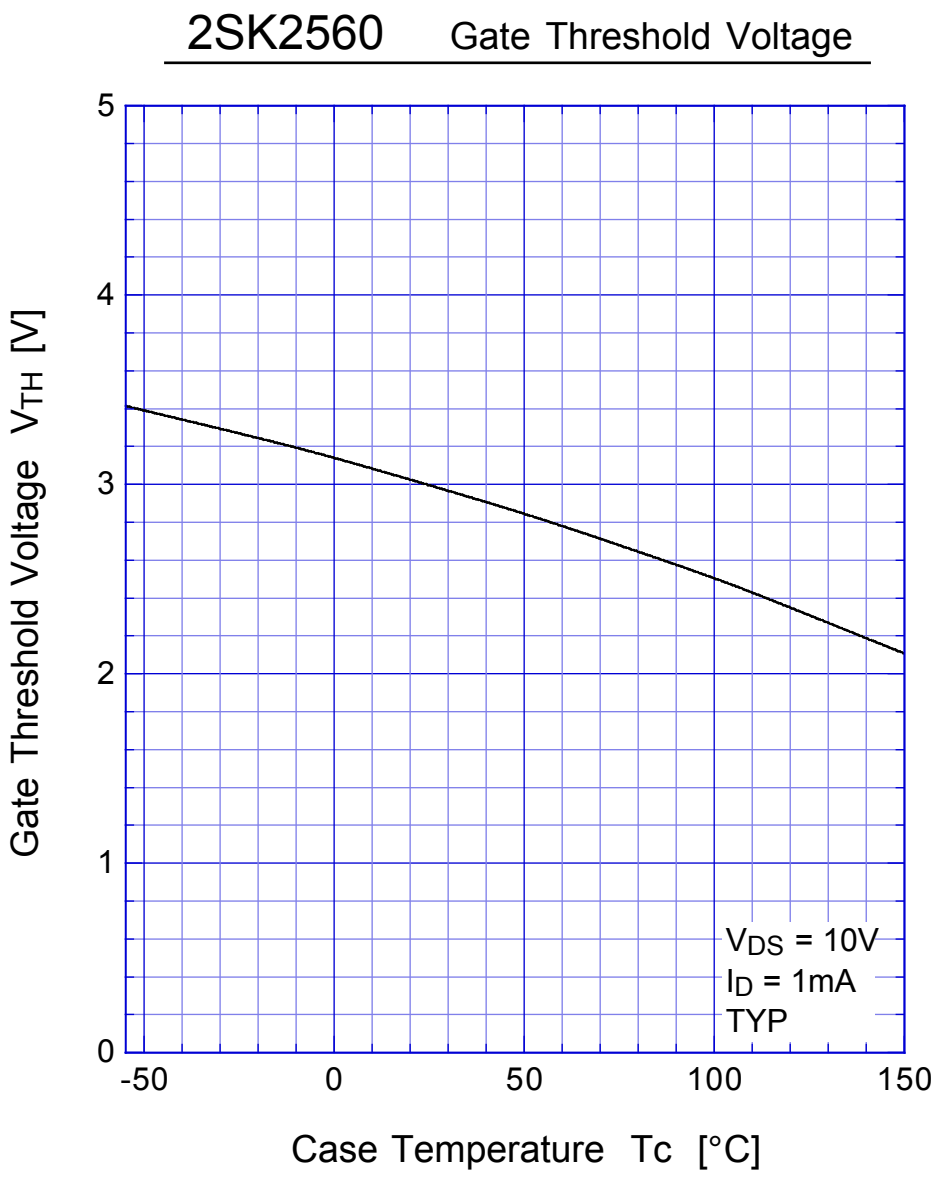
●Electrical Characteristics Tc = 25℃

Item	Symbol	Conditions	Min.	Typ.	Max.	Unit
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	I_D = 1mA, V_{GS} = 0V	200			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 200V, 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	7	14		S
Static Drain-Source On-state Resistance	$R_{DS(ON)}$	I_D =10A, V_{GS} = 10V		0.1	0.18	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			2.08	℃/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		1800		pF
Reverse Transfer Capacitance	C_{rss}			165		
Output Capacitance	C_{oss}			620		
Turn-On Time	t_{on}	I_D = 10A, R_L = 10Ω, V_{GS} = 10V		100	200	ns
Turn-Off Time	t_{off}			280	560	

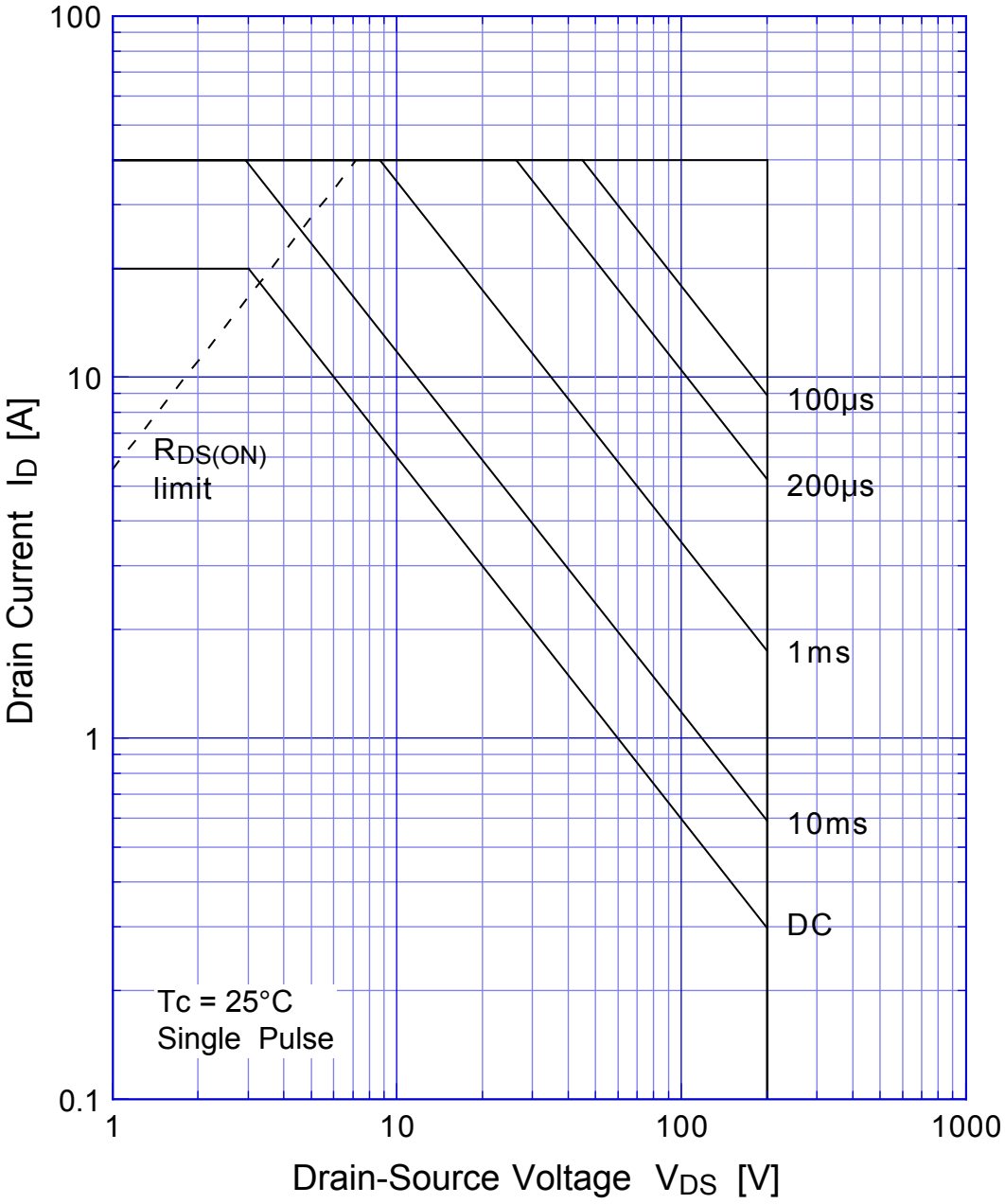

2SK2560
Transfer Characteristics
Drain Current I_D [A]
Gate-Source Voltage V_{GS} [V]
Tc = −55°C
25°C
100°C
150°C
V_{DS} = 10V
pulse test
TYP
0
5
10
15
20
25
30
35
40
0
4
8
12
16
20

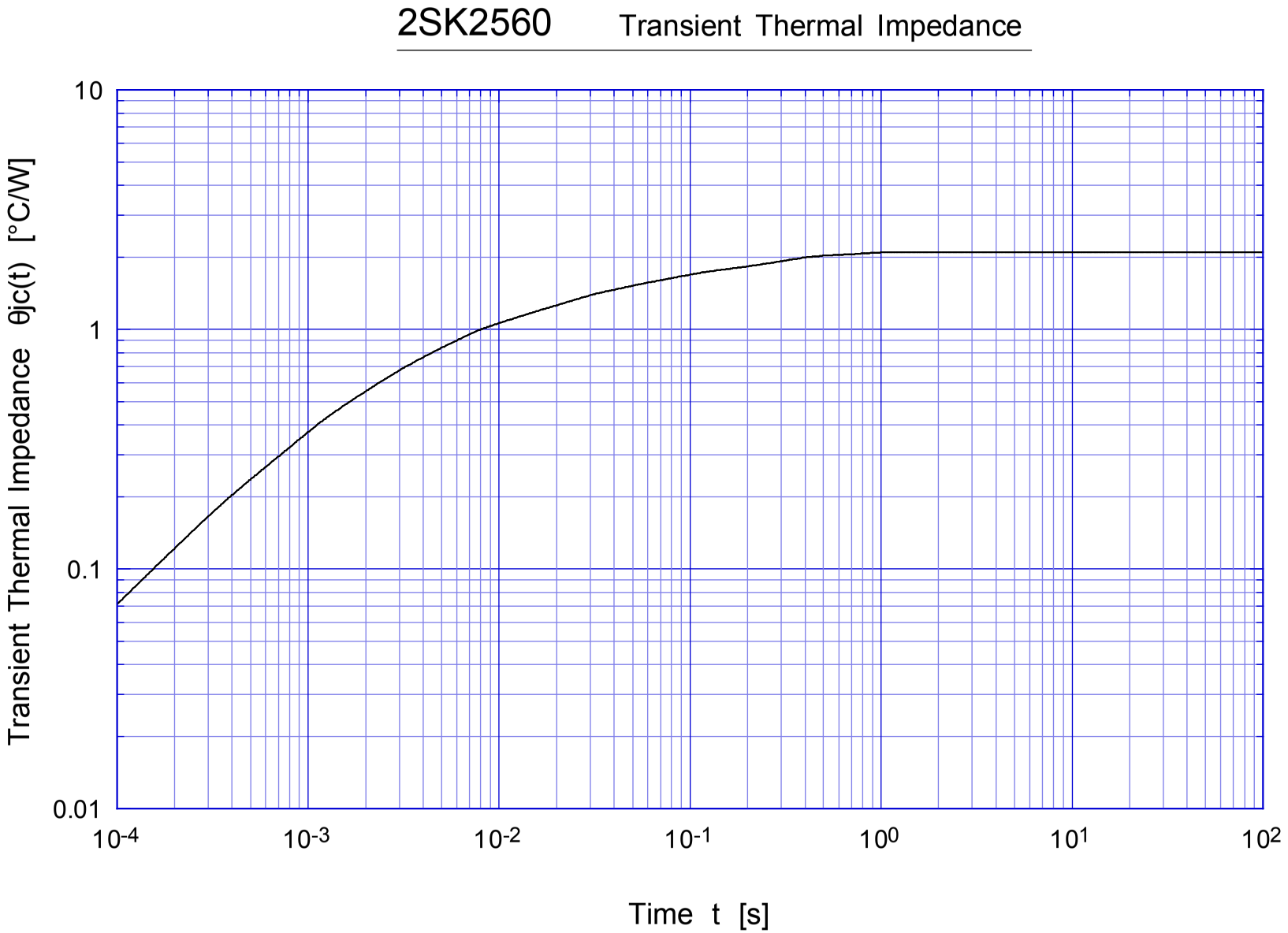
2SK2560 Static Drain-Source On-state Resistance



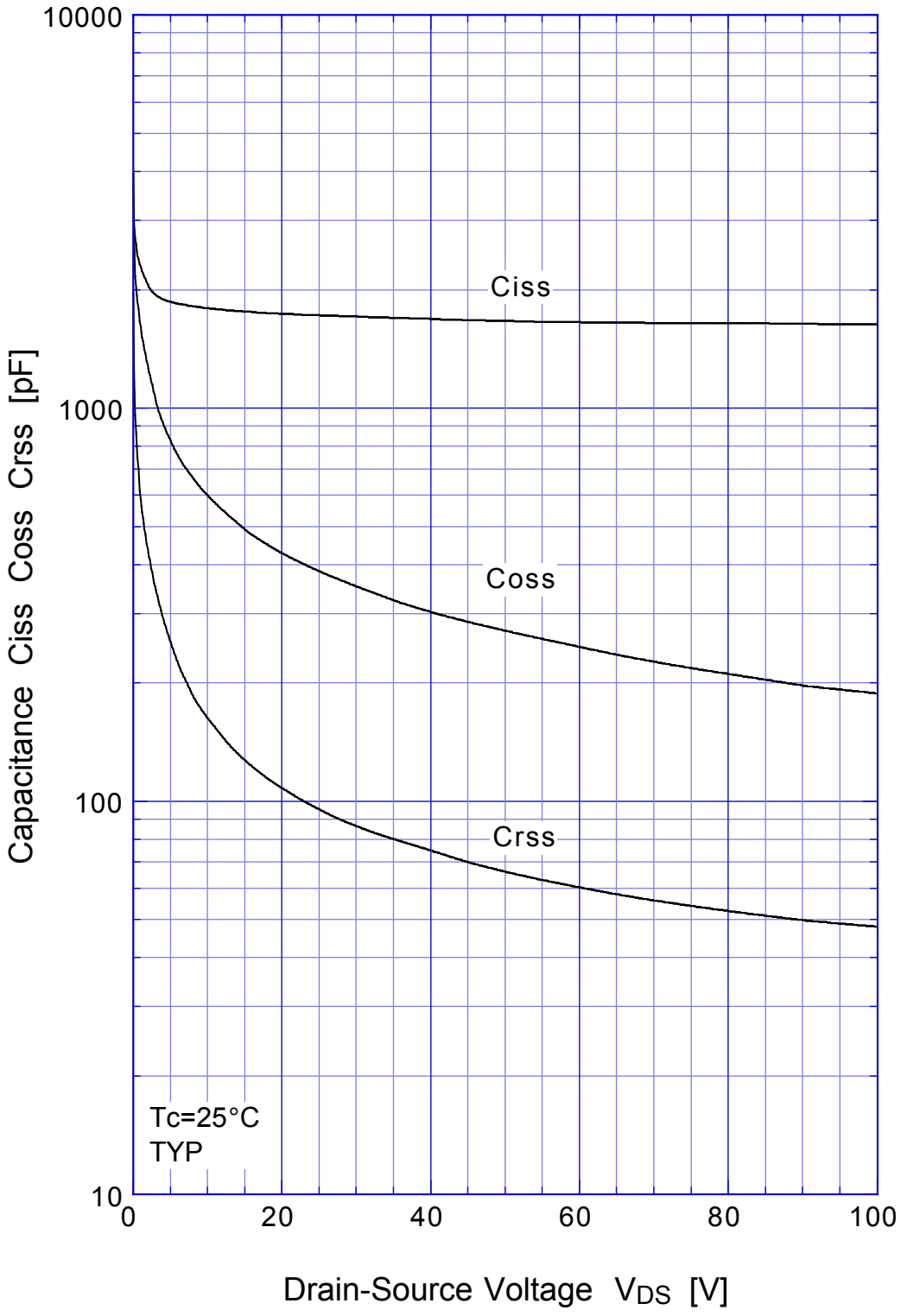

2SK2560 Gate Threshold Voltage
Gate Threshold Voltage V_{TH} [V]
5
4
3
2
1
0
-50
0
50
100
150
Case Temperature Tc [°C]
V_{DS} = 10V
I_D = 1mA
TYP

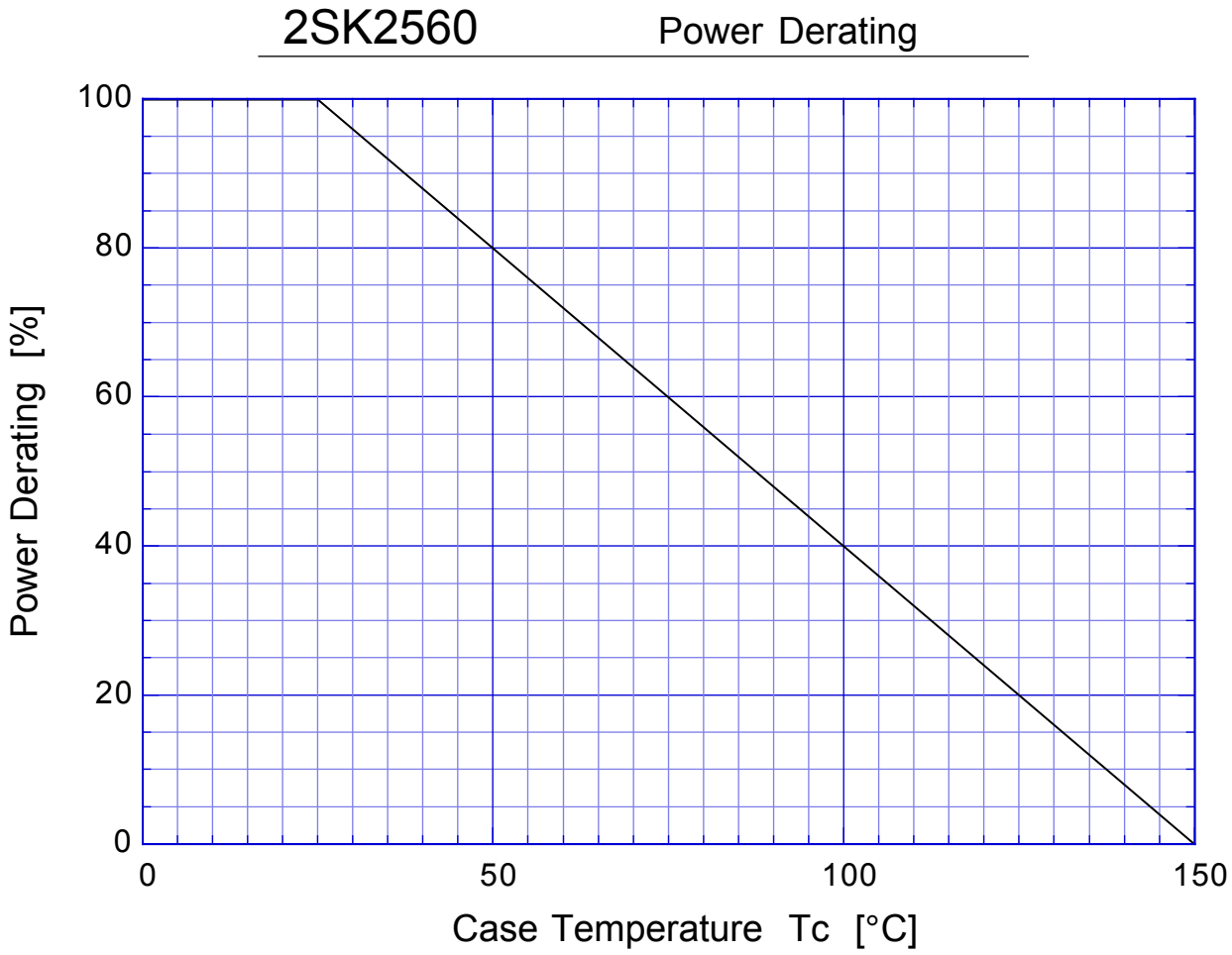
2SK2560 Safe Operating Area

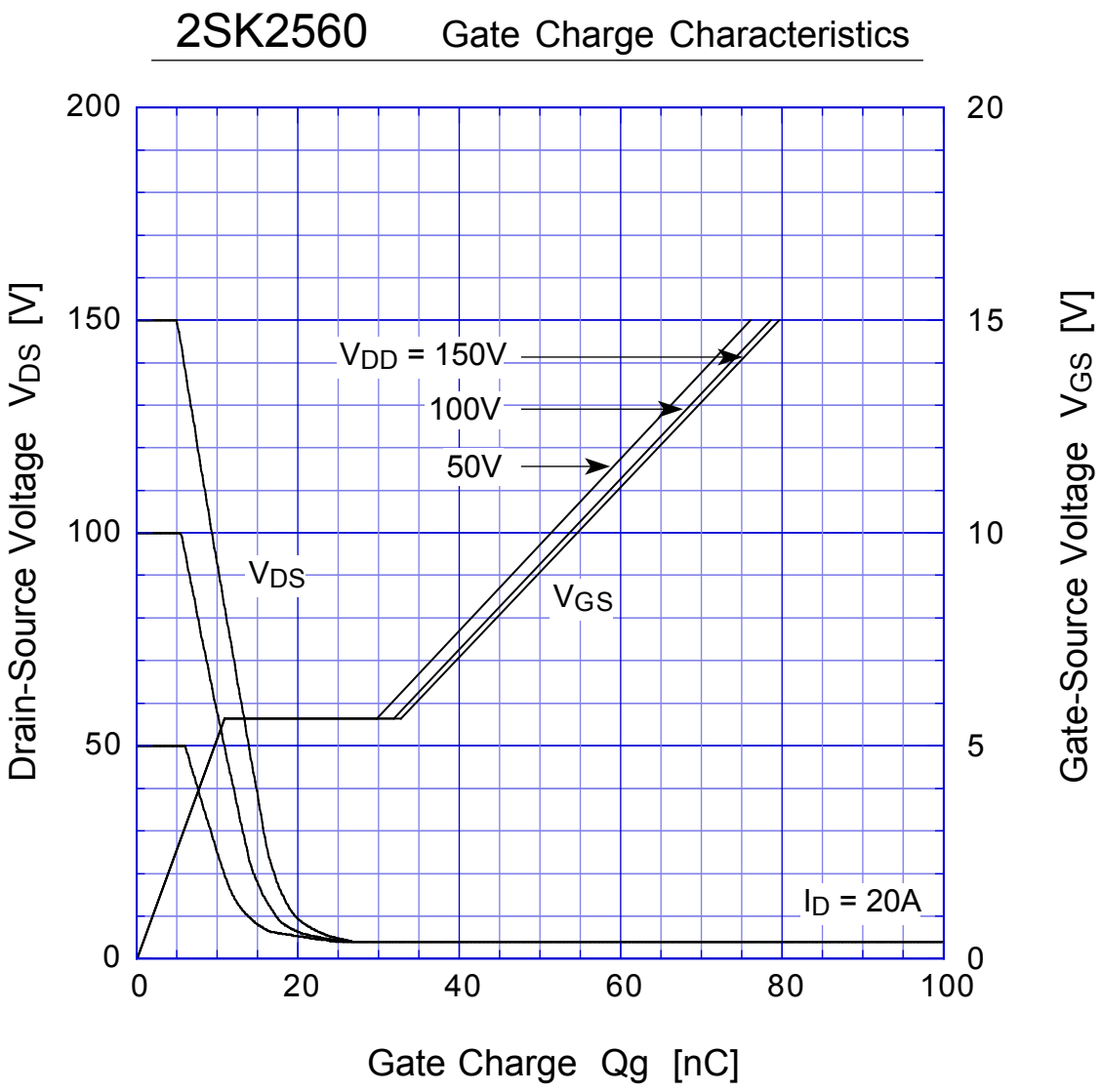



2SK2560
Transient Thermal Impedance
Transient Thermal Impedance θjc(t) [°C/W]
10
1
0.1
0.01
10-4
10-3
10-2
10-1
100
101
102
Time t [s]

2SK2560 Capacitance




2SK2560
Power Derating
Power Derating [%]
100
80
60
40
20
0
0
50
100
150
Case Temperature Tc [°C]


2SK2560 Gate Charge Characteristics
Drain-Source Voltage V_{DS} [V]
Gate-Source Voltage V_{GS} [V]
Gate Charge Qg [nC]
V_{DD} = 150V
100V
50V
V_{DS}
V_{GS}
I_D = 20A
200
150
100
50
0
20
15
10
5
0
0
20
40
60
80
100