SHINDENGEN

VX-2 Series Power MOSFET

N-Channel Enhancement type

2SK2188
(F10F50VX2)

500V 10A

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.

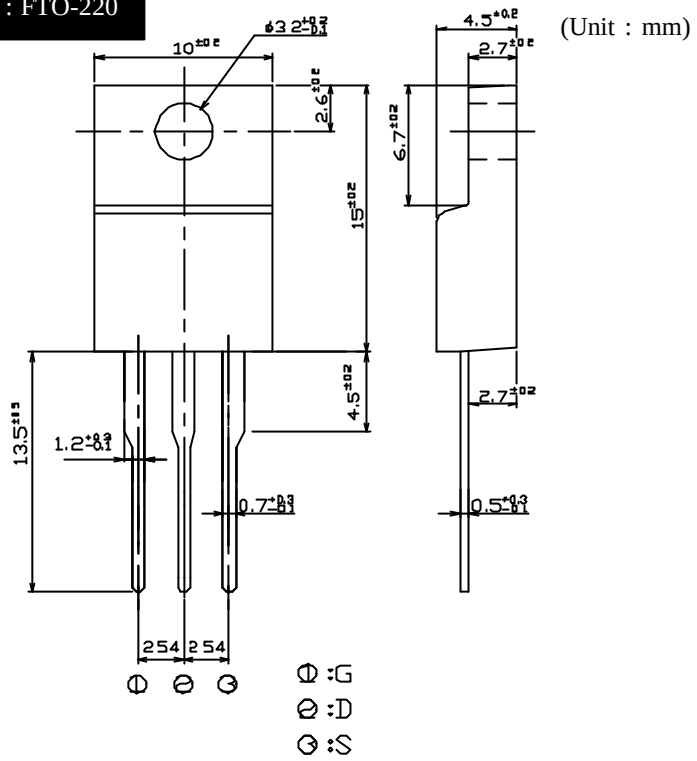
APPLICATION

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

OUTLINE DIMENSIONS

Case : FTO-220

(Unit : mm)



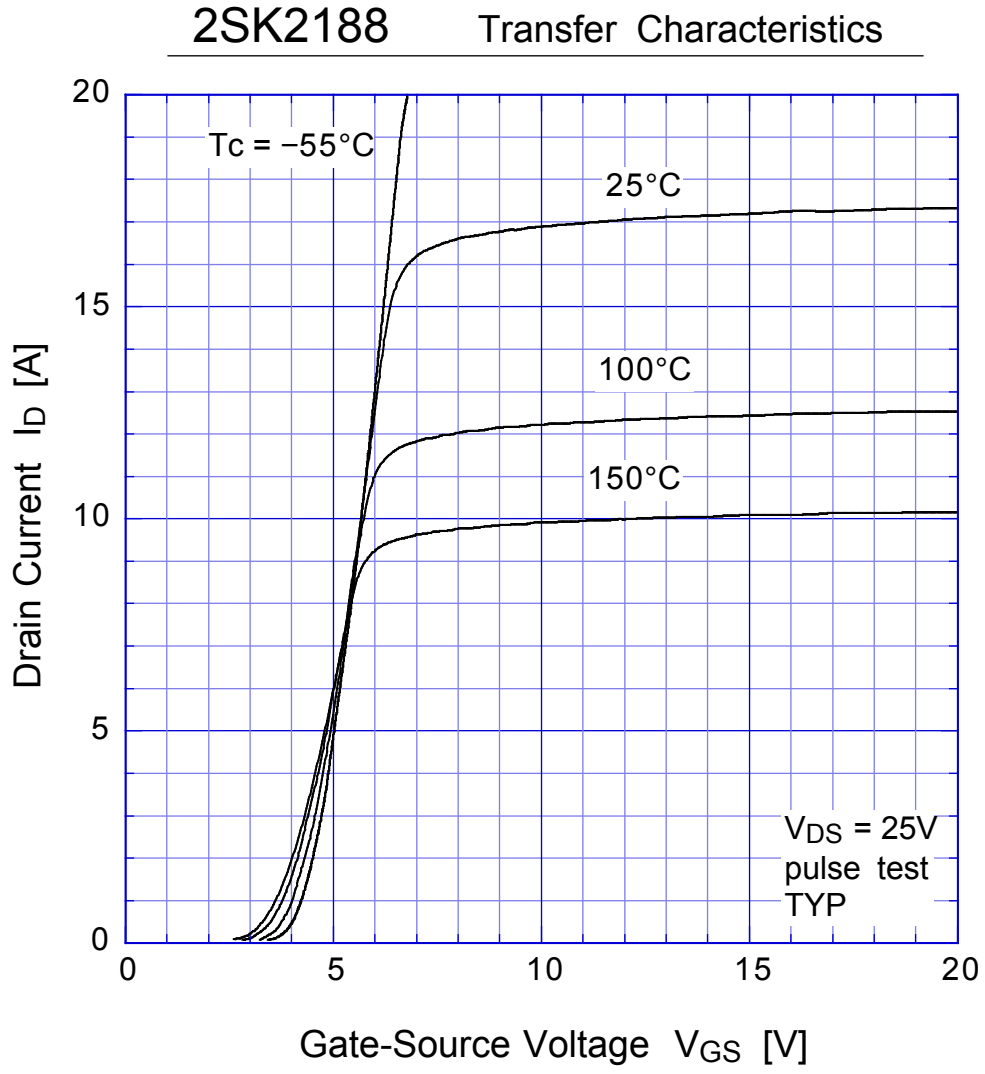
RATINGS

●Absolute Maximum Ratings (Tc = 25°C)

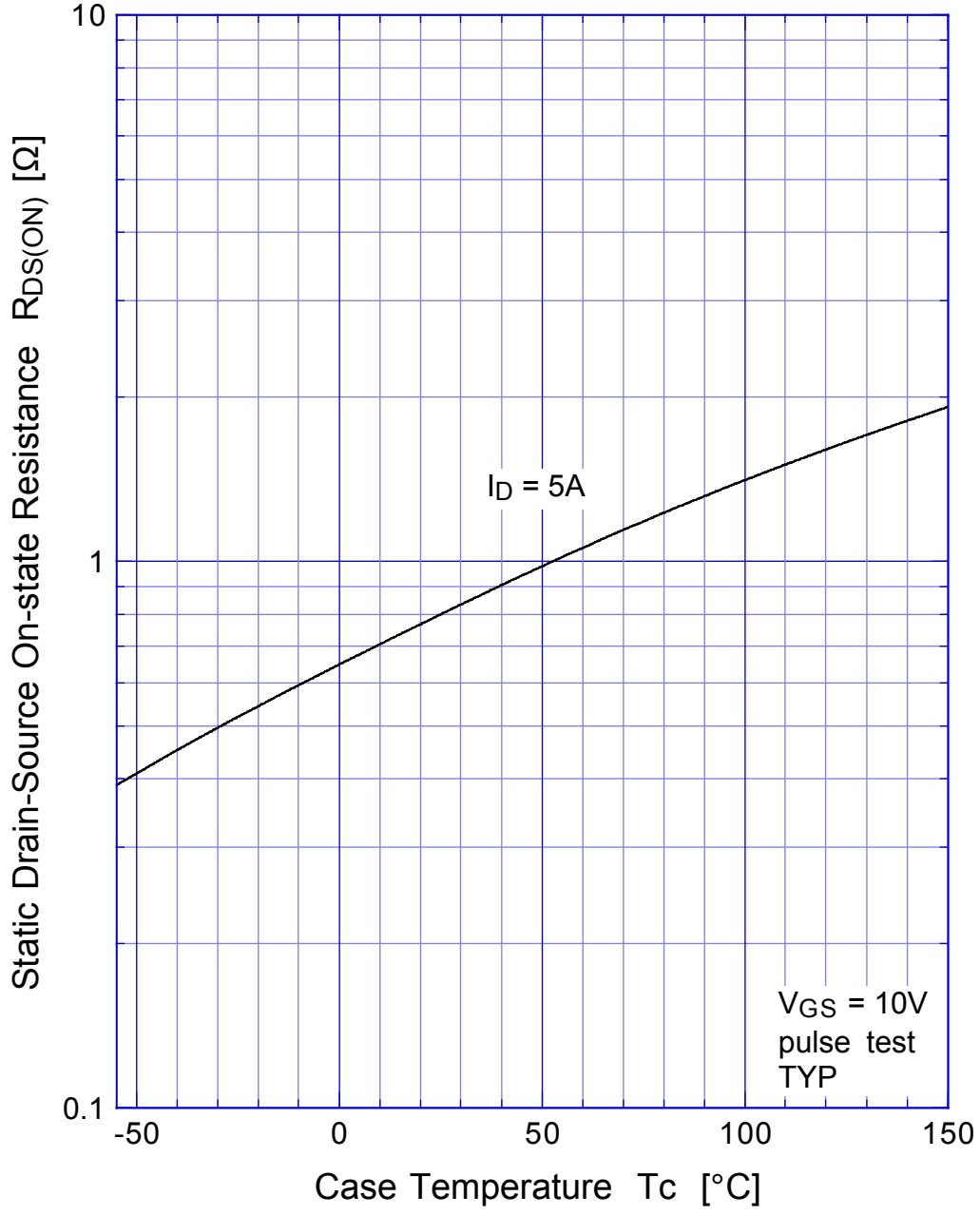
Item	Symbol	Conditions	Ratings	Unit
Storage Temperature	Tstg		-55～150	°C
Channel Temperature	Tch		150	
Drain-Source Voltage	VDSS		500	V
Gate-Source Voltage	VGSS		±30	
Continuous Drain Current (DC)	ID		10	A
Continuous Drain Current (Peak)	IDP		30	
Continuous Source Current (DC)	IS		10	
Total Power Dissipation	PT		40	W
Single Pulse Avalanche Current	IAS	Tch = 25°C	10	A
Dielectric Strength	Vdis	Terminals to case, AC 1 minute	2	kV
Mounting Torque	TOR	(Recommended torque : 0.3N·m)	0.5	N·m

●Electrical Characteristics Tc = 25℃

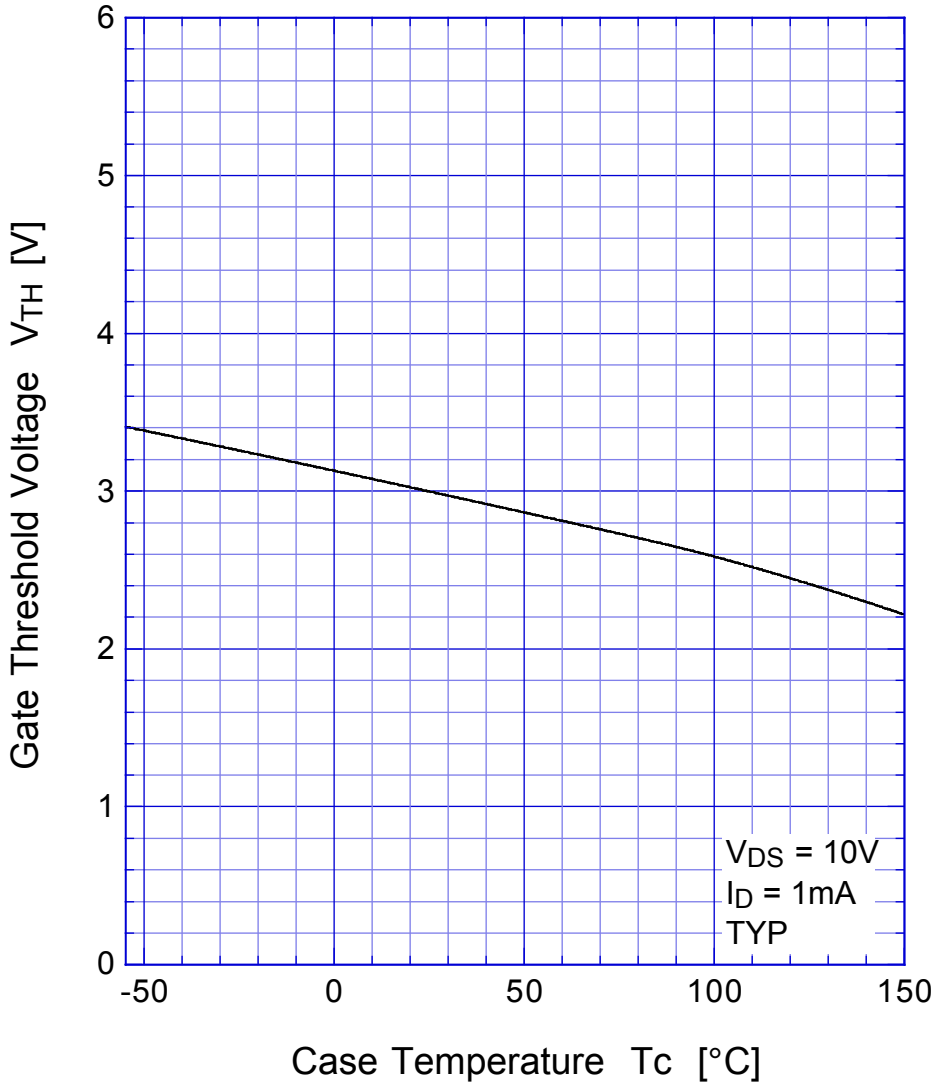
Item	Symbol	Conditions	Min.	Typ.	Max.	Unit
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	I_D = 1mA, V_{GS} = 0V	500			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 500V, V_{GS} = 0V			250	μA
Gate-Source Leakage Current	I_{GSS}	V_{GS} = ±30V, V_{DS} = 0V			±0.1	
Forward Transconductance	g_{fs}	I_D = 5A, V_{DS} = 10V	2.4	6.3		S
Static Drain-Source On-state Resistance	$R_{DS(ON)}$	I_D = 5A, V_{GS} = 10V		0.8	1.0	Ω
Gate Threshold Voltage	V_{TH}	I_D = 1mA, V_{DS} = 10V	2.5	3.0	3.5	V
Source-Drain Diode Forwade Voltage	V_{SD}	I_S = 5A, V_{GS} = 0V			1.5	
Thermal Resistance	θ jc	junction to case			3.12	℃/W
Total Gate Charge	Q_g	V_{DD} = 400V, V_{GS} = 10V, I_D = 10A		30		nC
Input Capacitance	C_{iss}	V_{DS} = 10V, V_{GS} = 0V, f = 1MHz		890		pF
Reverse Transfer Capacitance	C_{rss}			70		
Output Capacitance	C_{oss}			200		
Turn-On Time	t_{on}	I_D = 5A, V_{GS} = 10V, R_L = 30Ω		70	110	ns
Turn-Off Time	t_{off}	V_{GS} = 0V		140	220	


2SK2188
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
5
10
15
20

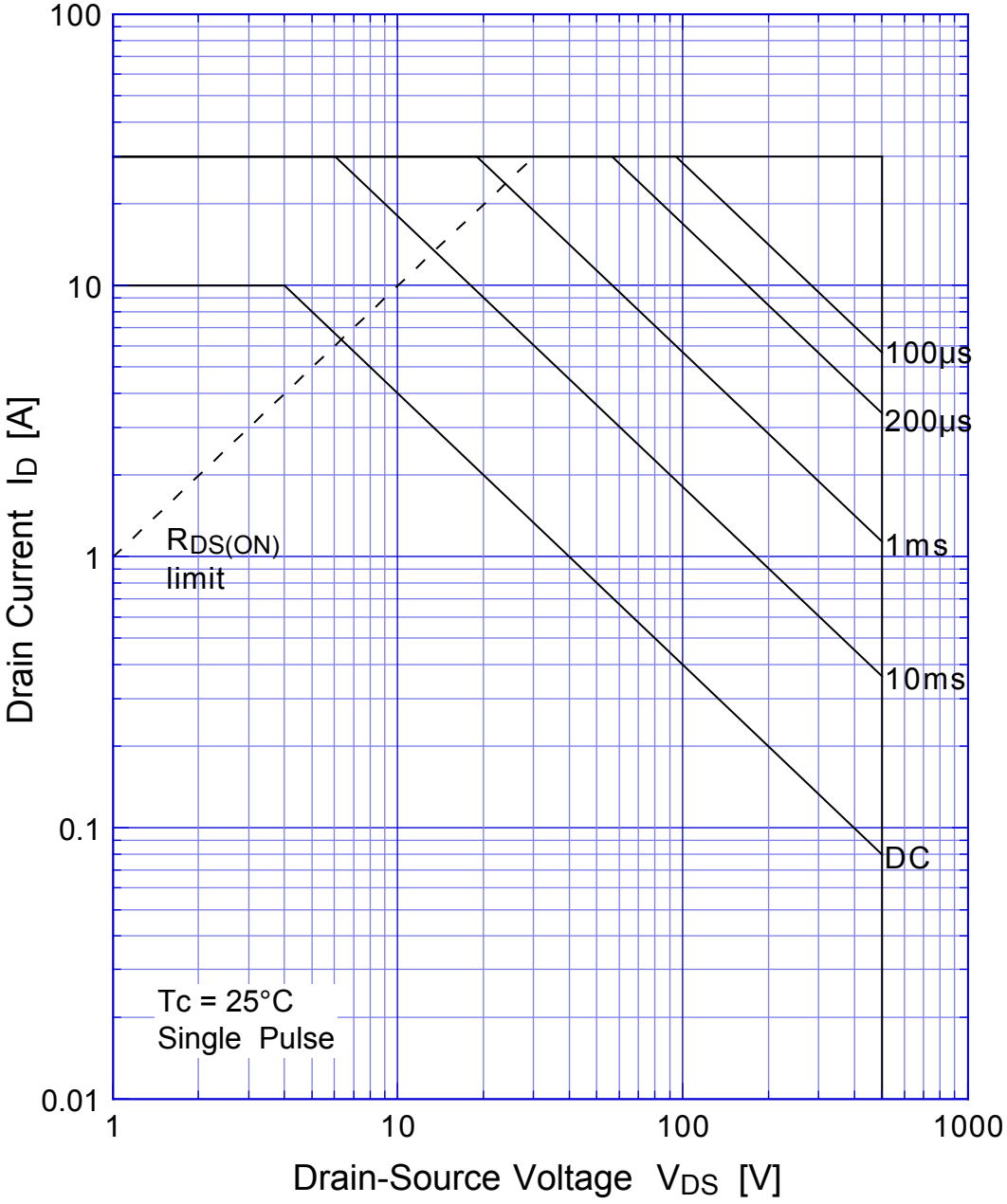
2SK2188 Static Drain-Source On-state Resistance

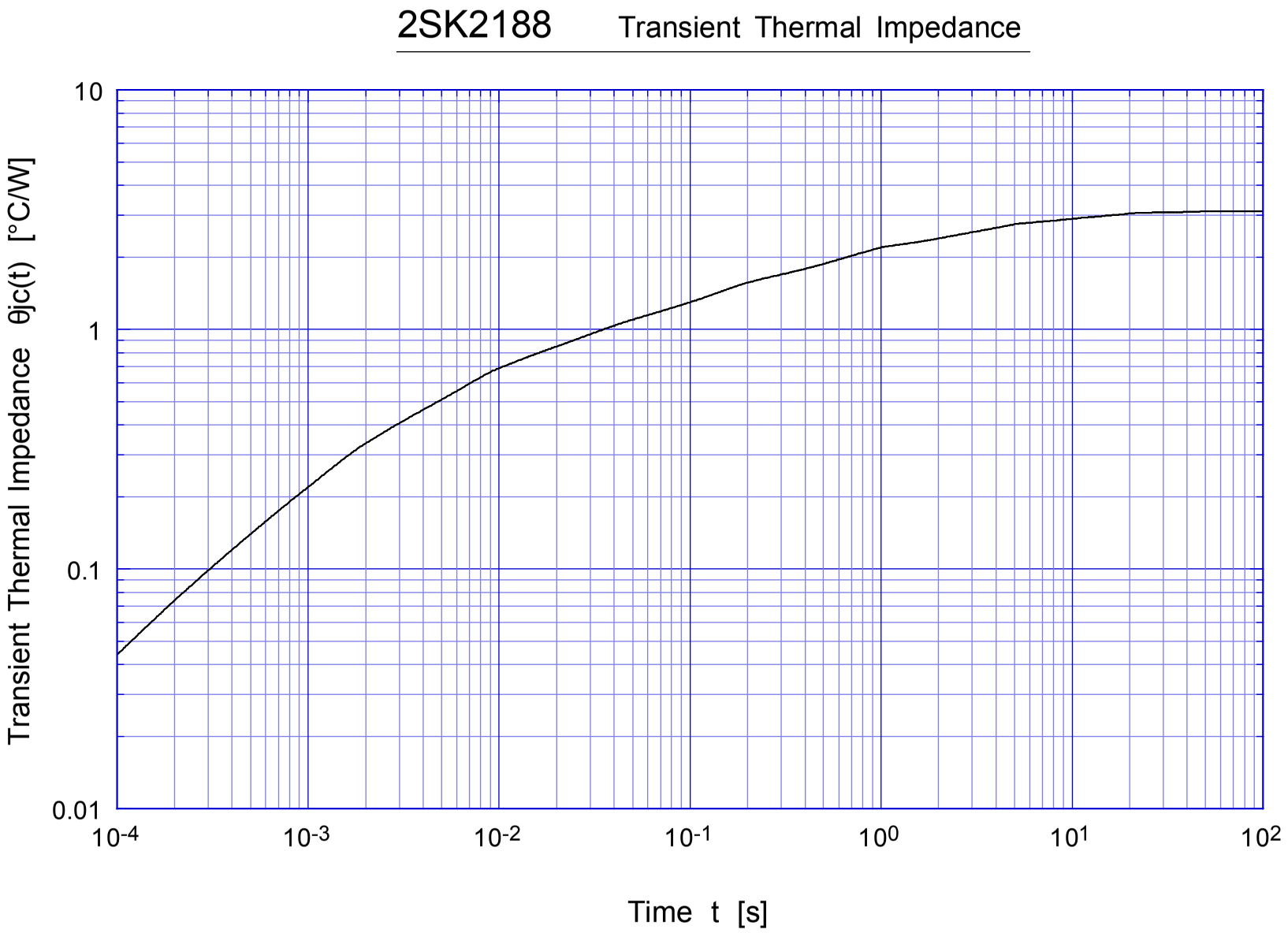


2SK2188 Gate Threshold Voltage

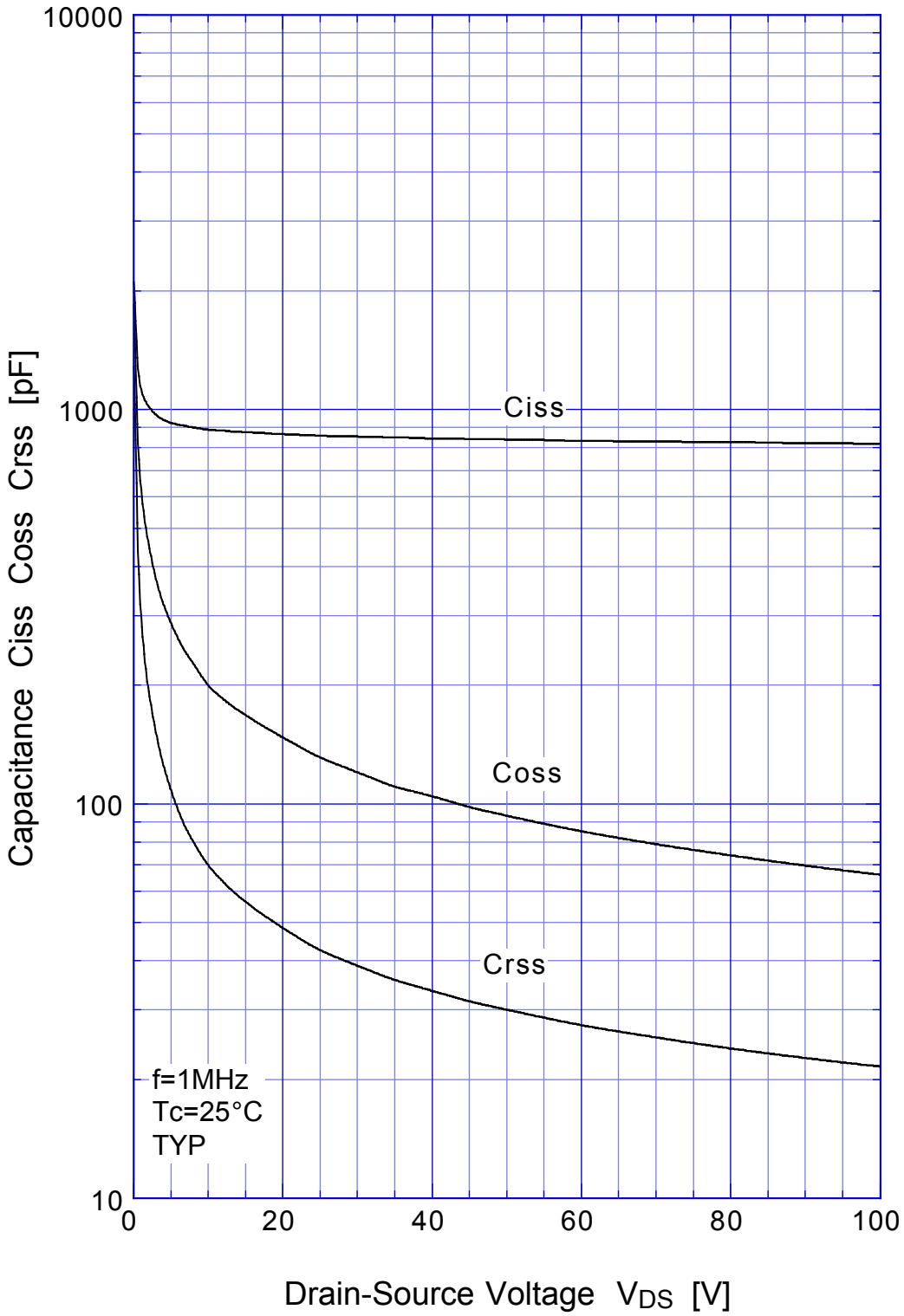


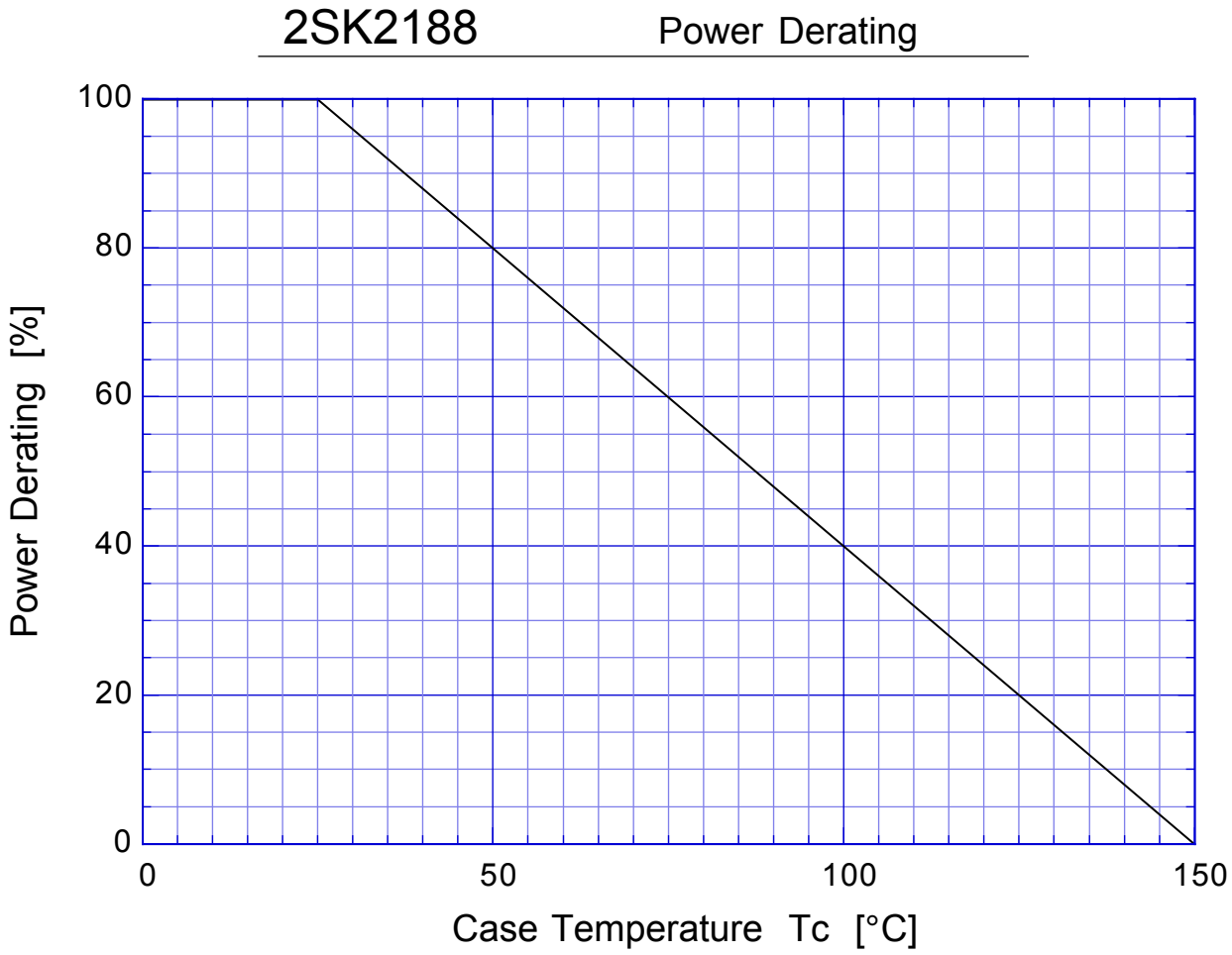
2SK2188 Safe Operating Area




2SK2188 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]

2SK2188 Capacitance




2SK2188
Power Derating
Power Derating [%]
100
80
60
40
20
0
0
50
100
150
Case Temperature Tc [°C]

2SK2188 Gate Charge Characteristics