SHINDENGEN

VX-2 Series Power MOSFET

N-Channel Enhancement type

2SK2190
(FP10W50VX2)

500V 10A

FEATURES

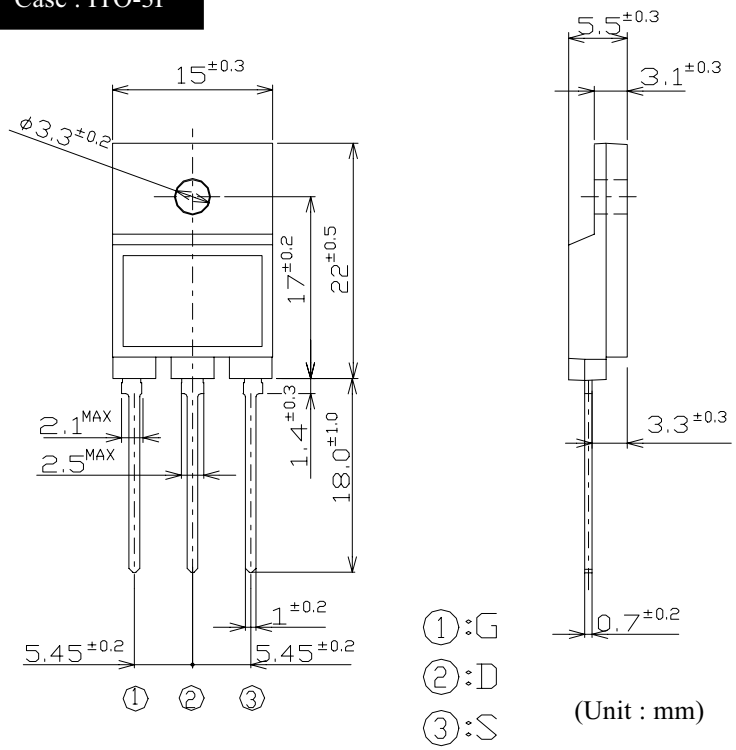
- Input capacitance (Ciss) is small. Especially, input capacitance at 0 biass is small.
- The static Rds(on) is small.
- The switching time is fast.

APPLICATION

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

OUTLINE DIMENSIONS

Case : ITO-3P



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}		500	V
Gate-Source Voltage	V_{GSS}		±30	
Continuous Drain Current(DC)	I_D		10	A
Continuous Drain Current(Peak)	I_{DP}		30	
Continuous Source Current(DC)	I_S		10	
Total Power Dissipation	P_T		40	W
Single Pulse Avalanche Current	I_{AS}	Tch = 25℃	10	A
Dielectric Strength	Vdis	Terminals to case, AC 1 minute	2	kV
Mounting Torque	TOR	(Recommended torque : 0.5N・m)	0.8	N・m

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●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}			140	220	

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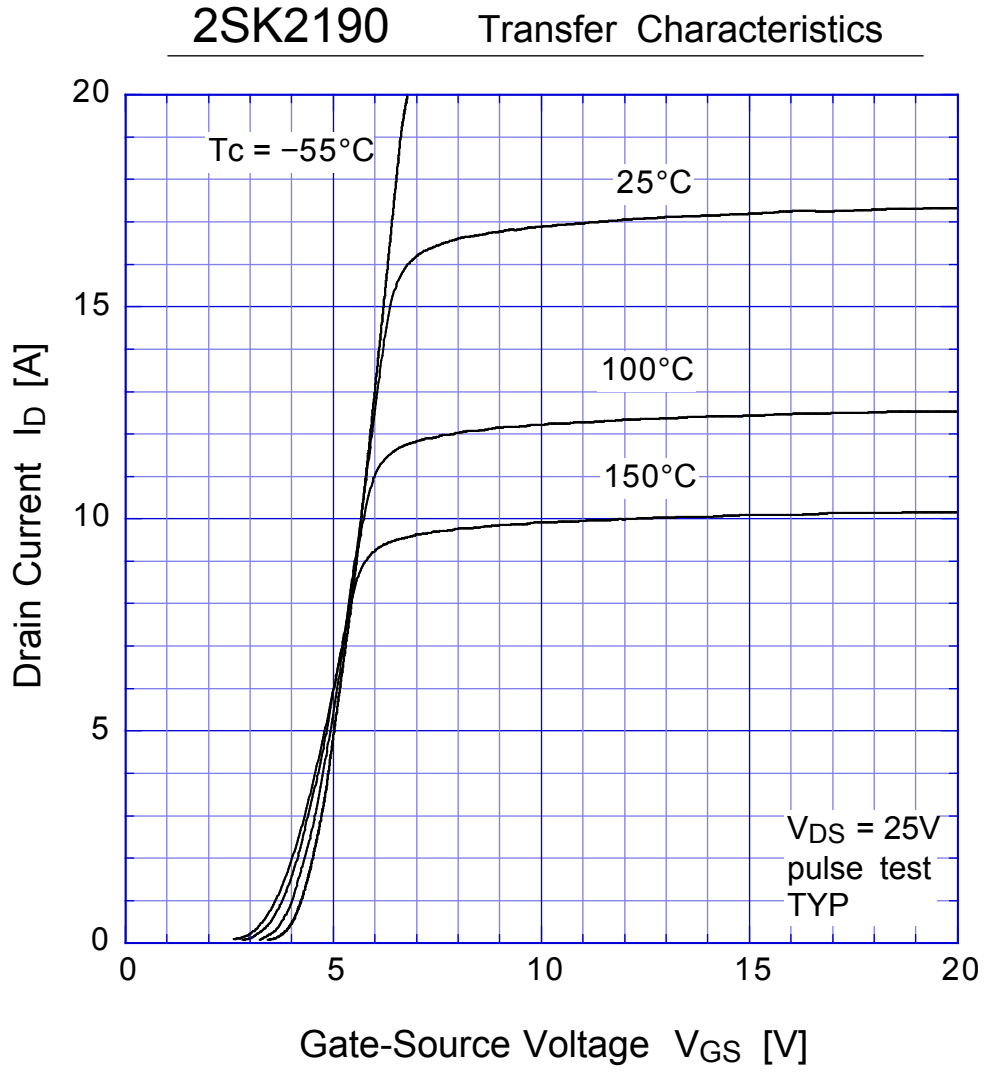
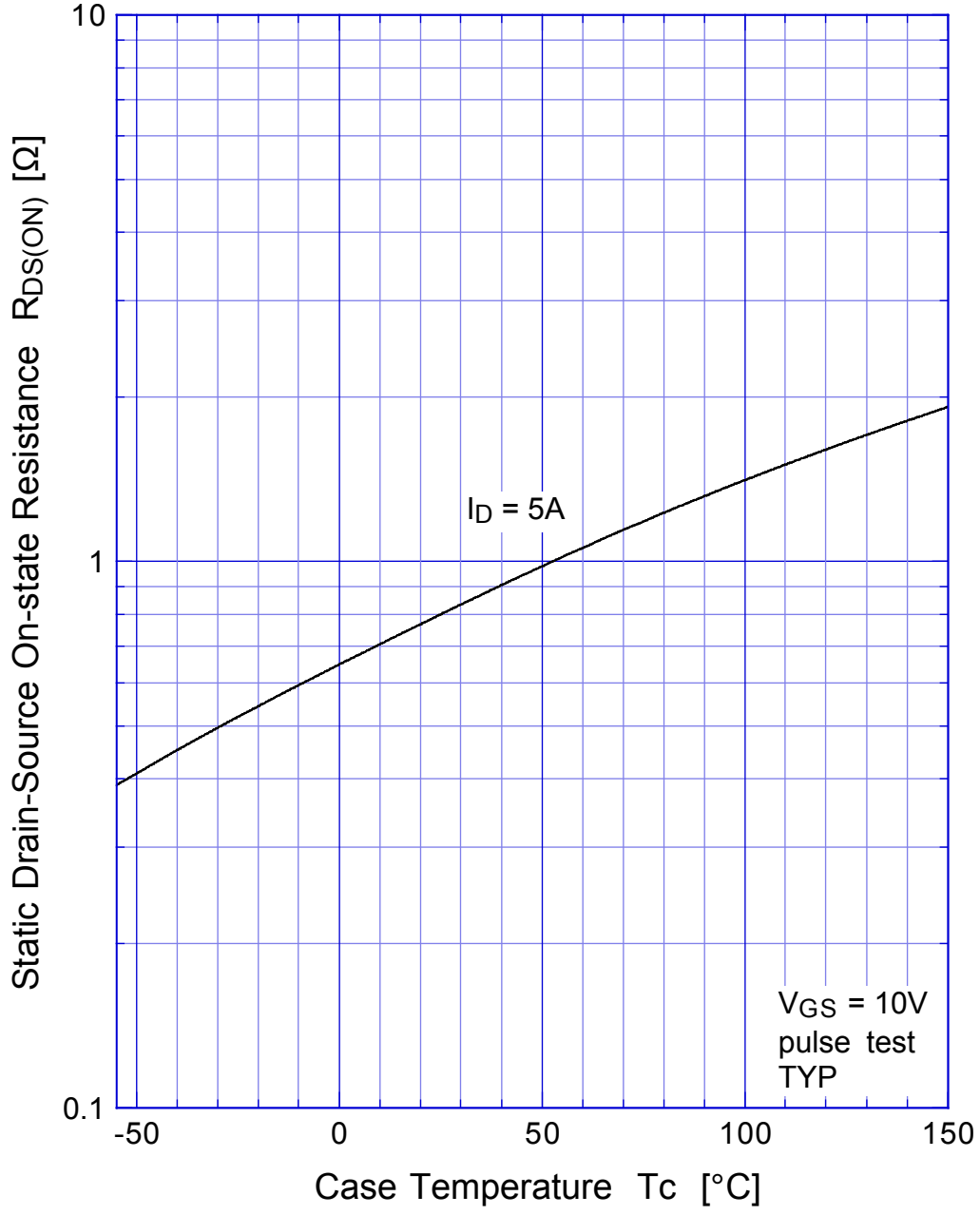
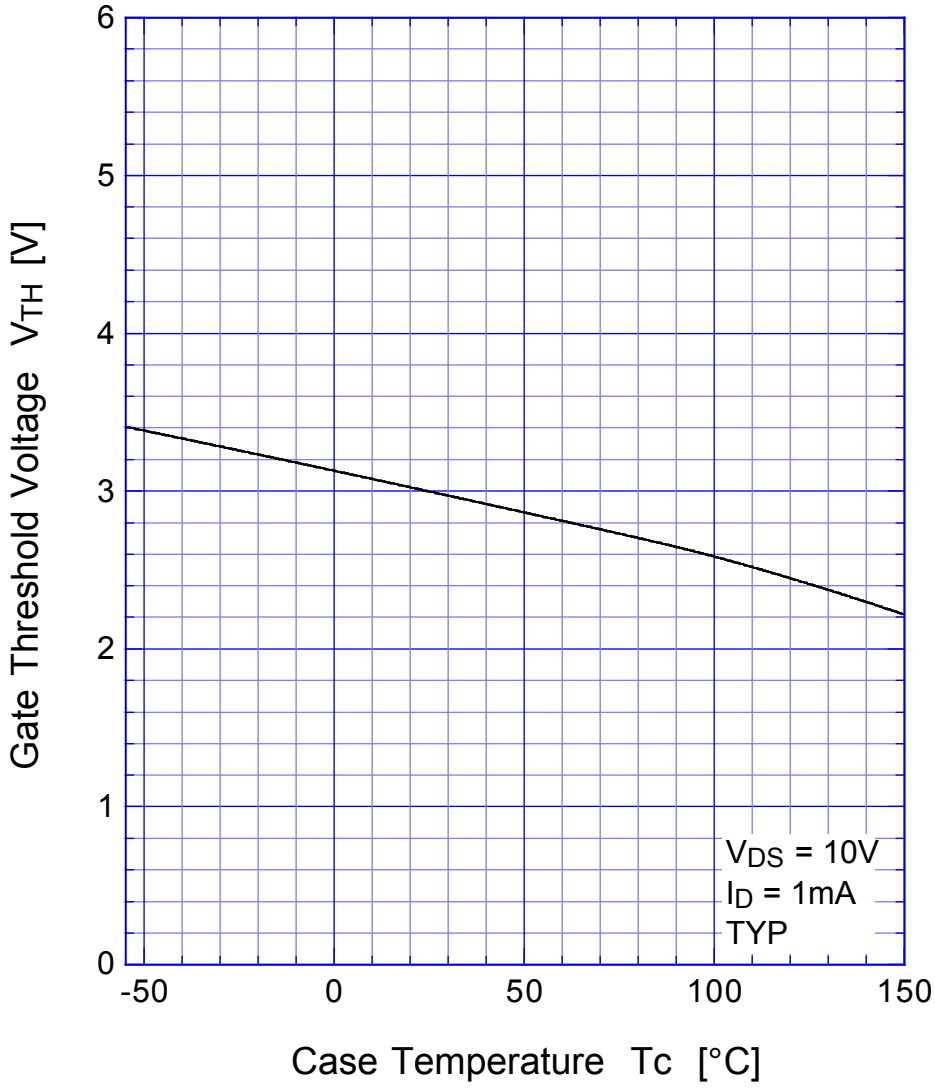

2SK2190 Transfer Characteristics
Tc = −55°C
25°C
100°C
150°C
VDS = 25V
pulse test
TYP
Drain Current ID [A]
Gate-Source Voltage VGS [V]
0
5
10
15
20

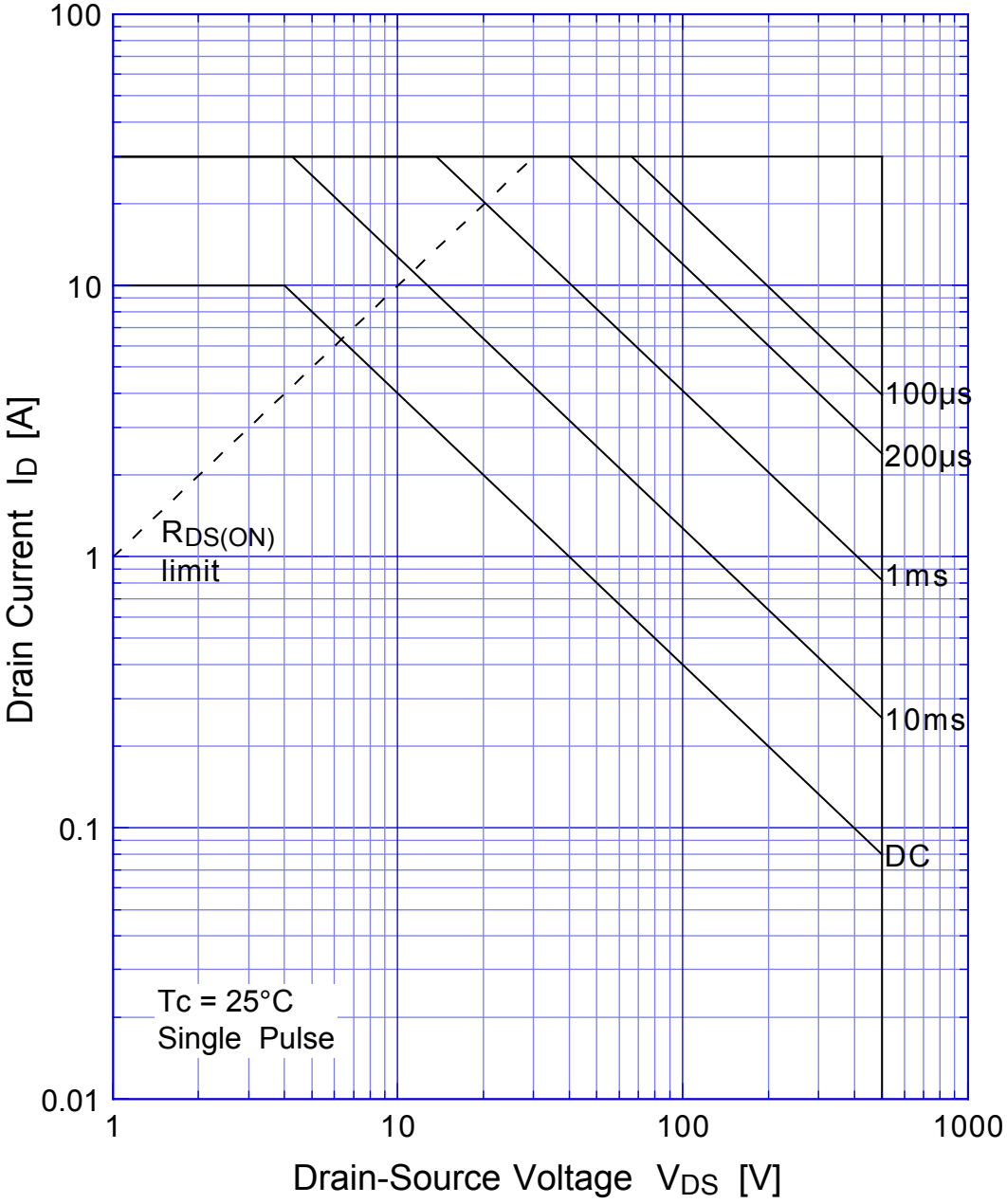
2SK2190 Static Drain-Source On-state Resistance



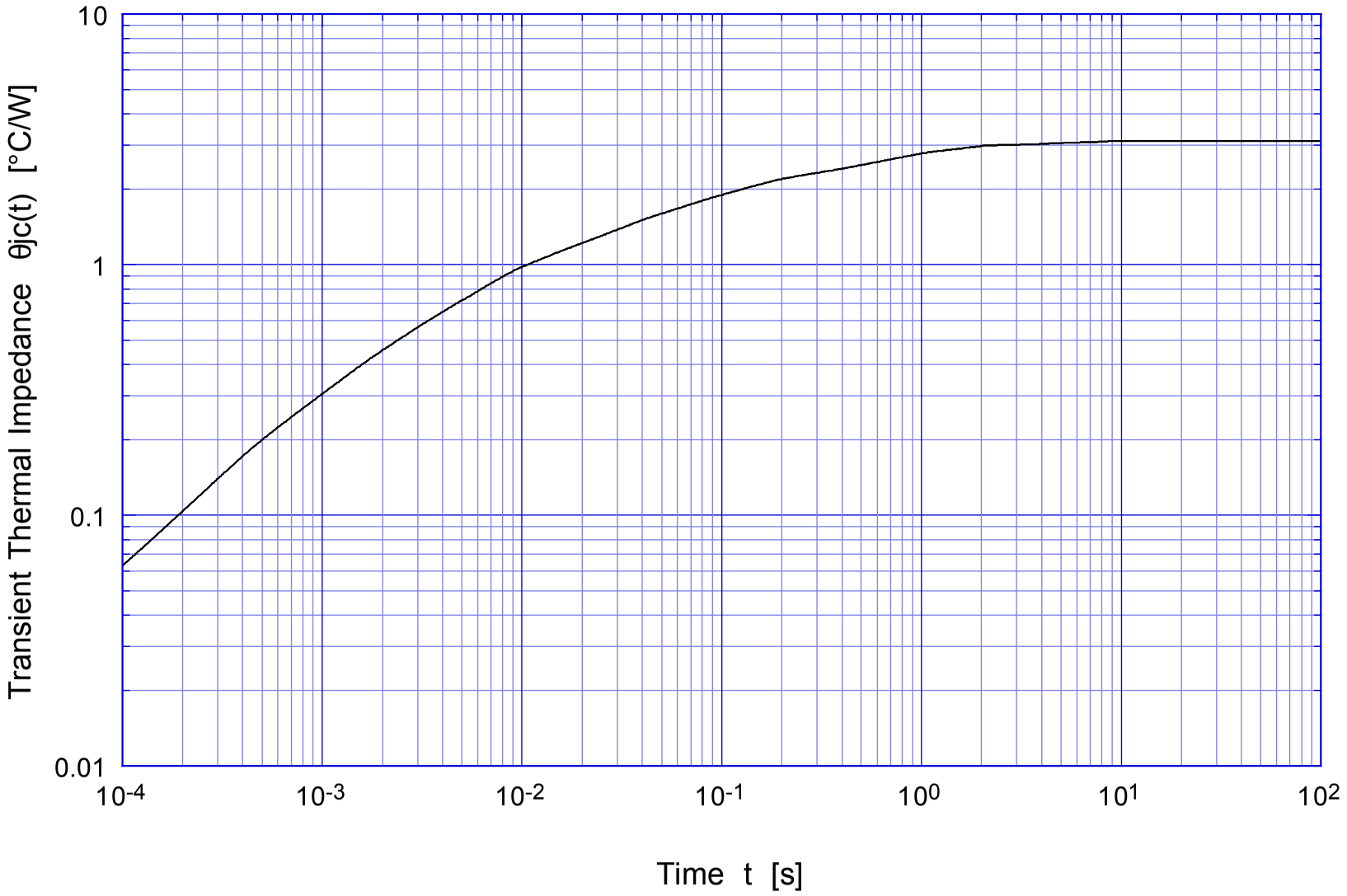
2SK2190 Gate Threshold Voltage

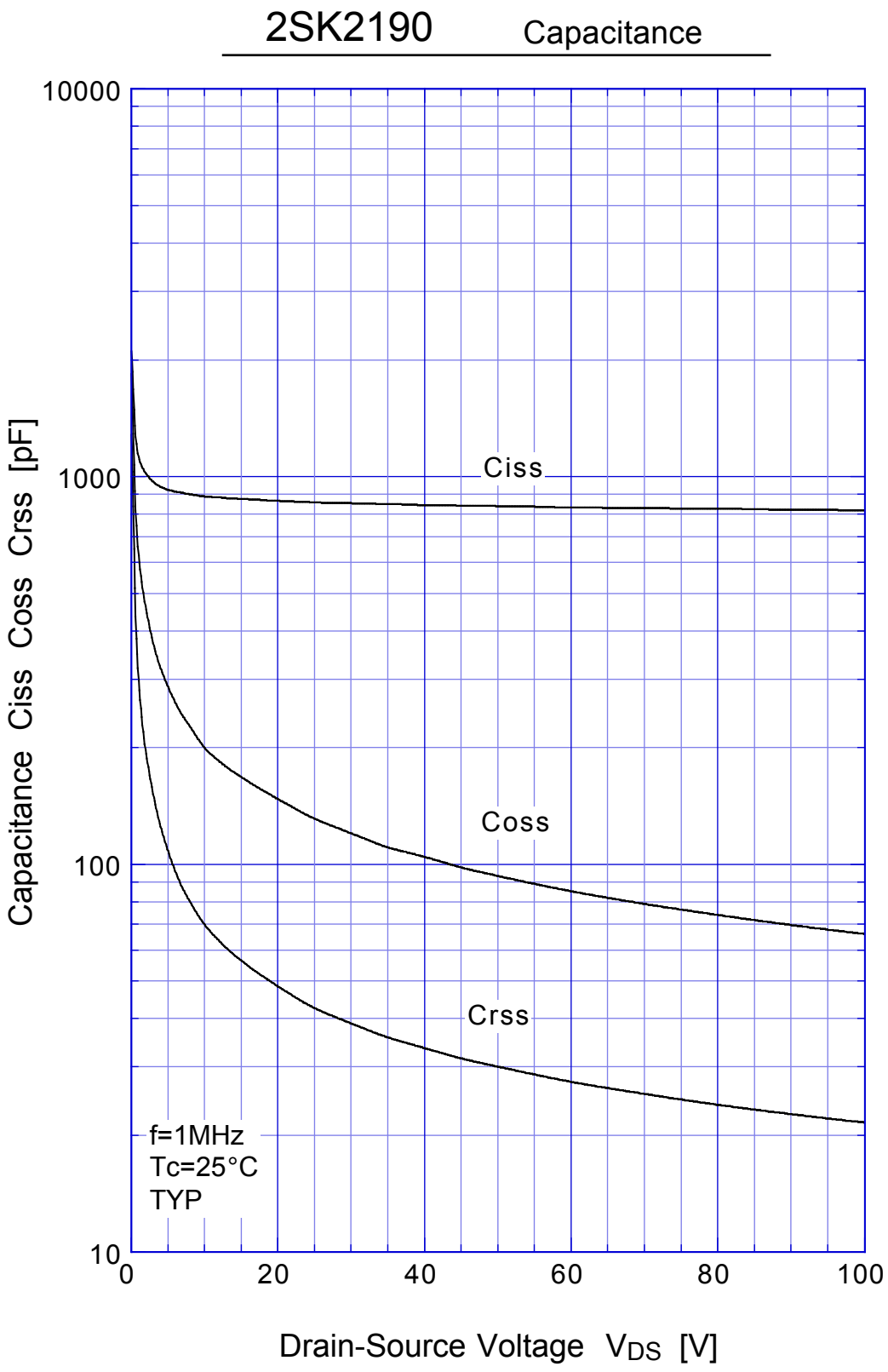


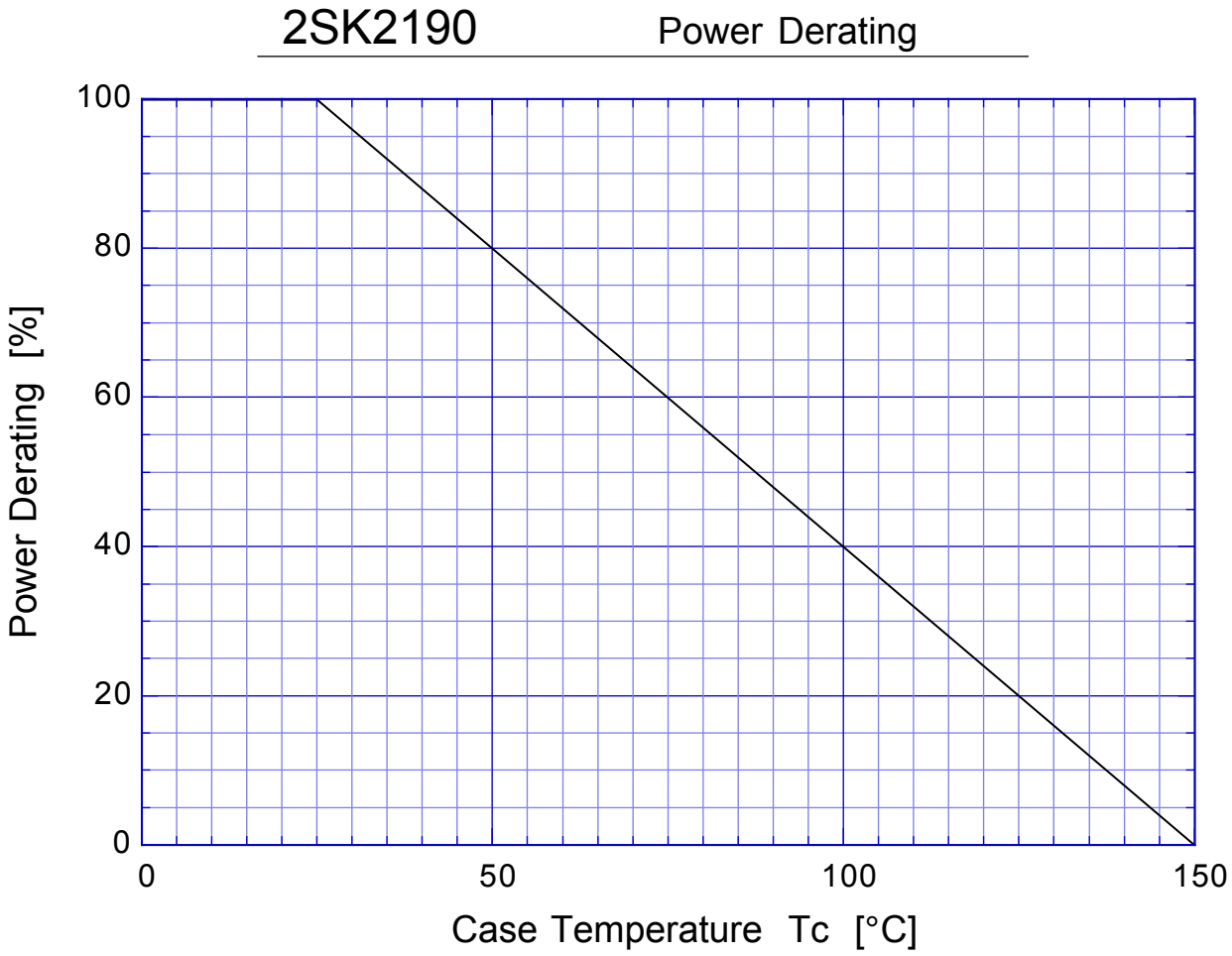
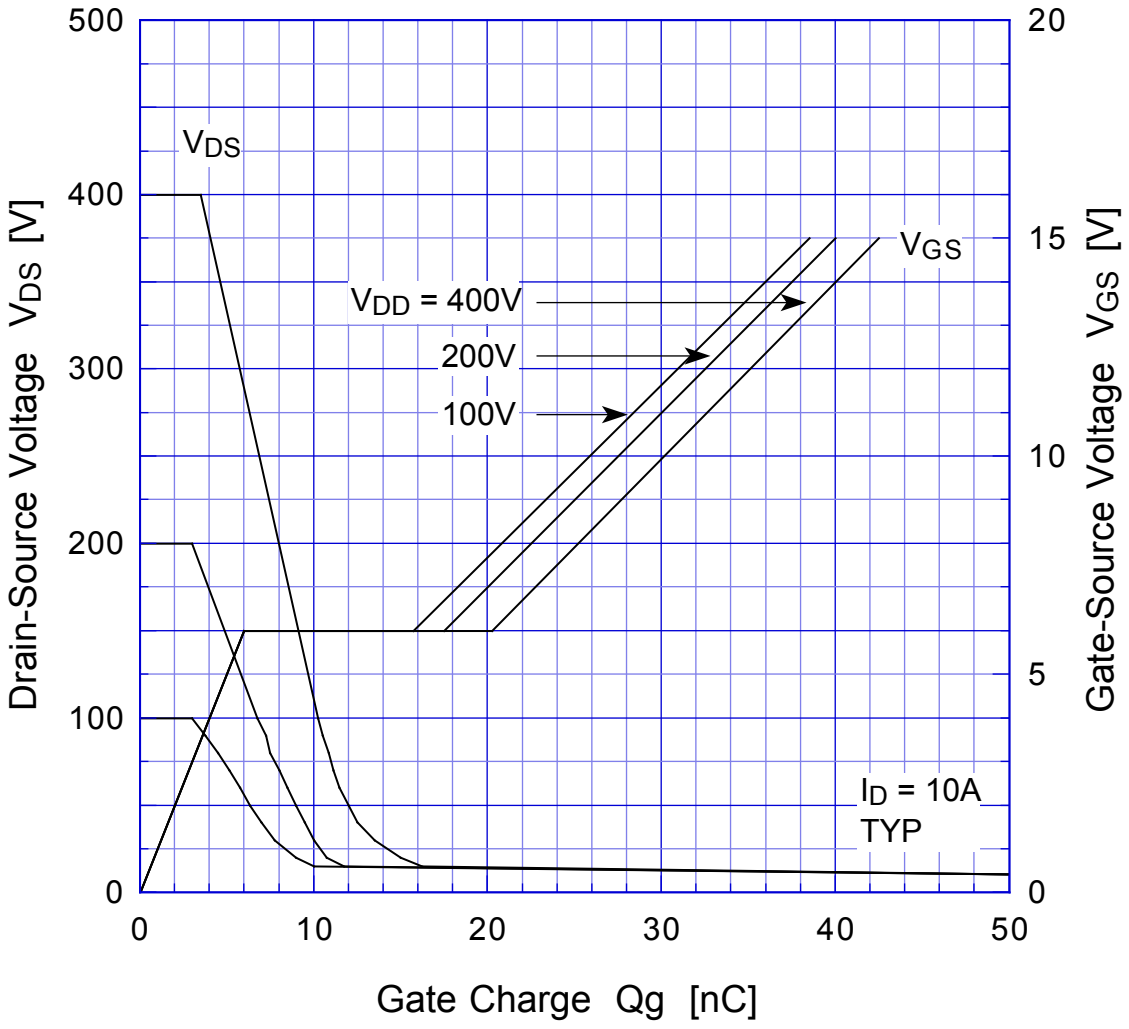
2SK2190 Safe Operating Area



2SK2190 Transient Thermal Impedance




2SK2190
Capacitance
10000
1000
100
10
Capacitance Ciss Coss Crss [pF]
Ciss
Coss
Crss
f=1MHz
Tc=25°C
TYP
0
20
40
60
80
100
Drain-Source Voltage VDS [V]


2SK2190
Power Derating
Power Derating [%]
100
80
60
40
20
0
0
50
100
150
Case Temperature Tc [°C]

2SK2190 Gate Charge Characteristics