SHINDENGEN

HVX-2 Series Power MOSFET

N-Channel Enhancement type

2SK2665
(F3S90HVX2)

900V 3A

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.
- Avalanche resistance guaranteed.

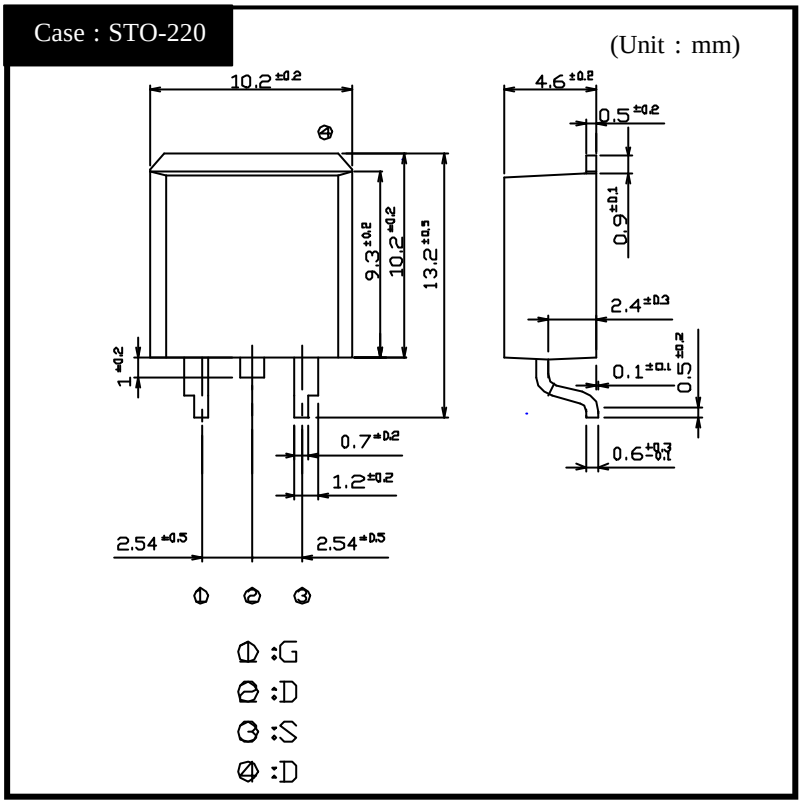
APPLICATION

- Switching power supply of AC 240V input
- High voltage power supply
- Inverter

OUTLINE DIMENSIONS

Case : STO-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		900	V
Gate-Source Voltage	VGSS		±30	
Continuous Drain Current (DC)	ID		3	A
Continuous Drain Current (Peak)	IDP	Pulse width≦10μs, Duty cycle≦1/100	6	
Continuous Source Current (DC)	IS		3	
Total Power Dissipation	PT		50	W
Repetitive Avalanche Current	IAR	Tch = 150°C	3	A
Single Avalanche Energy	EAS	Tch = 25°C	48	mJ
Repetitive Avalanche Energy	EAR	Tch = 25°C	4.8	

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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	900			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 900V, 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 = 1.5A, V_{DS} = 10V	1.5	2.5		S
Static Drain-Source On-state Resistance	$R_{DS(ON)}$	I_D = 1.5A, V_{GS} = 10V		3.5	4.7	Ω
Gate Threshold Voltage	V_{TH}	I_D = 1mA, V_{DS} = 10V	2.5	3.0	3.5	V
Source-Drain Diode Forward Voltage	V_{SD}	I_S = 1.5A, V_{GS} = 0V			1.5	
Thermal Resistance	θ jc	junction to case			2.5	℃/W
Total Gate Charge	Q_g	V_{DD} = 400V, V_{GS} = 10V, I_D = 3A		30		nC
Input Capacitance	C_{iss}	V_{DS} = 25V, V_{GS} = 0V, f = 1MHz		630		pF
Reverse Transfer Capacitance	C_{rss}			16		
Output Capacitance	C_{oss}			67		
Turn-On Time	t_{on}	I_D = 1.5A, VDD = 150V, R_L = 100Ω		40	70	ns
Turn-Off Time	t_{off}			140	230	

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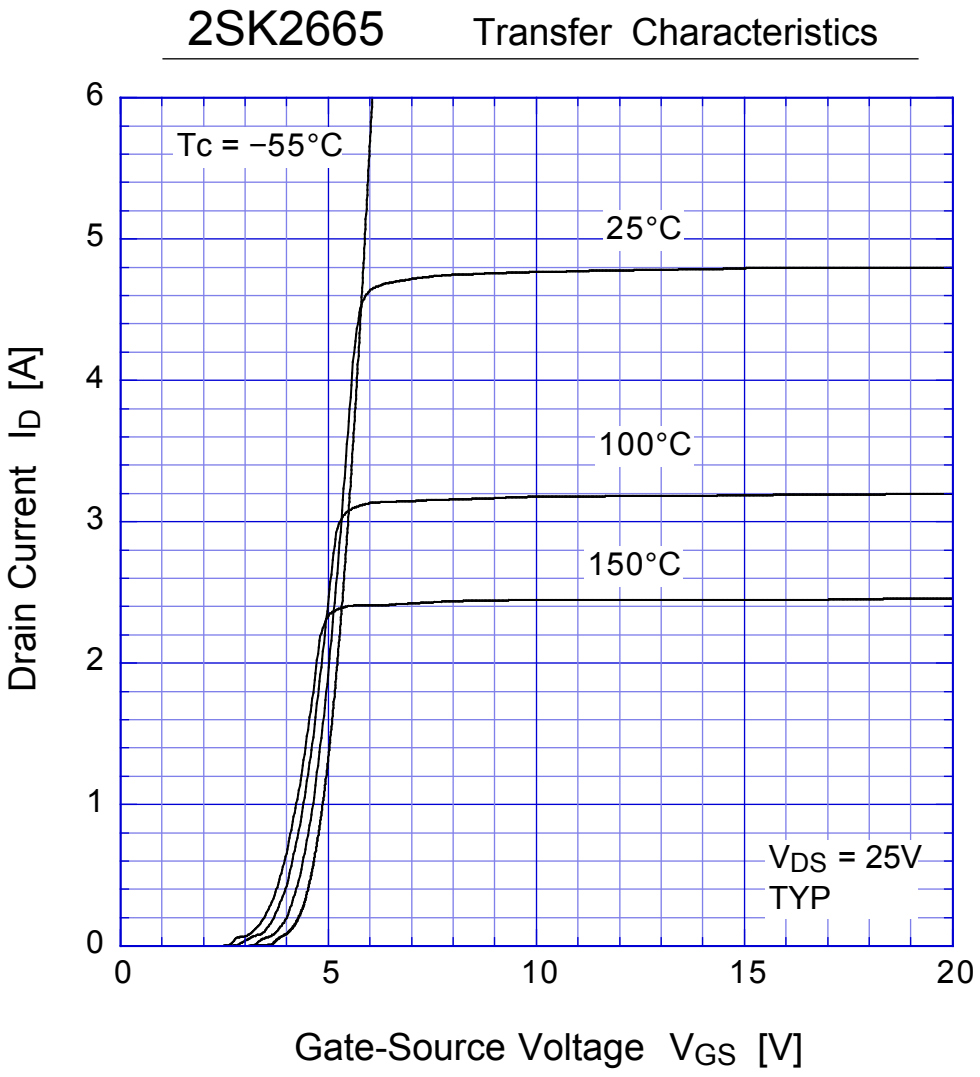
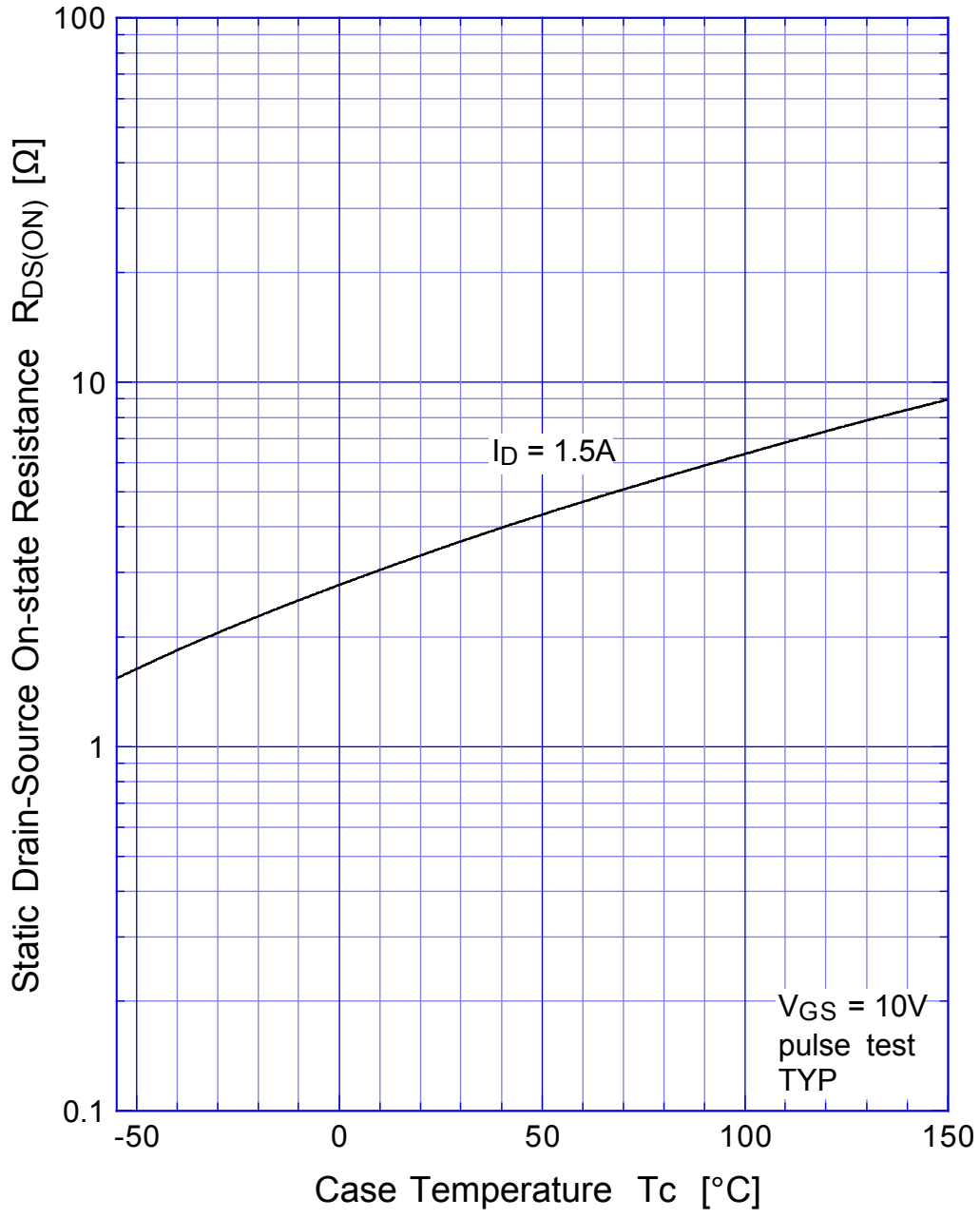
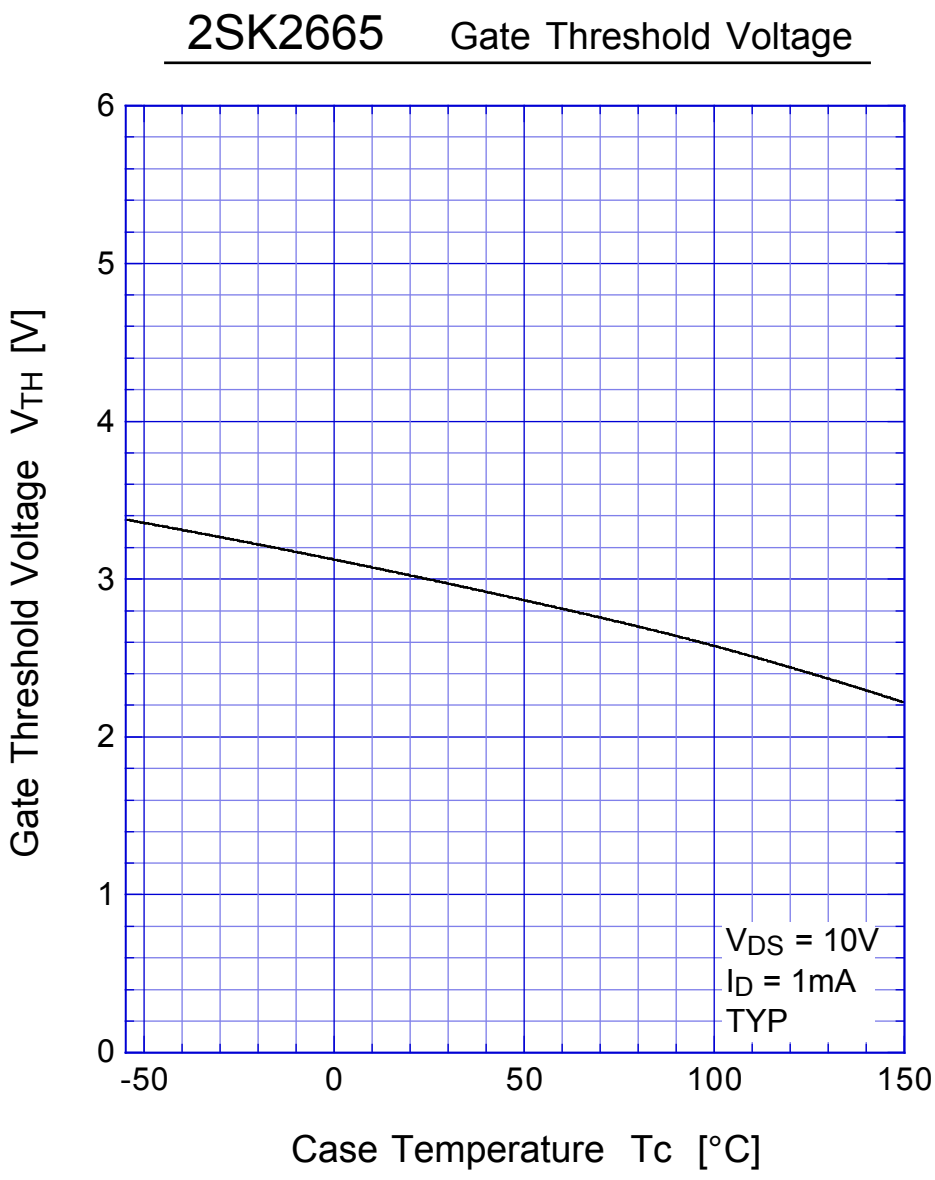
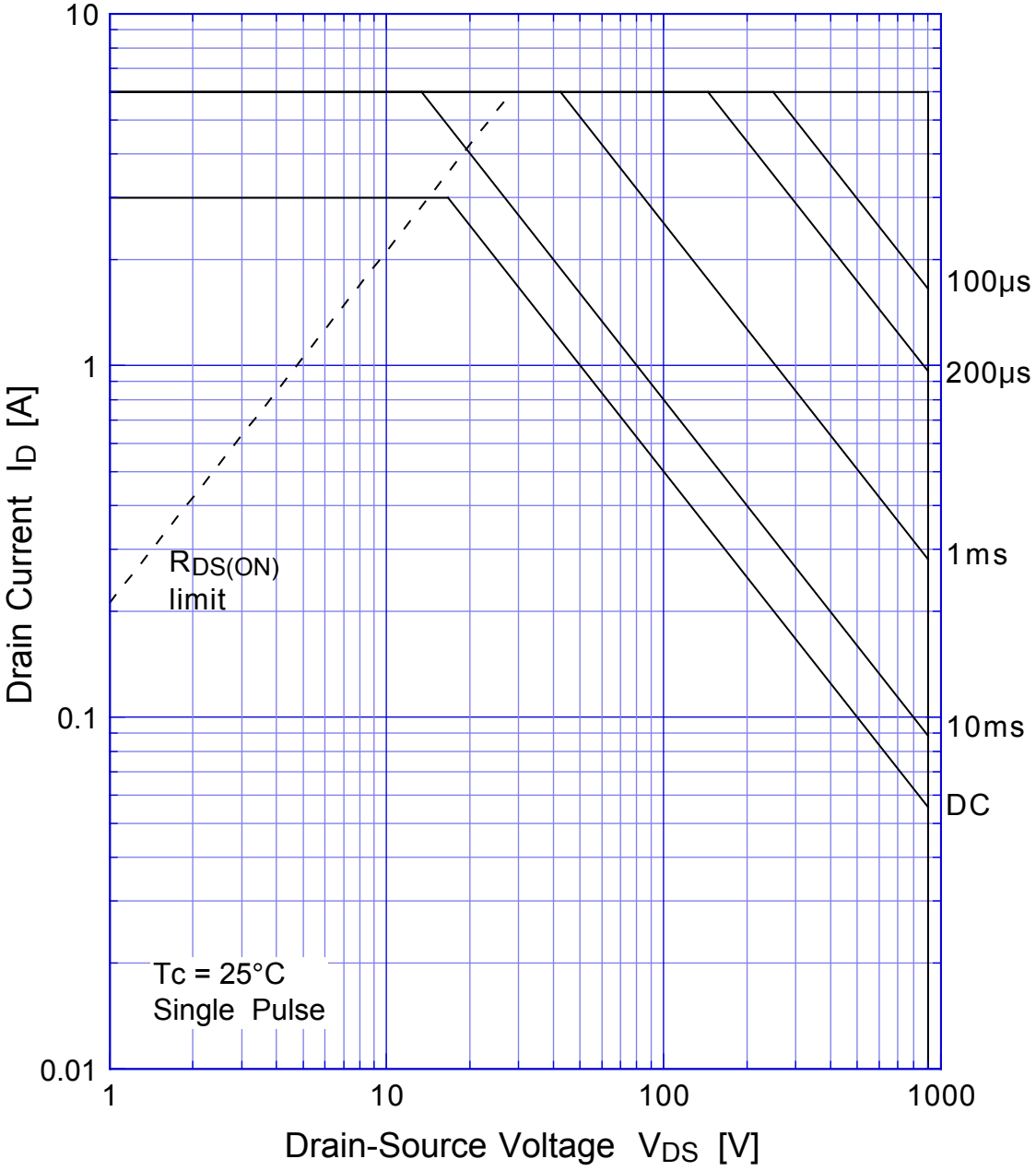

2SK2665
Transfer Characteristics
Tc = −55°C
25°C
100°C
150°C
VDS = 25V
TYP
Drain Current ID [A]
Gate-Source Voltage VGS [V]
0
1
2
3
4
5
6
0
5
10
15
20

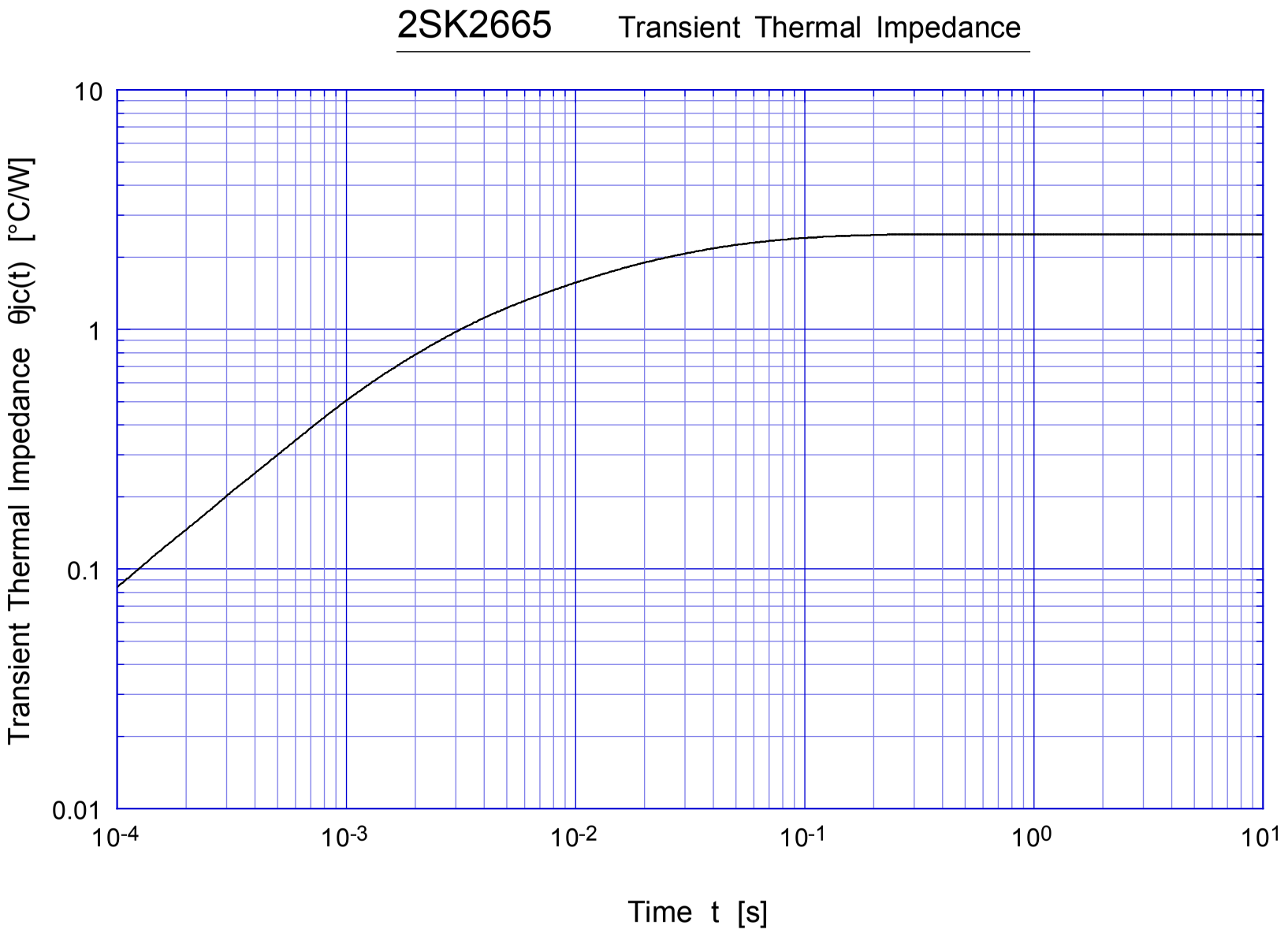
2SK2665 Static Drain-Source On-state Resistance

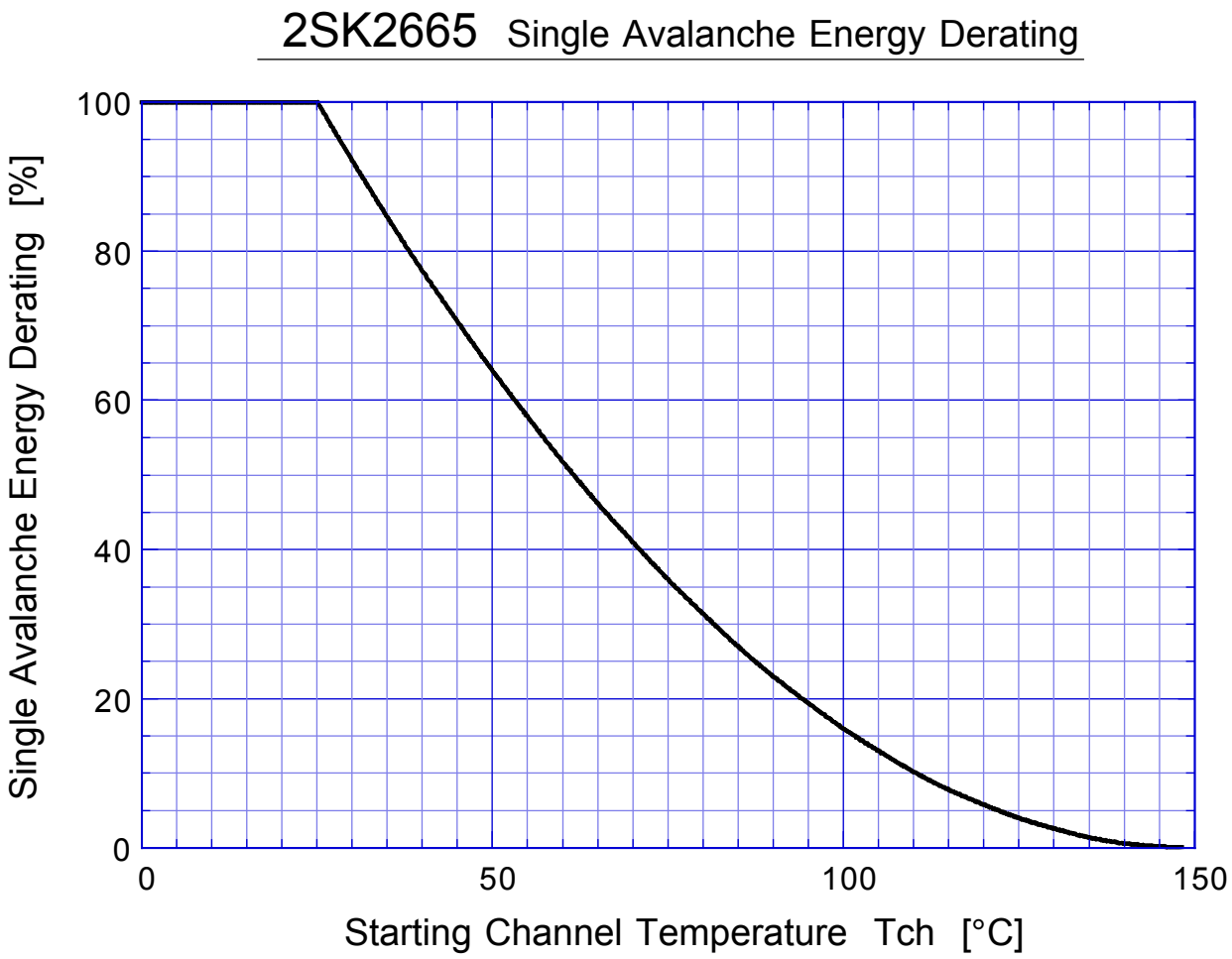



2SK2665 Gate Threshold Voltage
Gate Threshold Voltage VTH [V]
6
5
4
3
2
1
0
-50
0
50
100
150
Case Temperature Tc [°C]
VDS = 10V
ID = 1mA
TYP

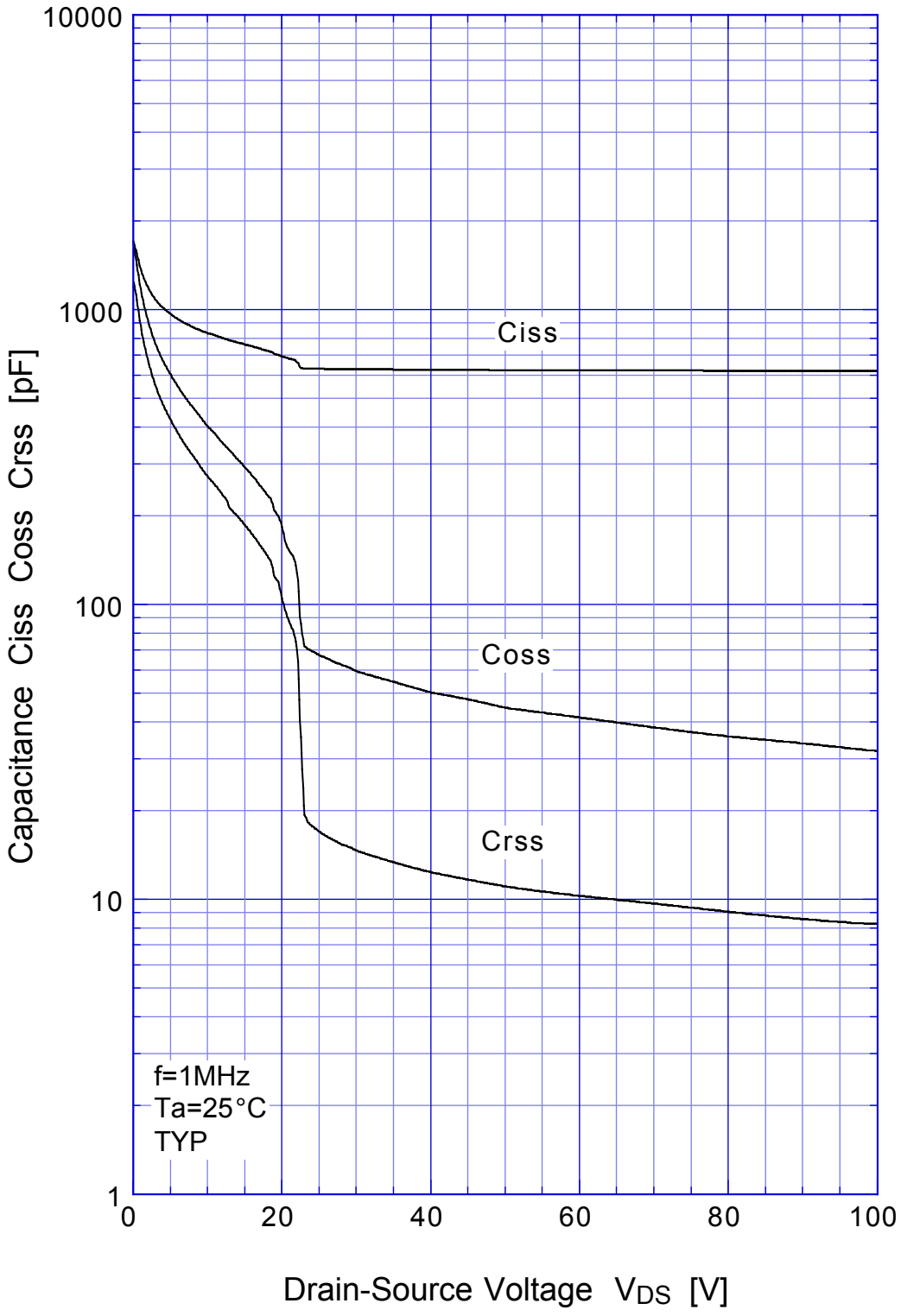
2SK2665 Safe Operating Area



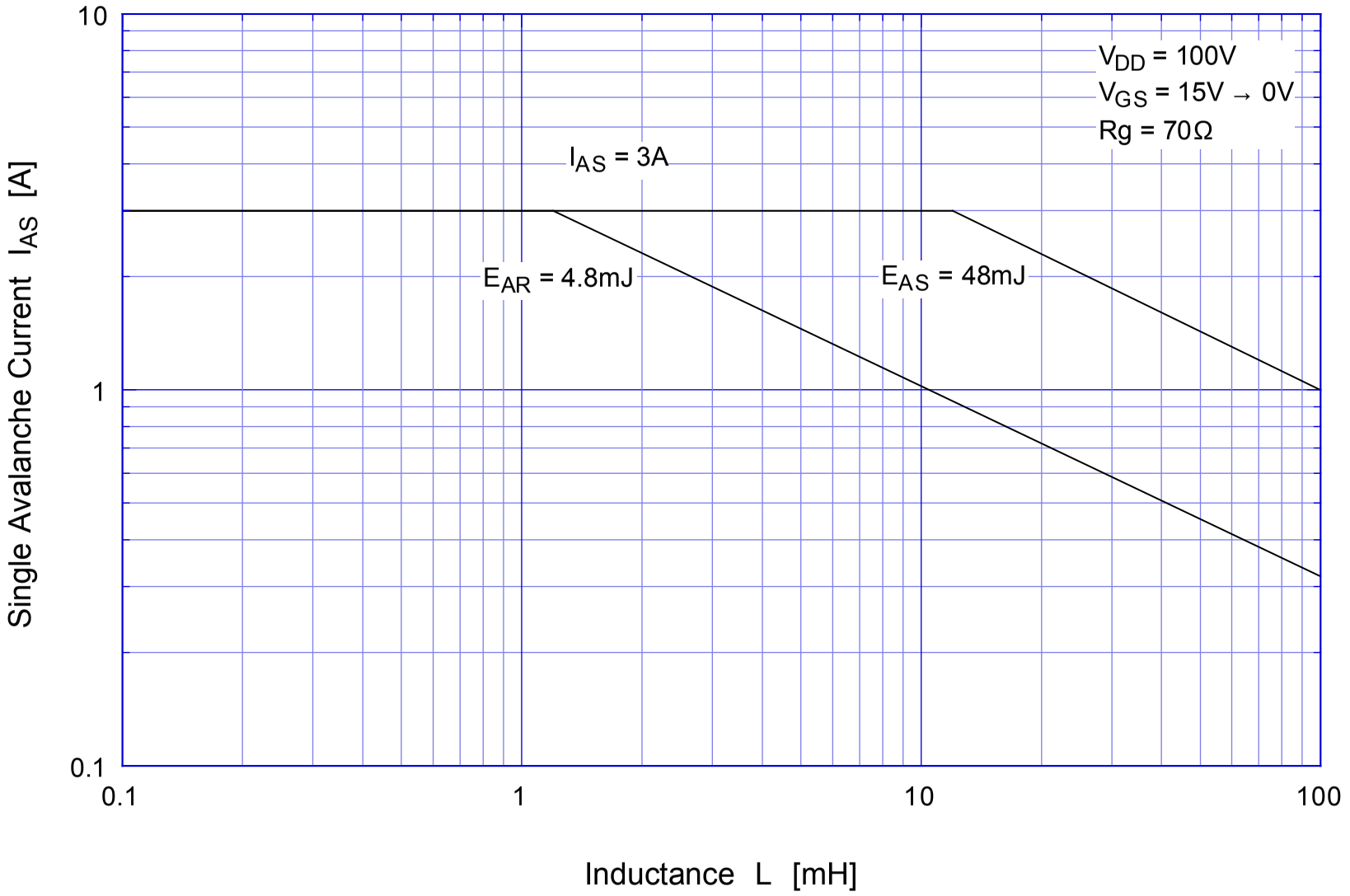

2SK2665
Transient Thermal Impedance
Transient Thermal Impedance θjc(t) [°C/W]
10
1
0.1
0.01
10-4
10-3
10-2
10-1
100
101
Time t [s]

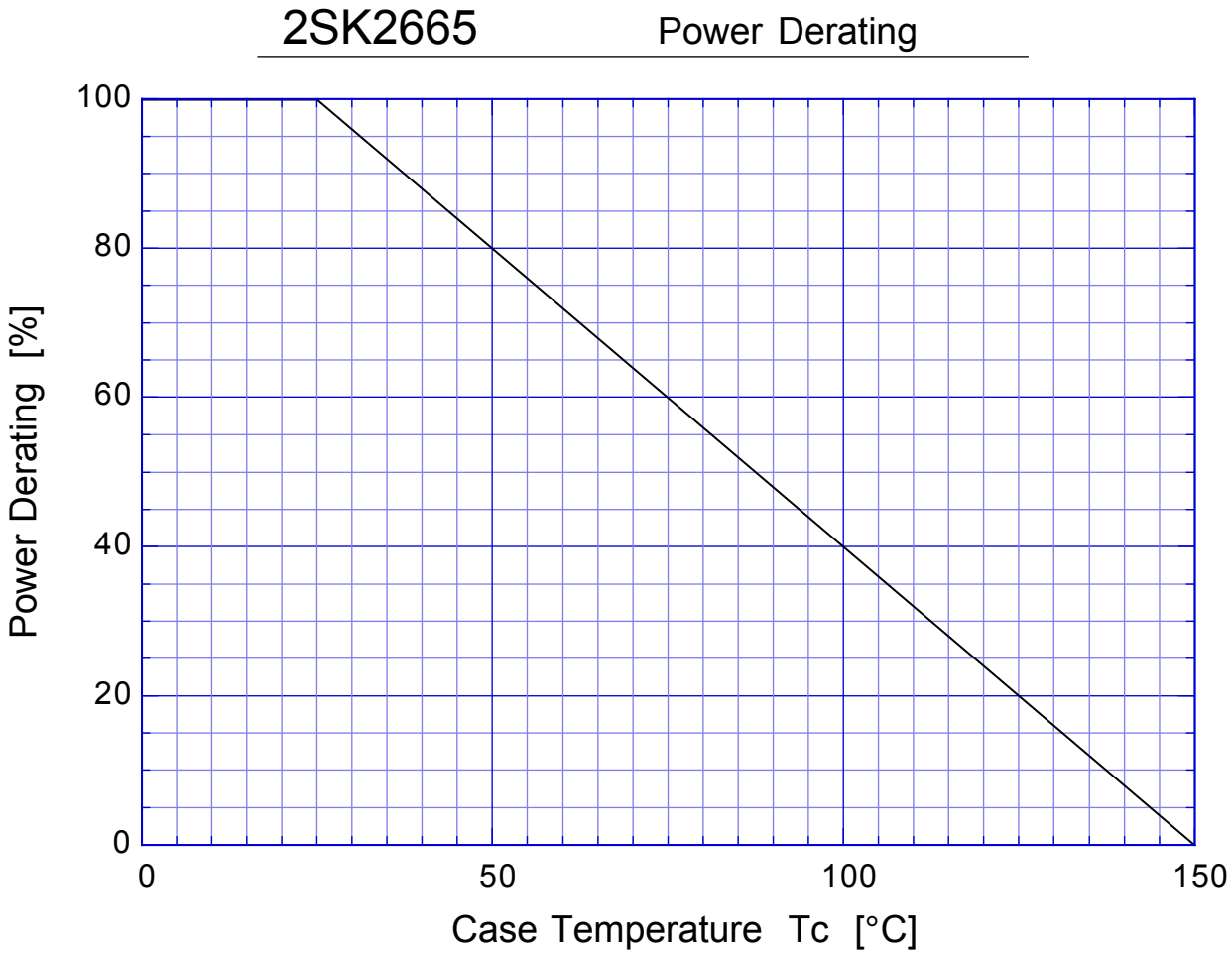

2SK2665 Single Avalanche Energy Derating
Single Avalanche Energy Derating [%]
100
80
60
40
20
0
0
50
100
150
Starting Channel Temperature Tch [°C]

2SK2665 Capacitance

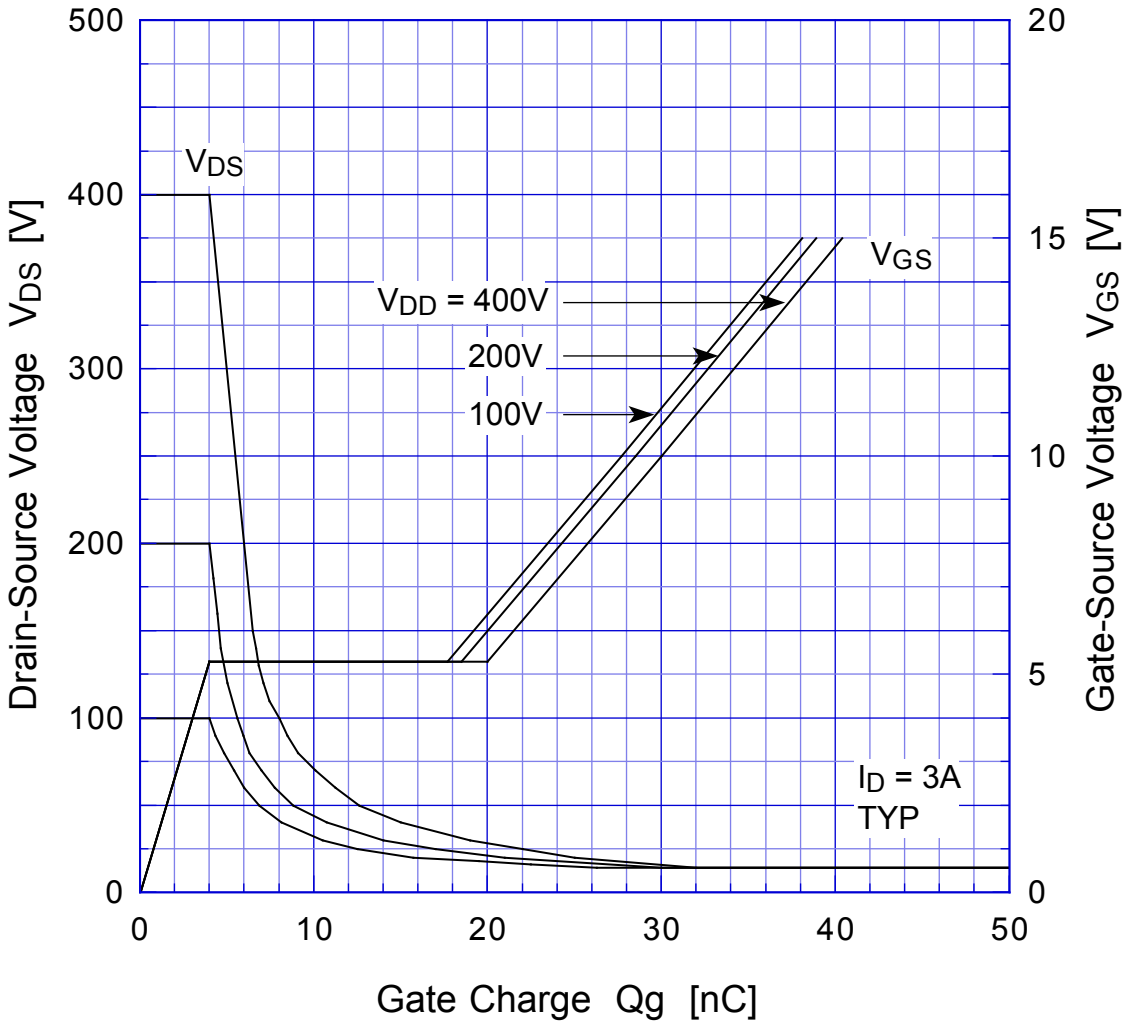


2SK2665 Single Avalanche Current - Inductive Load




2SK2665
Power Derating
Power Derating [%]
100
80
60
40
20
0
0
50
100
150
Case Temperature Tc [°C]

2SK2665 Gate Charge Characteristics



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