SHINDENGEN

HVX-2 Series Power MOSFET

N-Channel Enhancement type

2SK2333

(F6F70HVX2)

700V 6A

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.

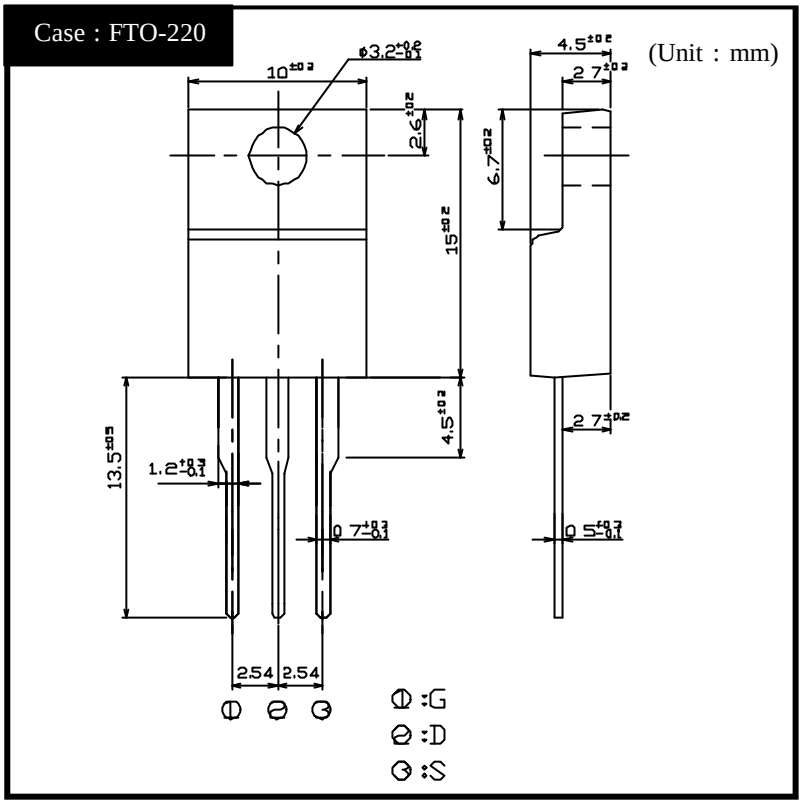
APPLICATION

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

OUTLINE DIMENSIONS

Case : FTO-220

(Unit : mm)



RATINGS

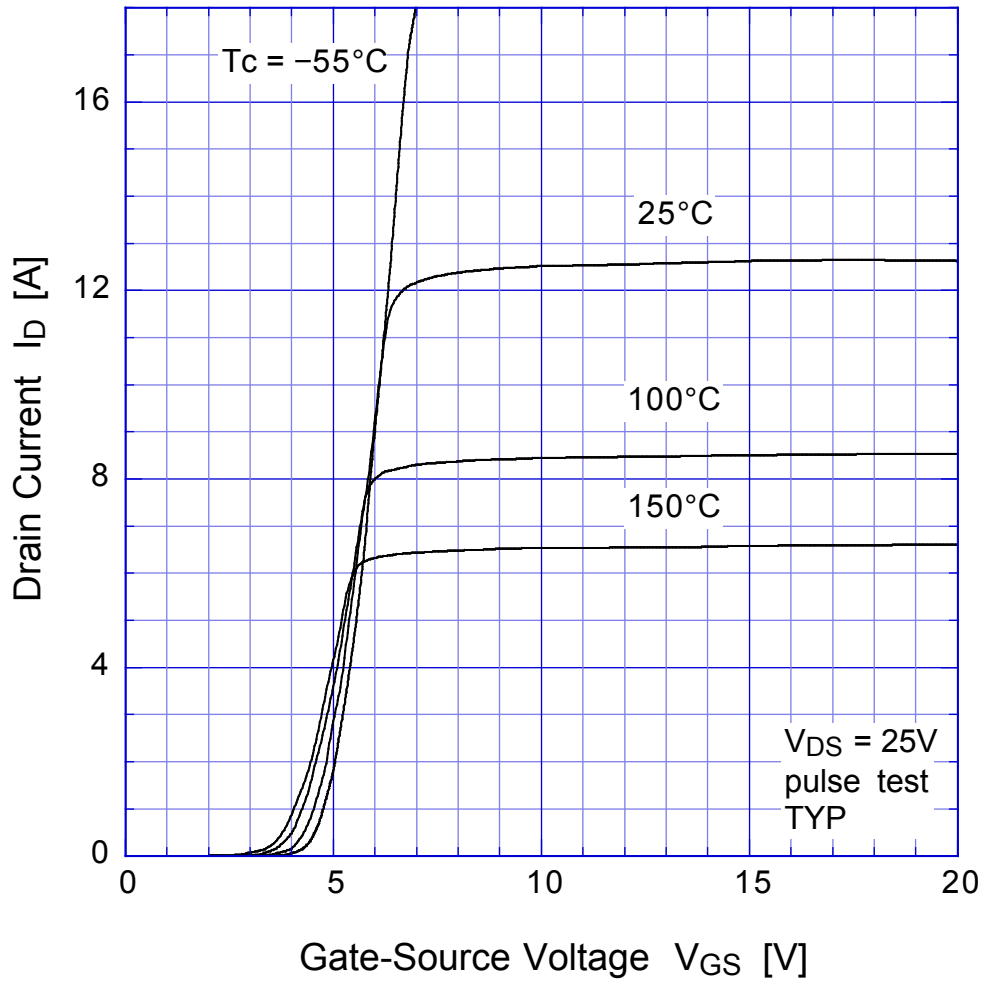
●Absolute Maximum Ratings (Tc = 25°C)

Item	Symbol	Conditions	Ratings	Unit
Storage Temperature	Tstg		-55～150	°C
Channel Temperature	Tch		150	
Drain-Source Voltage	VDSS		700	V
Gate-Source Voltage	VGSS		±30	
Continuous Drain Current (DC)	ID		6	A
Continuous Drain Current (Peak)	IDP	Pulse width≦10 μs, Duty cycle≦1/100	18	
Continuous Source Current (DC)	IS		6	
Total Power Dissipation	PT		50	W
Repetitive Avalanche Current	IAR	Tch = 150°C	6	A
Single Avalanche Energy	EAS	Tch = 25°C	190	mJ
Repetitive Avalanche Energy	EAR	Tch = 25°C	19	
Dielectric Strength	Vdis	Terminals to case, AC 1 minute	2	kV
Mounting Torque	TOR	(Recommended torque 0.3 N·m)	0.5	N·m

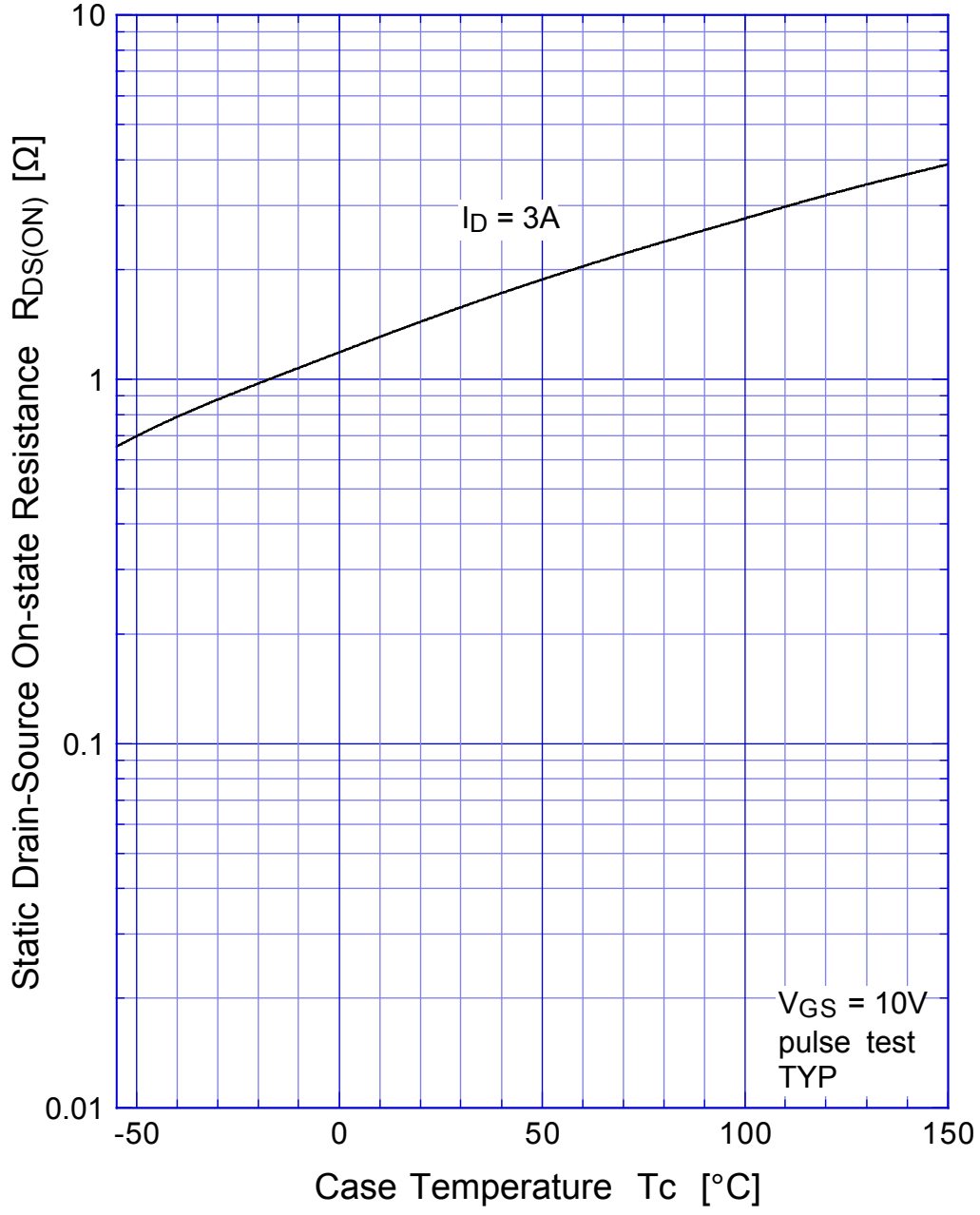
●Electrical Characteristics Tc = 25℃

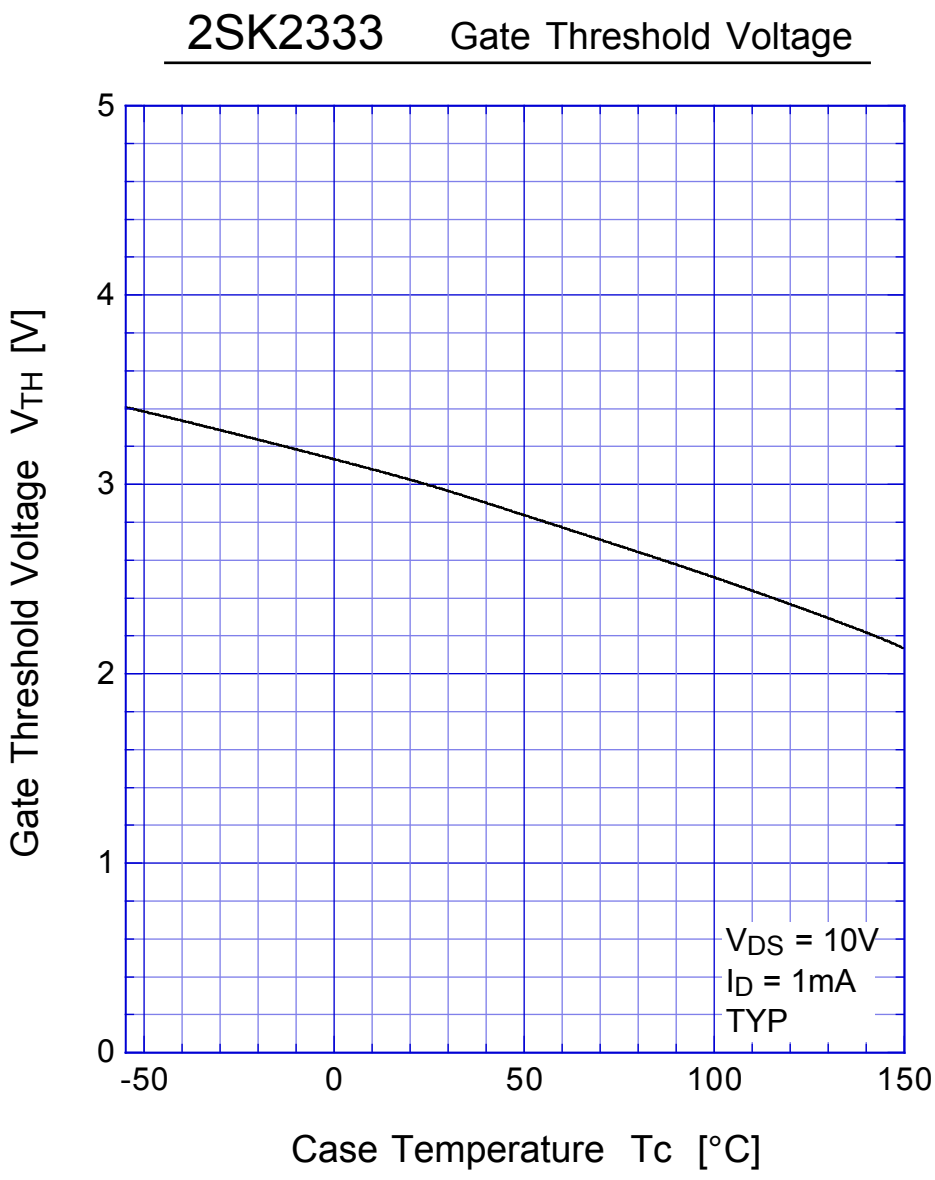
Item	Symbol	Conditions	Min.	Typ.	Max.	Unit
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	I_D = 1mA, V_{GS} = 0V	700			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 700V, V_{GS} = 0V			250	μA
Gate-Source Leakage Current	I_{GSS}	V_{GS} = ±30V, V_{DS} = 0V			±0.1	
Forward Transconductance	g_{fs}	I_D = 3A, V_{DS} = 10V	3.0	5.0		S
Static Drain-Source On-state Resistance	$R_{DS(ON)}$	I_D = 3A, V_{GS} = 10V		1.5	2.0	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 = 3A, 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 = 6A		35		nC
Input Capacitance	C_{iss}	V_{DS} = 10V, V_{GS} = 0V, f = 1MHz		1250		pF
Reverse Transfer Capacitance	C_{rss}			250		
Output Capacitance	C_{oss}			530		
Turn-On Time	t_{on}	I_D = 3A, R_L = 50Ω, V_{GS} = 10V		60	110	ns
Turn-Off Time	t_{off}			160	250	

2SK2333 Transfer Characteristics

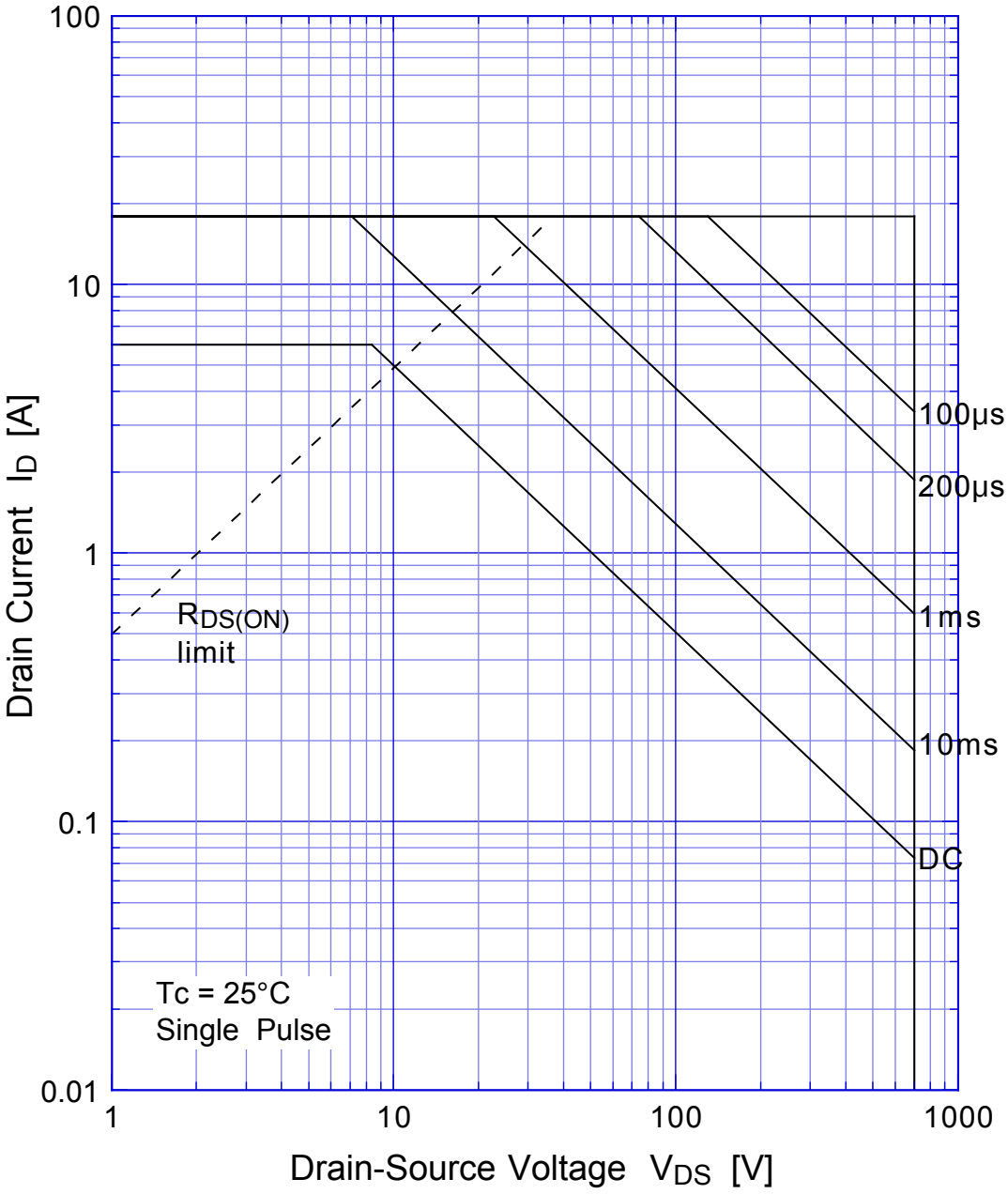


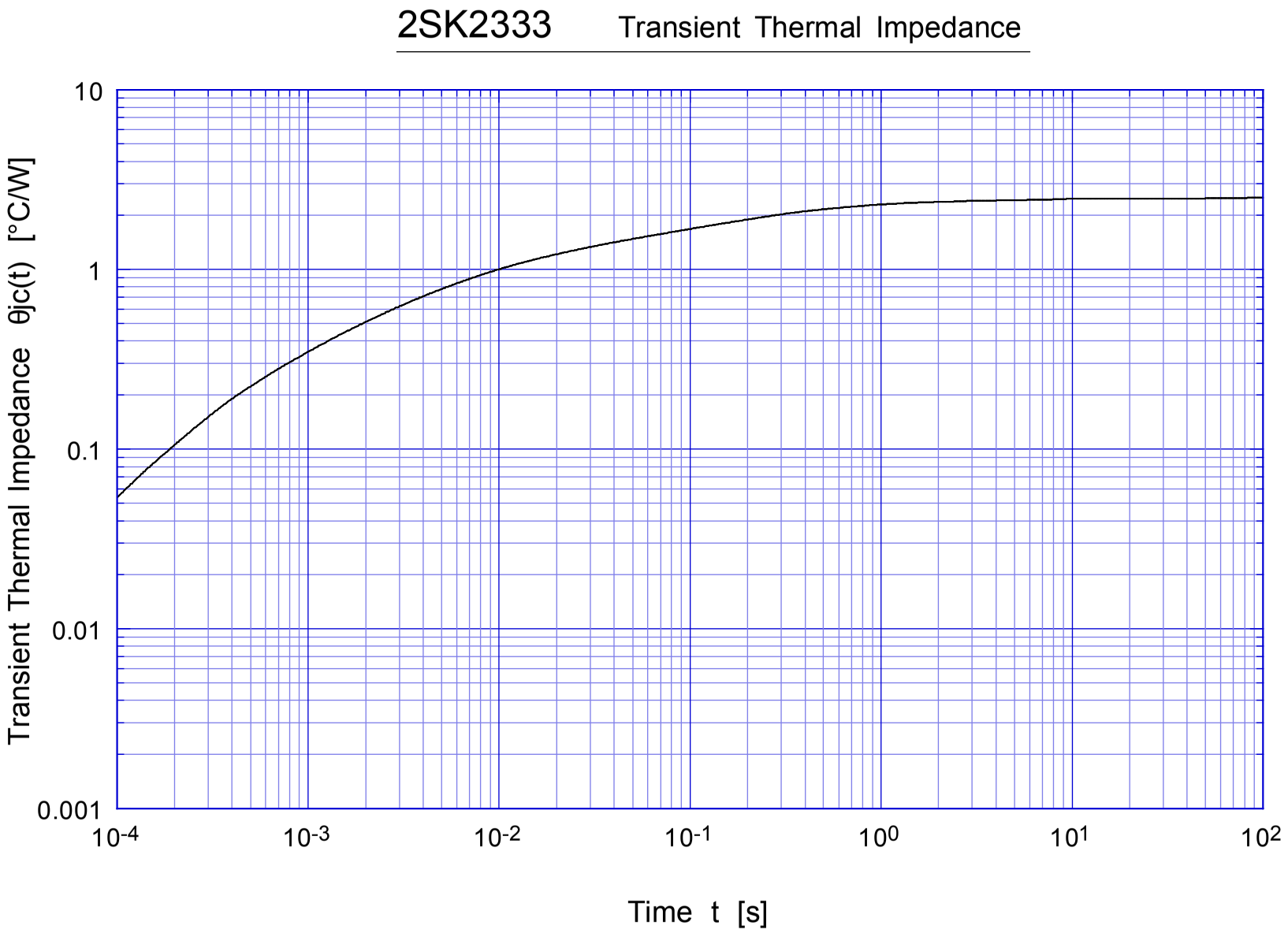
2SK2333 Static Drain-Source On-state Resistance

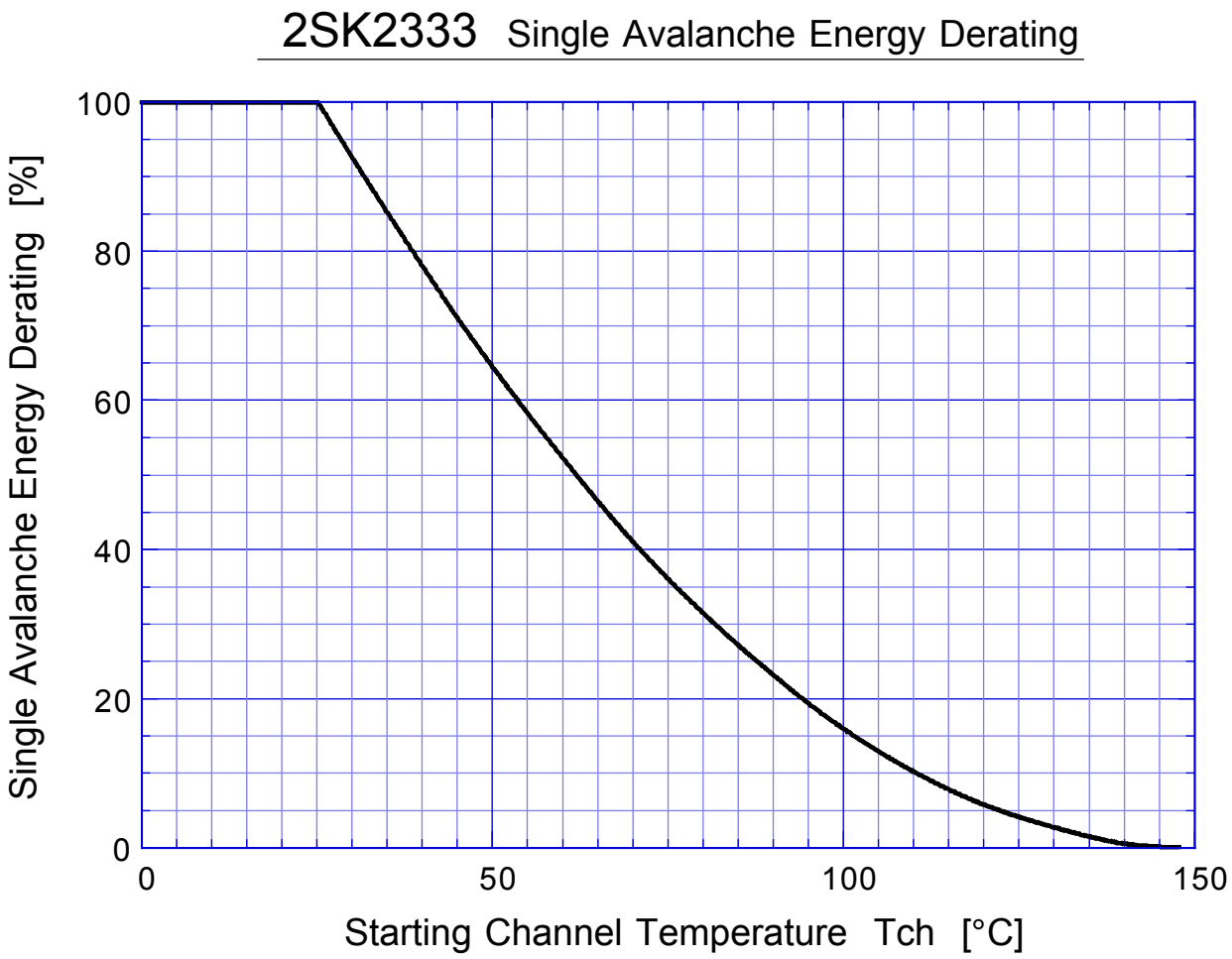



2SK2333 Gate Threshold Voltage
Gate Threshold Voltage V_{TH} [V]
5
4
3
2
1
0
-50
0
50
100
150
Case Temperature Tc [°C]
V_{DS} = 10V
I_D = 1mA
TYP

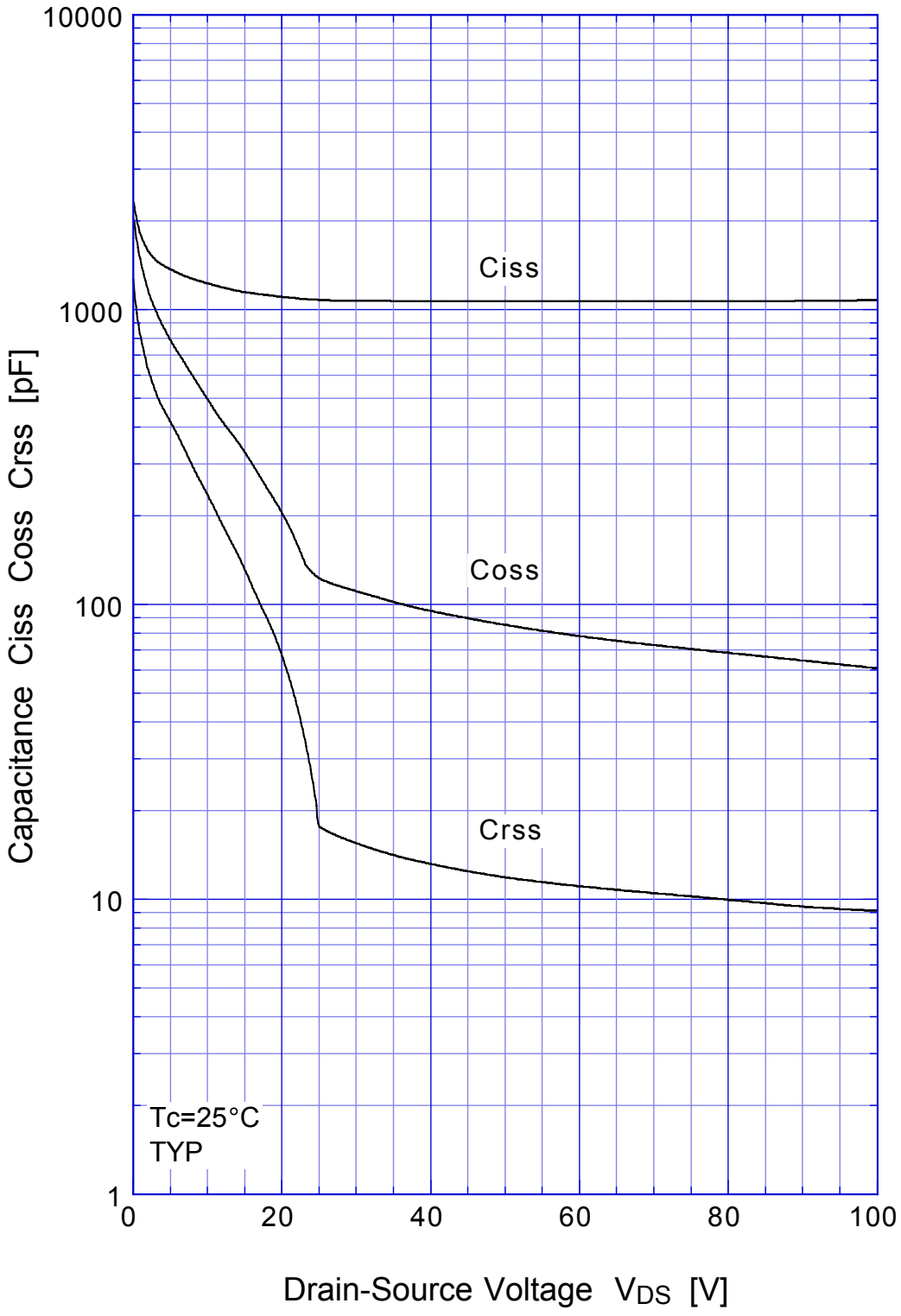
2SK2333 Safe Operating Area



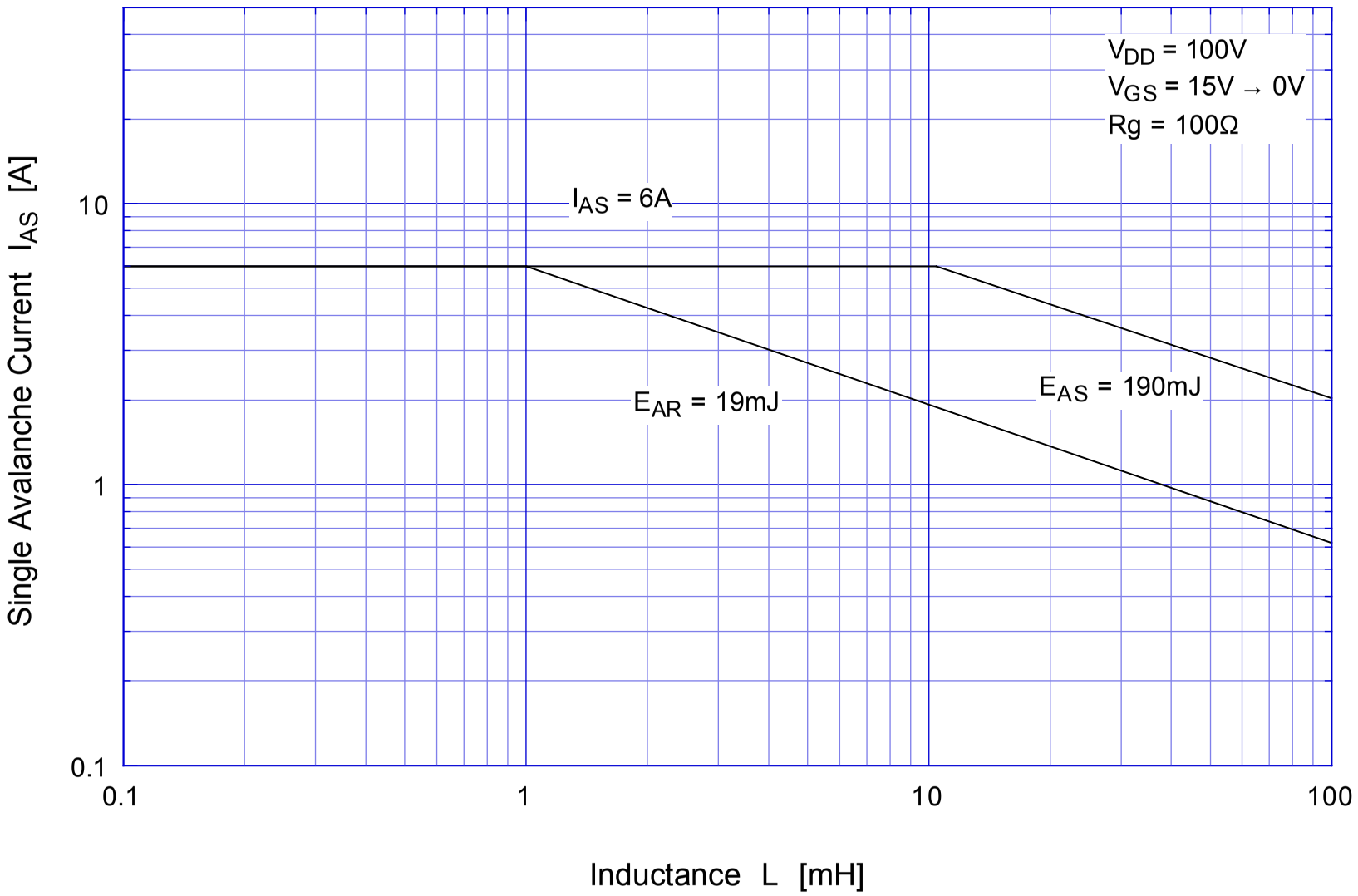

2SK2333
Transient Thermal Impedance
Transient Thermal Impedance θjc(t) [°C/W]
10
1
0.1
0.01
0.001
10-4
10-3
10-2
10-1
100
101
102
Time t [s]

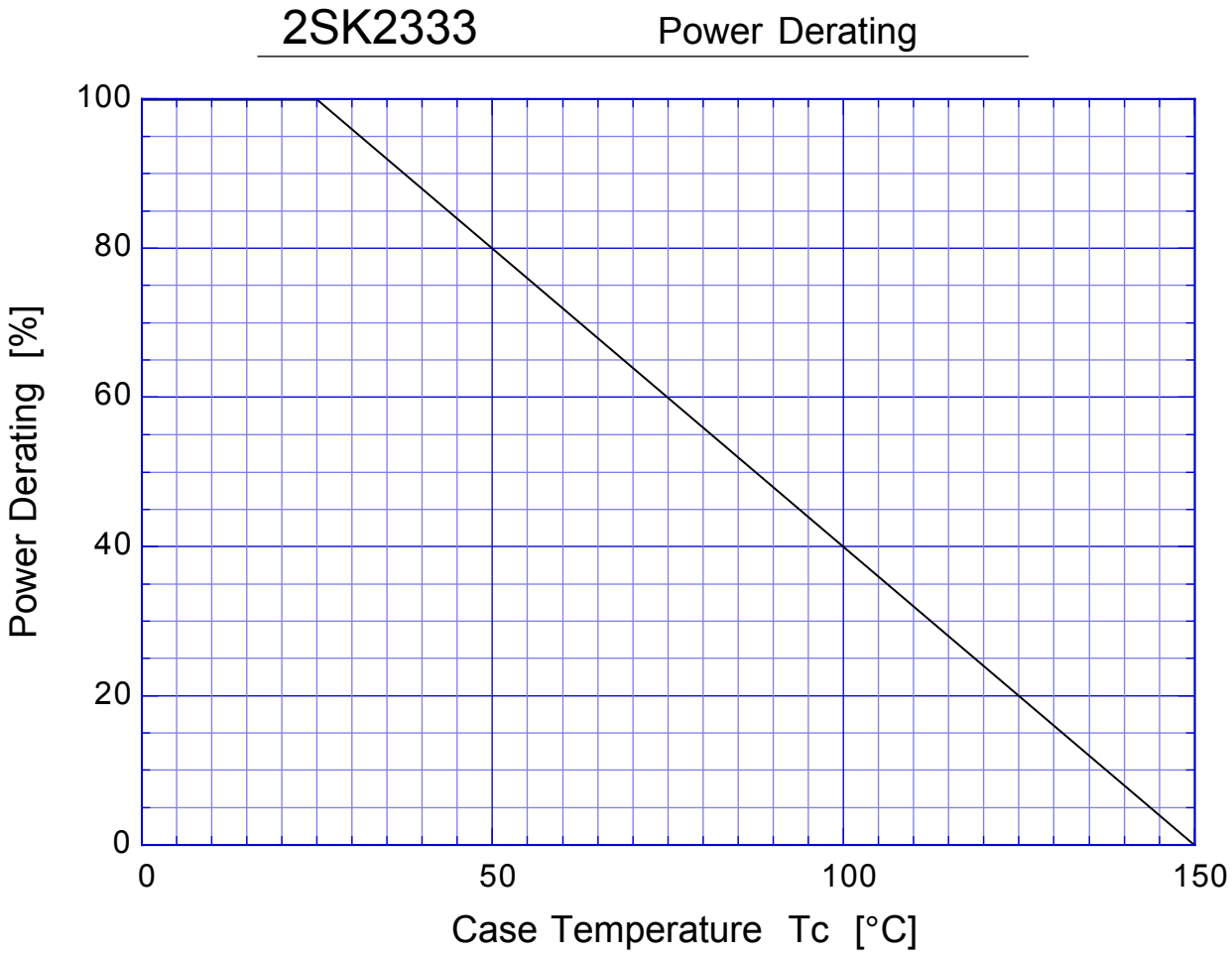

2SK2333 Single Avalanche Energy Derating
Single Avalanche Energy Derating [%]
100
80
60
40
20
0
0
50
100
150
Starting Channel Temperature Tch [°C]

2SK2333 Capacitance



2SK2333 Single Avalanche Current - Inductive Load




2SK2333
Power Derating
Power Derating [%]
100
80
60
40
20
0
0
50
100
150
Case Temperature Tc [°C]

2SK2333 Gate Charge Characteristics