SHINDENGEN

VX-2 Series Power MOSFET

N-Channel Enhancement type

2SK3012
(F16W60VX2)

600V 12A

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.

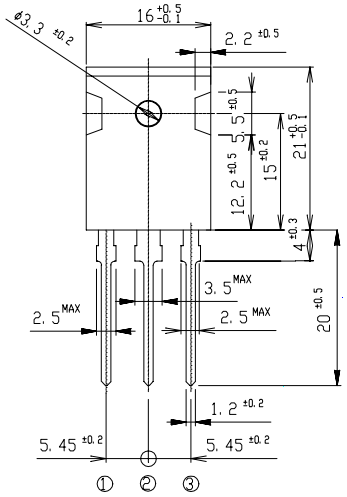
APPLICATION

- Switching power supply of AC 100-200V input
- Inverter
- Power Factor Control Circuit

OUTLINE DIMENSIONS

Case : MTO-3P

(Unit : mm)



RATINGS

● Absolute Maximum Ratings （Tc = 25℃）

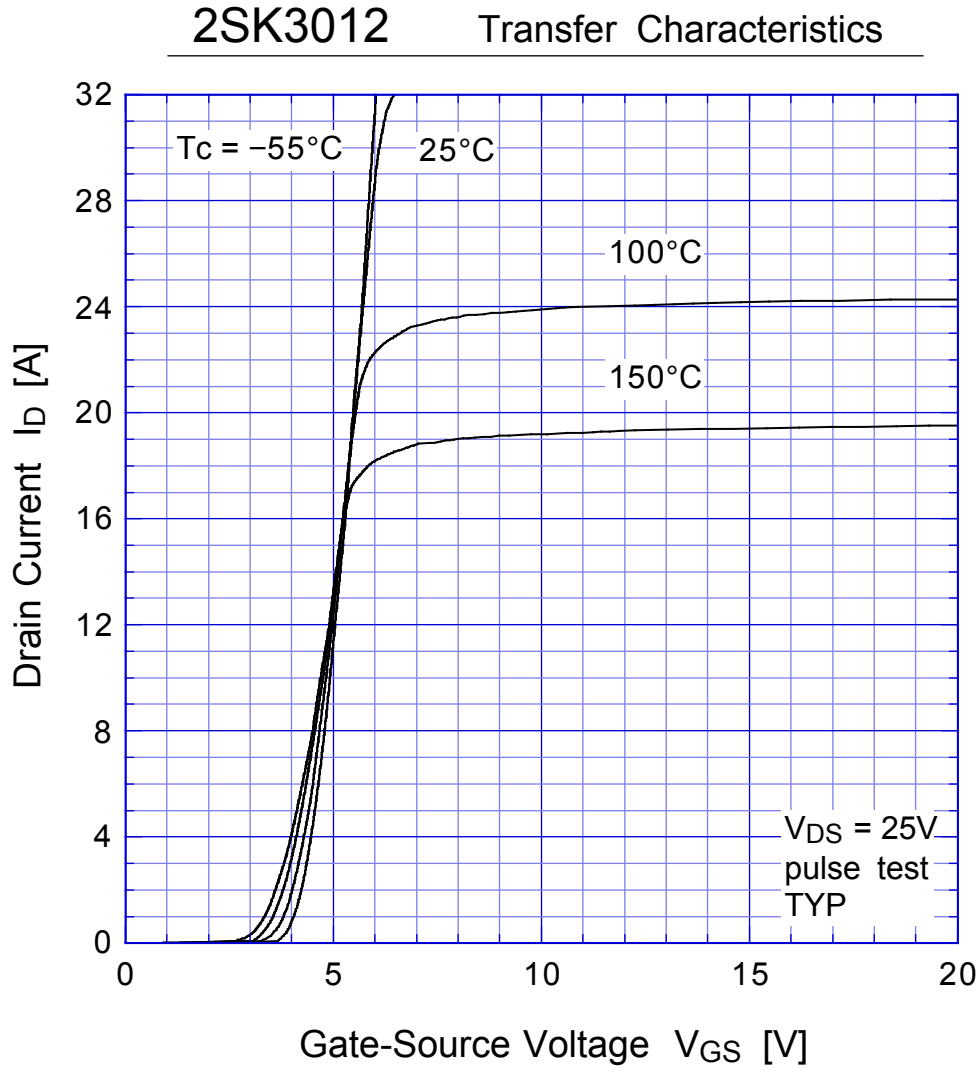
Item	Symbol	Conditions	Ratings	Unit
Storage Temperature	Tstg		-55～150	℃
Channel Temperature	Tch		150	
Drain-Source Voltage	VDSS		600	V
Gate-Source Voltage	VGSS		±30	
Continuous Drain Current (DC)	ID		16	A
Continuous Drain Current (Peak)	IDP		48	
Continuous Source Current (DC)	IS		16	
Total Power Dissipation	PT		125	W
Single Pulse Avalanche Current	IAS	Tch = 25℃	16	A
Mounting Torpue	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	600			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 600V, 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 = 8A, V_{DS} = 10V	6.2	10.0		S
Static Drain-Source On-state Resistance	$R_{DS(ON)}$	I_D = 8A, V_{GS} = 10V		0.45	0.6	Ω
Gate Threshold Voltage	V_{TH}	I_D = 1mA, V_{DS} = 10V	2.5	3	3.5	V
Source-Drain Diode Forward Voltage	V_{SD}	I_S = 8A, V_{GS} = 0V			1.5	
Thermal Resistance	θ jc	junction to case			1	℃/W
Total Gate Charge	Qg	V_{GS} = 10V, I_D = 16A, V_{DD} = 400V		85		nC
Input Capacitance	C_{iss}	V_{DS} = 10V, V_{GS} = 0V, f = 1MHz		2300		pF
Reverse Transfer Capacitance	C_{rss}			180		
Output Capacitance	C_{oss}			480		
Turn-On Time	t_{on}	I_D = 8A, V_{GS} = 10V, R_L = 19Ω		130	280	ns
Turn-Off Time	t_{off}			260	500	

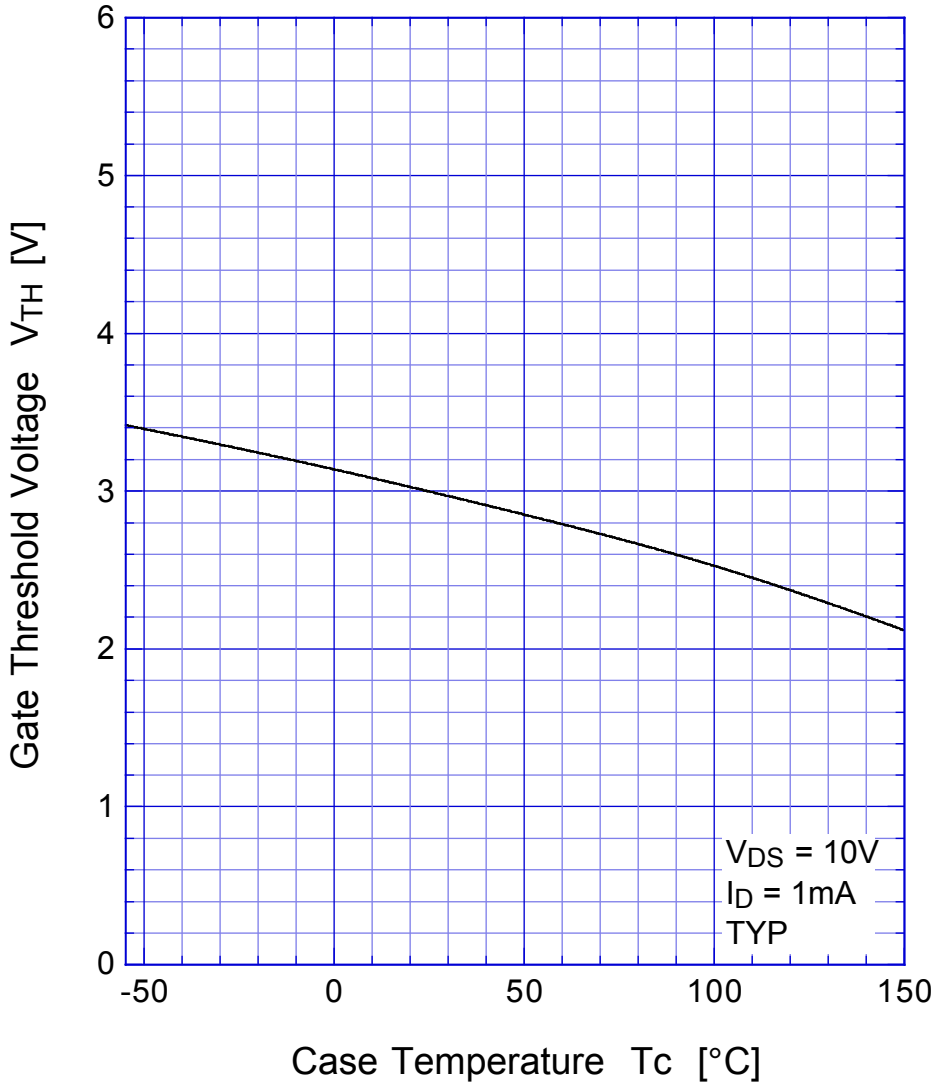
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2SK3012
Transfer Characteristics
Tc = −55°C
25°C
100°C
150°C
VDS = 25V
pulse test
TYP
Drain Current ID [A]
Gate-Source Voltage VGS [V]
0
4
8
12
16
20
24
28
32
0
5
10
15
20

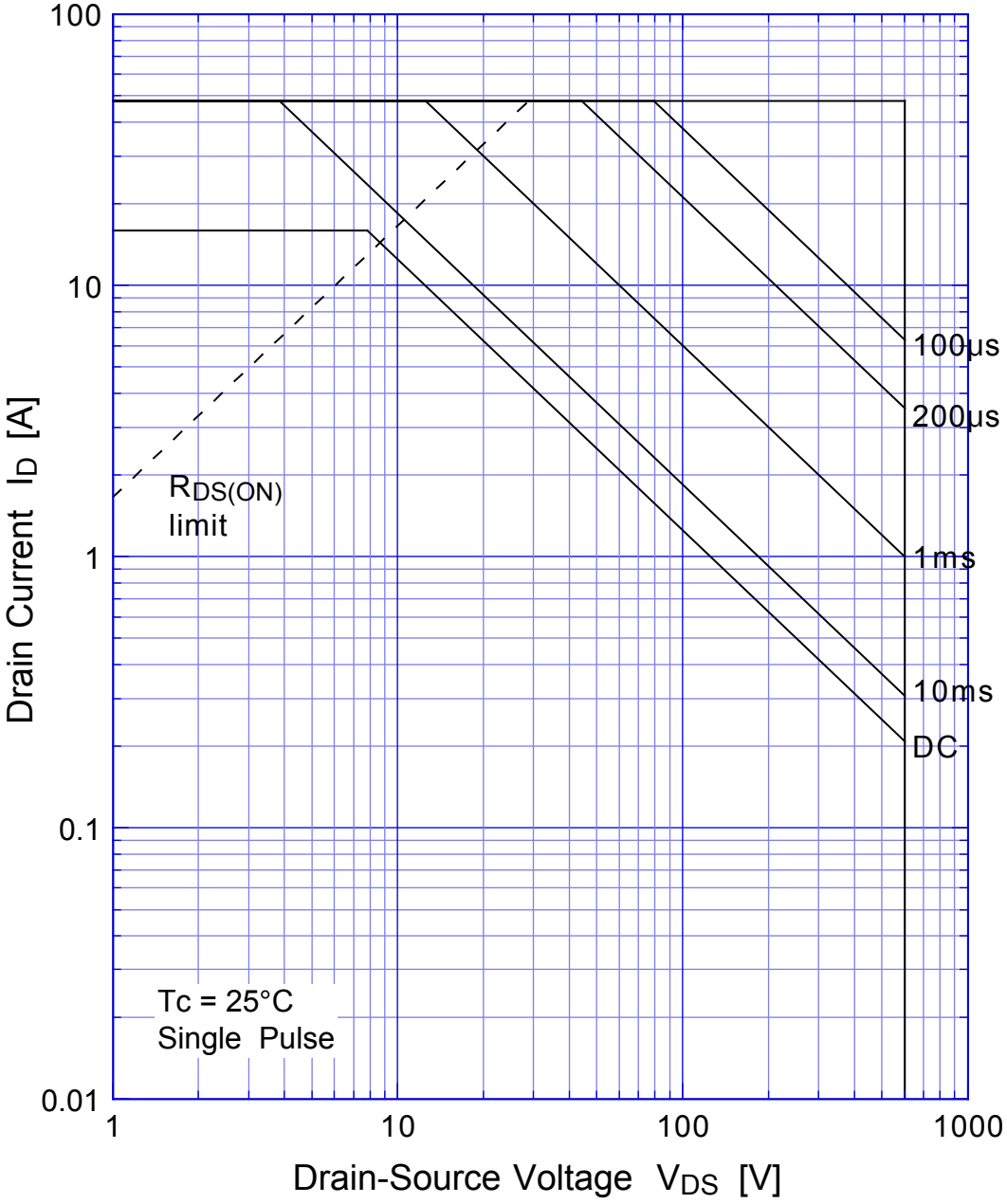
2SK3012 Static Drain-Source On-state Resistance



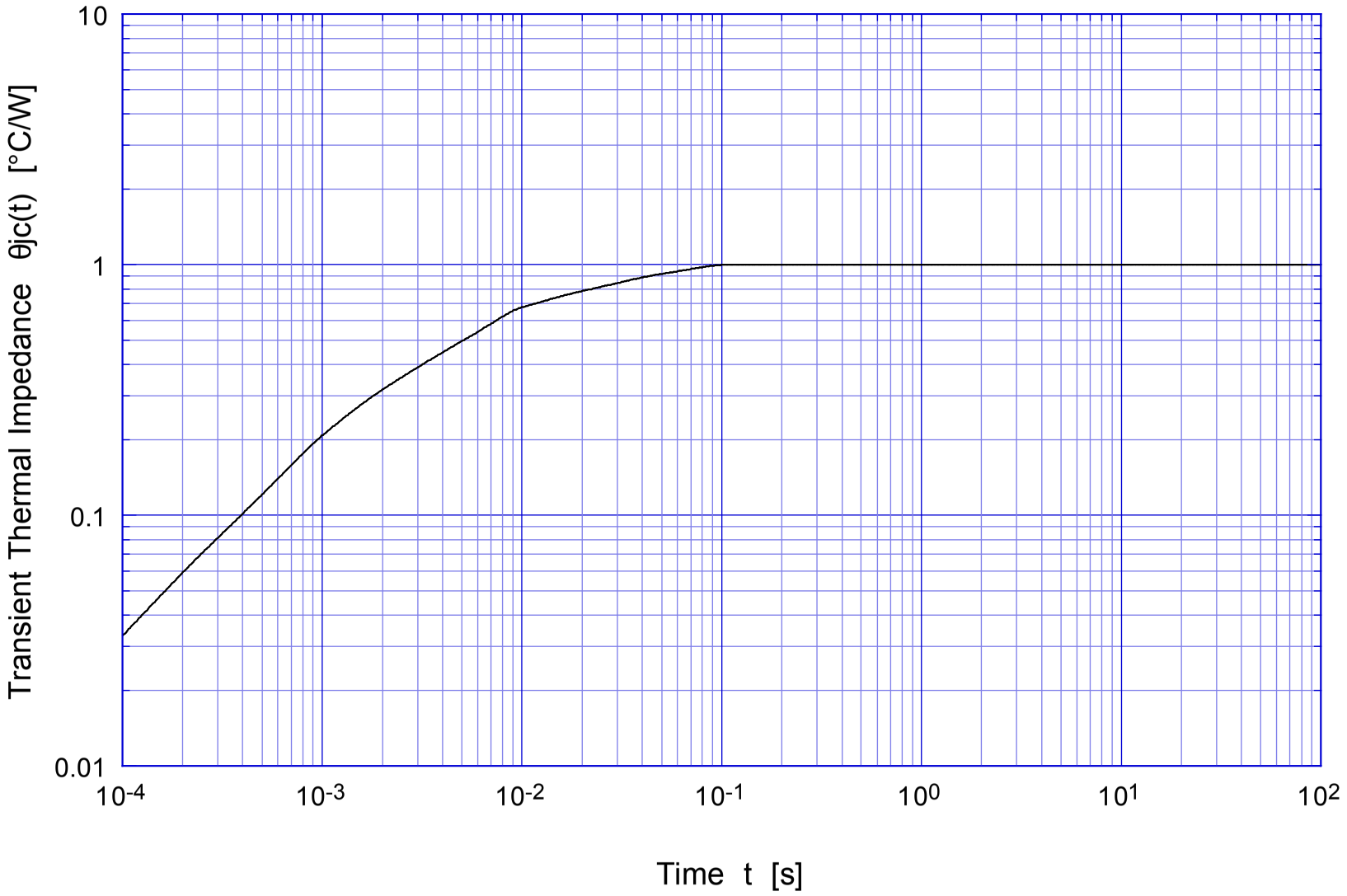
2SK3012 Gate Threshold Voltage

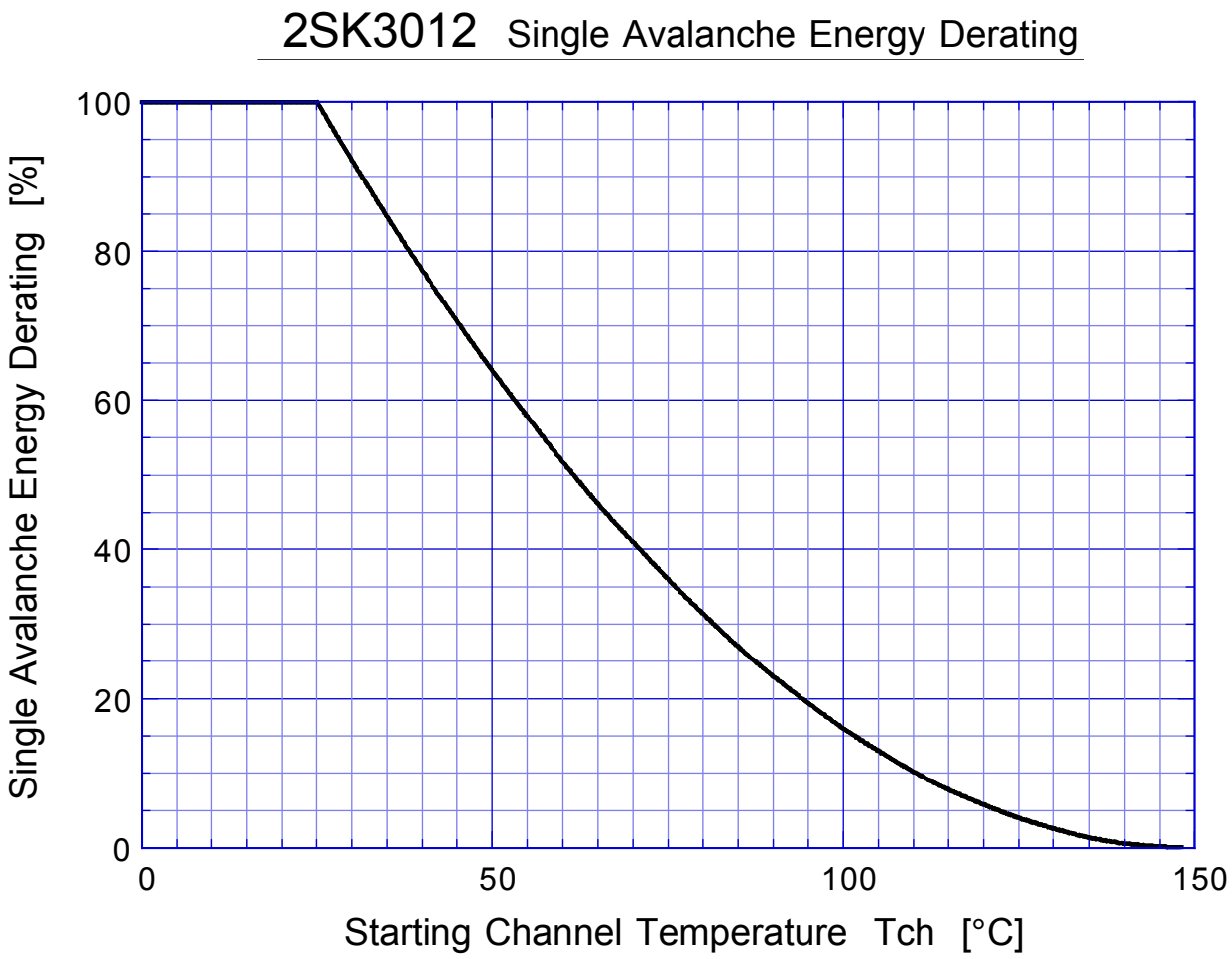


2SK3012 Safe Operating Area

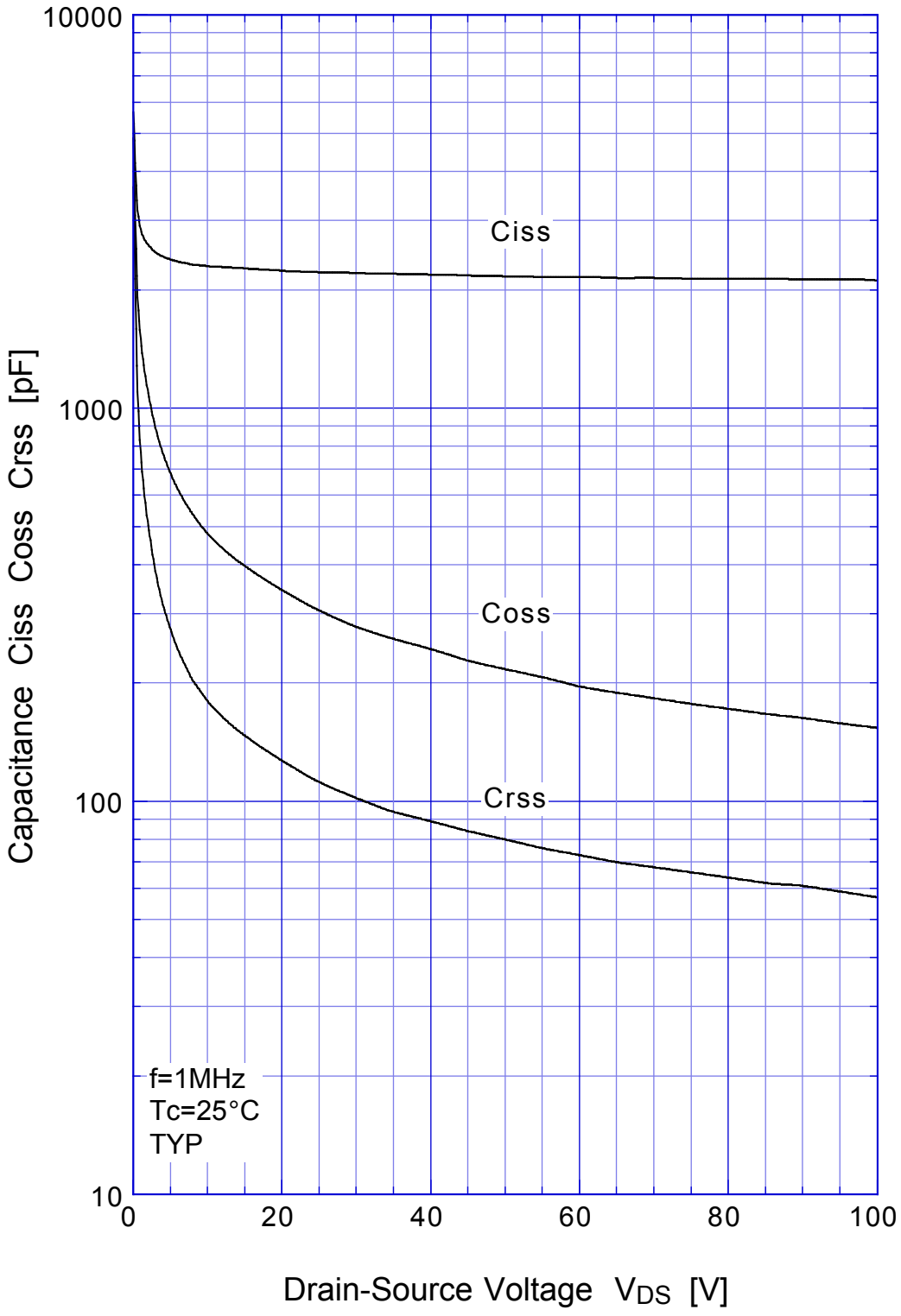


2SK3012 Transient Thermal Impedance

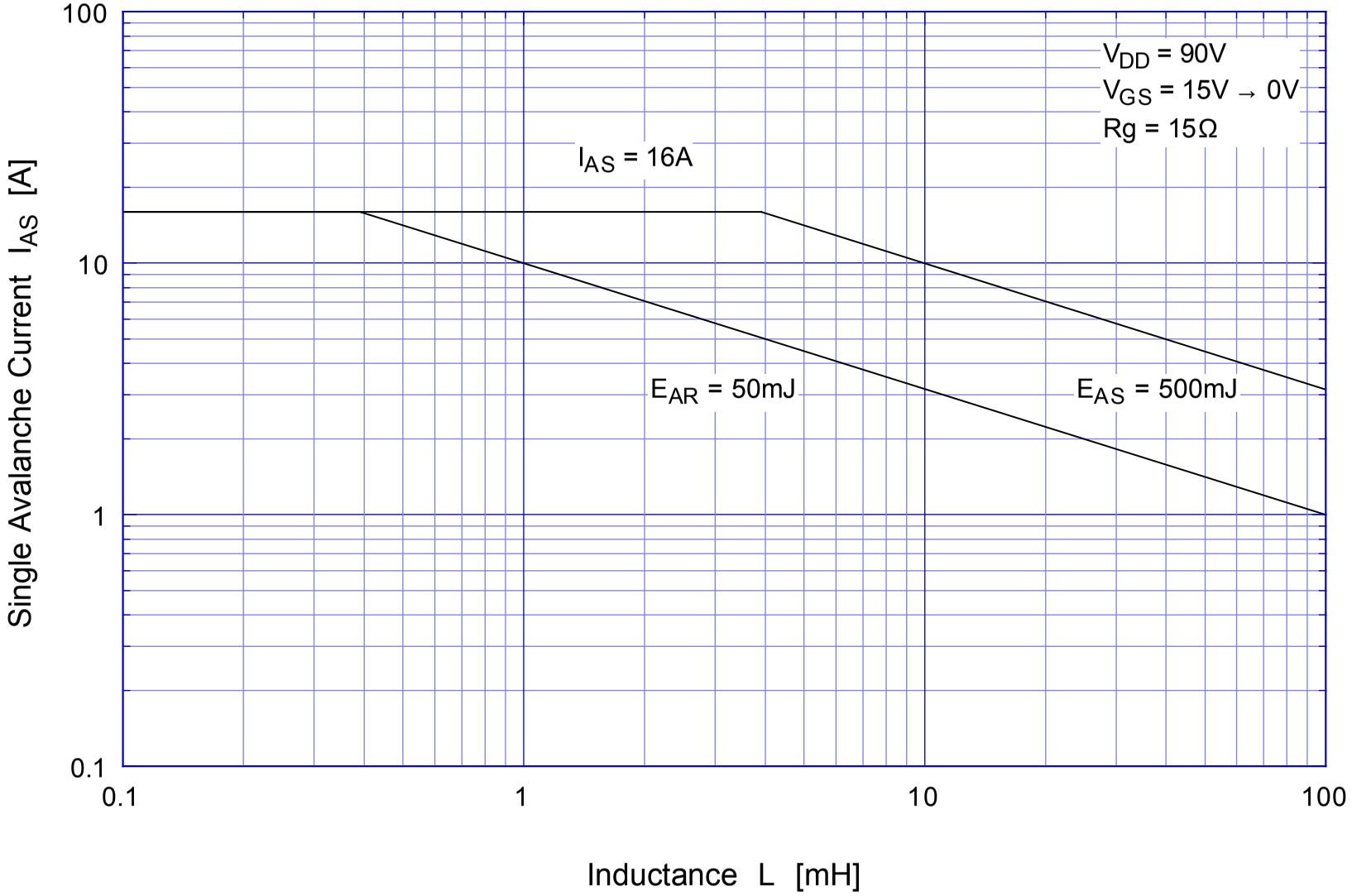


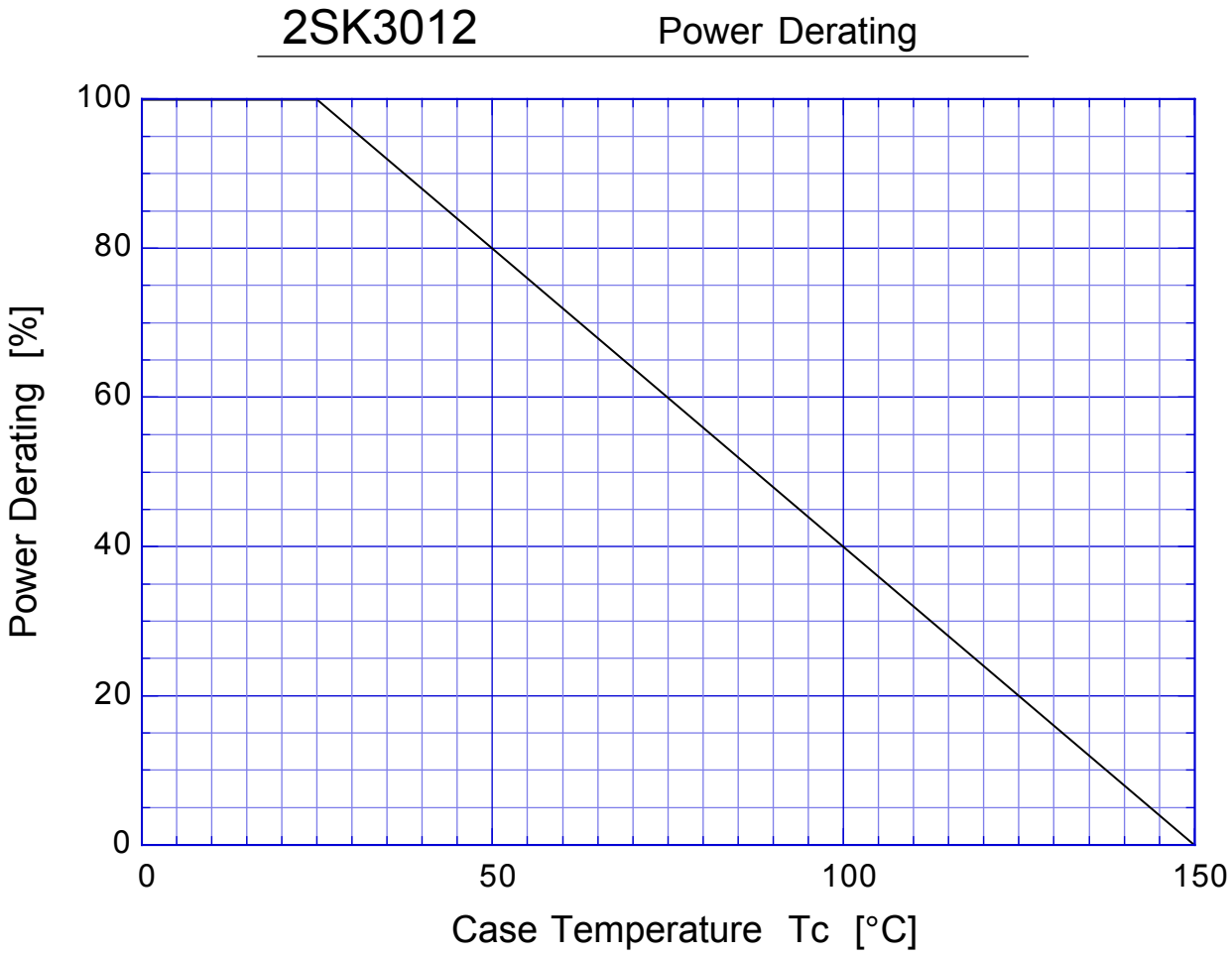

2SK3012 Single Avalanche Energy Derating
Single Avalanche Energy Derating [%]
100
80
60
40
20
0
0
50
100
150
Starting Channel Temperature Tch [°C]

2SK3012 Capacitance



2SK3012 Single Avalanche Current - Inductive Load




2SK3012
Power Derating
Power Derating [%]
100
80
60
40
20
0
0
50
100
150
Case Temperature Tc [°C]

2SK3012 Gate Charge Characteristics

