SHINDENGEN

VR Series Power MOSFET

N-Channel Enhancement type

2SK1194
(F05E23)

230V 0.5A

FEATURES

- Applicable to 4V drive.
- The static Rds(on) is small.
- Built-in ZD for Gate Protection.

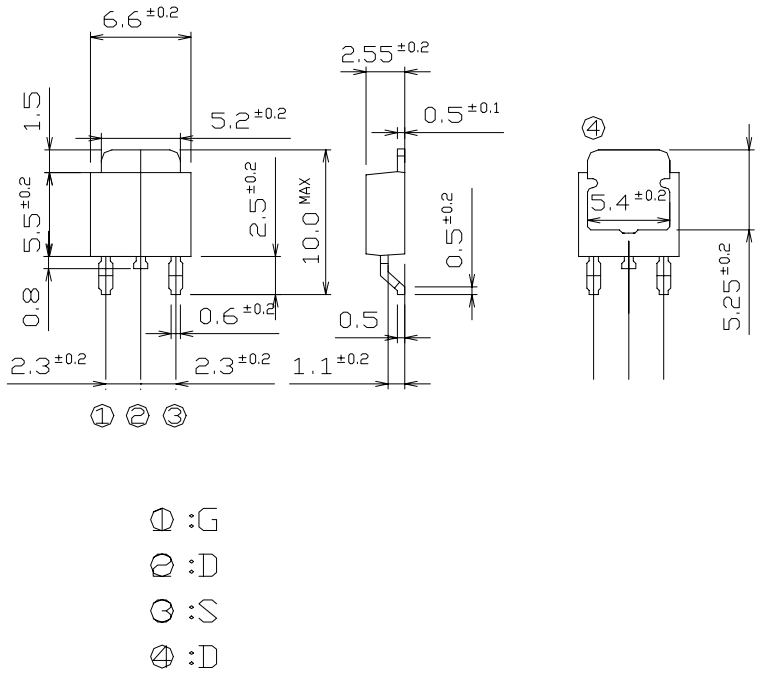
APPLICATION

- DC/DC converters
- Power supplies of DC 12-24V input
- Product related to
  Integrated Service Digital Network

OUTLINE DIMENSIONS

Case : E-pack

(Unit : mm)



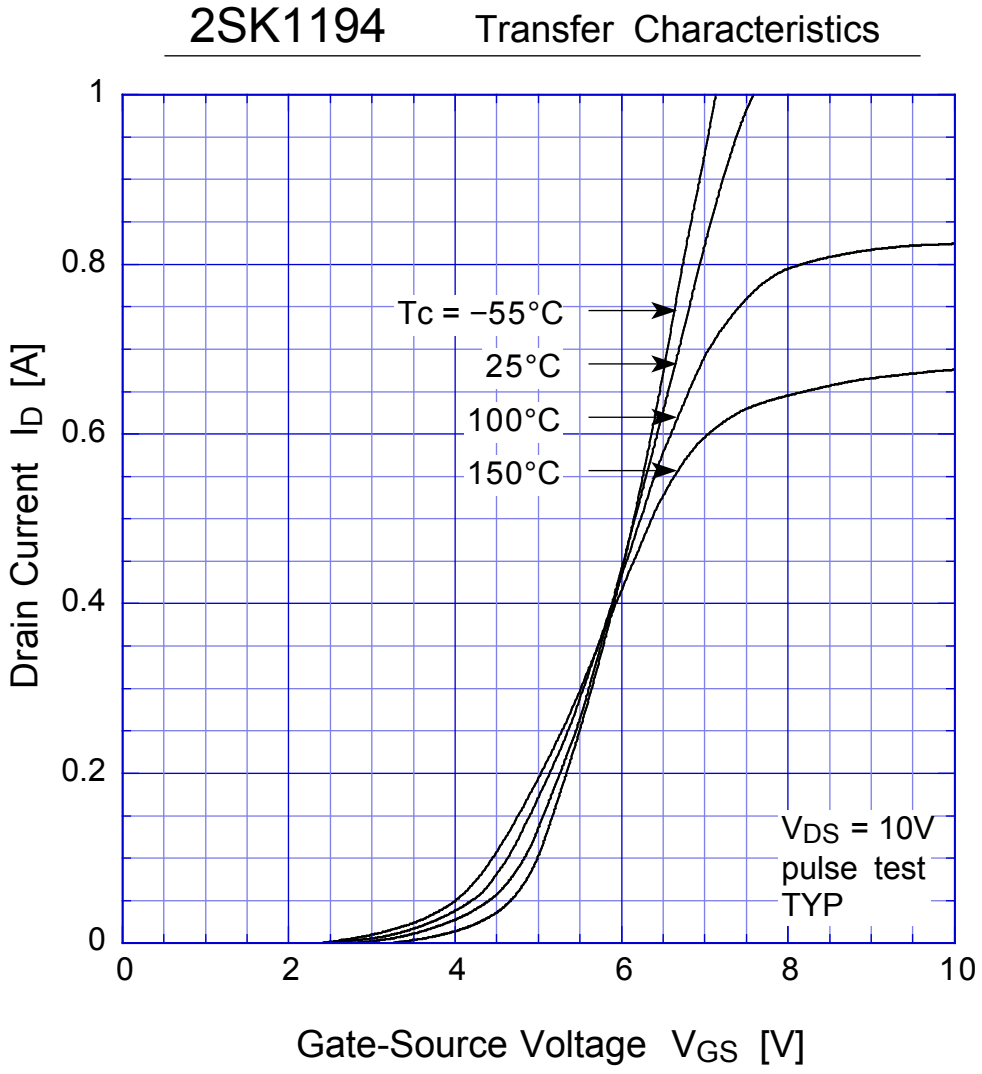
RATINGS

●Absolute Maximum Ratings （Tc = 25℃）

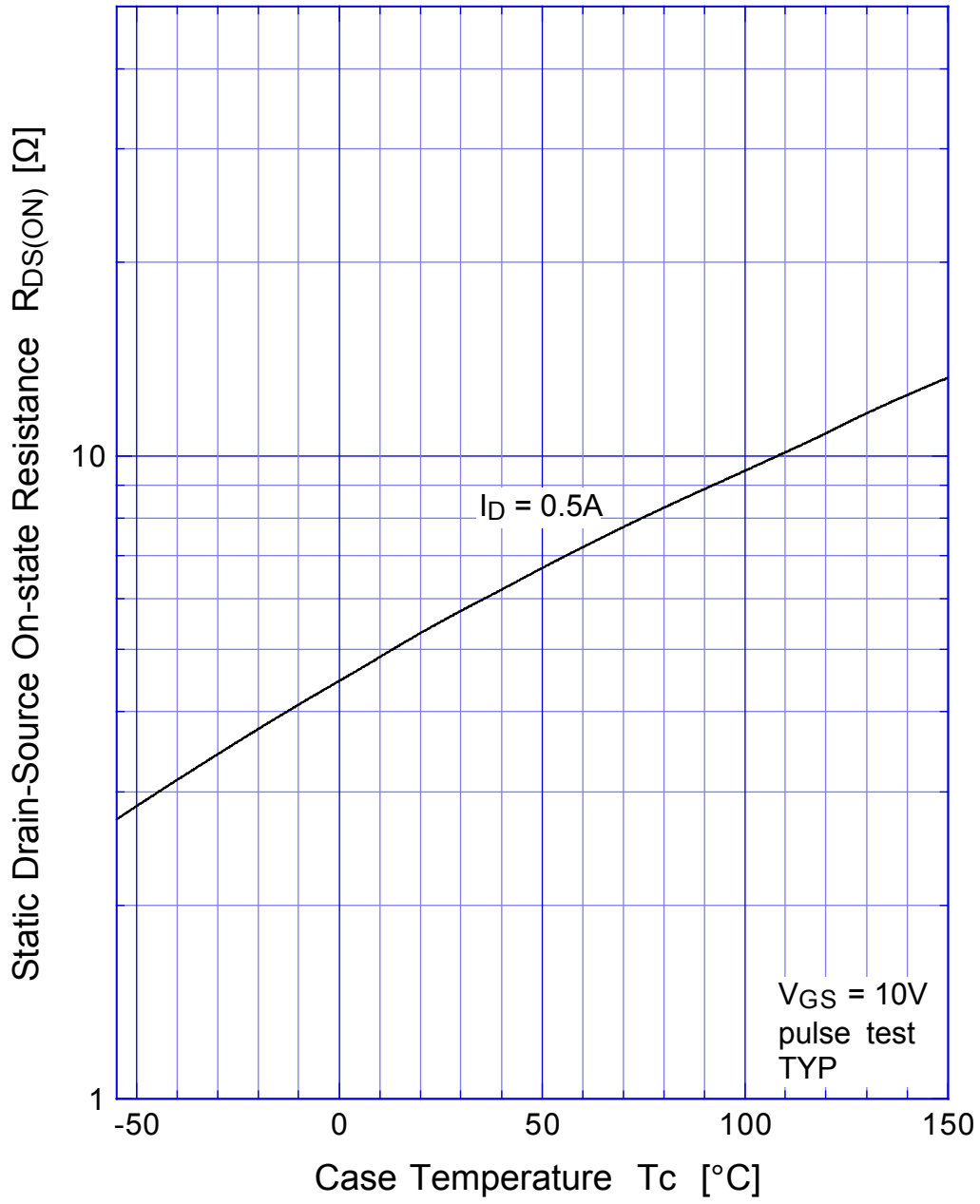
Item	Symbol	Conditions	Ratings	Unit
Storage Temperature	T_{stg}		−55～150	℃
Channel Temperature	T_{ch}		150	
Drain-Source Voltage	V_{DSS}		230	V
Gate-Source Voltage	V_{GSS}		±20	
Continuous Drain Current(DC)	I_D		0.5	A
Continuous Drain Current(Peak)	I_{DP}		1	
Continuous Source Current(DC)	I_S		0.5	
Total Power Dissipation	P_T		6	W

●Electrical Characteristics Tc = 25℃

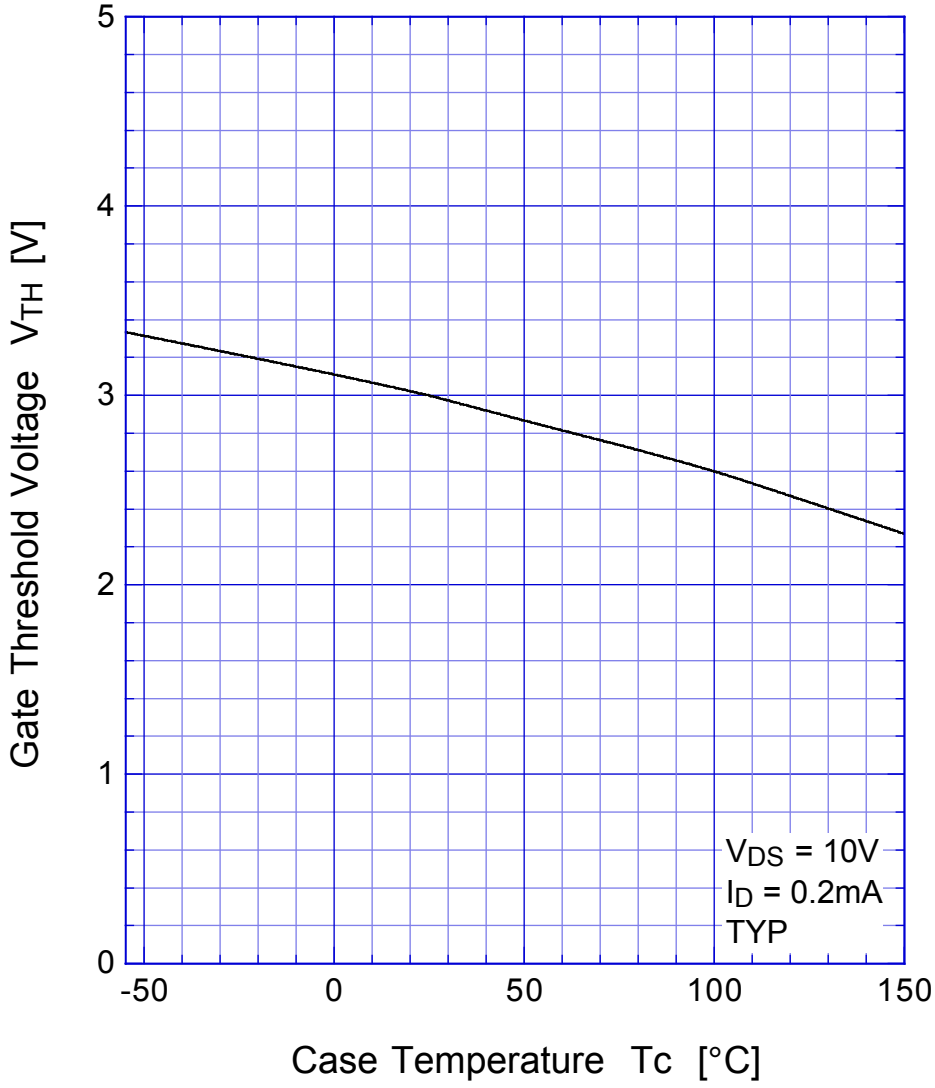
Item	Symbole	Conditions	Min.	Typ.	Max.	Unit
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	I_D = 250μA, V_{GS} = 0V	230			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 230V, V_{GS} = 0V			250	μA
Gate-Source Leakage Current	I_{GSS}	V_{GS} = ±20V, V_{DS} = 0V			±0.1	
Forward Transconductance	g_{fs}	I_D = 0.5A, V_{DS} = 10V	0.2	0.4		S
Static Drain-Source On-state Resistance	$R_{DS(ON)}$	I_D = 0.5A, V_{GS} = 10V		5.5	8	Ω
Gate Threshold Voltage	V_{TH}	I_D = 0.2mA, V_{DS} = 10V	2	3	4	V
Source-Drain Diode Forward Voltage	V_{SD}	I_S = 0.5A, V_{GS} = 0V			1.5	
Thermal Resistance	θjc	junction to case			20.8	℃/W
Total Gate Charge	Qg	V_{GS} = 10V, I_D = 0.5A, V_{DD} = 200V		2.7		nC
Input Capacitance	C_{iss}	V_{DS} = 10V, V_{GS} = 0V, f = 1MHz		45		pF
Reverse Transfer Capacitance	C_{rss}			4.5		
Output Capacitance	C_{oss}			30		
Turn-On Time	t_{on}	I_D = 0.5A, V_{GS} = 10V, R_L = 200Ω		30	60	ns
Turn-Off Time	t_{off}			50	100	


2SK1194 Transfer Characteristics
Drain Current I_D [A]
Gate-Source Voltage V_{GS} [V]
Tc = −55°C
25°C
100°C
150°C
V_{DS} = 10V
pulse test
TYP
0
0.2
0.4
0.6
0.8
1
0
2
4
6
8
10

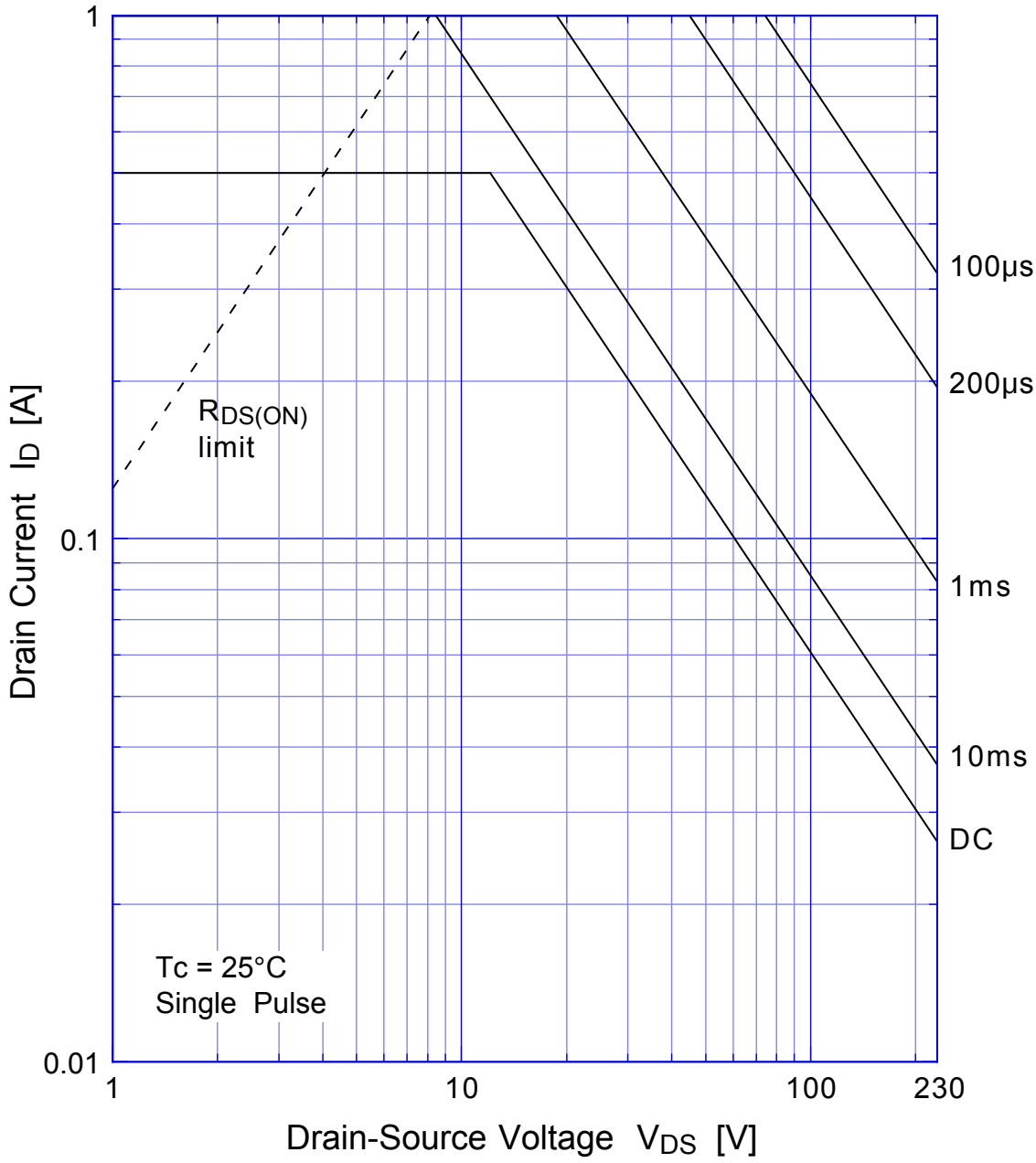
2SK1194 Static Drain-Source On-state Resistance

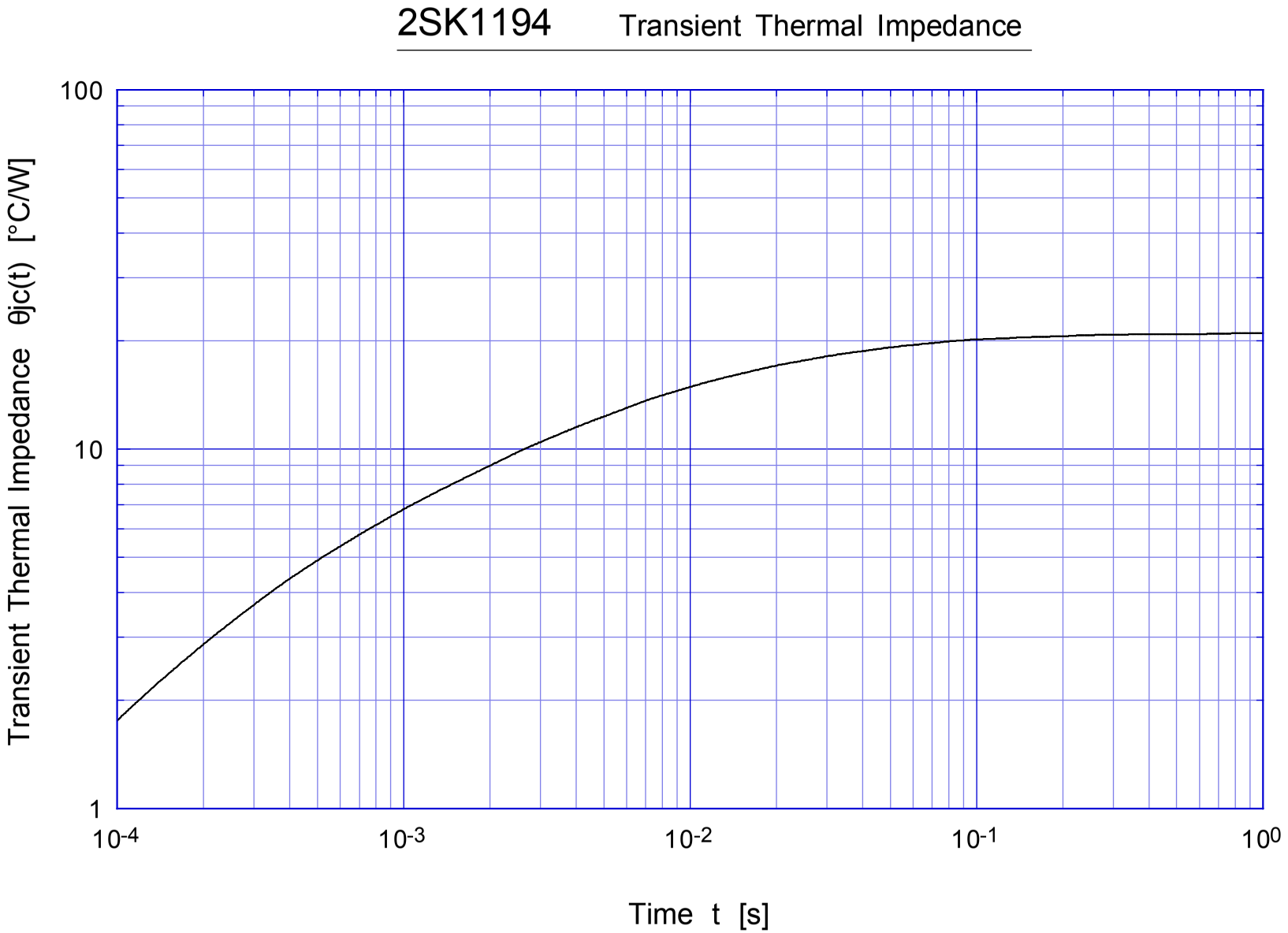


2SK1194 Gate Threshold Voltage

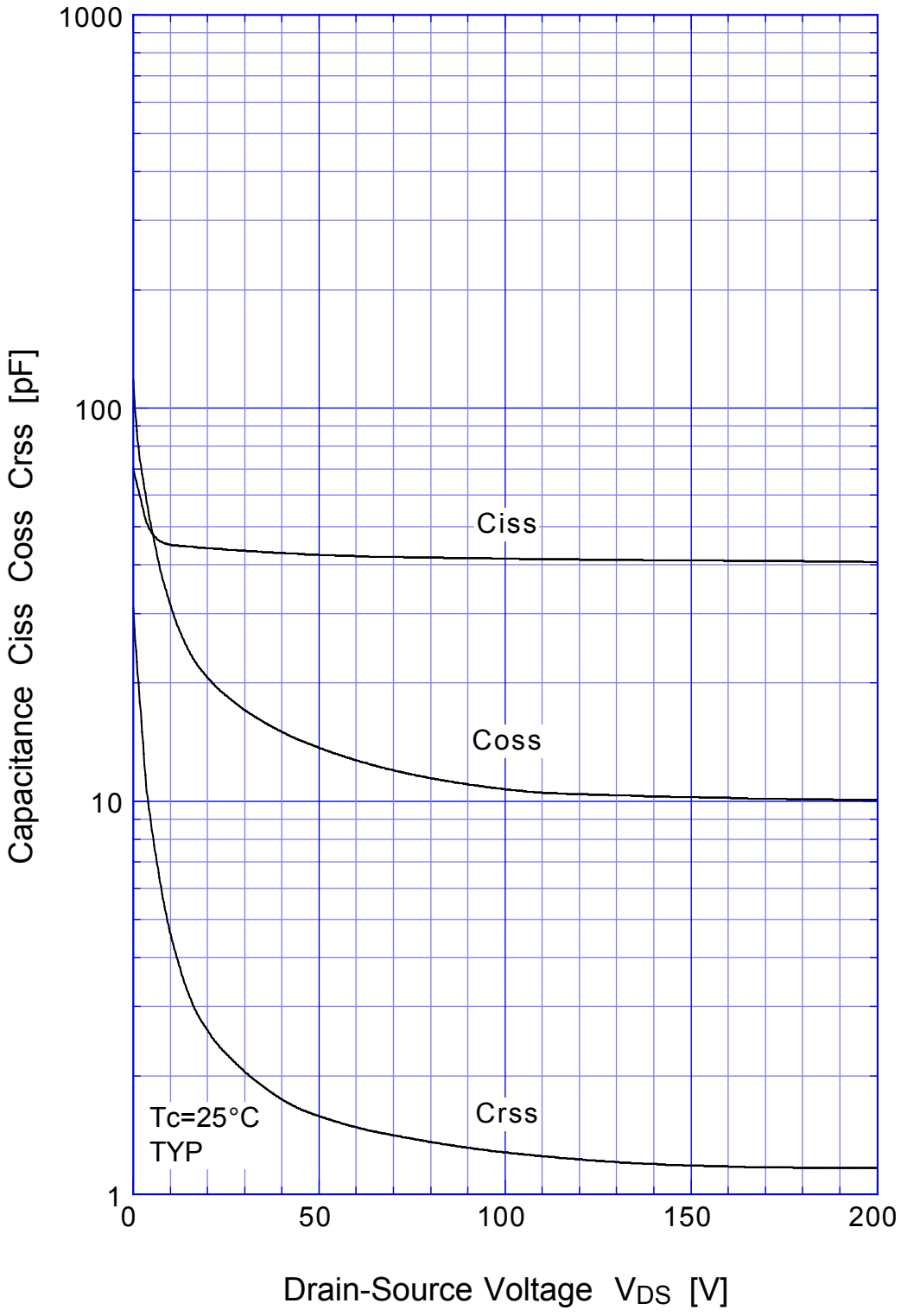


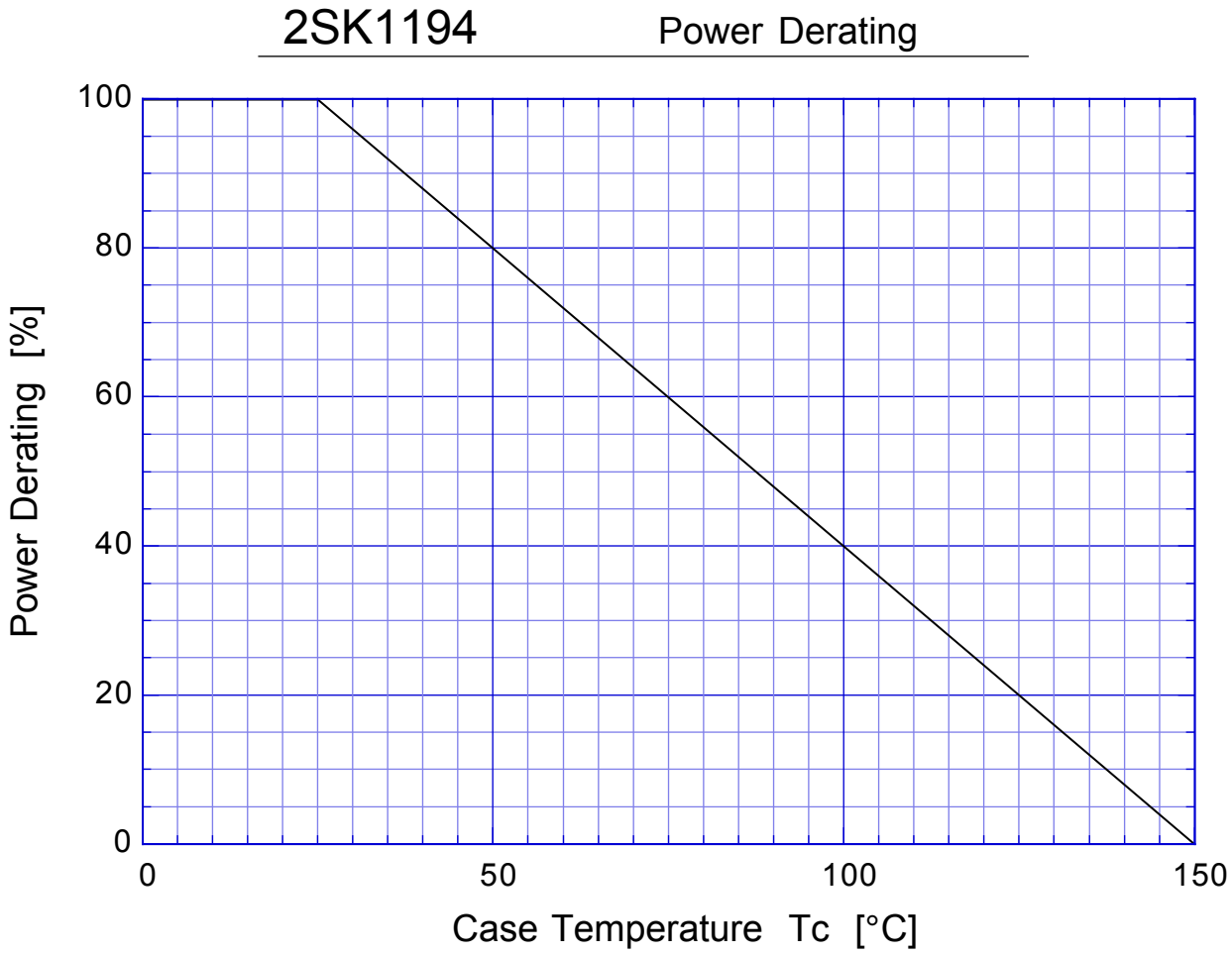
2SK1194 Safe Operating Area




2SK1194
Transient Thermal Impedance
Transient Thermal Impedance θjc(t) [°C/W]
100
10
1
10-4
10-3
10-2
10-1
100
Time t [s]

2SK1194 Capacitance




2SK1194
Power Derating
Power Derating [%]
100
80
60
40
20
0
0
50
100
150
Case Temperature Tc [°C]

2SK1194 Gate Charge Characteristics