SHINDENGEN

VR Series Power MOSFET

N-Channel Enhancement type

2SK1931

(F5E20)

200V 5A

FEATURES

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

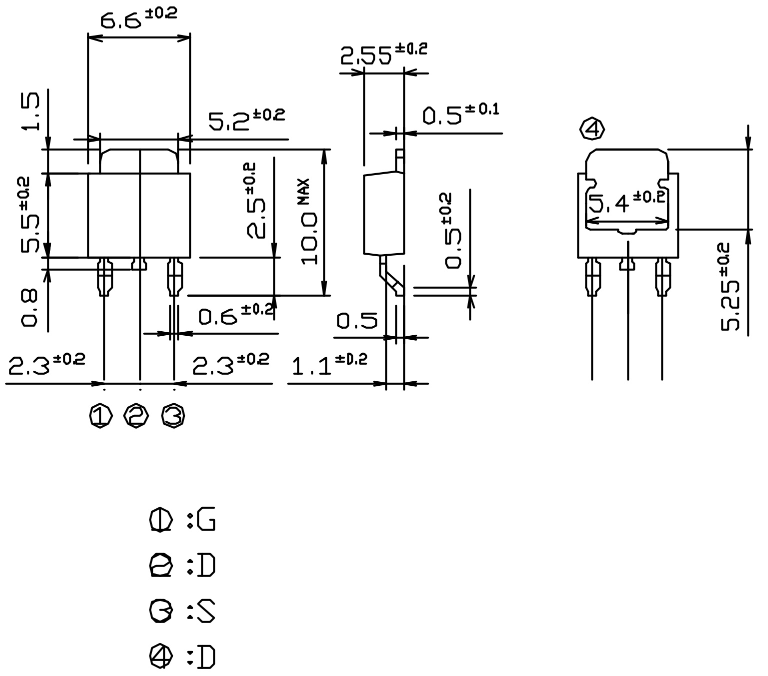
APPLICATION

- 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

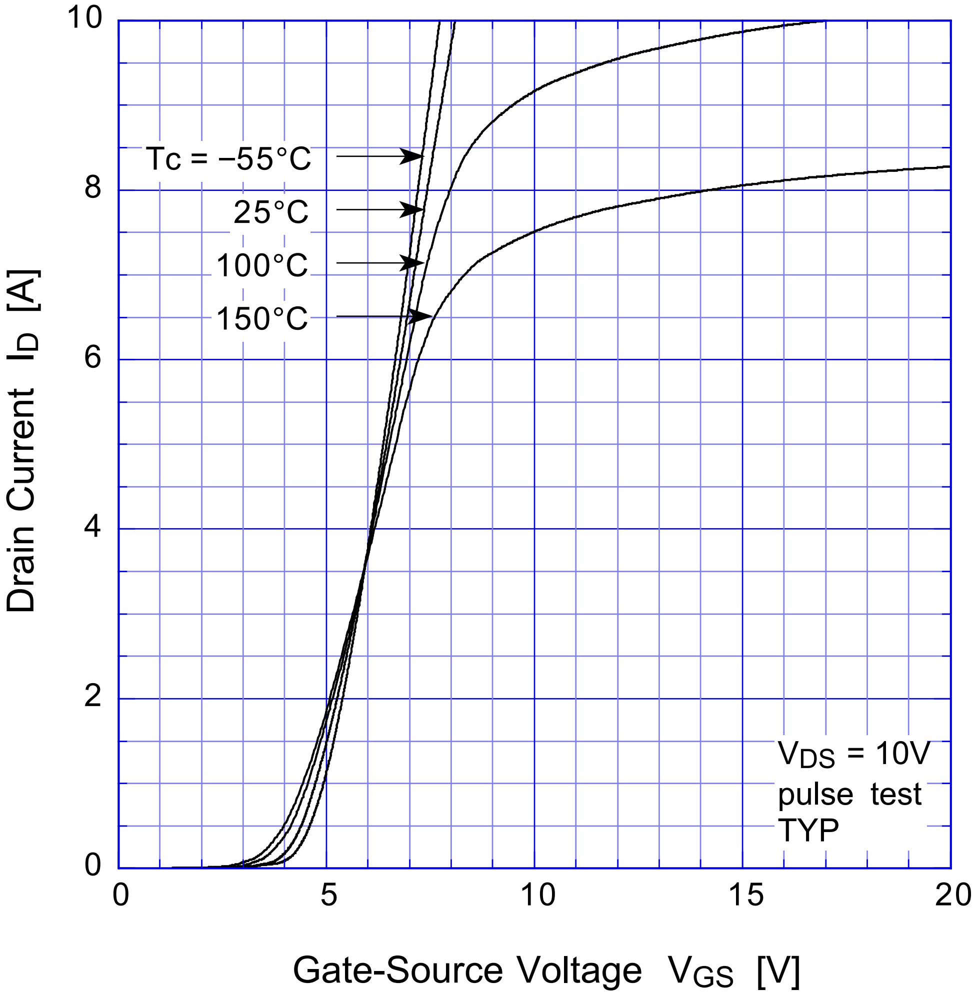
● Absolute Maximum Ratings (Tc = 25°C)

Item	Symbol	Conditions	Ratings	Unit
Storage Temperature	T_{stg}		-55～150	°C
Channel Temperature	T_{ch}		150	
Drain-Source Voltage	V_{DSS}		200	V
Gate-Source Voltage	V_{GSS}		±30	
Continuous Drain Current (DC)	I_D		5	A
Continuous Drain Current (Peak)	I_{DP}		10	
Continuous Source Current (DC)	I_S		5	
Total Power Dissipation	P_T		20	W

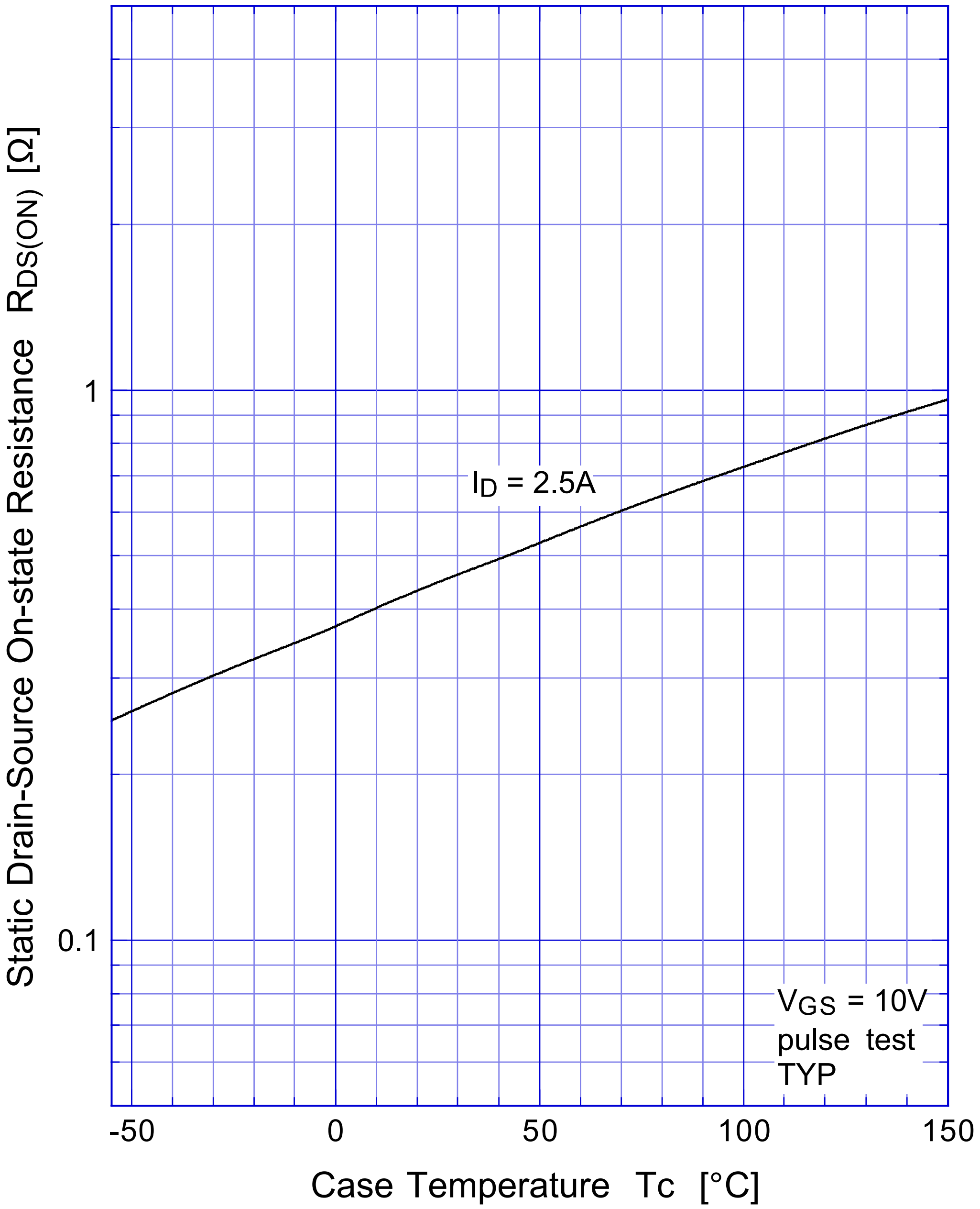
●Electrical Characteristics Tc = 25℃

Item	Symbol	Conditions	Min.	Typ.	Max.	Unit
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	I_D = 1mA, V_{GS} = 0V	200			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 200V, 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 = 2.5A, V_{DS} = 10V	0.9	1.8		S
Static Drain-Source On-state Resistance	$R_{DS(ON)}$	I_D = 2.5A, V_{GS} = 10V		0.45	0.65	Ω
Gate Threshold Voltage	V_{TH}	I_D = 1mA, V_{DS} = 10V	2	3	4	V
Source-Drain Diode Forward Voltage	V_{SD}	I_S = 2.5A, V_{GS} = 0V			1.5	
Thermal Resistance	θ jc	junction to case			6.25	℃/W
Total Gate Charge	Qg	V_{GS} = 10V, I_D = 5A, V_{DD} = 150V		11		nC
Input Capacitance	C_{iss}	V_{DS} = 10V, V_{GS} = 0V, f = 1MHz		360		pF
Reverse Transfer Capacitance	C_{rss}			45		
Output Capacitance	C_{oss}			190		
Turn-On Time	t_{on}	I_D = 2.5A, V_{GS} = 10V, R_L = 40Ω		55	110	ns
Turn-Off Time	t_{off}			75	150	

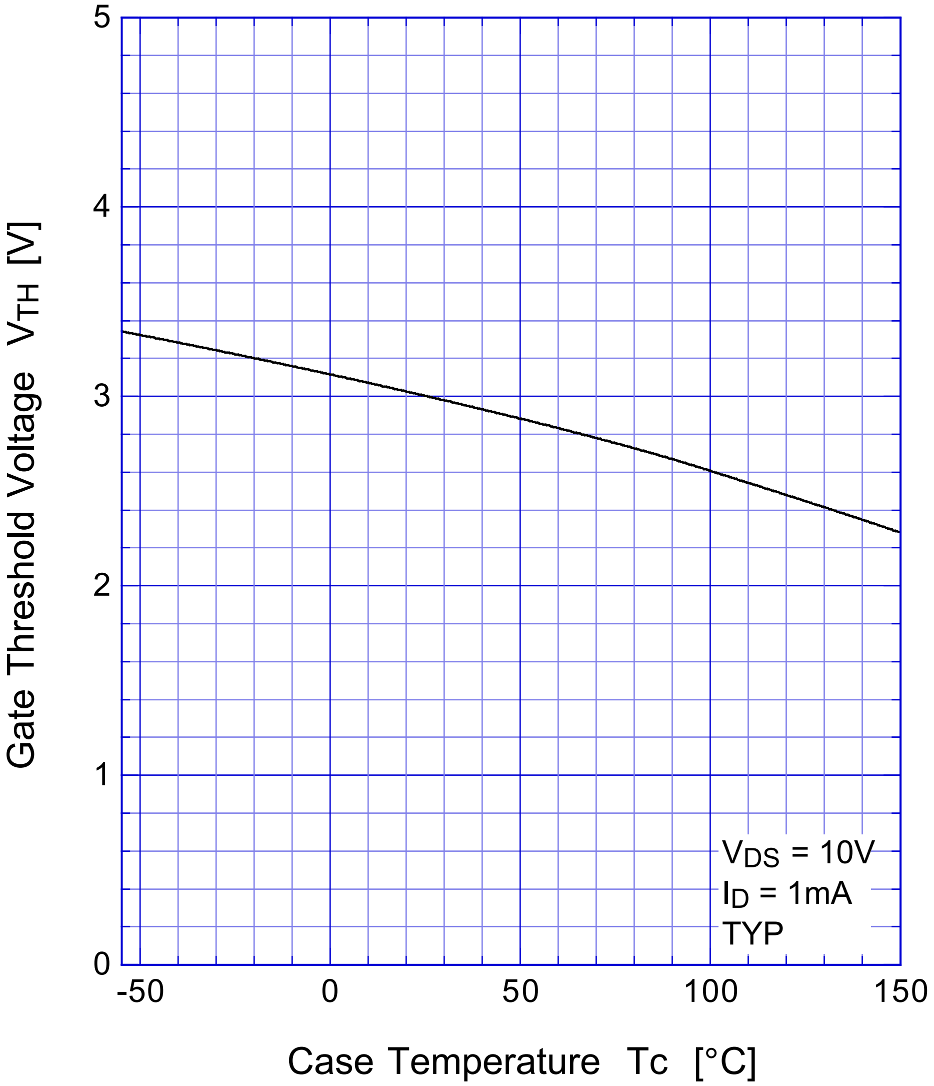
2SK1931 Transfer Characteristics



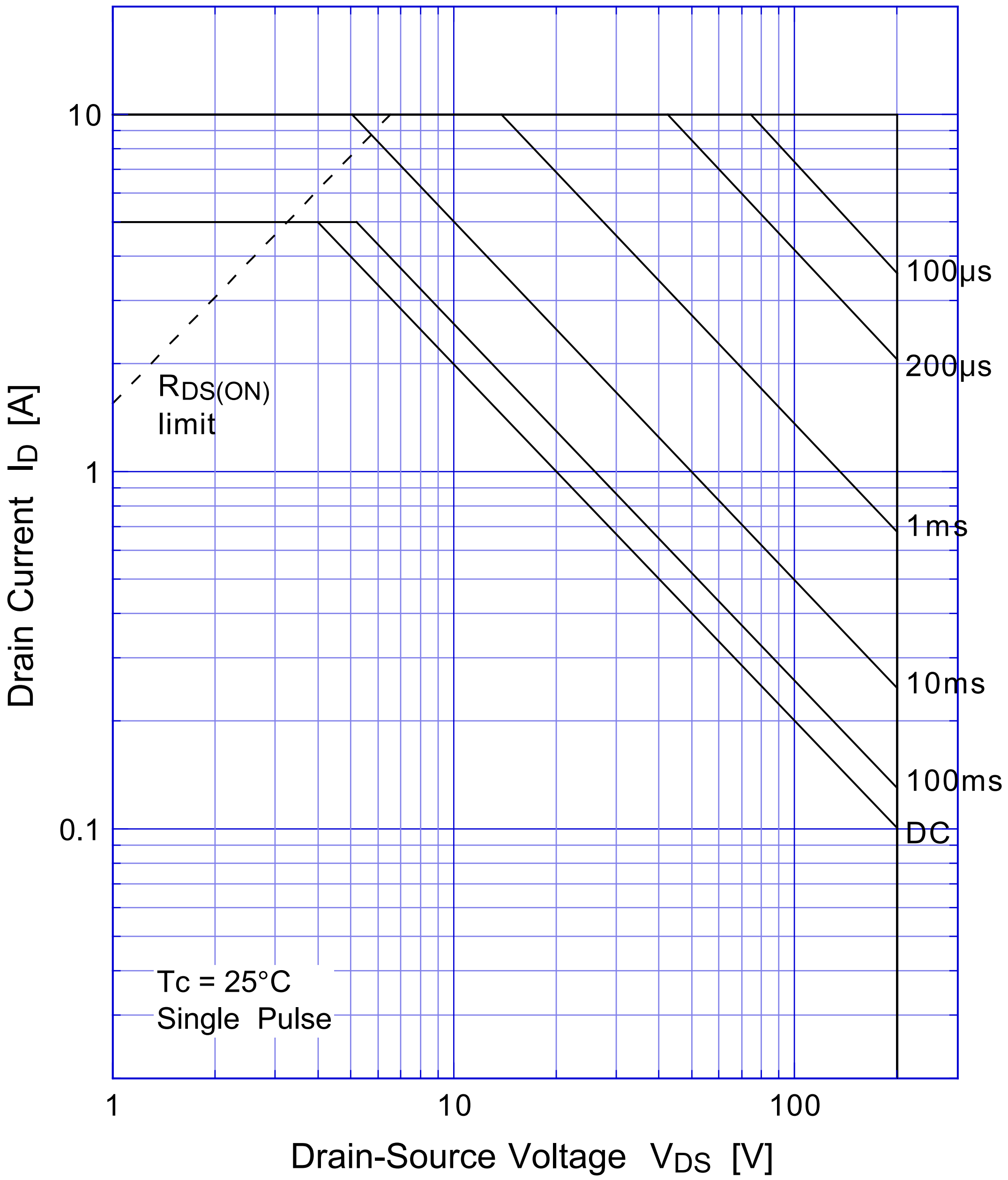
2SK1931 Static Drain-Source On-state Resistance



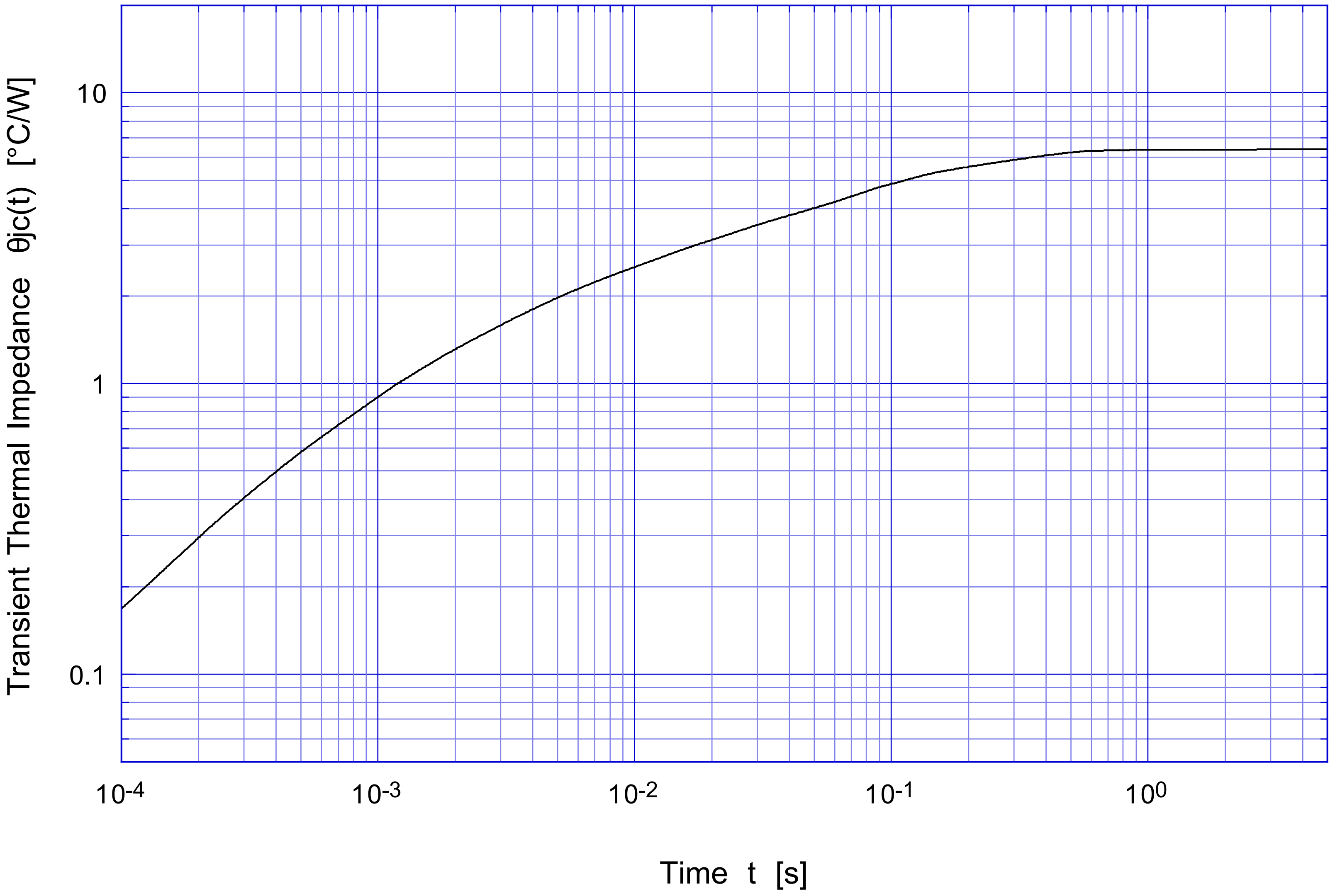
2SK1931 Gate Threshold Voltage



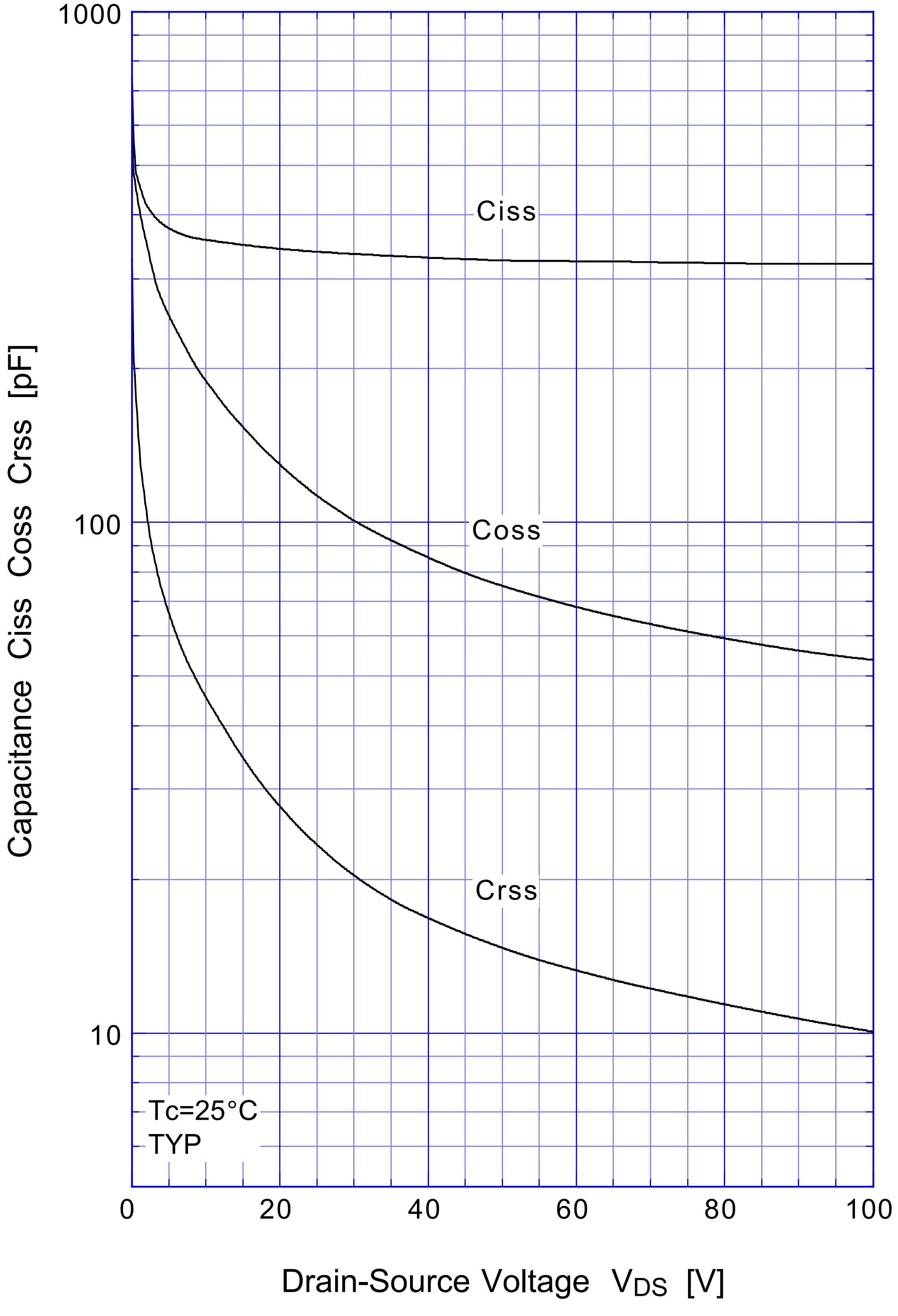
2SK1931 Safe Operating Area



2SK1931 Transient Thermal Impedance



2SK1931 Capacitance



2SK1931 Power Derating