

## VZ Series Power MOSFET

N-Channel Enhancement type

# 2SK2491

( F20S18VZ )

## 180V 20A

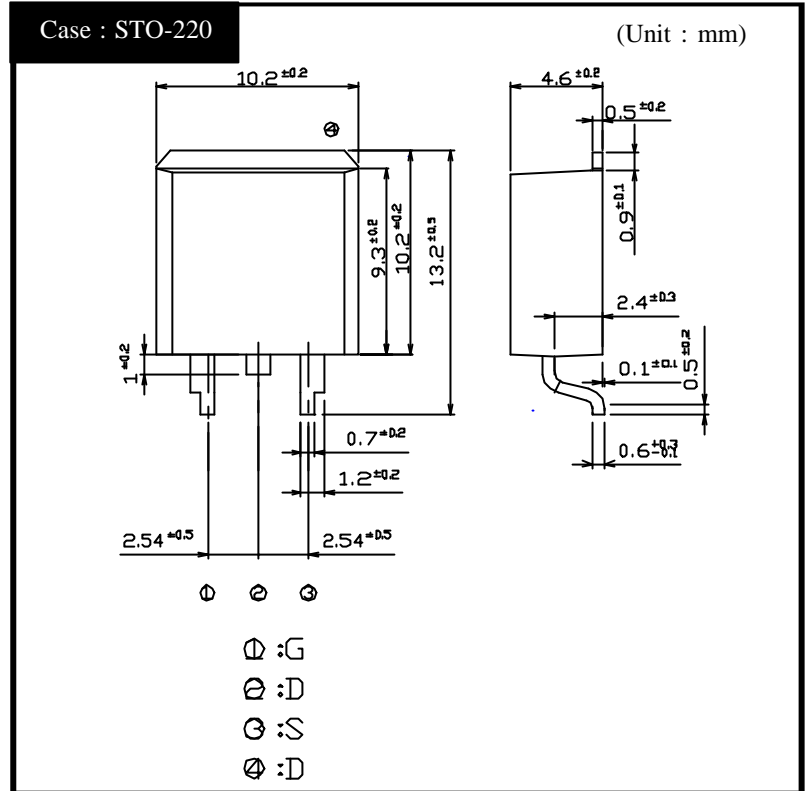
### FEATURES

Input capacitance (Ciss) is small.  
 Especially, input capacitance at 0 bias is small.  
 The static Rds(on) is small.  
 The switching time is fast.

### APPLICATION

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

### OUTLINE DIMENSIONS



### RATINGS

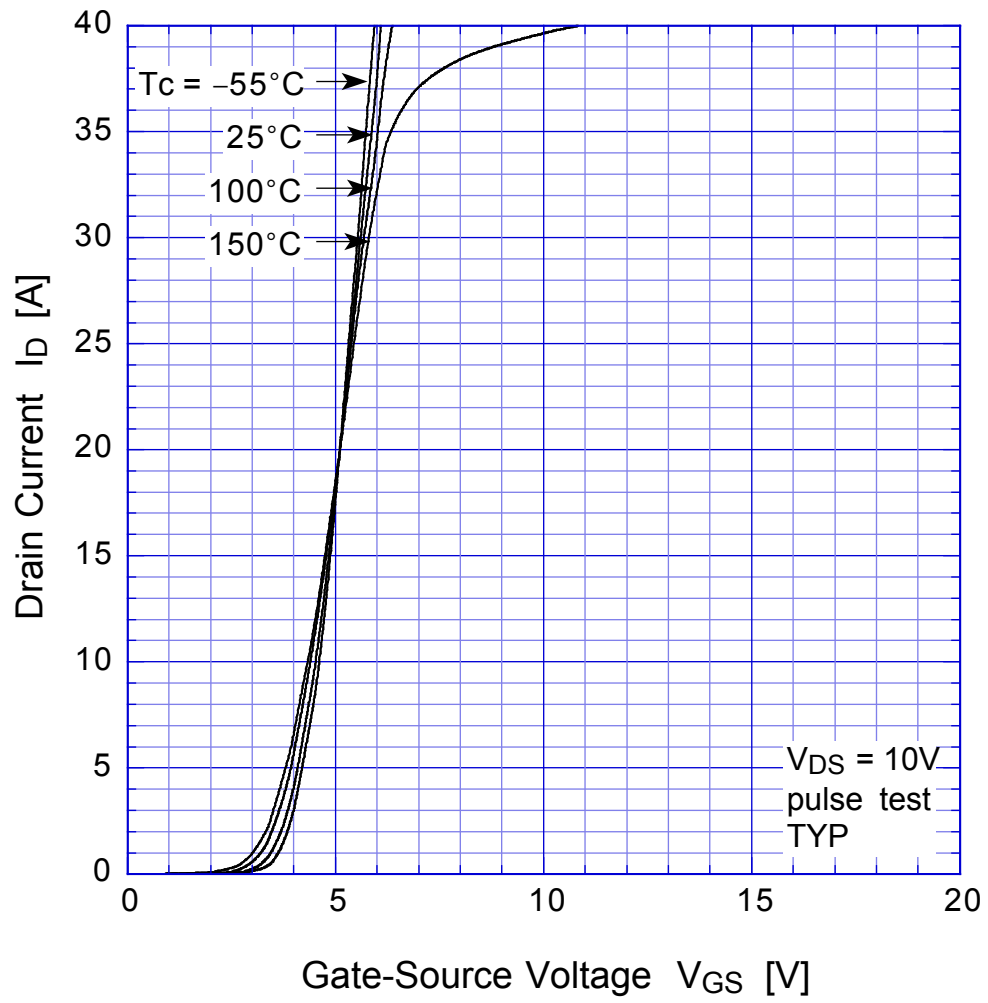
Absolute Maximum Ratings (Tc = 25 °C)

Item	Symbol	Conditions	Ratings	Unit
Storage Temperature	T <sub>stg</sub>		-55 ~ 150	
Channel Temperature	T <sub>ch</sub>		150	
Drain-Source Voltage	V <sub>DSS</sub>		180	V
Gate-Source Voltage	V <sub>GSS</sub>		± 30	
Continuous Drain Current (DC)	I <sub>D</sub>		20	A
Continuous Drain Current (Peak)	I <sub>DP</sub>		40	
Continuous Source Current (DC)	I <sub>S</sub>		20	
Total Power Dissipation	P <sub>T</sub>		70	W
Single Pulse Avalanche Current	I <sub>AS</sub>	T <sub>ch</sub> = 25	20	A

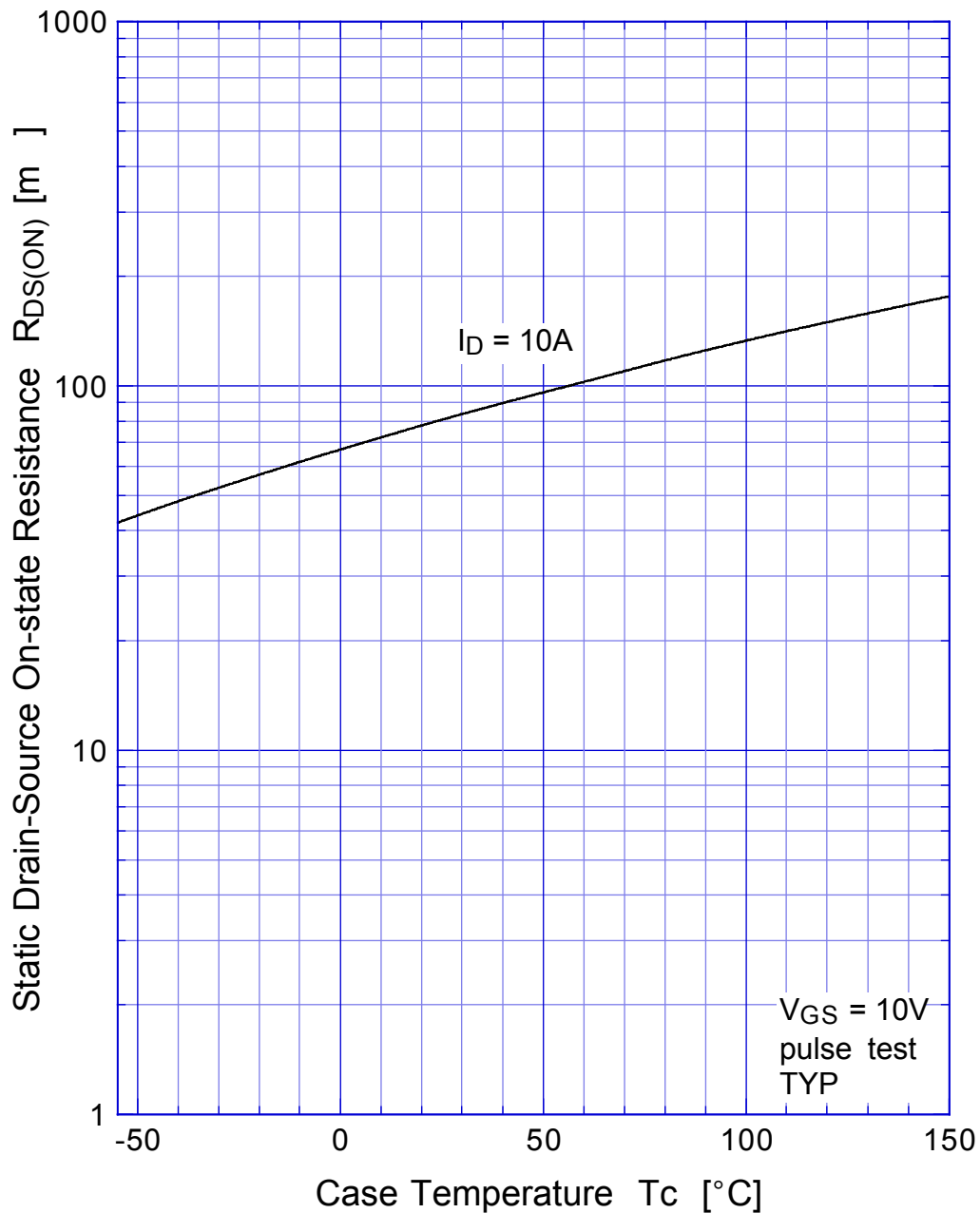
●Electrical Characteristics  $T_c = 25^\circ\text{C}$

Item	Symbol	Conditions	Min.	Typ.	Max.	Unit
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D = 1\text{mA}, V_{GS} = 0\text{V}$	180			V
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = 180\text{V}, V_{GS} = 0\text{V}$			250	$\mu\text{A}$
Gate-Source Leakage Current	$I_{GSS}$	$V_{GS} = \pm 30\text{V}, V_{DS} = 0\text{V}$			$\pm 0.1$	
Forward Transconductance	$g_{fs}$	$I_D = 10\text{A}, V_{DS} = 10\text{V}$	8.0	15.0		S
Static Drain-Source On-state Resistance	$R_{DS(ON)}$	$I_D = 10\text{A}, V_{GS} = 10\text{V}$		0.08	0.13	$\Omega$
Gate Threshold Voltage	$V_{TH}$	$I_D = 1\text{mA}, V_{DS} = 10\text{V}$	2.0	3.0	4.0	V
Source-Drain Diode Forward Voltage	$V_{SD}$	$I_S = 10\text{A}, V_{GS} = 0\text{V}$			1.5	
Thermal Resistance	$\theta_{jc}$	junction to case			1.78	$^\circ\text{C}/\text{W}$
Total Gate Charge	$Q_g$	$V_{DD} = 150\text{V}, V_{GS} = 10\text{V}, I_D = 20\text{A}$		55		nC
Input Capacitance	$C_{iss}$	$V_{DS} = 10\text{V}, V_{GS} = 0\text{V}, f = 1\text{MHz}$		1600		pF
Reverse Transfer Capacitance	$C_{rss}$			190		
Output Capacitance	$C_{oss}$			650		
Turn-On Time	$t_{on}$	$I_D = 10\text{A}, V_{GS} = 10\text{V}, R_L = 10\Omega$		95	190	ns
Turn-Off Time	$t_{off}$			300	600	

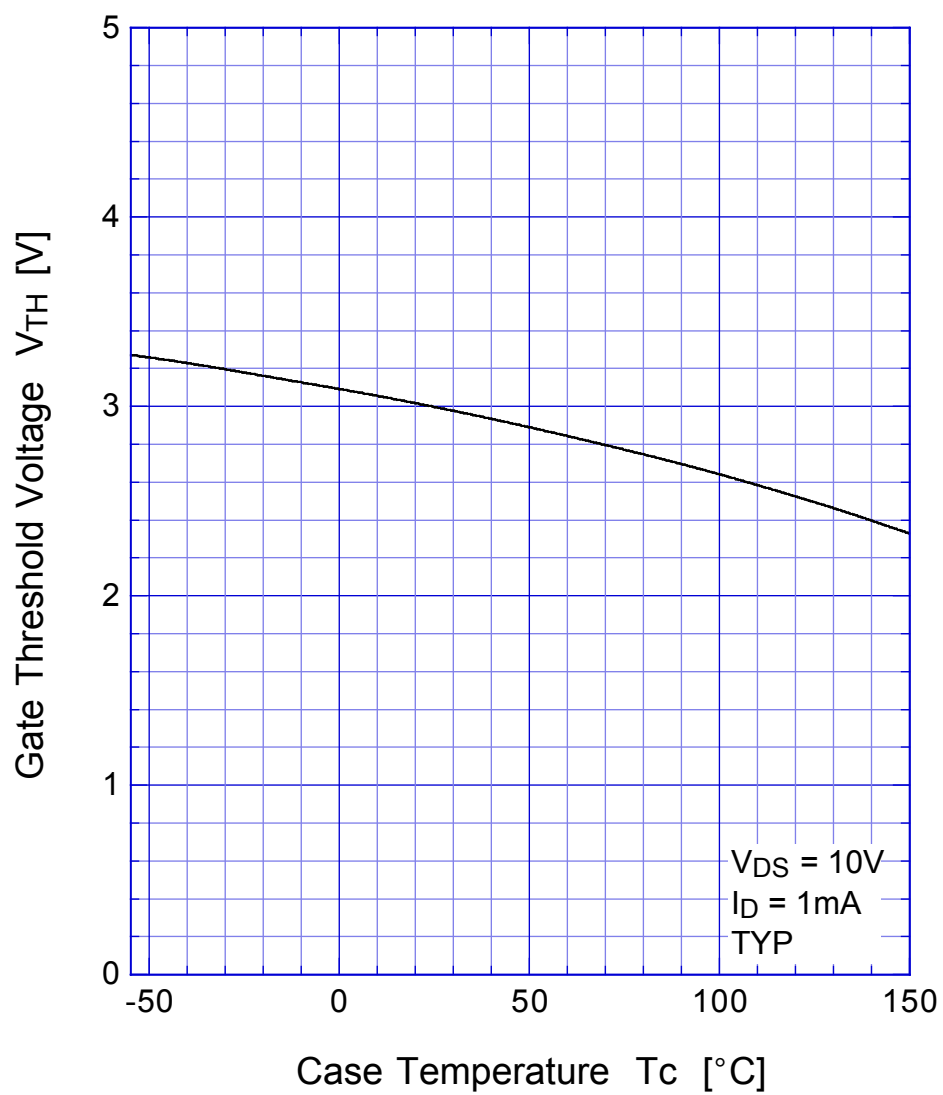
## 2SK2491 Transfer Characteristics



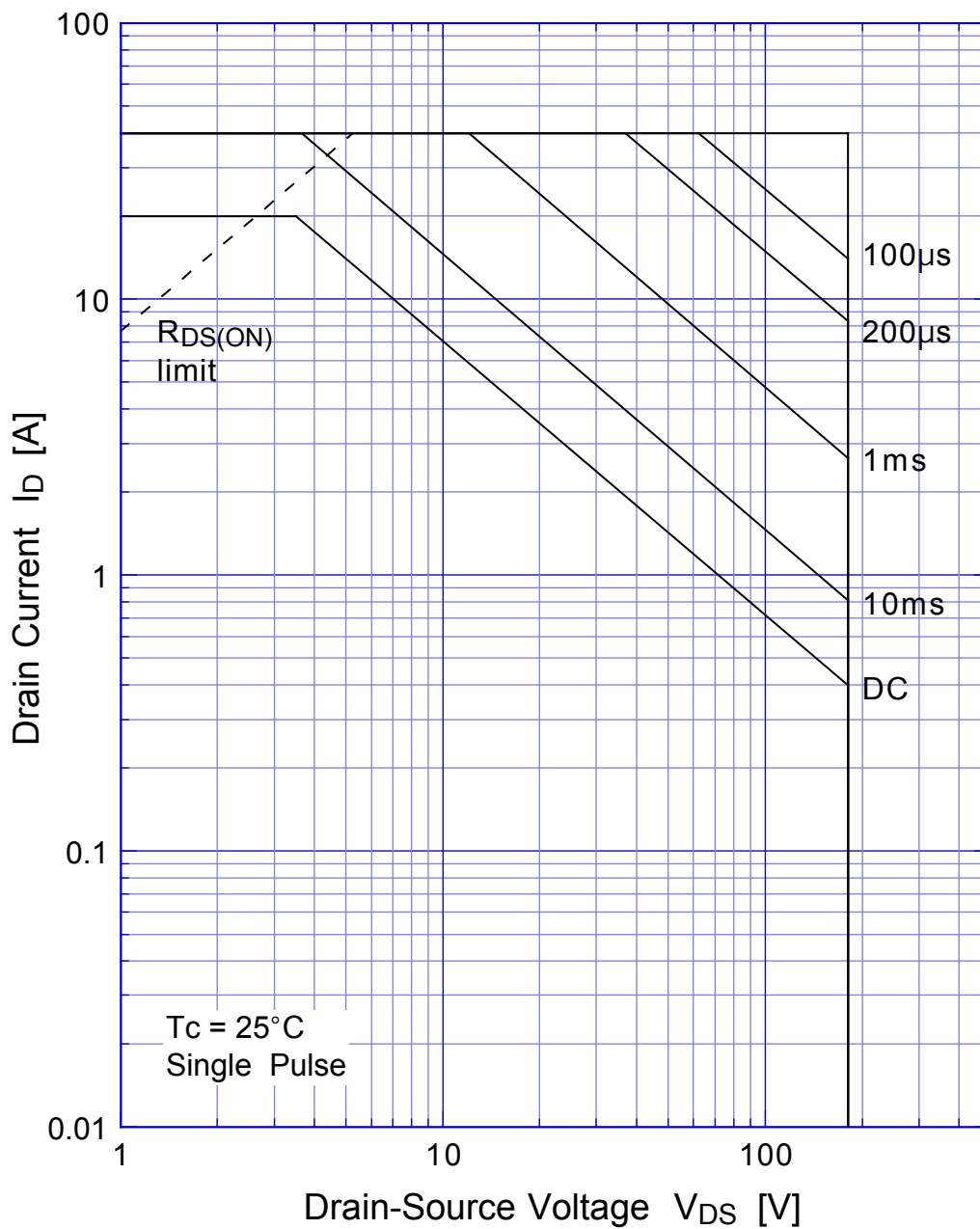
## 2SK2491 Static Drain-Source On-state Resistance



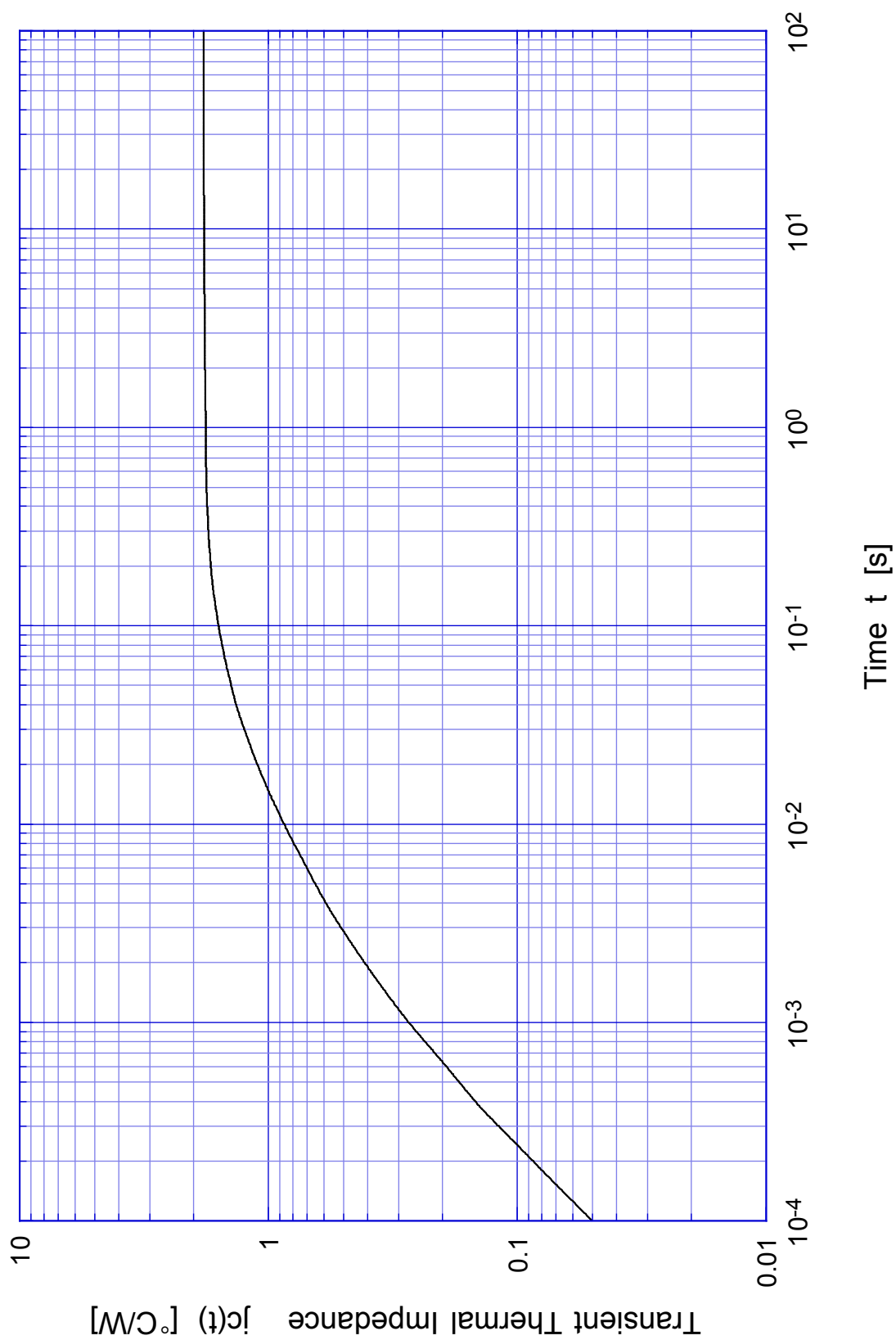
### 2SK2491 Gate Threshold Voltage



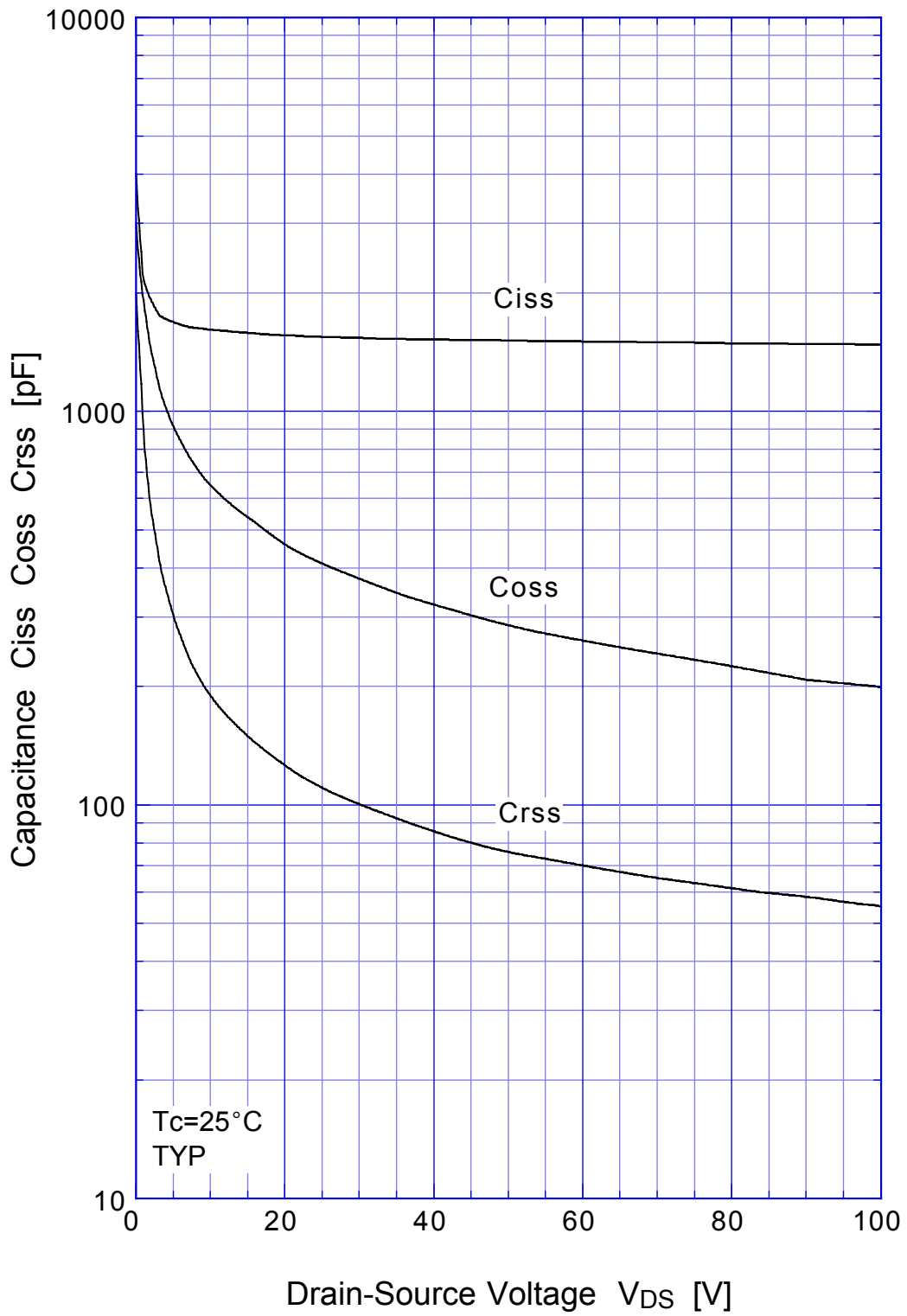
## 2SK2491 Safe Operating Area



### 2SK2491 Transient Thermal Impedance



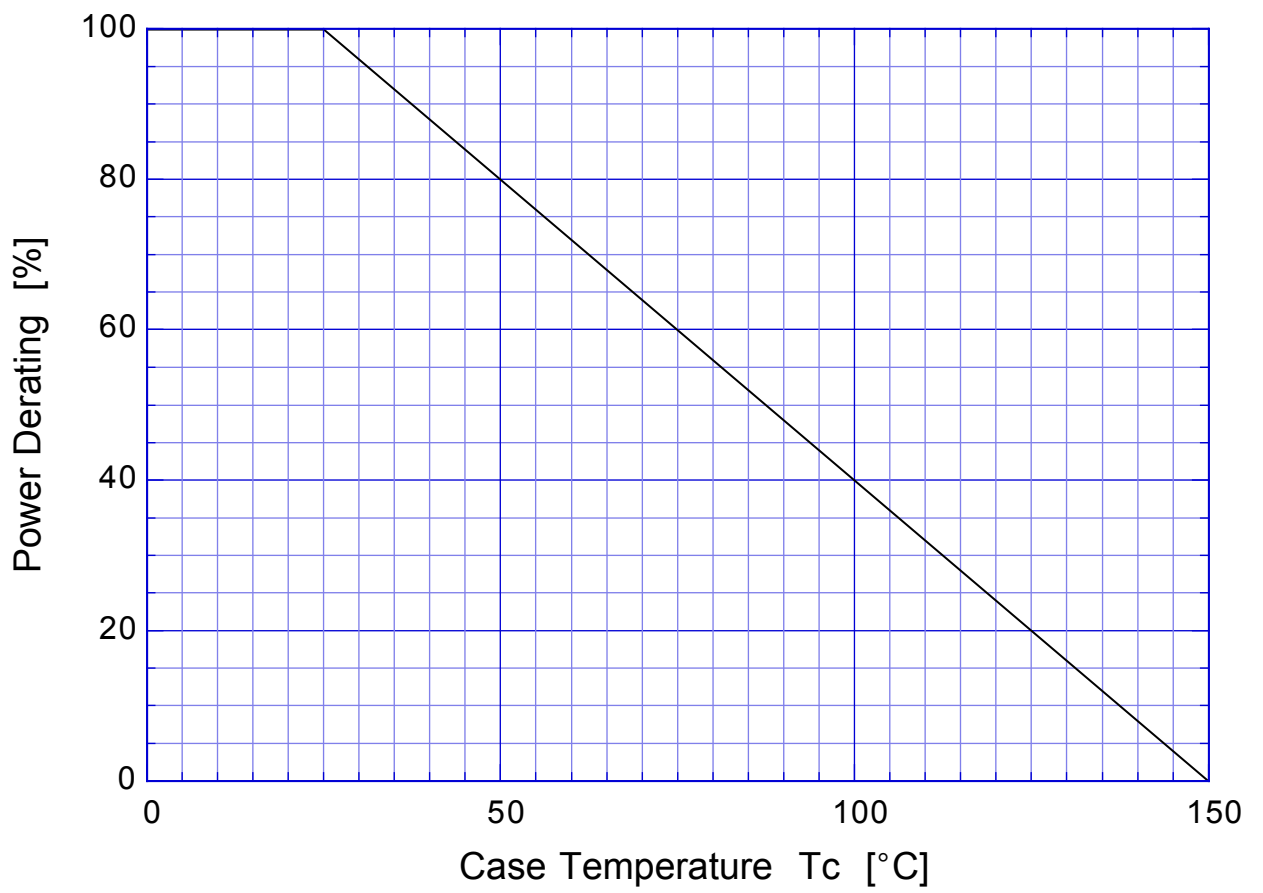
## 2SK2491 Capacitance





## 2SK2491

## Power Derating



## 2SK2491 Gate Charge Characteristics

