

# SHINDENGEN

## VX-2 Series Power MOSFET

N-Channel Enhancement type

**2SK2181**  
**(F3S50VX2)**

**500V 3A**

### 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

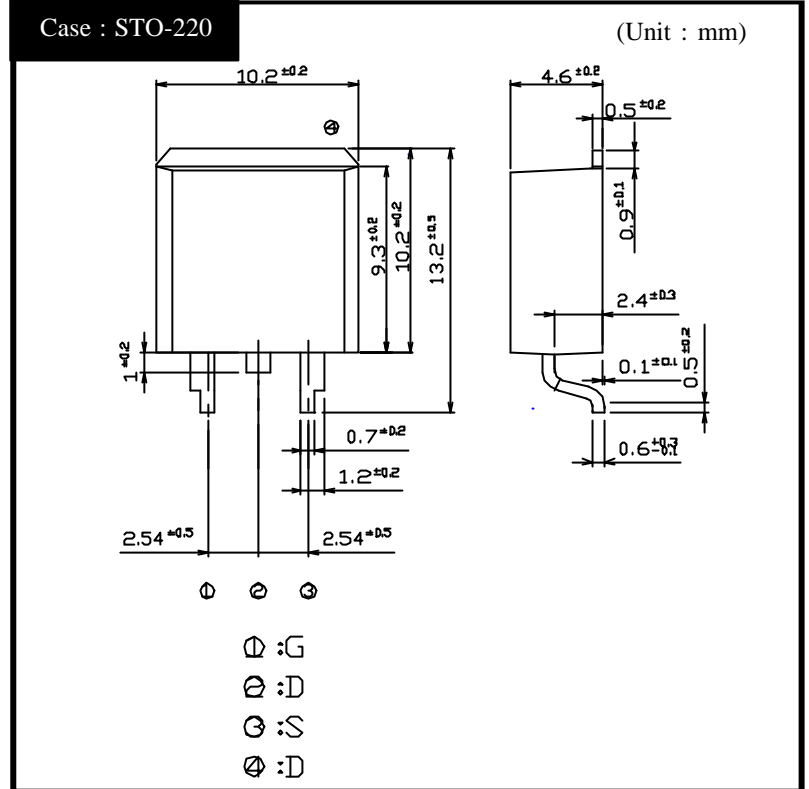
Switching power supply of AC 100V input  
High voltage power supply  
Inverter

### RATINGS

Absolute Maximum Ratings (Tc = 25 )

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>		500	V
Gate-Source Voltage	V <sub>GSS</sub>		± 30	
Continuous Drain Current (DC )	I <sub>D</sub>		3	A
Continuous Drain Current (Peak)	I <sub>DP</sub>		9	
Continuous Source Current (DC )	I <sub>S</sub>		3	
Total Power Dissipation	P <sub>T</sub>		40	W
Single Pulse Avalanche Current	I <sub>AS</sub>	T <sub>ch</sub> = 25	3	A

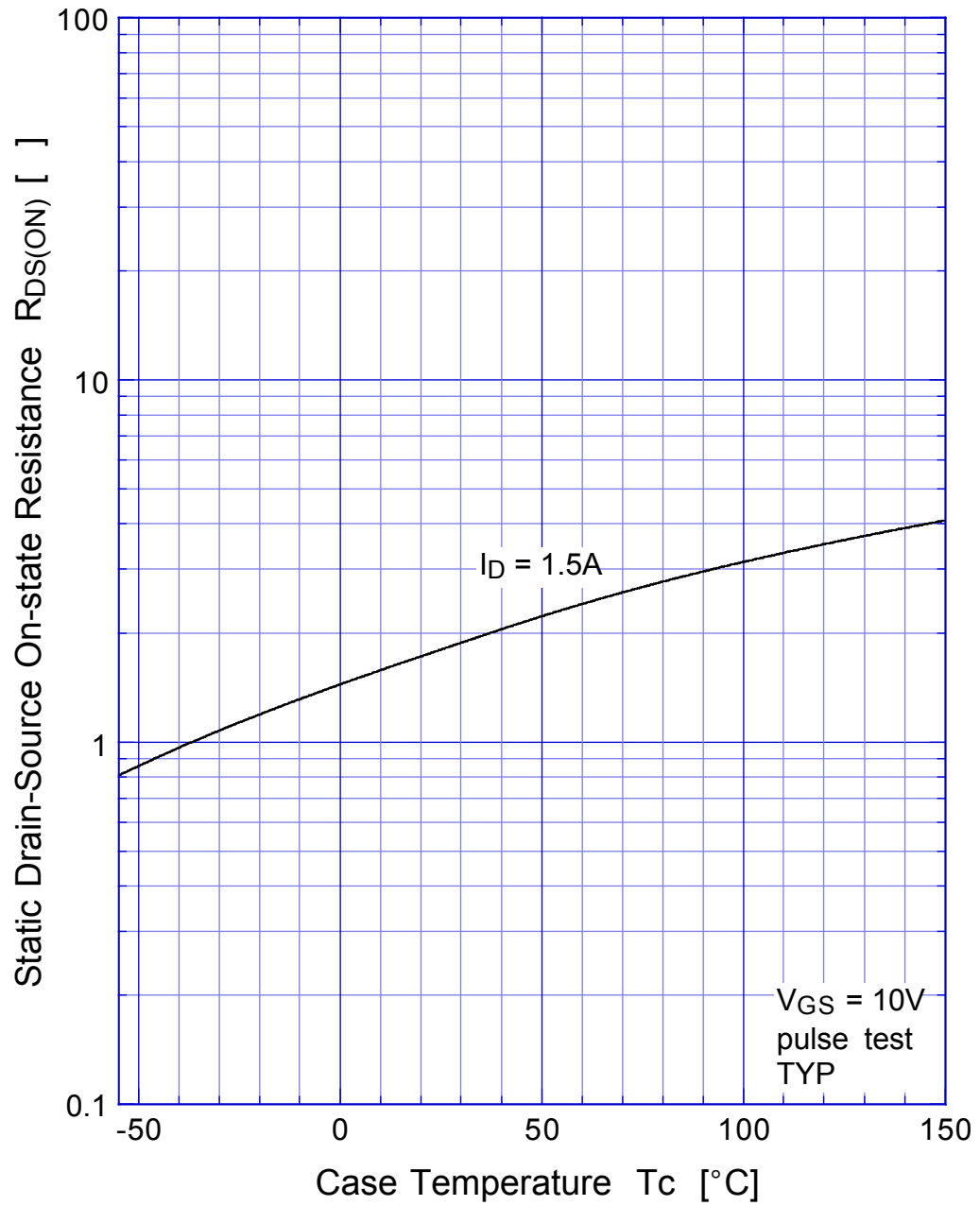
### OUTLINE DIMENSIONS



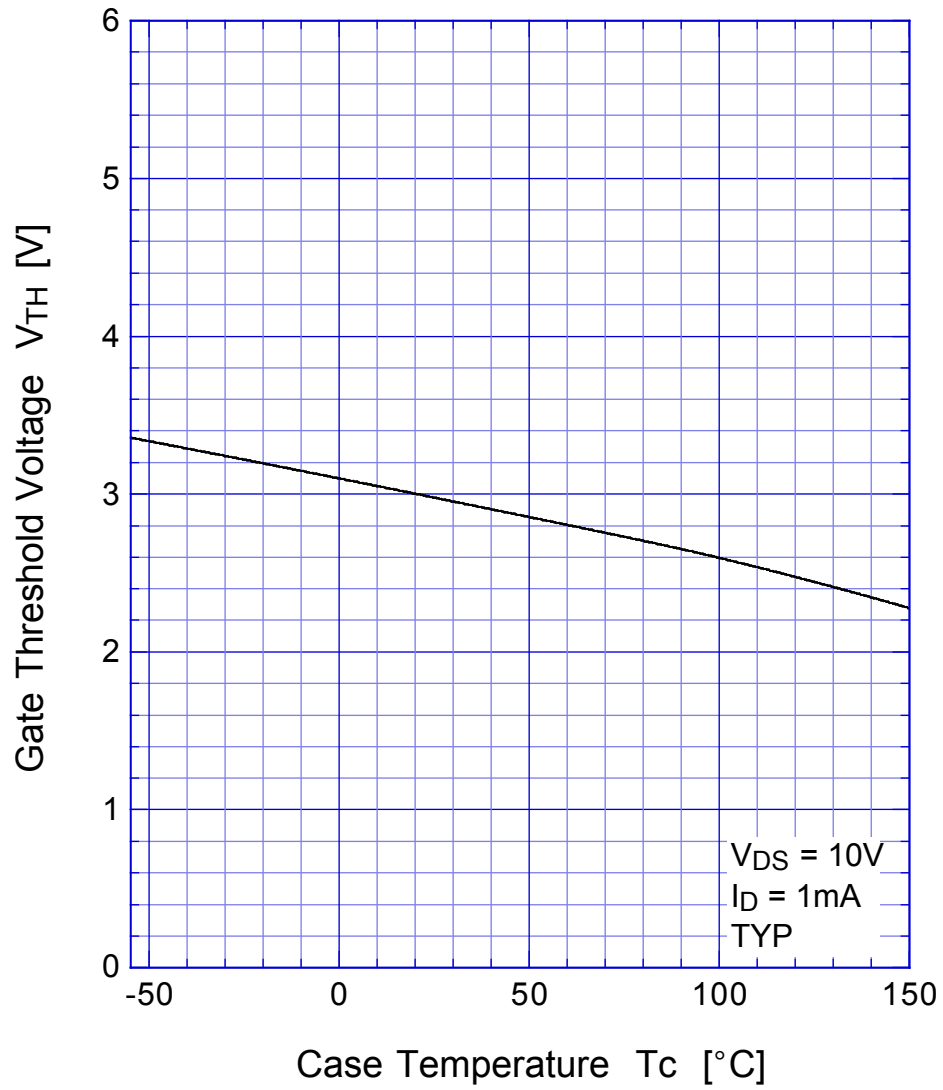
●Electrical Characteristics  $T_c = 25^\circ\text{C}$

Item	Symbol	Conditions	Min.	Typ.	Max.	Unit
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D = 1\text{mA}, V_{GS} = 0\text{V}$	500			V
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = 500\text{V}, V_{GS} = 0\text{V}$			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	$g_{fs}$	$I_D = 1.5\text{A}, V_{DS} = 10\text{V}$	0.9	2.1		S
Static Drain-Source On-state Resistance	$R_{DS(ON)}$	$I_D = 1.5\text{A}, V_{GS} = 10\text{V}$		1.8	2.3	$\Omega$
Gate Threshold Voltage	$V_{TH}$	$I_D = 0.3\text{mA}, V_{DS} = 10\text{V}$	2.5	3.0	3.5	V
Source-Drain Diode Forwade Voltage	$V_{SD}$	$I_S = 1.5\text{A}, V_{GS} = 0\text{V}$			1.5	
Thermal Resistance	$\theta_{jc}$	junction to case			3.12	$^\circ\text{C}/\text{W}$
Total Gate Charge	$Q_g$	$V_{DD} = 400\text{V}, V_{GS} = 10\text{V}, I_D = 3\text{A}$		15		nC
Input Capacitance	$C_{iss}$	$V_{DS} = 10\text{V}, V_{GS} = 0\text{V}, f = 1\text{MHz}$		400		pF
Reverse Transfer Capacitance	$C_{rss}$			30		
Output Capacitance	$C_{oss}$			90		
Turn-On Time	$t_{on}$	$I_D = 1.5\text{A}, V_{GS} = 10\text{V}, R_L = 100\Omega$		45	80	ns
Turn-Off Time	$t_{off}$			90	140	

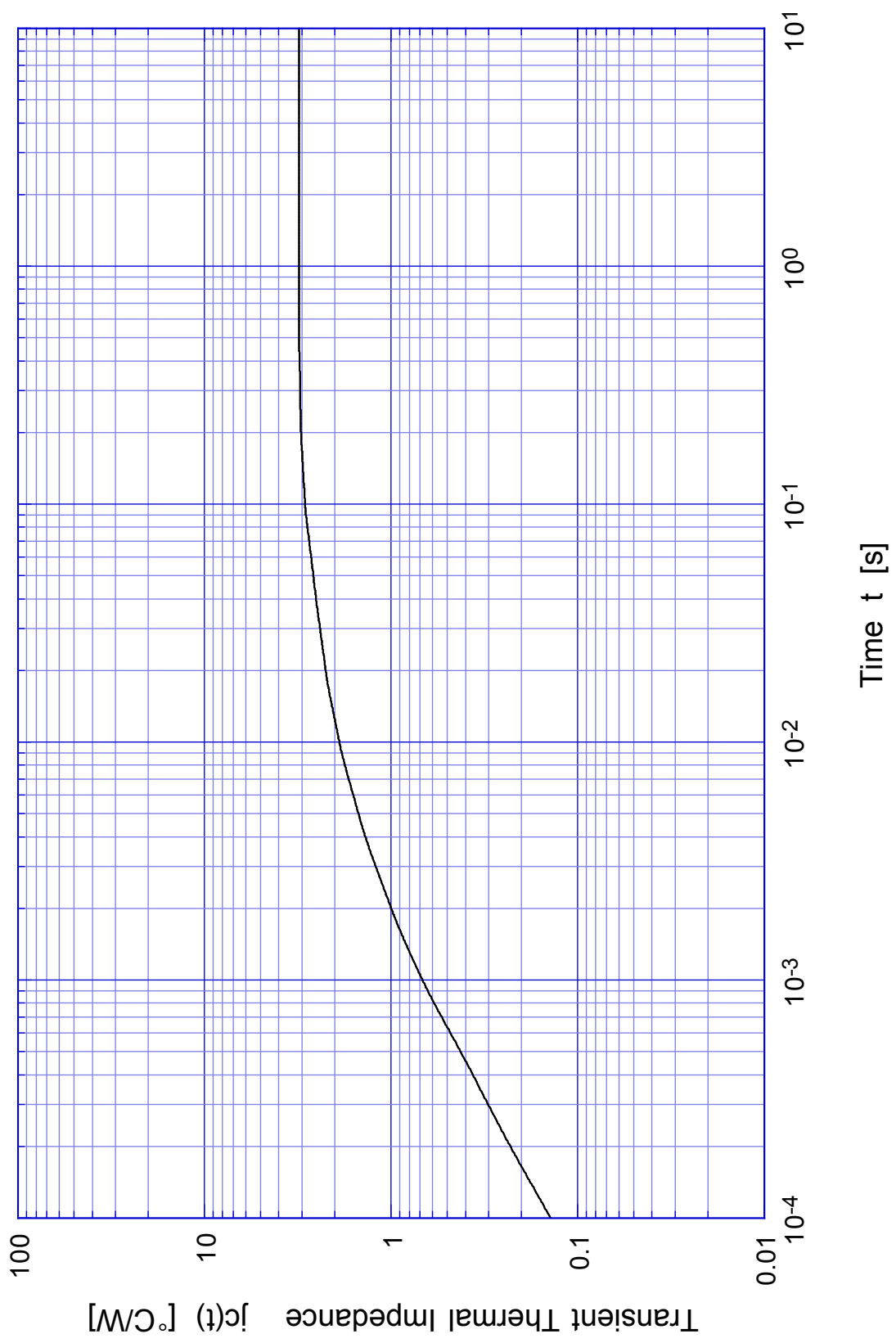
## 2SK2181 Static Drain-Source On-state Resistance



## 2SK2181 Gate Threshold Voltage



# 2SK2181 Transient Thermal Impedance



2SK2181

Power Derating

