

# SHINDENGEN

## VX-2 Series Power MOSFET

N-Channel Enhancement type

**2SK2182  
(F3F50VX2)**

**500V 3A**

### FEATURES

Input capacitance ( $C_{iss}$ ) is small.  
Especially, input capacitance at 0 bias is small.  
The static  $R_{ds(on)}$  is small.  
The switching time is fast.

### APPLICATION

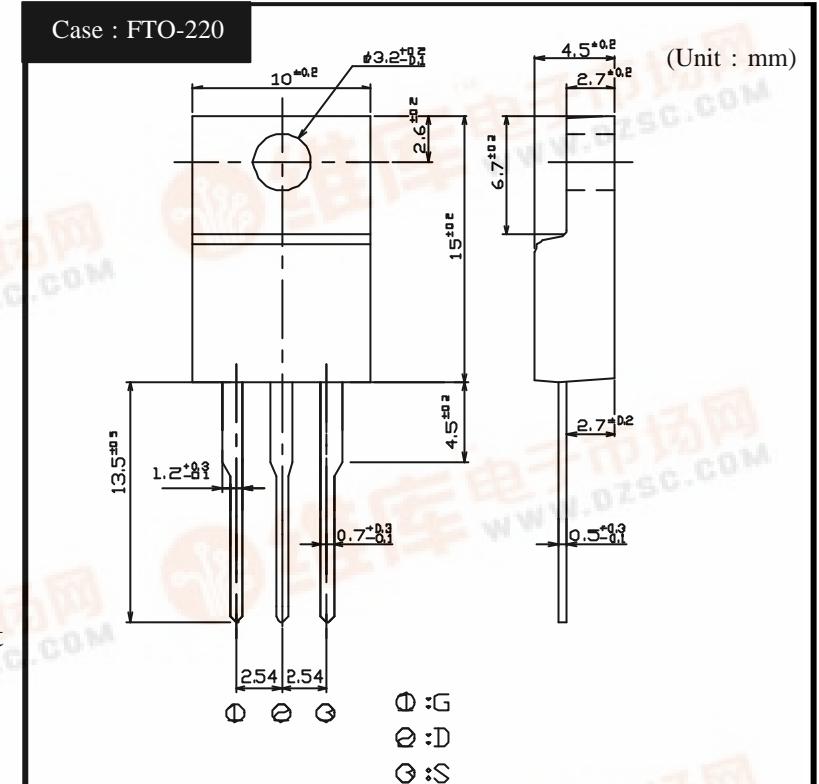
Switching power supply of AC 100V input  
High voltage power supply  
Inverter

### RATINGS

Absolute Maximum Ratings ( $T_c = 25^\circ C$ )

Item	Symbol	Conditions	Ratings	Unit
Storage Temperature	$T_{stg}$		-55 ~ 150	
Channel Temperature	$T_{ch}$		150	
Drain-Source Voltage	$V_{DSS}$		500	V
Gate-Source Voltage	$V_{GSS}$		$\pm 30$	
Continuous Drain Current (DC)	$I_D$		3	
Continuous Drain Current (Peak)	$I_{DP}$		9	A
Continuous Source Current (DC)	$I_S$		3	
Total Power Dissipation	$P_T$		25	W
Single Pulse Avalanche Current	$I_{AS}$	$T_{ch} = 25^\circ C$	3	A
Dielectric Strength	$V_{dis}$	Terminals to case, AC 1 minute	2	kV
Mounting Torque	$T_{OR}$	(Recommended torque : 0.3 N·m)	0.5	N·m

### OUTLINE DIMENSIONS



## VX-2 Series Power MOSFET

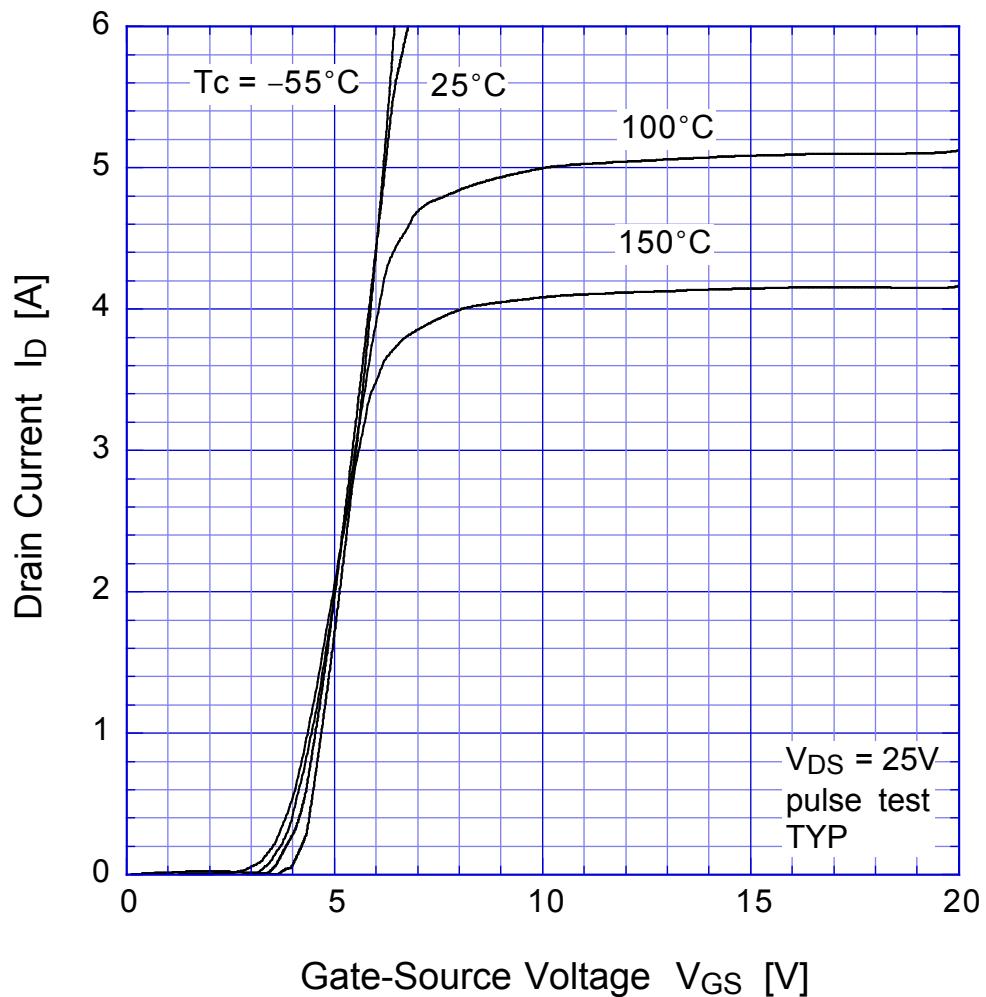
**2SK2182( F3F50VX2 )**

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

Item	Symbol	Conditions	Min.	Typ.	Max.	Unit
Drain-Source Breakdown Voltage	$V_{(\text{BR})\text{DSS}}$	$\text{ID} = 1\text{mA}, \text{VGS} = 0\text{V}$	500			V
Zero Gate Voltage Drain Current	$\text{IDSS}$	$\text{VDS} = 500\text{V}, \text{VGS} = 0\text{V}$			250	$\mu\text{A}$
Gate-Source Leakage Current	$\text{IGSS}$	$\text{VGS} = \pm 30\text{V}, \text{VDS} = 0\text{V}$			$\pm 0.1$	
Forward Transconductance	$g_{\text{fs}}$	$\text{ID} = 1.5\text{A}, \text{VDS} = 10\text{V}$	0.9	2.1		S
Static Drain-Source On-state Resistance	$R_{\text{DS}(\text{ON})}$	$\text{ID} = 1.5\text{A}, \text{VGS} = 10\text{V}$		1.8	2.3	$\Omega$
Gate Threshold Voltage	$V_{\text{TH}}$	$\text{ID} = 0.3\text{mA}, \text{VDS} = 10\text{V}$	2.5	3.0	3.5	V
Source-Drain Diode Forwade Voltage	$V_{\text{SD}}$	$\text{IS} = 1.5\text{A}, \text{VGS} = 0\text{V}$			1.5	
Thermal Resistance	$\theta_{\text{jc}}$	junction to case			5.0	$^\circ\text{C}/\text{W}$
Total Gate Charge	$Q_g$	$\text{VDD} = 400\text{V}, \text{VGS} = 10\text{V}, \text{ID} = 3\text{A}$		15		nC
Input Capacitance	$C_{\text{iss}}$	$\text{VDS} = 10\text{V}, \text{VGS} = 0\text{V}, f = 1\text{MHz}$		400		pF
Reverse Transfer Capacitance	$C_{\text{rss}}$			30		
Output Capacitance	$C_{\text{oss}}$			90		
Turn-On Time	$t_{\text{on}}$	$\text{ID} = 1.5\text{A}, \text{VGS} = 10\text{V}, \text{RL} = 100\Omega$		45	80	ns
Turn-Off Time	$t_{\text{off}}$			90	140	

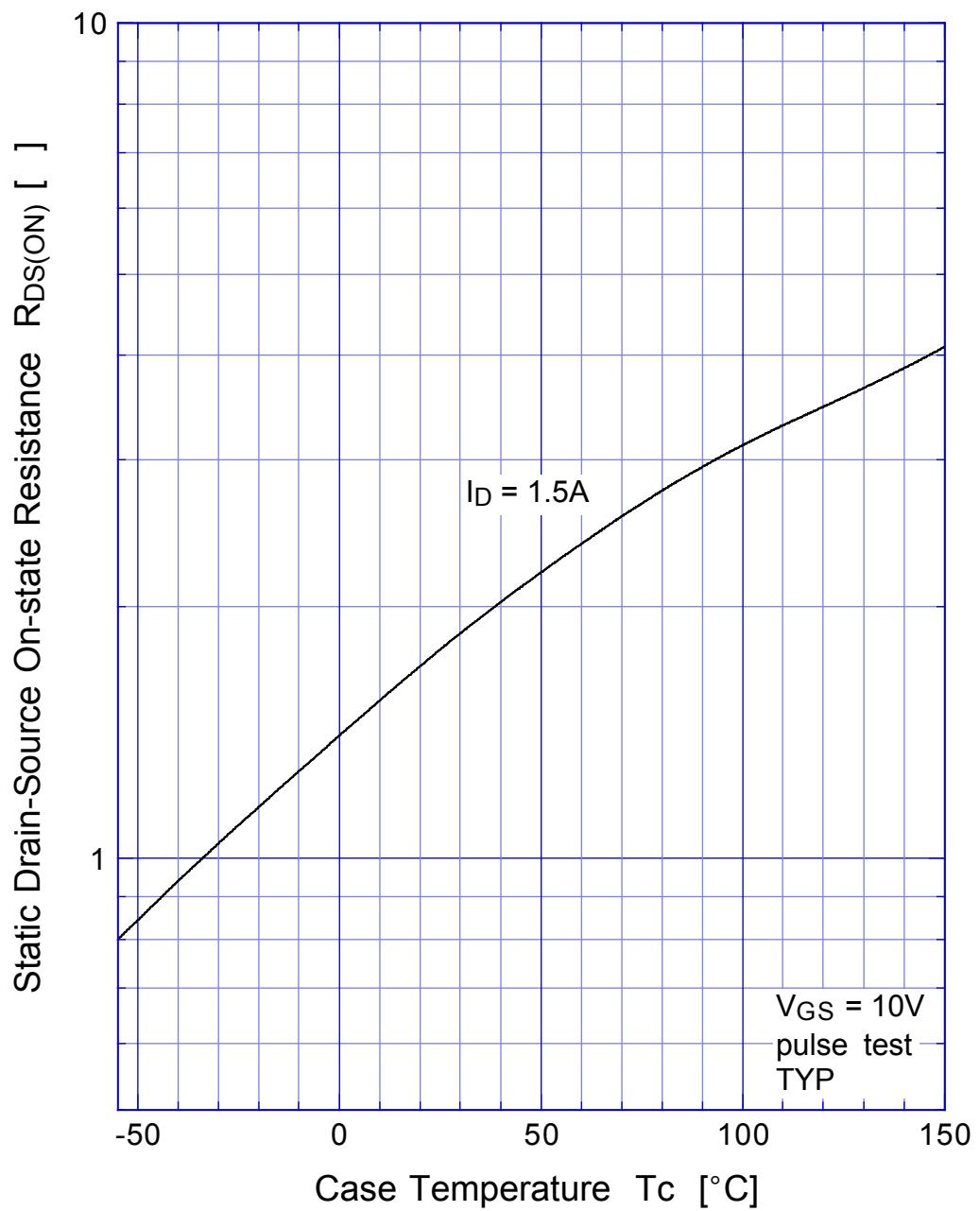
## 2SK2182

### Transfer Characteristics

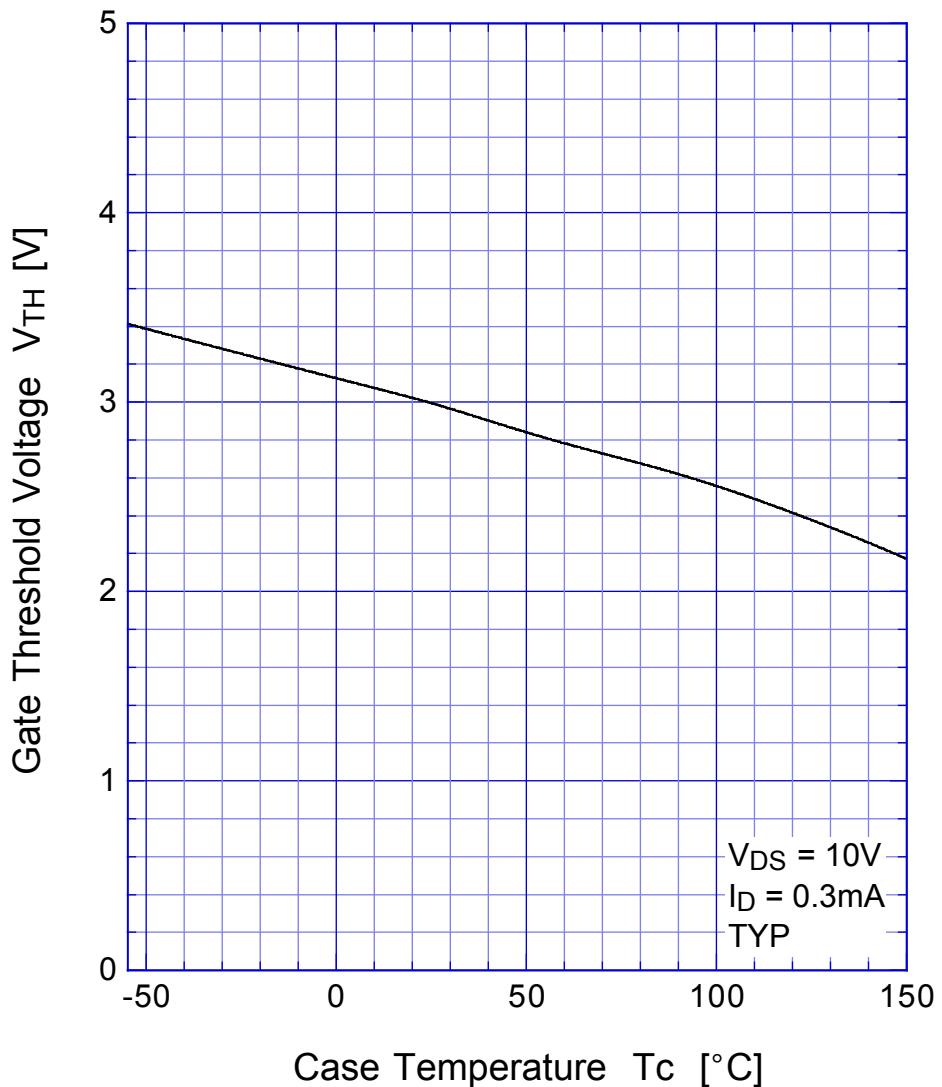


## 2SK2182 Static Drain-Source On-state Resistance

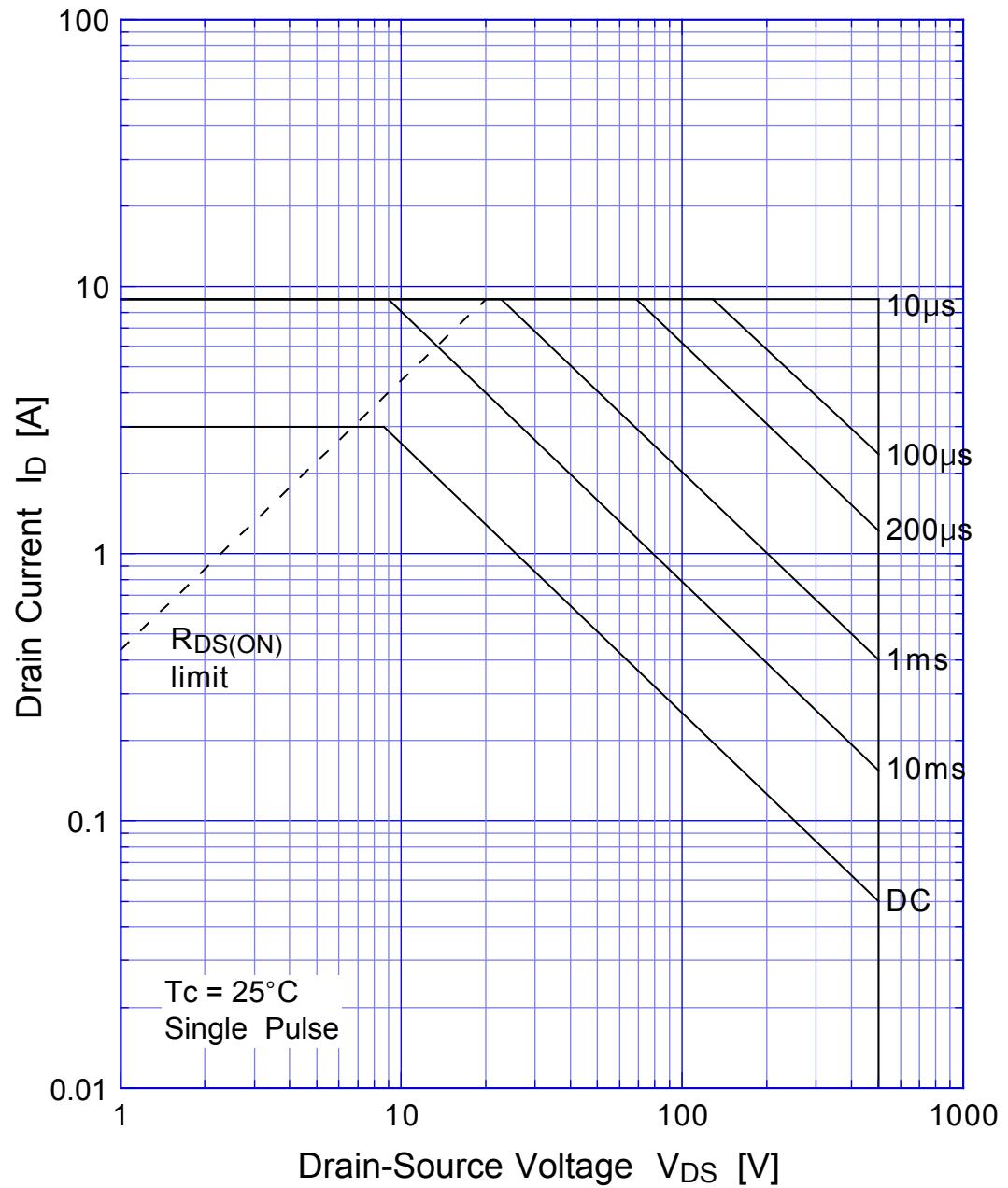
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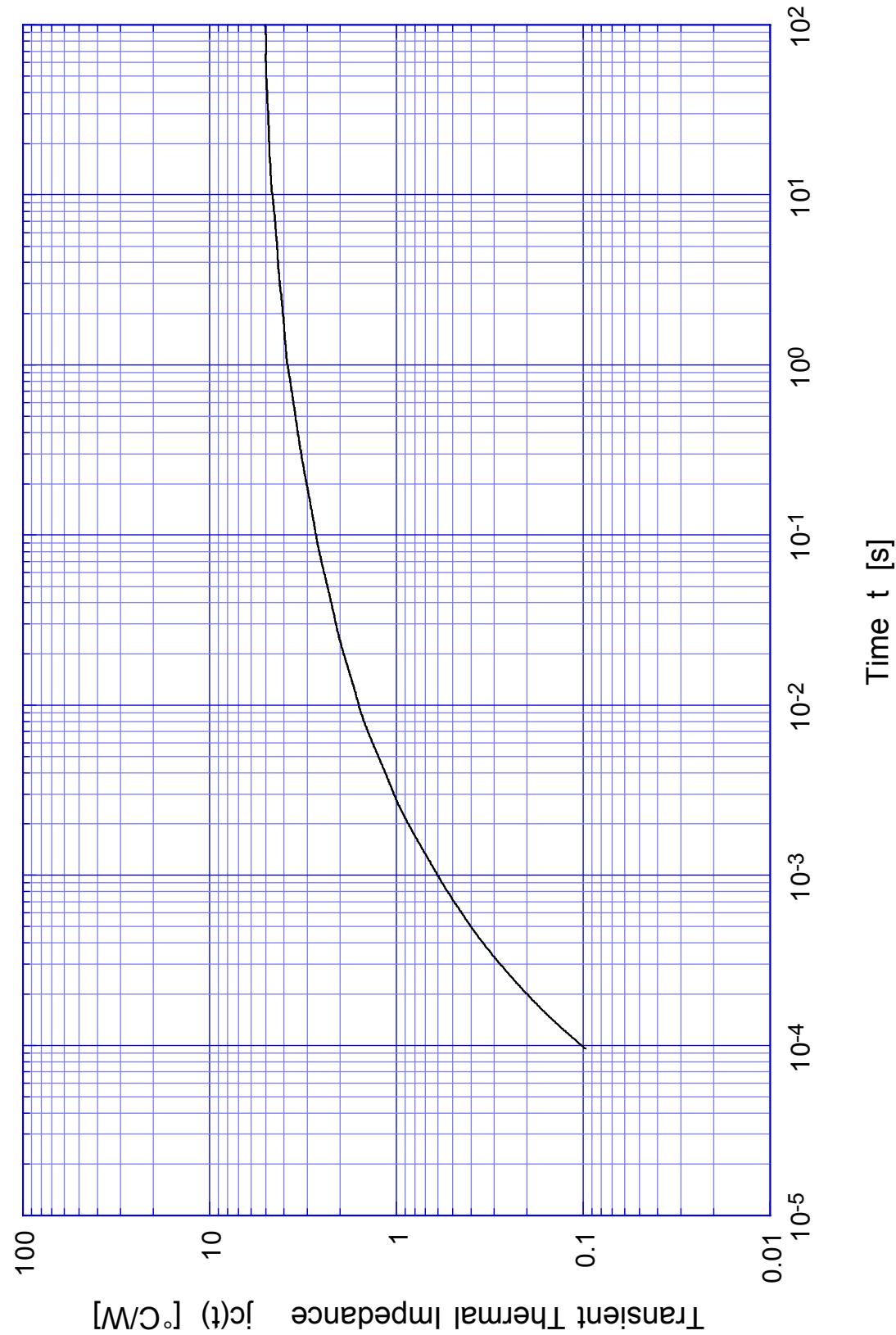
## 2SK2182 Gate Threshold Voltage



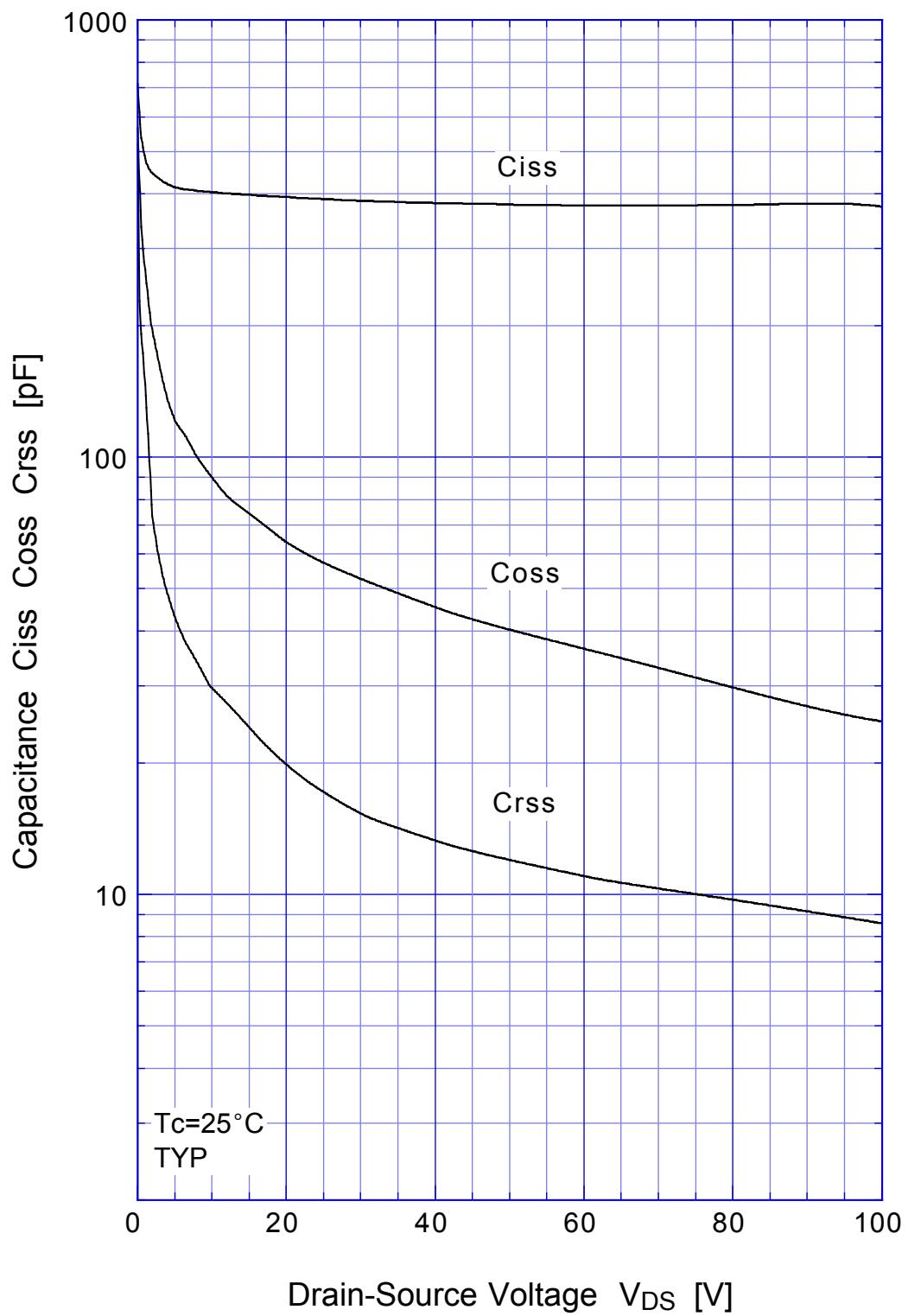
## 2SK2182 Safe Operating Area



## 2SK2182 Transient Thermal Impedance

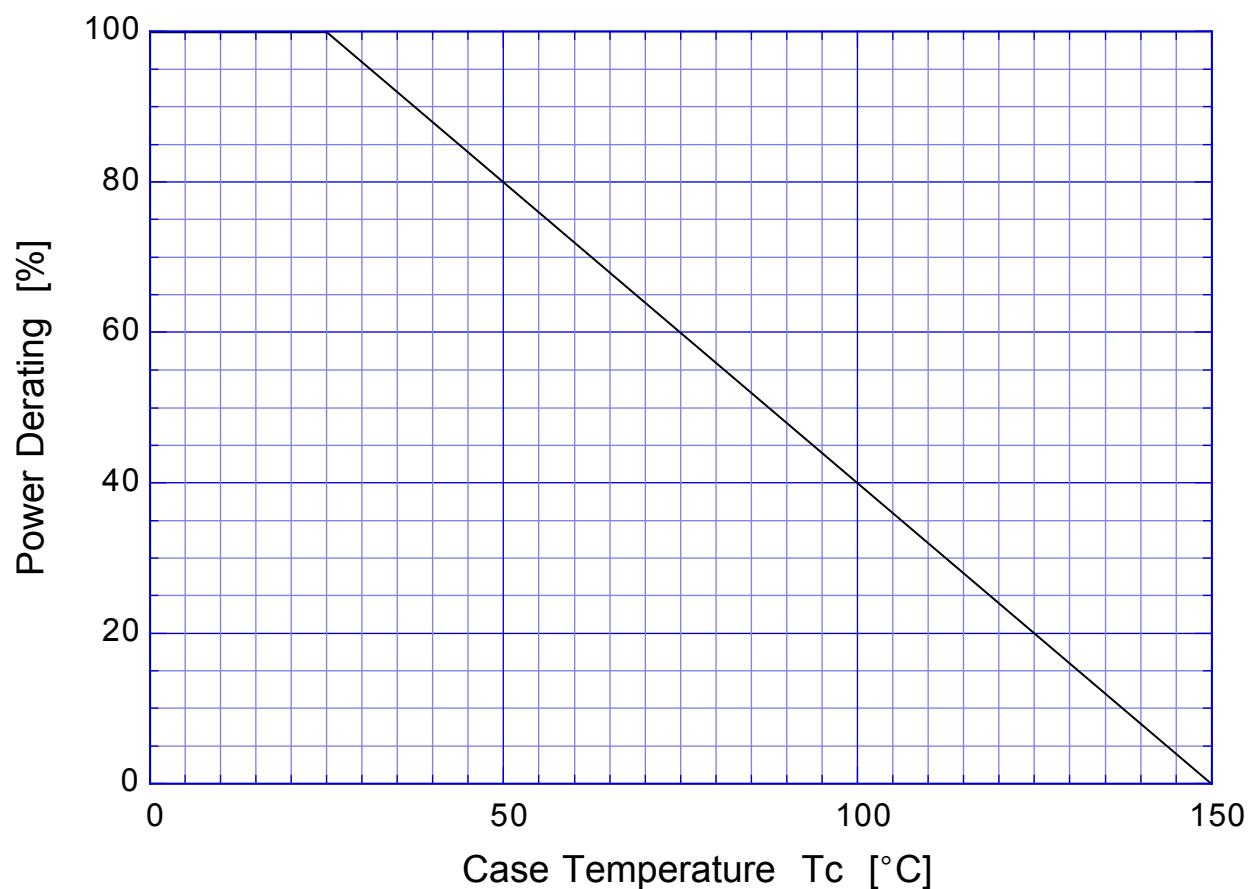


**2SK2182** Capacitance



**2SK2182**

Power Derating



**2SK2182**

### Gate Charge Characteristics

