

## VX-2 Series Power MOSFET

N-Channel Enhancement type

**2SK3009**  
(F8S60VX2)

**600V 8A**

### 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.  
Avalanche resistance guaranteed.

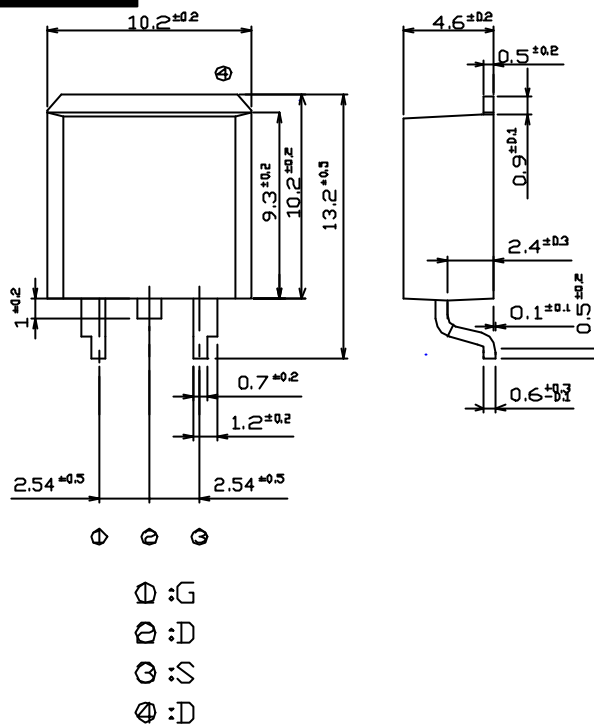
### APPLICATION

Switching power supply of  
AC 100-200V input  
Inverter  
Power Factor Control Circuit

### OUTLINE DIMENSIONS

Case : STO-220

(Unit : mm)



### RATINGS

Absolute Maximum Ratings (Tc = 25 )

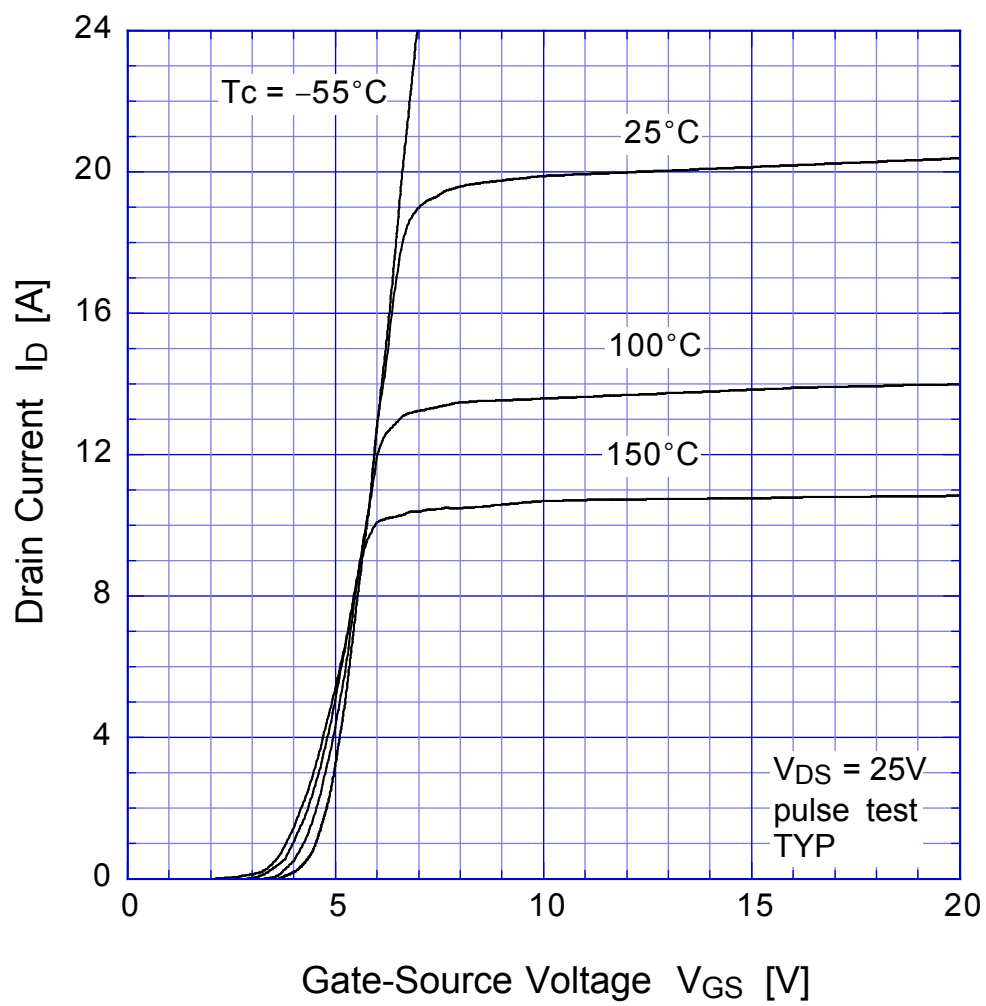
| Item                            | Symbol           | Conditions           | Ratings   | Unit |
|---------------------------------|------------------|----------------------|-----------|------|
| Storage Temperature             | T <sub>stg</sub> |                      | -55 ~ 150 | V    |
| Channel Temperature             | T <sub>ch</sub>  |                      | 150       |      |
| Drain-Source Voltage            | V <sub>DSS</sub> |                      | 600       |      |
| Gate-Source Voltage             | V <sub>GSS</sub> |                      | ± 30      |      |
| Continuous Drain Current (DC )  | I <sub>D</sub>   |                      | 8         | A    |
| Continuous Drain Current (Peak) | I <sub>DP</sub>  |                      | 16        |      |
| Continuous Source Current (DC ) | I <sub>S</sub>   |                      | 8         |      |
| Total Power Dissipation         | P <sub>T</sub>   |                      | 60        | W    |
| Single Pulse Avalanche Current  | I <sub>AS</sub>  | T <sub>ch</sub> = 25 | 8         | A    |

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

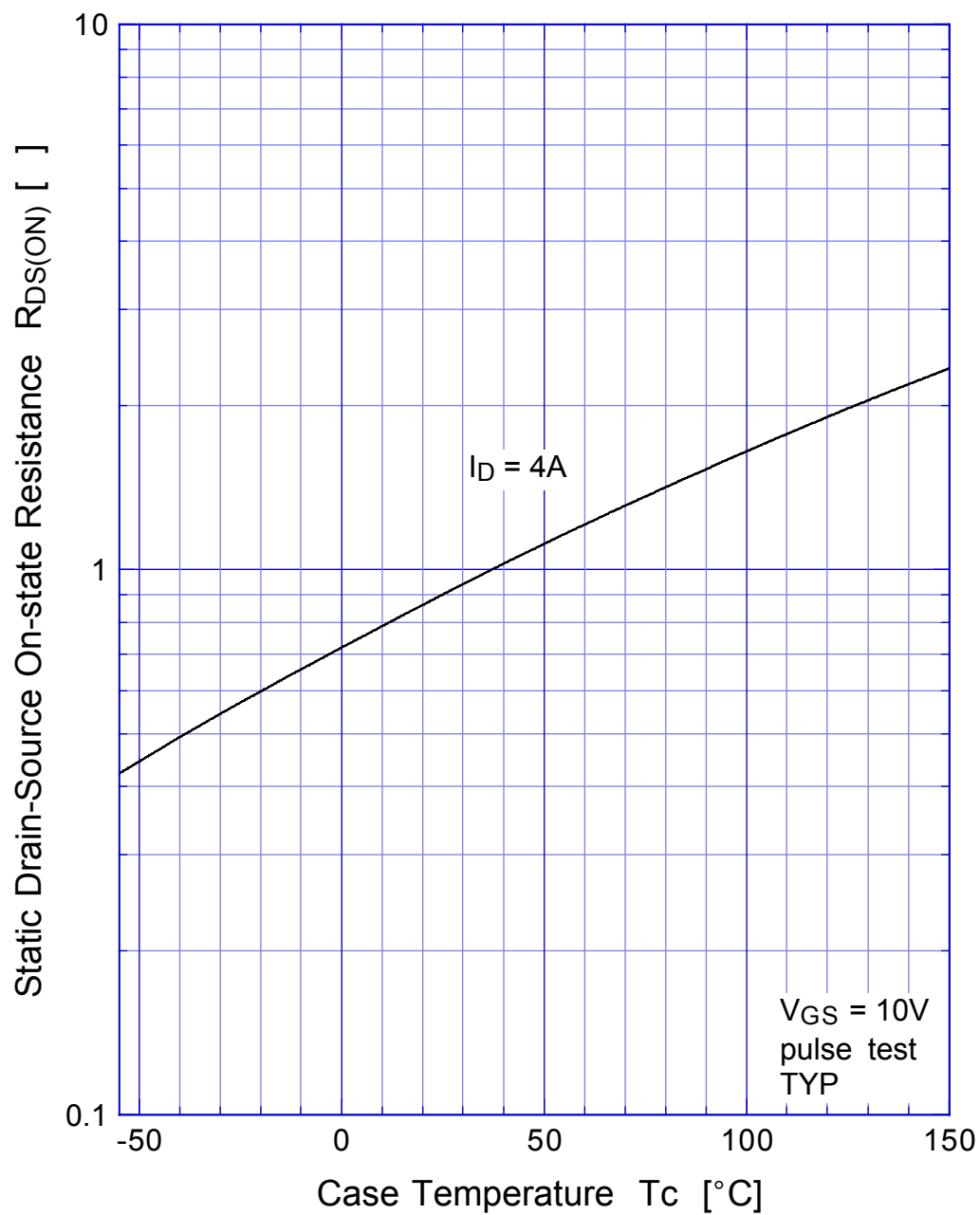
| Item                                    | Symbol        | Conditions   | Min. | Typ. | Max.      | Unit               |
|---|---------------|--|------|------|-----------|--------------------|
| Drain-Source Breakdown Voltage          | $V_{(BR)DSS}$ | $I_D = 1\text{mA}$ , $V_{GS} = 0\text{V}$                          | 600  |      |           | V                  |
| Zero Gate Voltage Drain Current         | $I_{DSS}$     | $V_{DS} = 600\text{V}$ , $V_{GS} = 0\text{V}$                      |      |      | 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                | $g_{fs}$      | $I_D = 4\text{A}$ , $V_{DS} = 10\text{V}$                          | 2.4  | 5.5  |           | S                  |
| Static Drain-Source On-state Resistance | $R_{DS(ON)}$  | $I_D = 4\text{A}$ , $V_{GS} = 10\text{V}$                          |      | 0.9  | 1.2       | $\Omega$           |
| Gate Threshold Voltage                  | $V_{TH}$      | $I_D = 1\text{mA}$ , $V_{DS} = 10\text{V}$                         | 2.5  | 3    | 3.5       | V                  |
| Source-Drain Diode Forward Voltage      | $V_{SD}$      | $I_S = 4\text{A}$ , $V_{GS} = 0\text{V}$                           |      |      | 1.5       |                    |
| Thermal Resistance                      | $\theta_{jc}$ | junction to case   |      |      | 2.08      | $^\circ\text{C/W}$ |
| Total Gate Charge                       | $Q_g$         | $V_{GS} = 10\text{V}$ , $I_D = 8\text{A}$ , $V_{DD} = 400\text{V}$ |      | 42   |           | nC                 |
| Input Capacitance                       | $C_{iss}$     | $V_{DS} = 10\text{V}$ , $V_{GS} = 0\text{V}$ , $f = 1\text{MHz}$   |      | 1130 |           | pF                 |
| Reverse Transfer Capacitance            | $C_{rss}$     |  |      | 85   |           |                    |
| Output Capacitance                      | $C_{oss}$     |  |      | 245  |           |                    |
| Turn-On Time                            | $t_{on}$      | $I_D = 4\text{A}$ , $V_{GS} = 150\text{V}$ , $R_L = 37.5\Omega$    |      | 55   | 80        | ns                 |
| Turn-Off Time                           | $t_{off}$     |  |      | 195  | 290       |                    |

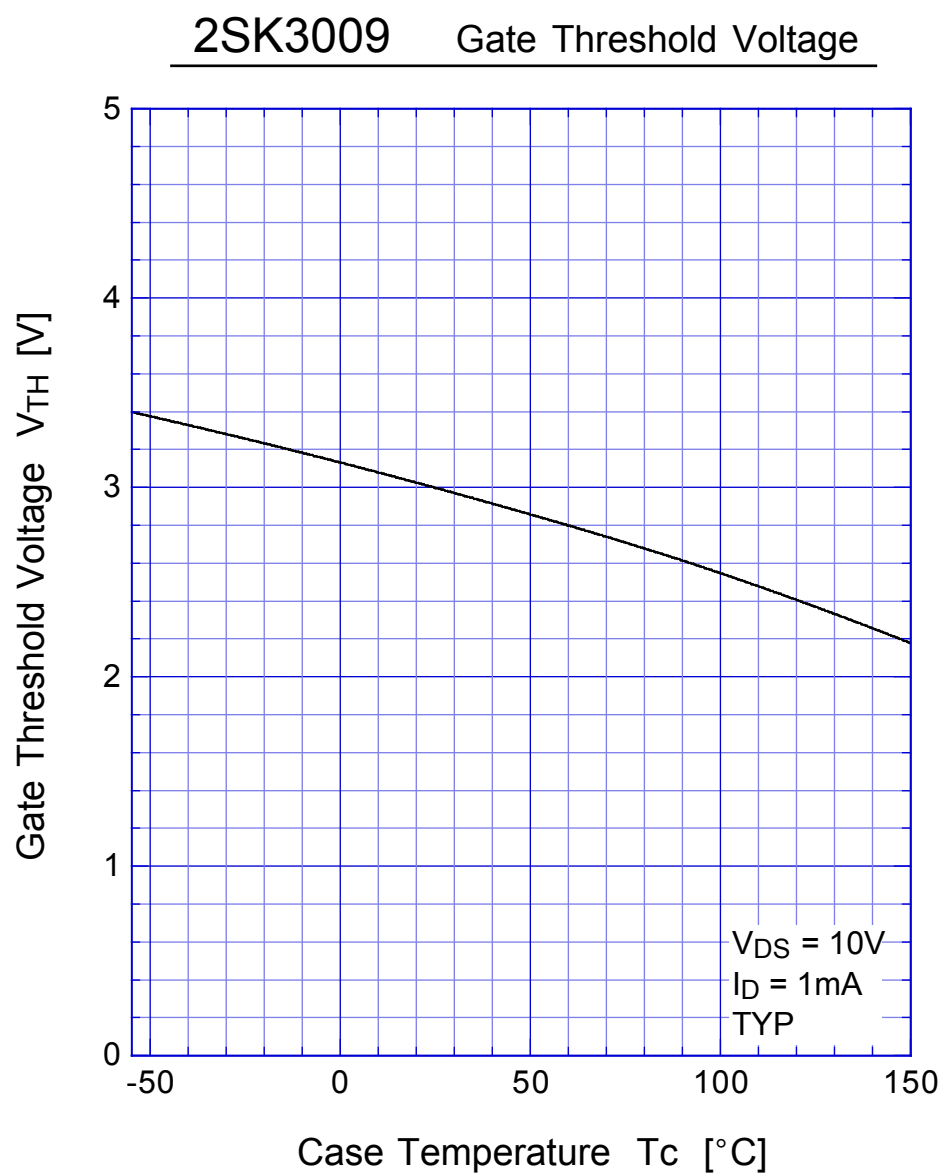
## 2SK3009

## Transfer Characteristics

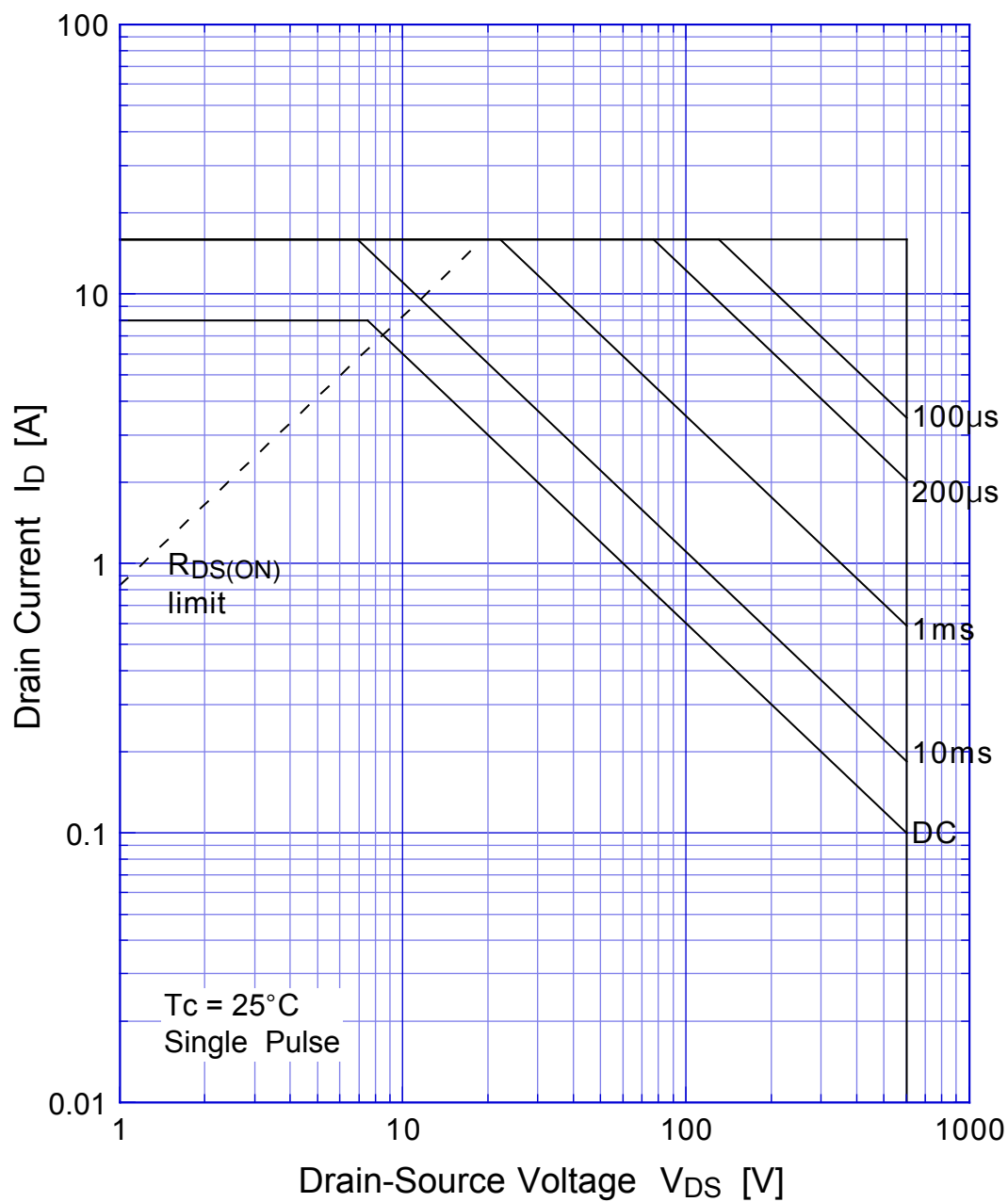


## 2SK3009 Static Drain-Source On-state Resistance

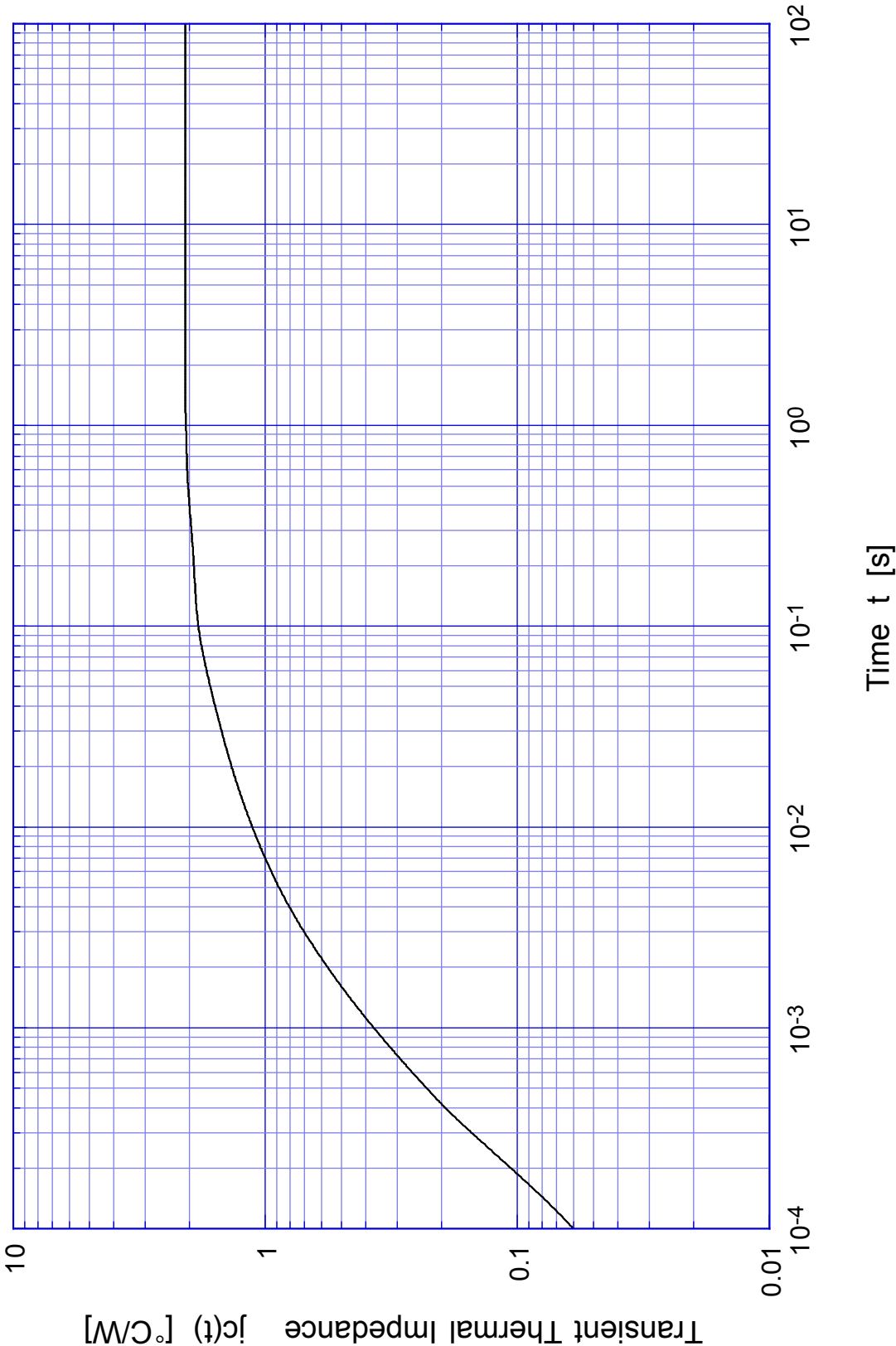




## 2SK3009 Safe Operating Area

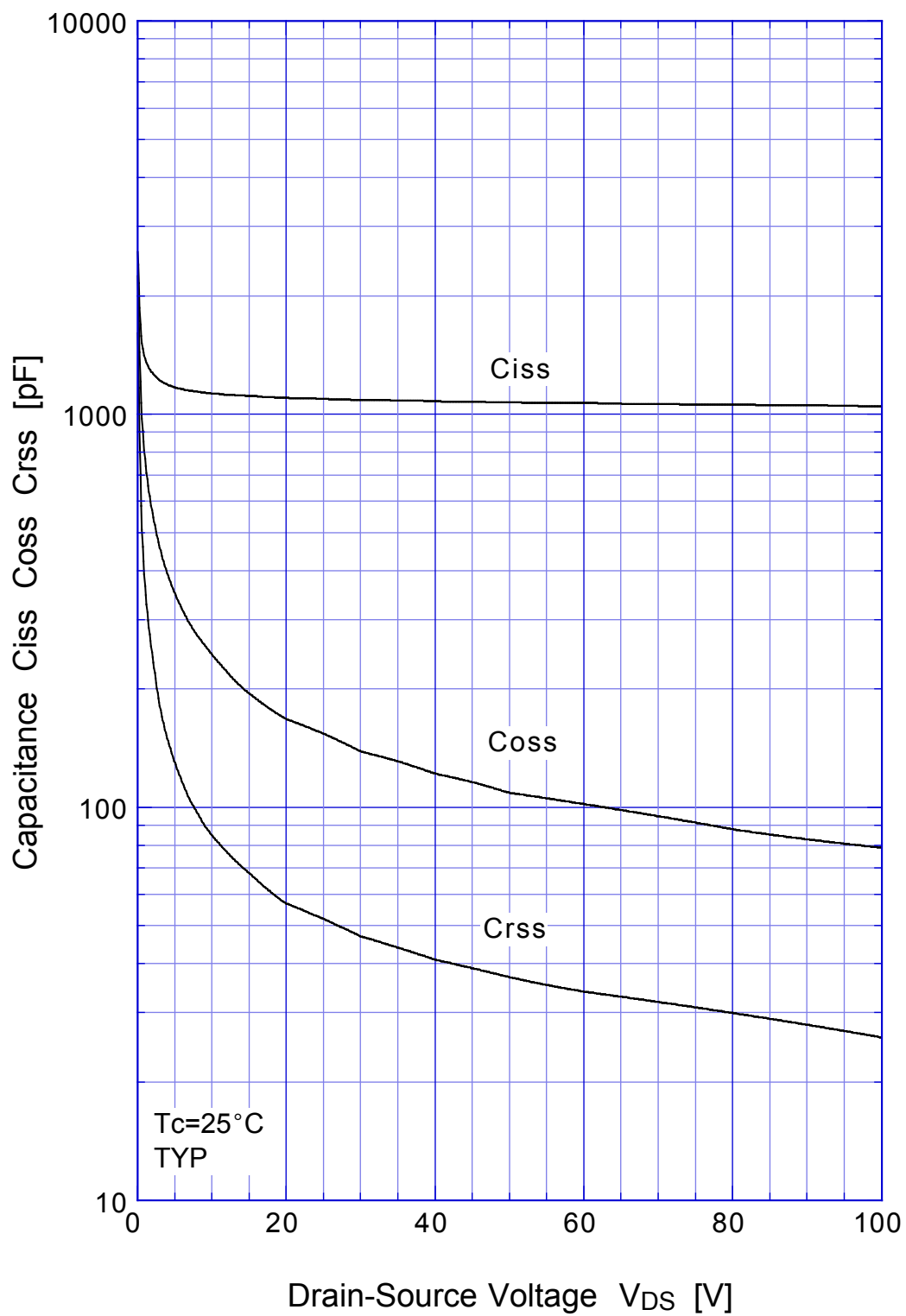


2SK3009      Transient Thermal Impedance

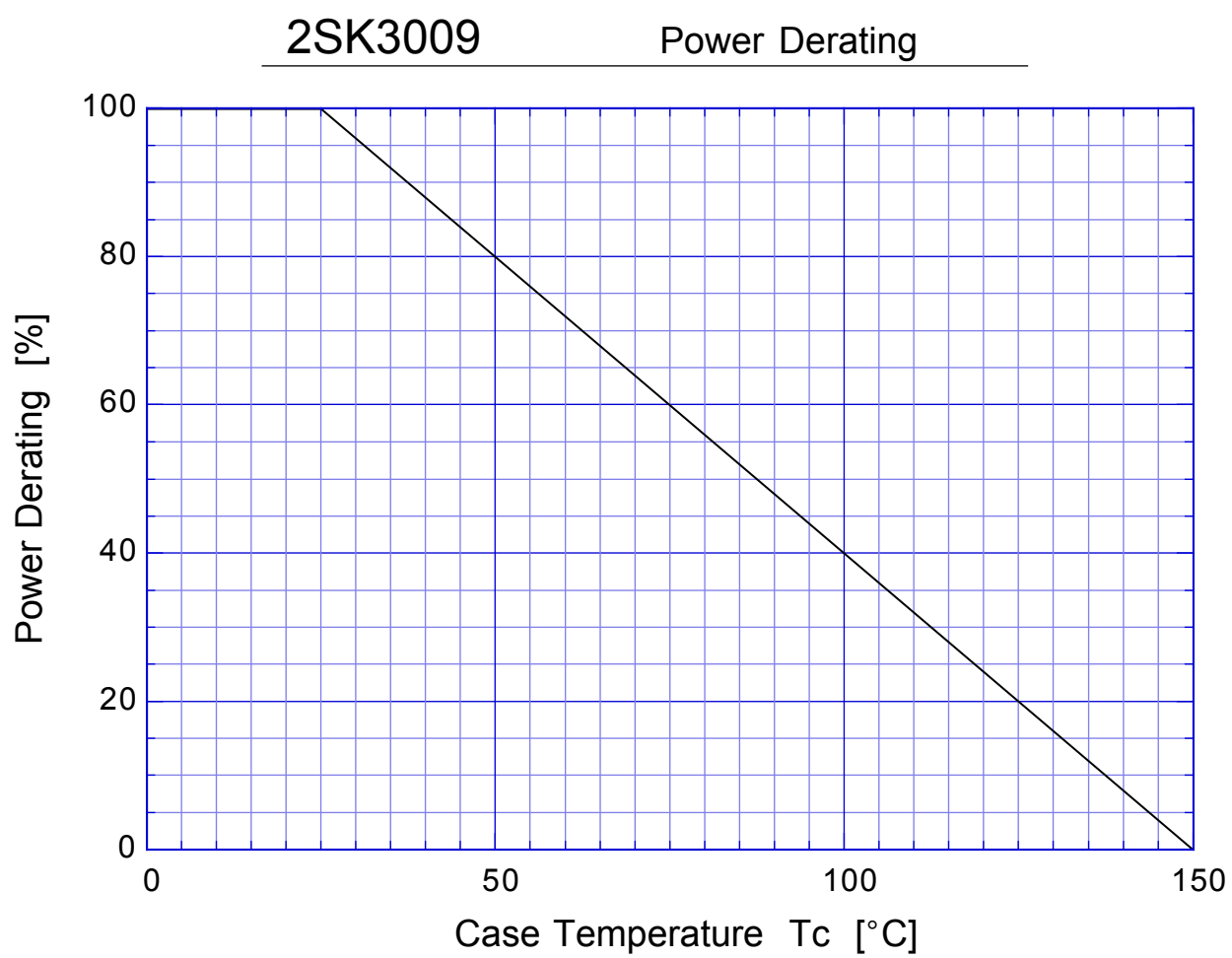


## 2SK3009

## Capacitance







## 2SK3009 Gate Charge Characteristics

