

# SHINDENGEN

## **VZ Series Power MOSFET**

## N-Channel Enhancement type

# 2SK2490 ( F10F18VZ )

180V 10A

## FEATURES

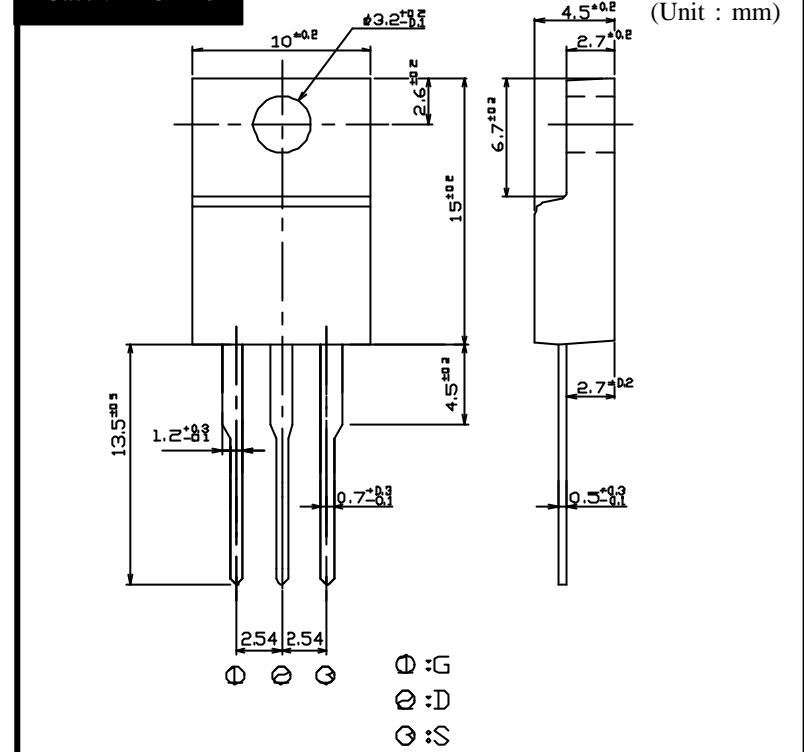
Input capacitance ( $C_{iss}$ ) is small.  
Especially, input capacitance  
at 0 bias is small.  
The static  $R_{ds(on)}$  is small.  
The switching time is fast.

## APPLICATION

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

## **OUTLINE DIMENSIONS**

Case : FTO-220



# RATINGS

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

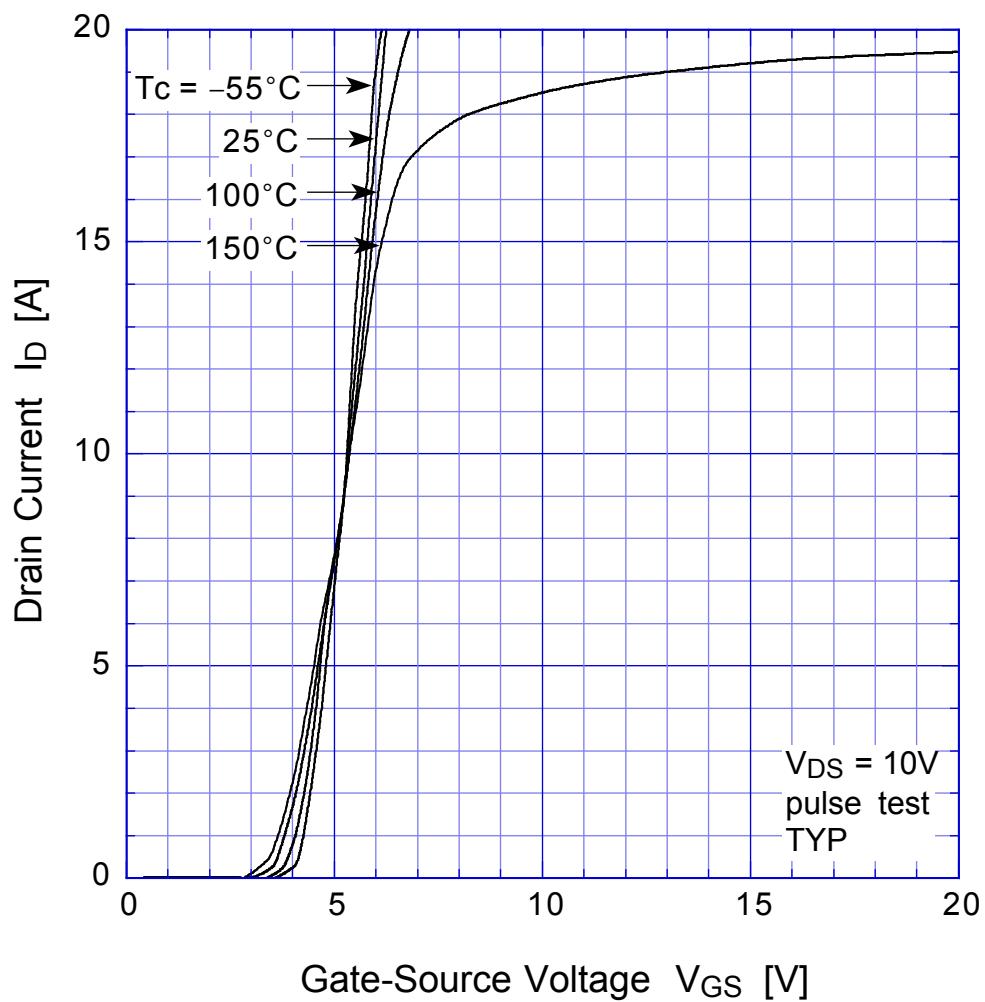
| Item                            | Symbol           | Conditions                     | Ratings   | Unit |
|---------------------------------|------------------|--------------------------------|-----------|------|
| Storage Temperature             | T <sub>stg</sub> |                                | -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>   |                                | 10        |      |
| Continuous Drain Current (Peak) | I <sub>DP</sub>  |                                | 20        | A    |
| Continuous Source Current (DC)  | I <sub>S</sub>   |                                | 10        |      |
| Total Power Dissipation         | P <sub>T</sub>   |                                | 40        | W    |
| Single Pulse Avalanche Current  | I <sub>AS</sub>  | T <sub>ch</sub> = 25           | 10        | A    |
| Dielectric Strength             | V <sub>dis</sub> | Terminals to case, AC 1 minute | 2         | kV   |
| Mounting Torque                 | T <sub>OR</sub>  | (Recommended torque 0.3 N·m)   | 0.5       | N·m  |

● Electrical Characteristics T<sub>c</sub> = 25°C

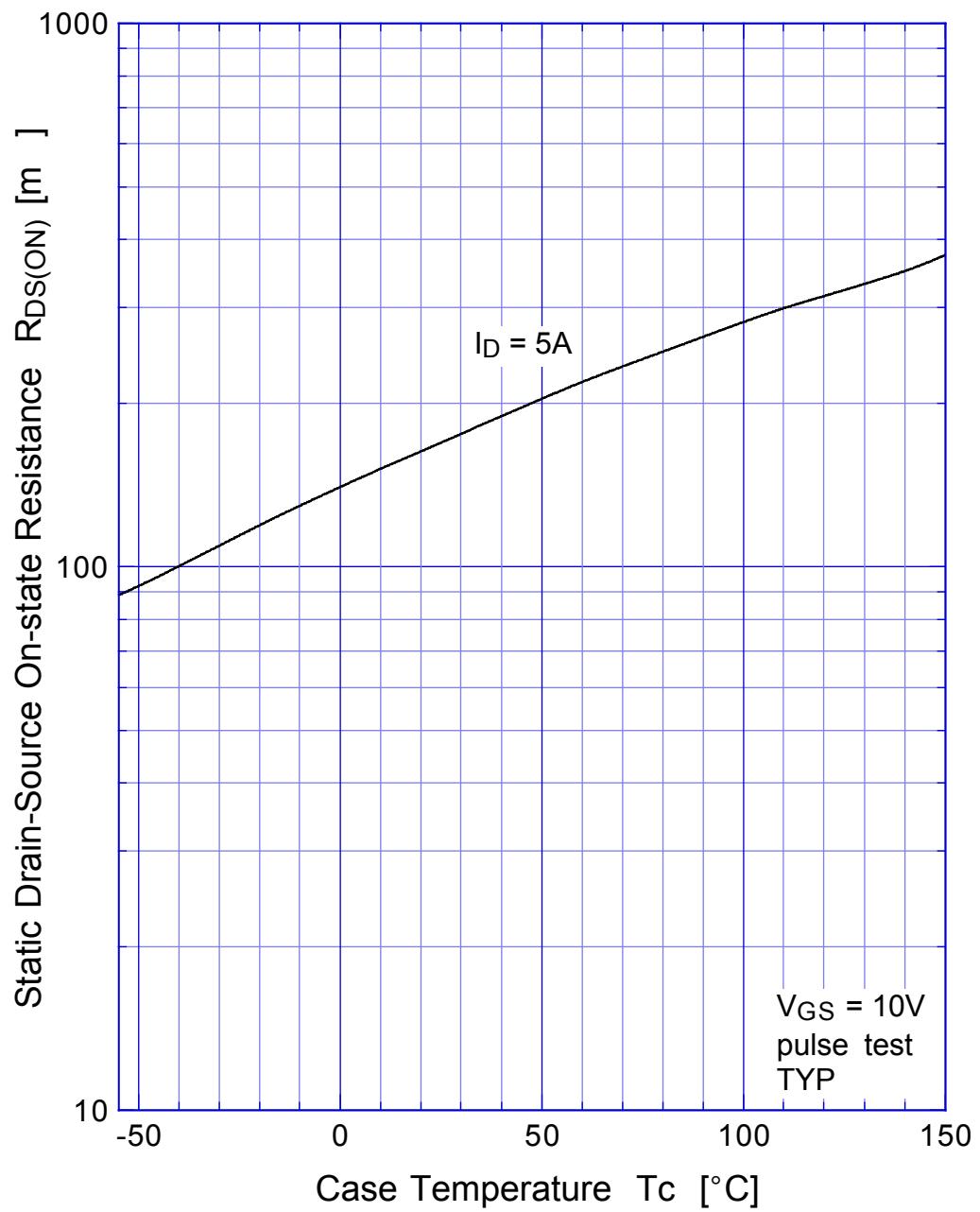
| Item                                    | Symbol               | Conditions                      | Min. | Typ. | Max. | Unit |
|---|----------------------|---------------------------------|------|------|------|------|
| Drain-Source Breakdown Voltage          | V <sub>(BR)DSS</sub> | ID = 1mA, VGS = 0V              | 180  |      |      | V    |
| Zero Gate Voltage Drain Current         | I <sub>DSS</sub>     | VDS = 180V, VGS = 0V            |      |      | 250  | μA   |
| Gate-Source Leakage Current             | I <sub>GSS</sub>     | VGS = ±30V, VDS = 0V            |      |      | ±0.1 |      |
| Forward Transconductance                | g <sub>fS</sub>      | ID = 5A, VDS = 10V              | 3.0  | 7.0  |      | S    |
| Static Drain-Source On-state Resistance | R <sub>D(S)ON</sub>  | ID = 5A, VGS = 10V              |      | 0.17 | 0.25 | Ω    |
| Gate Threshold Voltage                  | V <sub>TH</sub>      | ID = 1mA, VDS = 10V             | 2.0  | 3.0  | 4.0  | V    |
| Source-Drain Diode Forward Voltage      | V <sub>SD</sub>      | IS = 5A, VGS = 0V               |      |      | 1.5  |      |
| Thermal Resistance                      | θ <sub>jc</sub>      | junction to case                |      |      | 3.12 | °C/W |
| Total Gate Charge                       | Q <sub>g</sub>       | VDD = 150V, VGS = 10V, ID = 10A |      | 25   |      | nC   |
| Input Capacitance                       | C <sub>iss</sub>     | VDS = 10V, VGS = 0V, f = 1MHz   |      | 720  |      | pF   |
| Reverse Transfer Capacitance            | C <sub>rss</sub>     |                                 |      | 80   |      |      |
| Output Capacitance                      | C <sub>oss</sub>     |                                 |      | 280  |      |      |
| Turn-On Time                            | t <sub>on</sub>      | ID = 5A, VGS = 10V, RL = 20Ω    |      | 50   | 100  | ns   |
| Turn-Off Time                           | t <sub>off</sub>     |                                 |      | 140  | 280  |      |

# 2SK2490

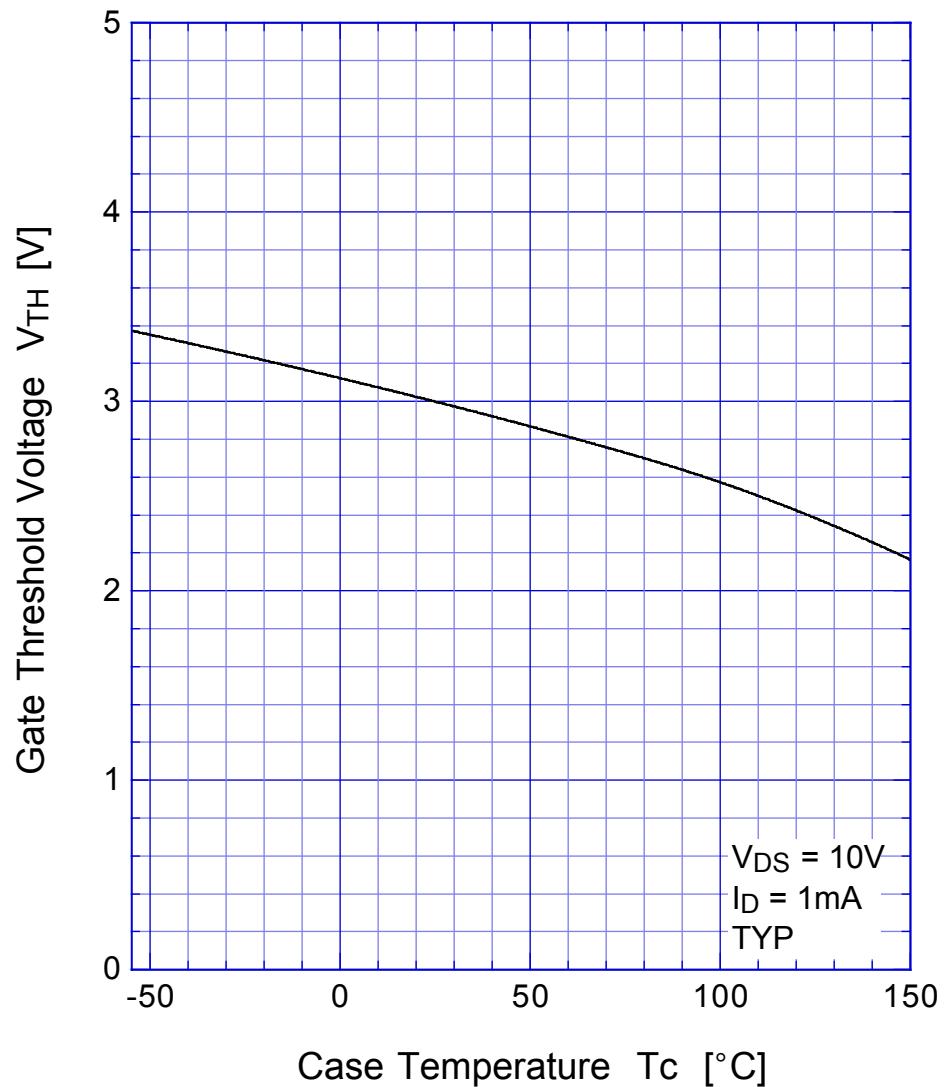
## Transfer Characteristics



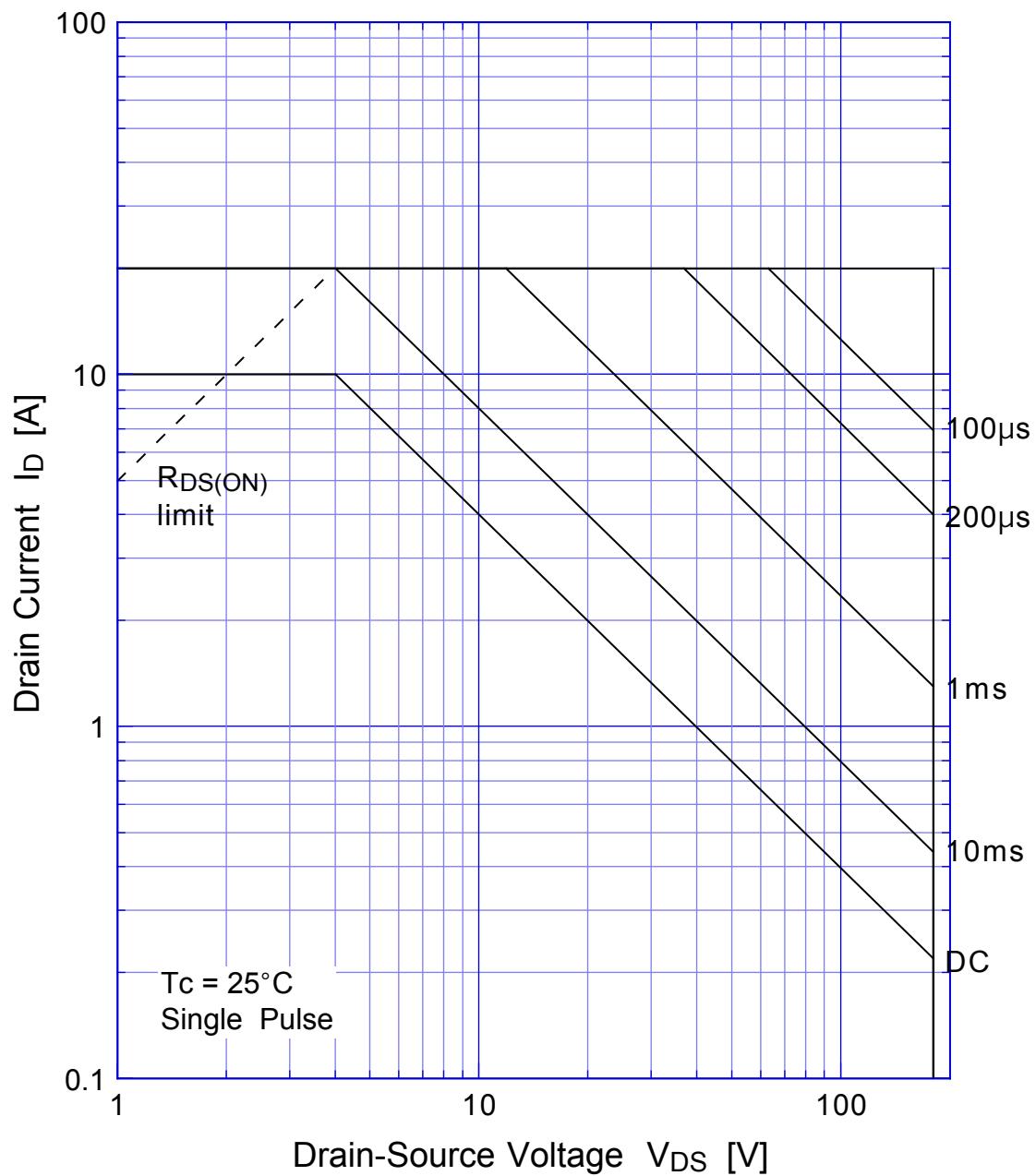
## 2SK2490 Static Drain-Source On-state Resistance



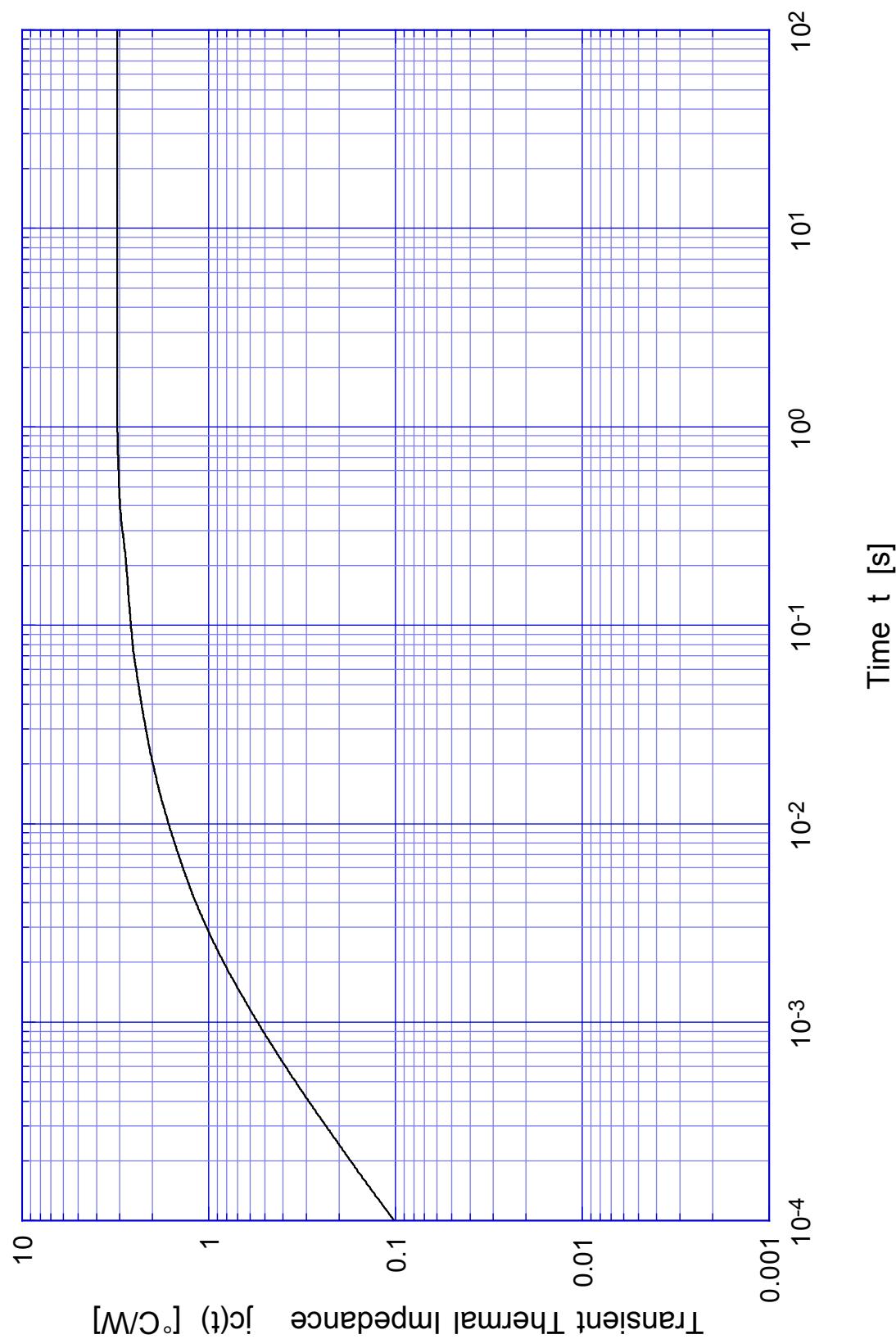
## **2SK2490      Gate Threshold Voltage**



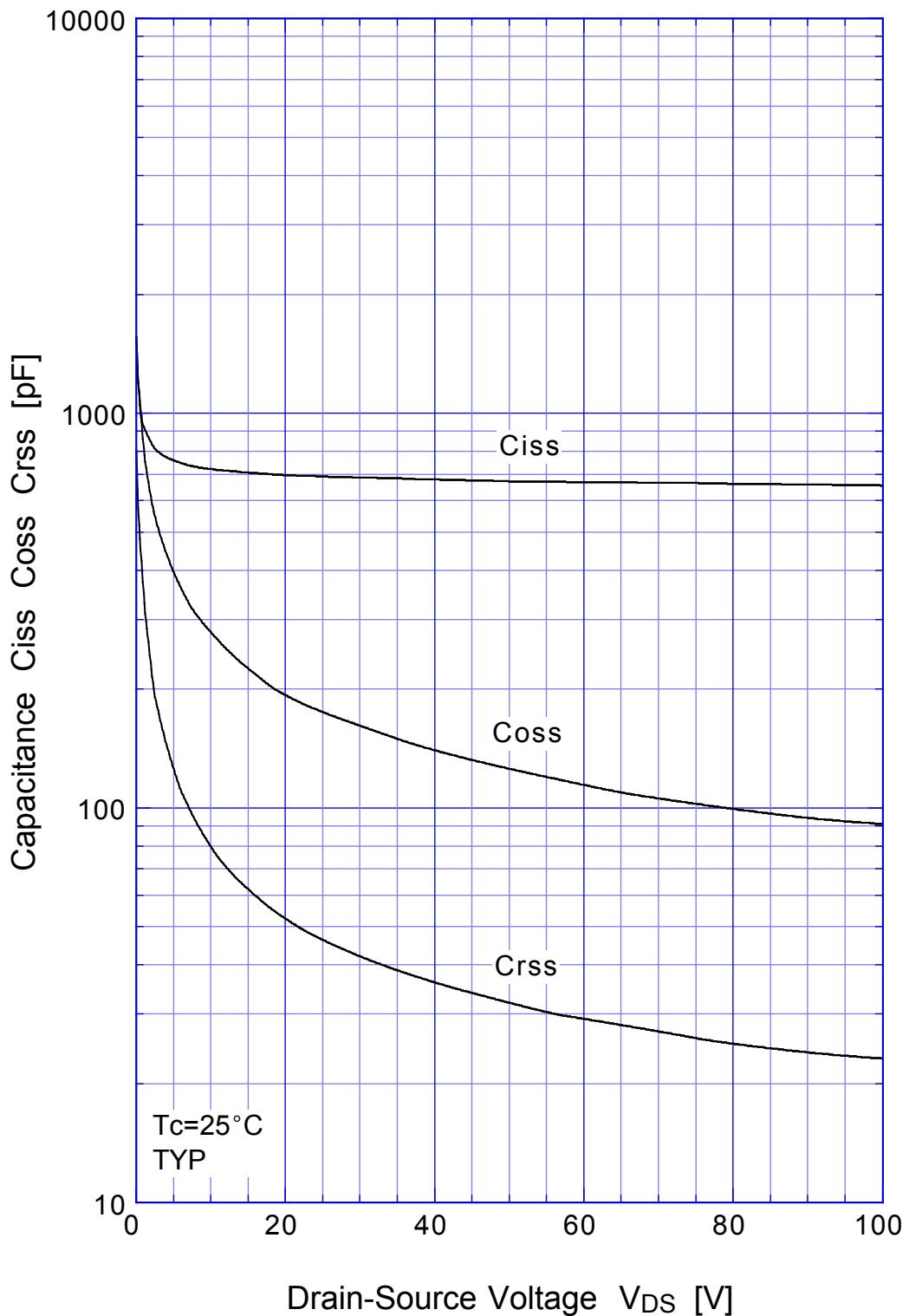
## 2SK2490 Safe Operating Area



## 2SK2490 Transient Thermal Impedance



**2SK2490** Capacitance



**2SK2490**

Power Derating



**2SK2490**

### Gate Charge Characteristics

