

# SHINDENGEN

## VR Series Power MOSFET

N-Channel Enhancement type

**2SK1195**  
(F1E23)

**230V 1.5A**

### FEATURES

- Applicable to 4V drive.
- The static  $R_{ds(on)}$  is small.
- Built-in ZD for Gate Protection.

### APPLICATION

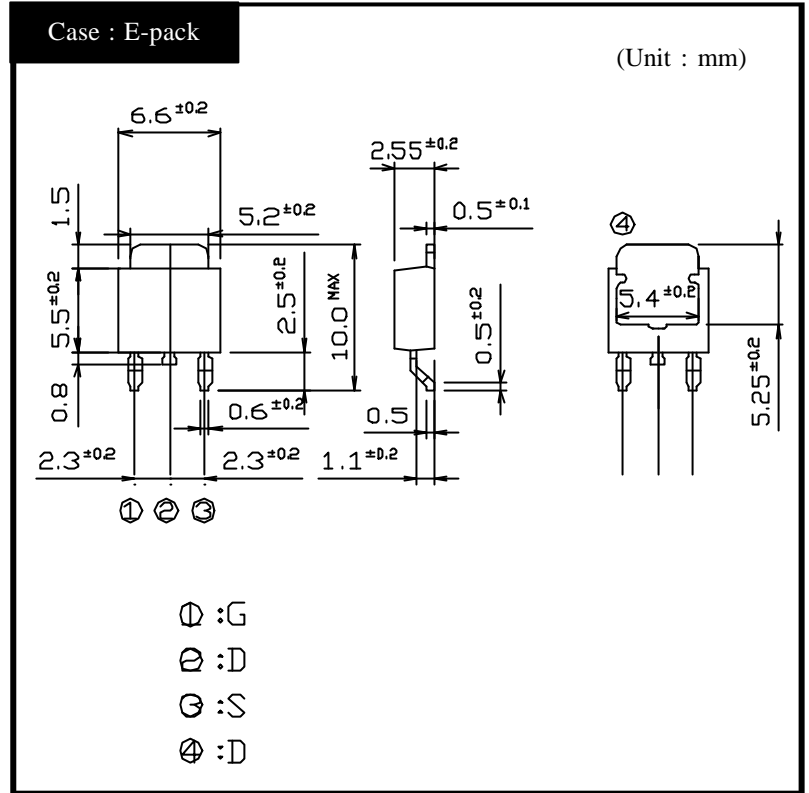
- DC/DC converters
- Power supplies of DC 12-24V input
- Product related to Integrated Service Digital Network

### RATINGS

Absolute Maximum Ratings ( $T_c = 25$  )

| Item                            | Symbol    | Conditions | Ratings   | Unit |
|---------------------------------|-----------|------------|-----------|------|
| Storage Temperature             | $T_{stg}$ |            | -55 ~ 150 |      |
| Channel Temperature             | $T_{ch}$  |            | 150       |      |
| Drain-Source Voltage            | $V_{DSS}$ |            | 230       | V    |
| Gate-Source Voltage             | $V_{GSS}$ |            | $\pm 20$  |      |
| Continuous Drain Current (DC)   | $I_D$     |            | 1.5       | A    |
| Continuous Drain Current (Peak) | $I_{DP}$  |            | 3         |      |
| Continuous Source Current (DC)  | $I_S$     |            | 1.5       |      |
| Total Power Dissipation         | $P_T$     |            | 10        | W    |

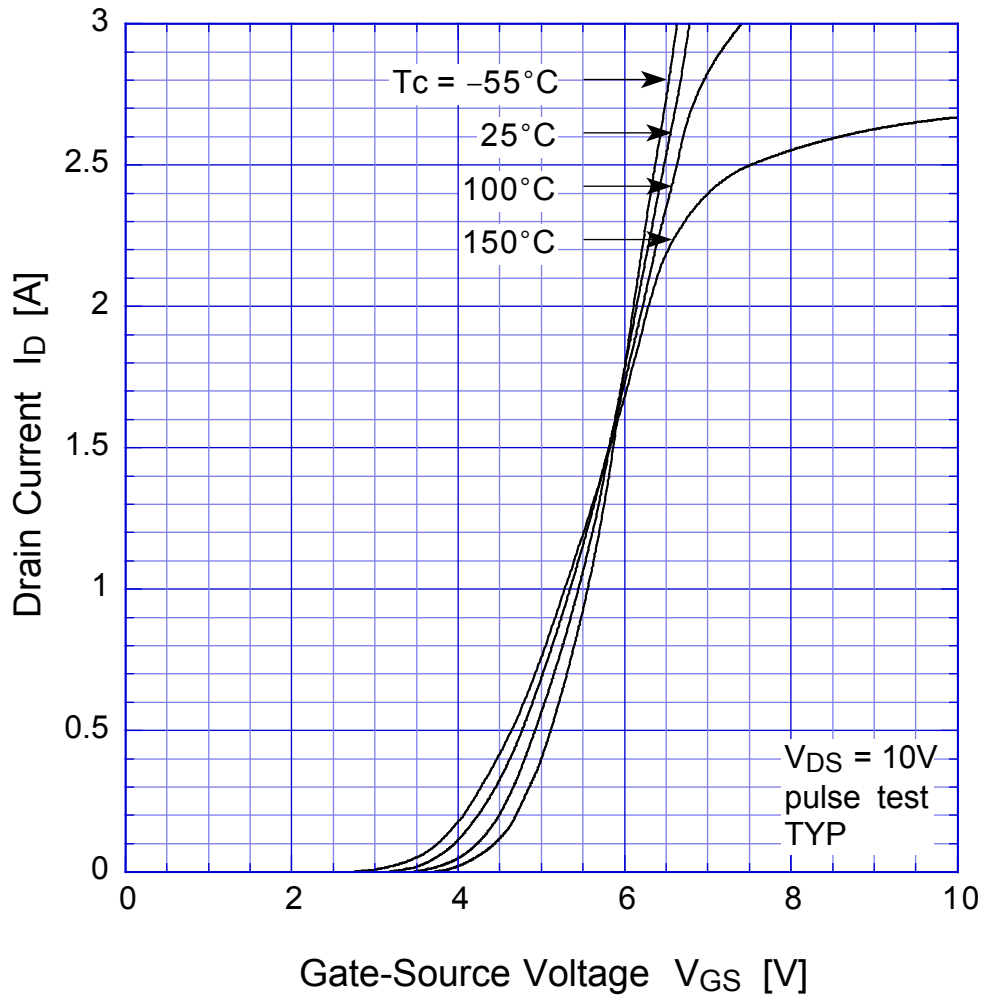
### OUTLINE DIMENSIONS



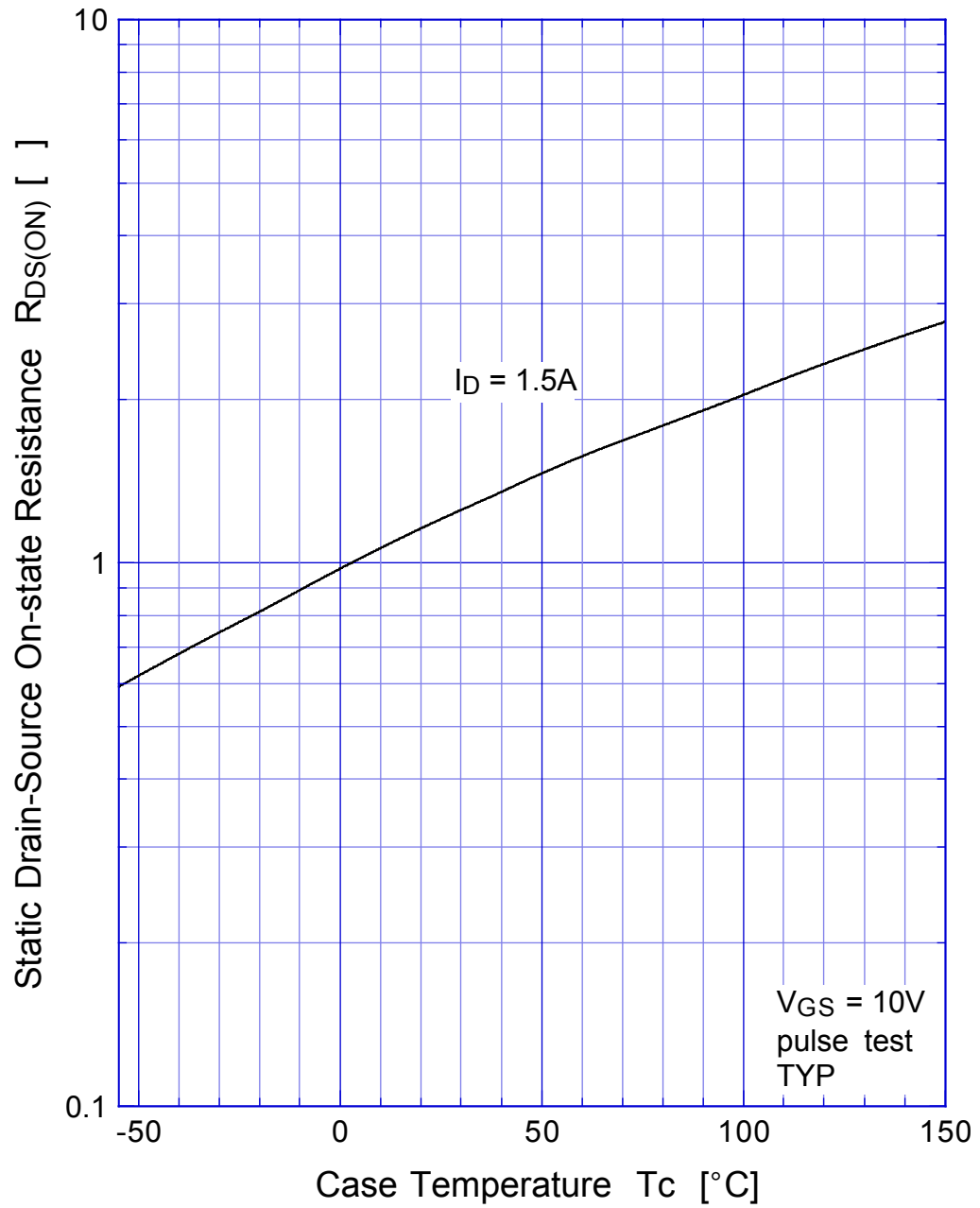
●Electrical Characteristics  $T_c = 25^\circ\text{C}$ 

| Item                                    | Symbole       | Conditions   | Min. | Typ. | Max.      | Unit                      |
|---|---------------|--|------|------|-----------|---------------------------|
| Drain-Source Breakdown Voltage          | $V_{(BR)DSS}$ | $I_D = 250 \mu\text{A}$ , $V_{GS} = 0\text{V}$                       | 230  |      |           | V                         |
| Zero Gate Voltage Drain Current         | $I_{DSS}$     | $V_{DS} = 230\text{V}$ , $V_{GS} = 0\text{V}$                        |      |      | 250       | $\mu\text{A}$             |
| Gate-Source Leakage Current             | $I_{GSS}$     | $V_{GS} = \pm 20\text{V}$ , $V_{DS} = 0\text{V}$                     |      |      | $\pm 0.1$ |                           |
| Forward Transconductance                | $g_{fs}$      | $I_D = 1.5\text{A}$ , $V_{DS} = 10\text{V}$                          | 0.7  | 1.4  |           | S                         |
| Static Drain-Source On-state Resistance | $R_{DS(ON)}$  | $I_D = 1.5\text{A}$ , $V_{GS} = 10\text{V}$                          |      | 1.2  | 2         | $\Omega$                  |
| Gate Threshold Voltage                  | $V_{TH}$      | $I_D = 0.2\text{mA}$ , $V_{DS} = 10\text{V}$                         | 2    | 3    | 4         | V                         |
| Source-Drain Diode Forward Voltage      | $V_{SD}$      | $I_S = 1.5\text{A}$ , $V_{GS} = 0\text{V}$                           |      |      | 1.5       |                           |
| Thermal Resistance                      | $\theta_{jc}$ | junction to case   |      |      | 12.5      | $^\circ\text{C}/\text{W}$ |
| Total Gate Charge                       | $Q_g$         | $V_{GS} = 10\text{V}$ , $I_D = 1.5\text{A}$ , $V_{DD} = 200\text{V}$ |      | 6.9  |           | nC                        |
| Input Capacitance                       | $C_{iss}$     | $V_{DS} = 10\text{V}$ , $V_{GS} = 0\text{V}$ , $f = 1\text{MHz}$     |      | 160  |           | pF                        |
| Reverse Transfer Capacitance            | $C_{rss}$     |  |      | 20   |           |                           |
| Output Capacitance                      | $C_{oss}$     |  |      | 90   |           |                           |
| Turn-On Time                            | $t_{on}$      | $I_D = 1.5\text{A}$ , $V_{GS} = 10\text{V}$ , $R_L = 67 \Omega$      |      | 37   | 75        | ns                        |
| Turn-Off Time                           | $t_{off}$     |  |      | 50   | 100       |                           |

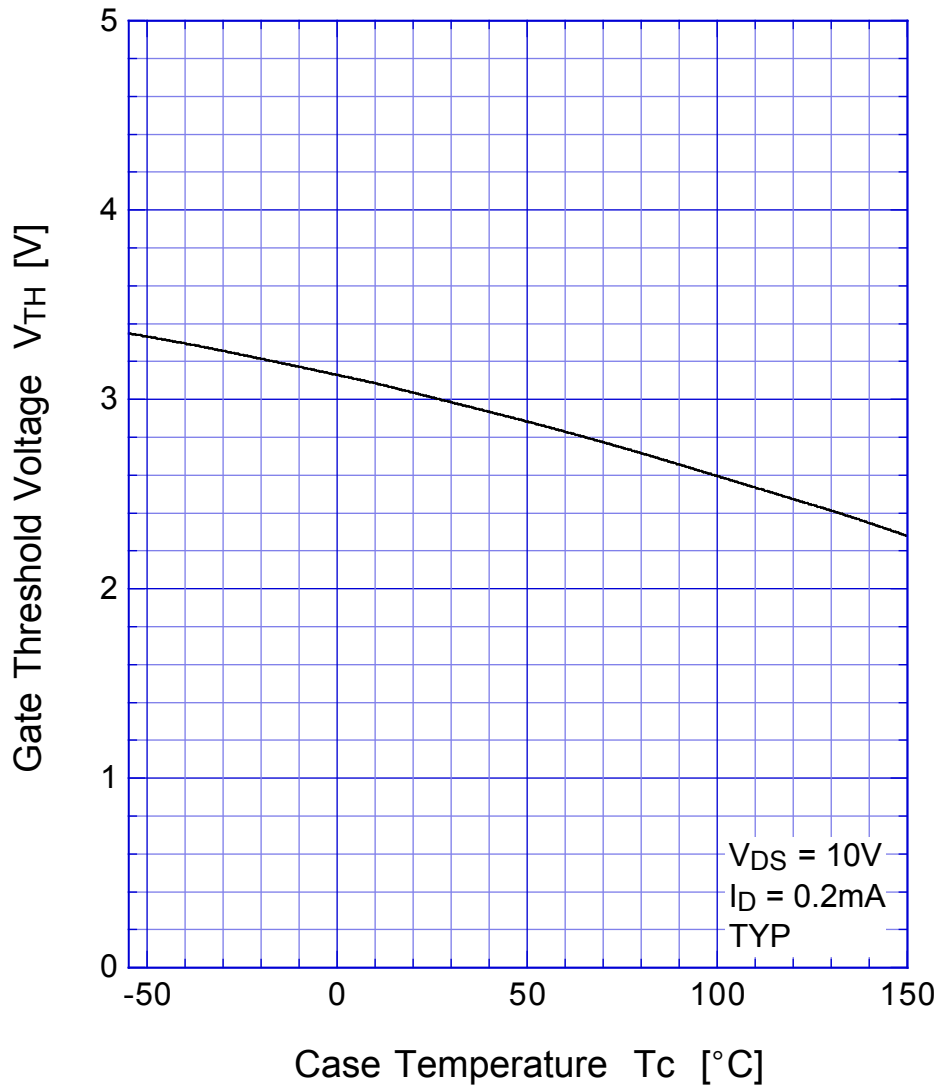
# 2SK1195 Transfer Characteristics



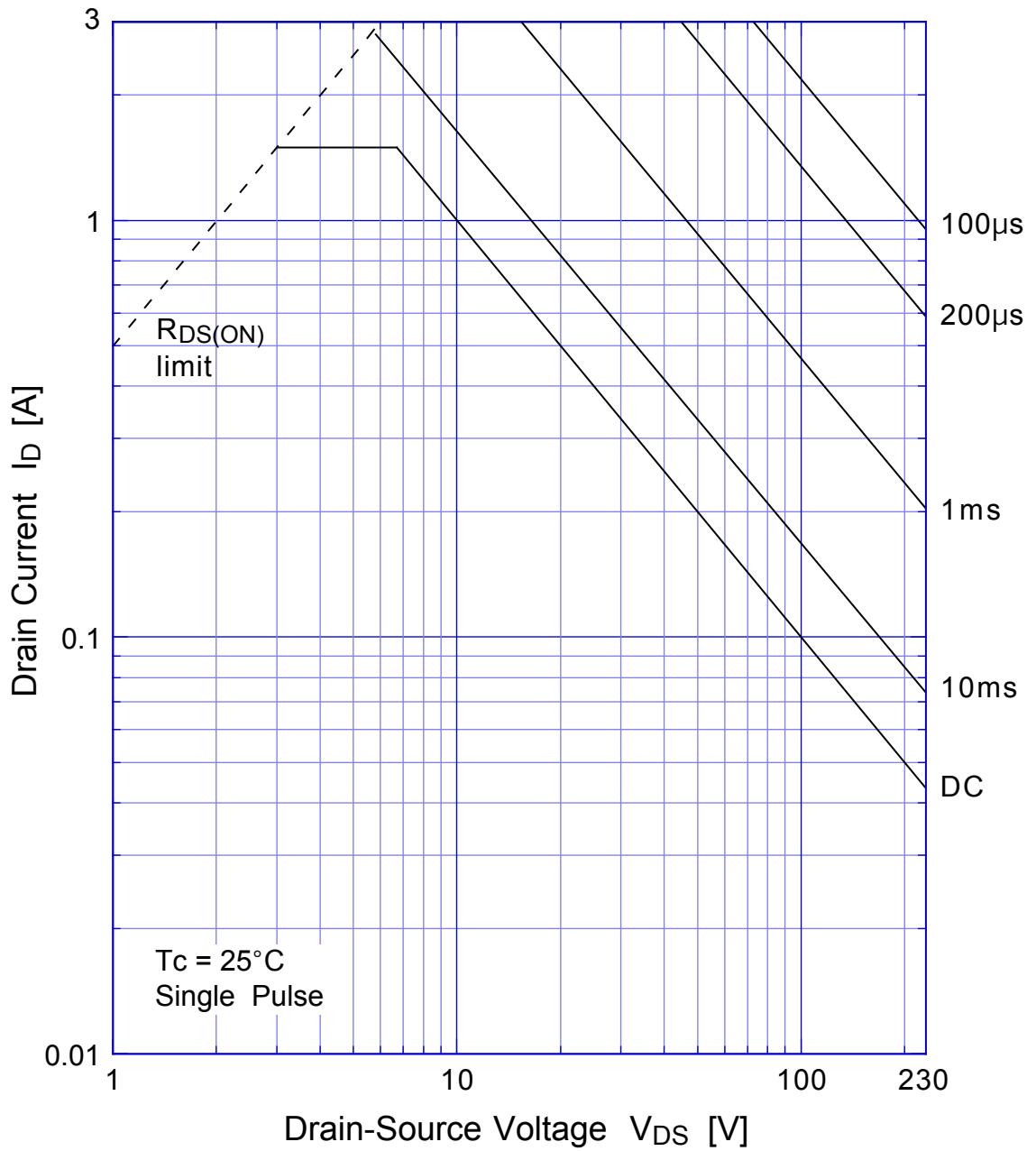
## 2SK1195 Static Drain-Source On-state Resistance



2SK1195 Gate Threshold Voltage

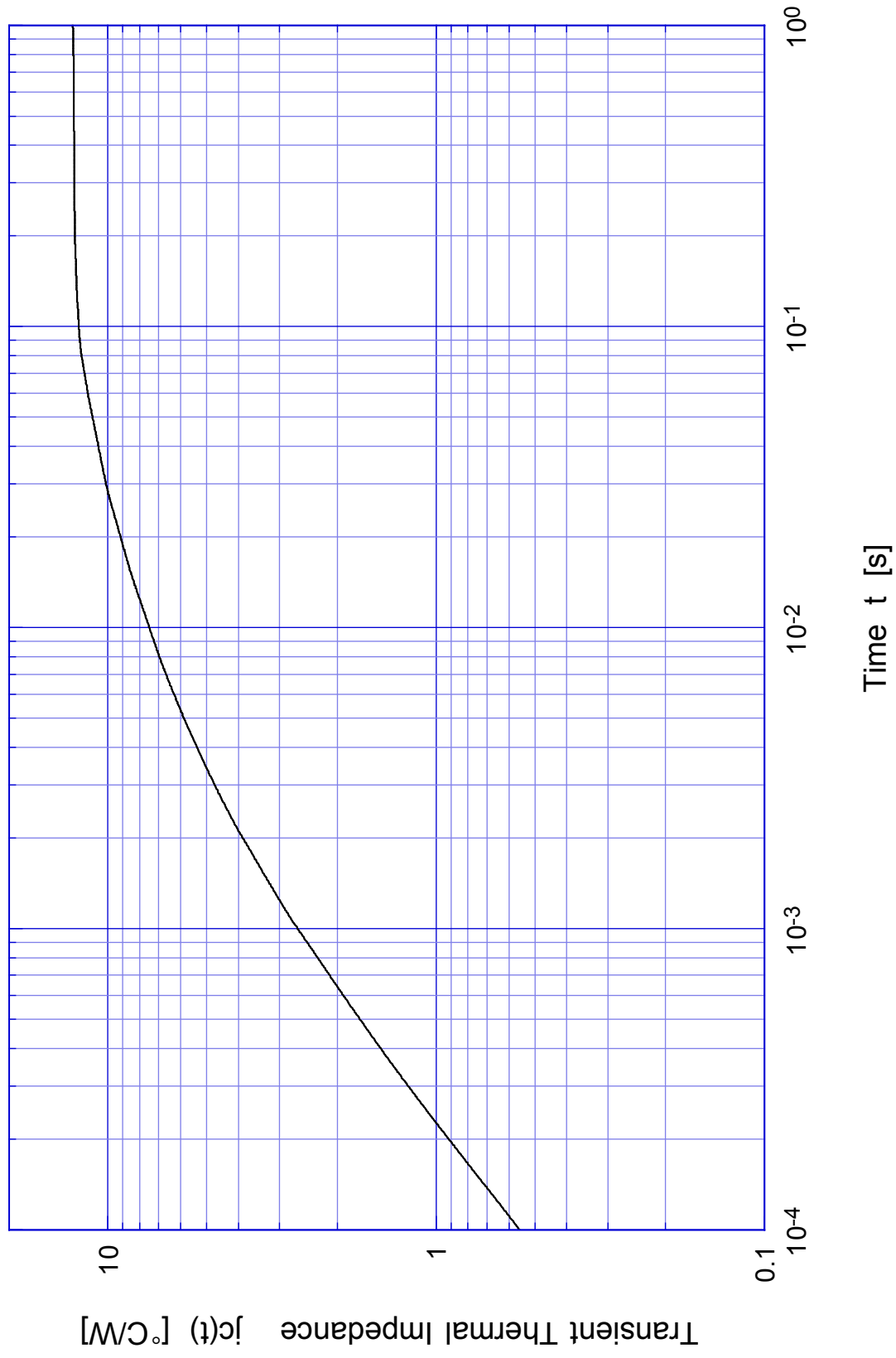


# 2SK1195 Safe Operating Area



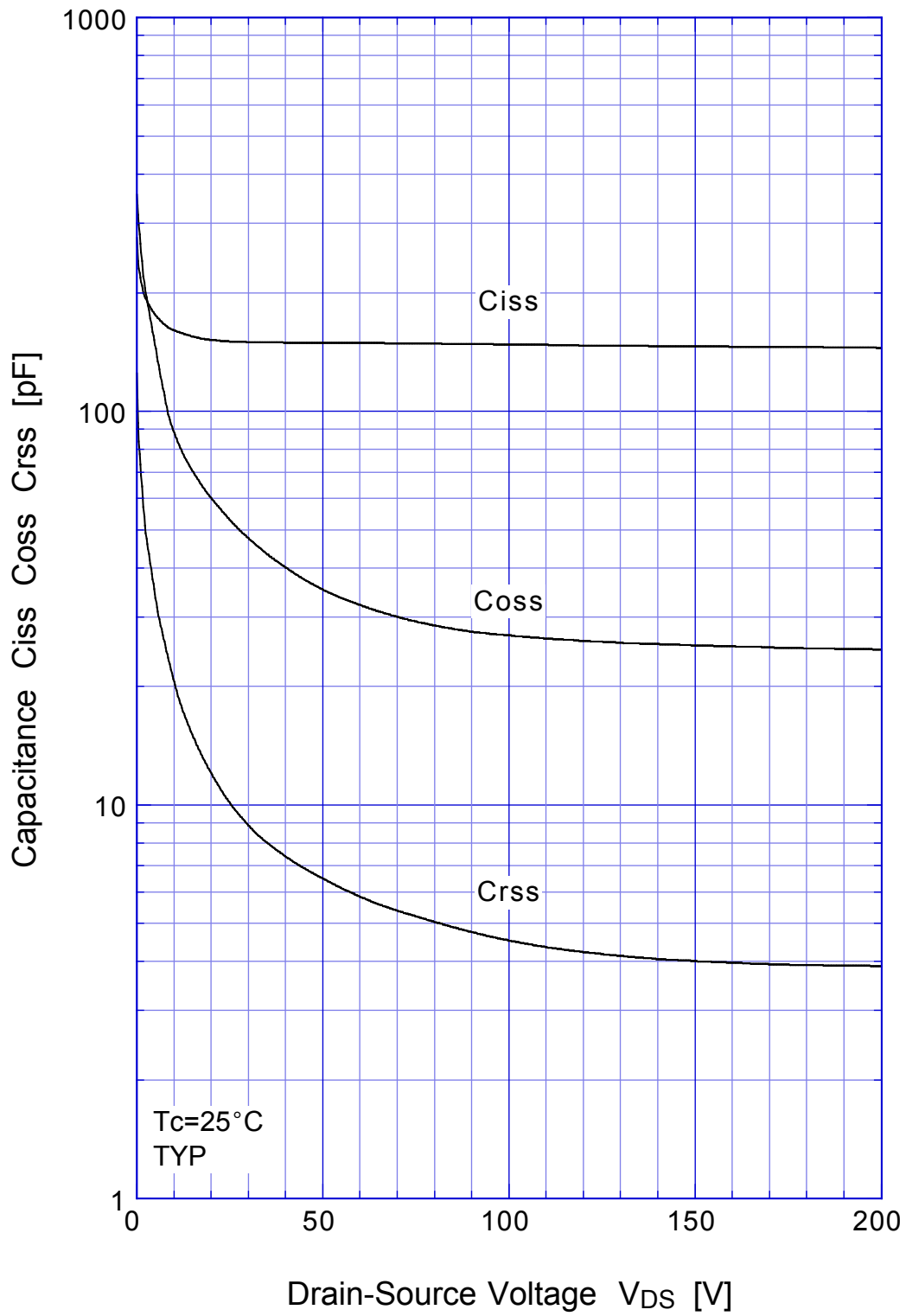
2SK1195

Transient Thermal Impedance



# 2SK1195

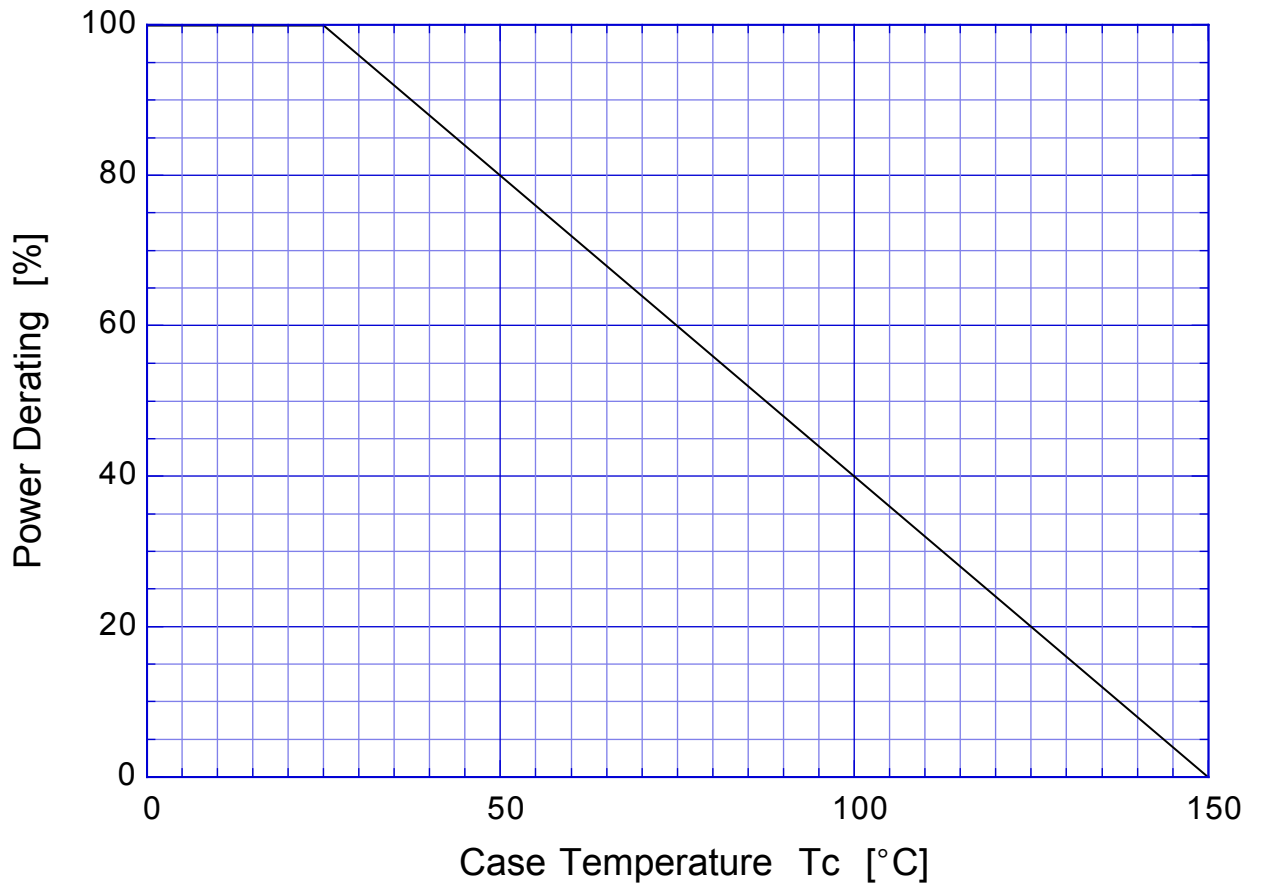
# Capacitance





2SK1195

Power Derating



## 2SK1195 Gate Charge Characteristics

