

# SHINDENGEN

## HVX-2 Series Power MOSFET

N-Channel Enhancement type

**2SK2677**  
**(FP10W90HVX2)**

**900V 10A**

### 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.

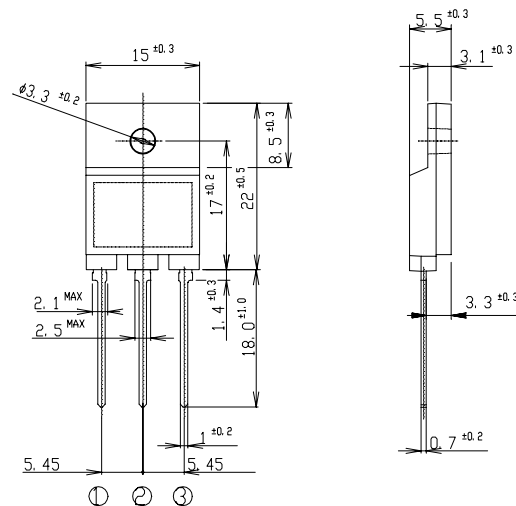
### APPLICATION

- Switching power supply of AC 240V input
- High voltage power supply
- Inverter

### OUTLINE DIMENSIONS

Case : ITO-3P

(Unit : mm)



① : G  
② : D  
③ : S

### RATINGS

- Absolute Maximum Ratings (Tc = 25°C)

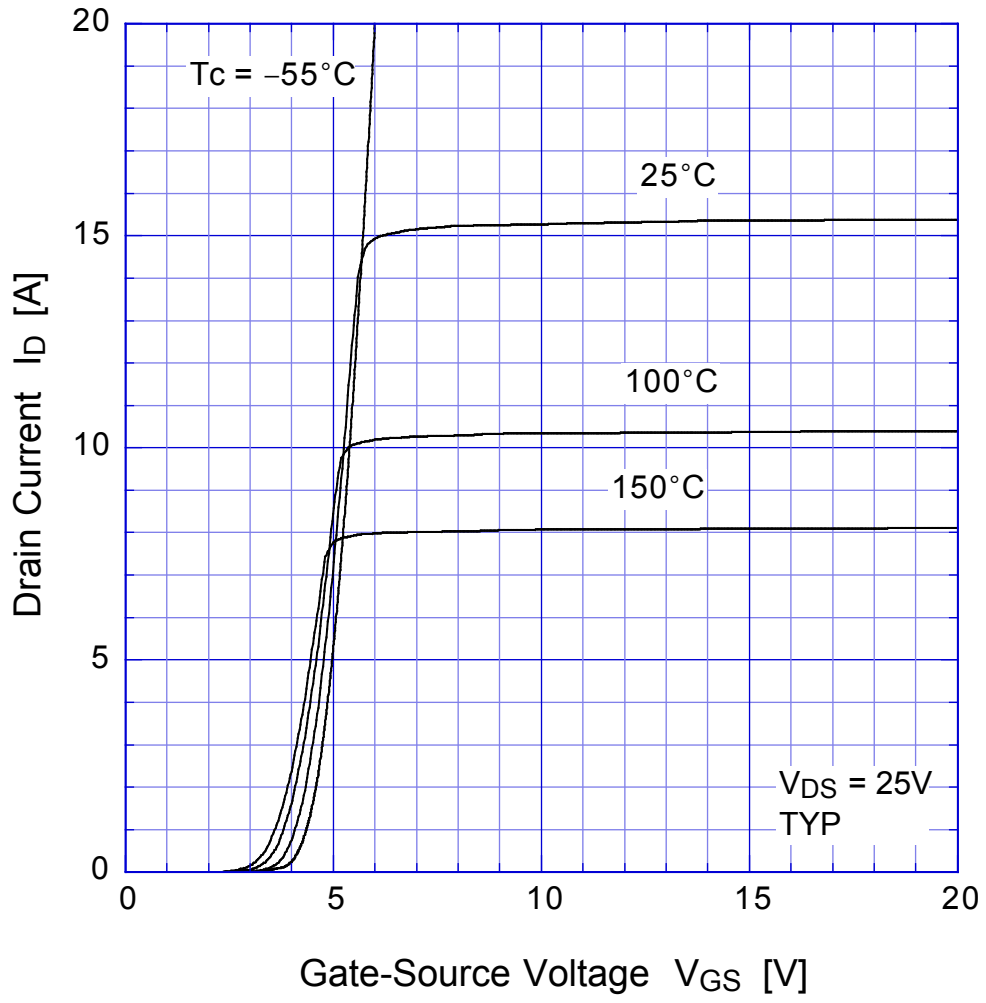
| Item                            | Symbol           | Conditions                              | Ratings | Unit |
|---------------------------------|------------------|---|---------|------|
| Storage Temperature             | T <sub>stg</sub> |   | -55~150 | °C   |
| Channel Temperature             | T <sub>ch</sub>  |   | 150     |      |
| Drain-Source Voltage            | V <sub>DSS</sub> |   | 900     | V    |
| Gate-Source Voltage             | V <sub>GSS</sub> |   | ±30     |      |
| Continuous Drain Current (DC)   | I <sub>D</sub>   |   | 10      | A    |
| Continuous Drain Current (Peak) | I <sub>DP</sub>  | Pulse width ≤ 10 μs, Duty cycle ≤ 1/100 | 20      |      |
| Continuous Source Current (DC)  | I <sub>S</sub>   |   | 10      |      |
| Total Power Dissipation         | P <sub>T</sub>   |   | 65      | W    |
| Repetitive Avalanche Current    | I <sub>AR</sub>  | T <sub>ch</sub> = 150°C                 | 10      | A    |
| Single Avalanche Energy         | E <sub>AS</sub>  | T <sub>ch</sub> = 25°C                  | 260     | mJ   |
| Repetitive Avalanche Energy     | E <sub>AR</sub>  | T <sub>ch</sub> = 25°C                  | 26      |      |
| Dielectric Strength             | V <sub>dis</sub> | Terminals to case, AC 1 minute          | 2       | kV   |
| Mounting Torque                 | TOR              | ( Recommended torque : 0.5 N·m )        | 0.8     | N·m  |

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

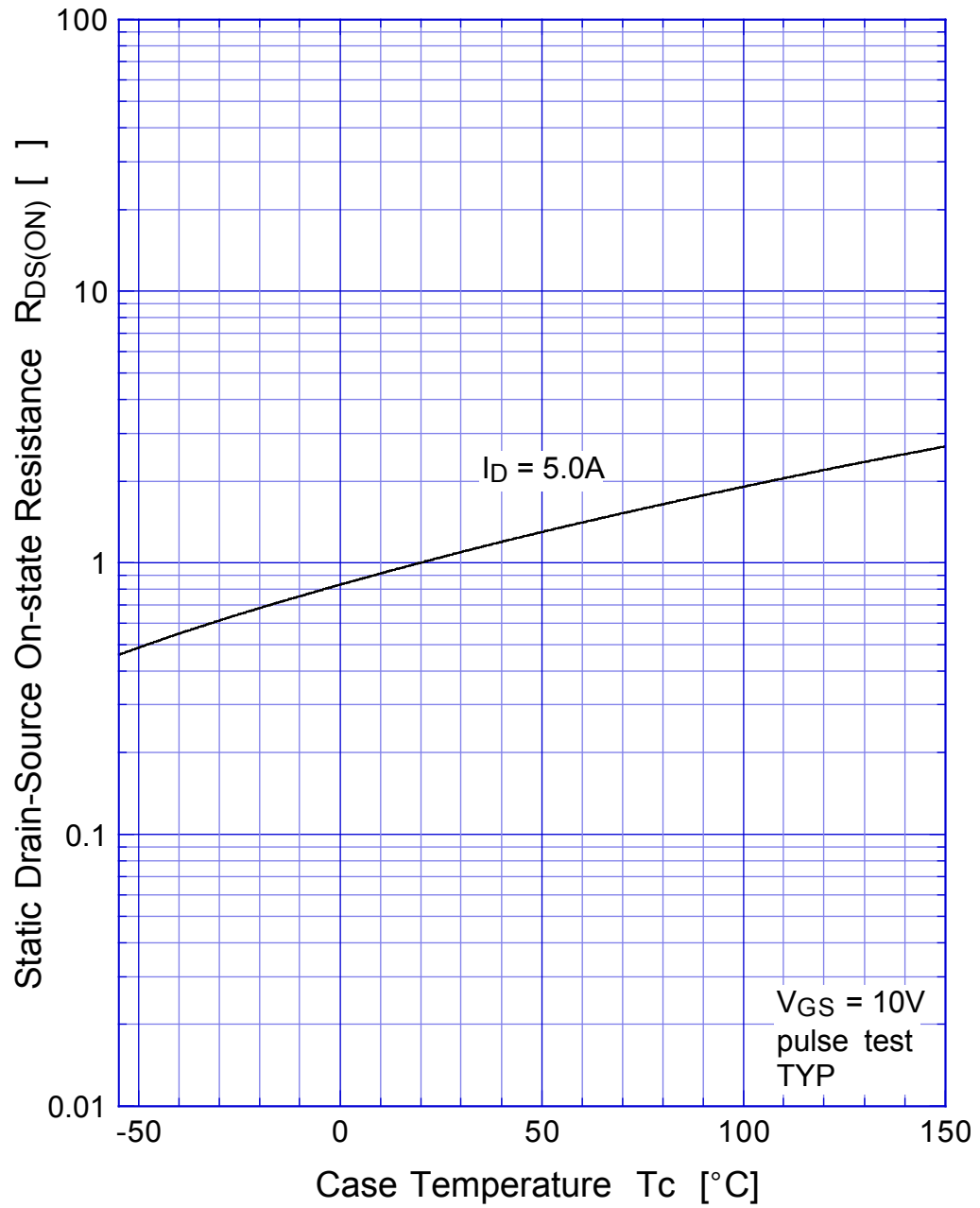
| Item                                    | Symbol        | Conditions  | Min. | Typ. | Max.      | Unit                      |
|---|---------------|---|------|------|-----------|---------------------------|
| Drain-Source Breakdown Voltage          | $V_{(BR)DSS}$ | $I_D = 1\text{mA}, V_{GS} = 0\text{V}$                        | 900  |      |           | V                         |
| Zero Gate Voltage Drain Current         | $I_{DSS}$     | $V_{DS} = 900\text{V}, V_{GS} = 0\text{V}$                    |      |      | 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                | $g_{fs}$      | $I_D = 5\text{A}, V_{DS} = 10\text{V}$                        | 4.8  | 8.0  |           | S                         |
| Static Drain-Source On-state Resistance | $R_{DS(ON)}$  | $I_D = 5\text{A}, V_{GS} = 10\text{V}$                        |      | 1.05 | 1.4       | $\Omega$                  |
| Gate Threshold Voltage                  | $V_{TH}$      | $I_D = 1\text{mA}, V_{DS} = 10\text{V}$                       | 2.5  | 3.0  | 3.5       | V                         |
| Source-Drain Diode Forward Voltage      | $V_{SD}$      | $I_S = 5\text{A}, V_{GS} = 0\text{V}$                         |      |      | 1.5       |                           |
| Thermal Resistance                      | $\theta_{jc}$ | junction to case  |      |      | 1.92      | $^\circ\text{C}/\text{W}$ |
| Total Gate Charge                       | $Q_g$         | $V_{DD} = 400\text{V}, V_{GS} = 10\text{V}, I_D = 10\text{A}$ |      | 90   |           | nC                        |
| Input Capacitance                       | $C_{iss}$     | $V_{DS} = 25\text{V}, V_{GS} = 0\text{V}, f = 1\text{MHz}$    |      | 2150 |           | pF                        |
| Reverse Transfer Capacitance            | $C_{rss}$     |   |      | 50   |           |                           |
| Output Capacitance                      | $C_{oss}$     |   |      | 210  |           |                           |
| Turn-On Time                            | $t_{on}$      | $I_D = 5\text{A}, R_L = 30\Omega, V_{GS} = 10\text{V}$        |      | 140  | 250       | ns                        |
| Turn-Off Time                           | $t_{off}$     |   |      | 440  | 740       |                           |

# 2SK2677

## Transfer Characteristics



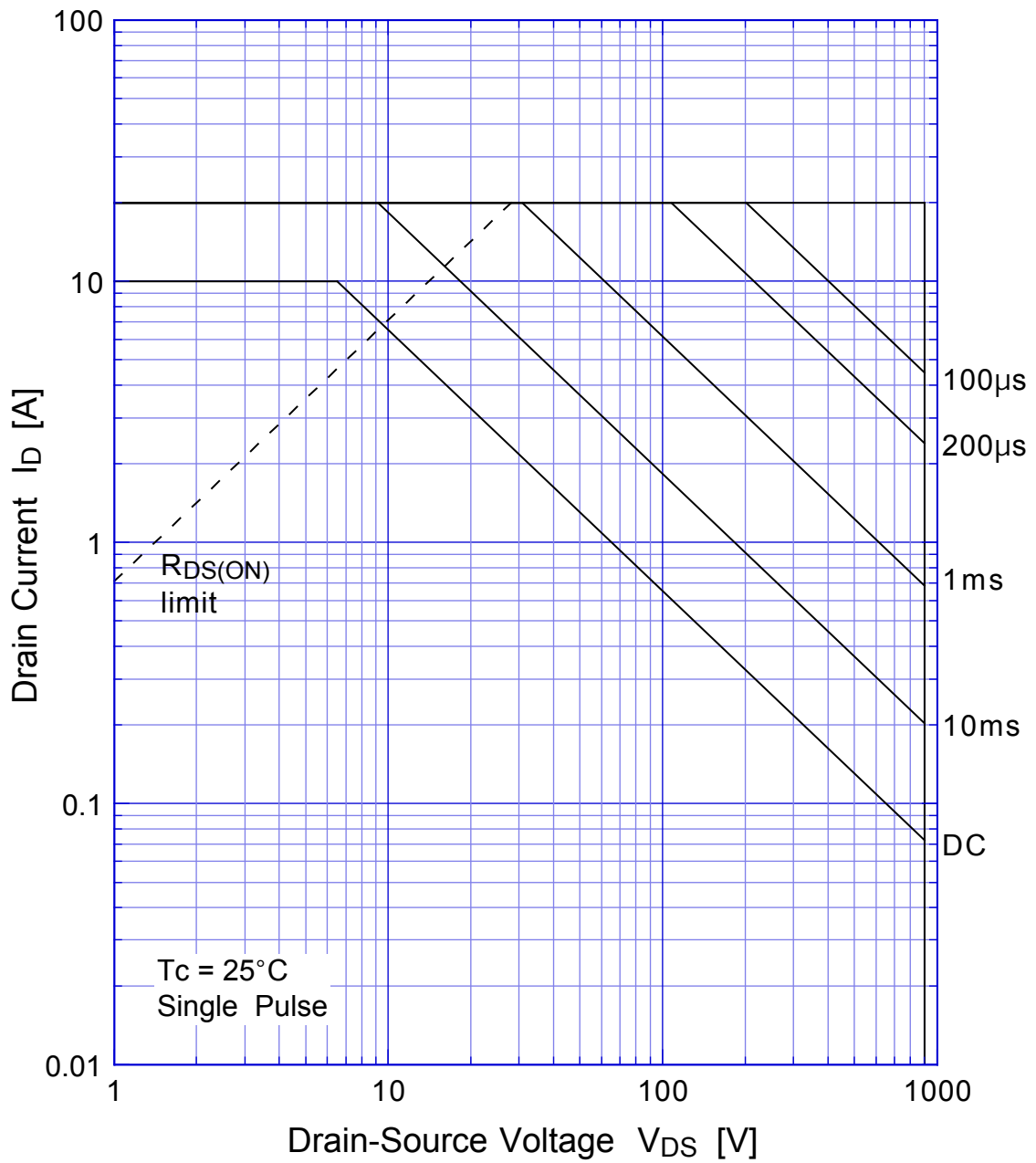
## 2SK2677 Static Drain-Source On-state Resistance



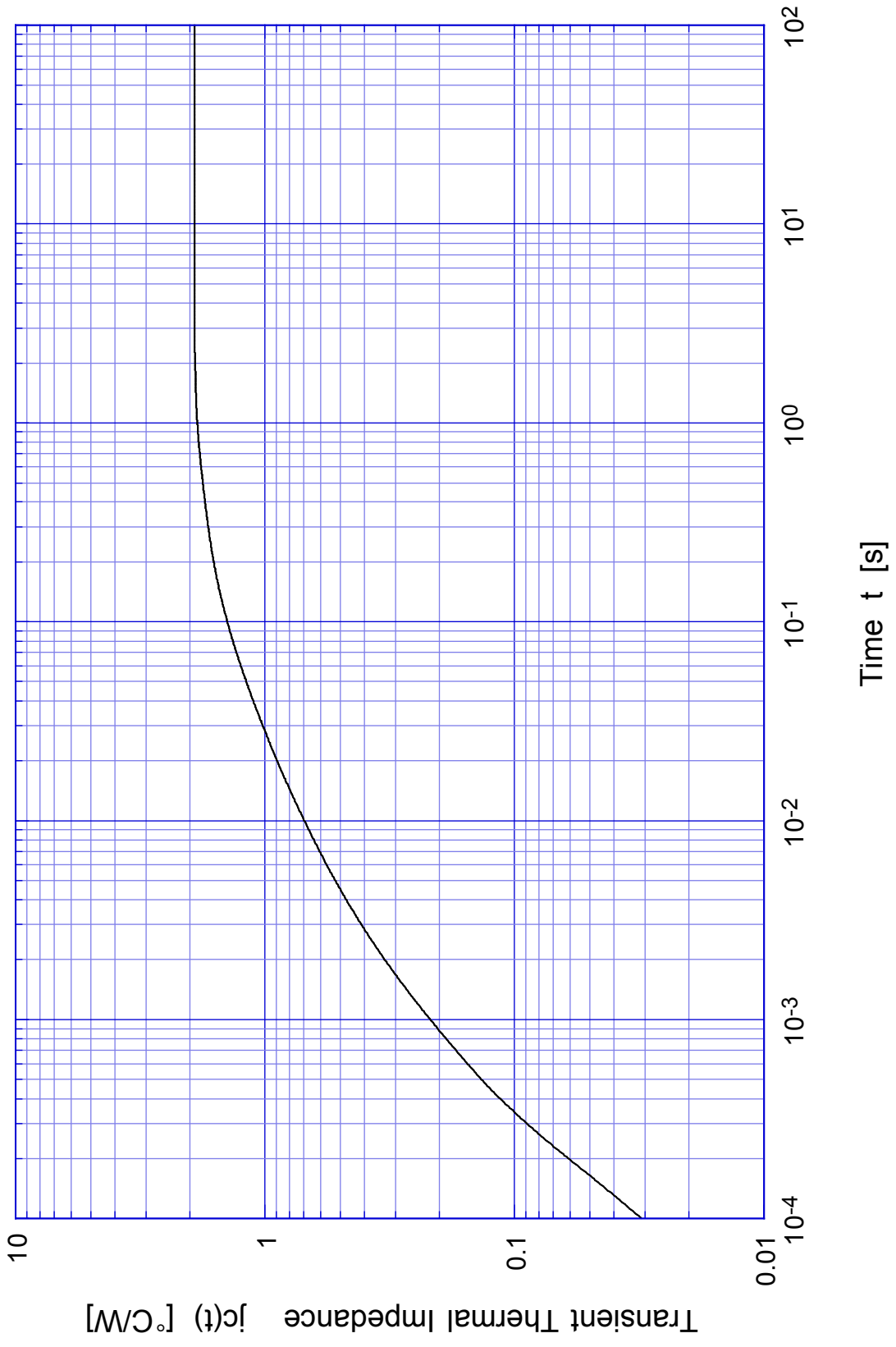
2SK2677 Gate Threshold Voltage



# 2SK2677 Safe Operating Area



# 2SK2677 Transient Thermal Impedance

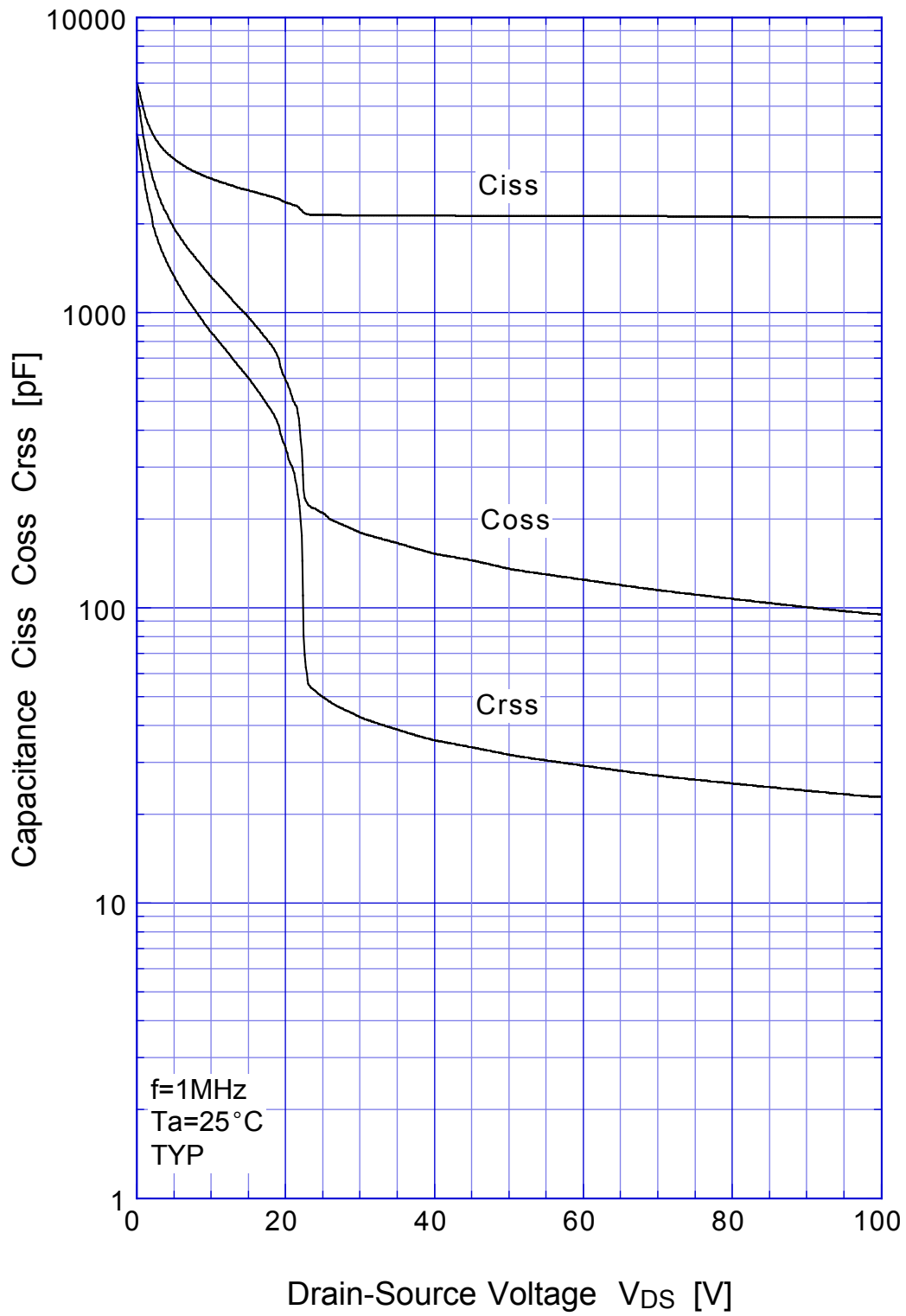


## 2SK2677 Single Avalanche Energy Derating



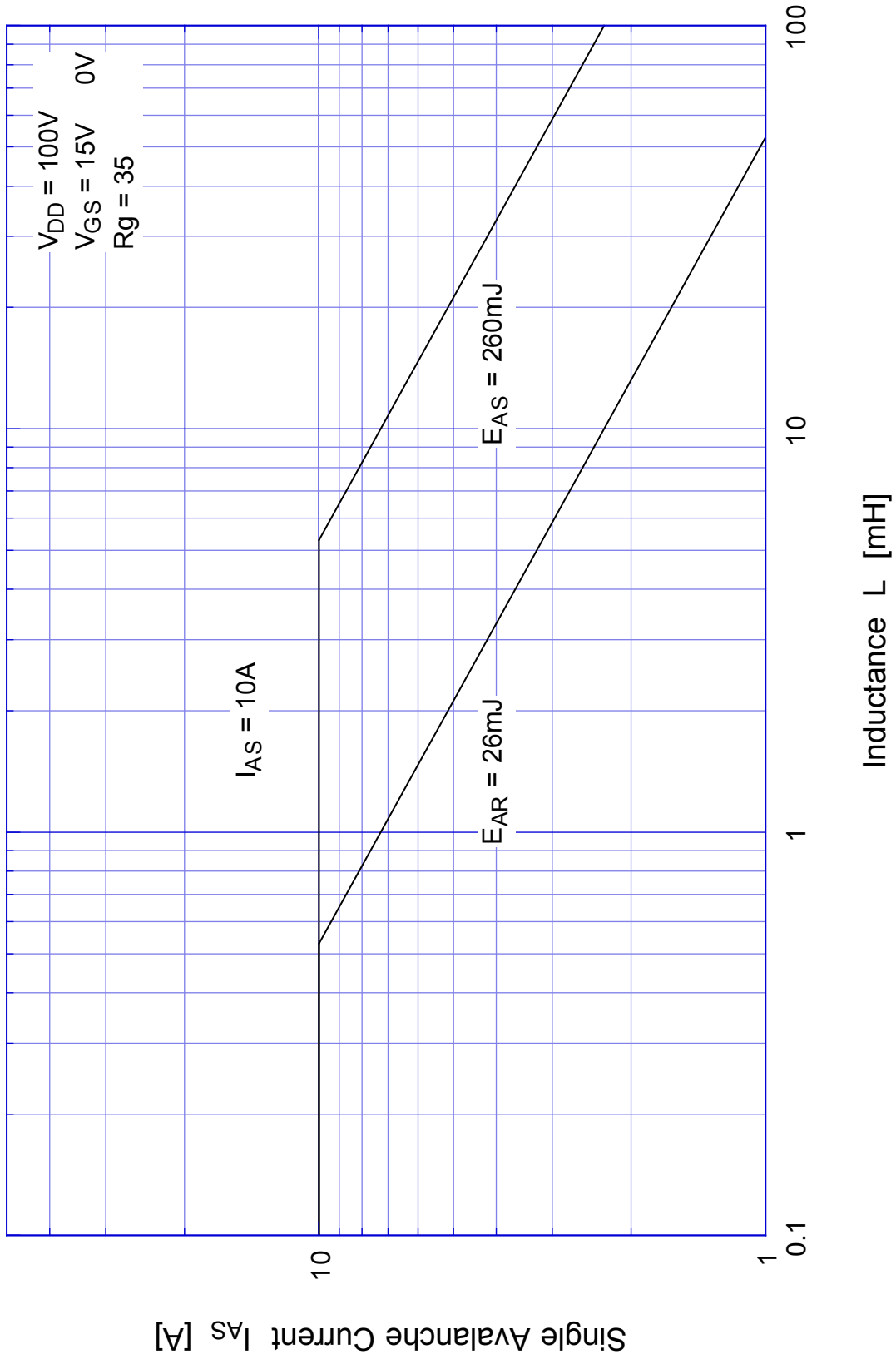


2SK2677 Capacitance



# 2SK2677

## Single Avalanche Current - Inductive Load



2SK2677

Power Derating



## 2SK2677 Gate Charge Characteristics

