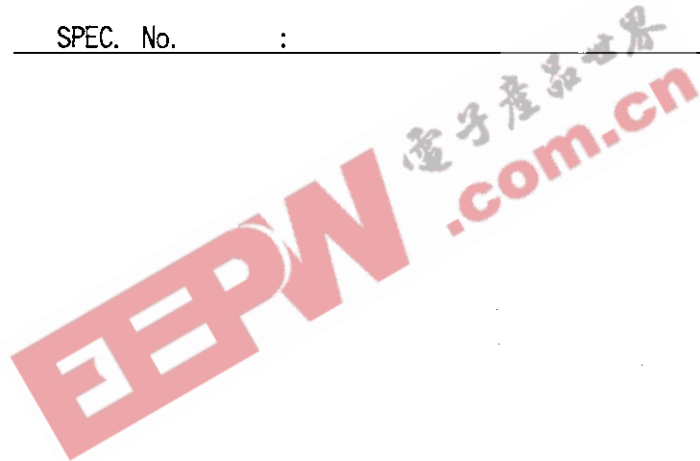


SPECIFICATION

DEVICE NAME : Power MOSFET

TYPE NAME : 2SK2833-R

SPEC. No. :



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Fuji Electric Co., Ltd.
Matsumoto Factory

This Specification is subject to change without notice.

| | DATE | NAME | APPROVED | Fuji Electric Co., Ltd | |
|---------|------|------|----------|------------------------|------|
| DRAWN | | | | DWG. NO. | 1/10 |
| CHECKED | | | | | |
| | | | | | |

1. Scope
This specifies Fuji power MOSFET 2SK2833-R
2. Construction N-channel enhancement mode power MOSFET
3. Application for switching
4. Outview T0-3PF Outview See to 4/10 page
5. Absolute maximum ratings at $T_c=25^\circ\text{C}$ (unless otherwise specified)

| Description | Symbol | Characteristics | Unit | |
|---|--------------|-----------------|------------------|------------------------------|
| Drain-source voltage | V_{DS} | 120 | V | |
| Drain-gate voltage | V_{DGR} | 120 | V | $R_{GS} = 20\text{ k}\Omega$ |
| Continuous Drain current | I_D | ± 50 | A | |
| Pulsed drain current | I_{Dpulso} | ± 200 | A | |
| Gate-source voltage | V_{GS} | ± 20 | V | |
| Maximum power dissipation | P_D | 100 | W | |
| Operating and storage temperature range | T_{ch} | 150 | $^\circ\text{C}$ | |
| | T_{sto} | -55 ~ +150 | $^\circ\text{C}$ | |

6. Electrical characteristics at $T_c=25^\circ\text{C}$ (unless otherwise specified)

Static ratings

| Description | Symbol | Conditions | Characteristics | | | Unit | |
|----------------------------------|--------------|---|------------------------------|------|------|---------------|------------|
| | | | Min. | Typ. | Max. | | |
| Drain-source breakdown voltage | BV_{DSS} | $I_D = 1\text{mA}$ $V_{GS} = 0\text{V}$ | 120 | | | V | |
| Gate threshold voltage | $V_{GS(th)}$ | $I_D = 1\text{mA}$ $V_{DS} = V_{GS}$ | 1.0 | 1.5 | 2.5 | V | |
| Zero gate voltage drain current | I_{DSS} | $V_{DS} = 120\text{V}$ $V_{GS} = 0\text{V}$ | $T_{ch} = 25^\circ\text{C}$ | 10 | 500 | μA | |
| | I_{DSS} | | $T_{ch} = 125^\circ\text{C}$ | 0.2 | 1.0 | mA | |
| Gate-source leakage current | I_{GSS} | $V_{GS} = \pm 20\text{V}$ $V_{DS} = 0\text{V}$ | | 10 | 100 | nA | |
| Drain-source on-state resistance | $R_{DS(on)}$ | $I_D = 25\text{A}$ | $V_{GS} = 4\text{V}$ | | 25 | 45 | m Ω |
| | | | $V_{GS} = 10\text{V}$ | | 20 | 30 | |

Dynamic ratings

| Description | Symbol | Conditions | Characteristics | | | Unit |
|------------------------------|--------------|--|-----------------|------|------|------|
| | | | Min. | Typ. | Max. | |
| Forward transconductance | g_{fs} | $I_D = 25A$ $V_{DS} = 25V$ | 25 | 50 | | S |
| Input capacitance | C_{iss} | $V_{DS} = 25V$ $V_{GS} = 0V$ $f = 1MHz$ | | 5000 | 7500 | pF |
| Output capacitance | C_{oss} | | | 920 | 1380 | pF |
| Reverse transfer capacitance | C_{rss} | | | 500 | 750 | pF |
| Turn-on time | $t_{d(on)}$ | $V_{CC} = 60V$ $V_{GS} = 10V$ $I_D = 50A$ $R_{GS} = 25\Omega$ | | 30 | 45 | ns |
| | t_r | | | 200 | 300 | ns |
| Turn-off time | $t_{d(off)}$ | | | 950 | 1425 | ns |
| | t_f | | | 400 | 600 | ns |

Reverse diode

| Description | Symbol | Conditions | Characteristics | | | Unit |
|--------------------------|----------|---|-----------------|------|------|---------|
| | | | Min. | Typ. | Max. | |
| Diode forward on-voltage | V_{SD} | $I_F = 2 \times I_{DR}$ $V_{GS} = 0V, T_{ch} = 25^\circ C$ | | 1.33 | 2.0 | V |
| Reverse recovery time | t_{rr} | $I_F = I_{DR}$ $V_{GS} = 0V$ $-di_F/dt = 100A/\mu s$ $T_{ch} = 25^\circ C$ | | 150 | | ns |
| Reverse recovery charge | Q_{rr} | | | 1.1 | | μC |

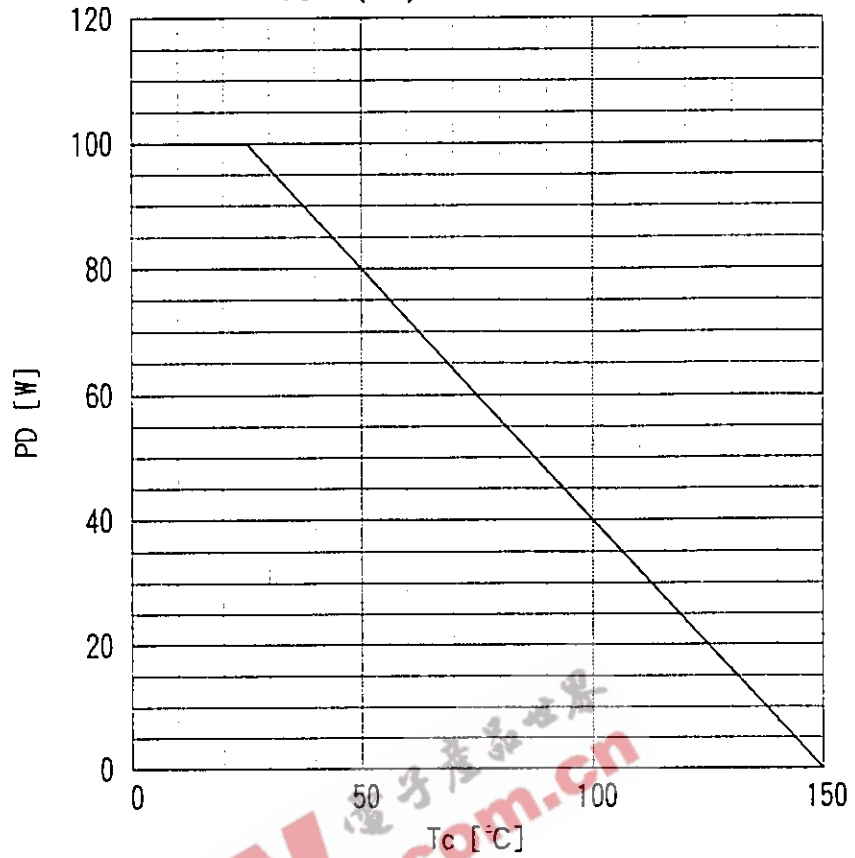
7. Thermal resistance

| Description | Symbol | Conditions | Characteristics | | | Unit |
|--------------------|-----------------|------------|-----------------|------|------|--------------|
| | | | Min. | Typ. | Max. | |
| Thermal resistance | $R_{th_{ch-c}}$ | | | | 1.25 | $^\circ C/W$ |
| | $R_{th_{ch-a}}$ | | | | 30 | $^\circ C/W$ |

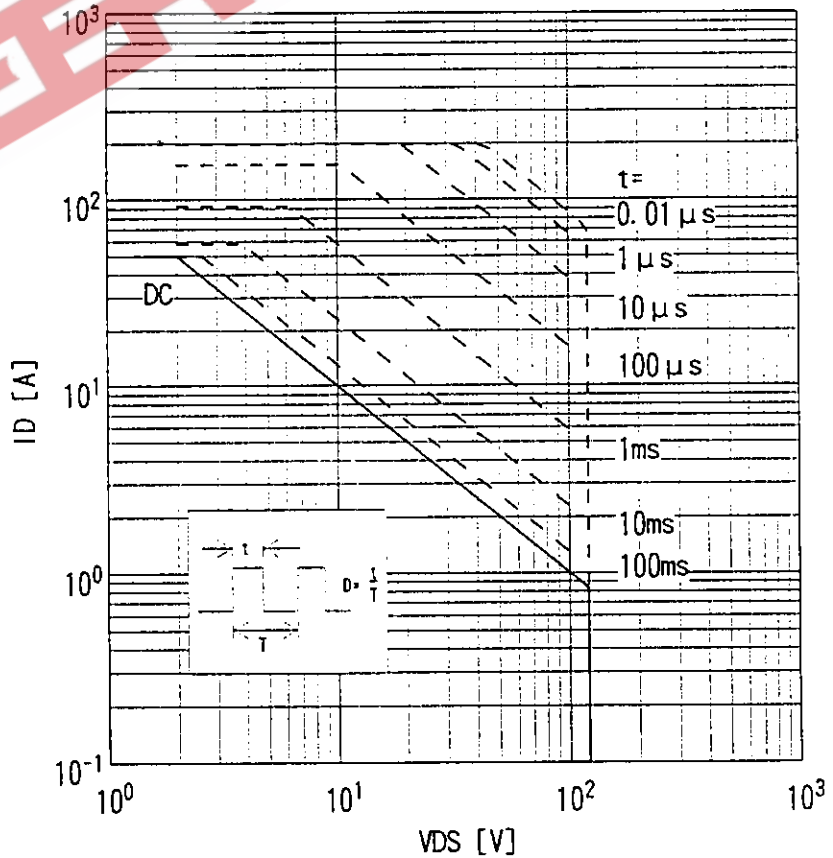
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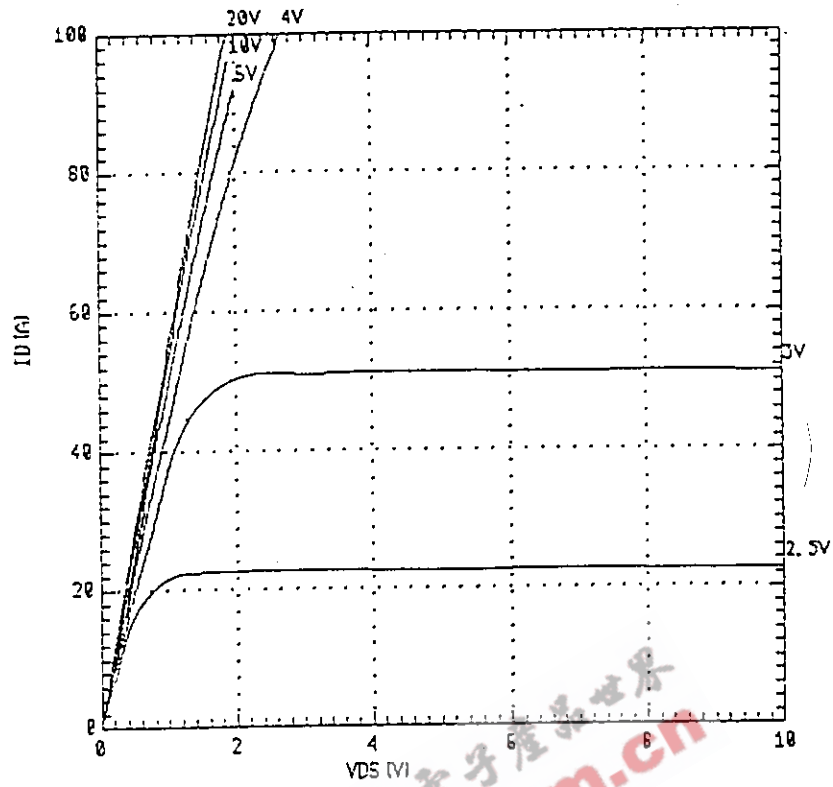
Power Dissipation
 $PD=f(T_c)$



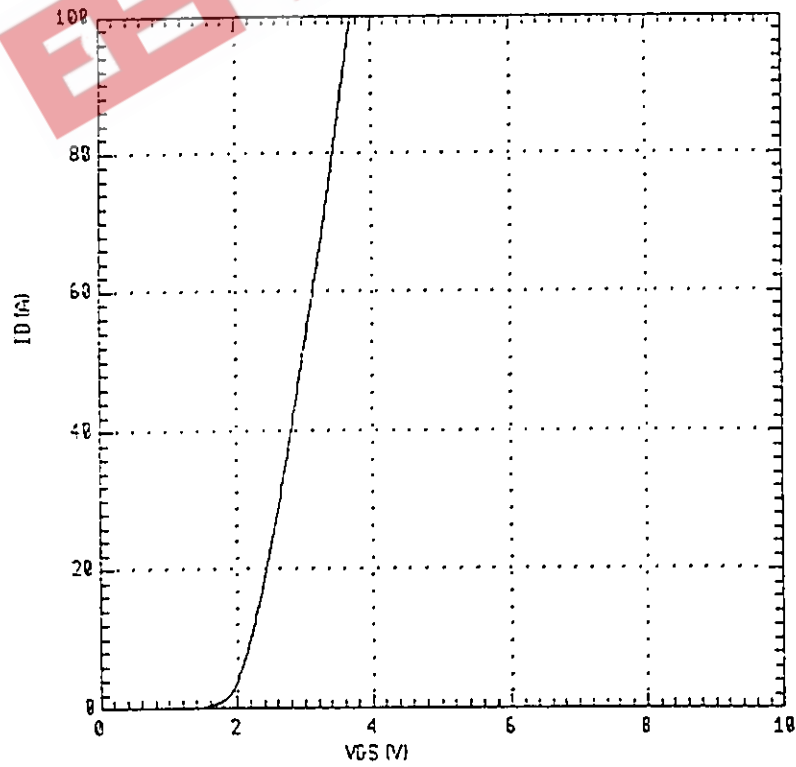
Safe operating area
 $ID=f(V_{DS}):D=0.01, T_c=25^\circ\text{C}$



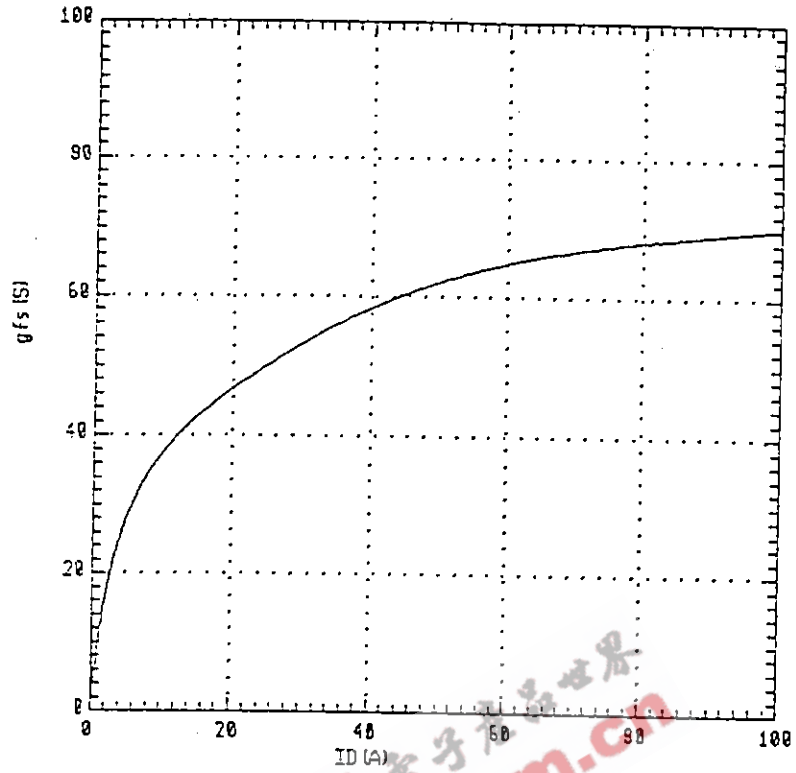
Typical output characteristics
 $I_D = f(V_{DS})$: 80 μ s pulse test, $T_{ch} = 25^\circ\text{C}$



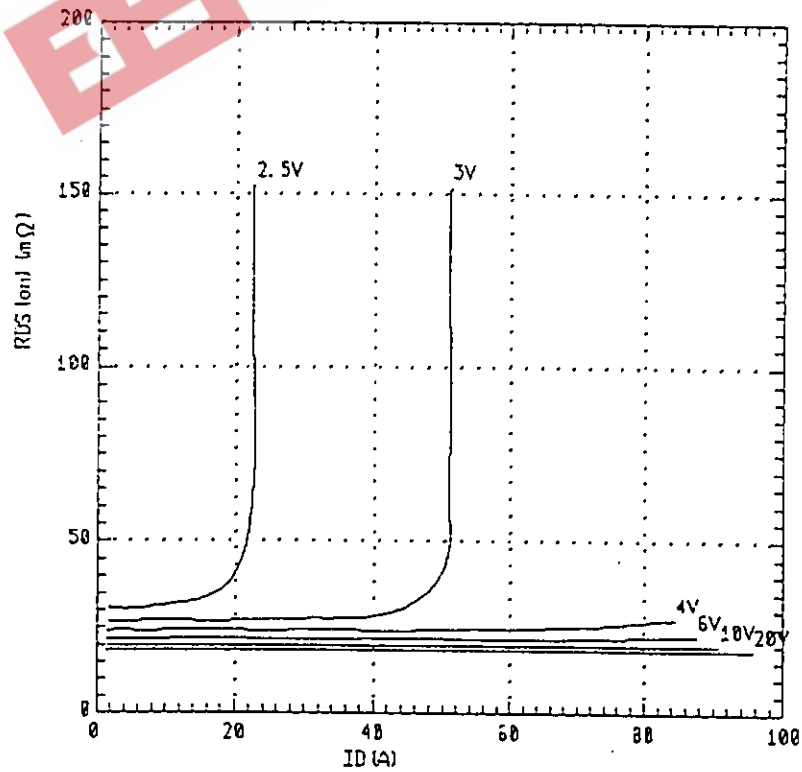
Typical Transfer Characteristic
 $I_D = f(V_{GS})$: 80 μ s pulse test, $V_{DS} = 25\text{V}$



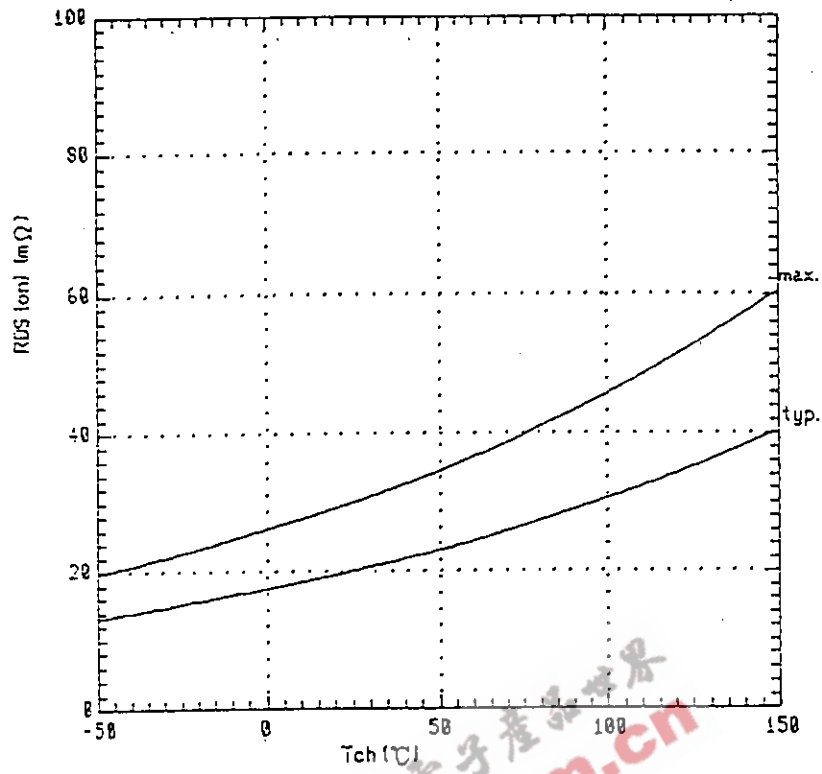
Typical Transconductance
 $g_{fs}=f(I_D): 80\mu s$ pulse test, $V_{DS}=25V, T_{ch}=25^\circ C$



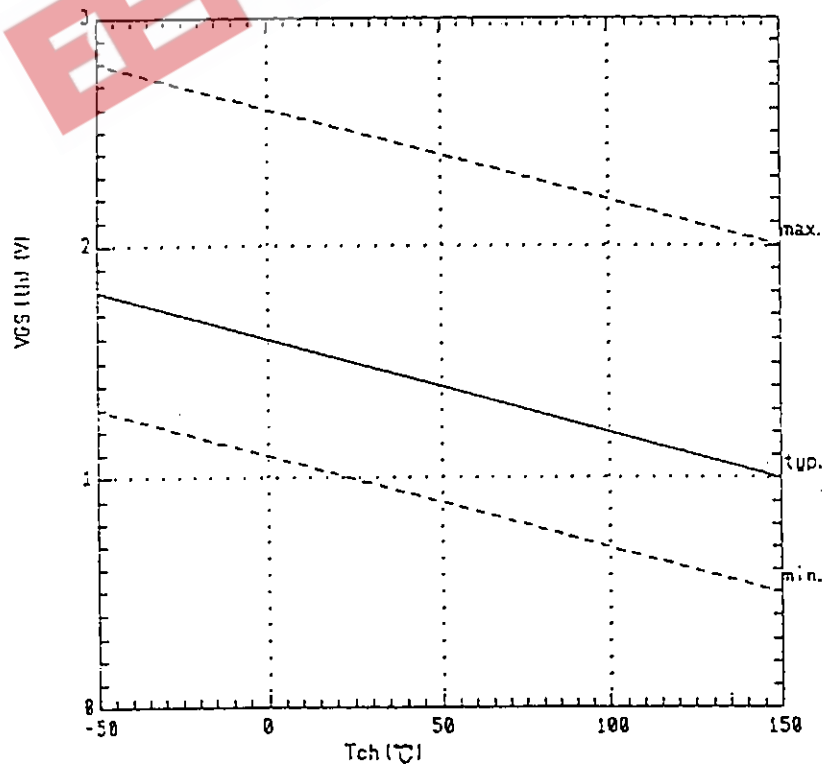
Typical Drain-source on-state resistance
 $R_{DS(on)}=f(I_D): 80\mu s$ pulse test, $T_{ch}=25^\circ C$



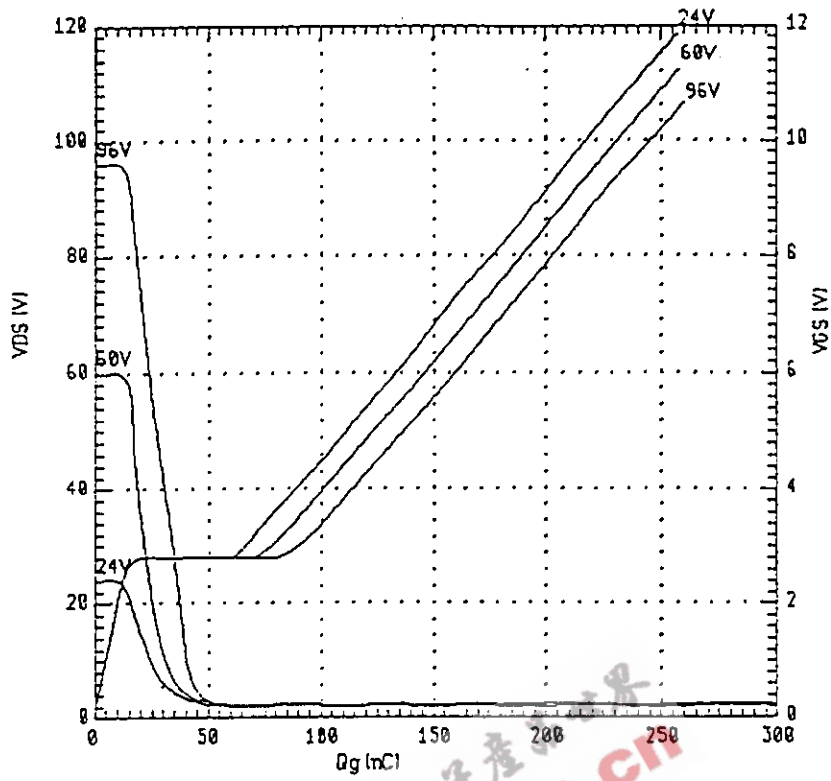
Drain-source on-state resistance
 $R_{DS(on)} = f(T_{ch}) : I_D = 25A, V_{GS} = 10V$



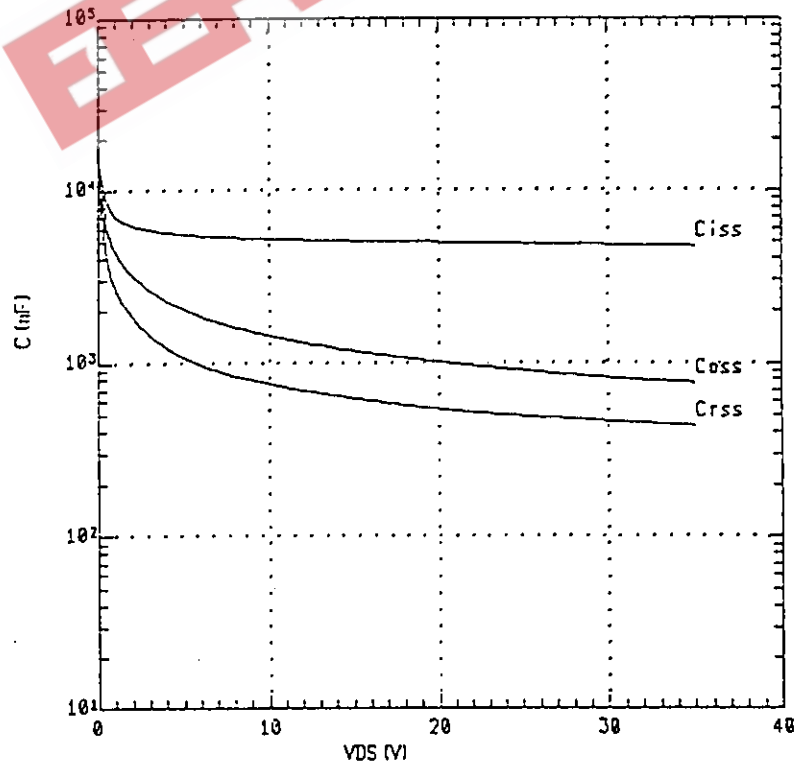
Gate threshold voltage
 $V_{GS(th)} = f(T_{ch}) : V_{DS} = V_{GS}, I_D = 1mA$



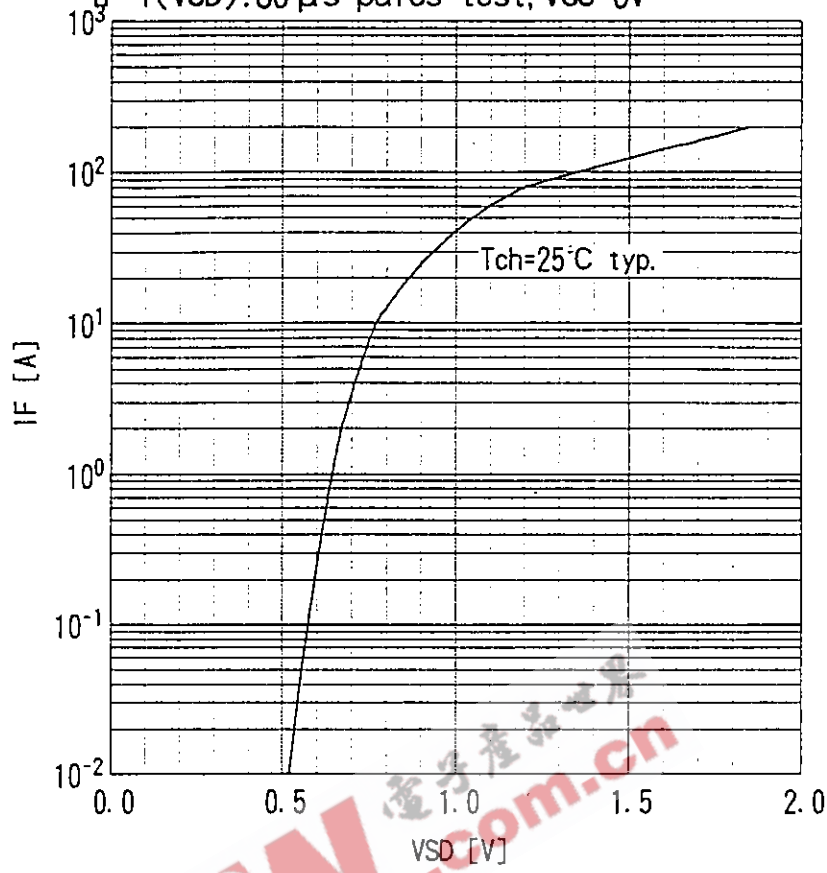
Typical gate charge characteristics
 $V_{GS} = f(Q_g) : I_D = 50A$



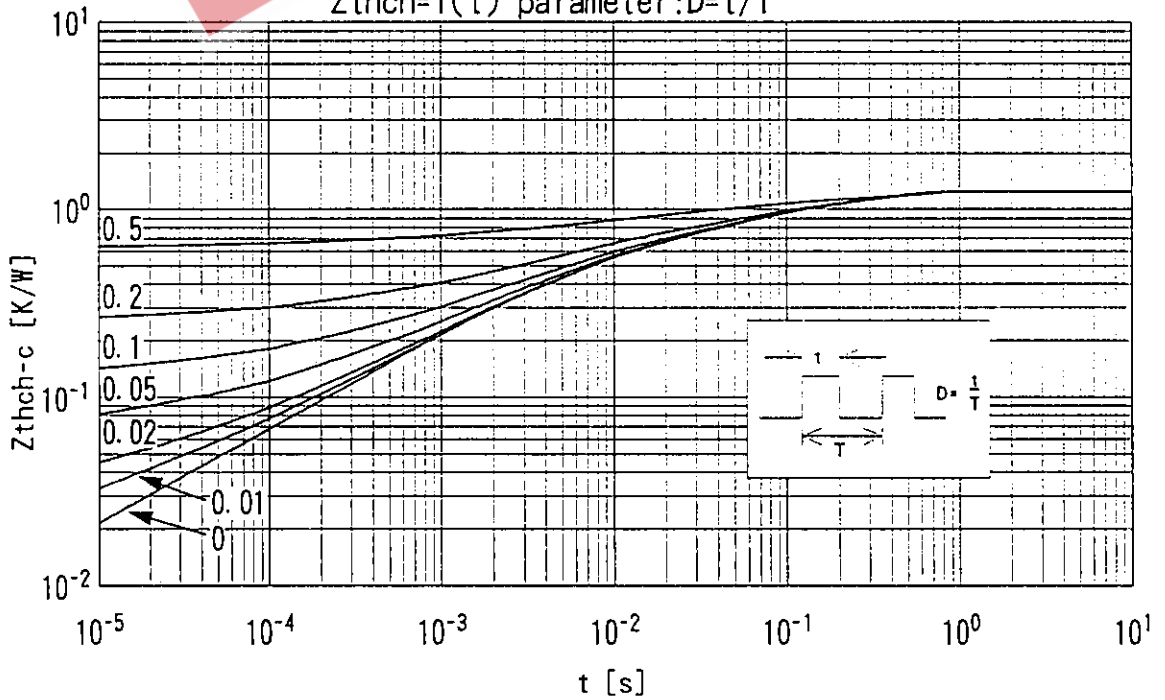
Typical capacitances
 $C = f(V_{DS}) : V_{GS} = 0V, f = 1MHz$



Forward characteristic of reverse of diode
 $I_F = f(V_{SD})$: 80 μ s pules test, $V_{GS} = 0V$



Transient thermal impedande
 $Z_{thch} = f(t)$ parameter: $D = t/T$



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