

勝特力材料 886-3-5753170  
 勝特力电子(上海) 86-21-54151736  
 勝特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)

# SPECIFICATION

DEVICE NAME : Power MOSFET

TYPE NAME : 2SK2850-01

SPEC. NO. : - - - - -

Fuji Electric Co.,Ltd.

This Specification is subject to change without notice.

|         |      |      |          |   |
|---------|------|------|----------|---|
|         | DATE | NAME | APPROVED | Fuji Electric Co.,Ltd.                          |
| DRAWN   |      |      |          |   |
| CHECKED |      |      |          |   |
|         |      |      |          | DWG. NO. <span style="float: right;">1/2</span> |

1.Scope This specifies Fuji Power MOSFET 2SK2850-01

2.Construction N-Channel enhancement mode power MOSFET

3.Applications for Switching

4.Outview TO-3P Outview See to 5/12 page

5.Absolute Maximum Ratings at Tc=25°C (unless otherwise specified)

| Description               | Symbol           | Characteristics | Unit | Remarks |
|---------------------------|------------------|-----------------|------|---------|
| Drain-Source Voltage      | V <sub>DS</sub>  | 900             | V    |         |
| Continuous Drain Current  | I <sub>D</sub>   | ±6              | A    |         |
| Pulsed Drain Current      | I <sub>DP</sub>  | ±24             | A    |         |
| Gate-Source Voltage       | V <sub>GS</sub>  | ±30             | V    |         |
| Maximum Avalanche Energy  | E <sub>AV</sub>  | 277             | mJ   | *1      |
| Maximum Power Dissipation | P <sub>D</sub>   | 125             | W    |         |
| Operating and Storage     | T <sub>ch</sub>  | 150             | °C   |         |
| Temperature range         | T <sub>stg</sub> | -55 to +150     | °C   |         |

\*1 L=14.1mH,Vcc=90V

6.Electrical Characteristics at Tc=25°C (unless otherwise specified)

Static Ratings

| Description                         | Symbol              | Conditions  | min. | typ. | max. | Unit |
|-------------------------------------|---------------------|---|------|------|------|------|
| Drain-Source<br>Breakdown Voltage   | BV <sub>DSS</sub>   | I <sub>D</sub> =1mA<br>V <sub>GS</sub> =0V              | 900  |      |      | V    |
| Gate Threshold<br>Voltage           | V <sub>GS(th)</sub> | I <sub>C</sub> =1mA<br>V <sub>DS</sub> =V <sub>GS</sub> | 2.5  | 3.0  | 3.5  | V    |
| Zero Gate Voltage<br>Drain Current  | I <sub>DSS</sub>    | V <sub>DS</sub> =900V<br>V <sub>GS</sub> =0V            |      | 10   | 500  | μA   |
|                                     |                     | T <sub>ch</sub> =25°C                                   |      |      |      |      |
|                                     |                     | T <sub>ch</sub> =125°C                                  |      | 0.2  | 1.0  | mA   |
| Gate-Source<br>Leakage Current      | I <sub>GSS</sub>    | V <sub>GS</sub> =±30V<br>V <sub>DS</sub> =0V            |      | 10   | 100  | nA   |
| Drain-Source<br>On-State Resistance | R <sub>DS(on)</sub> | I <sub>D</sub> =3A<br>V <sub>GS</sub> =10V              |      | 1.87 | 2.5  | Ω    |

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### Dynamic Ratings

| Description                  | Symbol       | Conditions               | min. | typ. | max. | Unit |
|------------------------------|--------------|--------------------------|------|------|------|------|
| Forward Transconductance     | $g_{fs}$     | $I_D=3A$<br>$V_{DS}=25V$ | 2.0  | 4.0  |      | S    |
| Input Capacitance            | $C_{iss}$    | $V_{DS}=25V$             |      | 950  | 1450 | pF   |
| Output Capacitance           | $C_{oss}$    | $V_{GS}=0V$              |      | 140  | 210  |      |
| Reverse Transfer Capacitance | $C_{rss}$    | $f=1MHz$                 |      | 80   | 120  |      |
| Turn-On Time                 | $t_{d(on)}$  | $V_{cc}=600V$            |      | 20   | 30   | ns   |
|                              | $t_r$        | $V_{GS}=10V$             |      | 50   | 80   |      |
| Turn-Off Time                | $t_{d(off)}$ | $I_D=6A$                 |      | 110  | 170  | ns   |
|                              | $t_f$        | $R_{GS}=10\Omega$        |      | 60   | 90   |      |

### Reverse Diode

| Description              | Symbol   | Conditions   | min. | typ. | max. | Unit    |
|--------------------------|----------|--|------|------|------|---------|
| Avalanche Capability     | $I_{AV}$ | $L=100\mu H$ $T_{ch}=25^\circ C$<br>See Fig.1 and Fig.2  | 6    |      |      | A       |
| Diode Forward On-Voltage | $V_{SD}$ | $I_F=2 \times I_{DR}$<br>$V_{GS}=0V$ $T_{ch}=25^\circ C$ |      | 1.0  | 1.5  | V       |
| Reverse Recovery Time    | $t_{rr}$ | $I_F=I_{DR}$   |      | 900  |      | ns      |
| Reverse Recovery Charge  | $Q_{rr}$ | $-di/dt=100A/\mu s$<br>$T_{ch}=25^\circ C$               |      | 10   |      | $\mu C$ |

### 7. Thermal Resistance

| Description        | Symbol         | min. | typ. | max. | Unit         |
|--------------------|----------------|------|------|------|--------------|
| Channel to Case    | $R_{th(ch-c)}$ |      |      | 1.00 | $^\circ C/W$ |
| Channel to Ambient | $R_{th(ch-a)}$ |      |      | 35.0 | $^\circ C/W$ |

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Fig.1 Test Circuit

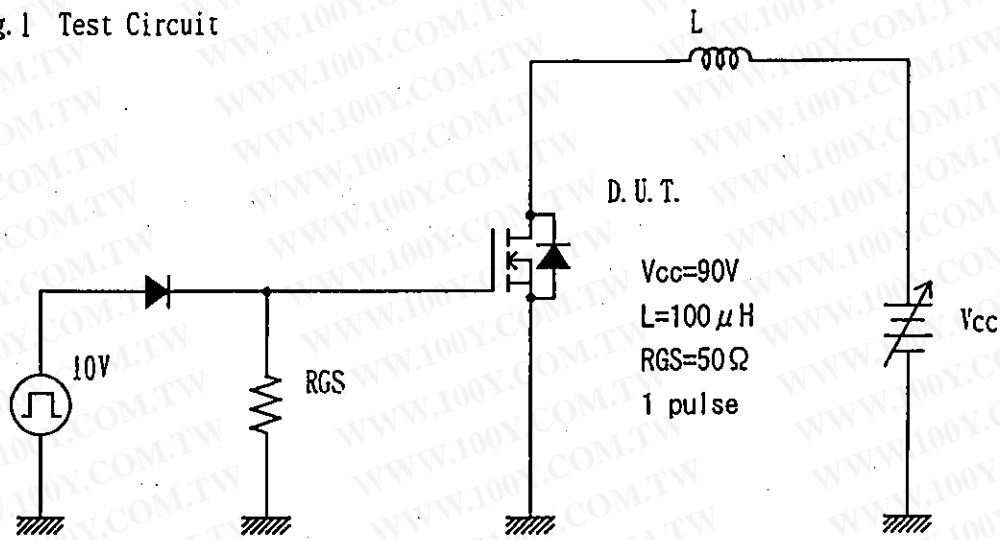
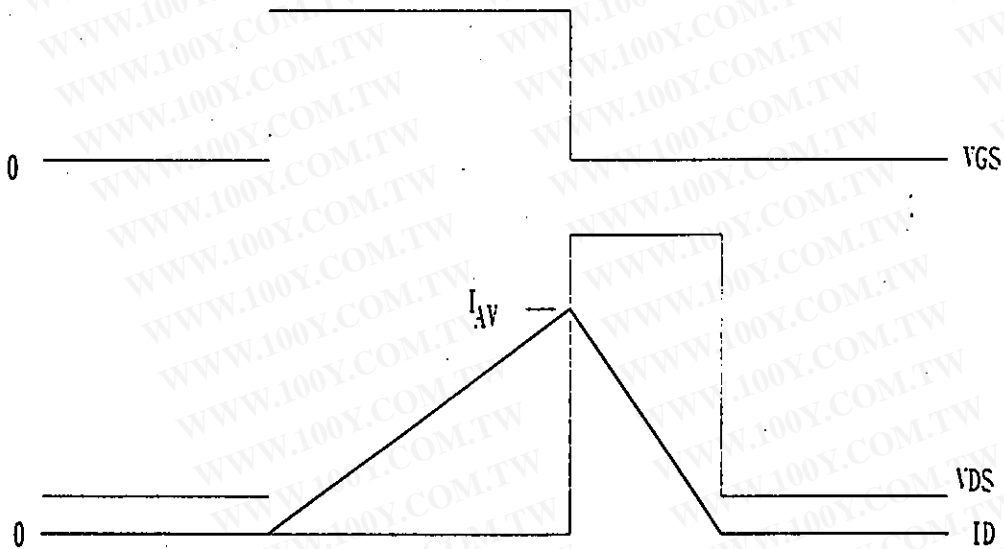


Fig.2 Operating waveforms

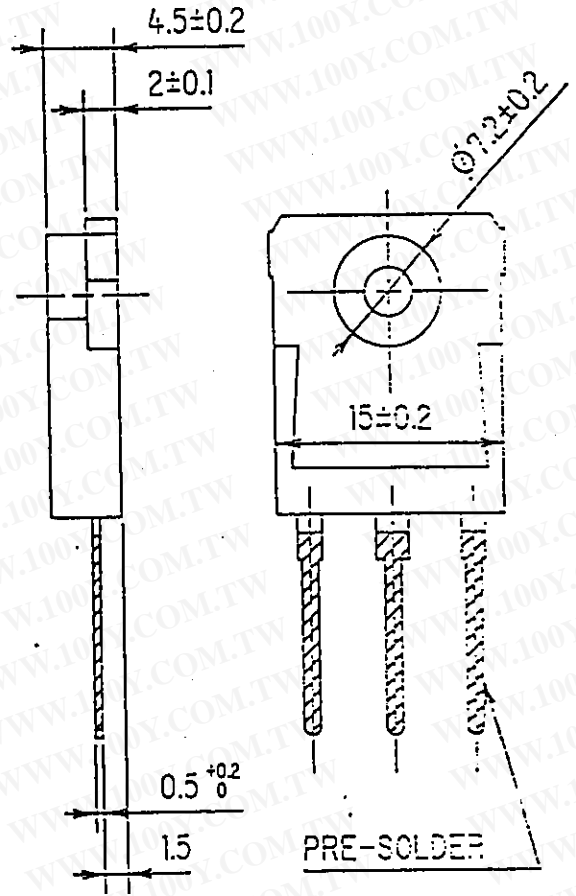
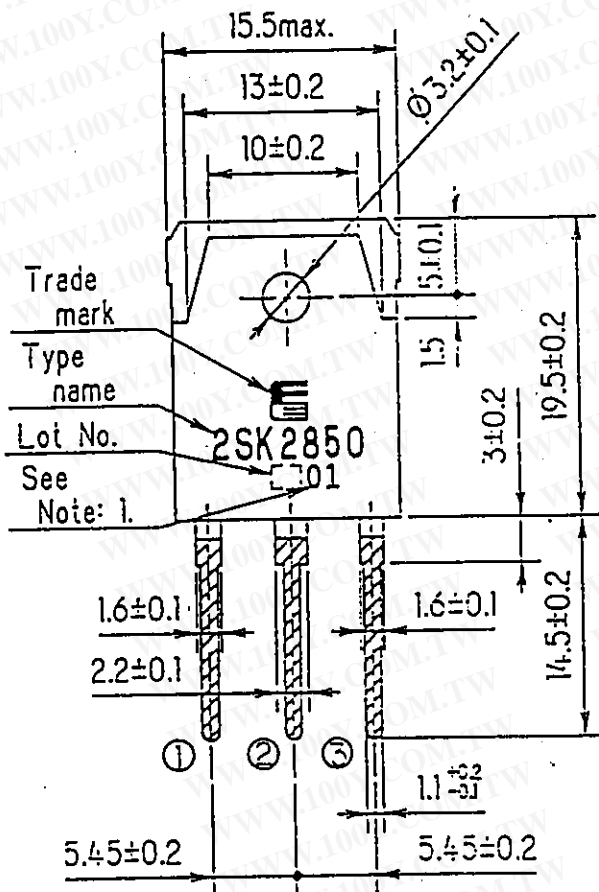


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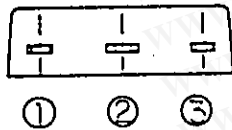
FUJI POWER MOS FET

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TYPE : 2SK2850-01



DIMENSIONS ARE IN MILLIMETERS.



CONNECTION

- ① GATE
- ② DRAIN
- ③ SOURCE

Note: 1. Guaranteed mark of avalanche ruggedness.

JEDEC : TO-247  
 EIAJ : SC-65

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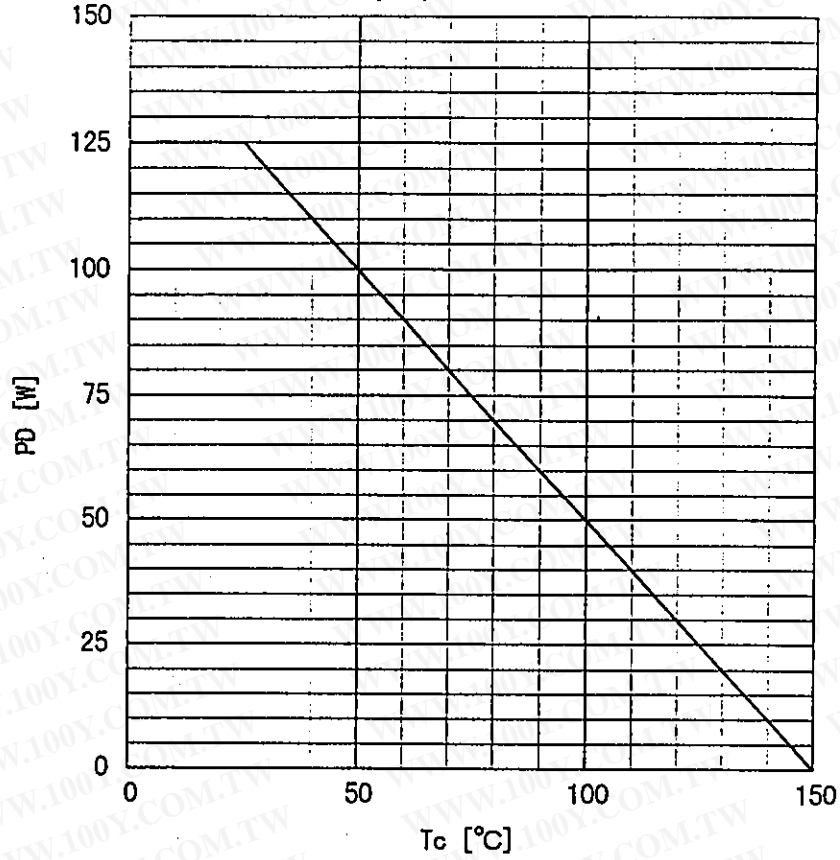
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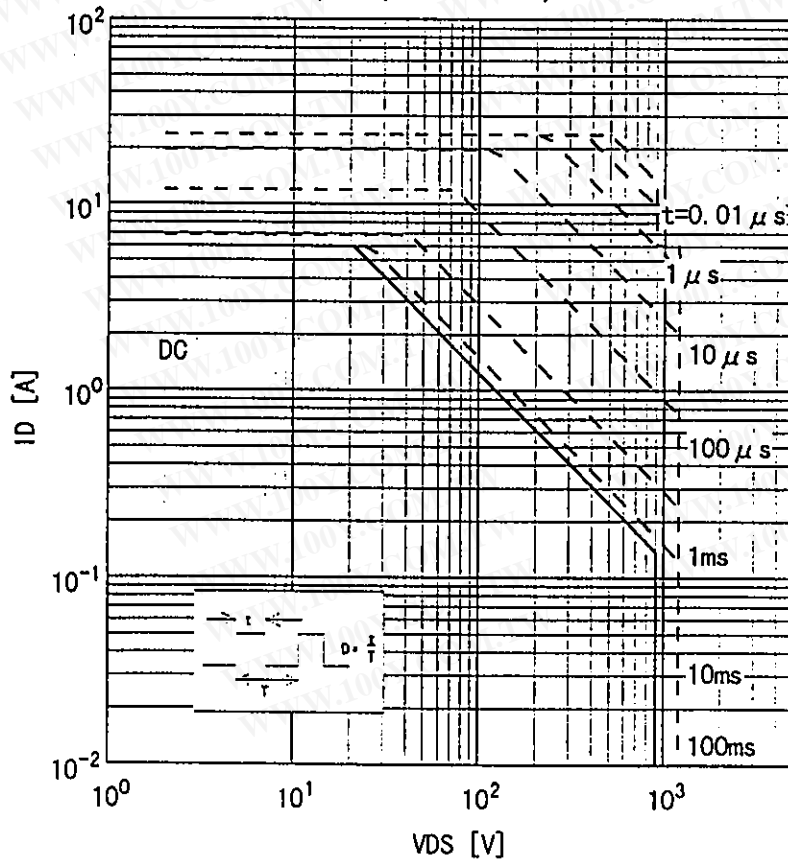
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Power Dissipation  
 $PD=f(T_c)$

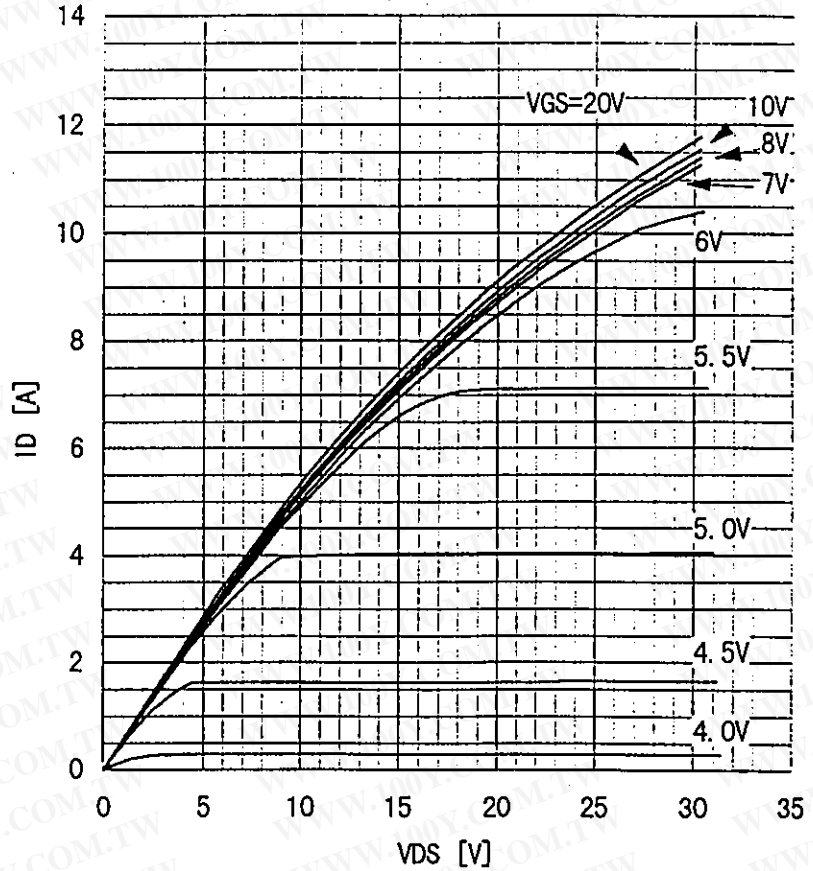


Safe operating area  
 $ID=f(V_{DS}) : D=0.01, T_c=25^\circ\text{C}$

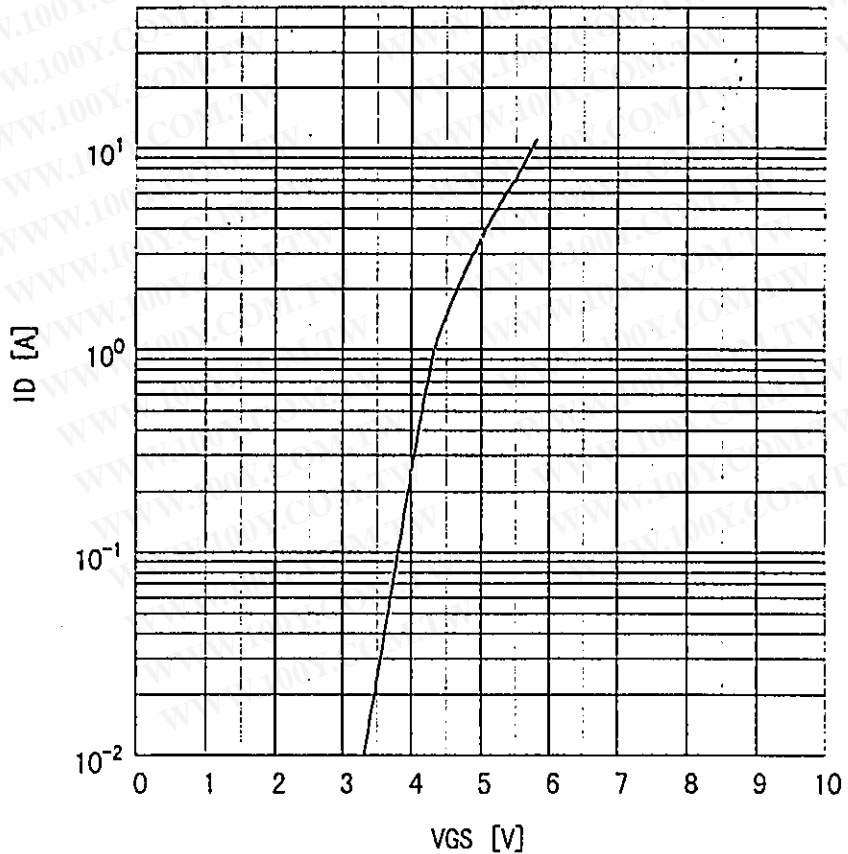


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Typical output characteristics  
 $I_D = f(V_{DS}) : 80 \mu s$  pulse test,  $T_c = 25^\circ C$

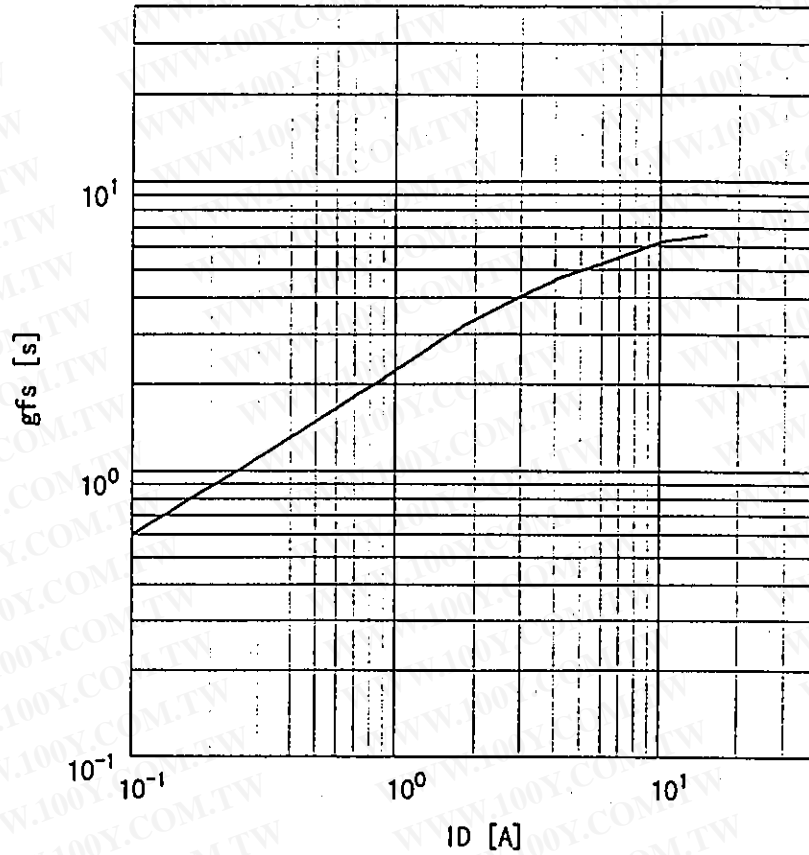


Typical transfer characteristic  
 $I_D = f(V_{GS}) : 80 \mu s$  pulse test,  $V_{DS} = 25V$ ,  $T_{ch} = 25^\circ C$

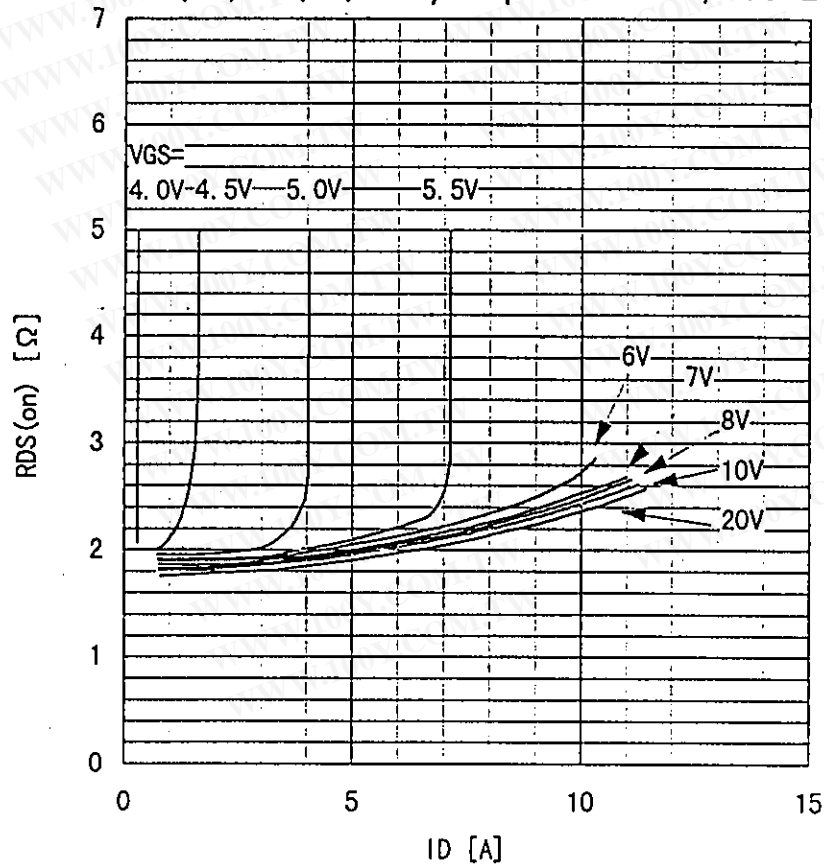


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Typical forward transconductance  
 $g_{fs}=f(I_D)$ : 80  $\mu$ s pulse test,  $V_{DS}=25V$ ,  $T_{ch}=25^\circ C$



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

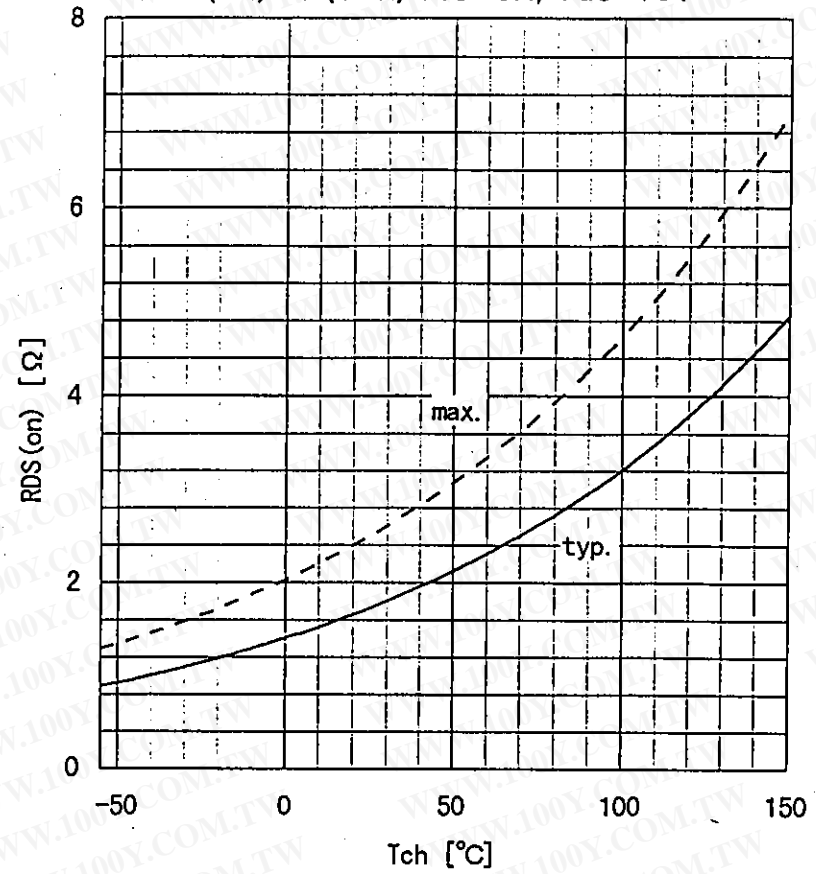


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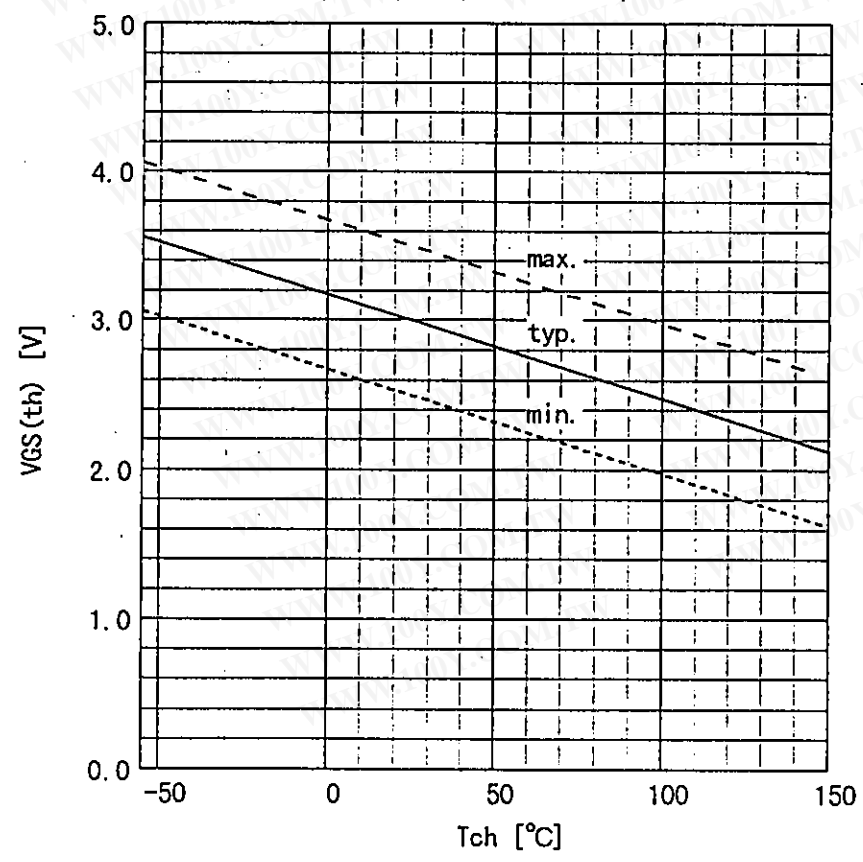


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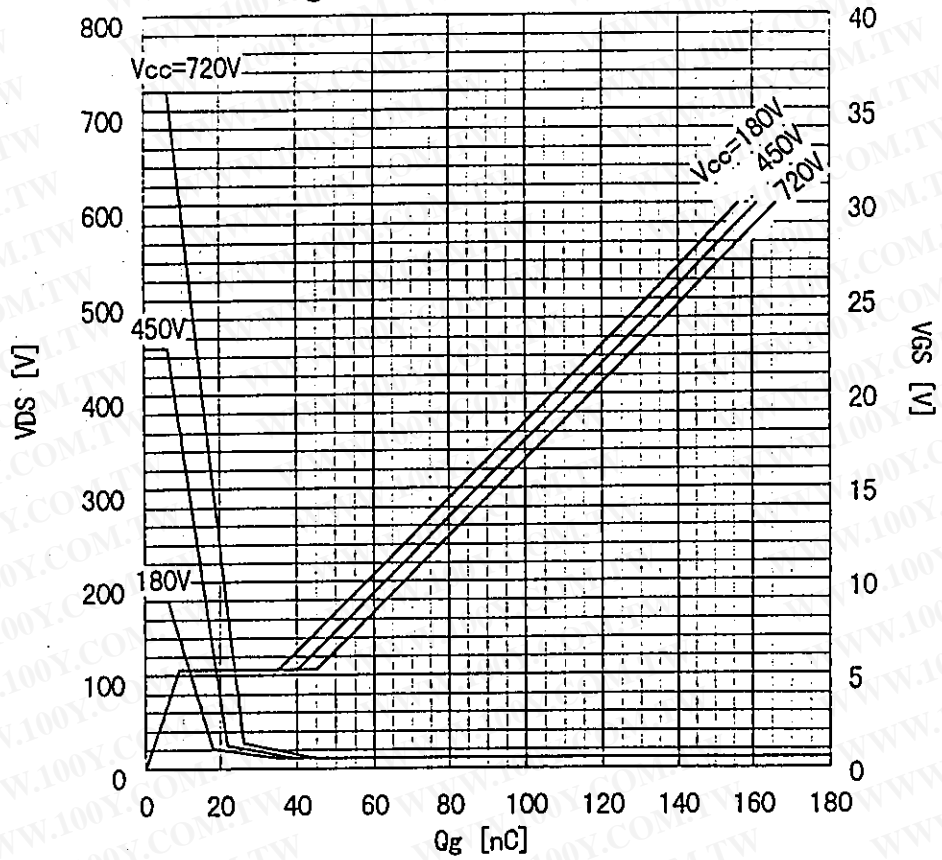
Drain-source on-state resistance  
 $R_{DS(on)} = f(T_{ch}) : I_D = 3A, V_{GS} = 10V$



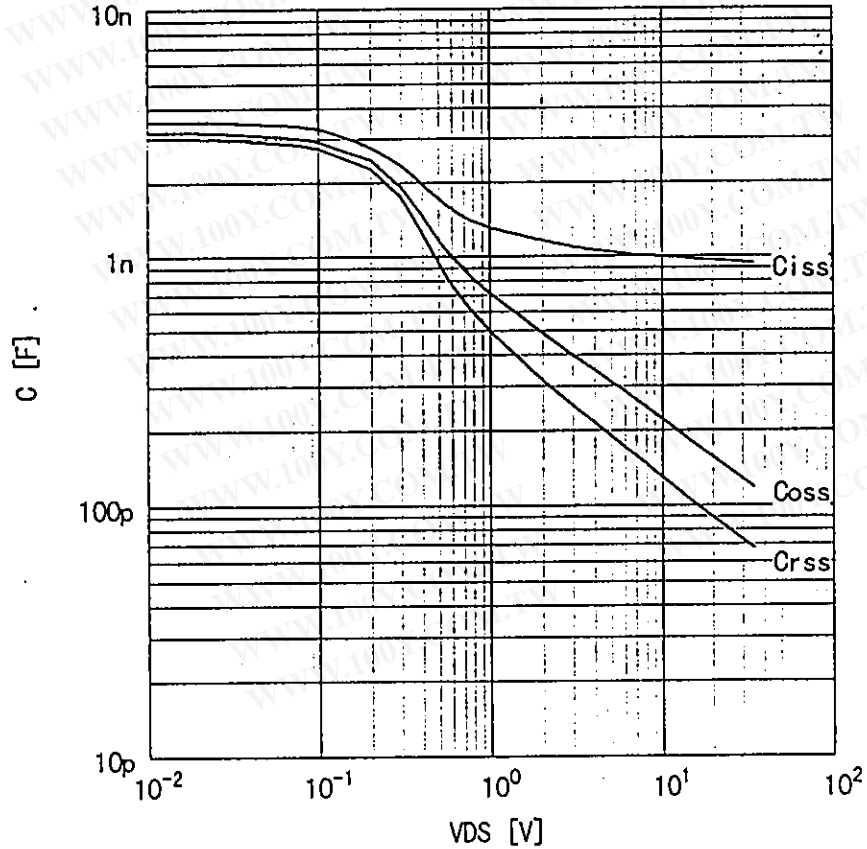
Gate threshold voltage  
 $V_{GS(th)} = f(T_{ch}) : I_D = 1mA, V_{DS} = V_{GS}$



Typical gate charge characteristic  
 $V_{GS} = f(Q_g) : I_D = 6A, T_c = 25^\circ C$



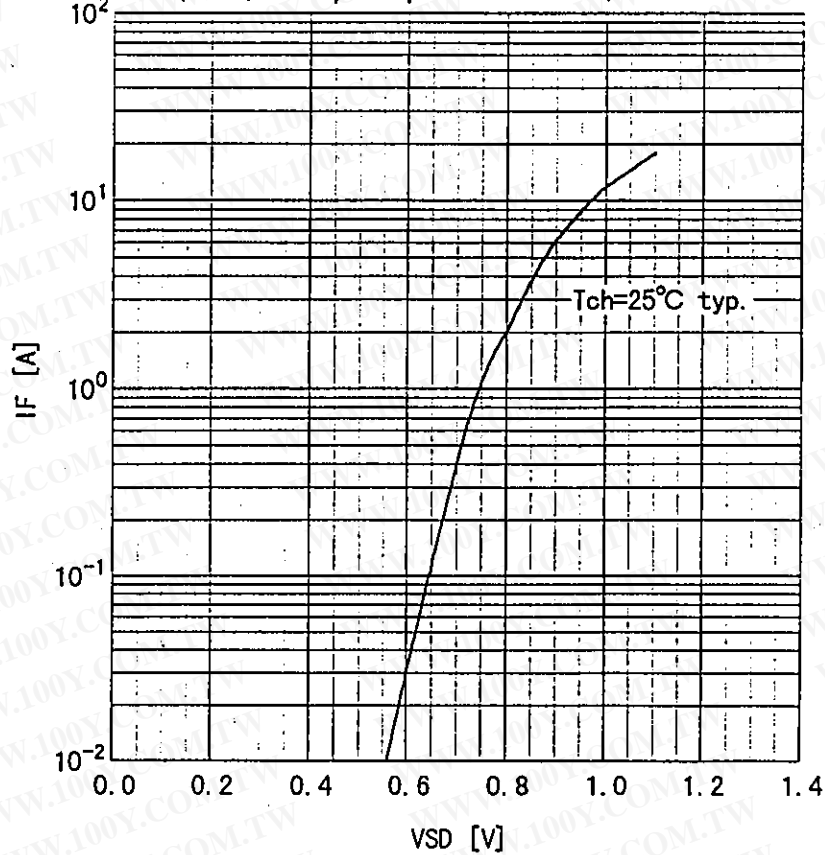
Typical capacitances  
 $C = f(V_{DS}) : V_{GS} = 0V, f = 1MHz$



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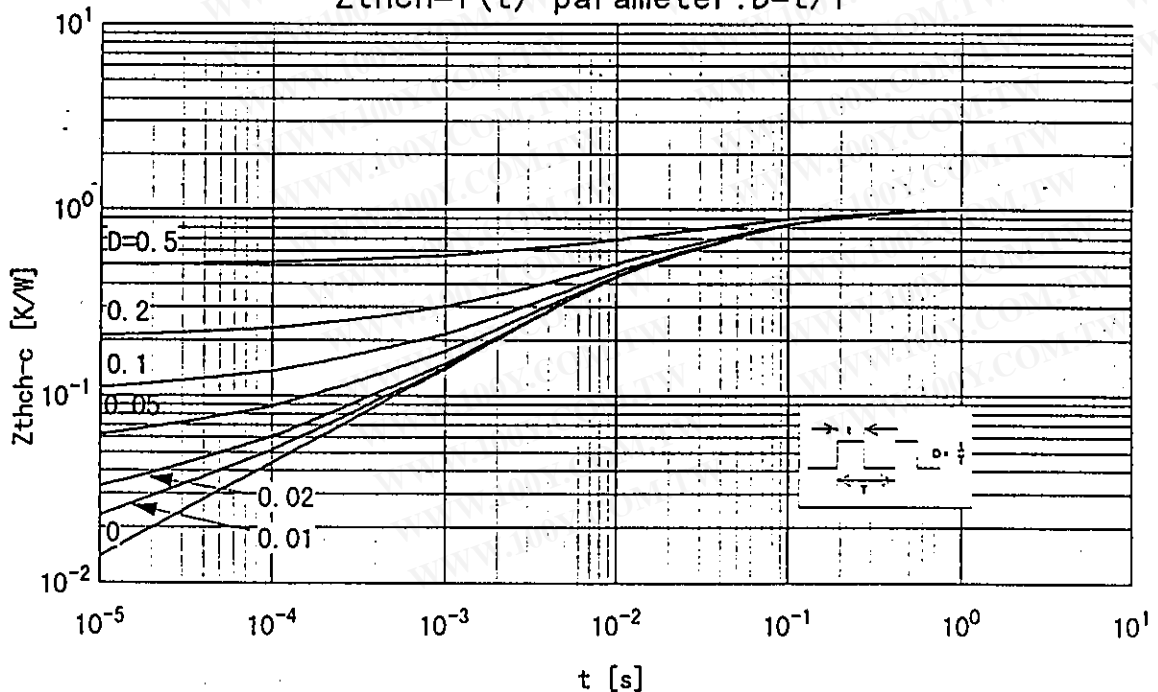
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Forward characteristic of reverse of diode  
 $I_F = f(V_{SD}) : 80 \mu s$  pulses test,  $V_{GS} = 0V$



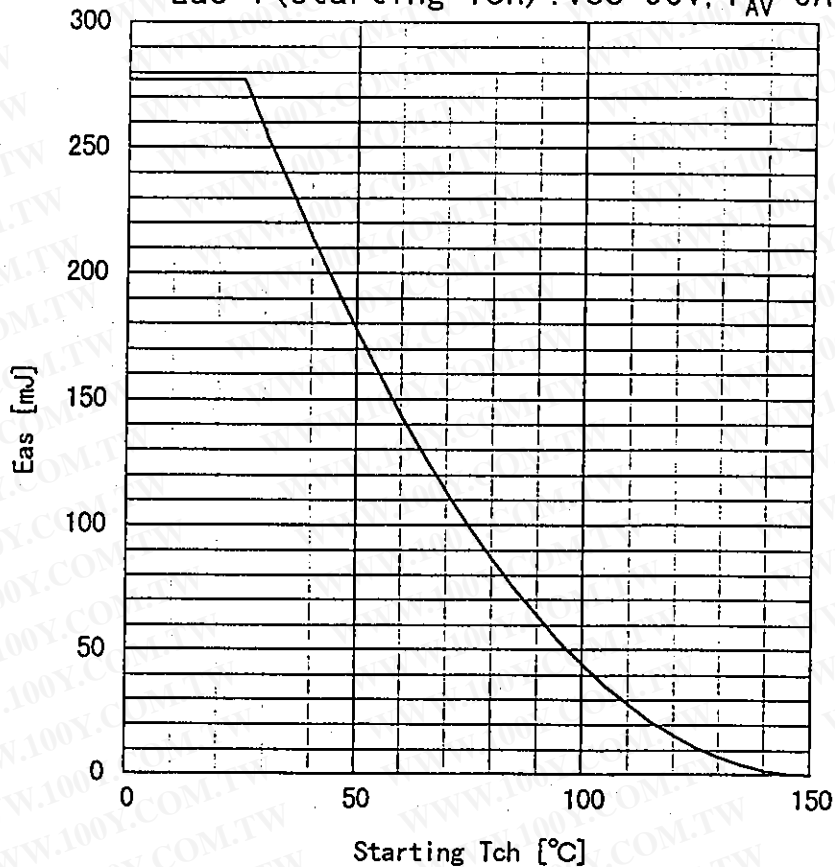
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Transient thermal impedance  
 $Z_{thch} = f(t)$  parameter:  $D = t/T$



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**Avalanche energy derating**  
 $E_{as} = f(\text{starting } T_{ch}) : V_{CC} = 90V, I_{AV} = 6A$



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