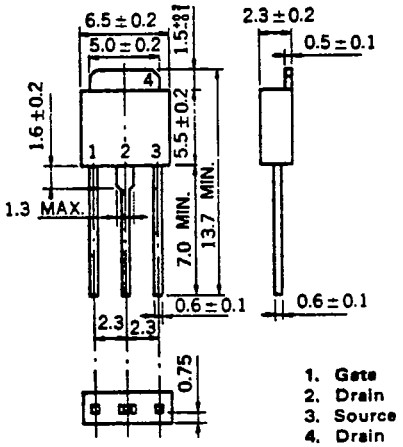
# MOS FIELD EFFECT POWER TRANSISTOR
# 2SK611

## FAST SWITCHING
## N-CHANNEL SILICON POWER MOS FET
## INDUSTRIAL USE

**PACKAGE DIMENSIONS** (Unit: mm)




**FEATURES**

- Suitable for switching power supplies, actuater controls, and pulse circuits.
- Low $C_{iss}$
- No second breakdown
- 4 V Gate Drive – Logic level –

**ABSOLUTE MAXIMUM RATINGS** ($T_a$ = 25 °C)

| | | | |
|---|---|---|---|
| Drain to Source Voltage | $V_{DSS}$ | 100 | V |
| Gate to Source Voltage | $V_{GSS}$ | ±20 | V |
| Continuous Drain Current | $I_{D(DC)}$ | ±1 | A |
| Peak Drain Current | $I_{D(pulse)}$* | ±3 | A |
| Total Power Dissipation | $P_T$** | 10 | W |
| Channel Temperature | $T_{ch}$ | 150 | °C |
| Storage Temperature | $T_{stg}$ | –55 to +150 | °C |

* PW ≦ 10 ms, Duty Cycle ≦ 50 %

** $T_c$ = 25 °C

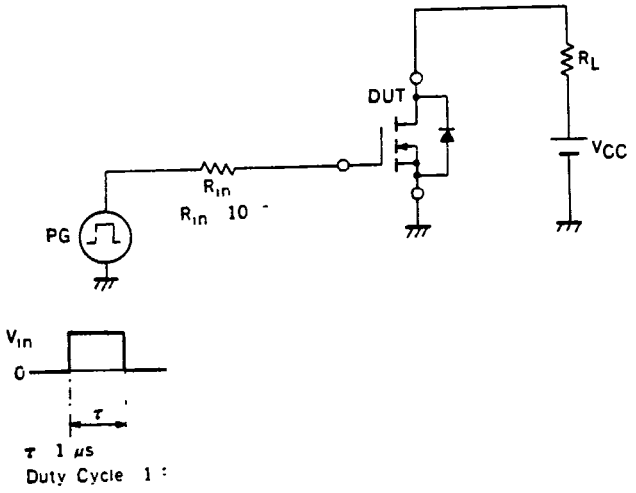
**ELECTRICAL CHARACTERISTICS** ($T_a$ = 25 °C)

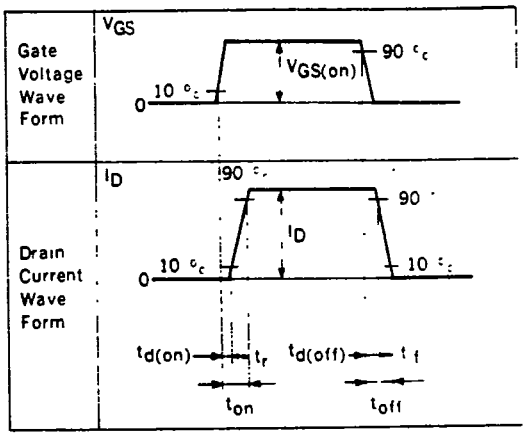
| CHARACTERISTIC | SYMBOL | MIN. | TYP. | MAX. | UNIT | TEST CONDITIONS |
|---|---|---|---|---|---|---|
| Drain Leakage Current | $I_{DSS}$ | | | 10 | μA | $V_{DS}$ = 80 V, $V_{GS}$ = 0 |
| Gate to Source Leakage Current | $I_{GSS}$ | | | ±100 | nA | $V_{GS}$ = ±15 V, $V_{DS}$ = 0 |
| Gate to Source Cutoff Voltage | $V_{GS(off)}$ | 0.8 | | 3.0 | V | $V_{DS}$ = 10 V, $I_D$ = 1 mA |
| Forward Transfer Admittance | $\|y_{fs}\|$ | 0.2 | | | S | $V_{DS}$ = 10 V, $I_D$ = 0.5 A |
| Drain to Source On-State Resistance | $R_{DS(on)}$ | | 3.0 | 5.0 | Ω | $V_{GS}$ = 10 V, $I_D$ = 0.5 A |
| Drain to Source On-State Resistance | $R_{DS(on)}$ | | 5.0 | 6.0 | Ω | $V_{GS}$ = 4 V, $I_D$ = 0.2 A |
| Input Capacitance | $C_{iss}$ | | 45 | | pF | $V_{DS}$ = 10 V, $V_{GS}$ = 0<br>f = 1 MHz |
| Output Capacitance | $C_{oss}$ | | 25 | | pF | |
| Reverse Transfer Capacitance | $C_{rss}$ | | 5 | | pF | |
| Turn-On Delay Time | $t_{d(on)}$ | | 2 | | ns | $I_D$ = 0.5 A, $V_{CC}$ ≒ 50 V<br>$V_{GS(on)}$ = 10 V<br>$R_L$ = 100 Ω<br>$R_{in}$ = 10 Ω |
| Rise Time | $t_r$ | | 10 | | ns | |
| Turn-Off Delay Time | $t_{d(off)}$ | | 10 | | ns | |
| Fall Time | $t_f$ | | 5 | | ns | |

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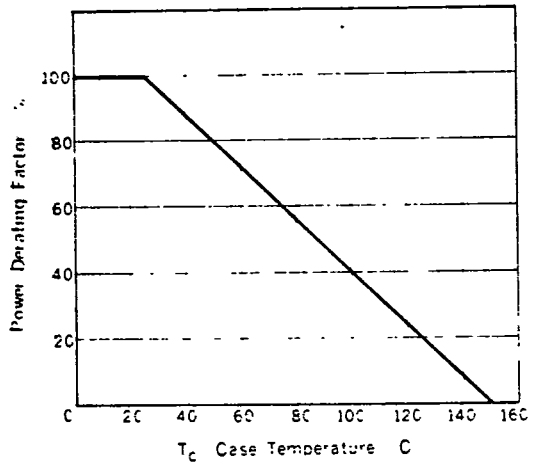
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## TURN-ON AND TURN-OFF TIME TEST CIRCUIT

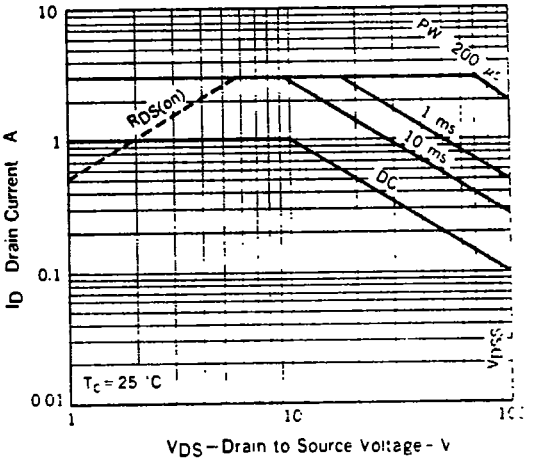


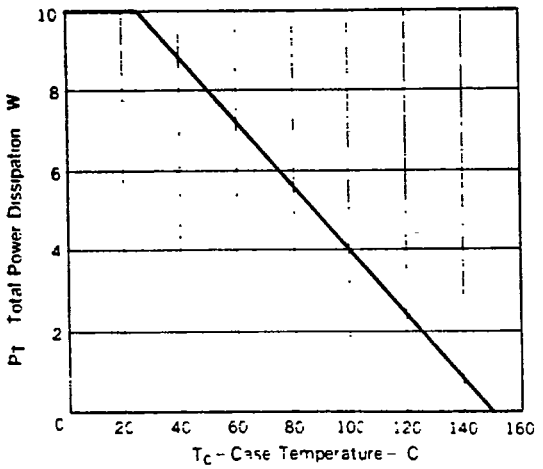

### DERATING FACTOR OF FORWARD BIAS SAFE OPERATING AREA



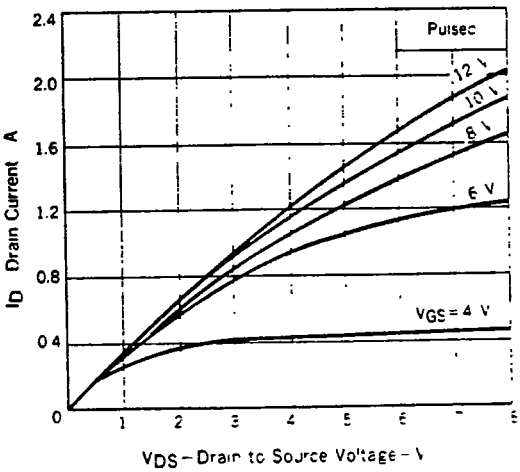

### FORWARD BIAS SAFE OPERATING AREA



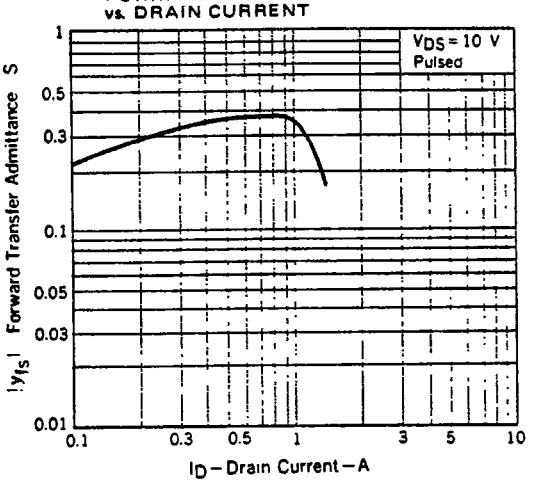

### TOTAL POWER DISSIPATION vs. CASE TEMPERATURE



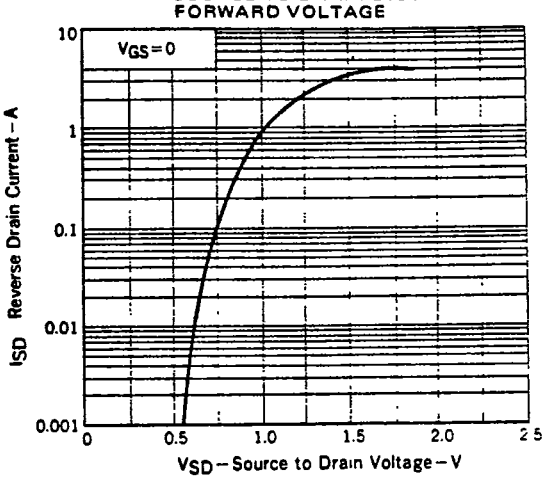

### DRAIN CURRENT vs. DRAIN TO SOURCE VOLTAGE



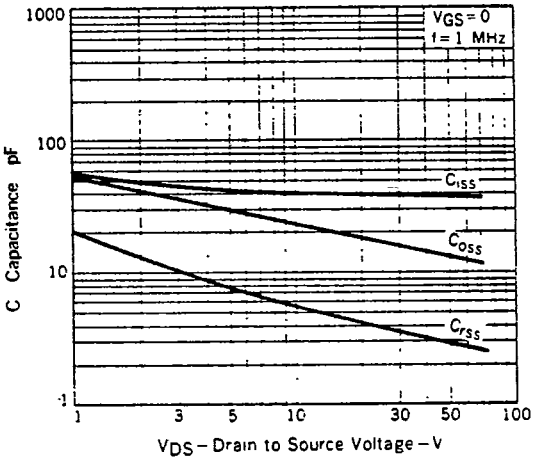
FORWARD TRANSFER ADMITTANCE vs. DRAIN CURRENT



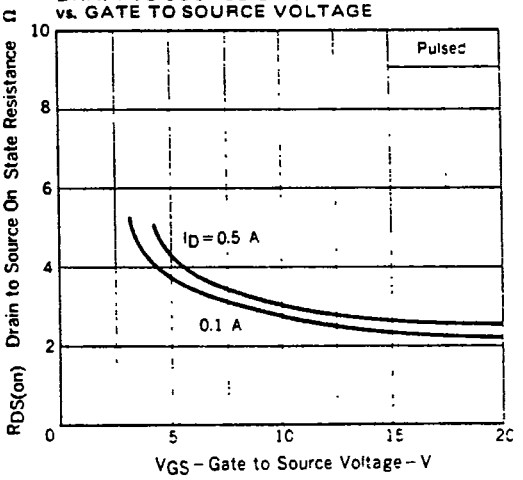

SOURCE TO DRAIN DIODE FORWARD VOLTAGE



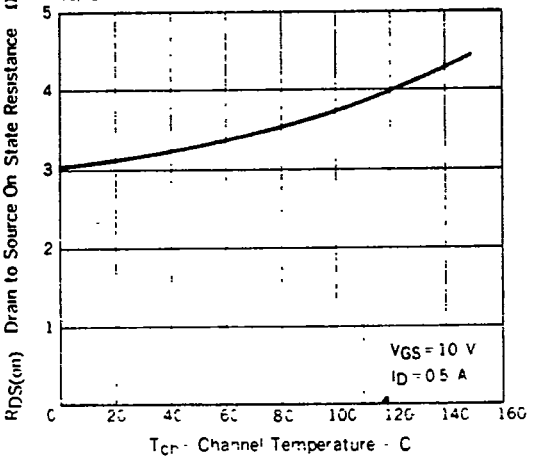

CAPACITANCE vs. DRAIN TO SOURCE VOLTAGE



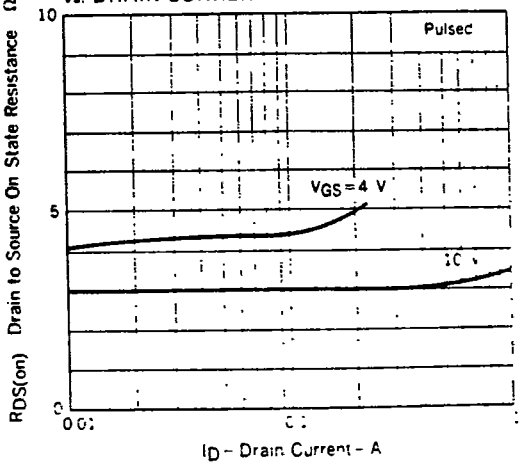

DRAIN TO SOURCE ON-STATE RESISTANCE vs. GATE TO SOURCE VOLTAGE



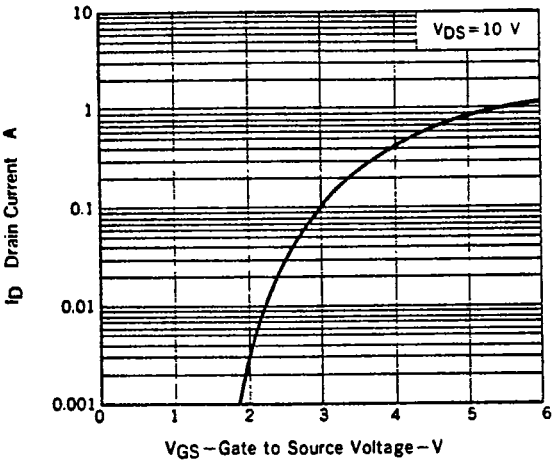

DRAIN TO SOURCE ON-STATE RESISTANCE vs. CHANNEL TEMPERATURE



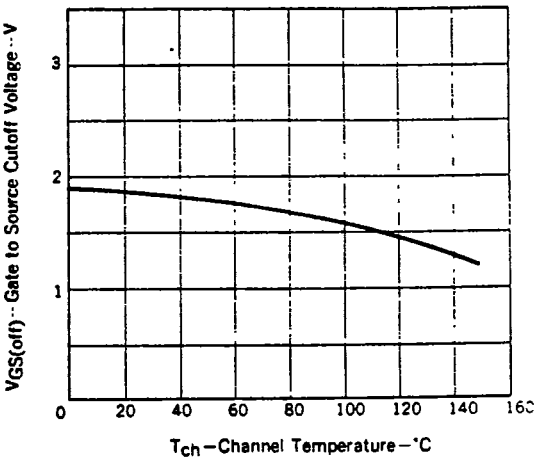

DRAIN TO SOURCE ON-STATE RESISTANCE vs. DRAIN CURRENT



TRANSFER CHARACTERISTIC




GATE TO SOURCE CUTOFF VOLTAGE vs. CHANNEL TEMPERATURE




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