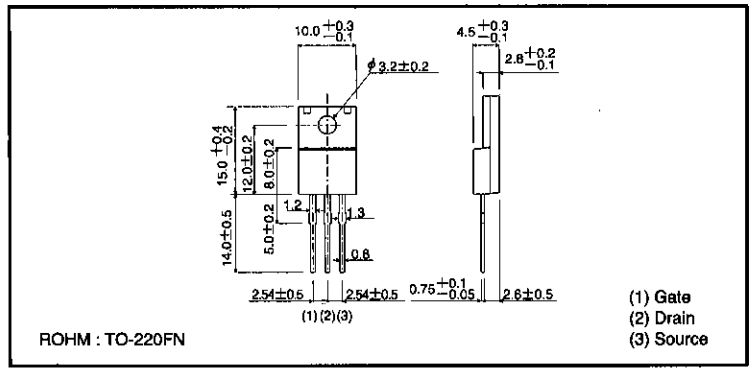
# Switching (800V, 3A)
## 2SK2294

●Features
1) Low on-resistance.
2) High-speed switching.
3) Wide SOA (safe operating area).
4) Gate-source voltage guaranteed at $V_{GSS}$ = ±30V.
5) Easily designed drive circuits.
6) Easy to use in parallel.

●Structure
Silicon N-channel
MOSFET transistor

●External dimensions (Units: mm)




●Absolute maximum ratings (Ta = 25℃)

| Parameter | | Symbol | Limits | Unit |
|---|---|---|---|---|
| Drain-source voltage | | $V_{DSS}$ | 800 | V |
| Gate-source voltage | | $V_{GSS}$ | ±30 | V |
| Drain current | Continuous | $I_D$ | 3 | A |
| | Pulsed | $I_{DP}$* | 6 | A |
| Drain reverse current | Continuous | $I_{DR}$ | 3 | A |
| | Pulsed | $I_{DRP}$* | 6 | A |
| Total power dissipation (Tc=25℃) | | $P_D$ | 30 | W |
| Channel temperature | | Tch | 150 | ℃ |
| Storage temperature | | Tstg | −55~150 | ℃ |

* Pw≦10 μs, Duty cycle≦1%

●Packaging specifications

| | | |
|---|---|---|
| Type | Package | Bulk |
| | Code | — |
| | Basic ordering unit (pieces) | 500 |
| 2SK2294 | | ○ |

●Electrical characteristics (Ta = 25℃)

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Conditions |
|---|---|---|---|---|---|---|
| Gate leakage current | $I_{GSS}$ | — | — | ±100 | nA | $V_{GS}$=±30V, $V_{DS}$=0V |
| Drain-source breakdown voltage | $V_{(BR)DSS}$ | 800 | — | — | V | $I_D$=1mA, $V_{GS}$=0V |
| Drain cutoff current | $I_{DSS}$ | — | — | 100 | μA | $V_{DS}$=800V, $V_{GS}$=0V |
| Gate threshold voltage | $V_{GS(th)}$ | 2 | — | 4 | V | $V_{DS}$=10V, $I_D$=1mA |
| Drain-source on-state resistance | $R_{DS(on)}$ | — | 3 | 4 | Ω | $I_D$=1.5A, $V_{GS}$=10V |
| Forward propagation admittance | $\|Y_{fs}\|$ | 1 | 2.5 | — | S | $V_{DS}$=10V, $I_D$=1.5A |
| Input capacitance | $C_{iss}$ | — | 740 | — | pF | $V_{DS}$=10V |
| Output capacitance | $C_{oss}$ | — | 120 | — | pF | $V_{GS}$=0V |
| Reverse transfer capacitance | $C_{rss}$ | — | 35 | — | pF | f=1MHz |
| Turn-on delay time | $t_{d(on)}$ | — | 10 | — | ns | $I_D$=1.5A, $V_{DD}$≒150V |
| Rise time | $t_r$ | — | 14 | — | ns | $V_{GS}$=10V |
| Turn-off delay time | $t_{d(off)}$ | — | 53 | — | ns | $R_L$=100Ω |
| Fall time | $t_f$ | — | 49 | — | ns | $R_G$=10Ω |
| Reverse recovery time | $t_{rr}$ | — | 800 | — | ns | $I_{DR}$=3A, $V_{GS}$=0V, |
| Reverse recovery load | $Q_{rr}$ | — | 4.4 | — | μC | di/dt=100A/μs |

●Electrical characteristic curves

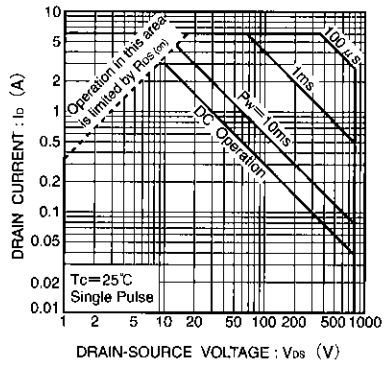



Fig.1 Maximum Safe Operating Area

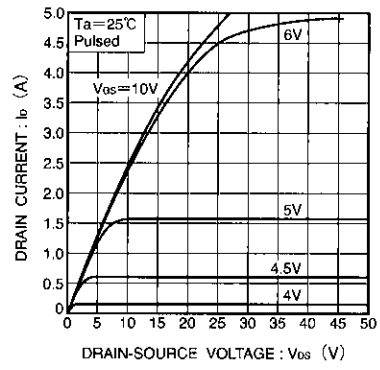



Fig.2 Typical Output Characteristics

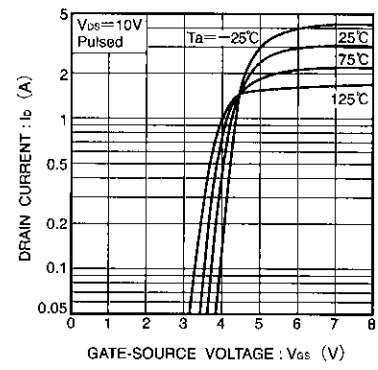



Fig.3 Typical Transfer Characteristics

●Electrical characteristic curves

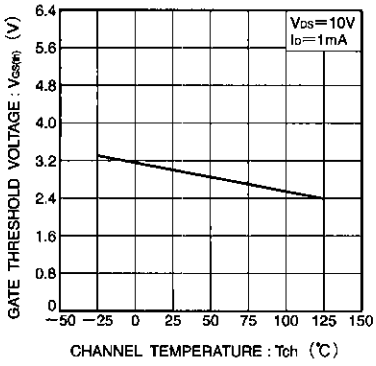



Fig.4 Gate Threshold Voltage vs. Channel Temperaturea

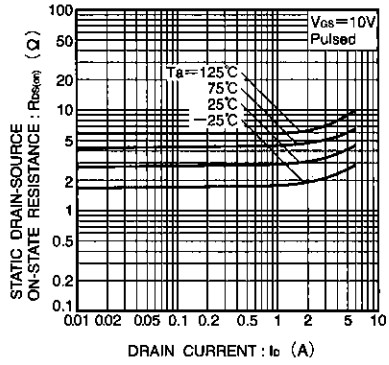



Fig.5 Static Drain-Source On-State Resistance vs. Drain Current

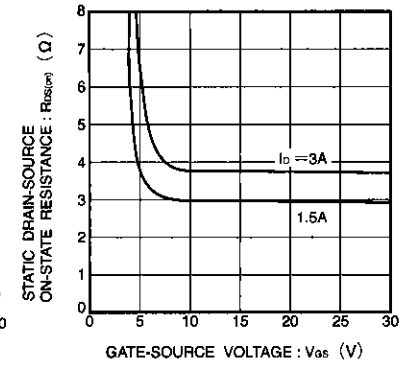



Fig.6 Static Drain-Source On-State Resistance vs. Gate-Source Voltage

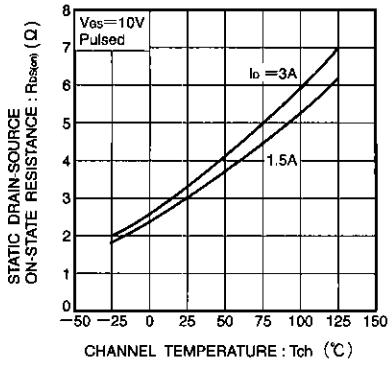



Fig.7 Static Drain-Source On-State Resistance vs. Channel Temperature

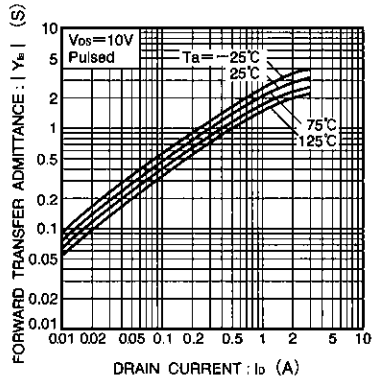



Fig.8 Forward Transfer Admittance vs. Drain Current

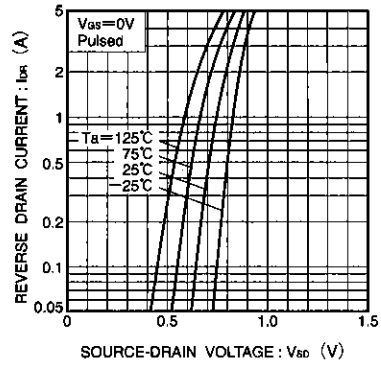



Fig.9 Reverse Drain Current vs. Source-Drain Voltage ( I )

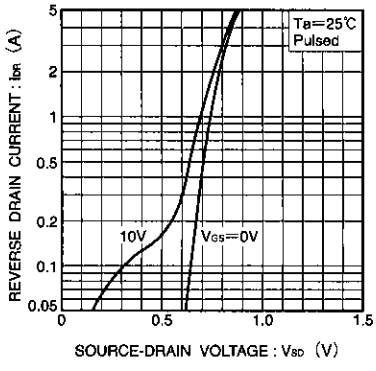



Fig.10 Reverse Drain Current vs. Source-Drain Voltage ( II )

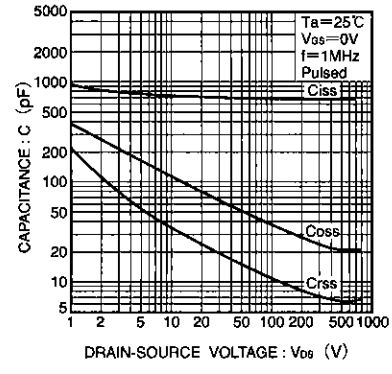



Fig.11 Typical Capacitance vs. Drain-Source Voltage

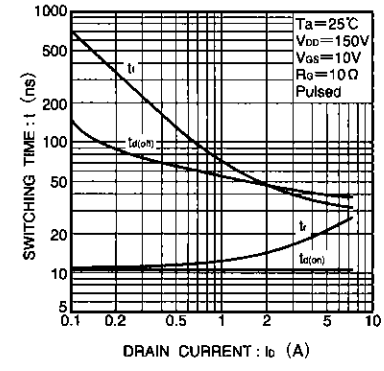



Fig.12 Switching Characteristics (See Figure. 16 and 17 for measurement circuits)

MOS FET

●Electrical characteristic curves

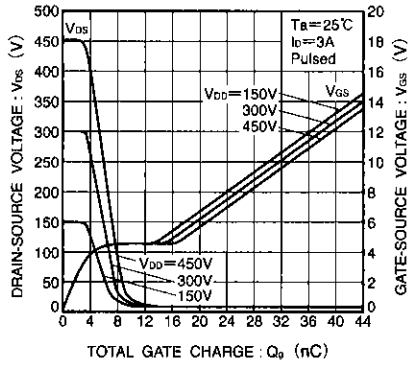



Fig.13 Dynamic Input Characteristics (See Figure. 18 for measurement circuit)

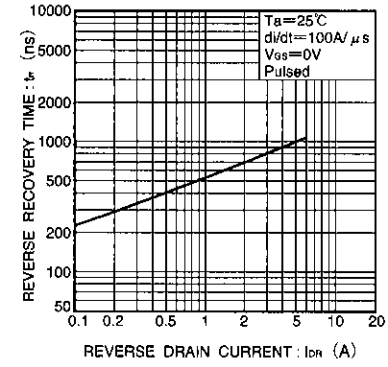



Fig.14 Reverse Recovery Time vs. Reverse Drain Current

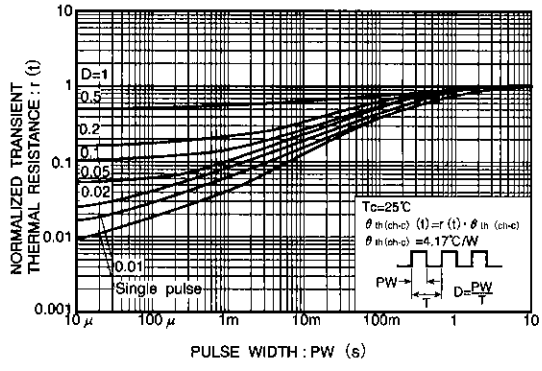



Fig.15 Normalized Transient Thermal Resistance vs.Pulse Width

●Switching characteristics measurement circuit

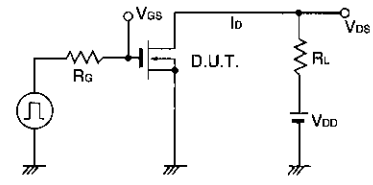



Fig.16 Switching Time Measurement Circuit

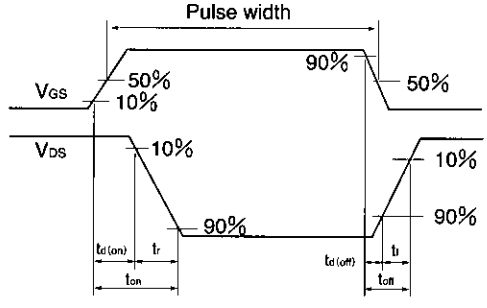



Fig.17 Switching Time Waveforms

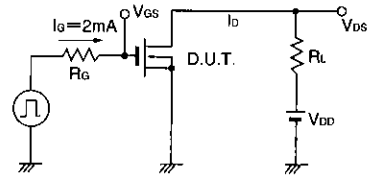



Fig.18 Gate Charge Measurement Circuit

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