# N-CHANNEL MOS FIELD EFFECT POWER TRANSISTOR

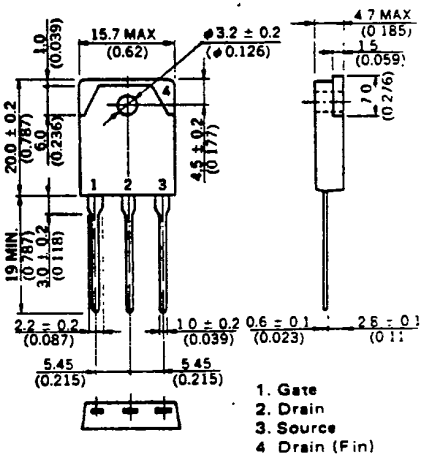
# 2SK797

**DESCRIPTION** The 2SK797 is N-Channel MOS Field Effect Power Transistor designed for solenoid, motor and lamp driver.

**FEATURES**

- Gate Drive — Logic level —
- Low $R_{DS(on)}$
- No Secondary Breakdown

**PACKAGE DIMENSIONS**
in millimeters (inches)




1. Gate
2. Drain
3. Source
4. Drain (Fin)

## ABSOLUTE MAXIMUM RATINGS

Maximum Temperatures

- Storage Temperature . . . . . −55 to +150 °C
- Channel Temperature. . . . . 150 °C Maximum

Maximum Power Dissipations

- Total Power Dissipation ($T_a$ = 25 °C) . . . . 3.0 W
- Total Power Dissipation ($T_c$ = 25 °C) . . . . 150 W

Maximum Voltages and Currents ($T_a$ = 25 °C)

- $V_{DSS}$ Drain to Source Voltage . . . . . 60 V
- $V_{GSS}$ Gate to Source Voltage. . . . . ±20 V
- $I_{D(DC)}$ Drain Current (DC) . . . . . ±40 A
- $I_{D(pulse)}$ Drain Current (pulse)* . . . . . ±160 A

* PW ≤ 300 μs, Duty Cycle ≤ 2 %

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

| SYMBOL | CHARACTERISTIC | MIN. | TYP. | MAX | UNIT | TEST CONDITIONS |
|---|---|---|---|---|---|---|
| $R_{DS(on)}$ | Drain to Source On-State Resistance | | | 18 | mΩ | $V_{GS}$ = 10 V, $I_D$ = 20 A |
| $R_{DS(on)}$ | Drain to Source On-State Resistance | | | 22 | mΩ | $V_{GS}$ = 4 V, $I_D$ = 20 A |
| $V_{GS(off)}$ | Gate to Source Cutoff Voltage | 1.0 | | 2.5 | V | $V_{DS}$ = 10 V, $I_D$ = 1 mA |
| $\|Y_{fs}\|$ | Forward Transfer Admittance | 5.0 | | | S | $V_{DS}$ = 10 V, $I_D$ = 20 A |
| $I_{DSS}$ | Drain Leakage Current | | | 100 | μA | $V_{DS}$ = 60 V, $V_{GS}$ = 0 |
| $I_{GSS}$ | Gate to Source Leakage Current | | | ±100 | nA | $V_{GS}$ = ±20 V, $V_{DS}$ = 0 |
| $C_{iss}$ | Input Capacitance | | 8000 | | pF | $V_{DS}$ = 10 V<br>$V_{GS}$ = 0<br>f = 1 MHz |
| $C_{oss}$ | Output Capacitance | | 2400 | | pF | |
| $C_{rss}$ | Reverse Transfer Capacitance | | 700 | | pF | |
| $t_{d(on)}$ | Turn-On Delay Time | | 60 | | ns | $I_D$ = 20 A, $V_{CC}$ = 50 V<br>$R_L$ = 2.5 Ω<br>$R_{in}$ = 10 Ω |
| $t_r$ | Rise Time | | 120 | | ns | |
| $t_{d(off)}$ | Turn-Off Delay Time | | 400 | | ns | |
| $t_f$ | Fall Time | | 250 | | ns | |

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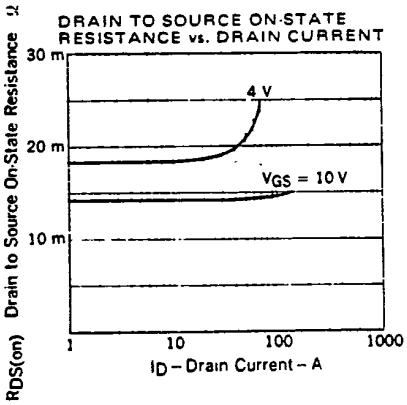


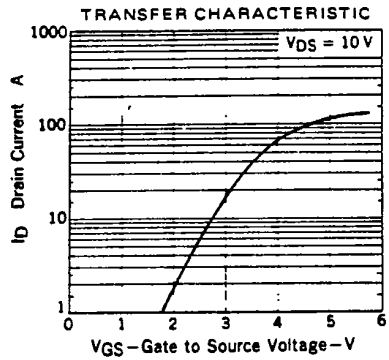


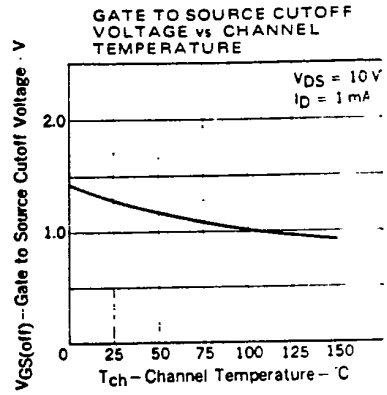


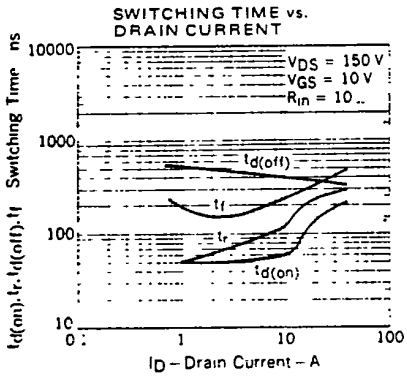


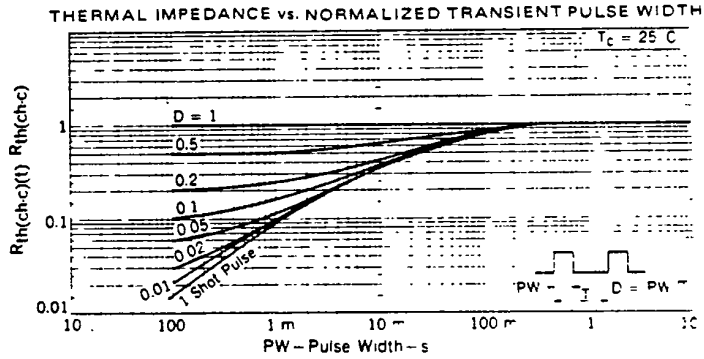


## SWITCHING TIME TEST CIRCUIT