

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

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_{DS} Drain to Source Voltage 60 V

V_{GS} Gate to Source Voltage ± 20 V

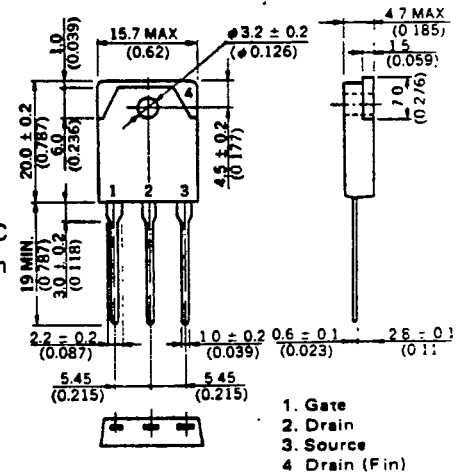
$I_{D(DC)}$ Drain Current (DC) ± 40 A

$I_{D(pulse)}$ Drain Current (pulse)* ± 160 A

* $PW \leq 300$ μs , Duty Cycle ≤ 2 %

PACKAGE DIMENSIONS

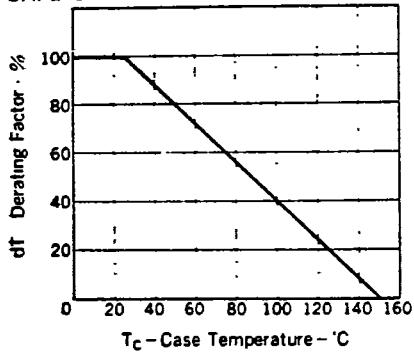
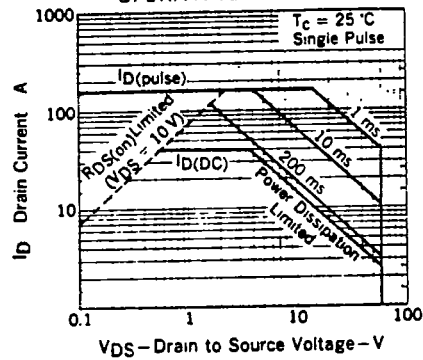
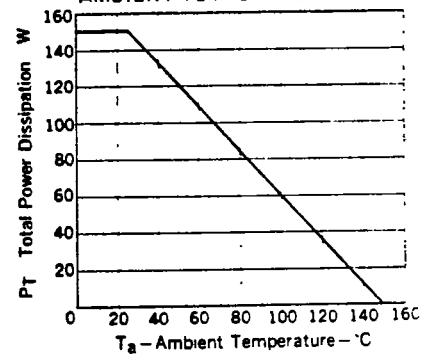
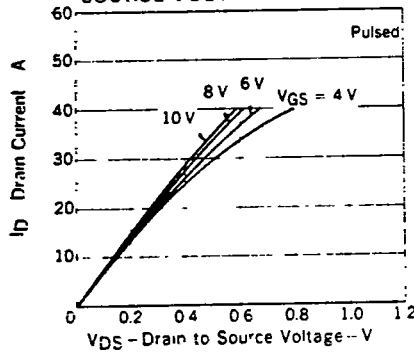
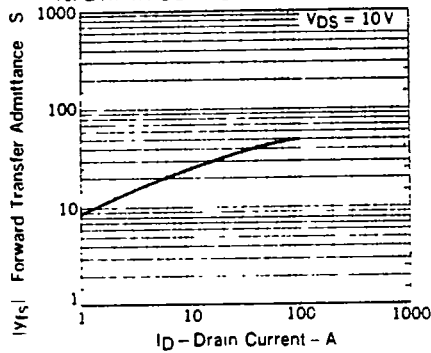
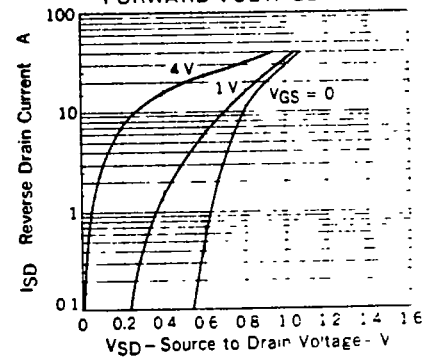
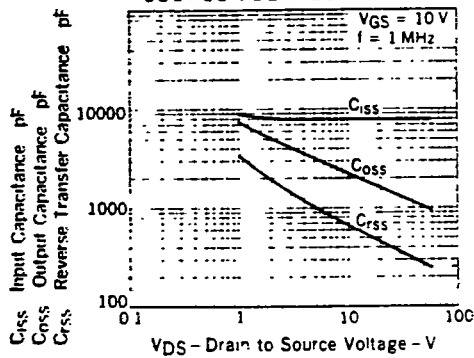
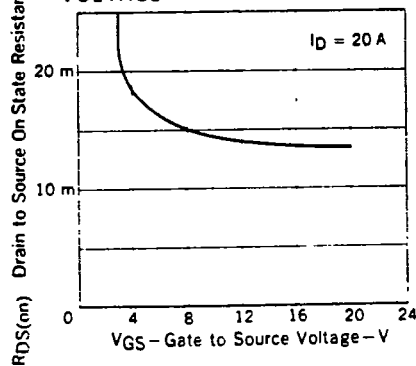
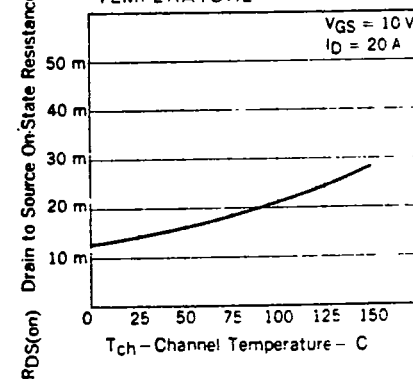
in millimeters (inches)

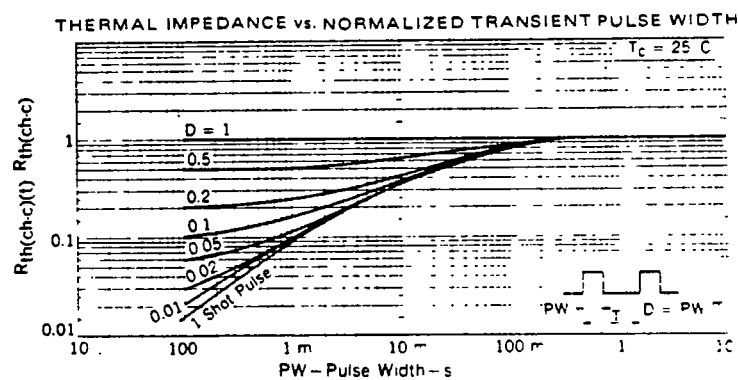
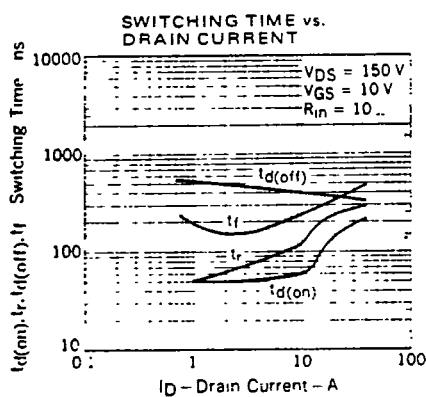
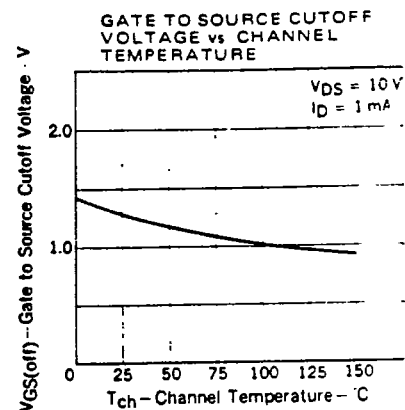
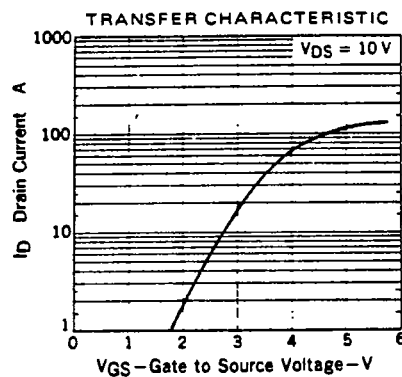
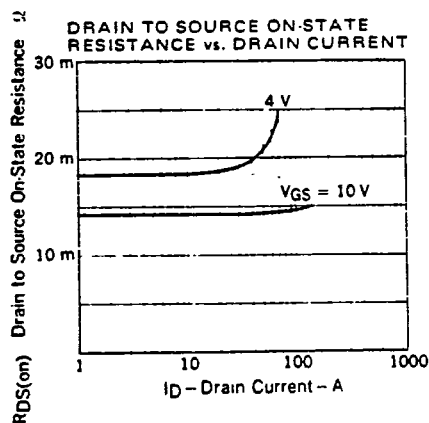


ELECTRICAL CHARACTERISTICS ($T_A = 25$ °C)

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

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TYPICAL CHARACTERISTICS ($T_a = 25^\circ\text{C}$)DERATING FACTOR OF FORWARD BIAS
SAFE OPERATING AREAFORWARD BIAS SAFE
OPERATING AREATOTAL POWER DISSIPATION vs.
AMBIENT TEMPERATUREDRAIN CURRENT vs. DRAIN TO
SOURCE VOLTAGEFORWARD TRANSFER ADMITTANCE
vs. DRAIN CURRENTSOURCE TO DRAIN DIODE
FORWARD VOLTAGECAPACITANCE vs DRAIN TO
SOURCE VOLTAGEDRAIN TO SOURCE ON-STATE
RESISTANCE vs. GATE TO SOURCE
VOLTAGEDRAIN TO SOURCE ON STATE
RESISTANCE vs CHANNEL
TEMPERATURE



SWITCHING TIME TEST CIRCUIT

