

N-CHANNEL MOS FIELD EFFECT POWER TRANSISTOR

2SK591

DESCRIPTION The 2SK591 is N-Channel MOS Field Effect Power Transistor designed for solenoid, motor and lamp driver.

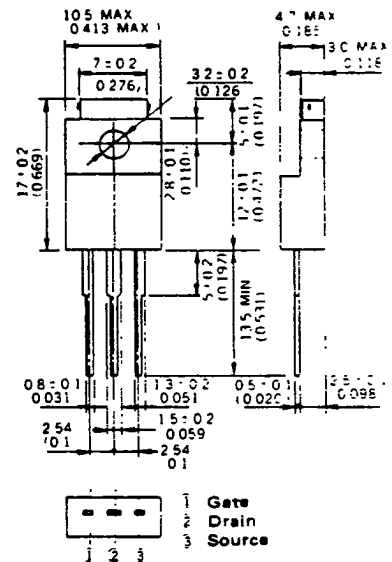
- FEATURES**
- 4 V Gate Drive — Logic level —
 - Low $R_{DS(on)}$
 - No Secondary Breakdown

ABSOLUTE MAXIMUM RATINGS

Maximum Temperatures			
Storage Temperature		-55 to +150 °C	
Channel Temperature		150 °C Maximum	
Maximum Power Dissipations			
Total Power Dissipation ($T_a = 25 °C$)	...	2.0	W
Total Power Dissipation ($T_c = 25 °C$)	...	35	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)	±15	A
$I_{D(pulse)}$	Drain Current (pulse)*	±60	A
*PW ≤ 300 μs, Duty Cycle ≤ 10 %			

PACKAGE DIMENSIONS

in millimeters (inches)

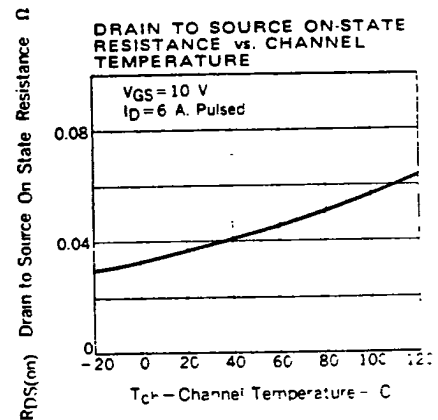
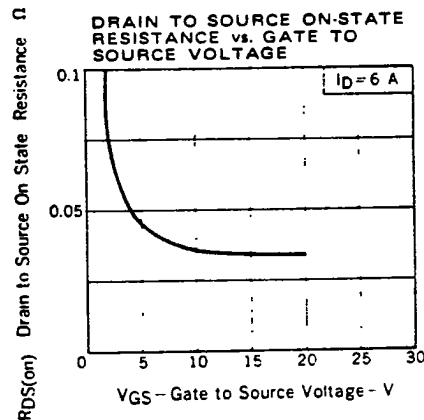
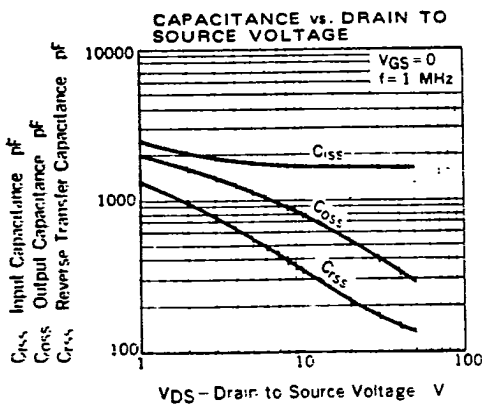
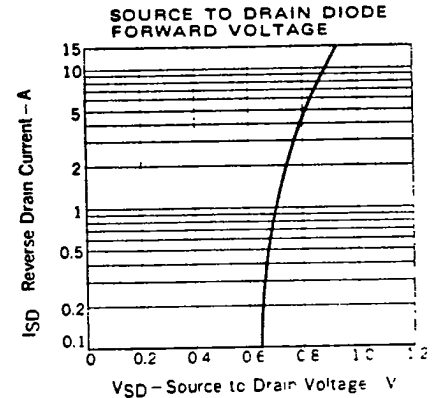
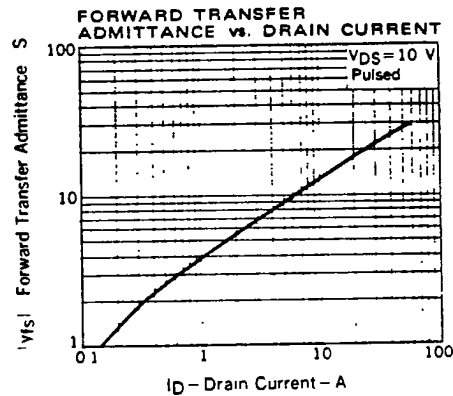
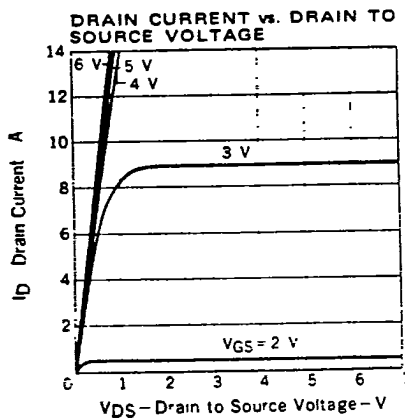
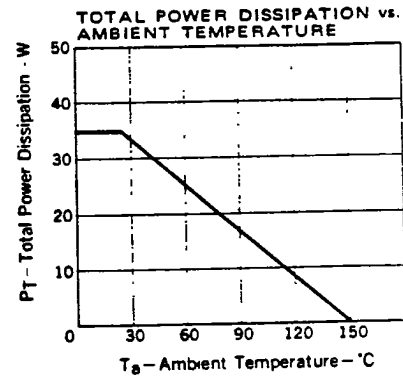
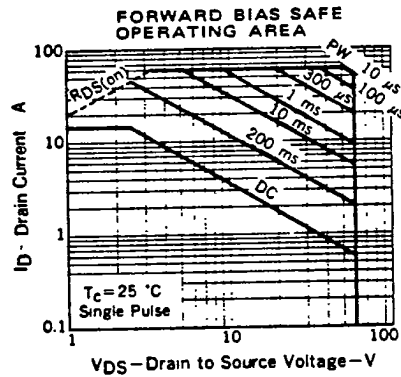
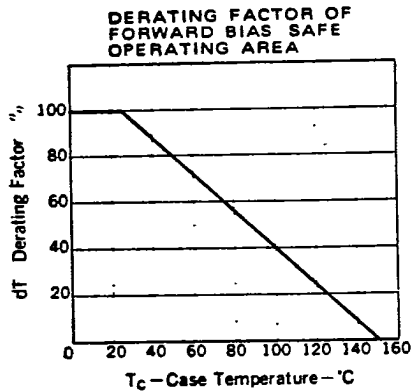


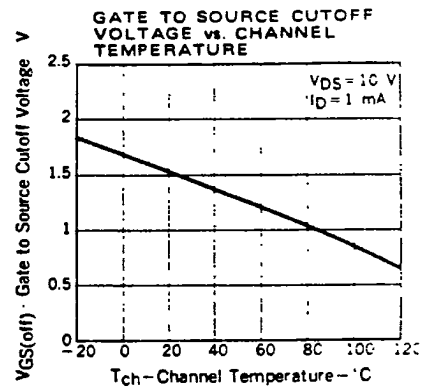
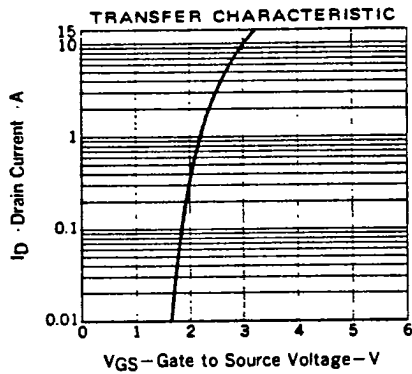
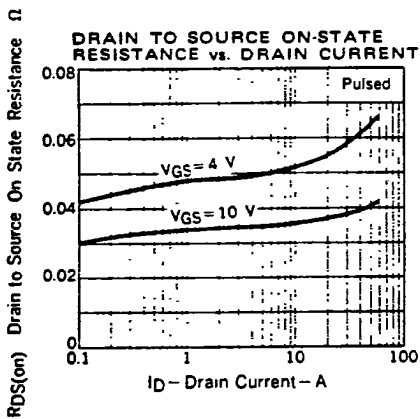
ELECTRICAL CHARACTERISTICS ($T_a = 25 °C$)

SYMBOL	CHARACTERISTIC	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
$R_{DS(on)}$	Drain to Source On-State Resistance			0.055	Ω	$V_{GS} = 10 V, I_D = 6 A$
$R_{DS(on)}$	Drain to Source On-State Resistance			0.070	Ω	$V_{GS} = 4 V, I_D = 6 A$
$V_{GS(off)}$	Gate to Source Cutoff Voltage	1		2.5	V	$V_{DS} = 10 V, I_D = 1 mA$
$ y_{fs} $	Forward Transfer Admittance	5			S	$V_{DS} = 10 V, I_D = 6 A$
I_{DSS}	Drain Leakage Current			10	μA	$V_{DS} = 60 V, V_{GS} = 0$
I_{GSS}	Gate to Source Leakage Current			±100	nA	$V_{GS} = \pm 20 V, V_{DS} = 0$
C_{iss}	Input Capacitance		1800		pF	$V_{DS} = 10 V$
C_{oss}	Output Capacitance		800		pF	$V_{GS} = 0$
C_{rss}	Reverse Transfer Capacitance		350		pF	$f = 1 MHz$
$t_{d(on)}$	Turn On Delay Time		20		ns	$I_D = 6 A, V_{CC} \approx 30 V$ $R_L = 5 \Omega, V_{GS(on)} = 10 V$ $R_{in} = 10 \Omega$
t_r	Rise Time		85		ns	
$t_{d(off)}$	Turn Off Delay Time		240		ns	
t_f	Fall Time		230		ns	

NEC cannot assume any responsibility for any circuits shown or represent that they are free from patent infringement.

© NEC Corporation 1986

TYPICAL CHARACTERISTICS ($T_a = 25^\circ\text{C}$)



SWITCHING TIME TEST CIRCUIT

