

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.

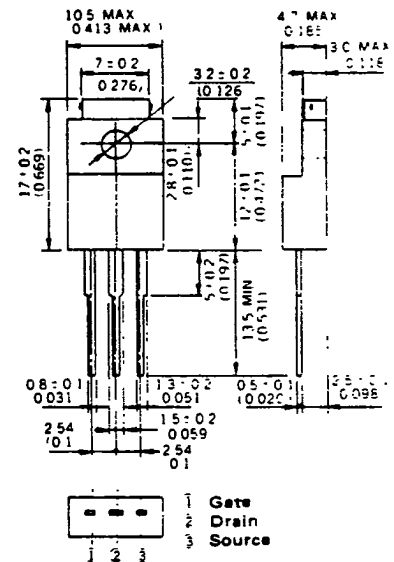
- FEATURES**
- 4 V Gate Drive — Logic level —
 - Low $R_{DS(on)}$
 - No Secondary Breakdown

ABSOLUTE MAXIMUM RATINGS

Maximum Temperatures			
Storage Temperature		-55 to +150 °C	
Channel Temperature		150 °C Maximum	
Maximum Power Dissipations			
Total Power Dissipation ($T_a = 25\text{ °C}$)	...	2.0	W
Total Power Dissipation ($T_c = 25\text{ °C}$)	...	35	W
Maximum Voltages and Currents ($T_a = 25\text{ °C}$)			
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)

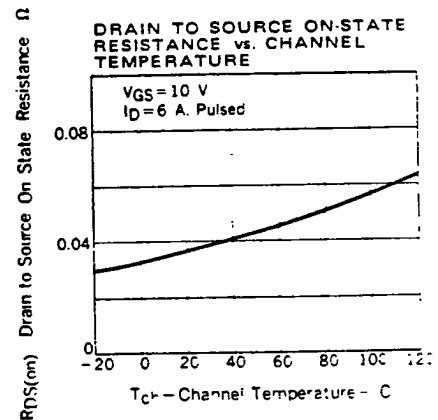
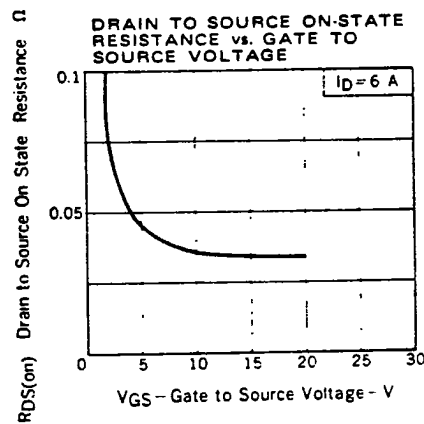
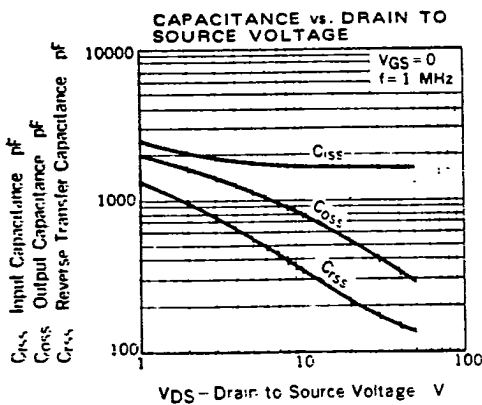
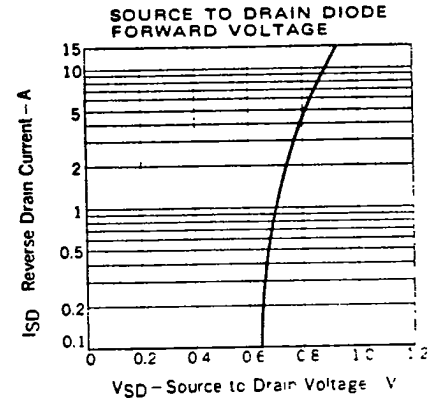
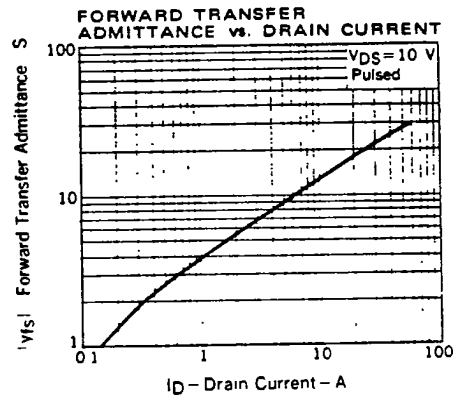
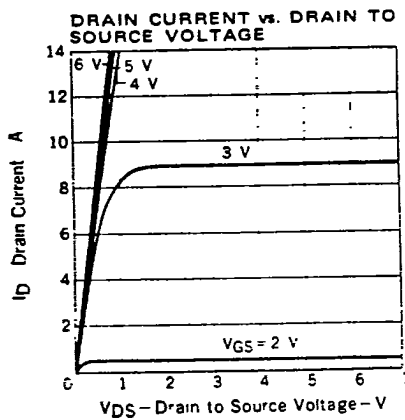
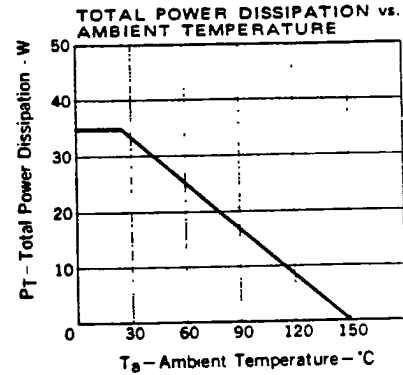
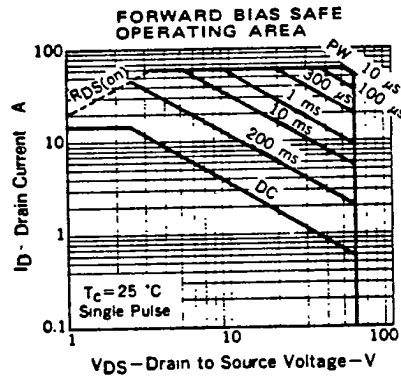
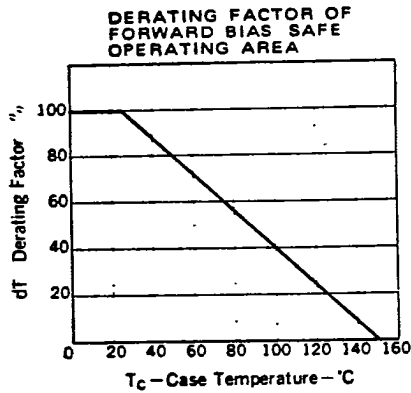


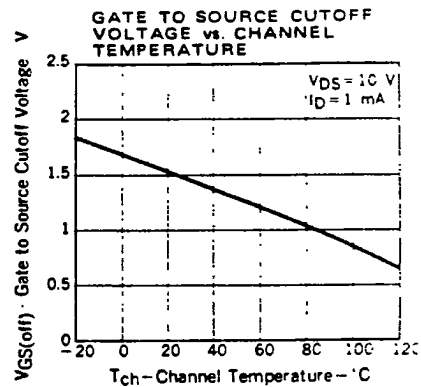
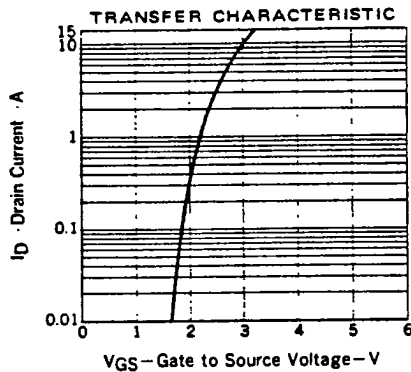
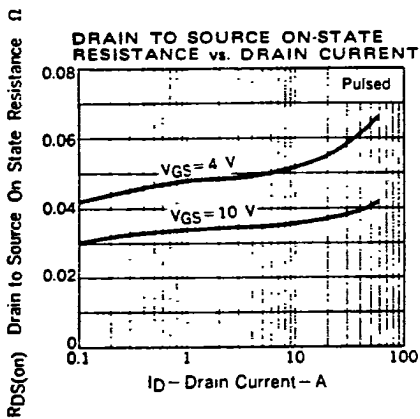
ELECTRICAL CHARACTERISTICS ($T_a = 25\text{ °C}$)

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

