

N-CHANNEL MOS FIELD EFFECT POWER TRANSISTOR

2SK591

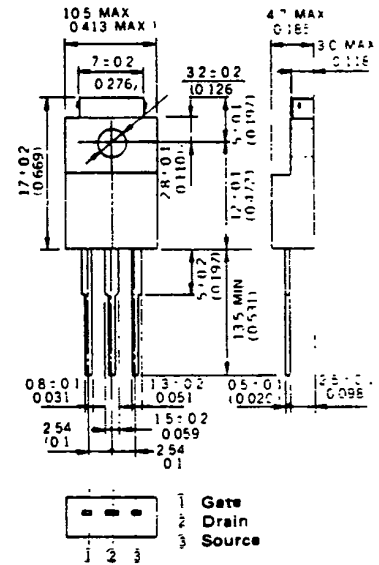
DESCRIPTION The 2SK591 is N-Channel MOS Field Effect Power Transistor designed for solenoid, motor and lamp driver.

- 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_{DSS} Drain to Source Voltage	60 V
V_{GSS} 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)

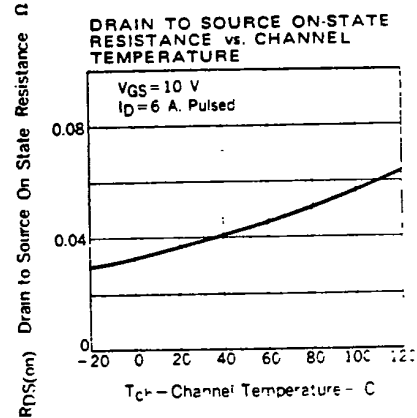
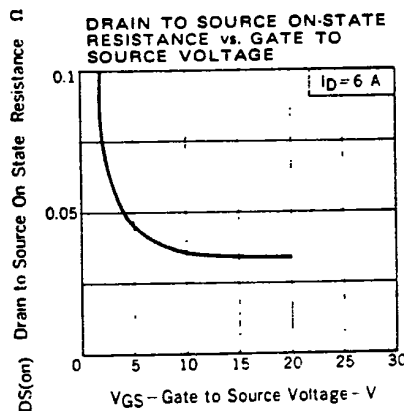
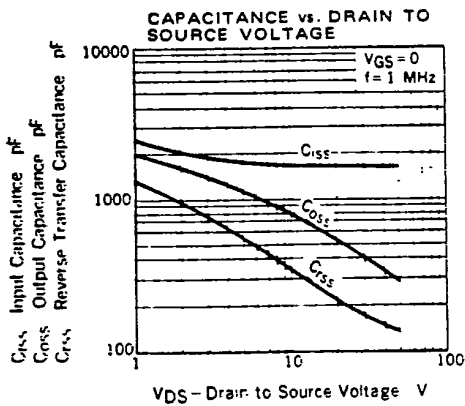
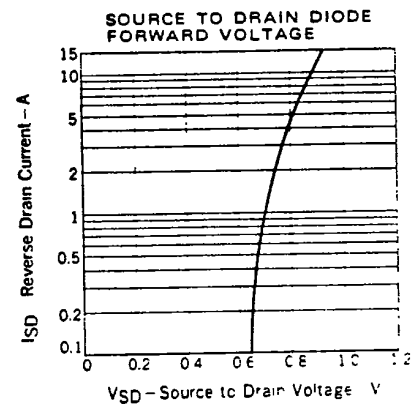
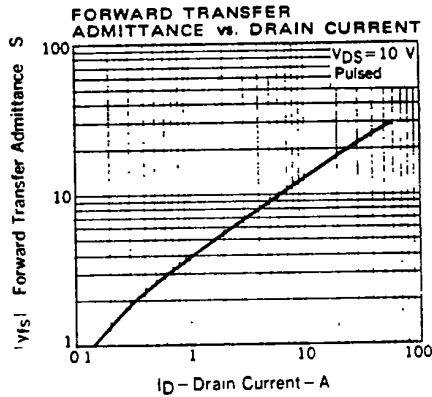
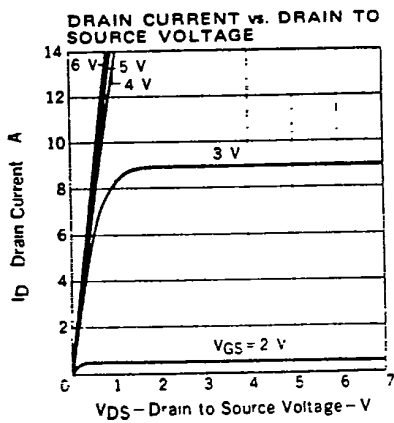
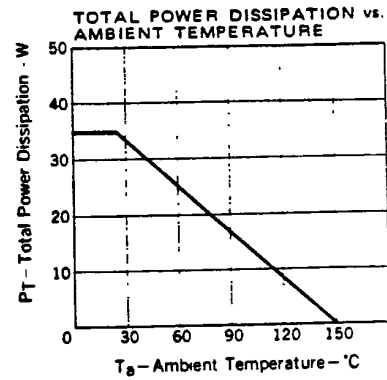
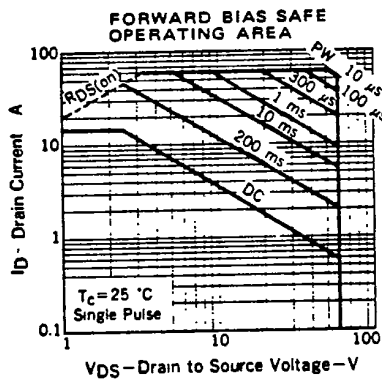
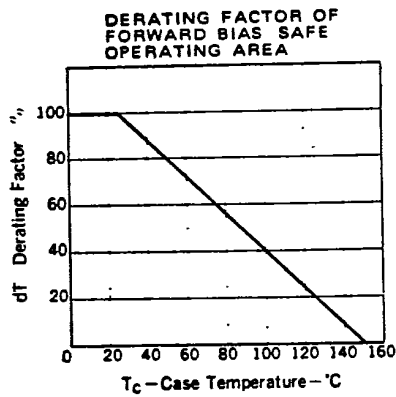


ELECTRICAL CHARACTERISTICS ($T_a = 25\text{ °C}$)

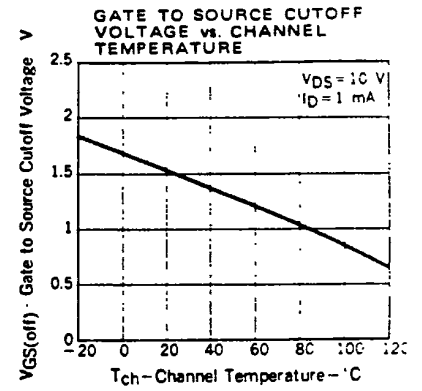
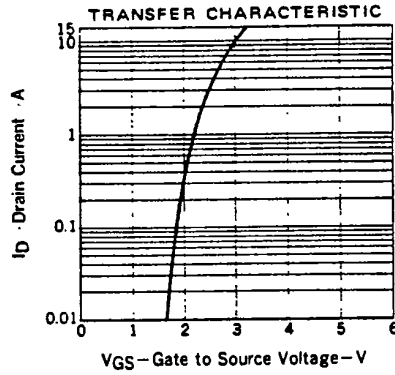
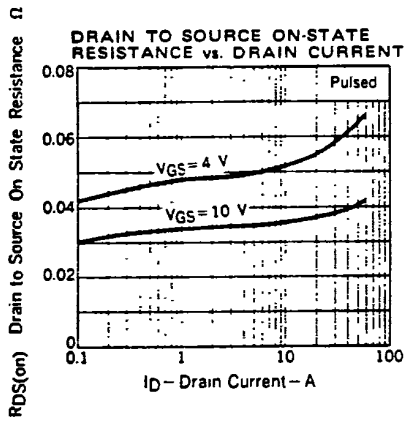
SYMBOL	CHARACTERISTIC	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
$R_{DS(on)}$	Drain to Source On-State Resistance			0.055	Ω	$V_{GS} = 10\text{ V}, I_D = 6\text{ A}$
$R_{DS(on)}$	Drain to Source On-State Resistance			0.070	Ω	$V_{GS} = 4\text{ V}, I_D = 6\text{ A}$
$V_{GS(off)}$	Gate to Source Cutoff Voltage	1		2.5	V	$V_{DS} = 10\text{ V}, I_D = 1\text{ mA}$
$ V_{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	$V_{GS} = ±20\text{ V}, V_{DS} = 0$
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	$I_D = 6\text{ A}, V_{CC} ≈ 30\text{ V}$ $R_L = 5\text{ Ω}, V_{GS(on)} = 10\text{ V}$ $R_{in} = 10\text{ Ω}$
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.

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



XCED1



SWITCHING TIME TEST CIRCUIT

