

To our customers,

Old Company Name in Catalogs and Other Documents

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Renesas Electronics website: <http://www.renesas.com>

April 1st, 2010
Renesas Electronics Corporation

Issued by: Renesas Electronics Corporation (<http://www.renesas.com>)

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Phase-out/Discontinued

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_{DSS} Drain to Source Voltage 60 V

V_{GSS} Gate to Source Voltage ± 20 V

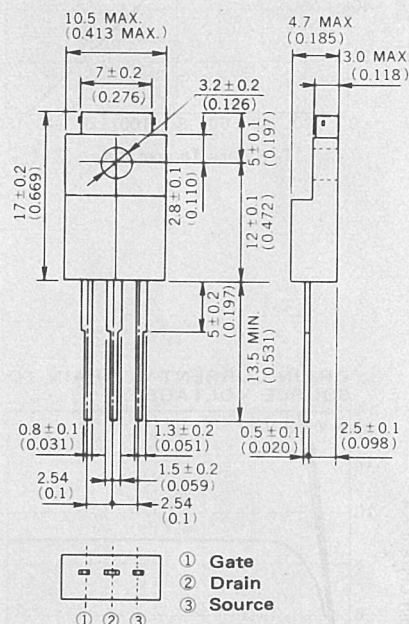
$I_{D(DC)}$ Drain Current (DC) ± 15 A

$I_{D(pulse)}$ Drain Current (pulse)* ± 60 A

*PW ≤ 300 μ s, Duty Cycle ≤ 10 %

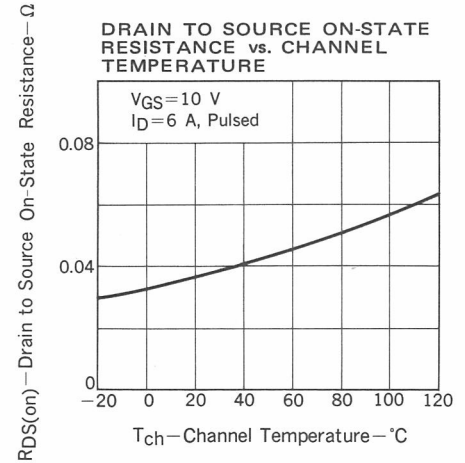
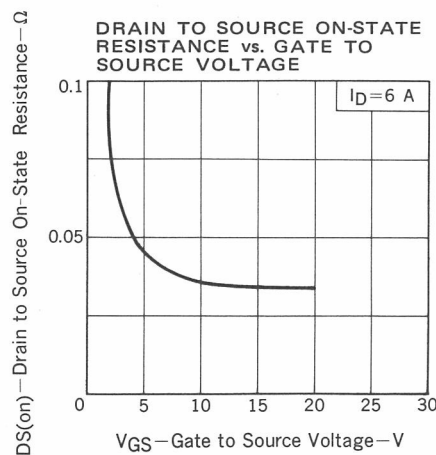
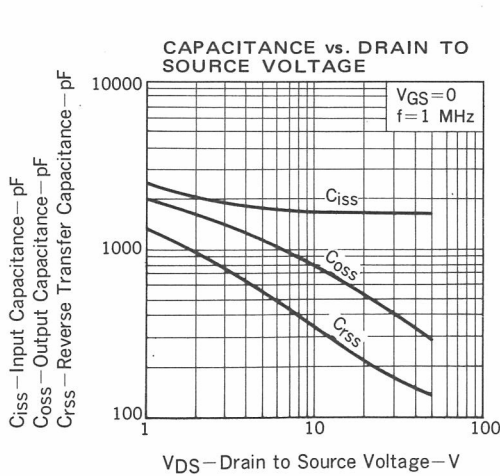
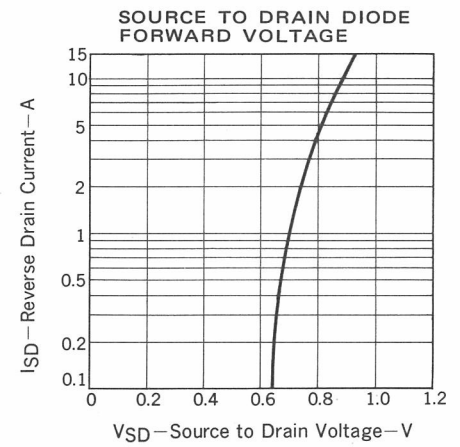
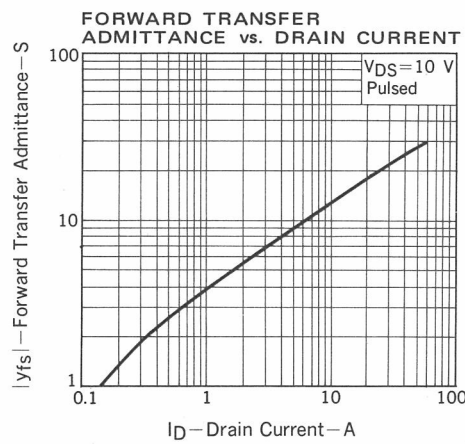
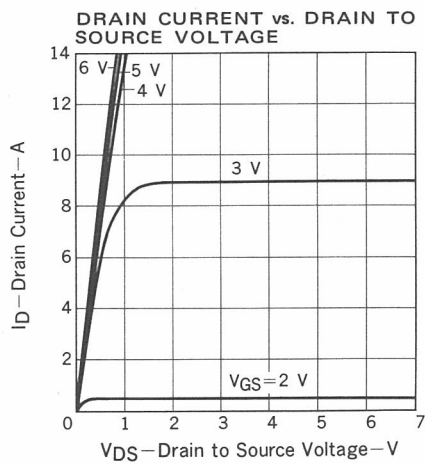
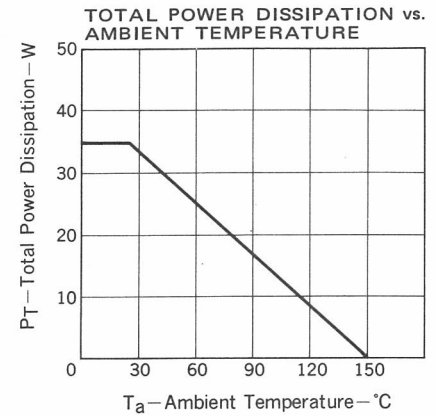
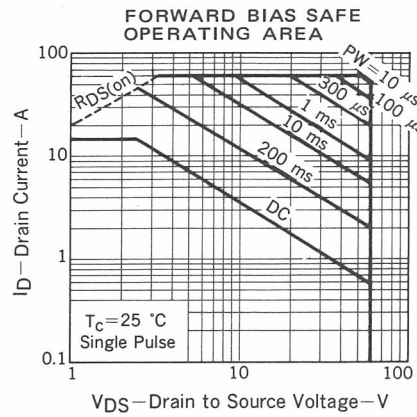
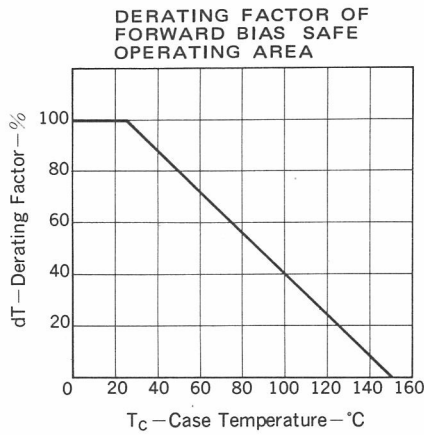
PACKAGE DIMENSIONS

in millimeters (inches)

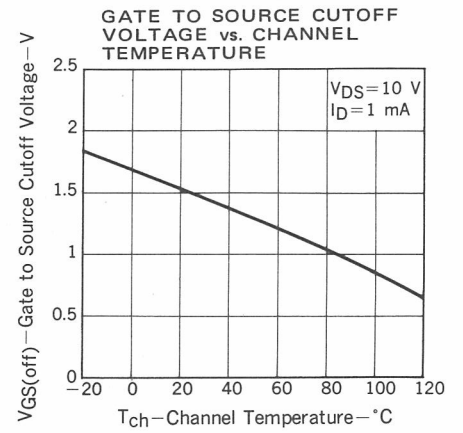
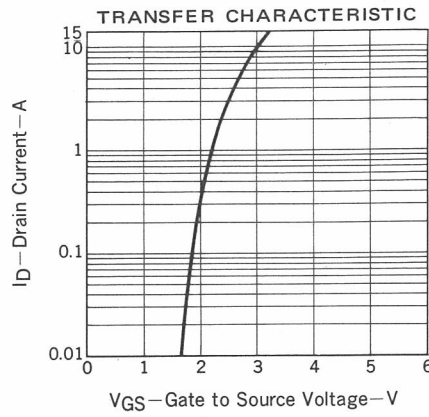
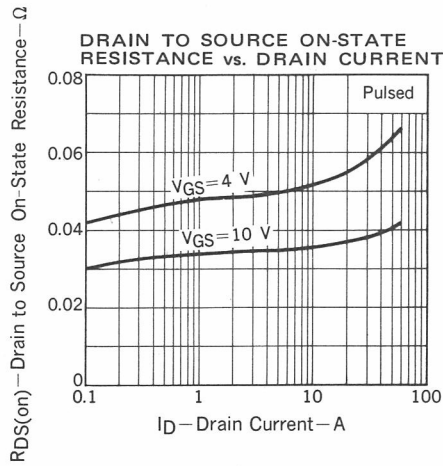


ELECTRICAL CHARACTERISTICS ($T_a = 25$ °C)

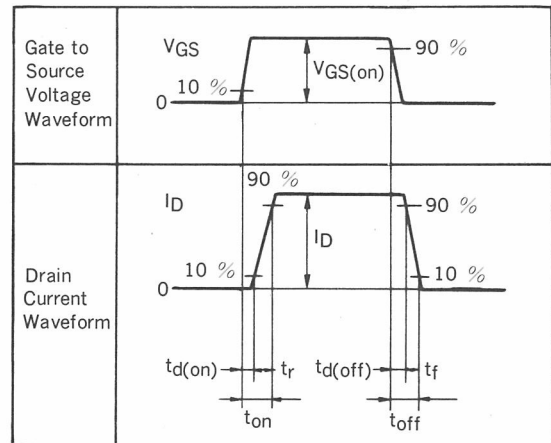
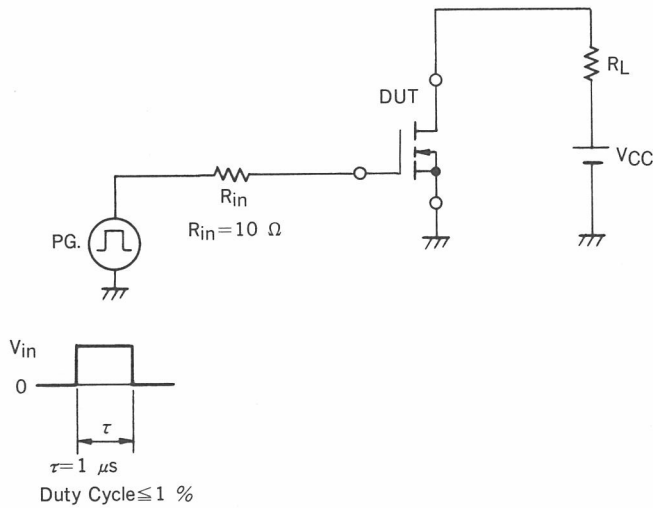
SYMBOL	CHARACTERISTIC	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
$R_{DS(on)}$	Drain to Source On-State Resistance			0.055	Ω	$V_{GS} = 10$ V, $I_D = 6$ A
$R_{DS(on)}$	Drain to Source On-State Resistance			0.070	Ω	$V_{GS} = 4$ V, $I_D = 6$ A
$V_{GS(off)}$	Gate to Source Cutoff Voltage	1		2.5	V	$V_{DS} = 10$ V, $I_D = 1$ mA
$ y_{fs} $	Forward Transfer Admittance	5			S	$V_{DS} = 10$ V, $I_D = 6$ A
I_{DSS}	Drain Leakage Current			10	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		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, $V_{CC} \div 30$ V $R_L = 5$ Ω , $V_{GS(on)} = 10$ V $R_{in} = 10$ Ω
t_r	Rise Time		85		ns	
$t_{d(off)}$	Turn Off Delay Time		240		ns	
t_f	Fall Time		230		ns	

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

Phase-out/Discontinued



SWITCHING TIME TEST CIRCUIT



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