

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>)

Send any inquiries to <http://www.renesas.com/inquiry>.

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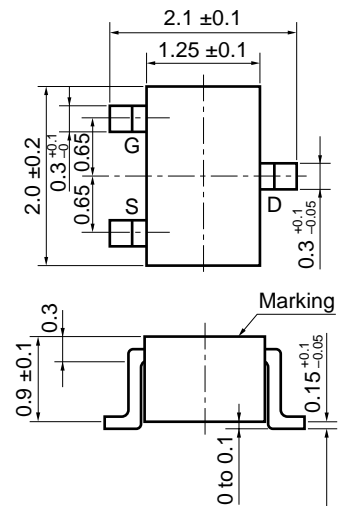
N-CHANNEL MOS FET FOR HIGH-SPEED SWITCHING

The 2SK2090 is an N-channel vertical MOSFET. Because it can be driven by a voltage as low as 2.5 V and it is not necessary to consider a drive current, this FET is ideal as an actuator for low-current portable systems such as headphone stereos and video cameras.

FEATURES

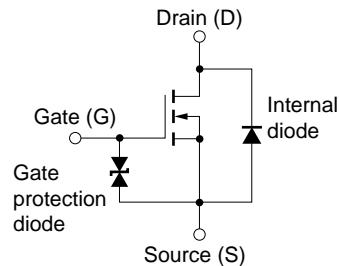
- Gate can be driven by 2.5 V
- Because of its high input impedance, there's no need to consider drive current

PACKAGE DIMENSIONS (in mm)



Marking: G22

EQUIVALENT CURCUIT



PIN CONNECTIONS
 S: Source
 D: Drain
 G: Gate

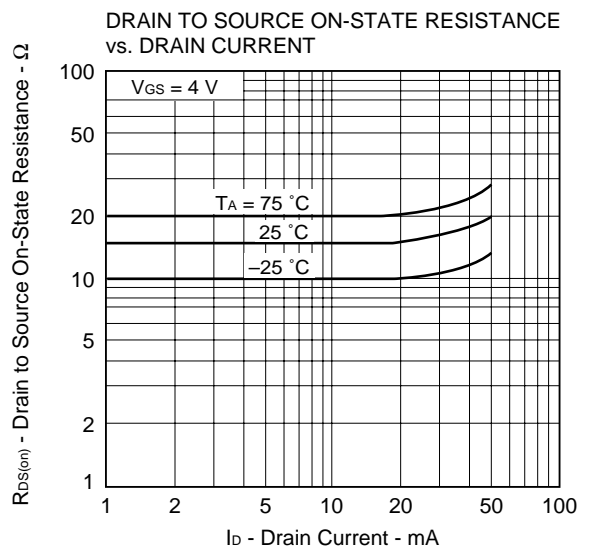
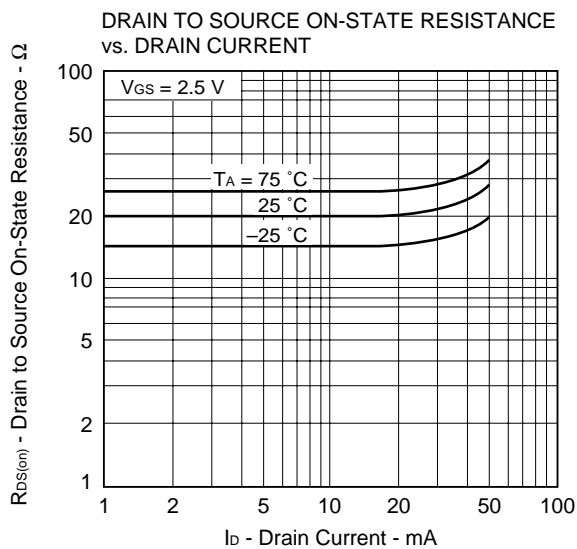
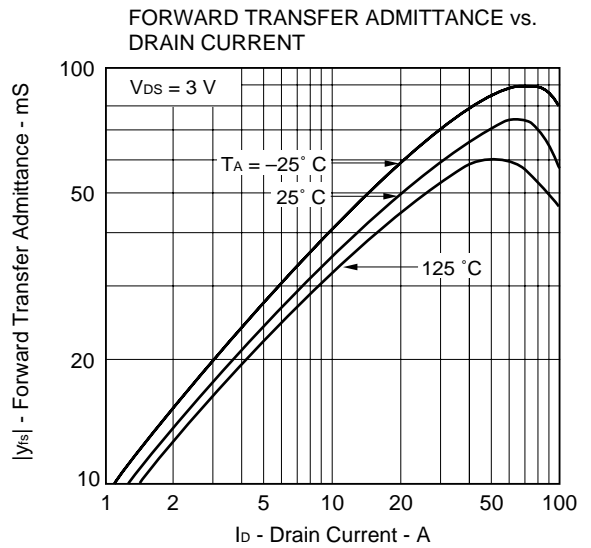
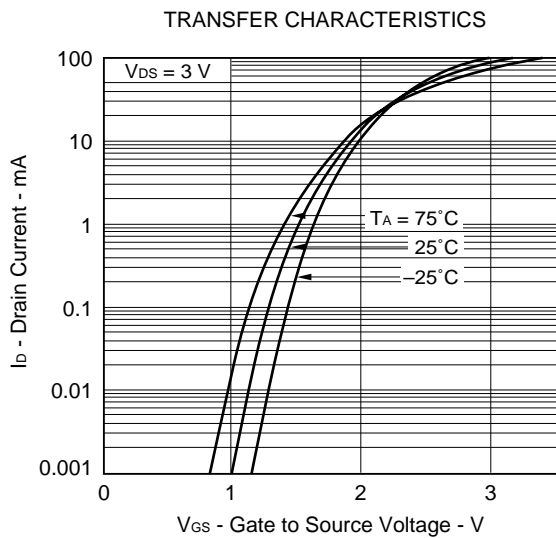
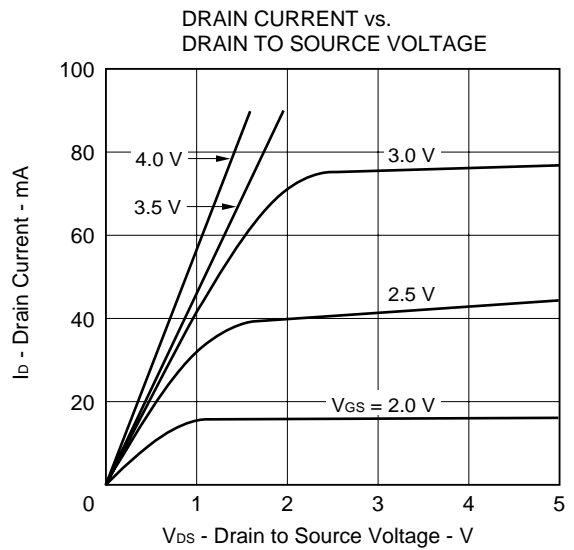
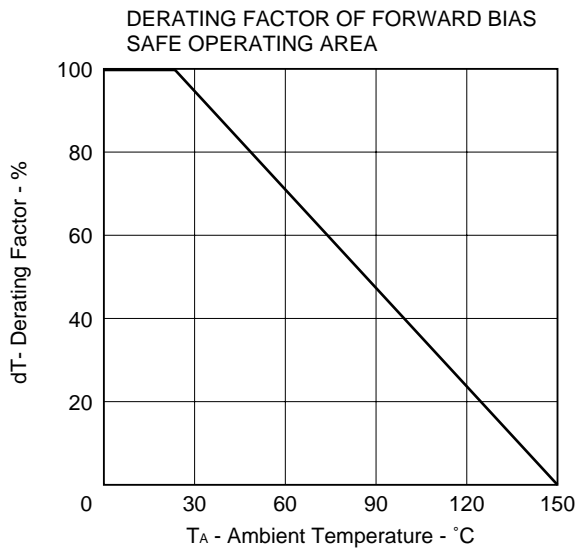
ABSOLUTE MAXIMUM RATINGS (T_A = 25 °C)

PARAMETER	SYMBOL	TEST CONDITIONS	RATING	UNIT
Drain to Source Voltage	V _{DSS}	V _{GS} = 0	50	V
Gate to Source Voltage	V _{GSS}	V _{DS} = 0	±7.0	V
Drain Current (DC)	I _{D(DC)}		±100	mA
Drain Current (Pulse)	I _{D(pulse)}	PW ≤ 10 ms, duty cycle ≤ 50 %	±200	mA
Total Power Dissipation	P _T		150	mW
Channel Temperature	T _{ch}		150	°C
Storage Temperature	T _{stg}		-55 to +150	°C

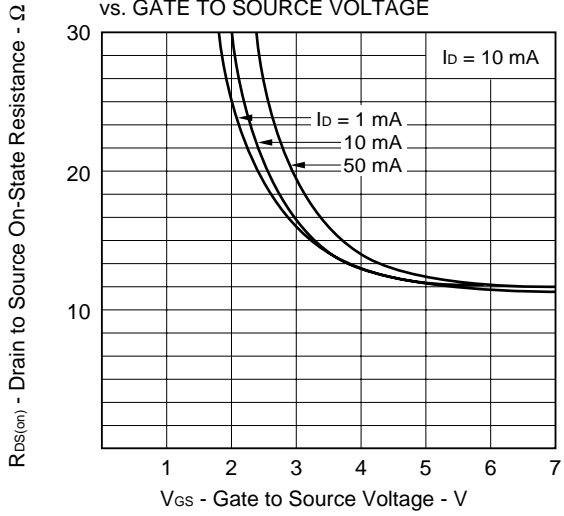
ELECTRICAL CHARACTERISTICS (T_A = 25 °C)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Drain Cut-Off Current	I _{DSS}	V _{DS} = 50 V, V _{GS} = 0			1.0	μA
Gate Leakage Current	I _{GSS}	V _{GS} = ±7.0 V, V _{DS} = 0			±5.0	μA
Gate Cut-Off Voltage	V _{GS(off)}	V _{DS} = 3.0 V, I _D = 1.0 μA	0.7	1.0	1.5	V
Forward Transfer Admittance	y _{fs}	V _{DS} = 3 V, I _D = 10 mA	20			mS
Drain to Source On-State Resistance	R _{DS(on)1}	V _{GS} = 2.5 V, I _D = 10 mA		20	40	Ω
Drain to Source On-State Resistance	R _{DS(on)2}	V _{GS} = 4.0 V, I _D = 10 mA		15	20	Ω
Input Capacitance	C _{iss}	V _{DS} = 3 V, V _{GS} = 0, f = 1.0 MHz		6		pF
Output Capacitance	C _{oss}			8		pF
Reverse Transfer Capacitance	C _{rss}			1.2		pF
Turn-ON Delay Time	t _{d(on)}	V _{DD} = 3 V, I _D = 20 mA, V _{GS(on)} = 3 V, R _G = 10 Ω, R _L = 120 Ω		9		ns
Rise Time	t _r			50		ns
Turn-OFF Delay Time	t _{d(off)}			20		ns
Fall Time	t _f			40		ns

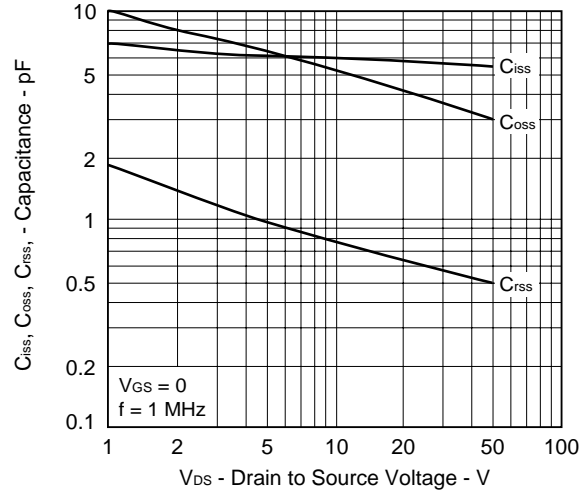
TYPICAL CHARACTERISTICS (T_A = 25 °C)



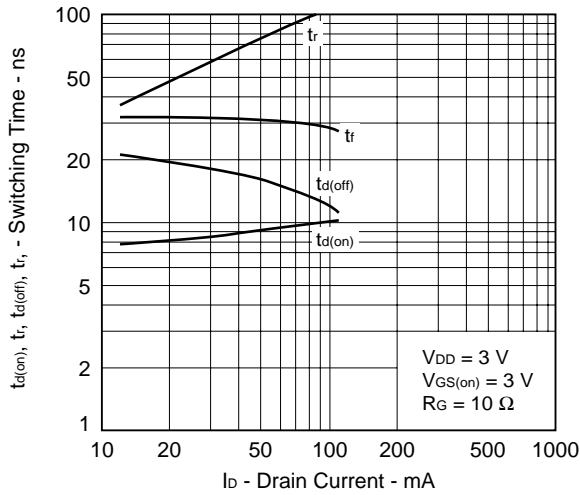
DRAIN TO SOURCE ON-STAGE RESISTANCE vs. GATE TO SOURCE VOLTAGE



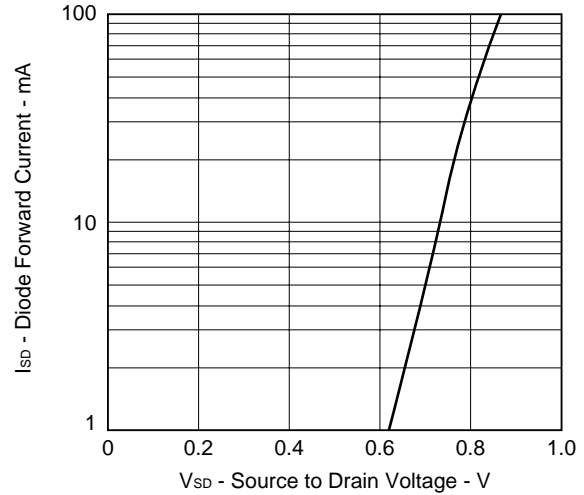
CAPACITANCE vs. DRAIN TO SOURCE VOLTAGE



SWITCHING CHARACTERISTICS



SOURCE TO DRAIN DIODE FORWARD VOLTAGE



REFERENCE

Document Name	Document No.
NEC semiconductor device reliability/quality control system	TEI-1202
Quality grade on NEC semiconductor devices	IEI-1209
Semiconductor device mounting technology manual	C10535E
Guide to quality assurance for semiconductor devices	MEI-1202
Semiconductor selection guide	X10679E

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Special: Transportation equipment (automobiles, trains, ships, etc.), traffic control systems, anti-disaster systems, anti-crime systems, safety equipment and medical equipment (not specifically designed for life support)

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