

To our customers,

Old Company Name in Catalogs and Other Documents

On April 1st, 2010, NEC Electronics Corporation merged with Renesas Technology Corporation, and Renesas Electronics Corporation took over all the business of both companies. Therefore, although the old company name remains in this document, it is a valid Renesas Electronics document. We appreciate your understanding.

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>.

Not recommended
for new design

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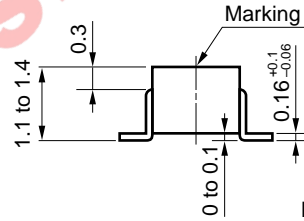
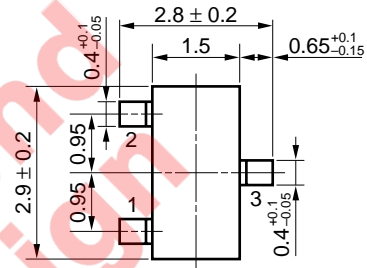
N-CHANNEL MOS FET
FOR HIGH-SPEED SWITCHING

The 2SK2158 is an N-channel vertical type MOS FET featuring an operating voltage as low as 1.5 V. Because it can be driven on a low voltage and it is not necessary to consider driving current, the 2SK2158 is suitable for use in low-voltage portable systems such as headphone stereo sets and camcorders.

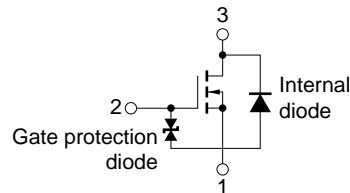
FEATURES

- Capable of drive gate with 1.5 V
- Because of high input impedance, there is no need to consider driving current.
- Bias resistance can be omitted, enabling reduction in total number of parts.

PACKAGE DIMENSIONS
(in millimeters)



EQUIVALENT CIRCUIT



PIN CONNECTION

1. Source (S)
2. Gate (G)
3. Drain (D)

ABSOLUTE MAXIMUM RATINGS (T_A = 25 °C)

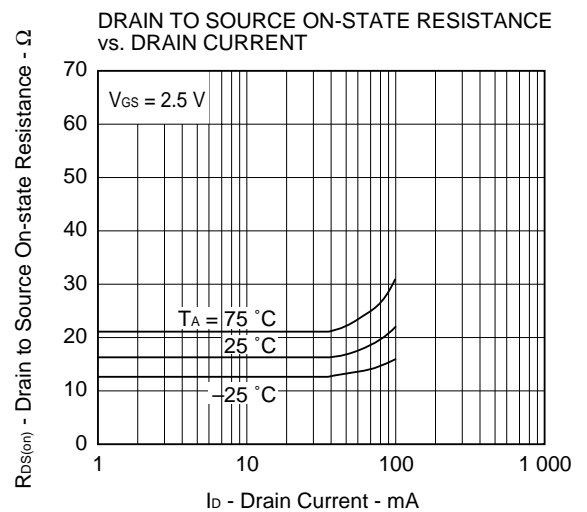
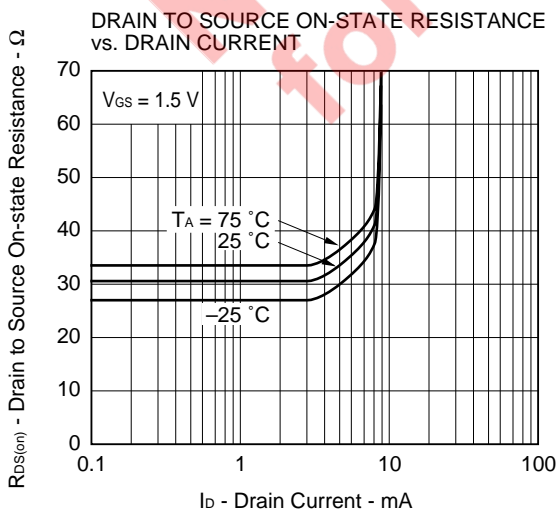
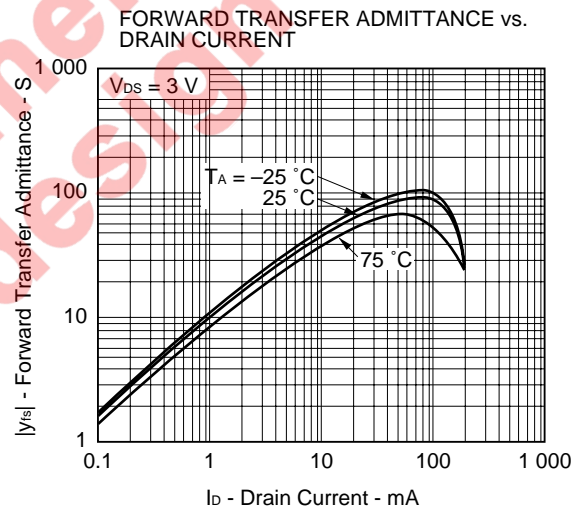
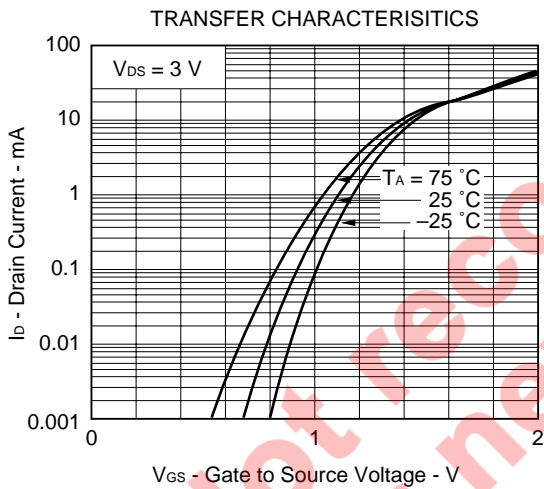
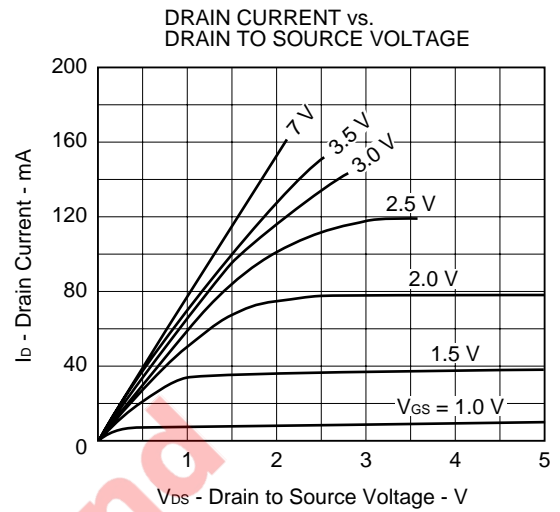
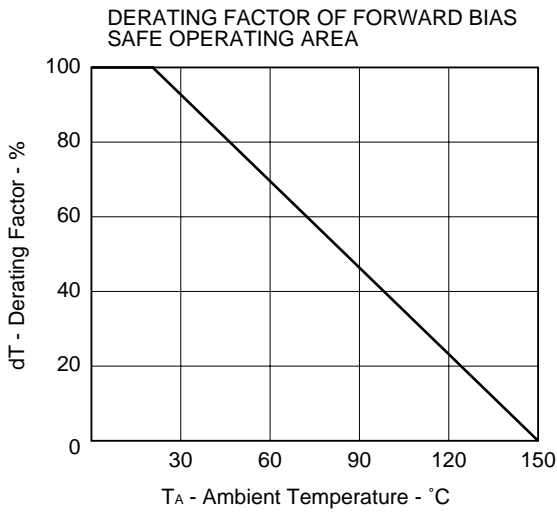
PARAMETER	SYMBOL	TEST CONDITIONS	RATINGS	UNIT
Drain to Source Voltage	V _{DSS}	V _{GS} = 0	50	V
Gate to Source Voltage	V _{GSS}	V _{DS} = 0	±7.0	V
Drain Current (DC)	I _{D(DC)}		±0.1	A
Drain Current (pulse)	I _{D(pulse)}	PW ≤ 10 ms, Duty Cycle ≤ 50 %	±0.2	A
Total Power Dissipation	P _T		200	mW
Channel Temperature	T _{ch}		150	°C
Storage Temperature	T _{stg}		-55 to +150	°C

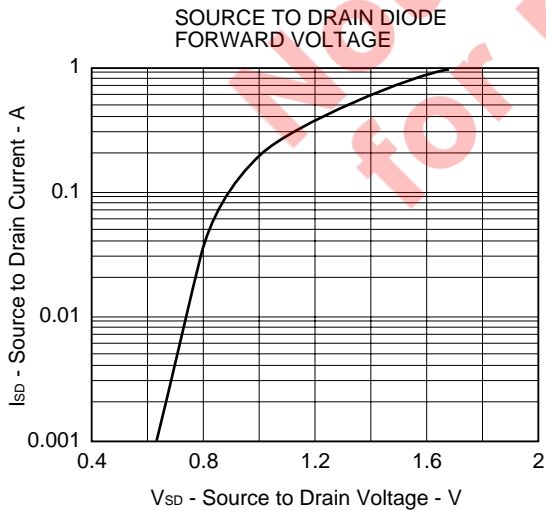
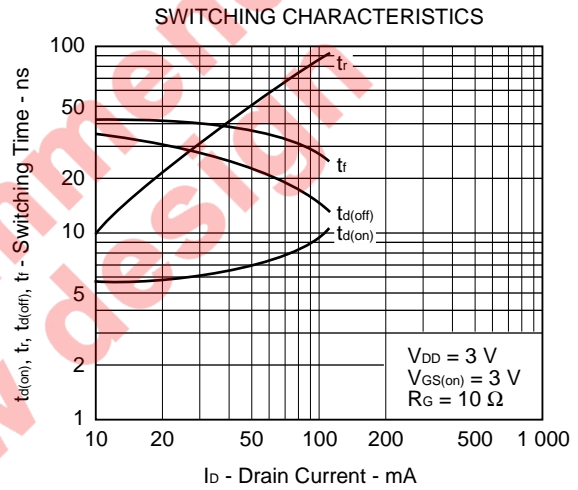
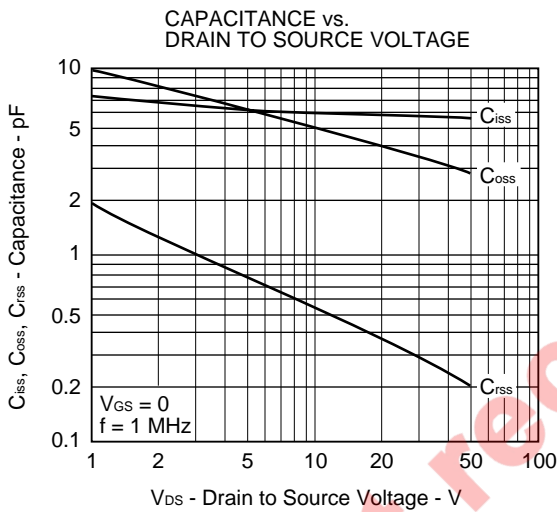
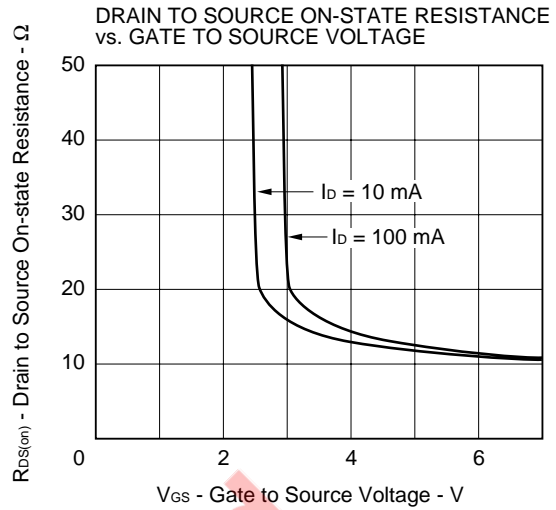
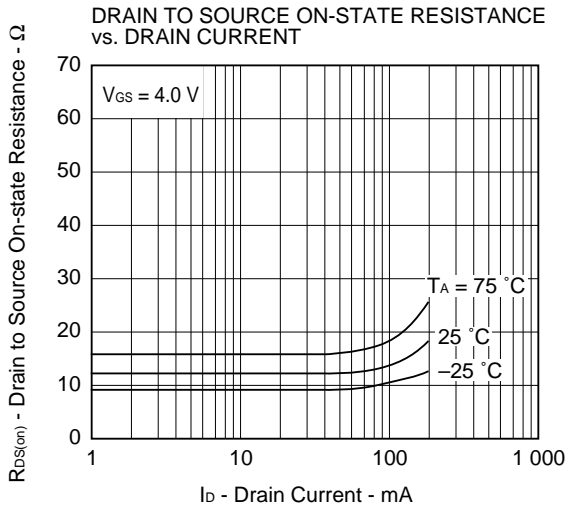
ELECTRICAL CHARACTERISTICS (T_A = 25 °C)

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			±3.0	μA
Gate Cut-off Voltage	V _{GS(off)}	V _{DS} = 3 V, I _D = 1.0 μA	0.5	0.7	1.1	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} = 1.5 V, I _D = 1.0 mA		32	50	Ω
Drain to Source On-state Resistance	R _{DS(on)2}	V _{GS} = 2.5 V, I _D = 10 mA		16	20	Ω
Drain to Source On-state Resistance	R _{DS(on)3}	V _{GS} = 4.0 V, I _D = 10 mA		12	15	Ω
Input Capacitance	C _{iss}	V _{DS} = 3 V, V _{GS} = 0		6		pF
Output Capacitance	C _{oss}	f = 1.0 MHz		8		pF
Reverse Transfer Capacitance	C _{rss}			1		pF
Turn-On Delay Time	t _{d(on)}	V _{DD} = 3 V, I _D = 20 mA		9		ns
Rise Time	t _r	V _{GS(on)} = 3 V, R _G = 10 Ω		48		ns
Turn-Off Delay Time	t _{d(off)}	R _L = 150 Ω		21		ns
Fall Time	t _f			31		ns

Not recommended for new designs

TYPICAL CHARACTERISTICS (T_A = 25 °C)





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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for new design

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Standard: Computers, office equipment, communications equipment, test and measurement equipment, audio and visual equipment, home electronic appliances, machine tools, personal electronic equipment and industrial robots

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)

Specific: Aircrafts, aerospace equipment, submersible repeaters, nuclear reactor control systems, life support systems or medical equipment for life support, etc.

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Anti-radioactive design is not implemented in this product.