

To our customers,

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## Old Company Name in Catalogs and Other Documents

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

April 1<sup>st</sup>, 2010  
Renesas Electronics Corporation

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

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EOL announced Product

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P-CHANNEL MOS FIELD EFFECT TRANSISTOR  
FOR HIGH SPEED SWITCHING

DESCRIPTION

The 2SJ462 is a switching device which can be driven directly by an IC operating at 3 V.

The 2SJ462 features a low on-state resistance and can be driven by a low voltage power source, so it is suitable for applications such as power management.

FEATURES

- Can be driven by a 2.5 V power source.
- New-type compact package.

Has advantages of packages for small signals and for power transistors, and compensates those disadvantages.

- Low on-state resistance.

$R_{DS(ON)}$  : 0.29  $\Omega$  MAX. @  $V_{GS} = -2.5$  V,  $I_D = -0.5$  A

$R_{DS(ON)}$  : 0.19  $\Omega$  MAX. @  $V_{GS} = -4.0$  V,  $I_D = -1.0$  A

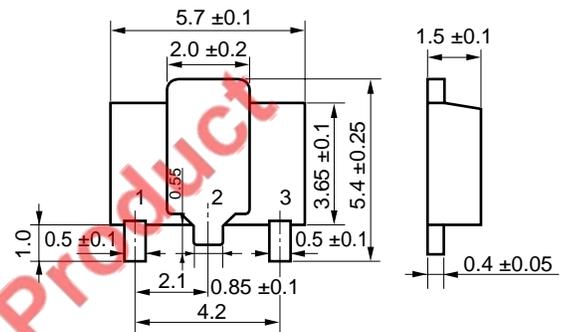
ABSOLUTE MAXIMUM RATINGS ( $T_A = +25$  °C)

Drain to Source Voltage	$V_{DSS}$	-12	V
Gate to Source Voltage	$V_{GSS}$	$\pm 8.0$	V
Drain Current (DC)	$I_{D(DC)}$	$\pm 2.5$	A
Drain Current (pulse)	$I_{D(pulse)}$	$\pm 5.0^*$	A
Total Power Dissipation	$P_T$	2.0**	W
Channel Temperature	$T_{ch}$	150	C
Storage Temperature	$T_{stg}$	-55 to +150	C

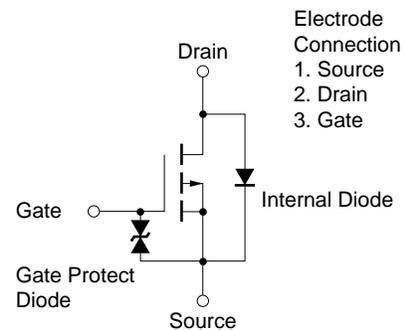
\*  $PW \leq 10$  ms, Duty Cycle  $\leq 1$  %

\*\* Mounted on ceramic board of 7.5 cm<sup>2</sup> × 0.7 mm

Package Drawings (unit : mm)



Equivalent Circuit



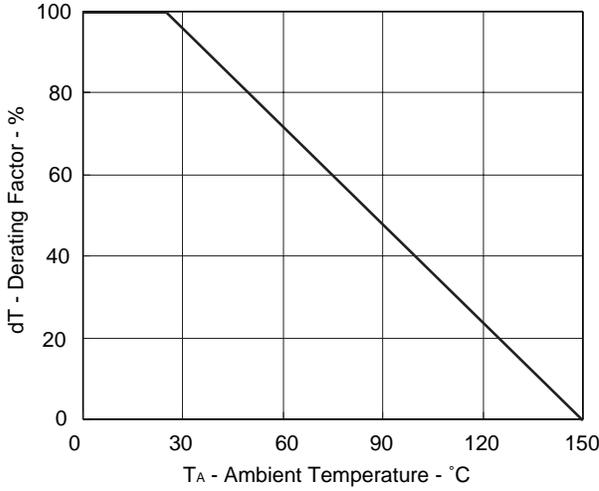
Marking : UA3

ELECTRICAL SPECIFICATIONS (T<sub>A</sub> = +25 °C)

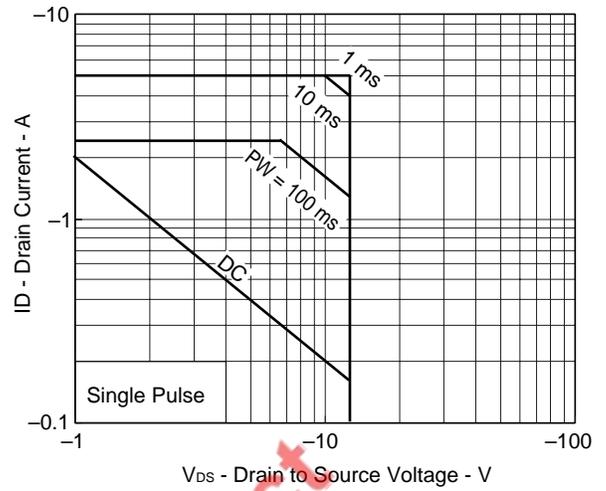
Parameter	Symbol	MIN.	TYP.	MAX.	Unit	Conditions
Drain Cut-off Current	I <sub>DSS</sub>			-10	μA	V <sub>DS</sub> = -12 V, V <sub>GS</sub> = 0
Gate Leakage Current	I <sub>GSS</sub>			±10	μA	V <sub>GS</sub> = ±8.0 V, V <sub>DS</sub> = 0
Gate Cut-off Voltage	V <sub>GS(off)</sub>	-0.7	-1.0	-1.3	V	V <sub>DS</sub> = -3.0 V, I <sub>D</sub> = -1.0 mA
Forward Transfer Admittance	y <sub>fs</sub>	1.5			S	V <sub>DS</sub> = -3.0 V, I <sub>D</sub> = -1.0 A
Drain to Source On-State Resistance	R <sub>DS(on)1</sub>		195	290	mΩ	V <sub>GS</sub> = -2.5 V, I <sub>D</sub> = -0.5 A
Drain to Source On-State Resistance	R <sub>DS(on)2</sub>		135	190	mΩ	V <sub>GS</sub> = -4.0, I <sub>D</sub> = -1.0 A
Input Capacitance	C <sub>iss</sub>		940		pF	V <sub>DS</sub> = -3.0 V, V <sub>GS</sub> = 0
Output Capacitance	C <sub>oss</sub>		835		pF	f = 1.0 MHz
Reverse Transfer Capacitance	C <sub>rss</sub>		495		pF	
Turn-On Delay Time	t <sub>d(on)</sub>		45		ns	V <sub>DD</sub> = -3.0 V, I <sub>D</sub> = -1.0 A
Rise Time	t <sub>r</sub>		225		ns	V <sub>GS(on)</sub> = -3.0 V, R <sub>G</sub> = 10 Ω
Turn-Off Delay Time	t <sub>d(off)</sub>		140		ns	R <sub>L</sub> = 3.0 Ω
Fall Time	t <sub>f</sub>		195		ns	
Total Gate Charge	Q <sub>G</sub>		12		nC	V <sub>DS</sub> = -8 V, I <sub>D</sub> = -2.5 A
Gate to Source Charge	Q <sub>GS</sub>		2		nC	V <sub>GS</sub> = -3.0 V, I <sub>G</sub> = -2 mA
Gate to Drain Charge	Q <sub>GD</sub>		7		nC	
Diode Forward Voltage	V <sub>F(S-D)</sub>		-0.86		V	I <sub>F</sub> = -2.5 A, V <sub>GS</sub> = 0
Reverse Recovery Time	t <sub>rr</sub>		150		ns	I <sub>F</sub> = -2.5 A, V <sub>GS</sub> = 0
Reverse Recovery Charge	Q <sub>rr</sub>		160		nC	di/dt = 50 A/μs

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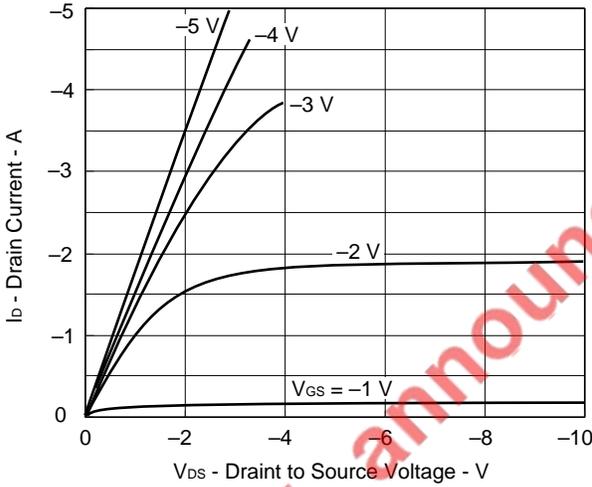
DERATING FACTOR OF FORWARD BIAS SAFE OPERATING AREA



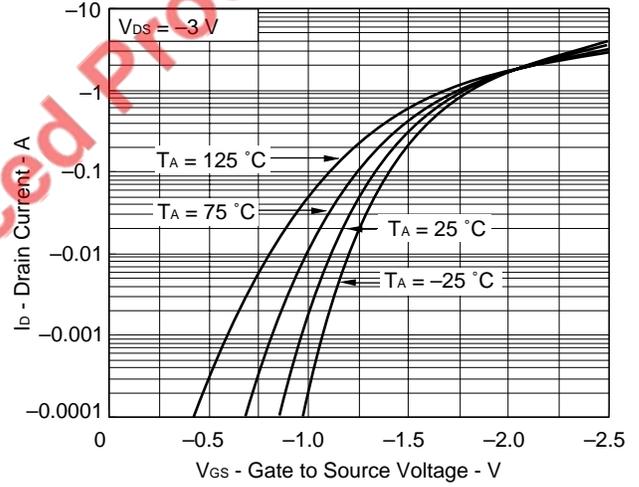
FORWARD BIAS SAFE OPERATING AREA



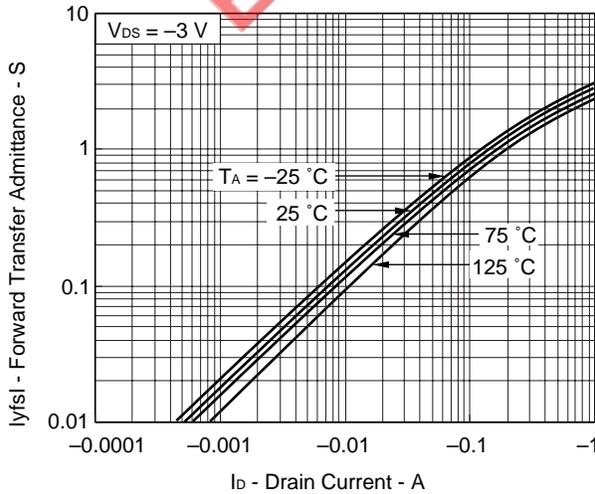
DRAIN CURRENT vs. DRAIN TO SOURCE VOLTAGE



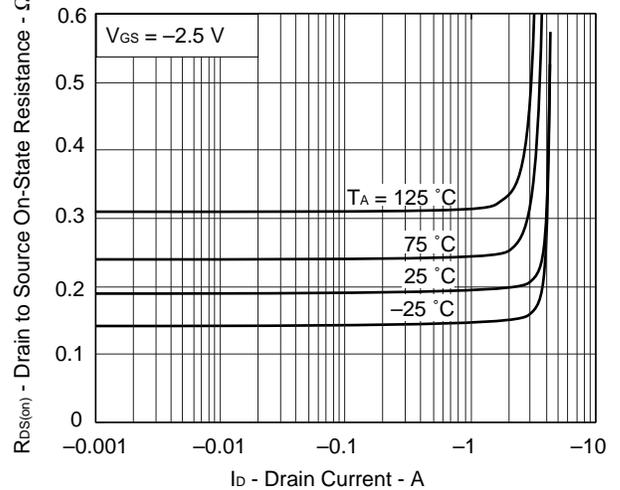
TRANSFER CHARACTERISTICS



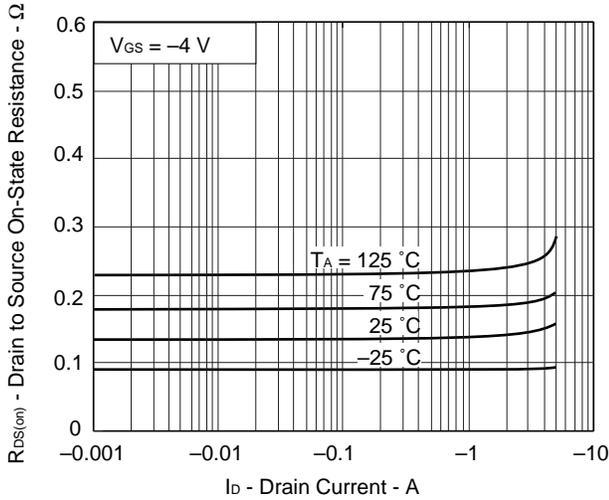
FORWARD TRANSFER ADMITTANCE vs. DRAIN CURRENT



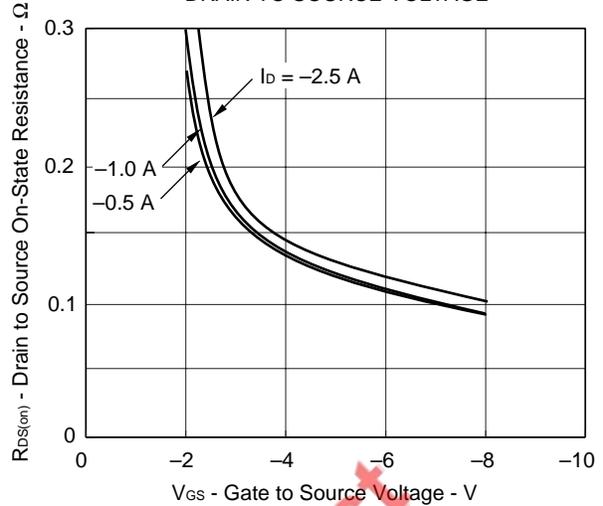
DRAIN TO SOURCE ON-STATE RESISTANCE vs. DRAIN CURRENT



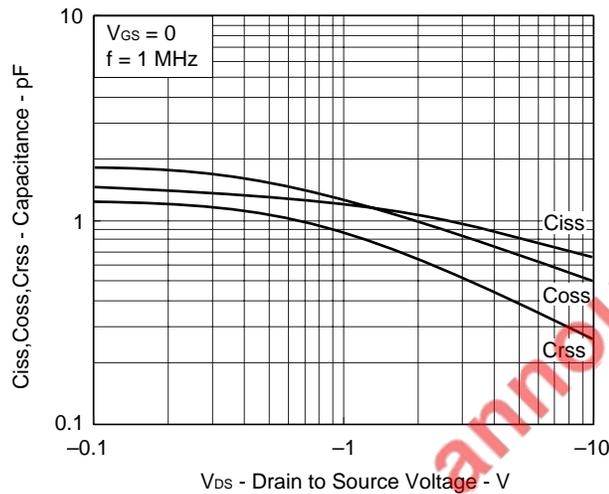
DRAIN TO SOURCE ON-STATE RESISTANCE vs. DRAIN CURRENT



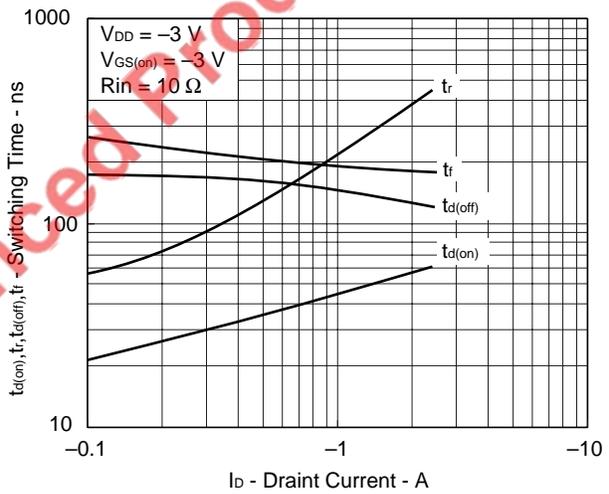
DRAIN CURRENT vs. DRAIN TO SOURCE VOLTAGE



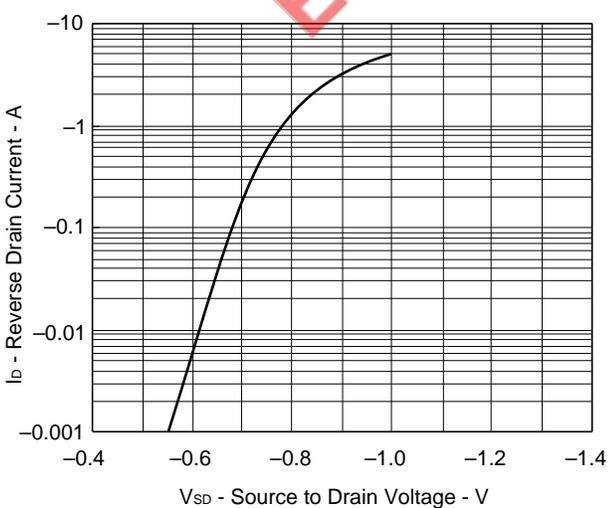
CAPACITANCE vs. DRAIN TO SOURCE VOLTAGE



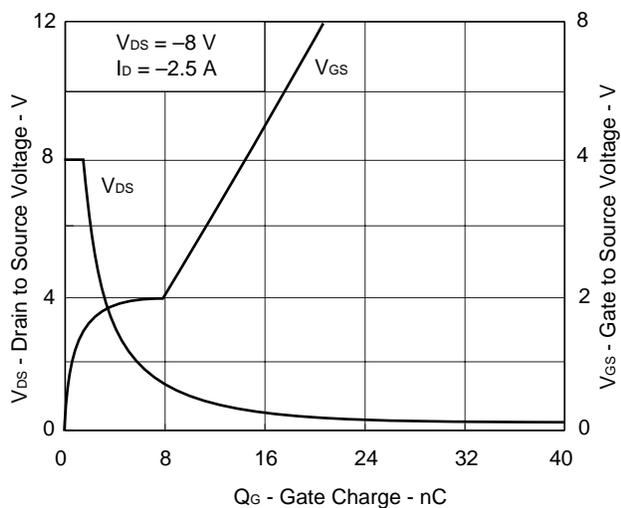
SWITCHING CHARACTERISTICS



SOURCE TO DRAIN DIODE FORWARD VOLTAGE



DYNAMIC INPUT/OUTPUT CHARACTERISTICS



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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