

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

P-CHANNEL MOS FIELD EFFECT TRANSISTOR FOR SWITCHING

DESCRIPTION

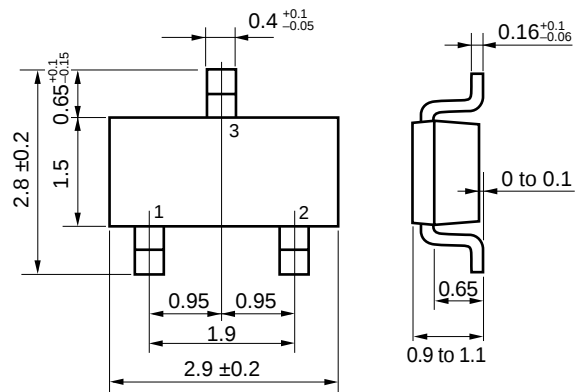
The 2SJ557 is a switching device which can be driven directly by a 4 V power source.

The 2SJ557 features a low on-state resistance and excellent switching characteristics, and is suitable for applications such as power switch of portable machine and so on.

FEATURES

- Can be driven by a 4 V power source
- Low on-state resistance
 $R_{DS(on)1} = 155 \text{ m}\Omega \text{ MAX. (} V_{GS} = -10 \text{ V, } I_D = -1.0 \text{ A)}$
 $R_{DS(on)2} = 255 \text{ m}\Omega \text{ MAX. (} V_{GS} = -4.5 \text{ V, } I_D = -1.0 \text{ A)}$
 $R_{DS(on)3} = 290 \text{ m}\Omega \text{ MAX. (} V_{GS} = -4.0 \text{ V, } I_D = -1.0 \text{ A)}$

PACKAGE DRAWING (Unit : mm)

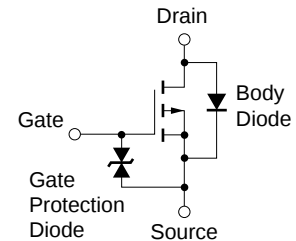


1 : Gate
2 : Source
3 : Drain

ORDERING INFORMATION

PART NUMBER	PACKAGE
2SJ557	SC-96 (Mini Mold Thin Type)

EQUIVALENT CIRCUIT



Marking: XB

ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$)

Drain to Source Voltage	V_{DSS}	-30	V
Gate to Source Voltage	V_{GSS}	-20 / +5	V
Drain Current (DC)	$I_{D(DC)}$	± 2.5	A
Drain Current (pulse) ^{Note1}	$I_{D(pulse)}$	± 10	A
Total Power Dissipation	P_{T1}	0.2	W
Total Power Dissipation ^{Note2}	P_{T2}	1.25	W
Channel Temperature	T_{ch}	150	$^\circ\text{C}$
Storage Temperature	T_{stg}	-55 to +150	$^\circ\text{C}$

- Notes 1.** $PW \leq 10 \mu\text{s}$, Duty Cycle $\leq 1 \%$
2. Mounted on FR-4 Board, $t \leq 5 \text{ sec.}$

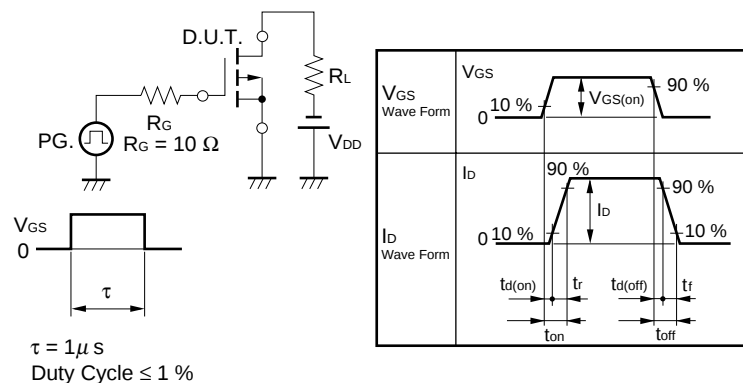
Remark The diode connected between the gate and source of the transistor serves as a protector against ESD. When this device actually used, an additional protection circuit is externally required if a voltage exceeding the rated voltage may be applied to this device.

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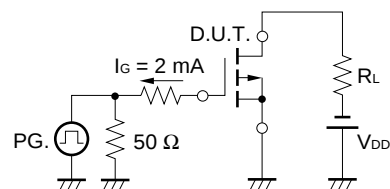
ELECTRICAL CHARACTERISTICS (T_A = 25°C)

CHARACTERISTICS	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Drain Cut-off Current	I _{DSS}	V _{DS} = -30 V, V _{GS} = 0 V			-10	μA
Gate Leakage Current	I _{GSS}	V _{GS} = ±16 V, V _{DS} = 0 V			±10	μA
Gate Cut-off Voltage	V _{GS(off)}	V _{DS} = -10 V, I _D = -1 mA	-1.0	-1.7	-2.5	V
Forward Transfer Admittance	y _{fs}	V _{DS} = -10 V, I _D = -1.5 A	1	2.5		S
Drain to Source On-state Resistance	R _{DS(on)1}	V _{GS} = -10 V, I _D = -1.0 A		114	155	mΩ
	R _{DS(on)2}	V _{GS} = -4.5 V, I _D = -1.0 A		178	255	mΩ
	R _{DS(on)3}	V _{GS} = -4.0 V, I _D = -1.0 A		212	290	mΩ
Input Capacitance	C _{iss}	V _{DS} = -10 V		312		pF
Output Capacitance	C _{oss}	V _{GS} = 0 V		117		pF
Reverse Transfer Capacitance	C _{rss}	f = 1 MHz		56		pF
Turn-on Delay Time	t _{d(on)}	V _{DD} = -10 V		12		ns
Rise Time	t _r	I _D = -1.0 A		7		ns
Turn-off Delay Time	t _{d(off)}	V _{GS(on)} = -10 V		133		ns
Fall Time	t _f	R _G = 10 Ω		85		ns
Total Gate Charge	Q _G	V _{DD} = -10 V		2.8		nC
Gate to Source Charge	Q _{GS}	I _D = -2.5 A		1.0		nC
Gate to Drain Charge	Q _{GD}	V _{GS} = -4.0 V		1.2		nC
Diode Forward Voltage	V _{F(S-D)}	I _F = 2.5 A, V _{GS} = 0 V		0.84		V
Reverse Recovery Time	t _{rr}	I _F = 2.5 A, V _{GS} = 0 V		28		ns
Reverse Recovery Charge	Q _{rr}	di/dt = 50 A/μs		7.8		nC

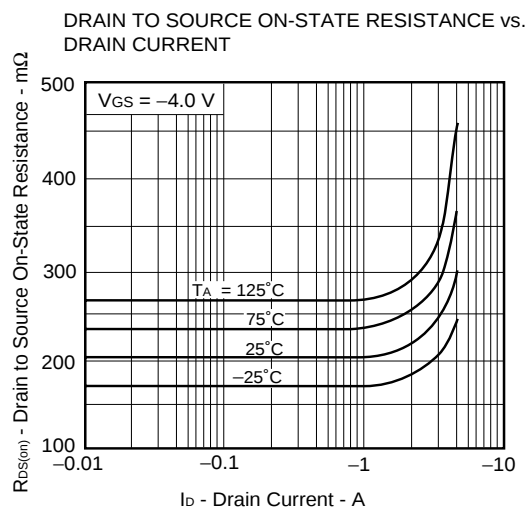
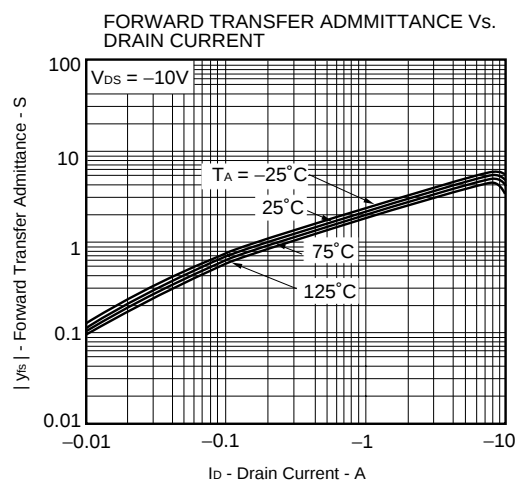
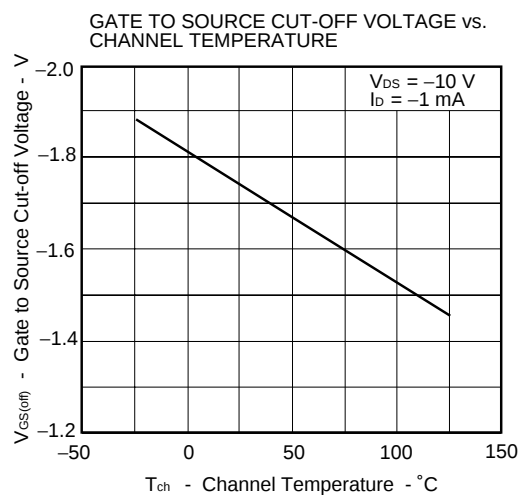
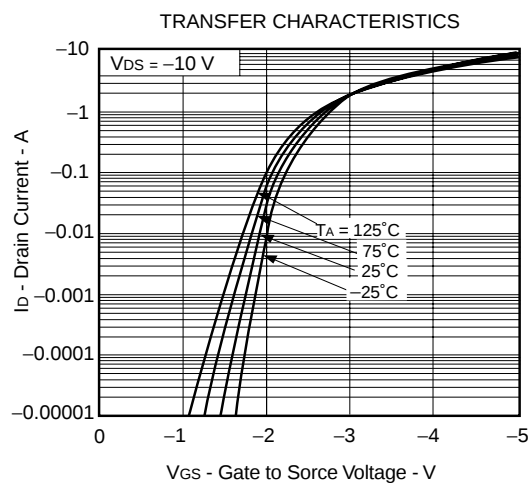
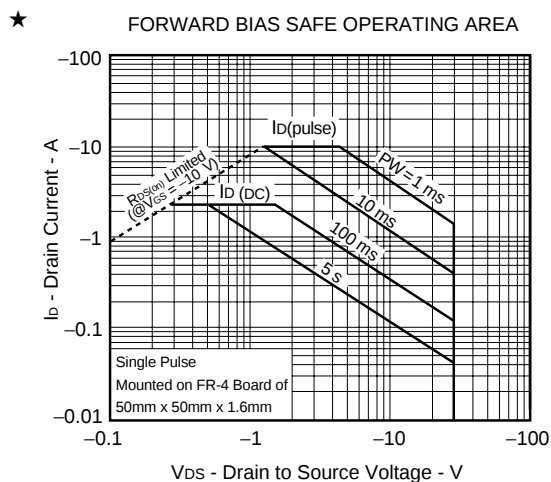
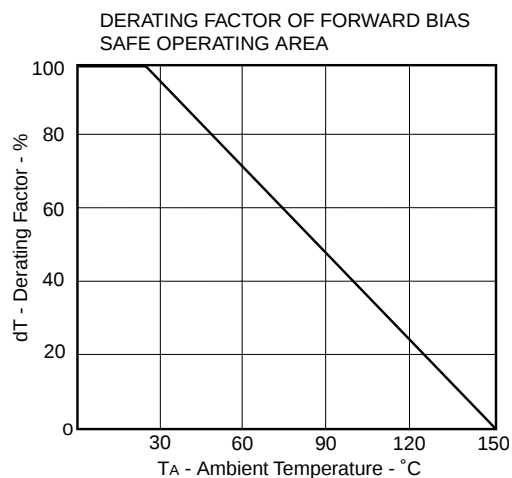
TEST CIRCUIT 1 SWITCHING TIME



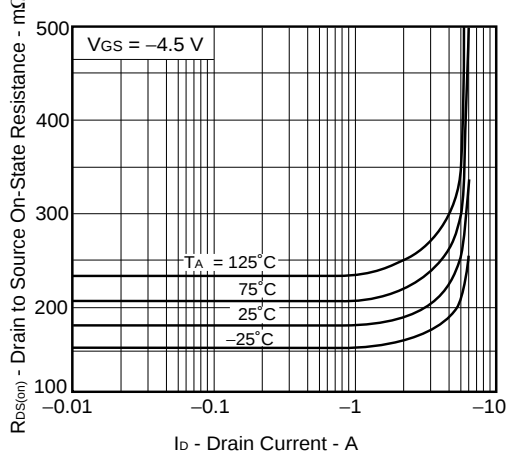
TEST CIRCUIT 2 GATE CHARGE



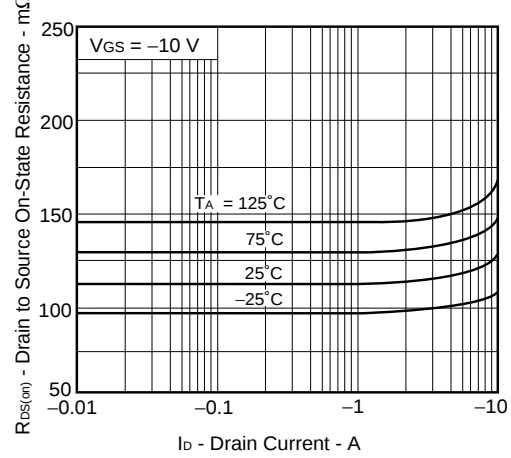
TYPICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$)



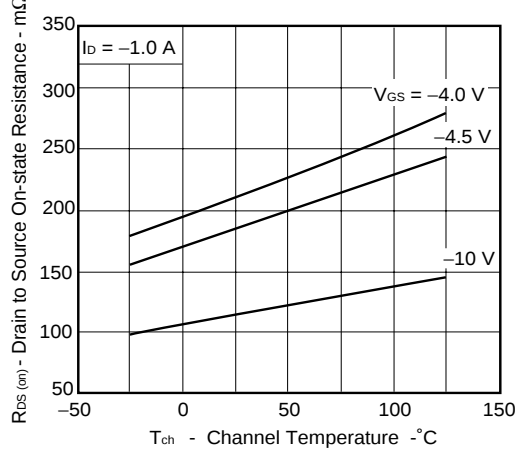
DRAIN TO SOURCE ON-STATE RESISTANCE vs. DRAIN CURRENT



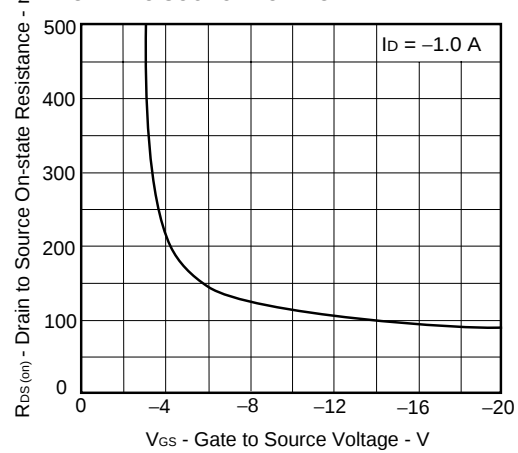
DRAIN TO SOURCE ON-STATE RESISTANCE vs. DRAIN CURRENT



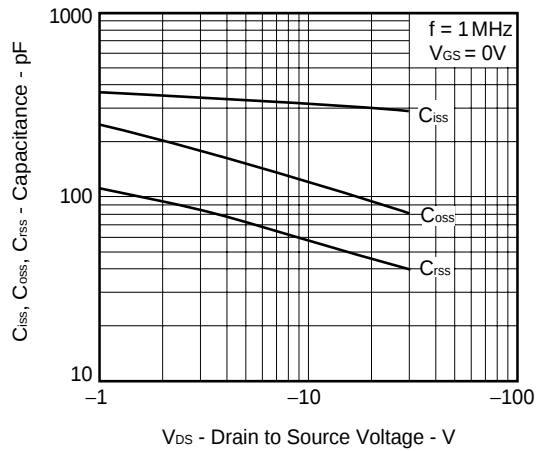
DRAIN TO SOURCE ON-STATE RESISTANCE vs. CHANNEL TEMPERATURE



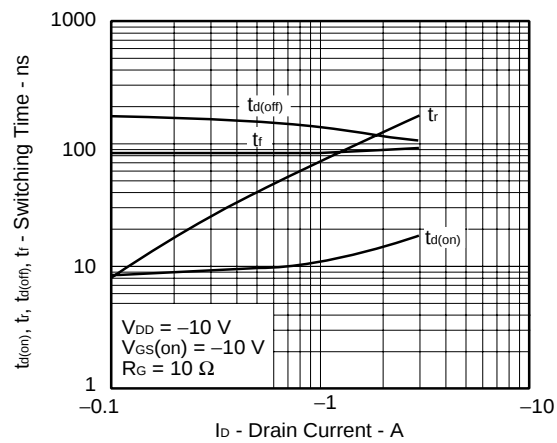
DRAIN TO SOURCE ON-STATE RESISTANCE vs. GATE TO SOURCE VOLTAGE

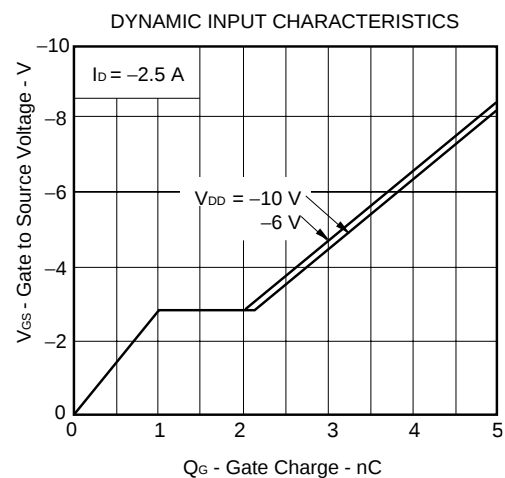
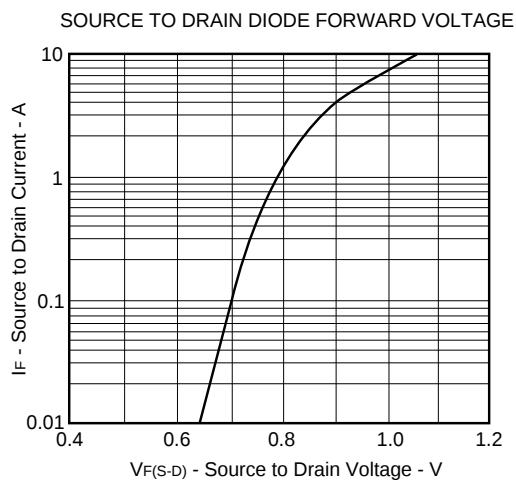


CAPACITANCE vs. DRAIN TO SOURCE VOLTAGE

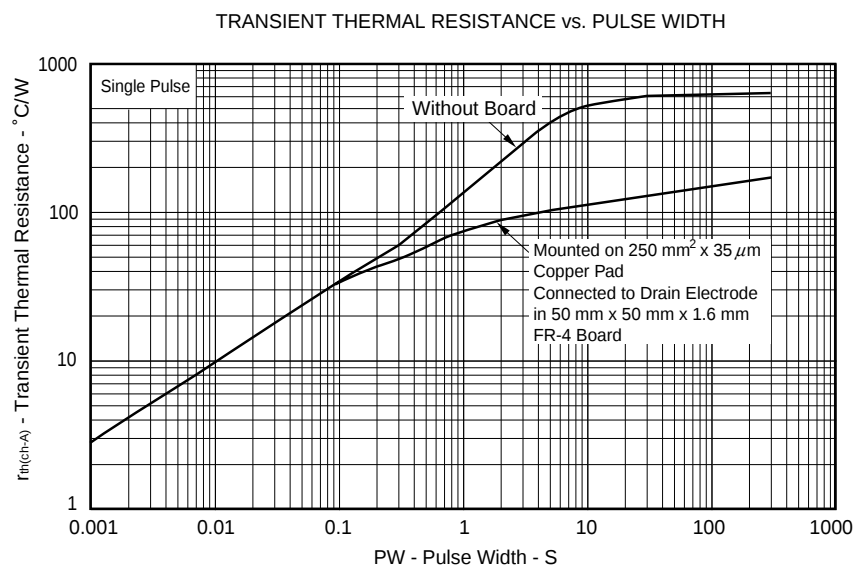


SWITCHING CHARACTERISTICS





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[MEMO]

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