

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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MOS FIELD EFFECT TRANSISTOR

2SJ324,324-Z

SWITCHING P-CHANNEL POWER MOS FET

DESCRIPTION

The 2SJ324 is P-channel MOS Field Effect Transistor designed for solenoid, motor and lamp driver.

FEATURES

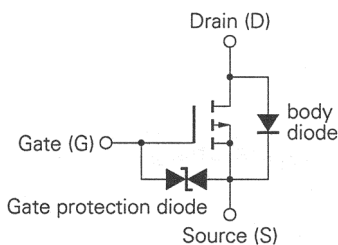
- Low On-state Resistance
 $R_{DS(on)} = 0.18 \Omega$ TYP. ($V_{GS} = -10 V, I_D = -1.0 A$)
 $R_{DS(on)} = 0.36 \Omega$ TYP. ($V_{GS} = -4 V, I_D = -0.8 A$)
- Low C_{iss} : $C_{iss} = 330 pF$ TYP.
- Built-in G-S Gate Protection Diode

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

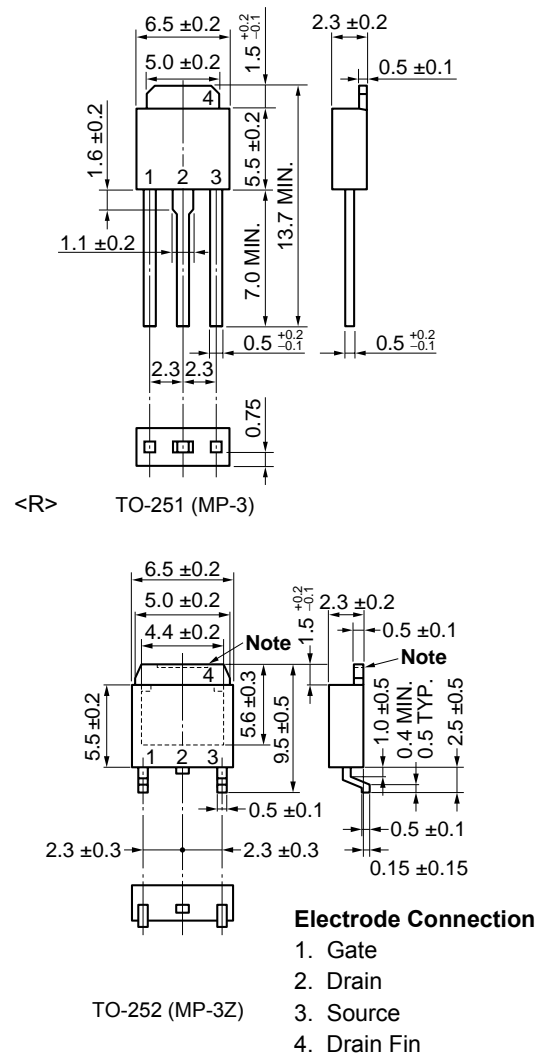
Drain to Source Voltage	V_{DSS}	-30	V
Gate to Source Voltage (AC)	V_{GSS}	± 20	V
Gate to Source Voltage (DC)	V_{GSS}	-20, +10	V
Drain Current (DC)	$I_{D(DC)}$	± 2.0	A
Drain Current (pulse) ^{Note}	$I_{D(pulse)}$	± 8.0	A
Total Power Dissipation ($T_C = 25^\circ C$)	P_{T1}	20	W
Total Power Dissipation ($T_A = 25^\circ C$)	P_{T2}	1.0	W
Channel Temperature	T_{ch}	150	$^\circ C$
Storage Temperature	T_{stg}	-55 to +150	$^\circ C$

Note $PW \leq 10 \mu s$, Duty Cycle $\leq 1\%$

EQUIVALENT CIRCUIT



PACKAGE DRAWINGS (Unit: mm)

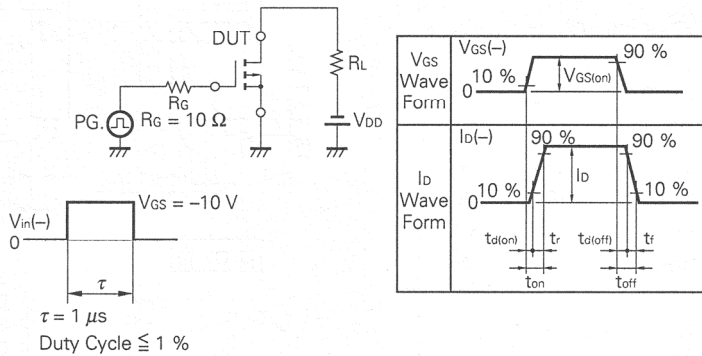


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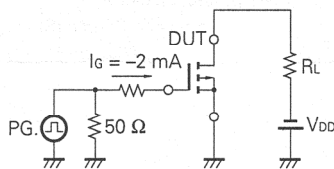
ELECTRICAL CHARACTERISTICS (T_a = 25 °C)

CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
Drain to Source On-state Resistance	R _{DS(on)}		0.18	0.25	Ω	V _{GS} = -10 V, I _D = -1.0 A
Drain to Source On-state Resistance	R _{DS(on)}		0.36	0.52	Ω	V _{GS} = -4 V, I _D = -0.8 A
Gate to Source Cutoff Voltage	V _{GS(off)}	-1.0	-1.5	-2.0	V	V _{DS} = -10 V, I _D = -1 mA
Forward Transfer Admittance	y _{fs}	1.0	1.9		S	V _{DS} = -10 V, I _D = -1.0 A
Drain Leakage Current	I _{DSS}			-10	μA	V _{DS} = -30 V, V _{GS} = 0
Gate to Source Leakage Current	I _{GSS}			±10	μA	V _{GS} = ±16 V, V _{DS} = 0
Input Capacitance	C _{iss}		330		pF	V _{DS} = -10 V
Output Capacitance	C _{oss}		290		pF	V _{GS} = 0
Reverse Transfer Capacitance	C _{rss}		105		pF	f = 1 MHz
Turn-On Delay Time	t _{d(on)}		7		ns	V _{GS(on)} = -10 V V _{DD} = -15 V I _D = -1.0 A, R _G = 10 Ω R _L = 15 Ω
Rise Time	t _r		35		ns	
Turn-Off Delay Time	t _{d(off)}		40		ns	
Fall Time	t _f		30		ns	
Total Gate Charge	Q _G		12		nC	V _{GS} = -10 V I _D = -2.0 A V _{DD} = -24 V
Gate to Source Charge	Q _{GS}		1.5		nC	
Gate to Drain Charge	Q _{GD}		4.5		nC	
Body Diode Forward Voltage	V _F		0.9		V	I _F = 2.0 A, V _{GS} = 0
Reverse Recovery Time	t _{rr}		50		ns	I _F = 2.0 A, V _{GS} = 0
Reverse Recovery Charge	Q _{rr}		40		nC	di/dt = 50 A/μs
ESD	V _{ESD}		±130		V	C = 200 pF, R = 0, Single Pulse

Test Circuit 1: Switching Time

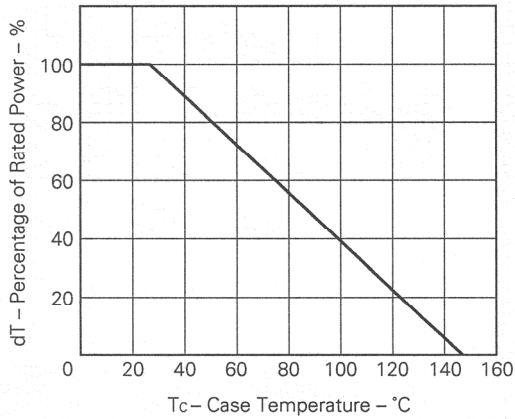


Test Circuit 2: Gate Charge

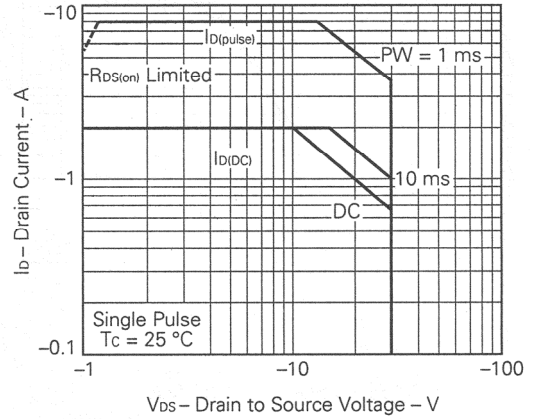


TYPICAL CHARACTERISTICS (T_a = 25 °C)

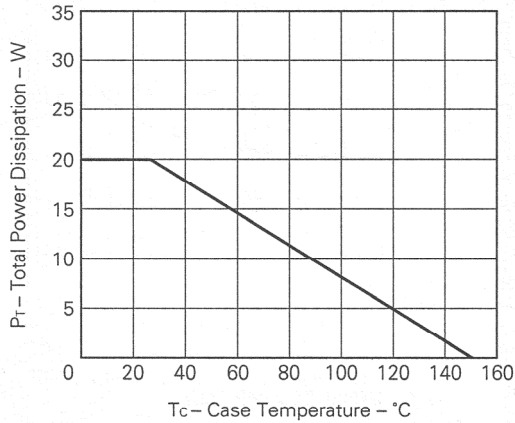
DERATING FACTOR OF FORWARD BIAS SAFE OPERATING AREA



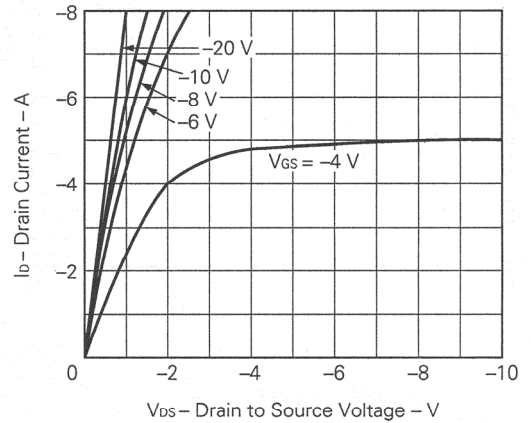
FORWARD BIAS SAFE OPERATING AREA



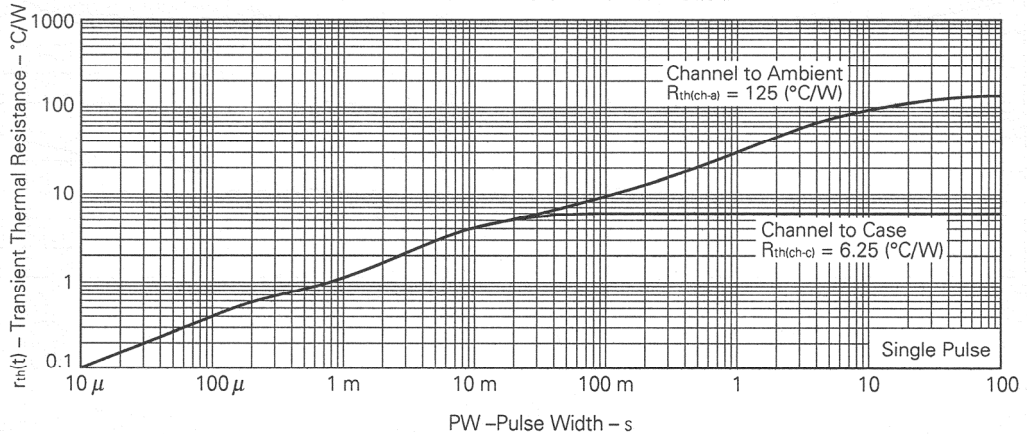
TOTAL POWER DISSIPATION vs. CASE TEMPERATURE

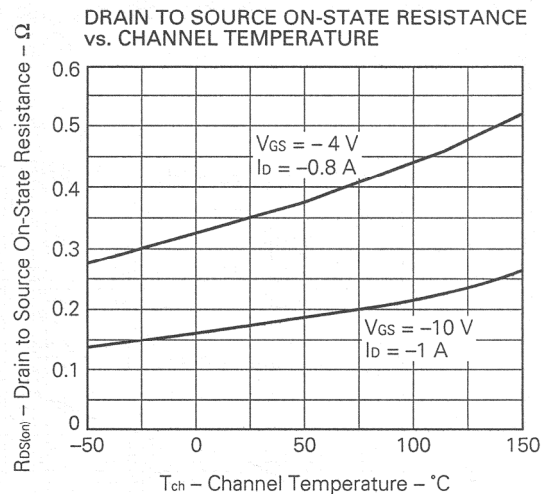
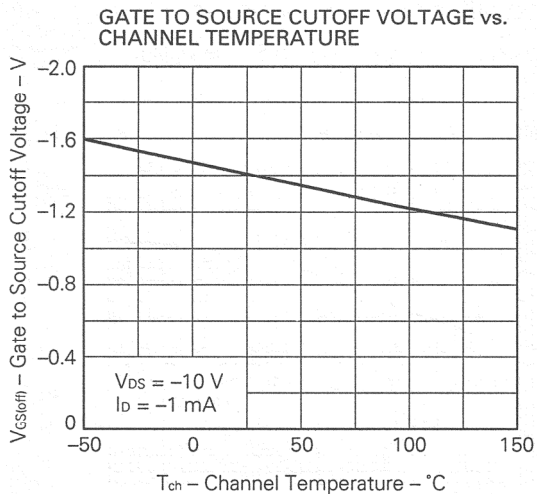
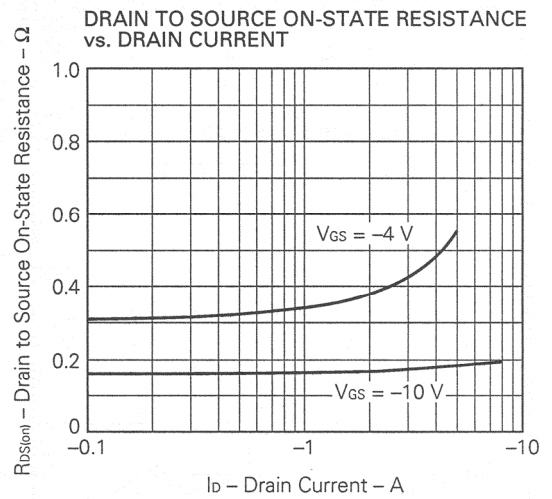
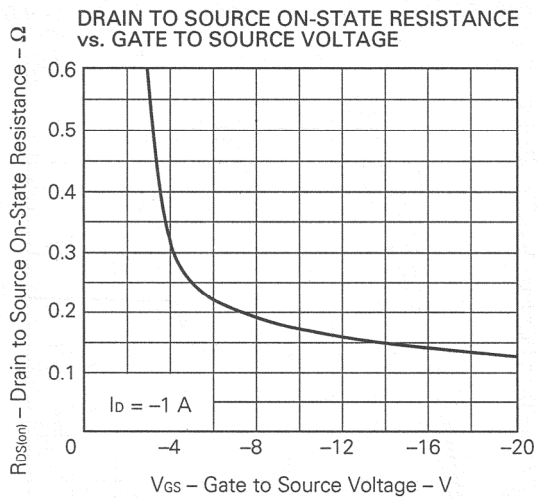
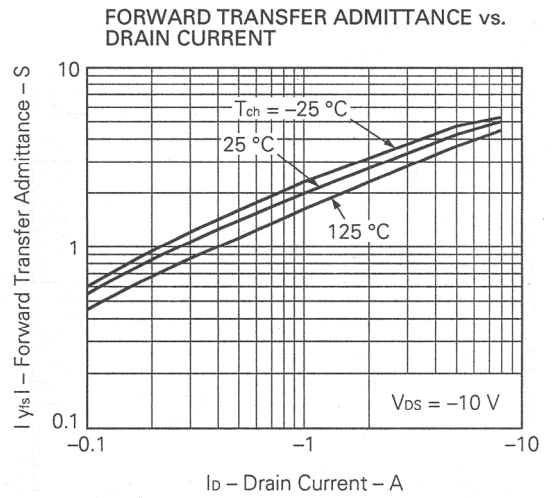
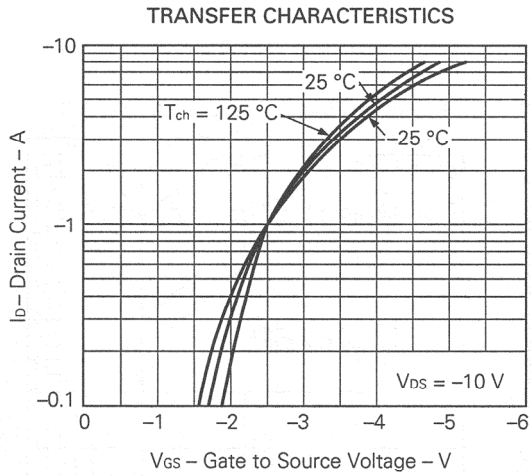


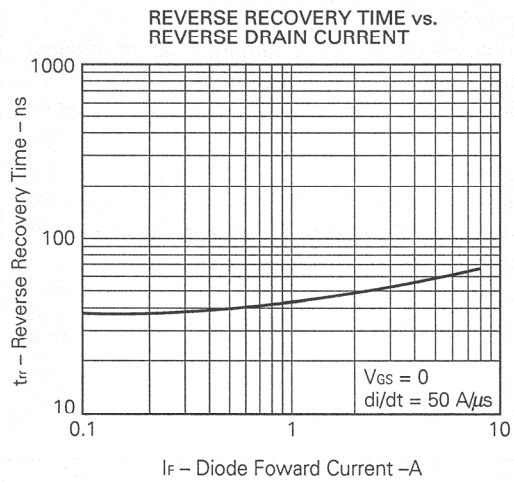
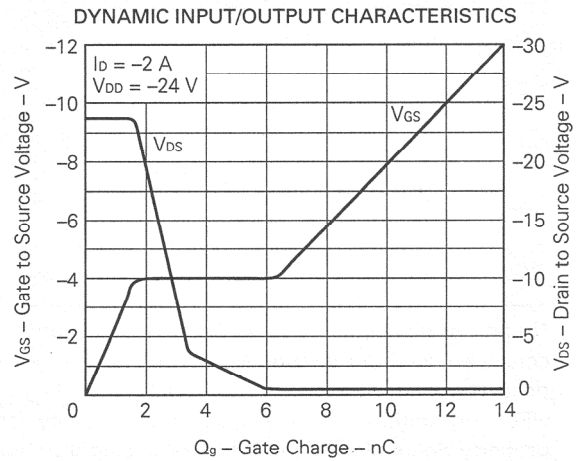
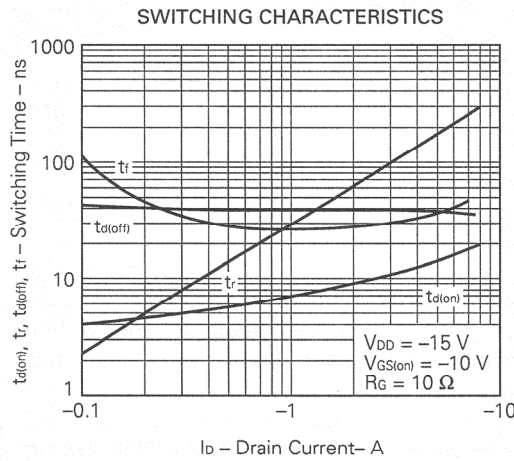
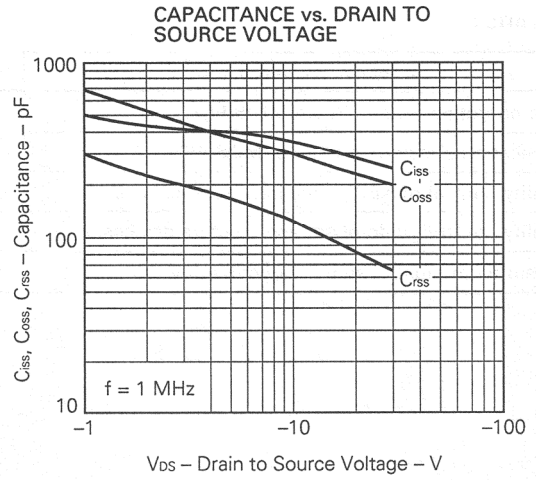
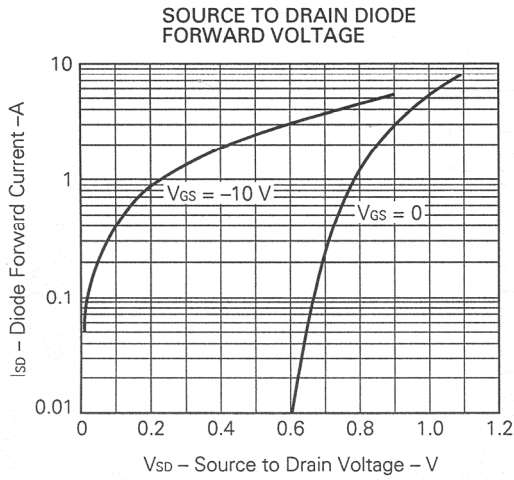
DRAIN CURRENT vs. DRAIN TO SOURCE VOLTAGE



TRANSIENT THERMAL RESISTANCE vs. PULSE WIDTH







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