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April 1st, 2010
Renesas Electronics Corporation

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

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MOS FIELD EFFECT TRANSISTOR

2SJ325, 325-Z

SWITCHING P-CHANNEL POWER MOS FET

DESCRIPTION

The 2SJ325 is P-channel MOS Field Effect Transistor designed for solenoid, motor and lamp driver.

FEATURES

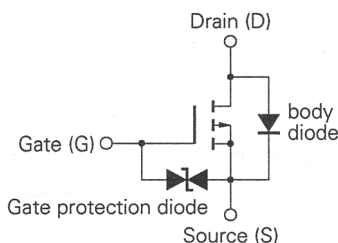
- Low On-state Resistance
 $R_{DS(on)} = 0.08 \Omega$ TYP. ($V_{GS} = -10 V, I_D = -2.0 A$)
 $R_{DS(on)} = 0.15 \Omega$ TYP. ($V_{GS} = -4 V, I_D = -1.6 A$)
- Low C_{iss} : $C_{iss} = 800 pF$ TYP.
- Built-in G-S Gate Protection Diode

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

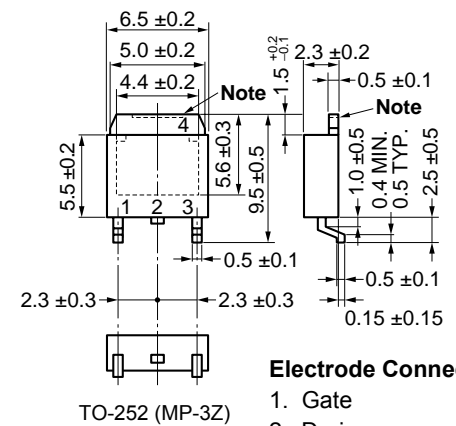
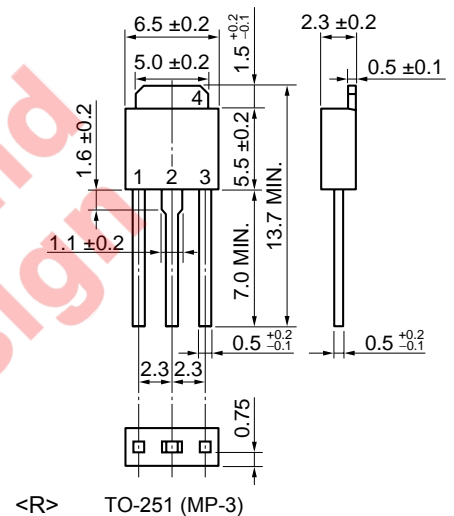
Drain to Source Voltage	V_{DSS}	-30	V
Gate to Source Voltage (AC)	$V_{GSS(AC)}$	± 20	V
Gate to Source Voltage (DC)	$V_{GSS(DC)}$	-20, +10	V
Drain Current (DC)	$I_{D(DC)}$	± 4.0	A
Drain Current (pulse) ^{Note}	$I_{D(pulse)}$	± 16	A
Total Power Dissipation ($T_C = 25^\circ C$)	P_{T1}	20	W
Total Power Dissipation ($T_A = 25^\circ C$)	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)



Electrode Connection

1. Gate
2. Drain
3. Source
4. Drain Fin

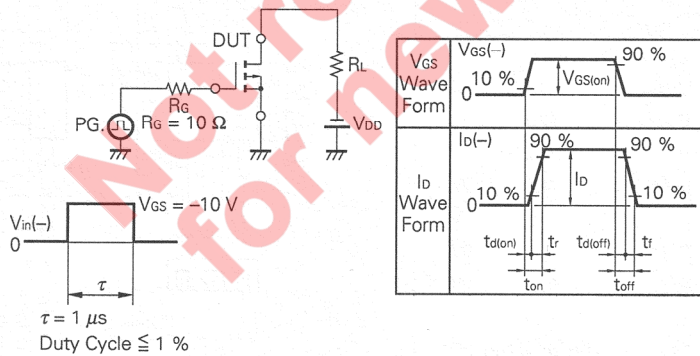
Note The depth of notch at the top of the fin is from 0 to 0.2 mm.

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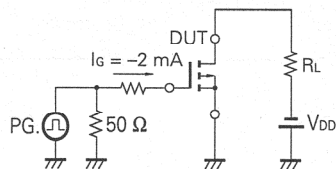
ELECTRICAL CHARACTERISTICS (T_a = 25 °C)

CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
Drain to Source On-state Resistance	R _{DS(on)}		0.08	0.11	Ω	V _{GS} = -10 V, I _D = -2.0 A
Drain to Source On-state Resistance	R _{DS(on)}		0.15	0.24	Ω	V _{GS} = -4 V, I _D = -1.6 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}	3.0	4.2		S	V _{DS} = -10 V, I _D = -2.0 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}		800		pF	V _{DS} = -10 V V _{GS} = 0 f = 1 MHz
Output Capacitance	C _{oss}		600		pF	
Reverse Transfer Capacitance	C _{rs}		250		pF	
Turn-On Delay Time	t _{d(on)}		15		ns	V _{GS(on)} = -10 V V _{DD} = -15 V I _D = -2.0 A, R _G = 10 Ω R _L = 7.5 Ω
Rise Time	t _r		65		ns	
Turn-Off Delay Time	t _{d(off)}		85		ns	
Fall Time	t _f		60		ns	
Total Gate Charge	Q _G		28		nC	V _{GS} = -10 V I _D = -4.0 A V _{DD} = -24 V
Gate to Source Charge	Q _{GS}		3		nC	
Gate to Drain Charge	Q _{GD}		11		nC	
Body Diode Forward Voltage	V _F		0.9		V	I _F = 4.0 A, V _{GS} = 0
Reverse Recovery Time	t _{rr}		65		ns	I _F = 4.0 A, V _{GS} = 0
Reverse Recovery Charge	Q _{rr}		60		nC	di/dt = 50 A/μs

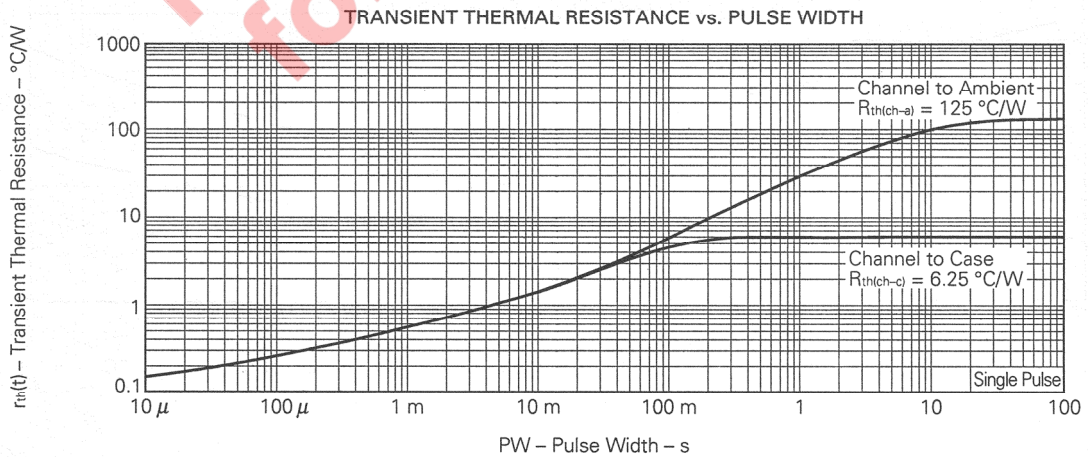
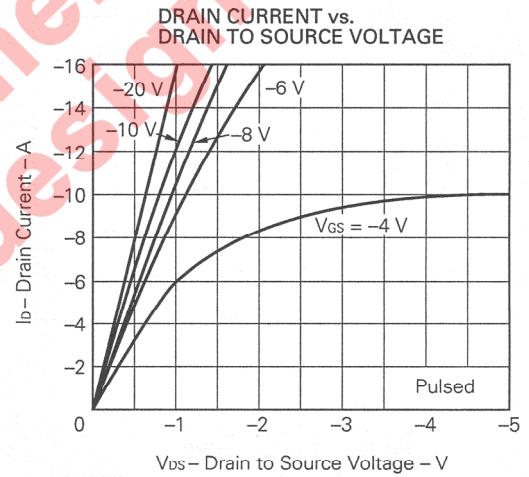
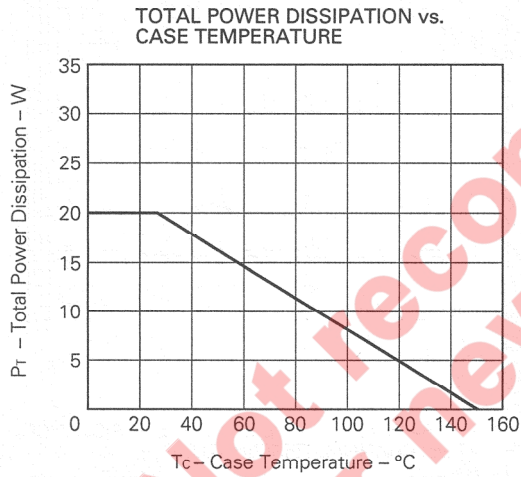
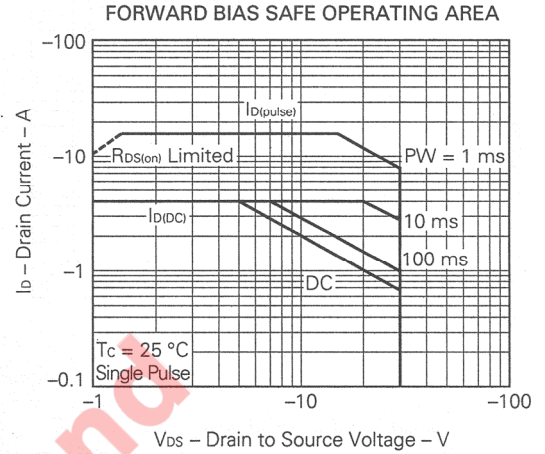
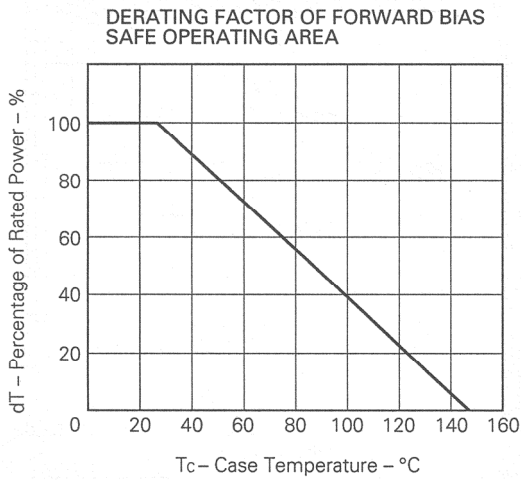
Test Circuit 1: Switching Time

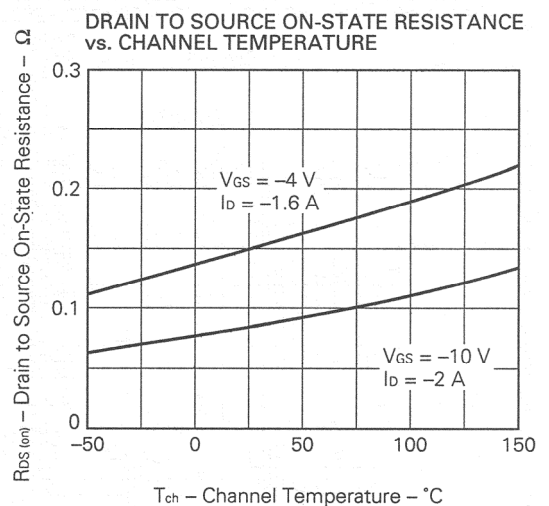
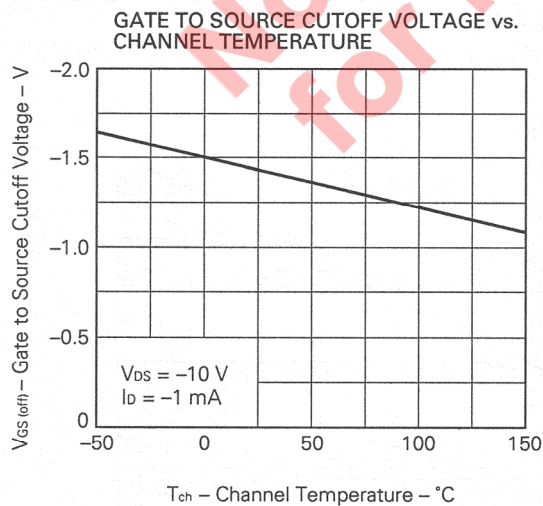
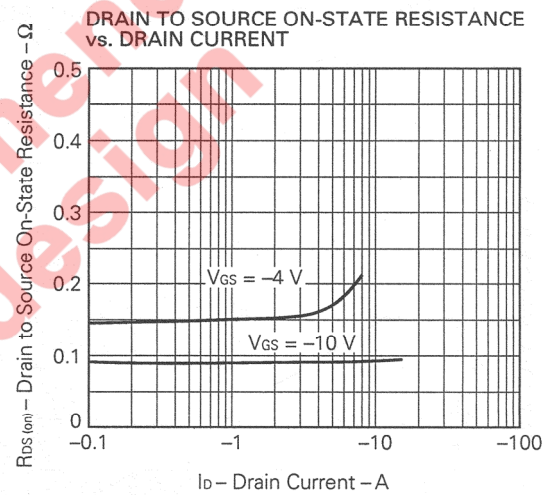
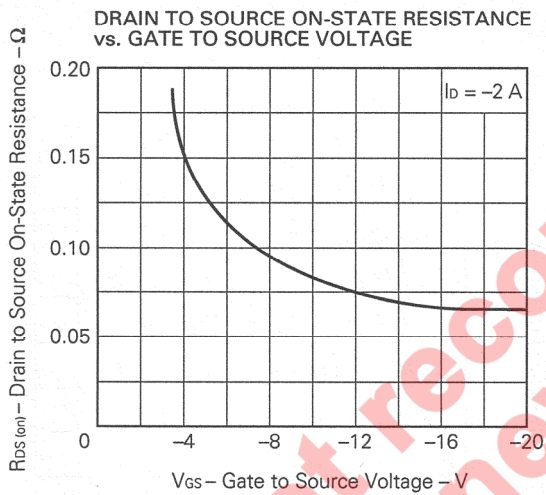
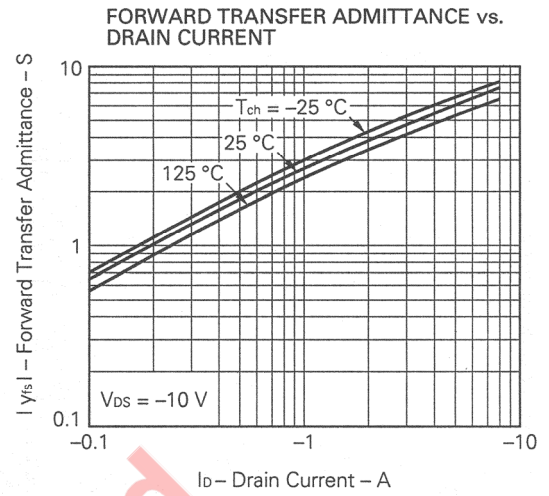
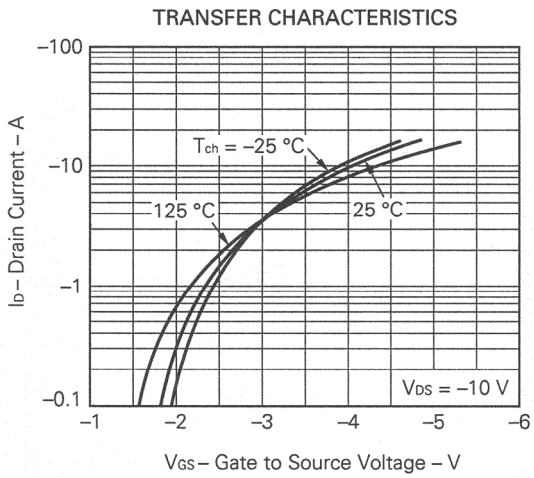


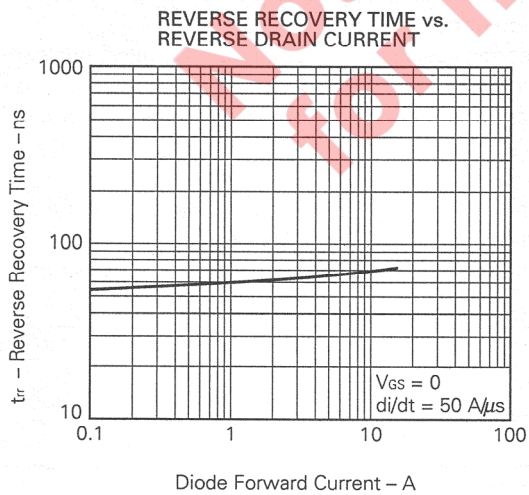
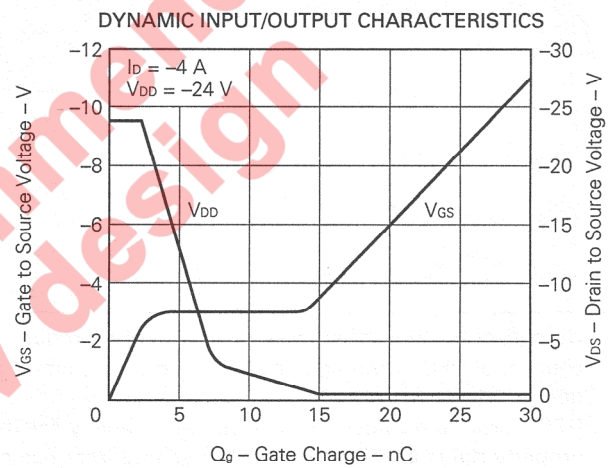
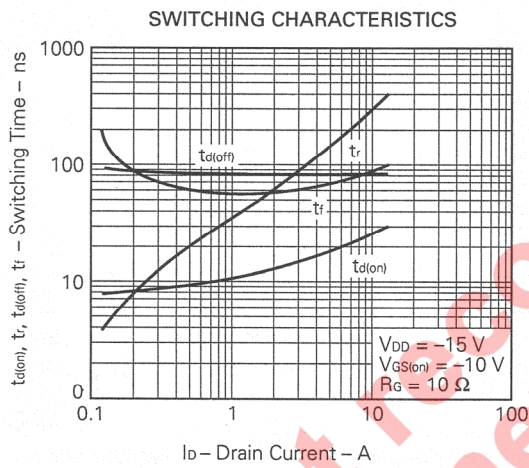
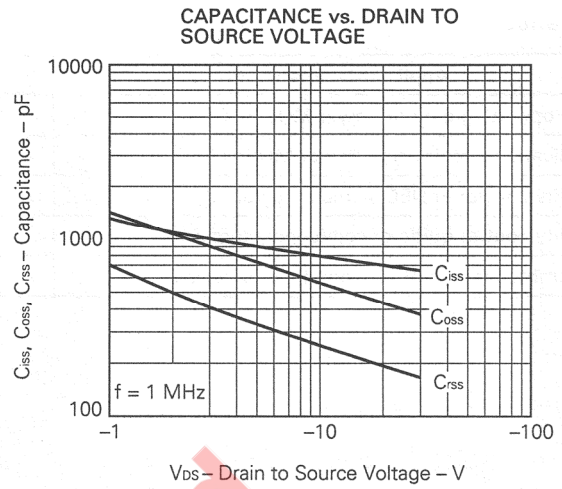
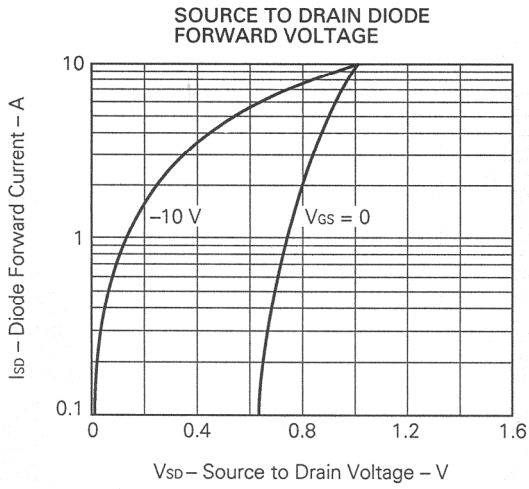
Test Circuit 2: Gate Charge



TYPICAL CHARACTERISTICS (T_a = 25 °C)







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