

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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EOL announced Product

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SWITCHING
 N-CHANNEL POWER MOS FET

DESCRIPTION

The 2SK1285 is N-channel MOS Field Effect Transistor designed for solenoid, motor and lamp driver.

FEATURES

- Low on-state resistance
 $R_{DS(on)} = 0.32 \Omega \text{ MAX. (} V_{GS} = 10 \text{ V, } I_D = 2 \text{ A)}$
 $R_{DS(on)} = 0.40 \Omega \text{ MAX. (} V_{GS} = 4 \text{ V, } I_D = 2 \text{ A)}$
- Low C_{iss} $C_{iss} = 500 \text{ pF TYP.}$
- Built-in G-S gate protection diodes

QUALITY GRADE

Standard

Please refer to "Quality Grades on NEC Semiconductor Devices" (Document No. C11531E) published by NEC Electronics Corporation to know the specification of quality grade on the devices and its recommended applications.

ABSOLUTE MAXIMUM RATINGS

Maximum Temperatures

Storage Temperature	-55 to +150	°C
Channel Temperature	150	°C MAX.

Maximum Power Dissipation

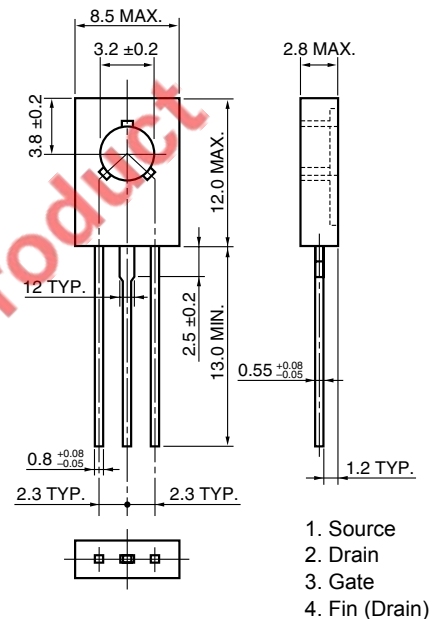
Total Power Dissipation ($T_A = 25^\circ\text{C}$)	1.3	W
Total Power Dissipation ($T_C = 25^\circ\text{C}$)	20	W

Maximum Voltages and Currents ($T_A = 25^\circ\text{C}$)

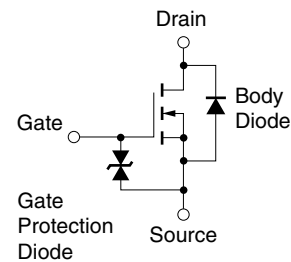
V_{DSS}	Drain to Source Voltage	100	V
$V_{GSS(AC)}$	Gate to Source Voltage	± 20	V
$I_{D(DC)}$	Drain Current (DC)	± 3.0	A
$I_{D(pulse)}$ ^{Note}	Drain Current (pulse)	± 12	A

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

★ **PACKAGE DRAWING**
 (Unit: mm)



EQUIVALENT CIRCUIT

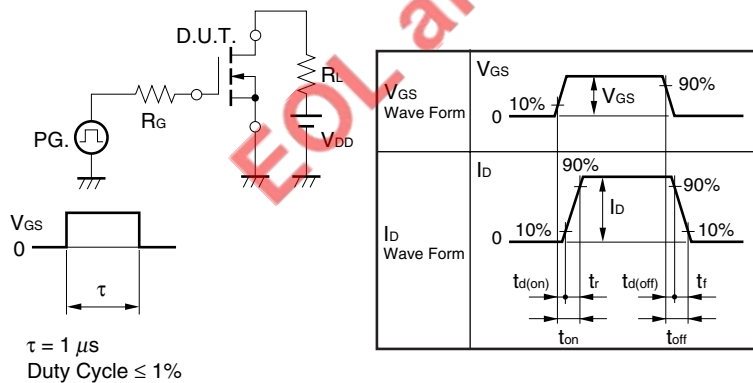


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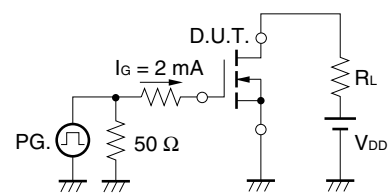
ELECTRICAL CHARACTERISTICS (T_A = 25°C)

CHARACTERISTICS	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Drain to Source On-state Resistance	R _{DS(on)}	V _{GS} = 10 V, I _D = 2 A		0.26	0.32	Ω
		V _{GS} = 4.0 V, I _D = 2 A		0.32	0.40	Ω
Gate to Source Cutoff Voltage	V _{GS(off)}	V _{DS} = 10 V, I _D = 1 mA	1.0		2.5	V
Forward Transfer Admittance	y _{fs}	V _{DS} = 10 V, I _D = 2 A	2.4			S
Drain Leakage Current	I _{DSS}	V _{DS} = 100 V, V _{GS} = 0 V			10	μA
Gate to Source Leakage Current	I _{GSS}	V _{DS} = ±20 V, V _{GS} = 0 V			±10	μA
Input Capacitance	C _{iss}	V _{DS} = 10 V		500		pF
Output Capacitance	C _{oss}	V _{GS} = 0 V		160		pF
Reverse Transfer Capacitance	C _{rss}	f = 1 MHz		20		pF
Turn-on Delay Time	t _{d(on)}	V _{GS(on)} = 10 V V _{DD} = 50 V		40		ns
Rise Time	t _r			55		ns
Turn-off Delay Time	t _{d(off)}	I _D = 2 A, R _G = 10 Ω R _L = 15 Ω		500		ns
Fall Time	t _f			120		ns
Total Gate Charge	Q _G	V _{GS} = 10 V		13		nC
Gate to Source Charge	Q _{GS}	I _D = 3 V		3		nC
Gate to Drain Charge	Q _{GD}	V _{DD} = 80 V		2		nC
Diode Forward Voltage	V _{SD}	I _{SD} = 3 A, V _{GS} = 0 V		0.9		V
Reverse Recovery Time	t _{rr}	I _F = 3 A, V _{GS} = 0		140		ns
Reverse Recovery Charge	Q _{rr}	di/dt = 50 A/μs		250		nC

TEST CIRCUIT 1 SWITCHING TIME

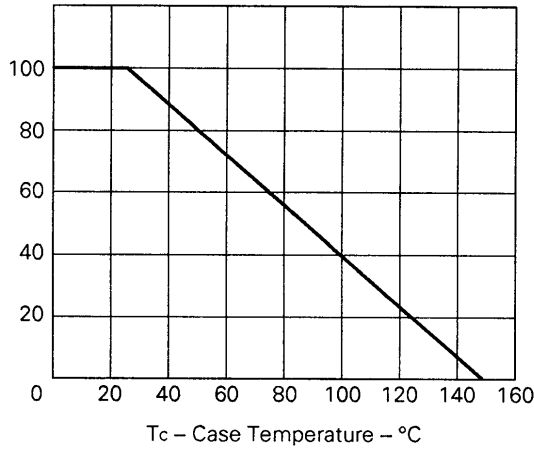


TEST CIRCUIT 2 GATE CHARGE

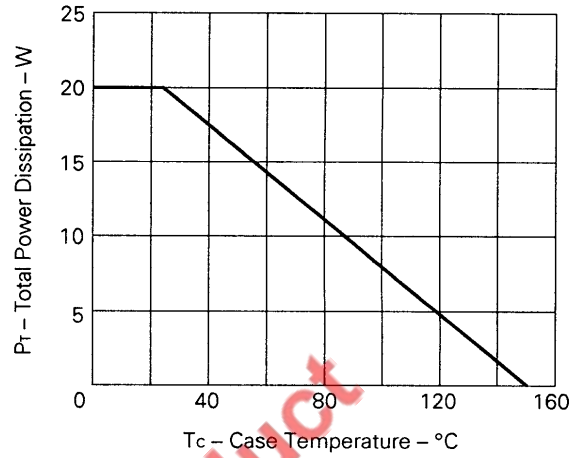


TYPICAL CHARACTERISTICS (T_A = 25°C)

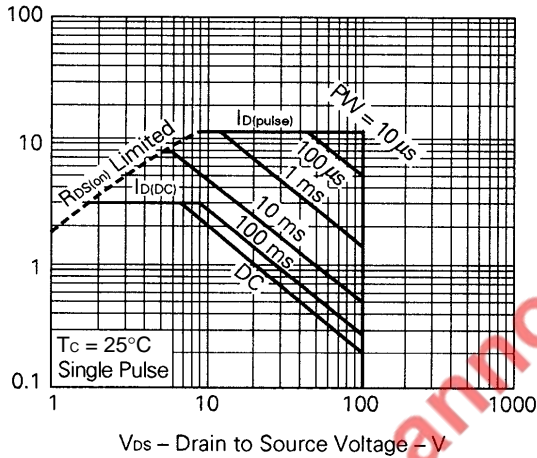
DERATING FACTOR OF FORWARD BIAS SAFE OPERATING AREA



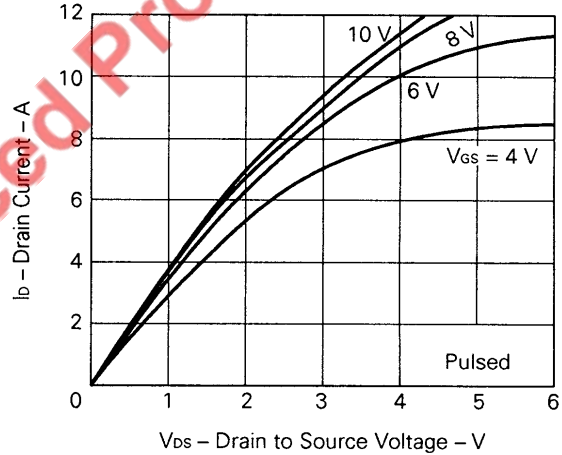
TOTAL POWER DISSIPATION vs. CASE TEMPERATURE



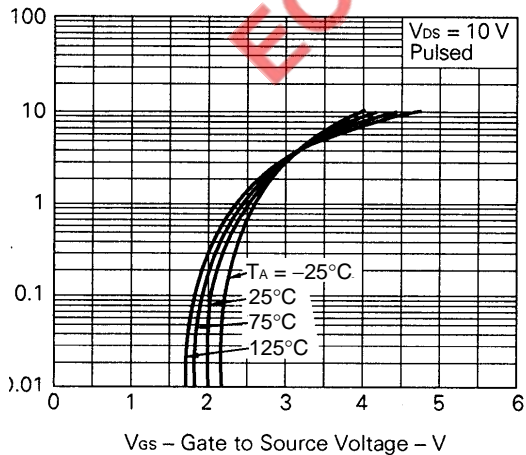
FORWARD BIAS SAFE OPERATING AREA

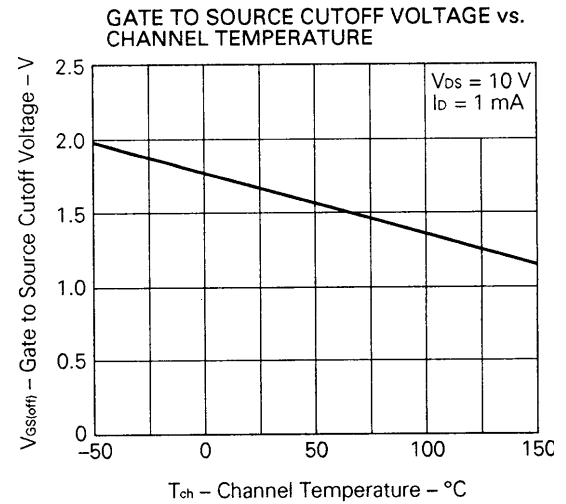
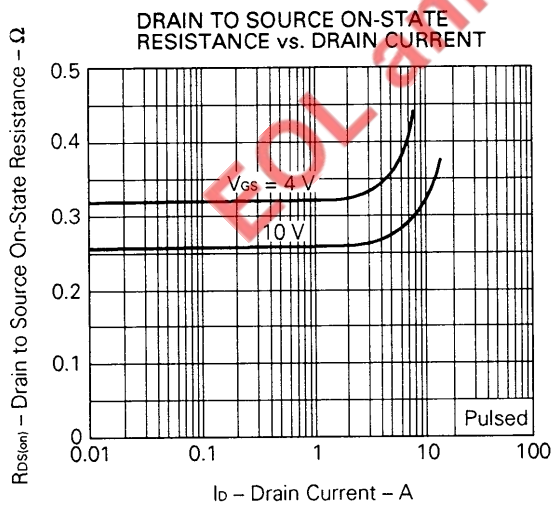
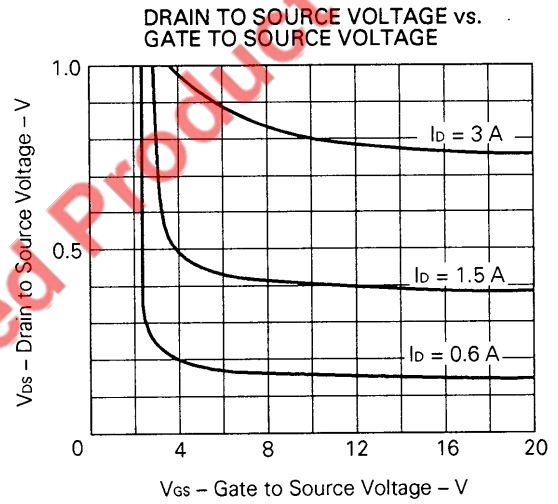
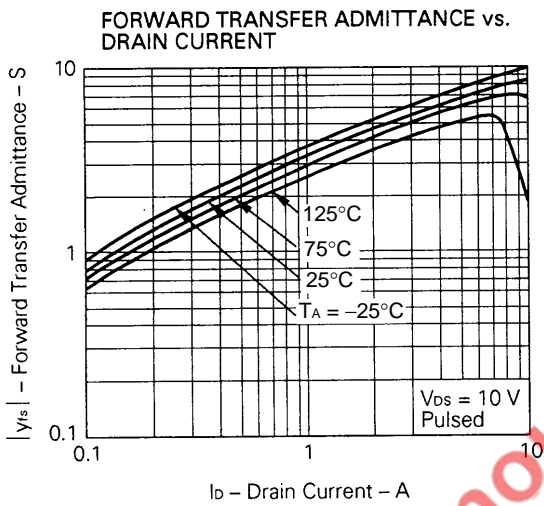
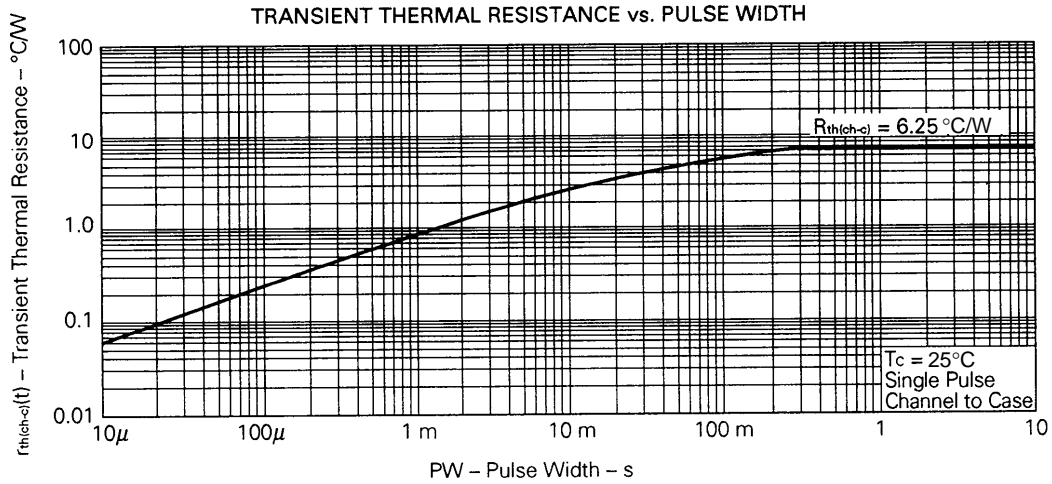


DRAIN CURRENT vs. DRAIN TO SOURCE VOLTAGE

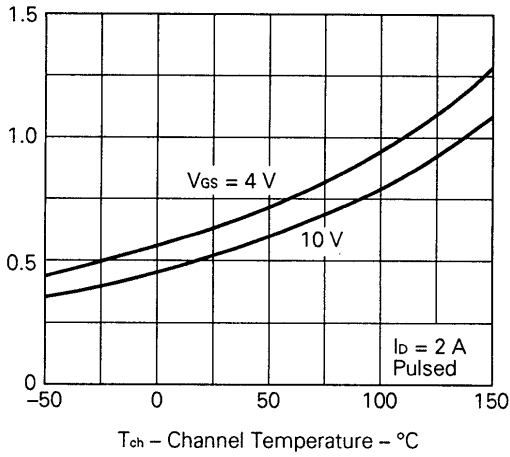


TRANSFER CHARACTERISTICS

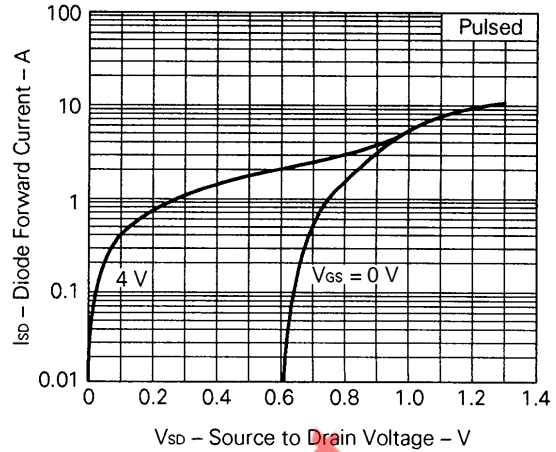




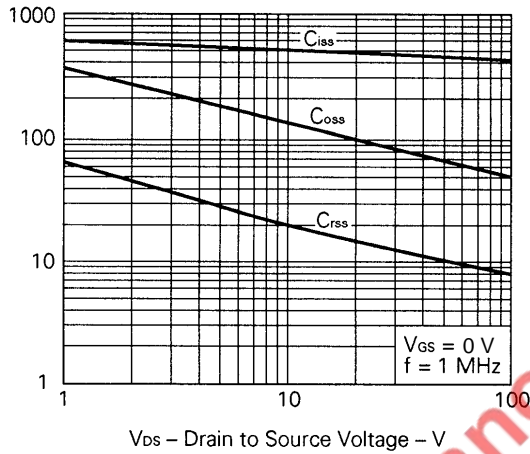
DRAIN TO SOURCE ON-STATE RESISTANCE vs. CHANNEL TEMPERATURE



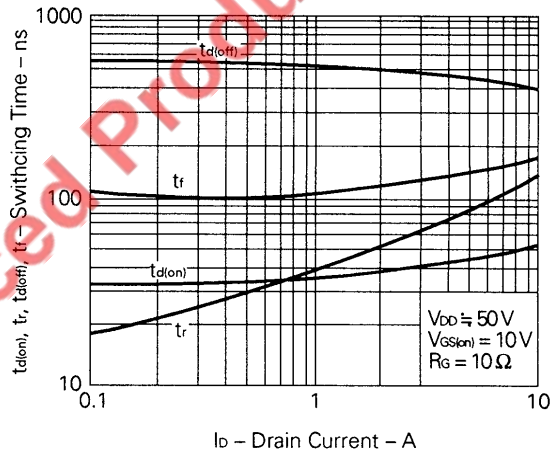
SOURCE TO DRAIN DIODE FORWARD VOLTAGE



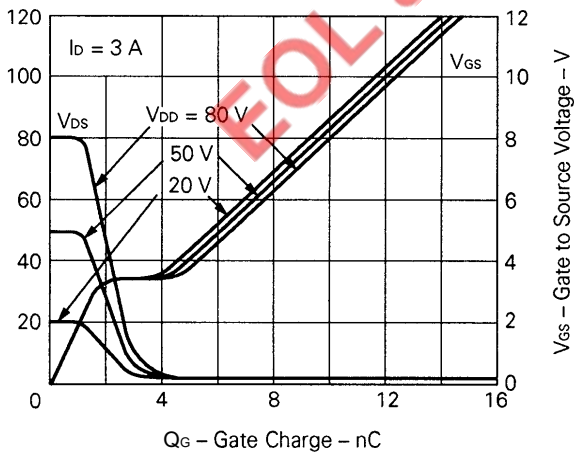
CAPACITANCE vs. DRAIN TO SOURCE VOLTAGE



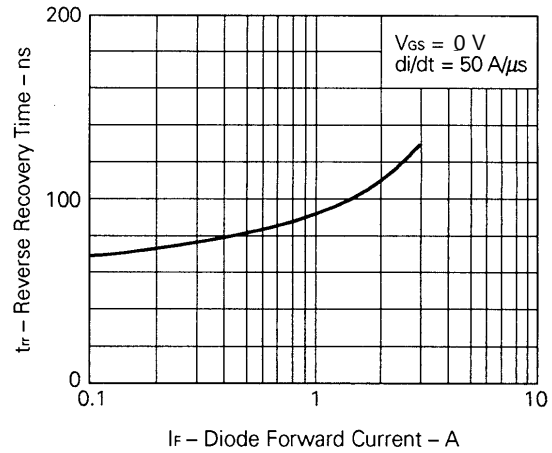
SWITCHING CHARACTERISTICS



DYNAMIC INPUT CHARACTERISTICS



REVERSE RECOVERY TIME vs. DIODE FORWARD CURRENT



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