

To our customers,

Old Company Name in Catalogs and Other Documents

On April 1st, 2010, NEC Electronics Corporation merged with Renesas Technology Corporation, and Renesas Electronics Corporation took over all the business of both companies. Therefore, although the old company name remains in this document, it is a valid Renesas Electronics document. We appreciate your understanding.

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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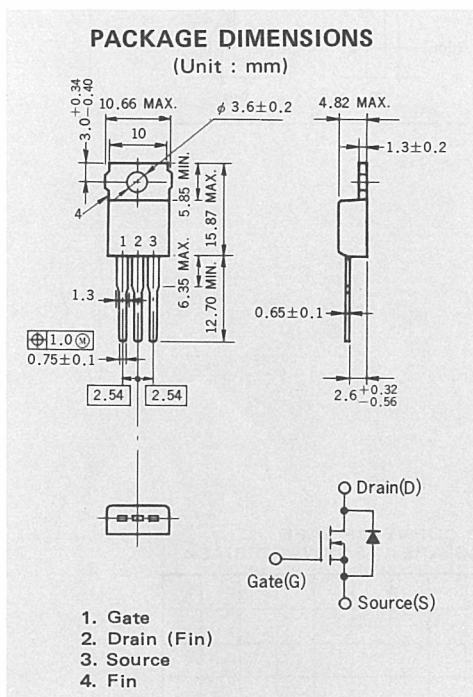
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HIGH VOLTAGE, HIGH SPEED, HIGH CURRENT SWITCHING N-CHANNEL POWER MOS FET INDUSTRIAL USE

DESCRIPTION

Suitable for switching regulator.



FEATURES

- High Voltage $V_{DSS} \geq 400$ V
- Low Resistance $R_{DS(ON)} \leq 1.5$ Ω
- Small Molded Package TO-220AB
- High speed switching
- Wide S.O.A.

ABSOLUTE MAXIMUM RATINGS

Maximum Voltages and Currents ($T_a = 25$ °C)

Drain to Source Voltage	V_{DSS}	400	V
Gate to Source Voltage	V_{GSS}	±20	V
Continuous Drain Current	$I_{D(DC)}$	±5.0	A
Peak Drain Current	$I_{D(pulse)}$ *	±7.5	A

Maximum Power Dissipations

Total Power Dissipation	$P_T(T_c = 25$ °C)	40	W
Total Power Dissipation	$P_T(T_a = 25$ °C)	1.5	W

Maximum Temperatures

Channel Temperature	T_{ch}	150	°C
Storage Temperature	T_{stg}	-55 to +150	°C

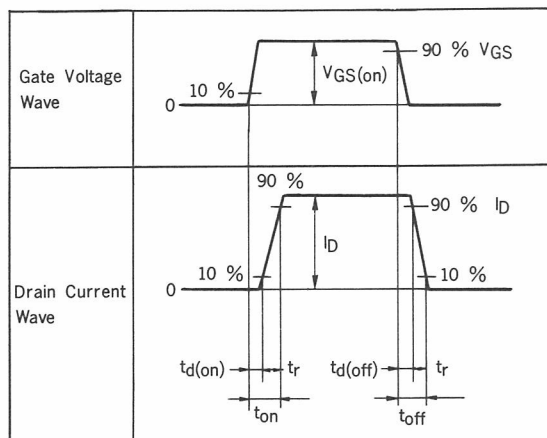
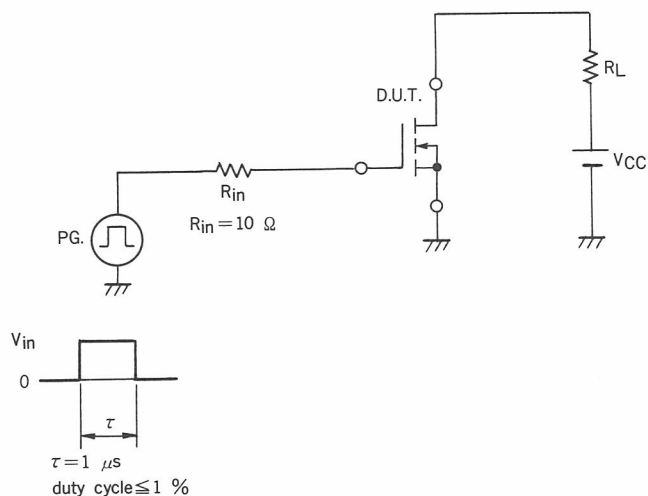
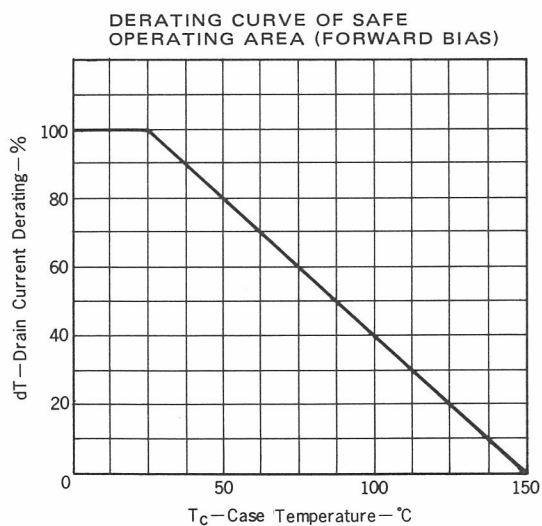
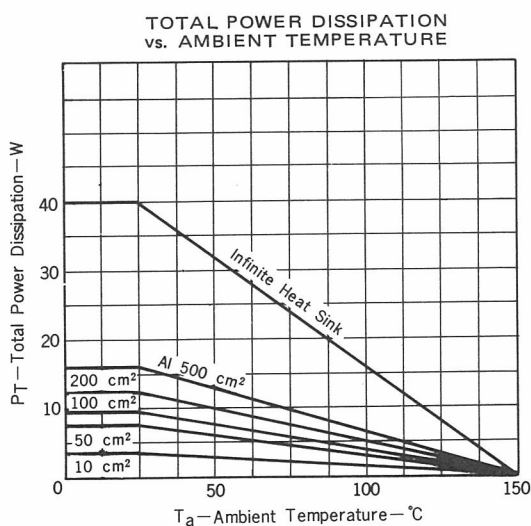
*Pulse Test; $PW \leq 10$ ms, duty cycle ≤ 50 %

ELECTRICAL CHARACTERISTICS ($T_a = 25$ °C unless otherwise noted)

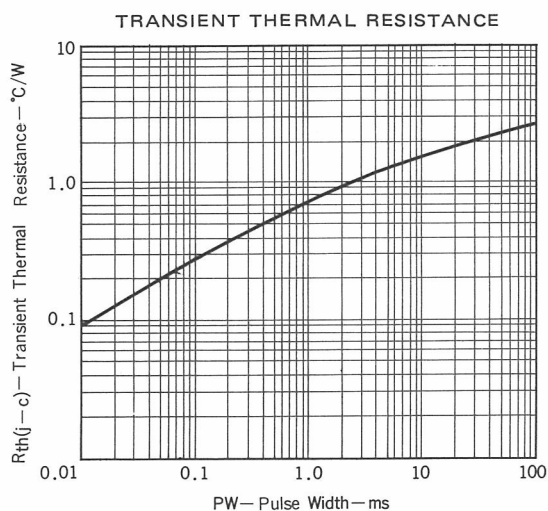
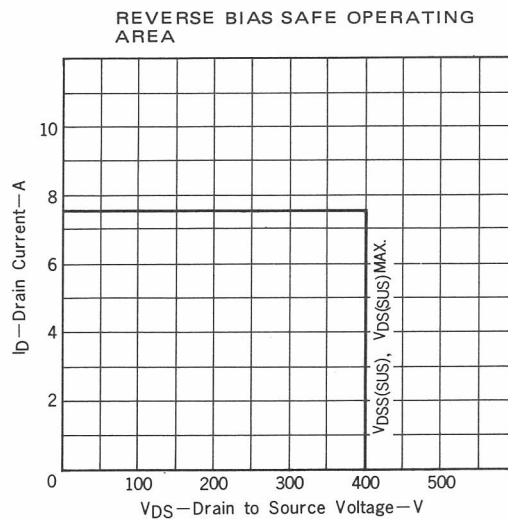
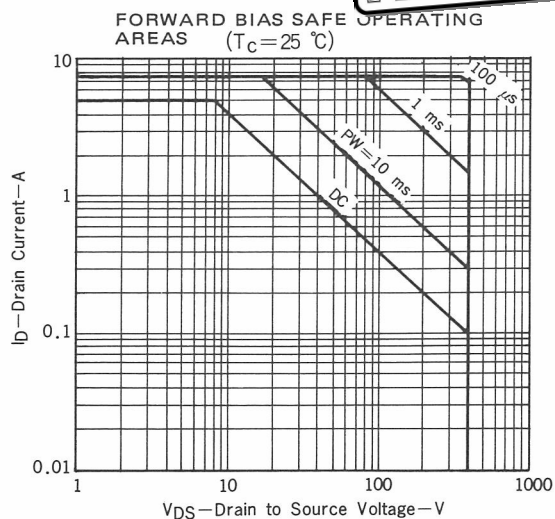
CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
Drain Cutoff Current	I_{DSS}			100	μ A	$V_{DS} = 400$ V, $V_{GS} = 0$
Gate Leakage	I_{GSS}			±100	nA	$V_{GS} = \pm 20$ V, $V_{DS} = 0$
Gate to Source Cutoff Voltage	$V_{GS(off)}$	1	1.8	5	V	$V_{DS} = 10$ V, $I_D = 40$ mA
Forward Transfer Admittance	$ Y_{fs} $	1			S	$V_{DS} = 10$ V, $I_D = 2$ A
Drain to Source On Resistance	$R_{DS(ON)}$			1.5	Ω	$V_{GS} = 10$ V, $I_D = 2$ A
Input Capacitance	C_{iss}		600	2000	pF	$V_{DS} = 10$ V, $V_{GS} = 0$ $f = 1$ MHz
Output Capacitance	C_{oss}		150	300	pF	
Reverse Transfer Capacitance	C_{rss}		20	50	pF	
Turn-on Delay Time	$t_{d(on)}$		10	50	ns	$I_D = 2$ A, $V_{GS(on)} = 10$ V, $R_{in} = 10$ Ω , $R_L = 75$ Ω , $V_{CC} \doteq 150$ V
Rise Time	t_r		40	100	ns	
Turn-off Delay Time	$t_{d(off)}$		15	50	ns	
Fall Time	t_f		20	50	ns	

Phase-out/Discontinued

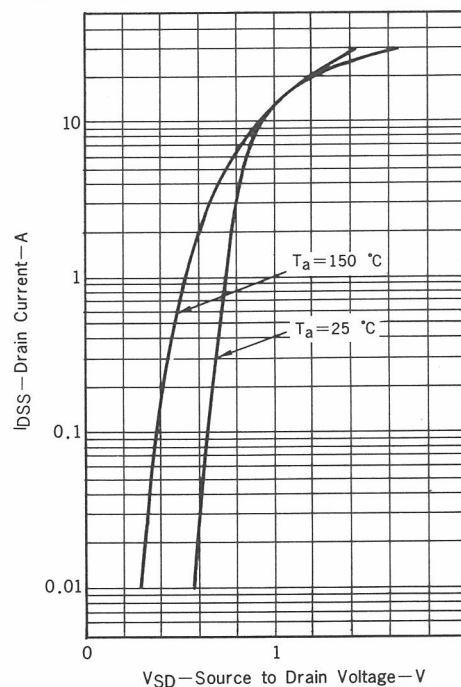
SWITCHING TIME TEST CIRCUIT

TYPICAL CHARACTERISTICS ($T_a = 25^\circ C$)

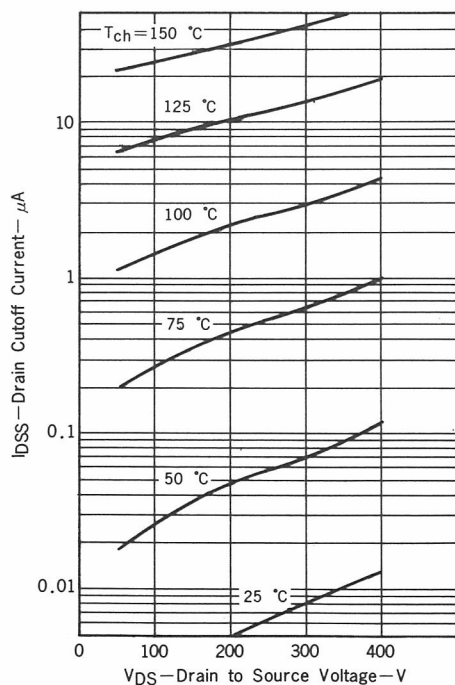
Phase-out/Discontinued



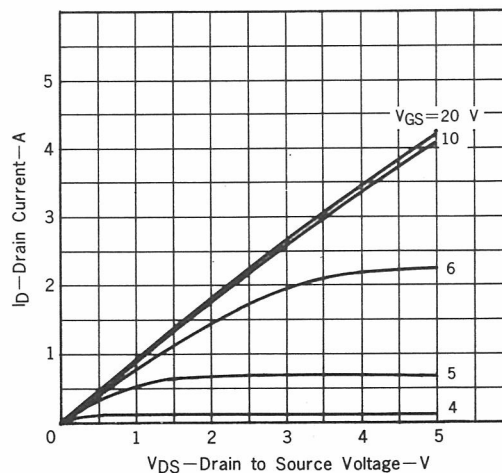
ZERO-GATE VOLTAGE DRAIN CURRENT vs. SOURCE TO DRAIN VOLTAGE



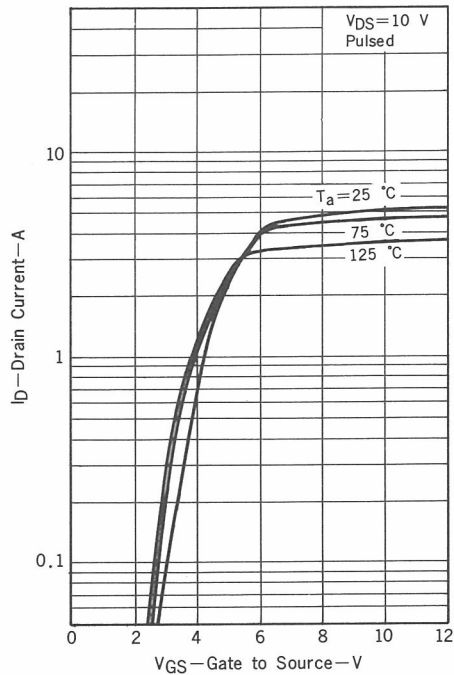
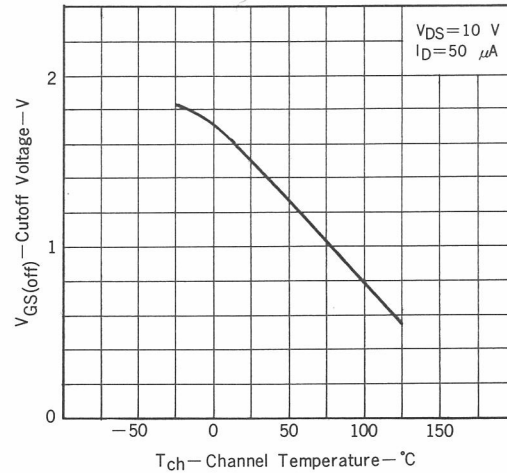
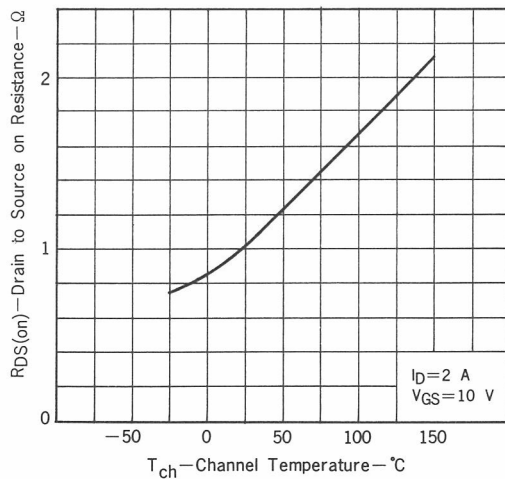
DRAIN LEAK CURRENT vs. DRAIN TO SOURCE VOLTAGE



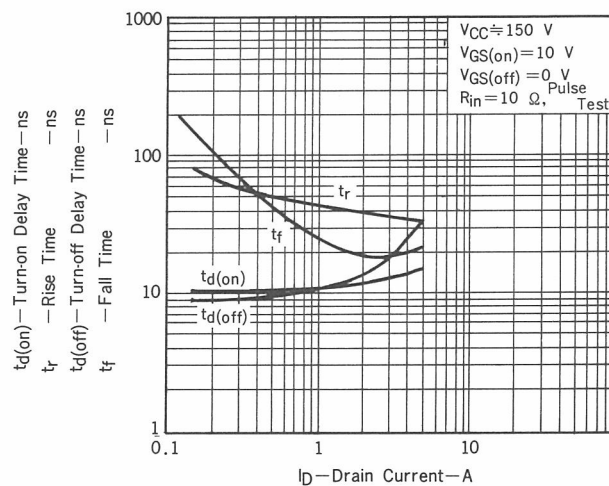
DRAIN CURRENT vs. DRAIN TO SOURCE VOLTAGE



TRANSFER CHARACTERISTICS

GATE TO SOURCE CUTOFF VOLTAGE
vs. CHANNEL TEMPERATUREDRAIN TO SOURCE ON RESISTANCE
vs. CHANNEL TEMPERATURE

SWITCHING CHARACTERISTICS



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