

To our customers,

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## Old Company Name in Catalogs and Other Documents

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On April 1<sup>st</sup>, 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 1<sup>st</sup>, 2010  
Renesas Electronics Corporation

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

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(Note 2) “Renesas Electronics product(s)” means any product developed or manufactured by or for Renesas Electronics.

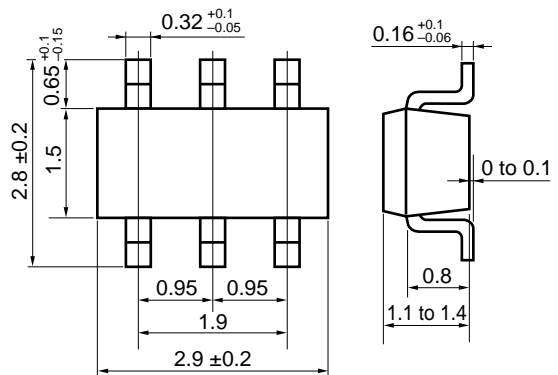
N-CHANNEL MOS FET (6-PIN 2 CIRCUITS)  
 FOR SWITCHING

The  $\mu$ PA606T is a mini-mold device provided with two MOS FET elements. It achieves high-density mounting and saves mounting costs.

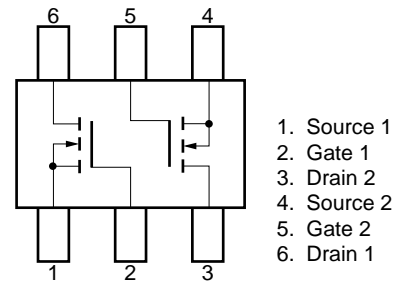
FEATURES

- Two MOS FET elements in package the same size as SC-59
- Complement to  $\mu$ PA607T
- Automatic mounting supported

PACKAGE DIMENSIONS (in millimeters)



PIN CONNECTION



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

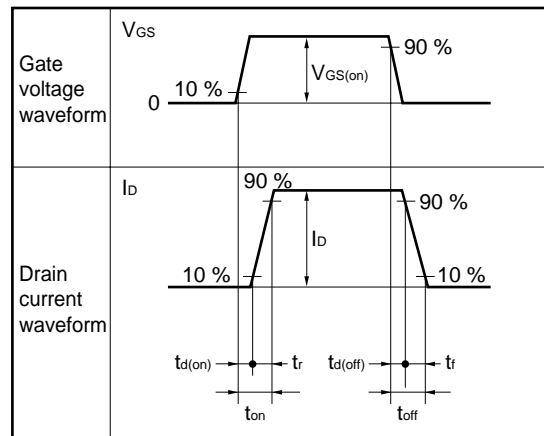
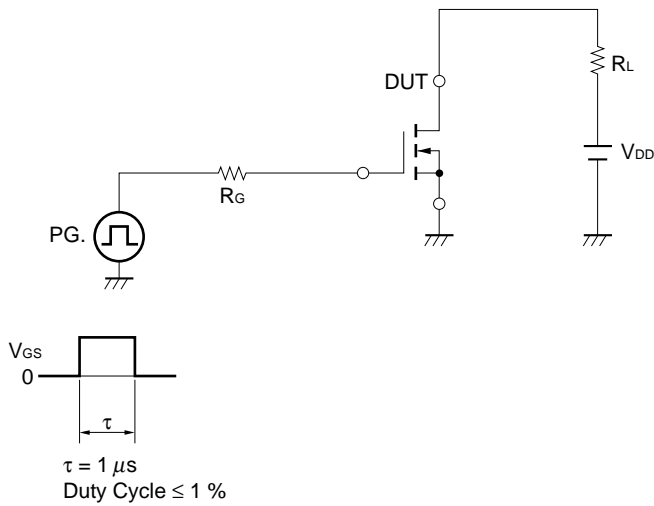
PARAMETER	SYMBOL	RATINGS	UNIT
Drain to Source Voltage	$V_{DSS}$	50	V
Gate to Source Voltage	$V_{GSS}$	$\pm 20$	V
Drain Current (DC)	$I_{D(DC)}$	100	mA
Drain Current (pulse)	$I_{D(pulse)^*}$	200	mA
Total Power Dissipation	$P_T$	300 (Total)	mW
Channel Temperature	$T_{ch}$	150	$^\circ\text{C}$
Storage Temperature	$T_{stg}$	-55 to +150	$^\circ\text{C}$

\*  $PW \leq 10\text{ ms}$ , Duty Cycle  $\leq 50\%$

**ELECTRICAL CHARACTERISTICS (Ta = 25 °C)**

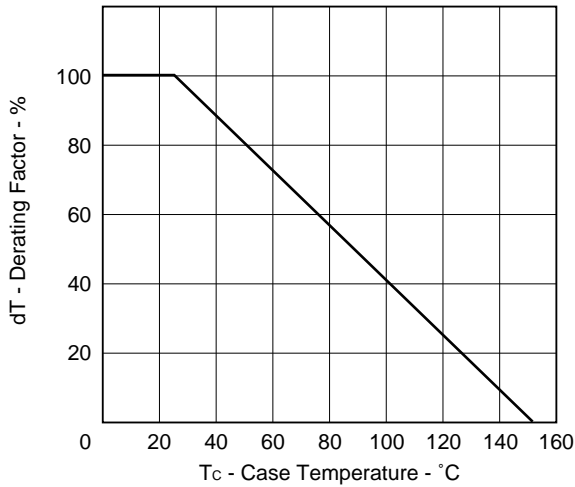
PARAMETER	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Drain Cut-off Current	$I_{DSS}$	$V_{DS} = 50\text{ V}, V_{GS} = 0$	–	–	1.0	μA
Gate Leakage Current	$I_{GSS}$	$V_{GS} = \pm 20\text{ V}, V_{DS} = 0$	–	–	±1.0	μA
Gate Cut-off Voltage	$V_{GS(off)}$	$V_{DS} = 5.0\text{ V}, I_D = 1.0\ \mu\text{A}$	0.8	1.4	1.8	V
Forward Transfer Admittance	$ y_{fs} $	$V_{DS} = 5.0\text{ V}, I_D = 10\text{ mA}$	20	–	–	mS
Drain to Source On-State Resistance	$R_{DS(on)1}$	$V_{GS} = 4.0\text{ V}, I_D = 10\text{ mA}$	–	19	30	Ω
Drain to Source On-State Resistance	$R_{DS(on)2}$	$V_{GS} = 10\text{ V}, I_D = 10\text{ mA}$	–	15	25	Ω
Input Capacitance	$C_{iss}$	$V_{DS} = 5.0\text{ V}, V_{GS} = 0, f = 1.0\text{ MHz}$	–	16	–	pF
Output Capacitance	$C_{oss}$		–	12	–	pF
Reverse Transfer Capacitance	$C_{rss}$		–	3	–	pF
Turn-On Delay Time	$t_{d(on)}$	$V_{GS(on)} = 5.0\text{ V}, R_G = 10\ \Omega, V_{DD} = 5.0\text{ V}, I_D = 10\text{ mA}, R_L = 500\ \Omega$	–	17	–	ns
Rise Time	$t_r$		–	10	–	ns
Turn-Off Delay Time	$t_{d(off)}$		–	68	–	ns
Fall Time	$t_f$		–	38	–	ns

**SWITCHING TIME MEASUREMENT CIRCUIT AND CONDITIONS (RESISTANCE LOADED)**

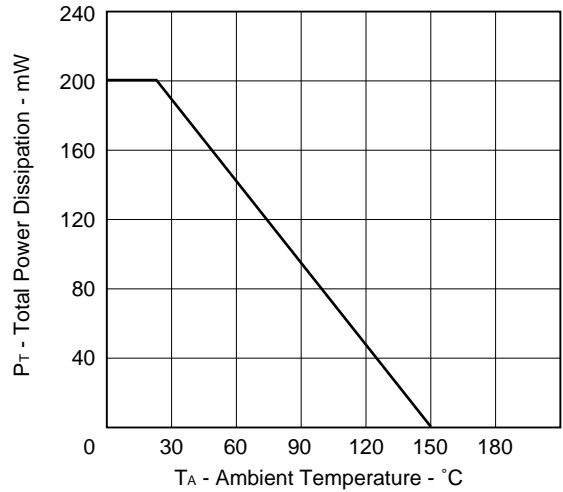


TYPICAL CHARACTERISTICS ( $T_A = 25^\circ\text{C}$ )

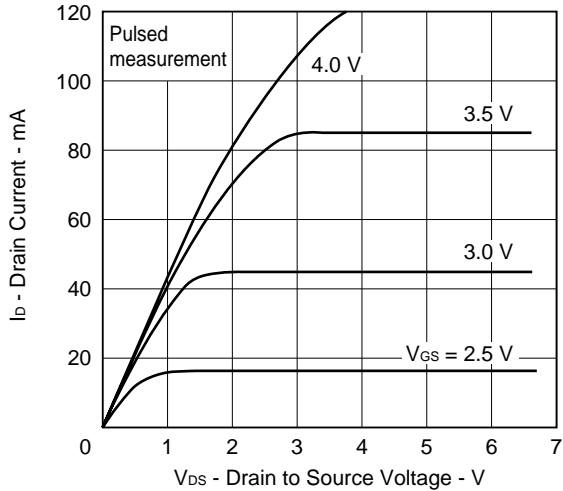
DERATING FACTOR OF FORWARD BIAS SAFE OPERATING AREA



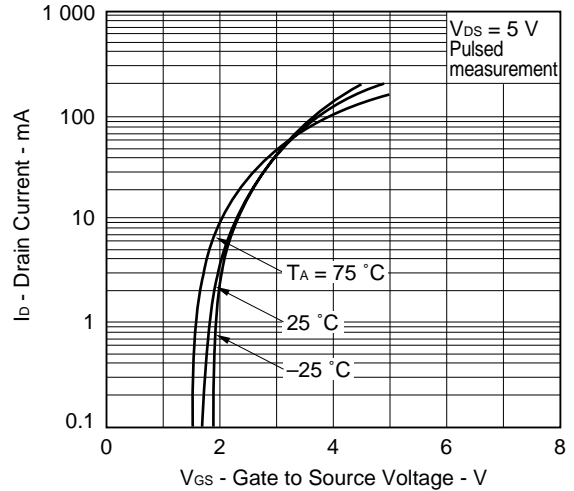
TOTAL POWER DISSIPATION vs. AMBIENT TEMPERATURE



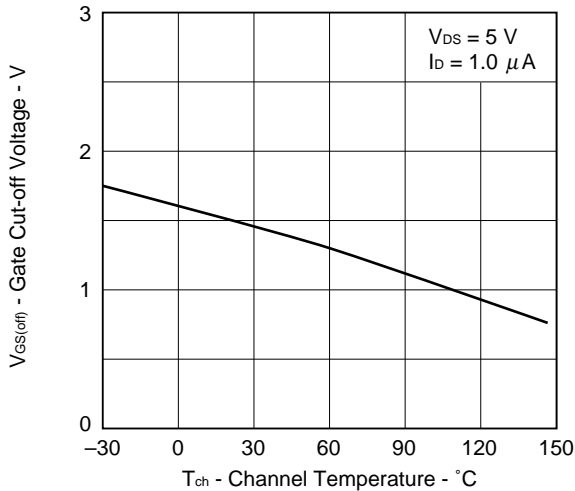
DRAIN CURRENT vs. DRAIN TO SOURCE VOLTAGE



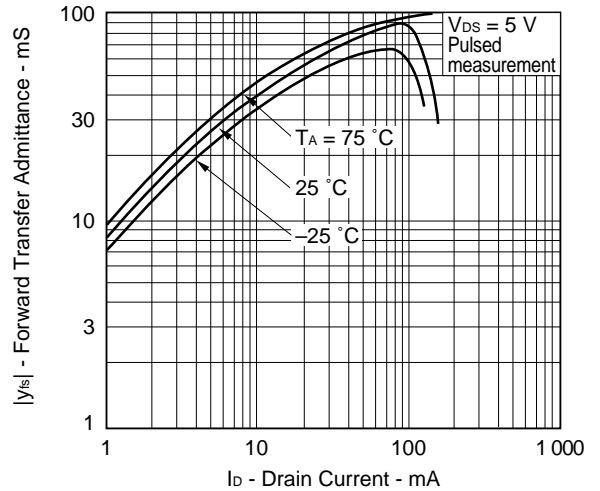
TRANSFER CHARACTERISTICS

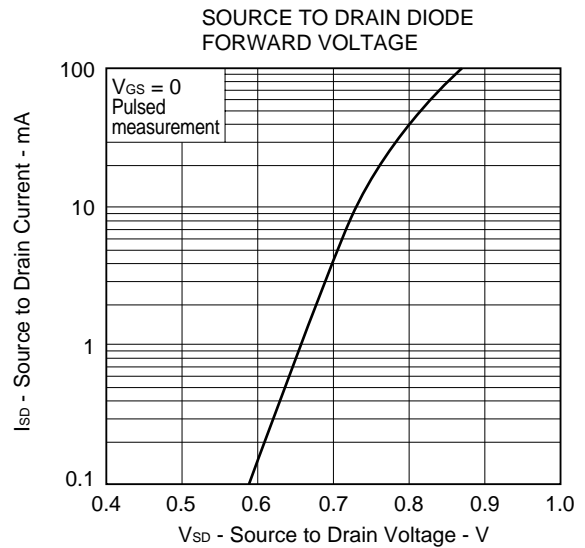
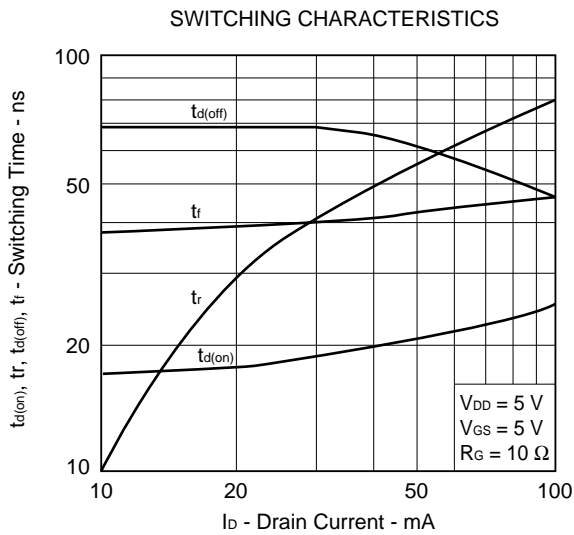
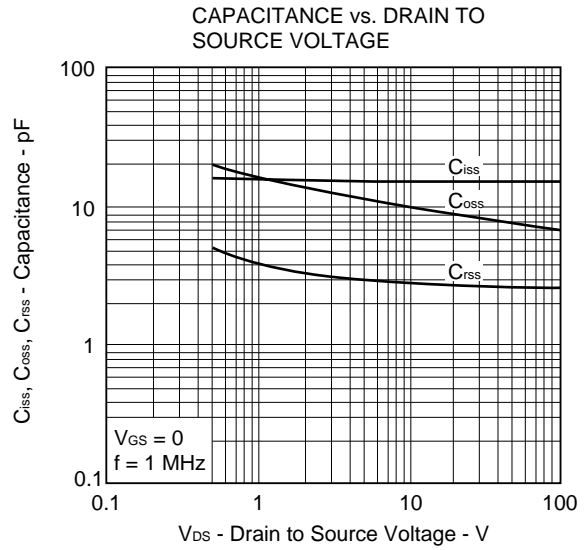
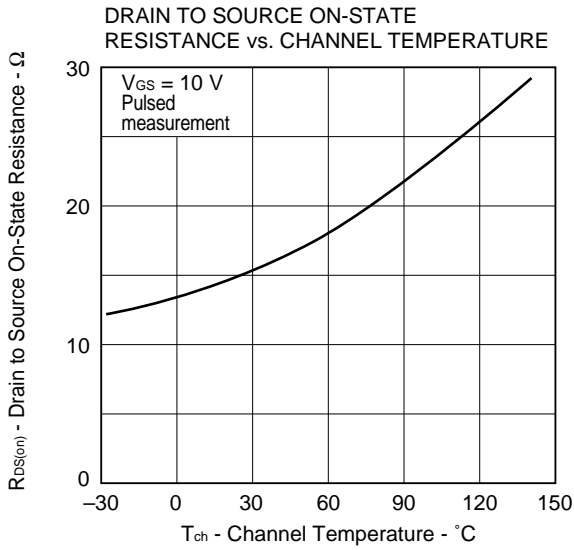
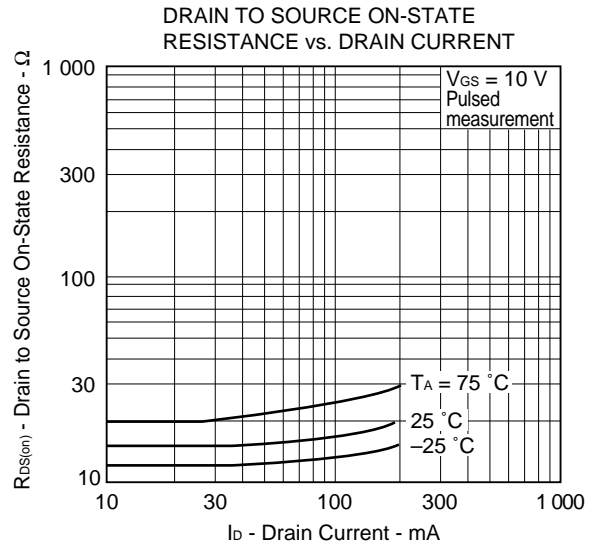
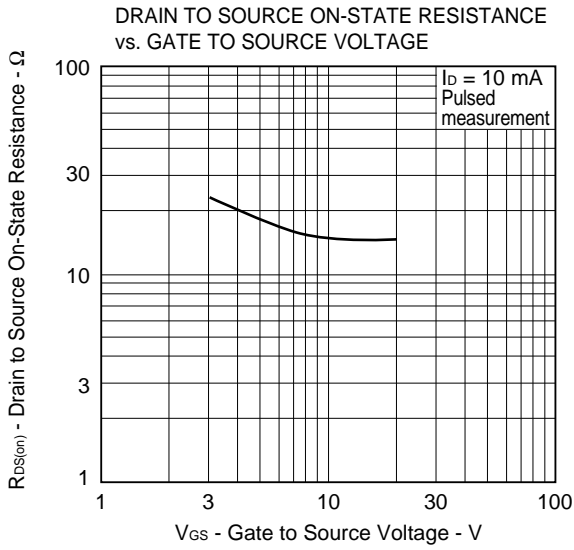


GATE TO SOURCE CUT-OFF VOLTAGE vs. CHANNEL TEMPERATURE



FORWARD TRANSFER ADMITTANCE vs. DRAIN CURRENT





## REFERENCE

Document Name	Document No.
NEC semiconductor device reliability/quality control system	TEI-1202
Quality grade on NEC semiconductor devices	IEI-1209
Semiconductor device mounting technology manual	C10535E
Guide to quality assurance for semiconductor devices	MEI-1202
Semiconductor selection guide	X10679E

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Standard: Computers, office equipment, communications equipment, test and measurement equipment, audio and visual equipment, home electronic appliances, machine tools, personal electronic equipment and industrial robots

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