

To our customers,

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## Old Company Name in Catalogs and Other Documents

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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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### N-CHANNEL MOSFET (5-PIN 2 CIRCUITS) FOR SWITCHING

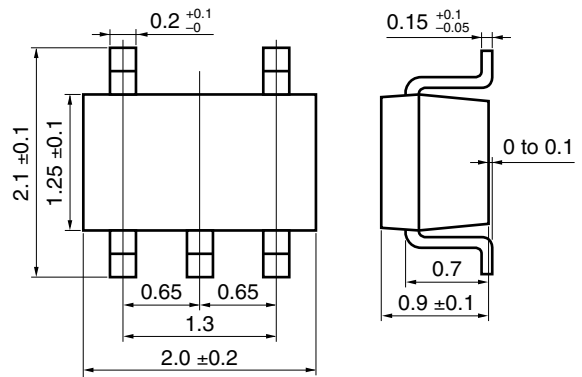
#### DESCRIPTION

The μPA572T is a super-mini-mold device provided with two MOS FET circuits. It achieves high-density mounting and saves mounting costs.

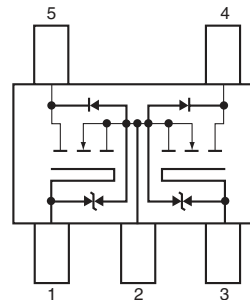
#### FEATURES

- Two source common MOS FET circuits in package the same size as SC-70
- Directly driven by 3 V power supply
- Automatic mounting supported

#### PACKAGE DIMENSIONS (in millimeters)



#### <R> EQUIVALENT CIRCUIT



#### PIN CONNECTION

1. Gate1 (G1)
  2. Source (common)
  3. Gate2 (G2)
  4. Drain2 (D2)
  5. Drain1 (D1)
- Marking: DB

#### ABSOLUTE MAXIMUM RATINGS (T<sub>A</sub> = 25 °C)

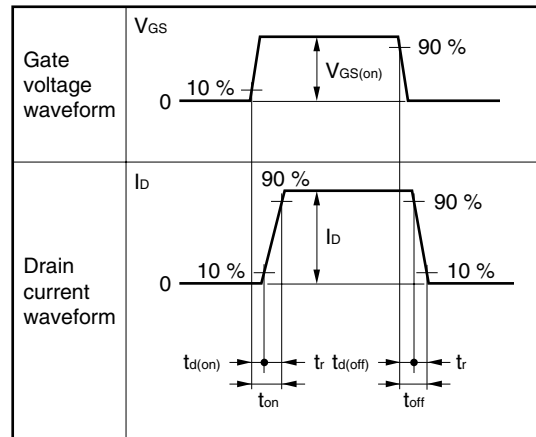
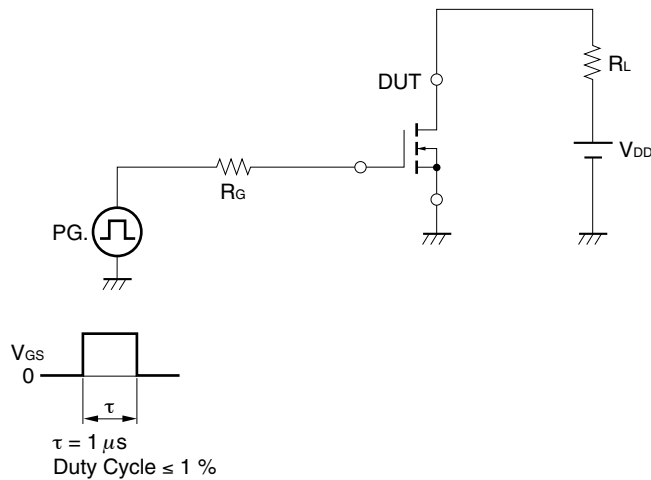
PARAMETER	SYMBOL	TEST CONDITIONS	RATINGS	UNIT
Drain to Source Voltage	V <sub>DSS</sub>	V <sub>GS</sub> = 0 V	30	V
Gate to Source Voltage	V <sub>GSS</sub>	V <sub>DS</sub> = 0 V	±7	V
Drain Current (DC)	I <sub>D(DC)</sub>		±100	mA
Drain Current (pulse)	I <sub>D(pulse)</sub>	PW ≤ 10 ms, Duty Cycle ≤ 50 %	±200	mA
Total Power Dissipation	P <sub>T</sub>		200 (Total)	mW
Channel Temperature	T <sub>ch</sub>		150	°C
Storage Temperature	T <sub>stg</sub>		-55 to +150	°C

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

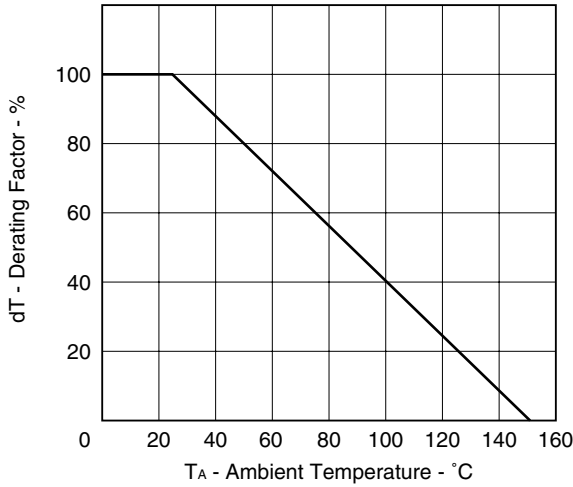
PARAMETER	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Drain Cut-off Current	$I_{DSS}$	$V_{DS} = 30\text{ V}, V_{GS} = 0$			1.0	$\mu\text{A}$
Gate Leakage Current	$I_{GSS}$	$V_{GS} = \pm 5\text{ V}, V_{DS} = 0$			$\pm 3.0$	$\mu\text{A}$
Gate Cut-off Voltage	$V_{GS(off)}$	$V_{DS} = 3\text{ V}, I_D = 10\ \mu\text{A}$	0.8	1.0	1.5	V
Forward Transfer Admittance	$ y_{fs} $	$V_{DS} = 3\text{ V}, I_D = 10\text{ mA}$	20	50		mS
Drain to Source On-State Resistance	$R_{DS(on)1}$	$V_{GS} = 2.5\text{ V}, I_D = 1\text{ mA}$		7	13	$\Omega$
Drain to Source On-State Resistance	$R_{DS(on)2}$	$V_{GS} = 4.0\text{ V}, I_D = 10\text{ mA}$		5	8	$\Omega$
Input Capacitance	$C_{iss}$	$V_{DS} = 5.0\text{ V}, V_{GS} = 0, f = 1\text{ MHz}$		16		pF
Output Capacitance	$C_{oss}$			14		pF
Reverse Transfer Capacitance	$C_{rss}$			2		pF
Turn-On Delay Time	$t_{d(on)}$	$V_{DD} = 5\text{ V}, I_D = 10\text{ mA}, V_{GS} = 5\text{ V}, R_G = 10\ \Omega$		15		ns
Rise Time	$t_r$			20		ns
Turn-Off Delay Time	$t_{d(off)}$			100		ns
Fall Time	$t_f$			100		ns

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

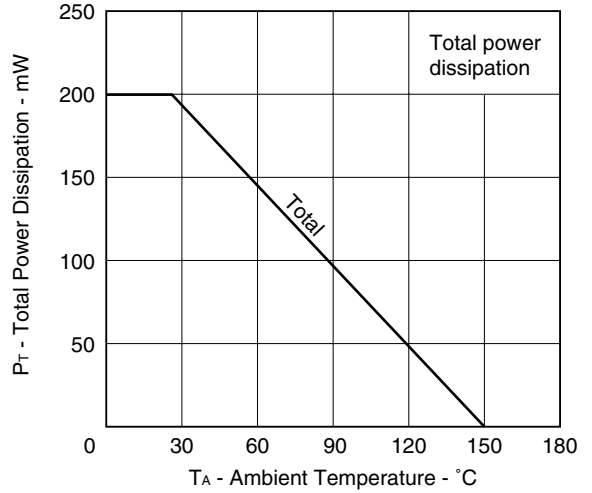


TYPICAL CHARACTERISTICS ( $T_A = 25^\circ\text{C}$ )

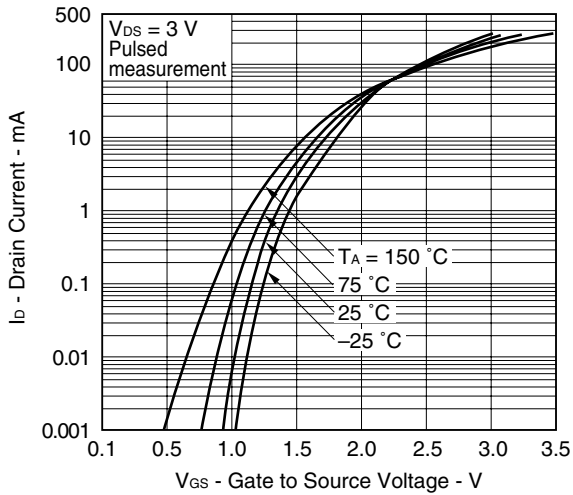
DERATING FACTOR OF FORWARD BIAS SAFE OPERATING AREA



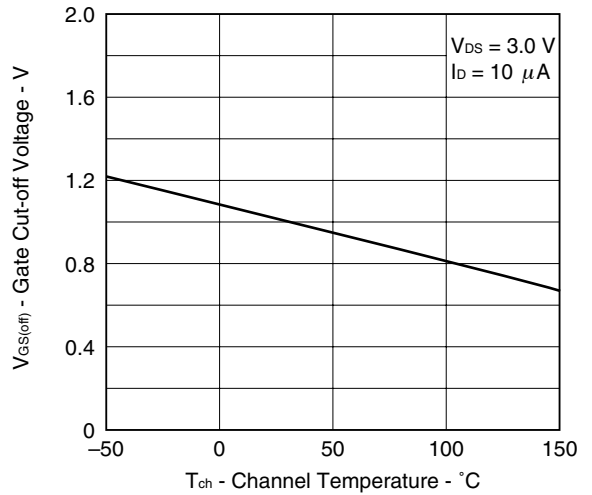
TOTAL POWER DISSIPATION vs. AMBIENT TEMPERATURE



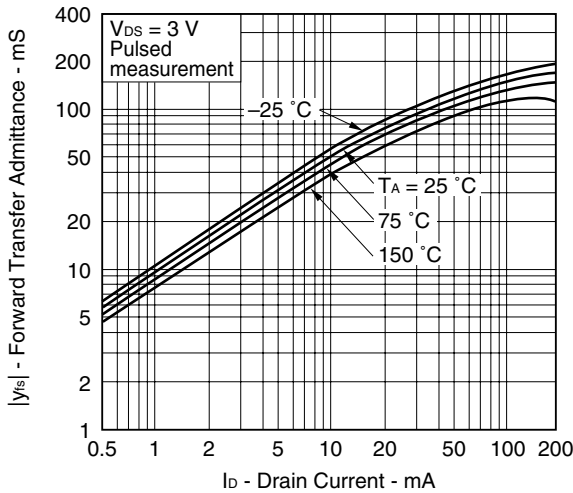
TRANSFER CHARACTERISTICS



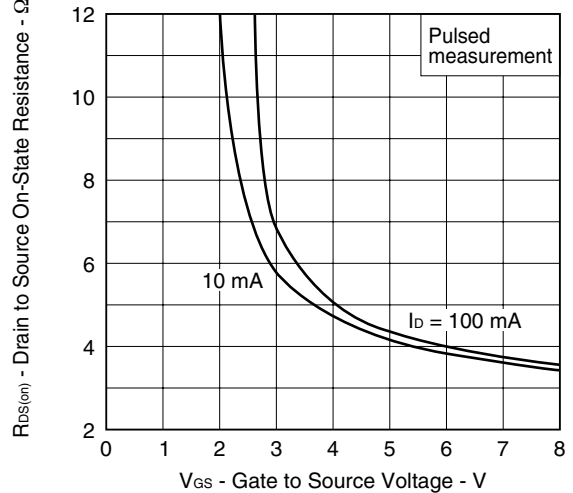
GATE TO SOURCE CUTOFF VOLTAGE vs. CHANNEL TEMPERATURE



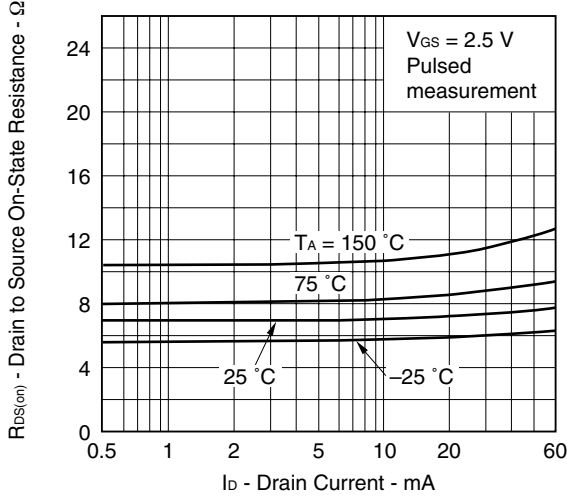
FORWARD TRANSFER ADMITTANCE vs. DRAIN CURRENT



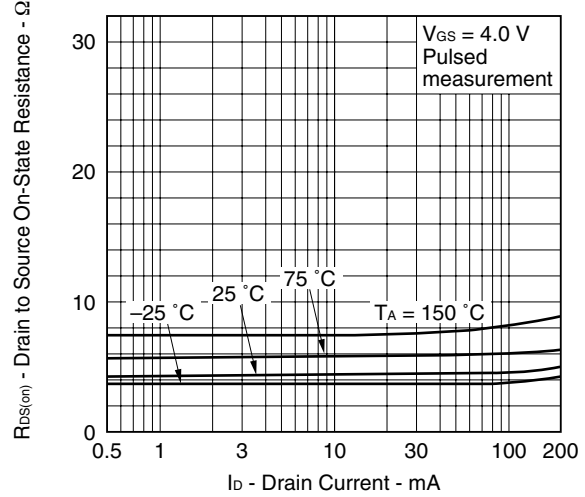
DRAIN TO SOURCE ON-STATE RESISTANCE vs. GATE TO SOURCE VOLTAGE



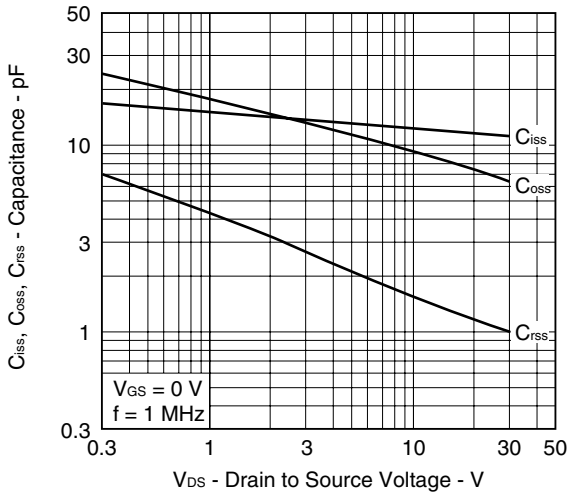
DRAIN TO SOURCE ON-STATE RESISTANCE vs. DRAIN CURRENT



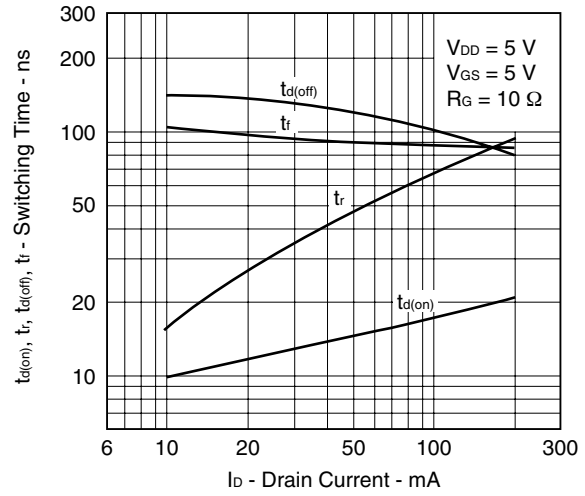
DRAIN TO SOURCE ON-STATE RESISTANCE vs. DRAIN CURRENT



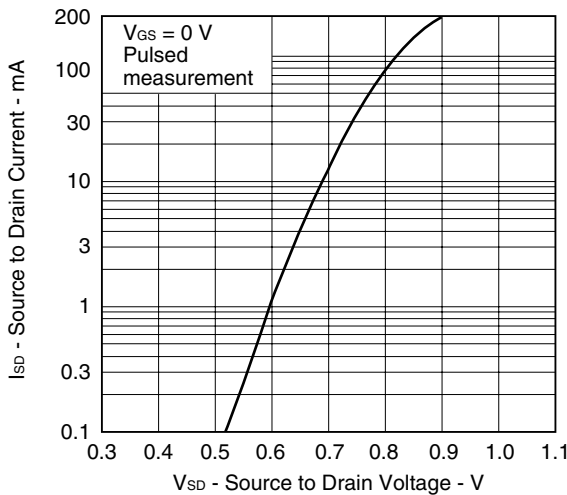
CAPACITANCE vs. DRAIN TO SOURCE VOLTAGE



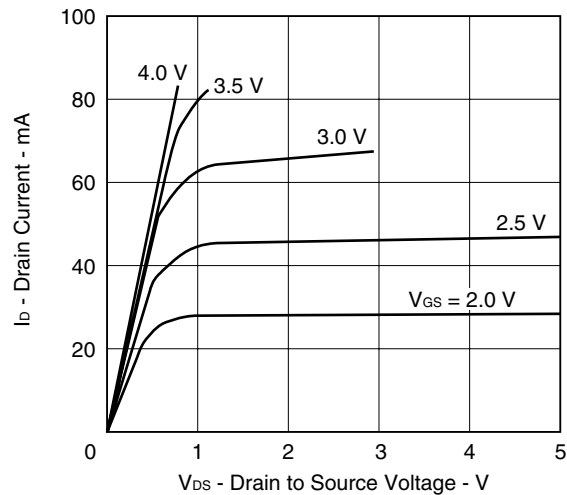
SWITCHING CHARACTERISTICS



SOURCE TO DRAIN DIODE FORWARD VOLTAGE



DRAIN CURRENT vs. DRAIN TO SOURCE VOLTAGE



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