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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RENESAS

MOS FIELD EFFECT TRANSISTOR

μPA502T

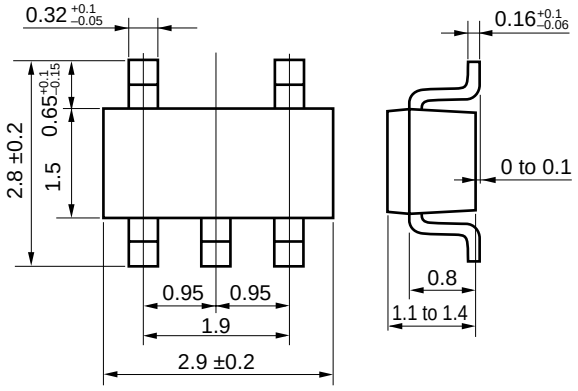
N-CHANNEL MOS FET (5-PIN 2 CIRCUITS)

The μPA502T is a mini-mold device provided with two MOS FET circuits. It achieves high-density mounting and saves mounting costs.

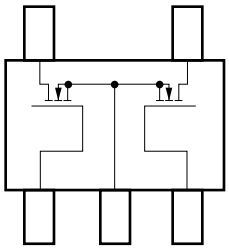
FEATURES

- Two source common MOS FET circuits in package the same size as SC-59
- Complement to μPA503T
- Automatic mounting supported

PACKAGE DIMENSIONS (in millimeters)



PIN CONNECTION (Top view)



ABSOLUTE MAXIMUM RATINGS (T_A = 25 °C)

PARAMETER	SYMBOL	RATINGS	UNIT
Drain to Source Voltage	V_{DSS}	50	V
Gate to Source Voltage	V_{GSS}	±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	°C
Storage Temperature	T_{stg}	–55 to 150	°C

* PW ≤ 10 ms, Duty Cycle ≤ 50 %

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Date Published June 1996 P
Printed in Japan

NEC Corporation 1996

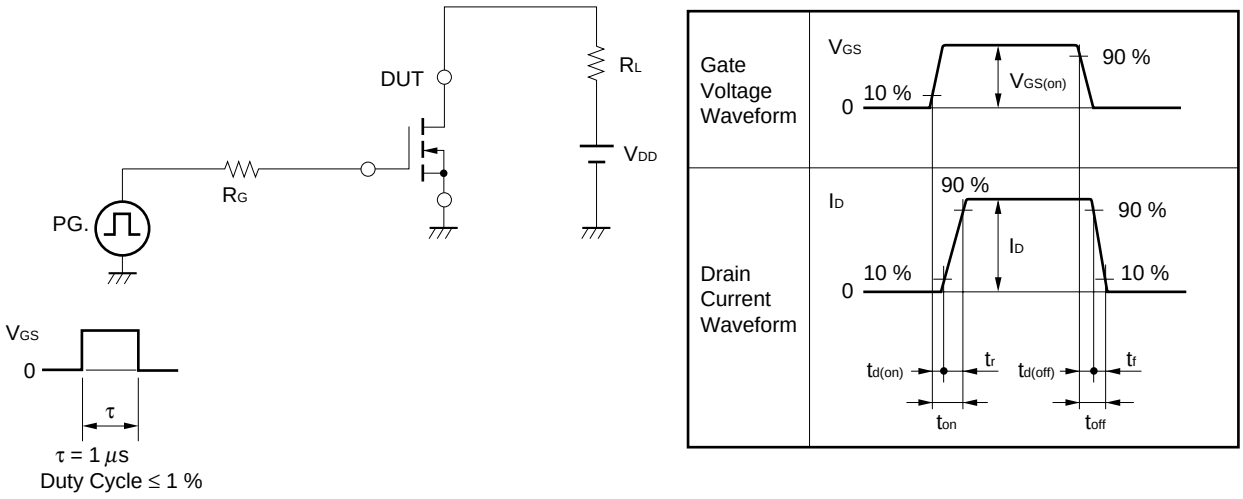
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ELECTRICAL CHARACTERISTICS (T_A = 25 °C)

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

Marking: DA

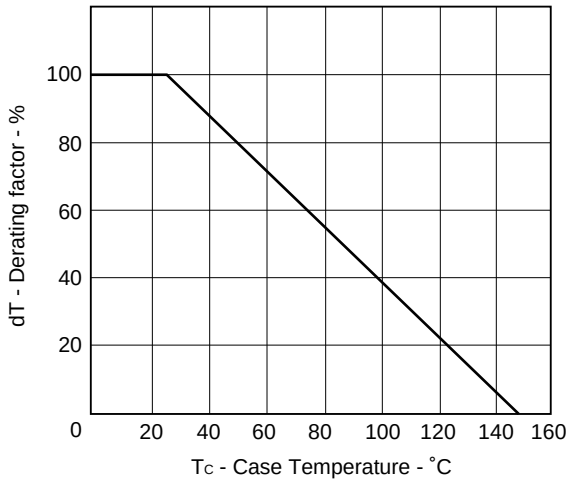
SWITCHING TIME MEASUREMENT CIRCUIT AND MEASUREMENT CONDITIONS (RESISTANCE LOADED)



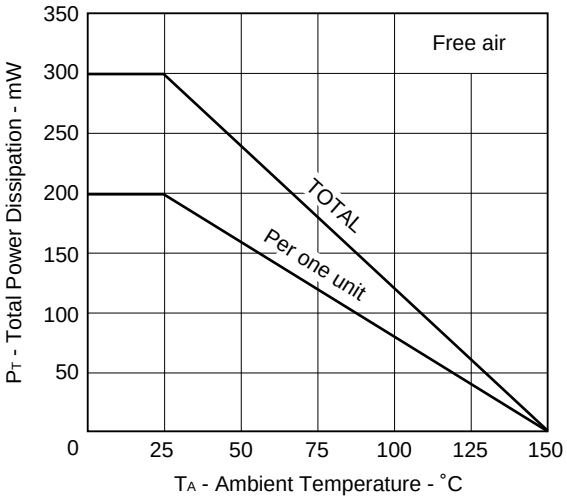
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TYPICAL CHARACTERISTICS (T_A = 25 ˚C)

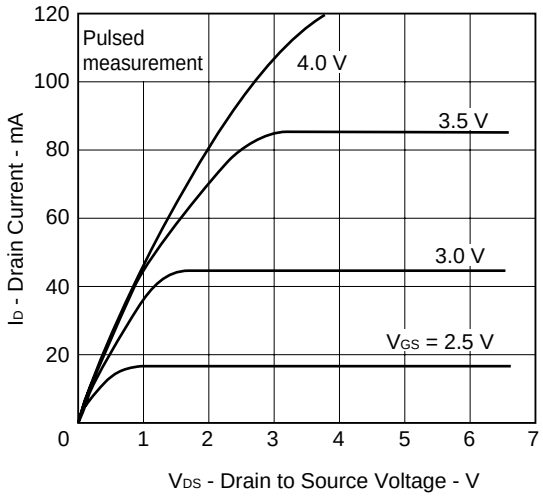
DERATING FACTOR OF FORWARD BIAS SAFE OPERATING AREA



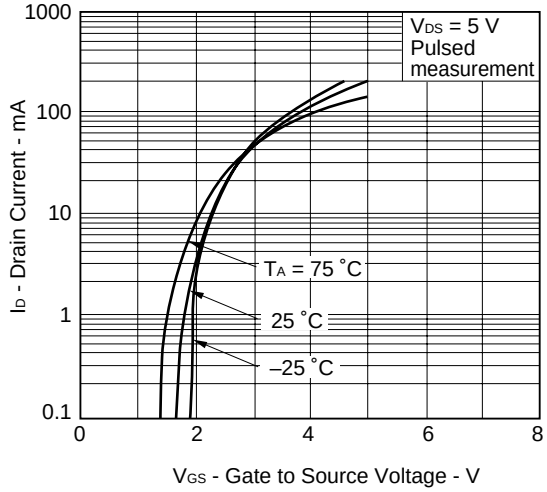
TOTAL POWER DISSIPATION vs. AMBIENT TEMPERATURE



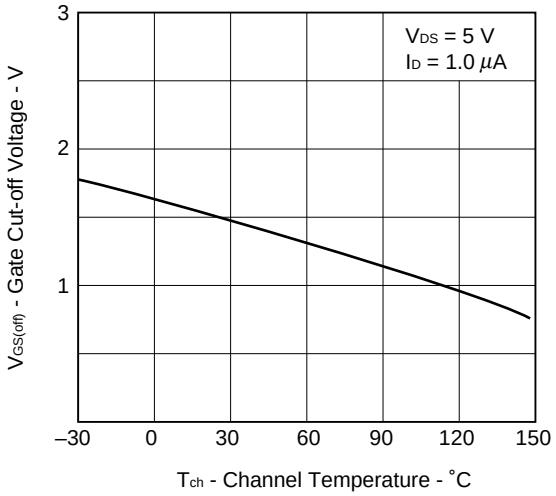
DRAIN CURRENT vs. DRAIN TO SOURCE VOLTAGE



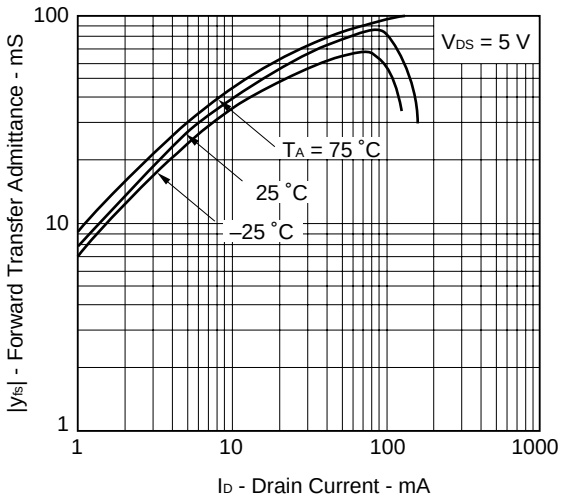
TRANSFER CHARACTERISTICS



GATE TO SOURCE CUT-OFF VOLTAGE vs. CHANNEL TEMPERATURE

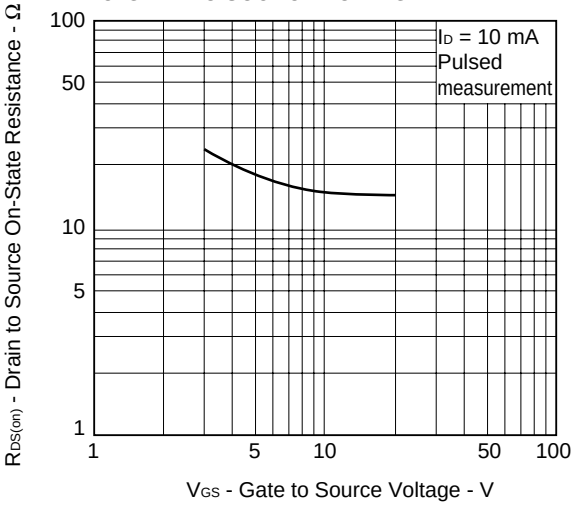


FORWARD TRANSFER ADMITTANCE vs. DRAIN CURRENT

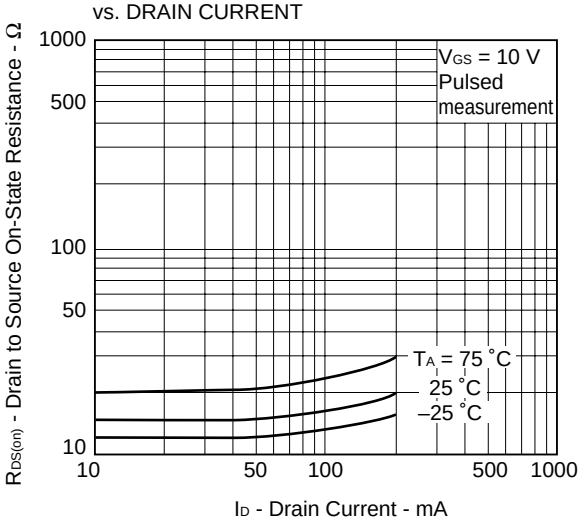


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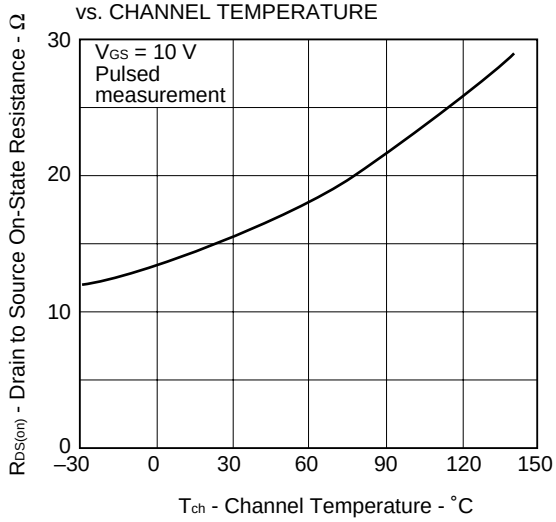
DRAIN TO SOURCE ON-STATE RESISTANCE
vs. GATE TO SOURCE VOLTAGE



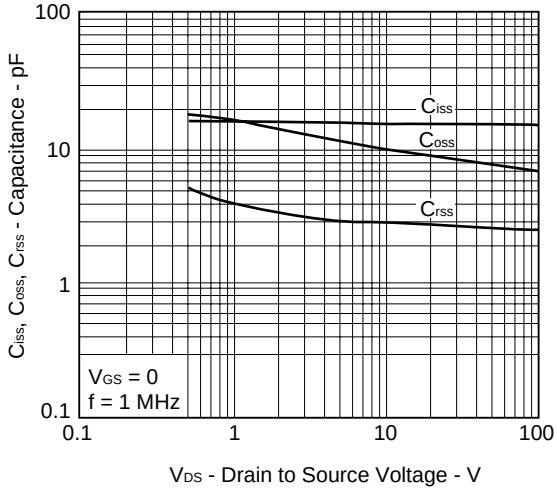
DRAIN TO SOURCE ON-STATE RESISTANCE
vs. DRAIN CURRENT



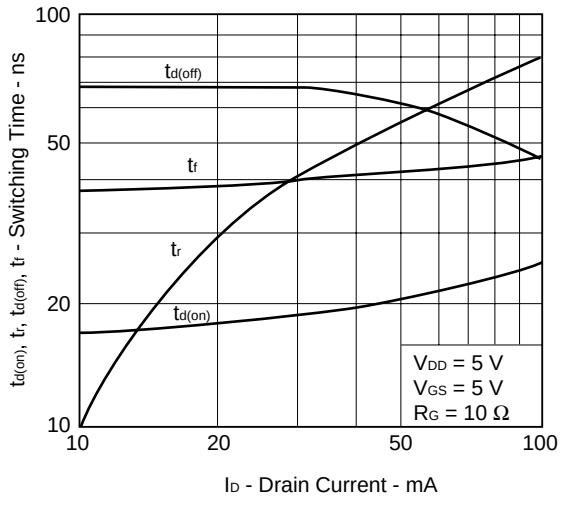
DRAIN TO SOURCE ON-STATE RESISTANCE
vs. CHANNEL TEMPERATURE



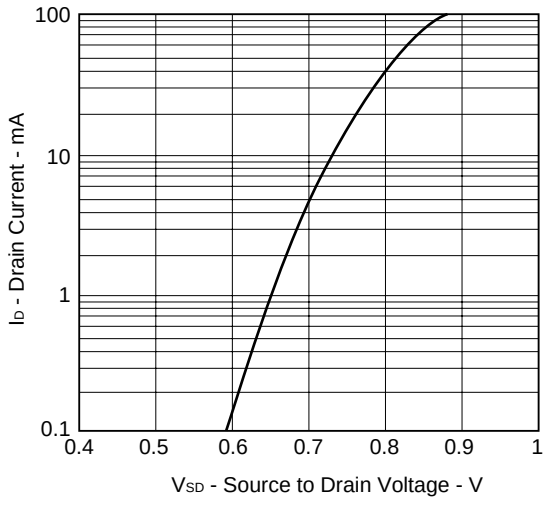
CAPACITANCE vs. DRAIN TO
SOURCE VOLTAGE



SWITCHING CHARACTERISTICS



SOURCE TO DRAIN DIODE
FORWARD VOLTAGE



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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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Special: Transportation equipment (automobiles, trains, ships, etc.), traffic control systems, anti-disaster systems, anti-crime systems, safety equipment and medical equipment (not specifically designed for life support)

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