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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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Not recommended
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**SWITCHING
N-CHANNEL POWER MOSFET**

DESCRIPTION

The μ PA2722UT1A is N-channel MOSFET designed for DC/DC converter applications.

FEATURES

- Low on-state resistance
 $R_{DS(on)1} = 3.3 \text{ m}\Omega \text{ MAX. (} V_{GS} = 10 \text{ V, } I_D = 15 \text{ A)}$
 $R_{DS(on)2} = 4.6 \text{ m}\Omega \text{ MAX. (} V_{GS} = 4.5 \text{ V, } I_D = 15 \text{ A)}$
- Thin type surface mount package with heat spreader (8-pin HVSON)
- RoHS Compliant

ABSOLUTE MAXIMUM RATINGS (T_A = 25°C, All terminals are connected.)

Drain to Source Voltage (V _{GS} = 0 V)	V _{DSS}	30	V
Gate to Source Voltage (V _{DS} = 0 V)	V _{GSS}	±20	V
Drain Current (DC)	I _{D(DC)}	±29	A
Drain Current (pulse) ^{Note1}	I _{D(pulse)}	±170	A
Total Power Dissipation ^{Note2}	P _{T1}	1.5	W
Total Power Dissipation (PW = 10 sec) ^{Note2}	P _{T2}	4.6	W
Channel Temperature	T _{ch}	150	°C
Storage Temperature	T _{stg}	-55 to +150	°C
Single Avalanche Current ^{Note3}	I _{AS}	29	A
Single Avalanche Energy ^{Note3}	E _{AS}	84	mJ

THERMAL RESISTANCE

Channel to Ambient Thermal Resistance ^{Note2}	R _{th(ch-A)}	83.3	°C/W
Channel to Case (Drain) Thermal Resistance	R _{th(ch-C)}	1.5	°C/W

Notes 1. PW ≤ 10 μs, Duty Cycle ≤ 1%

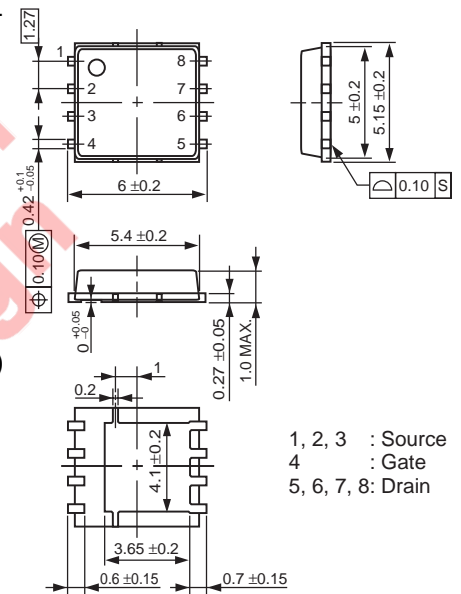
2. Mounted on a glass epoxy board of 25.4 mm x 25.4 mm x 0.8 mm

3. Starting T_{ch} = 25°C, V_{DD} = 15 V, R_G = 25 Ω, V_{GS} = 20 → 0 V, L = 100 μH

Remark Strong electric field, when exposed to this device, can cause destruction of the gate oxide and ultimately degrade the device operation. Steps must be taken to stop generation of static electricity as much as possible, and quickly dissipate it once, when it has occurred.

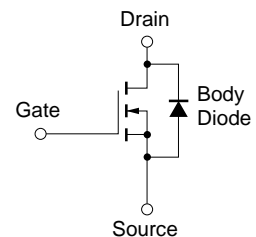
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PACKAGE DRAWING (Unit: mm)



1, 2, 3 : Source
 4 : Gate
 5, 6, 7, 8: Drain

EQUIVALENT CIRCUIT

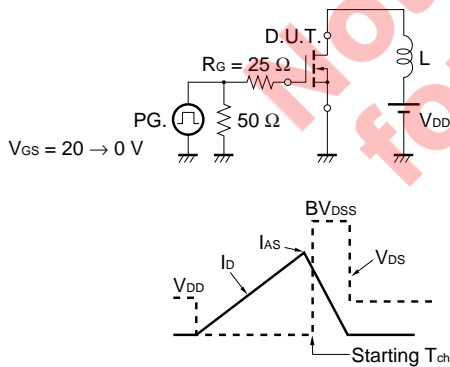


ELECTRICAL CHARACTERISTICS (TA = 25°C, All terminals are connected.)

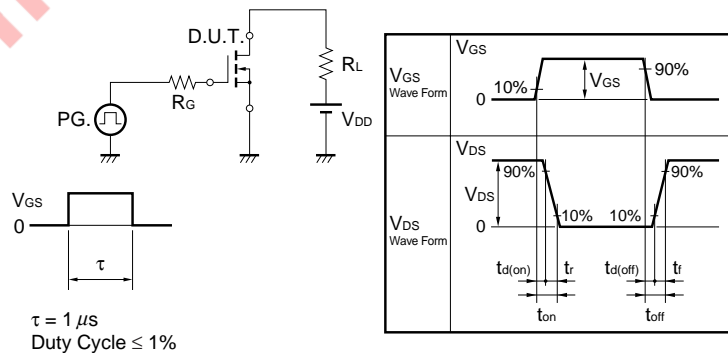
CHARACTERISTICS	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 30\text{ V}, V_{GS} = 0\text{ V}$			10	μA
Gate Leakage Current	I_{GSS}	$V_{GS} = \pm 20\text{ V}, V_{DS} = 0\text{ V}$			±100	nA
Gate to Source Cut-off Voltage	$V_{GS(off)}$	$V_{DS} = 10\text{ V}, I_D = 1\text{ mA}$	1.0		2.5	V
Forward Transfer Admittance ^{Note}	$ y_{fs} $	$V_{DS} = 10\text{ V}, I_D = 15\text{ A}$	13			S
Drain to Source On-state Resistance ^{Note}	$R_{DS(on)1}$	$V_{GS} = 10\text{ V}, I_D = 15\text{ A}$		2.4	3.3	mΩ
	$R_{DS(on)2}$	$V_{GS} = 4.5\text{ V}, I_D = 15\text{ A}$		3.4	4.6	mΩ
Input Capacitance	C_{iss}	$V_{DS} = 15\text{ V},$		6200		pF
Output Capacitance	C_{oss}	$V_{GS} = 0\text{ V},$		800		pF
Reverse Transfer Capacitance	C_{rss}	$f = 1\text{ MHz}$		410		pF
Turn-on Delay Time	$t_{d(on)}$	$V_{DD} = 15\text{ V}, I_D = 15\text{ A},$		31		ns
Rise Time	t_r	$V_{GS} = 10\text{ V},$		20		ns
Turn-off Delay Time	$t_{d(off)}$	$R_G = 10\ \Omega$		129		ns
Fall Time	t_f			40		ns
Total Gate Charge	Q_G	$V_{DD} = 15\text{ V},$		46		nC
Gate to Source Charge	Q_{GS}	$V_{GS} = 5\text{ V},$		17		nC
Gate to Drain Charge	Q_{GD}	$I_D = 29\text{ A}$		18		nC
Body Diode Forward Voltage ^{Note}	$V_{F(S-D)}$	$I_F = 29\text{ A}, V_{GS} = 0\text{ V}$		0.8		V
Reverse Recovery Time	t_{rr}	$I_F = 29\text{ A}, V_{GS} = 0\text{ V},$		44		ns
Reverse Recovery Charge	Q_{rr}	$di/dt = 100\text{ A}/\mu\text{s}$		44		nC
Gate Resistance	R_G	$f = 1\text{ MHz}$		1.4		Ω

Note Pulsed

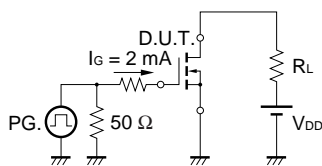
TEST CIRCUIT 1 AVALANCHE CAPABILITY



TEST CIRCUIT 2 SWITCHING TIME

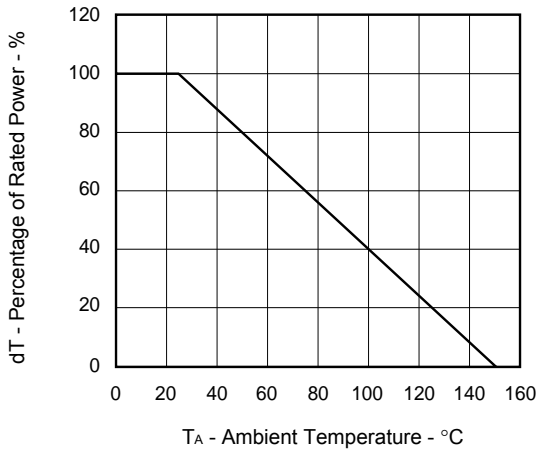


TEST CIRCUIT 3 GATE CHARGE

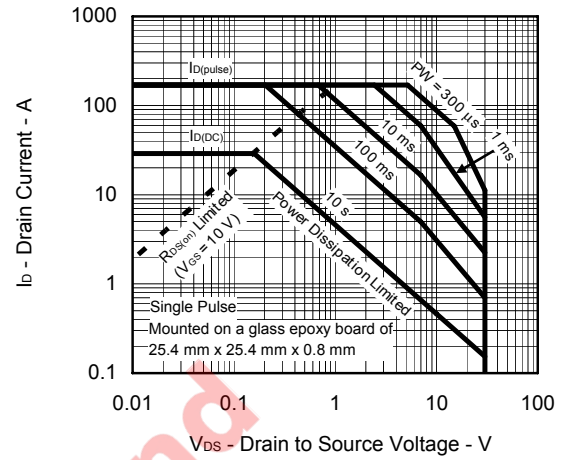


<R> TYPICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$)

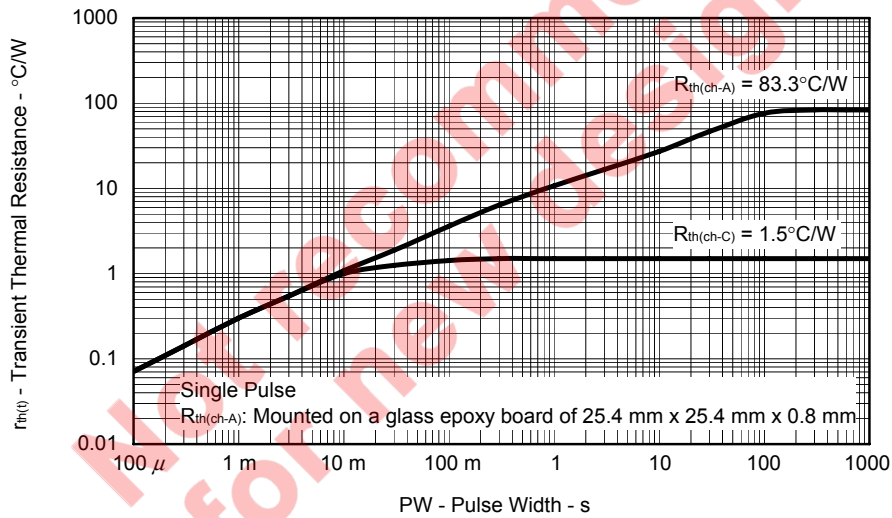
DERATING FACTOR OF FORWARD BIAS SAFE OPERATING AREA



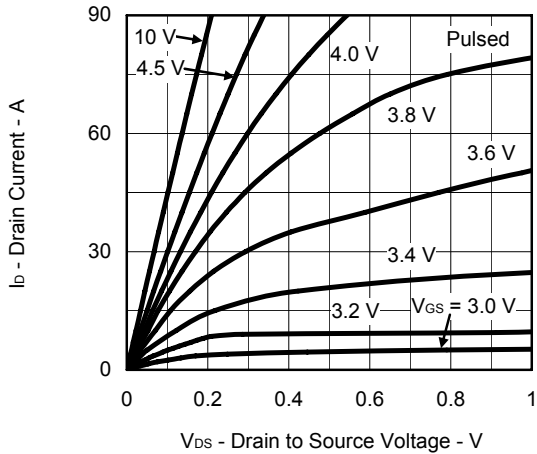
FORWARD BIAS SAFE OPERATING AREA



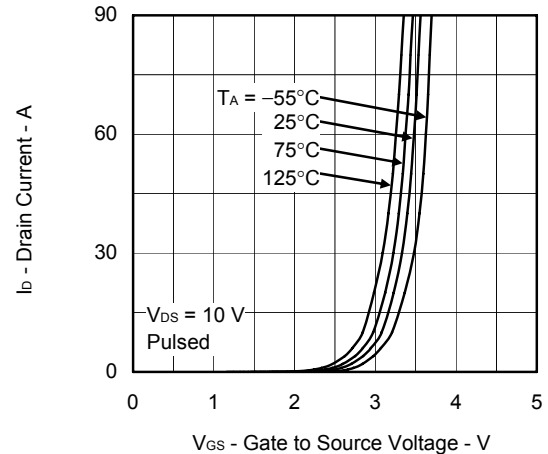
TRANSIENT THERMAL RESISTANCE vs. PULSE WIDTH



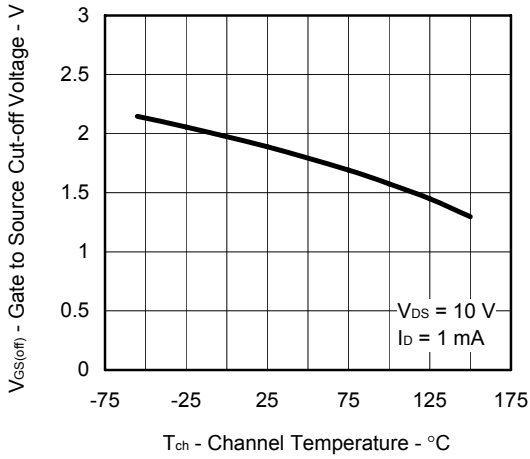
DRAIN CURRENT vs. DRAIN TO SOURCE VOLTAGE



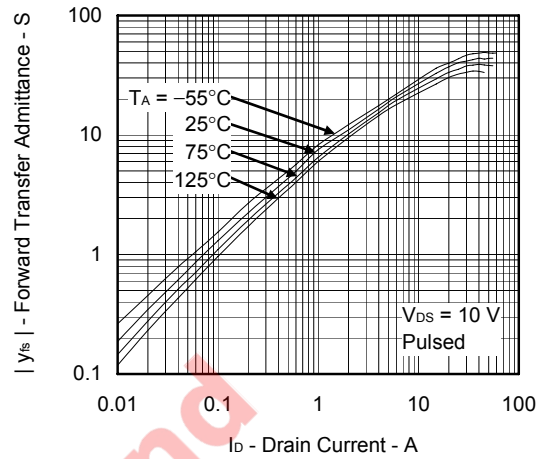
FORWARD TRANSFER CHARACTERISTICS



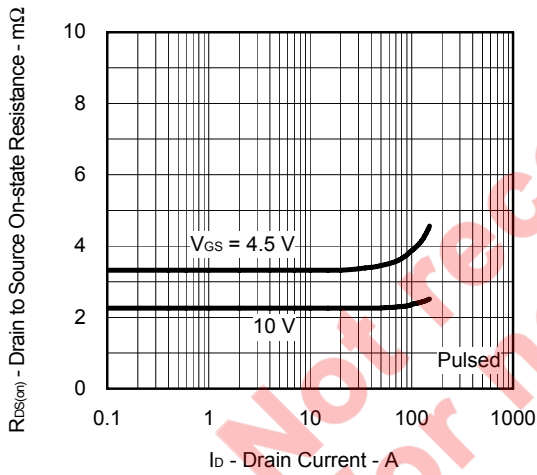
GATE TO SOURCE CUT-OFF VOLTAGE vs. CHANNEL TEMPERATURE



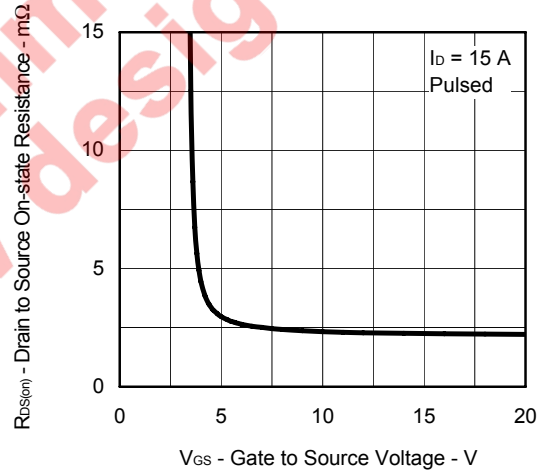
FORWARD TRANSFER ADMITTANCE vs. DRAIN CURRENT



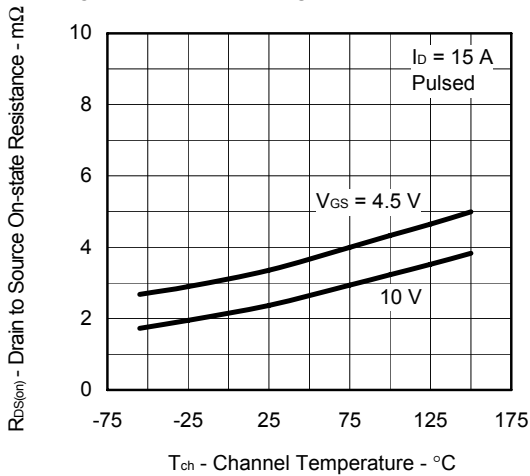
DRAIN TO SOURCE ON-STATE RESISTANCE vs. DRAIN CURRENT



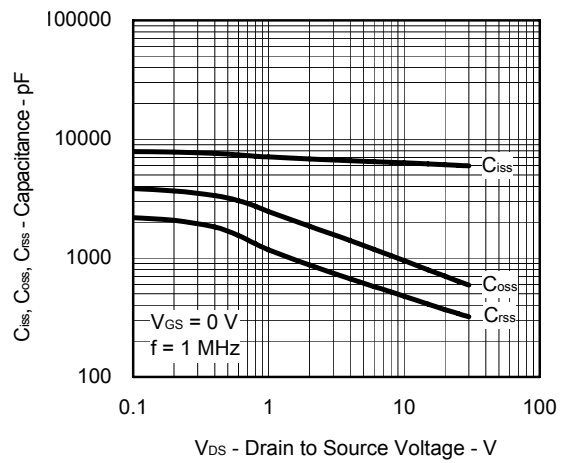
DRAIN TO SOURCE ON-STATE RESISTANCE vs. GATE TO SOURCE VOLTAGE



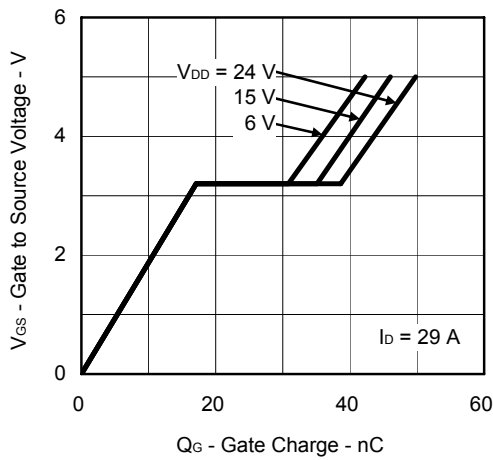
DRAIN TO SOURCE ON-STATE RESISTANCE vs. CHANNEL TEMPERATURE



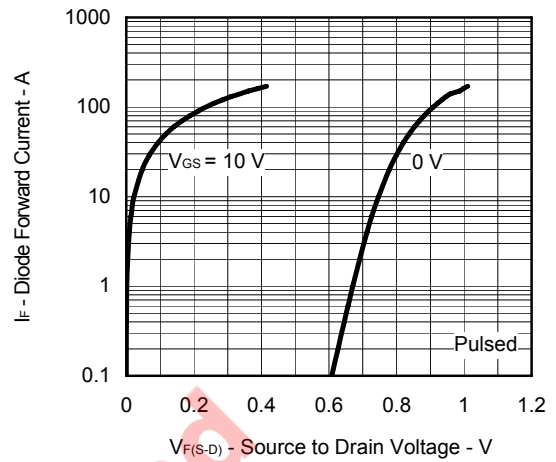
CAPACITANCE vs. DRAIN TO SOURCE VOLTAGE



DYNAMIC INPUT/OUTPUT CHARACTERISTICS



SOURCE TO DRAIN DIODE FORWARD VOLTAGE



ORDERING INFORMATION

PART NUMBER	LEAD PLATING	PACKING	PACKAGE
μ PA2722UT1A-E1-AZ ^{Note}	Sn-Bi	Tape 3000 p/reel	8-pin HVSON 0.10 g TYP.
μ PA2722UT1A-E2-AZ ^{Note}			
μ PA2722UT1A-E1-AY ^{Note}	Pure Sn		
μ PA2722UT1A-E2-AY ^{Note}			

Note Pb-free (This product does not contain Pb in the external electrode.)

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