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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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MOS FIELD EFFECT TRANSISTOR

μ PA2734GR

SWITCHING

P-CHANNEL POWER MOS FET

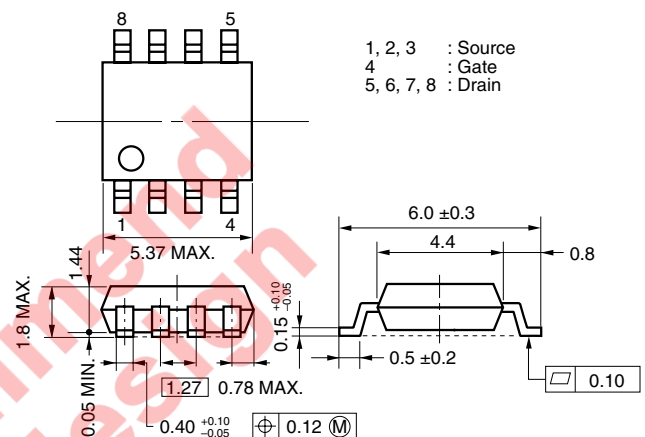
DESCRIPTION

The μ PA2734GR is P-Channel MOS Field Effect Transistor designed for DC/DC converter and power management applications.

FEATURES

- Low on-state resistance
 $R_{DS(on)1} = 38 \text{ m}\Omega \text{ MAX. (} V_{GS} = -4.5 \text{ V, } I_D = -7.0 \text{ A)}$
 $R_{DS(on)2} = 72 \text{ m}\Omega \text{ MAX. (} V_{GS} = -2.5 \text{ V, } I_D = -3.5 \text{ A)}$
- Low input capacitance
 $C_{iss} = 1130 \text{ pF TYP. (} V_{DS} = -10 \text{ V, } V_{GS} = 0 \text{ V)}$
- Built-in gate protection diode
- Small and surface mount package (Power SOP8)
- RoHS Compliant

PACKAGE DRAWING (Unit: mm)



ORDERING INFORMATION

| PART NUMBER | LEAD PLATING | PACKING | PACKAGE |
|--------------------------------------|--------------|------------------|---------------------------|
| μ PA2734GR-E1-AT ^{Note} | Pure Sn | Tape 2500 p/reel | Power SOP8 0.08 g TYP. |
| μ PA2734GR-E2-AT ^{Note} | | | |

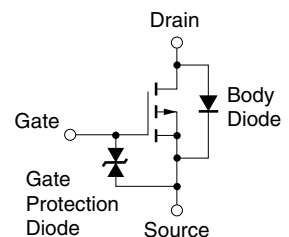
Note Pb-free (This product does not contain Pb in external electrode and other parts.)

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} | ±12 | V |
| Drain Current (DC) ^{Note1} | I _{D(DC)} | ±7 | A |
| Drain Current (pulse) ^{Note2} | I _{D(pulse)} | ±28 | A |
| Total Power Dissipation ^{Note3} | P _{T1} | 1.1 | W |
| Total Power Dissipation (PW = 10 sec) ^{Note3} | P _{T2} | 2.5 | W |
| Channel Temperature | T _{ch} | 150 | °C |
| Storage Temperature | T _{stg} | -55 to +150 | °C |

- Notes**
1. V_{GS} = -4.5 V
 2. PW ≤ 10 μs, Duty Cycle ≤ 1%
 3. Mounted on glass epoxy board of 25.4 mm x 25.4 mm x 0.8 mm

EQUIVALENT CIRCUIT



Remark The diode connected between the gate and source of the transistor serves as a protector against ESD. When this device actually used, an additional protection circuit is externally required if a voltage exceeding the rated voltage may be applied to this device.

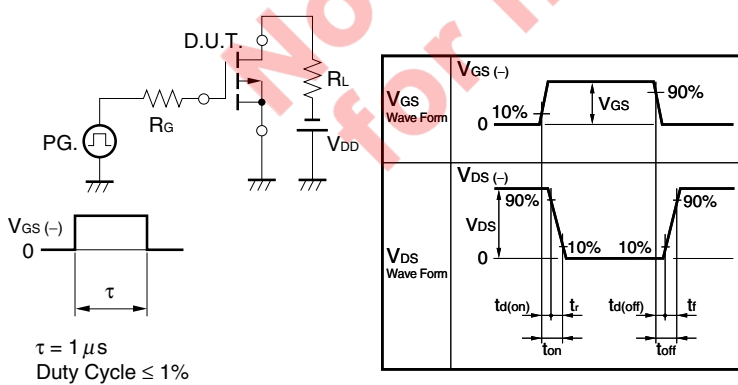
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ELECTRICAL CHARACTERISTICS (T_A = 25°C, All terminals are connected.)

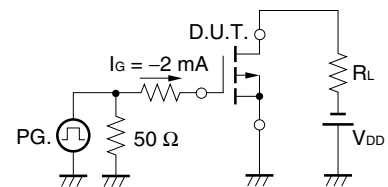
| CHARACTERISTICS | SYMBOL | TEST CONDITIONS | MIN. | TYP. | MAX. | UNIT |
|---|----------------------|---|------|------|------|------|
| Zero Gate Voltage Drain Current | I _{DSS} | V _{DS} = -30 V, V _{GS} = 0 V | | | -1 | μA |
| Gate Leakage Current | I _{GSS} | V _{GS} = ±12 V, V _{DS} = 0 V | | | ±10 | μA |
| Gate to Source Cut-off Voltage | V _{GS(off)} | V _{DS} = -10 V, I _D = -1 mA | -0.5 | | -1.5 | V |
| Forward Transfer Admittance ^{Note} | y _{fs} | V _{DS} = -10 V, I _D = -3.5 A | 5 | | | S |
| Drain to Source On-state Resistance ^{Note} | R _{DS(on)1} | V _{GS} = -4.5 V, I _D = -7.0 A | | 32 | 38 | mΩ |
| | R _{DS(on)2} | V _{GS} = -2.5 V, I _D = -3.5 A | | 53 | 72 | mΩ |
| Input Capacitance | C _{iss} | V _{DS} = -10 V, | | 1130 | | pF |
| Output Capacitance | C _{oss} | V _{GS} = 0 V, | | 200 | | pF |
| Reverse Transfer Capacitance | C _{rss} | f = 1 MHz | | 160 | | pF |
| Turn-on Delay Time | t _{d(on)} | V _{DD} = -15 V, I _D = -3.5 A, | | 13 | | ns |
| Rise Time | t _r | V _{GS} = -4.5 V, | | 20 | | ns |
| Turn-off Delay Time | t _{d(off)} | R _G = 10 Ω | | 82 | | ns |
| Fall Time | t _f | | | 77 | | ns |
| Total Gate Charge | Q _G | V _{DD} = -24 V, | | 12 | | nC |
| Gate to Source Charge | Q _{GS} | V _{GS} = -4.5 V, | | 2.7 | | nC |
| Gate to Drain Charge | Q _{GD} | I _D = -7 A | | 5.9 | | nC |
| Body Diode Forward Voltage ^{Note} | V _{F(S-D)} | I _F = 7 A, V _{GS} = 0 V | | 0.93 | 1.2 | V |
| Reverse Recovery Time | t _{rr} | I _F = 7 A, V _{GS} = 0 V, | | 64 | | ns |
| Reverse Recovery Charge | Q _{rr} | di/dt = 100 A/μs | | 55 | | nC |

Note Pulsed

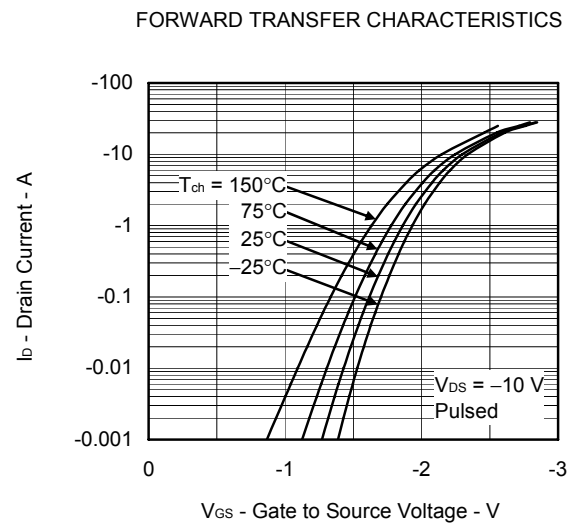
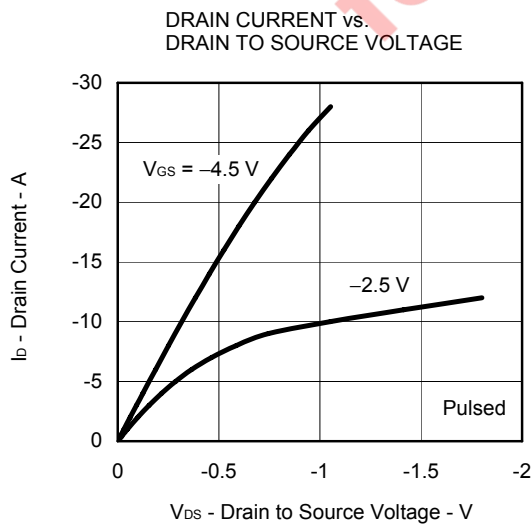
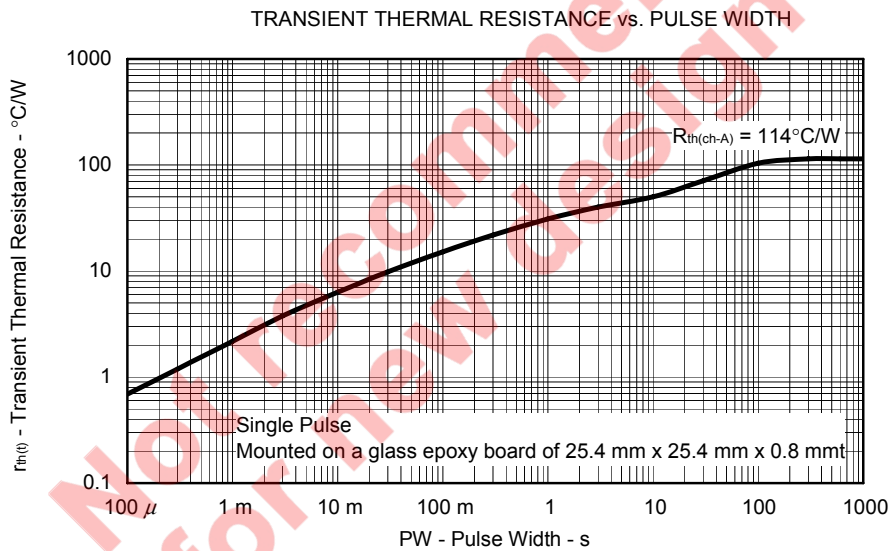
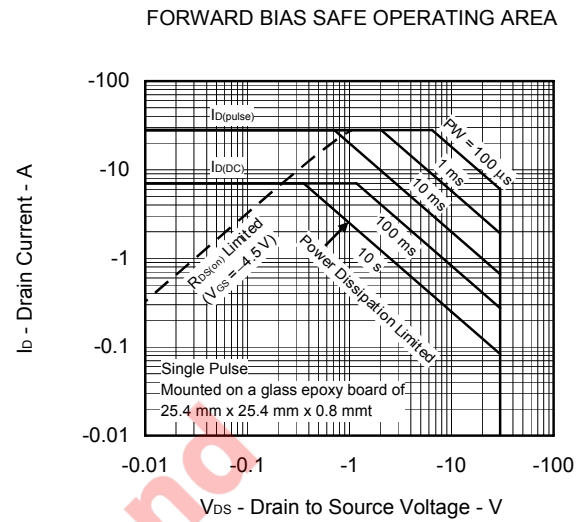
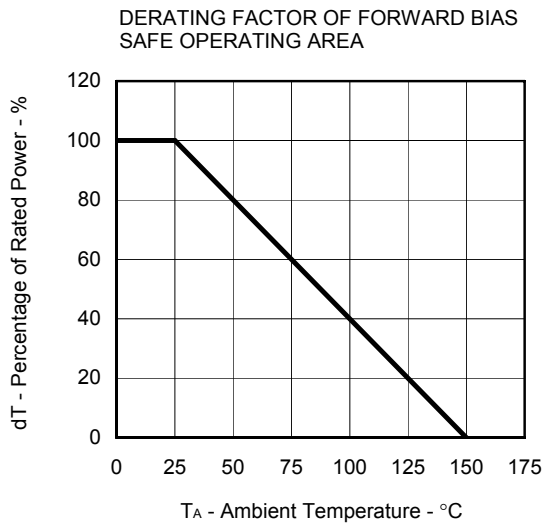
TEST CIRCUIT 1 SWITCHING TIME



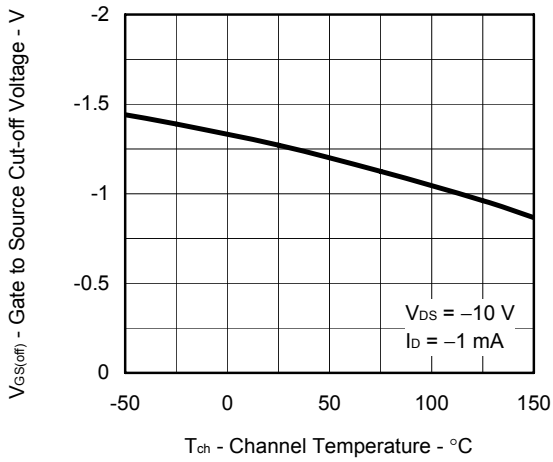
TEST CIRCUIT 2 GATE CHARGE



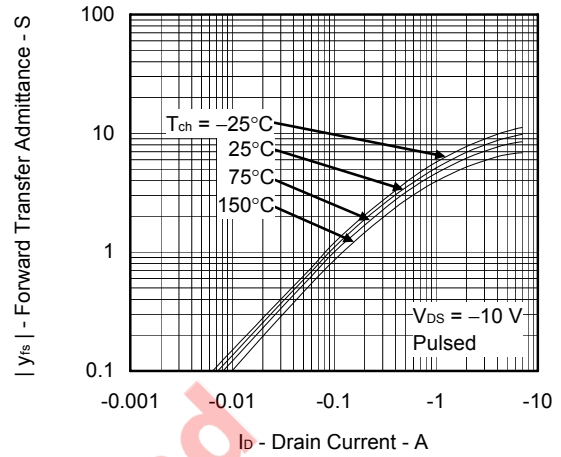
ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$)



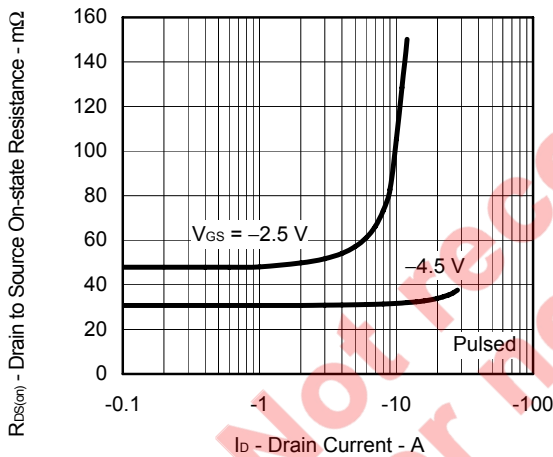
GATE TO SOURCE CUT-OFF VOLTAGE vs. CHANNEL TEMPERATURE



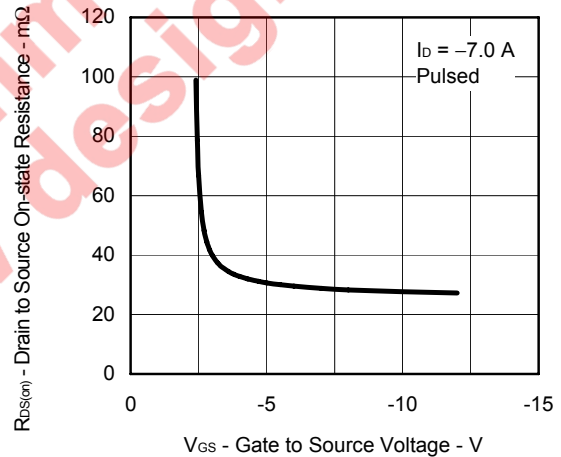
FORWARD TRANSFER ADMITTANCE vs. DRAIN CURRENT



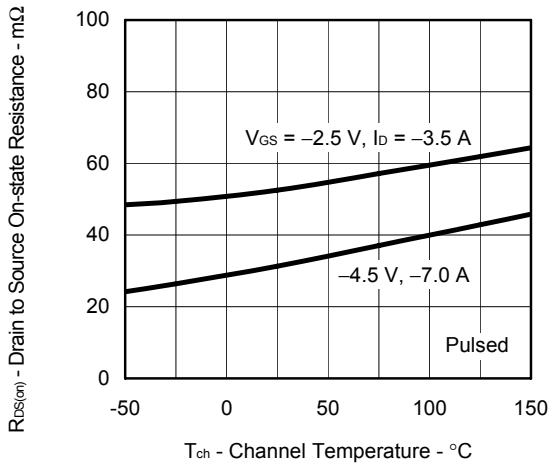
DRAIN TO SOURCE ON-STATE RESISTANCE vs. DRAIN CURRENT



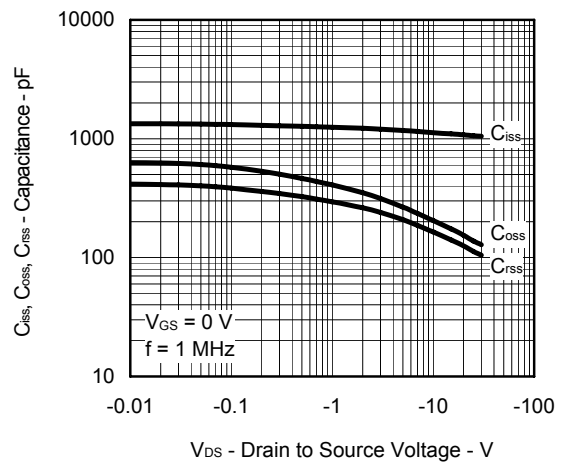
DRAIN TO SOURCE ON-STATE RESISTANCE vs. GATE TO SOURCE VOLTAGE



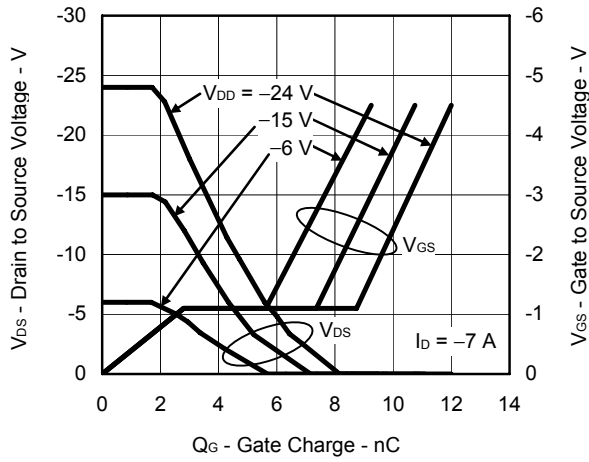
DRAIN TO SOURCE ON-STATE RESISTANCE vs. CHANNEL TEMPERATURE



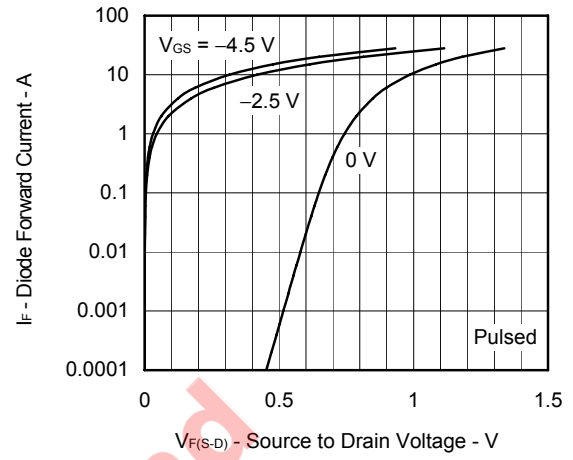
CAPACITANCE vs. DRAIN TO SOURCE VOLTAGE



DYNAMIC INPUT/OUTPUT CHARACTERISTICS



SOURCE TO DRAIN DIODE FORWARD VOLTAGE



Not recommended for new design

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