

DUAL P-CHANNEL MOSFET FOR SWITCHING

DESCRIPTION

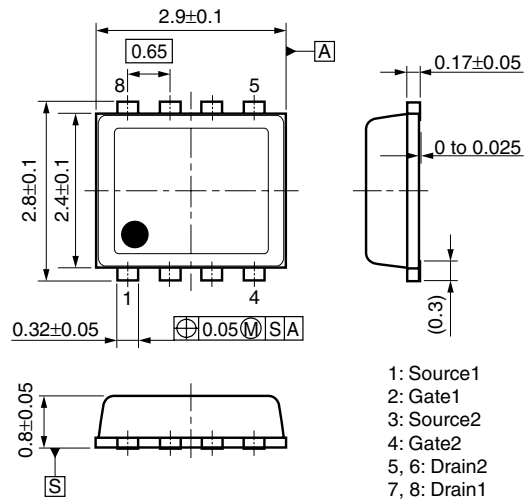
The μ PA2550 is dual P-channel MOSFETs designed for power management applications of portable equipments, such as load switch.

Dual P-channel MOSFETs are assembled in one package, to contribute minimize the equipments.

FEATURES

- 1.8 V drive available
- Low on-state resistance
 - $R_{DS(on)1} = 40 \text{ m}\Omega \text{ MAX. (} V_{GS} = -4.5 \text{ V, } I_D = -2.5 \text{ A)}$
 - $R_{DS(on)2} = 60 \text{ m}\Omega \text{ MAX. (} V_{GS} = -2.5 \text{ V, } I_D = -2.5 \text{ A)}$
 - $R_{DS(on)3} = 93 \text{ m}\Omega \text{ MAX. (} V_{GS} = -1.8 \text{ V, } I_D = -2.5 \text{ A)}$
- Built-in gate protection diode
- Small and surface mount package (8-pin VSOF (2429))

PACKAGE DRAWING (Unit: mm)



ORDERING INFORMATION

| PART NUMBER | LEAD PLATING | PACKING | PACKAGE |
|---------------------------------------|--------------|----------------------|-------------------|
| μ PA2550T1H-T1-AT ^{Note} | Pure Sn | 8 mm embossed taping | 8-pin VSOF (2429) |
| μ PA2550T1H-T2-AT ^{Note} | | 3000 p/reel | |

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

Marking: 2550

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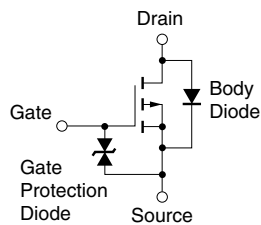
ABSOLUTE MAXIMUM RATINGS (TA = 25°C)

| | | | |
|---|-----------------------|-------------|----|
| Drain to Source Voltage (VGS = 0 V) | V _{DSS} | -12 | V |
| Gate to Source Voltage (Vbs = 0 V) | V _{GSS} | ±8 | V |
| Drain Current (DC) | I _{D(DC)} | ±5.0 | A |
| Drain Current (pulse) ^{Note1} | I _{D(pulse)} | ±20 | A |
| Total Power Dissipation (1 unit, 5 s) ^{Note2} | P _{T1} | 1.5 | W |
| Total Power Dissipation (2 units, 5 s) ^{Note2} | P _{T2} | 2.2 | W |
| Channel Temperature | T _{ch} | 150 | °C |
| Storage Temperature | T _{stg} | -55 to +150 | °C |

Notes 1. PW ≤ 10 μs, Duty Cycle ≤ 1%

2. Mounted on FR-4 board of 25.4 mm x 25.4 mm x 0.8 mm

EQUIVALENT CIRCUIT (1/2)



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.

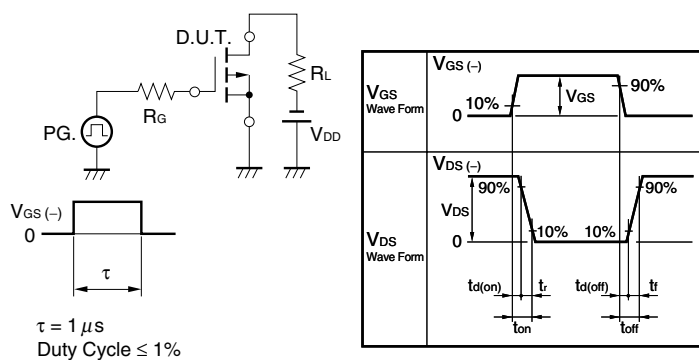
Caution This product is electrostatic-sensitive device due to low ESD capability and should be handled with caution for electrostatic discharge.

ELECTRICAL CHARACTERISTICS (T_A = 25°C)

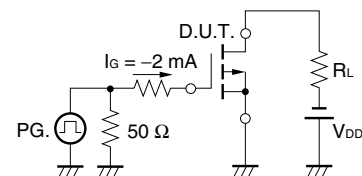
| CHARACTERISTICS | SYMBOL | TEST CONDITIONS | MIN. | TYP. | MAX. | UNIT |
|---|----------------------|--|------|------|------|------|
| Zero Gate Voltage Drain Current | I _{DSS} | V _{DS} = -12 V, V _{GS} = 0 V | | | -1 | μA |
| Gate Leakage Current | I _{GSS} | V _{GS} = ±8 V, V _{DS} = 0 V | | | ±10 | μA |
| Gate to Source Cut-off Voltage | V _{GS(off)} | V _{DS} = -10 V, I _D = -1 mA | -0.4 | -0.7 | -1.0 | V |
| Forward Transfer Admittance Note | y _{fs} | V _{DS} = -10 V, I _D = -2.5 A | 3.5 | | | S |
| Drain to Source On-state Resistance Note | R _{DS(on)1} | V _{GS} = -4.5 V, I _D = -2.5 A | | 29 | 40 | mΩ |
| | R _{DS(on)2} | V _{GS} = -2.5 V, I _D = -2.5 A | | 37 | 60 | mΩ |
| | R _{DS(on)3} | V _{GS} = -1.8 V, I _D = -2.5 A | | 53 | 93 | mΩ |
| Input Capacitance | C _{iss} | V _{DS} = -10 V, | | 930 | | pF |
| Output Capacitance | C _{oss} | V _{GS} = 0 V, | | 200 | | pF |
| Reverse Transfer Capacitance | C _{rss} | f = 1.0 MHz | | 170 | | pF |
| Turn-on Delay Time | t _{d(on)} | V _{DD} = -6 V, I _D = -2.5 A, | | 11 | | ns |
| Rise Time | t _r | V _{GS} = -4 V, | | 3.3 | | ns |
| Turn-off Delay Time | t _{d(off)} | R _G = 6 Ω | | 70 | | ns |
| Fall Time | t _f | | | 46 | | ns |
| Total Gate Charge | Q _G | V _{DD} = -6 V, V _{GS} = -4 V, I _D = -5 A | | 8.7 | | nC |
| Body Diode Forward Voltage Note | V _{F(S-D)} | I _F = -5 A, V _{GS} = 0 V | | 0.9 | | V |

Note Pulsed

TEST CIRCUIT 1 SWITCHING TIME

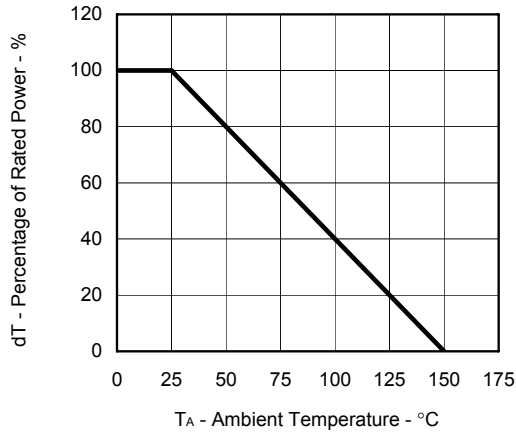


TEST CIRCUIT 2 GATE CHARGE

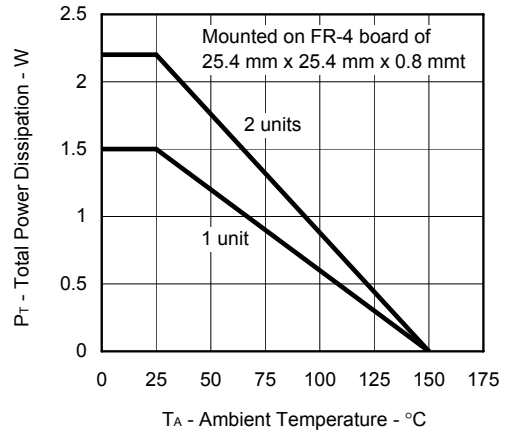


TYPICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$)

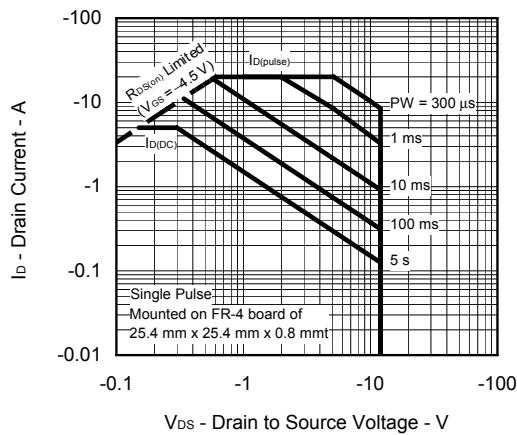
DERATING FACTOR OF FORWARD BIAS SAFE OPERATING AREA



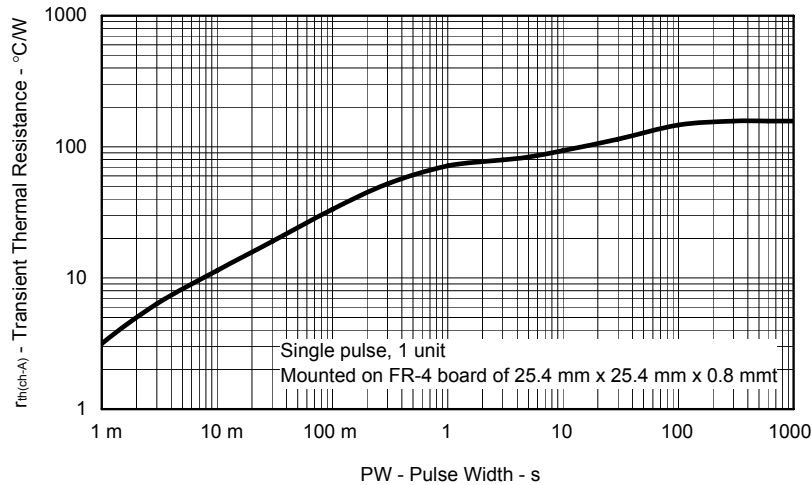
TOTAL POWER DISSIPATION vs. AMBIENT TEMPERATURE



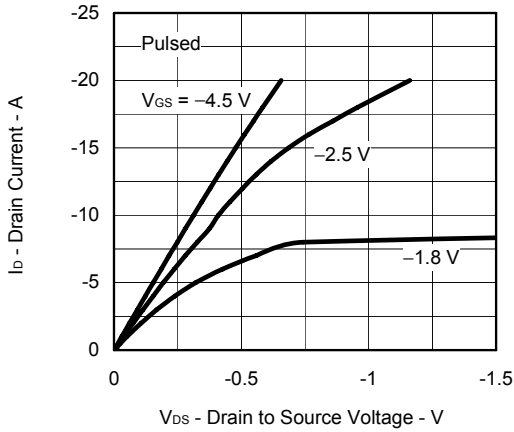
FORWARD BIAS SAFE OPERATING AREA



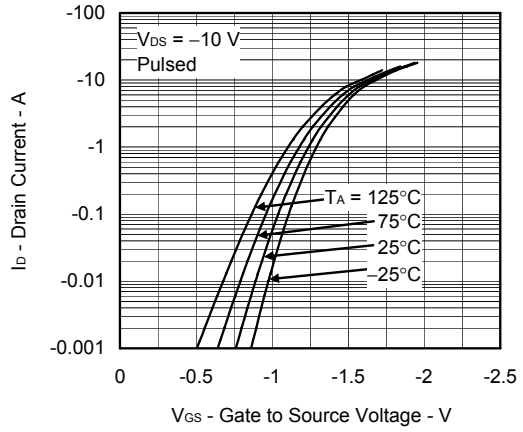
TRANSIENT THERMAL RESISTANCE vs. PULSE WIDTH



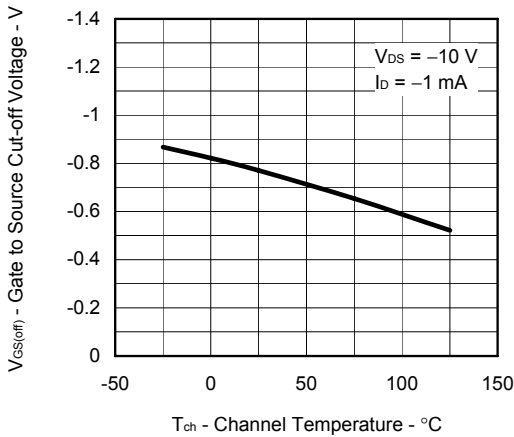
DRAIN CURRENT vs. DRAIN TO SOURCE VOLTAGE



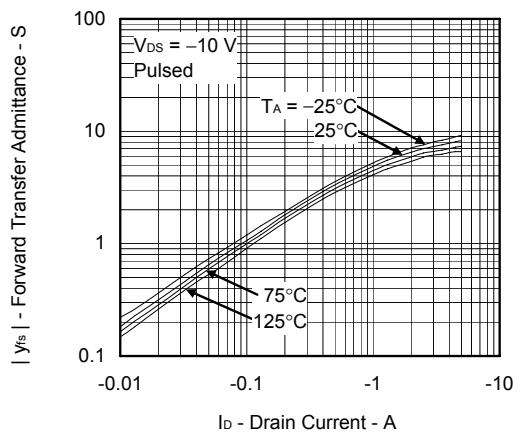
FORWARD TRANSFER CHARACTERISTICS



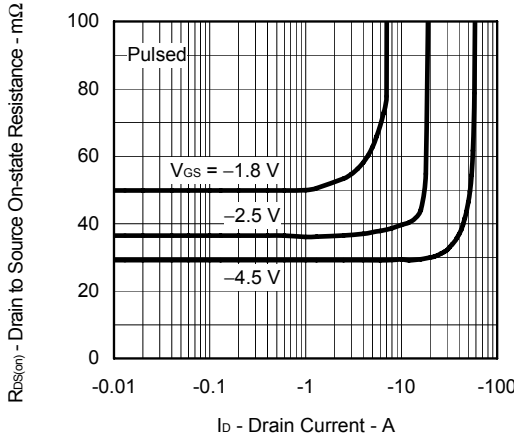
GATE TO SOURCE CUT-OFF VOLTAGE vs. CHANNEL TEMPERATURE



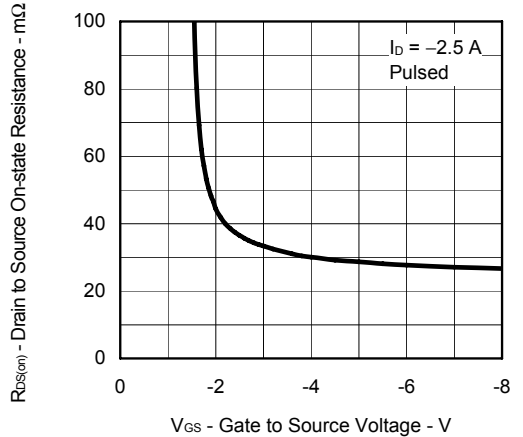
FORWARD TRANSFER ADMITTANCE vs. DRAIN CURRENT



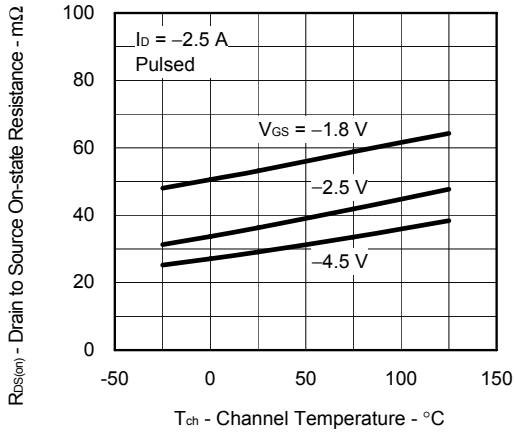
DRAIN TO SOURCE ON-STATE RESISTANCE vs. DRAIN CURRENT



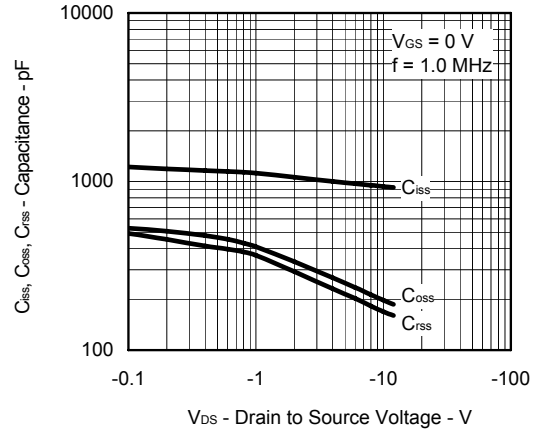
DRAIN TO SOURCE ON-STATE RESISTANCE vs. GATE TO SOURCE VOLTAGE



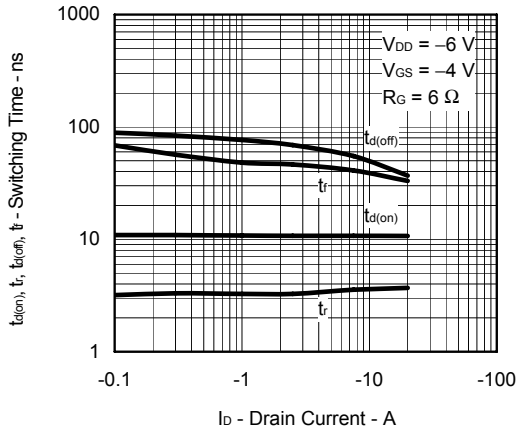
DRAIN TO SOURCE ON-STATE RESISTANCE vs. CHANNEL TEMPERATURE



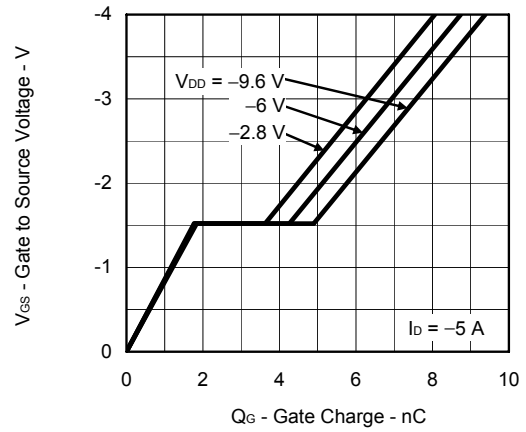
CAPACITANCE vs. DRAIN TO SOURCE VOLTAGE



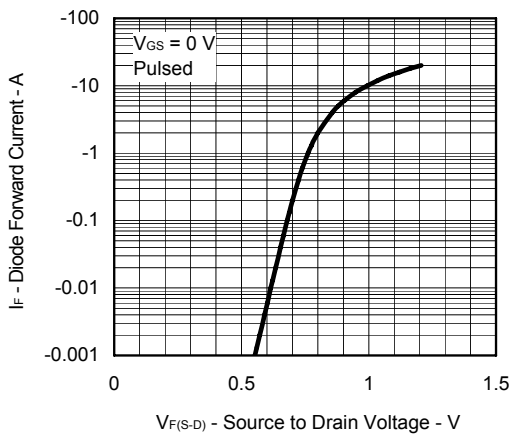
SWITCHING CHARACTERISTICS



DYNAMIC INPUT CHARACTERISTICS



SOURCE TO DRAIN DIODE FORWARD VOLTAGE



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