

μPA1900

DESCRIPTION

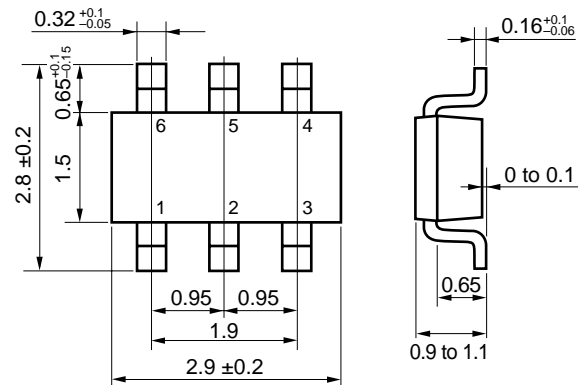
The μPA1900 is a switching device which can be driven directly by a 2.5 V power source.

The μPA1900 features a low on-state resistance and excellent switching characteristics, and is suitable for applications such as power switch of portable machine and so on.

FEATURES

- Can be driven by a 2.5 V power source
- Low on-state resistance
 - $R_{DS(on)1} = 35 \text{ m}\Omega \text{ MAX. (} V_{GS} = 4.5 \text{ V, } I_D = 3.0 \text{ A)}$
 - $R_{DS(on)2} = 38 \text{ m}\Omega \text{ MAX. (} V_{GS} = 4.0 \text{ V, } I_D = 3.0 \text{ A)}$
 - $R_{DS(on)3} = 45 \text{ m}\Omega \text{ MAX. (} V_{GS} = 2.5 \text{ V, } I_D = 3.0 \text{ A)}$

PACKAGE DRAWING (Unit : mm)



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

ORDERING INFORMATION

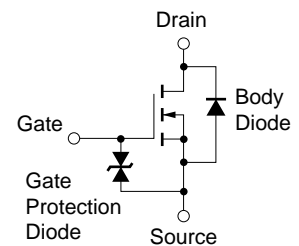
| PART NUMBER | PACKAGE |
|-------------|-----------------------------|
| μPA1900TE | 6-pin Mini Mold (Thin Type) |

ABSOLUTE MAXIMUM RATINGS (T_A = 25°C)

| | | | |
|--|-----------------------|-------------|----|
| Drain to Source Voltage | V _{DSS} | 20 | V |
| Gate to Source Voltage | V _{GSS} | ±12 | V |
| Drain Current (DC) | I _{D(DC)} | ±5.5 | A |
| Drain Current (pulse) ^{Note1} | I _{D(pulse)} | ±22 | A |
| Total Power Dissipation | P _{T1} | 0.2 | W |
| Total Power Dissipation ^{Note2} | P _{T2} | 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, t ≤ 5 sec.

EQUIVALENT CIRCUIT



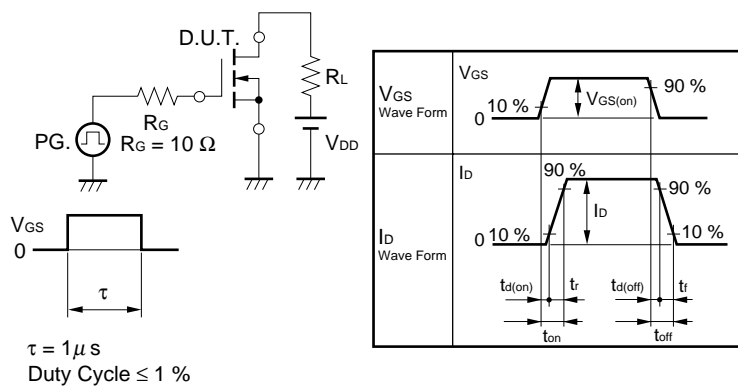
Marking: TG

μPA1900

★ ELECTRICAL CHARACTERISTICS (T_A = 25 °C)

| CHARACTERISTICS | SYMBOL | TEST CONDITIONS | MIN. | TYP. | MAX. | UNIT |
|-------------------------------------|----------------------|---|------|------|------|------|
| Zero Gate Voltage Drain Current | I _{DSS} | V _{DS} = 20 V, V _{GS} = 0 V | | | 10 | μA |
| Gate Leakage Current | I _{GSS} | V _{GS} = ±12 V, V _{DS} = 0 V | | | ±10 | μA |
| Gate Cut-off Voltage | V _{GS(off)} | V _{DS} = 10 V, I _D = 1 mA | 0.5 | 0.93 | 1.5 | V |
| Forward Transfer Admittance | y _{fs} | V _{DS} = 10 V, I _D = 3.0 A | 3 | 9.2 | | S |
| Drain to Source On-state Resistance | R _{DS(on)1} | V _{GS} = 4.5 V, I _D = 3.0 A | | 28 | 35 | mΩ |
| | R _{DS(on)2} | V _{GS} = 4.0 V, I _D = 3.0 A | | 29 | 38 | mΩ |
| | R _{DS(on)3} | V _{GS} = 2.5 V, I _D = 3.0 A | | 37 | 45 | mΩ |
| Input Capacitance | C _{iss} | V _{DS} = 10 V | | 595 | | pF |
| Output Capacitance | C _{oss} | V _{GS} = 0 V | | 222 | | pF |
| Reverse Transfer Capacitance | C _{rss} | f = 1 MHz | | 133 | | pF |
| Turn-on Delay Time | t _{d(on)} | V _{DD} = 10 V | | 61 | | ns |
| Rise Time | t _r | I _D = 3.0 A | | 172 | | ns |
| Turn-off Delay Time | t _{d(off)} | V _{GS(on)} = 4.0 V | | 220 | | ns |
| Fall Time | t _f | R _G = 10 Ω | | 293 | | ns |
| Total Gate Charge | Q _G | V _{DS} = 16 V | | 6.7 | | nC |
| Gate to Source Charge | Q _{GS} | I _D = 5.5 A | | 1.2 | | nC |
| Gate to Drain Charge | Q _{GD} | V _{GS} = 4.0 V | | 3.1 | | nC |
| Diode Forward Voltage | V _{F(S-D)} | I _F = 5.5 A, V _{GS} = 0 V | | 0.87 | | V |

TEST CIRCUIT 1 SWITCHING TIME



TEST CIRCUIT 2 GATE CHARGE

