

MOS FIELD EFFECT TRANSISTOR μ PA1900

N-CHANNEL MOS FIELD EFFECT TRANSISTOR FOR SWITCHING

DESCRIPTION

The μ PA1900 is a switching device which can be driven directly by a 2.5 V power source.

The μ PA1900 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

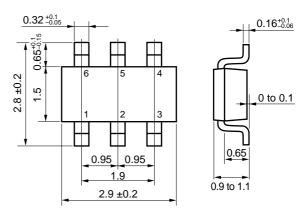
- Can be driven by a 2.5 V power source
- · Low on-state resistance

 $R_{DS(on)1} = 35 \text{ m}\Omega \text{ MAX.} \text{ (Vgs} = 4.5 \text{ V, ID} = 3.0 \text{ A)}$

RDS(on)2 = 38 m Ω MAX. (VGS = 4.0 V, ID = 3.0 A)

 $R_{DS(on)3} = 45 \text{ m}\Omega$ MAX. (Vgs = 2.5 V, ID = 3.0 A)

PACKAGE DRAWING (Unit: mm)



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

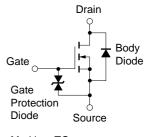
ORDERING INFORMATION

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

ABSOLUTE MAXIMUM RATINGS (TA = 25°C)

Drain to Source Voltage	Voss	20	V
Gate to Source Voltage	Vgss	±12	V
Drain Current (DC)	ID(DC) ±5.5		Α
Drain Current (pulse) Note1	I _{D(pulse)}	±22	Α
Total Power Dissipation	P _{T1}	0.2	W
Total Power Dissipation Note2	P _{T2}	2	W
Channel Temperature	Tch	150	°C
Storage Temperature	Tstg	-55 to +150	°C

EQUIVALENT CIRCUIT



Marking: TG

Notes 1. PW \leq 10 μ s, Duty Cycle \leq 1 %

2. Mounted on FR-4 Board, $t \le 5$ sec.

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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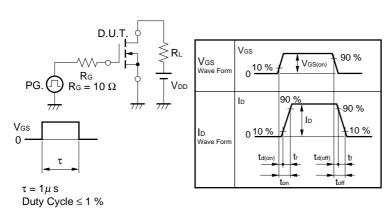
Not all devices/types available in every country. Please check with local NEC representative for availability and additional information.



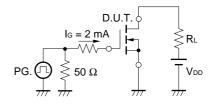
★ ELECTRICAL CHARACTERISTICS (T_A = 25 °C)

CHARACTERISTICS	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Zero Gate Voltage Drain Current	IDSS	V _{DS} = 20 V, V _{GS} = 0 V			10	μΑ
Gate Leakage Current	Igss	Vgs = ±12 V, Vps = 0 V			±10	μΑ
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	yfs	V _{DS} = 10 V, I _D = 3.0 A	3	9.2		S
Drain to Source On-state Resistance	RDS(on)1	Vgs = 4.5 V, ID = 3.0 A		28	35	mΩ
	RDS(on)2	Vgs = 4.0 V, ID = 3.0 A		29	38	mΩ
	RDS(on)3	Vgs = 2.5 V, ID = 3.0 A		37	45	mΩ
Input Capacitance	Ciss	V _{DS} = 10 V		595		pF
Output Capacitance	Coss	Vgs = 0 V		222		pF
Reverse Transfer Capacitance	Crss	f = 1 MHz		133		pF
Turn-on Delay Time	td(on)	V _{DD} = 10 V		61		ns
Rise Time	tr	ID = 3.0 A		172		ns
Turn-off Delay Time	td(off)	V _{GS(on)} = 4.0 V		220		ns
Fall Time	t _f	$R_G = 10 \Omega$		293		ns
Total Gate Charge	Q _G	V _{DS} = 16 V		6.7		nC
Gate to Source Charge	Qgs	I _D = 5.5 A		1.2		nC
Gate to Drain Charge	Q _{GD}	Vgs = 4.0 V		3.1		nC
Diode Forward Voltage	V _{F(S-D)}	IF = 5.5 A, VGS = 0 V		0.87		V

TEST CIRCUIT 1 SWITCHING TIME

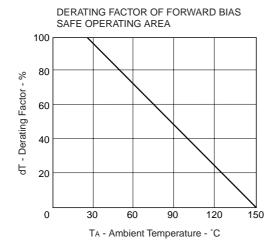


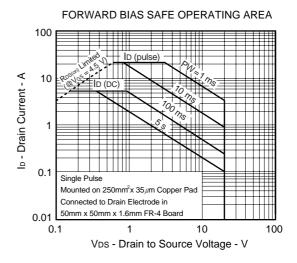
TEST CIRCUIT 2 GATE CHARGE

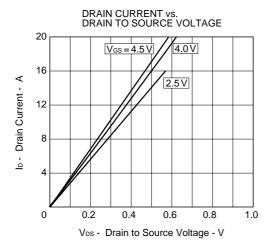


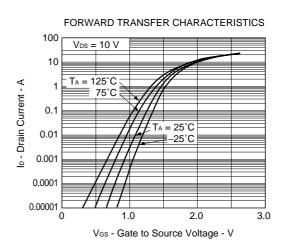


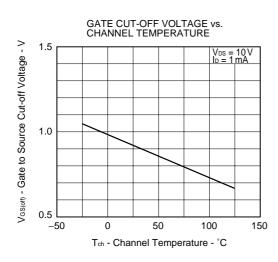
★ TYPICAL CHARACTERISTICS (T_A = 25 °C)

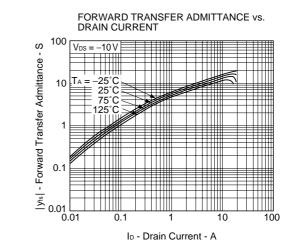




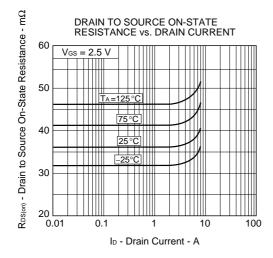


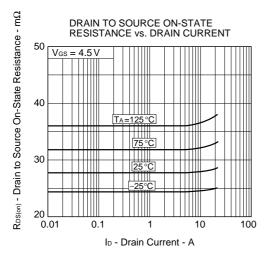


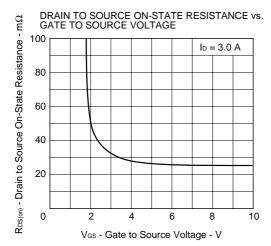


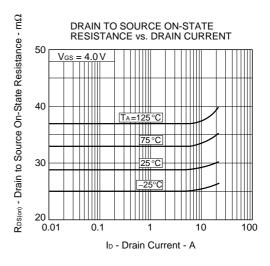


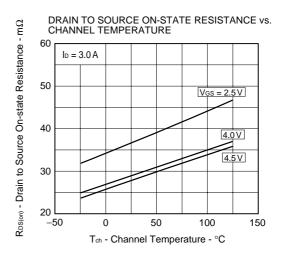
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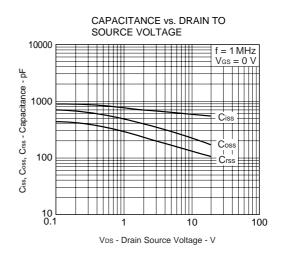


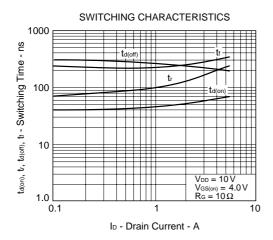


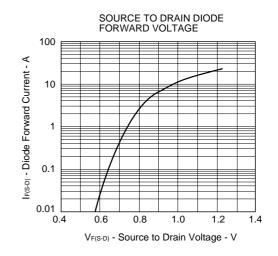


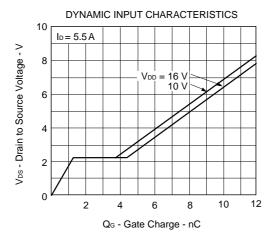


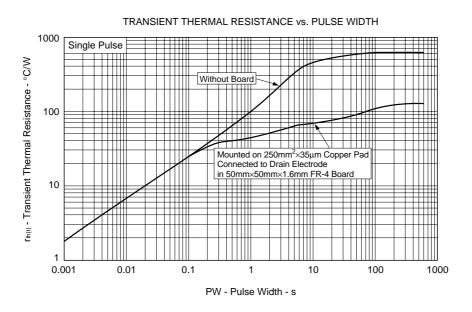












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