

P-CHANNEL MOS FIELD EFFECT TRANSISTOR FOR SWITCHING

9

0.65+0.0

0.95

1.9

2.9 ±0.2

0.95

2.8 ±0.2 1.5

DESCRIPTION

The μ PA1911 is a switching device which can be driven directly by a 2.5-V power source.

The μ PA1911 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

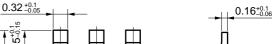
 $R_{DS(on)1} = 115 \text{ m}\Omega \text{ MAX.} (V_{GS} = -4.5 \text{ V}, \text{ ID} = -1.5 \text{ A})$ $R_{DS(on)2} = 120 \text{ m}\Omega \text{ MAX.}$ (Vgs = -4.0 V, ID = -1.5 A) $R_{DS(on)3} = 190 \text{ m}\Omega \text{ MAX.}$ (Vgs = -2.5 V, ID = -1.0A)

ORDERING INFORMATION

PART NUMBER	PACKAGE		
μΡΑ1911ΤΕ	6-pin Mini Mold (Thin Type)		

ABSOLUTE MAXIMUM RATINGS ($T_A = 25^{\circ}C$)

Drain to Source Voltage	Voss	-20	V
·			•
Gate to Source Voltage	Vgss	-12/+6	V
Drain Current (DC)	D(DC)	+ 2.5	А
Drain Current (pulse) Note1	D(pulse)	∓ 10	А
Total Power Dissipation	Рт1	0.2	W
Total Power Dissipation Note2	Рт2	2	W
Channel Temperature	Tch	150	°C
Storage Temperature	Tstg	–55 to +150	°C



PACKAGE DRAWING (Unit : mm)

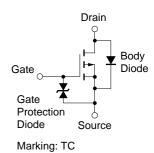


EQUIVALENT CIRCUIT

0 to 0.1

0.65

0.9 to 1.1



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

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

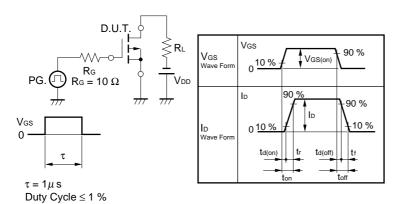
Remark The diode connected between the gate and source of the transistor serves as a protector against ESD. When this device actually used, an additional protection circuit is externally required if a voltage exceeding the rated voltage may be applied to this device.

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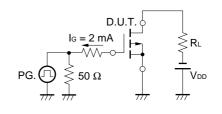
ELECTRICAL CHARACTERISTICS (TA = 25 °C)

CHARACTERISTICS	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Zero Gate Voltage Drain Current	ldss	$V_{DS} = -20 V$, $V_{GS} = 0 V$			-10	μA
Gate Leakage Current	lgss	$V_{GS} = \pm 12 V$, $V_{DS} = 0 V$			±10	μA
Gate Cut-off Voltage	VGS(off)	$V_{DS} = -10 V$, $I_D = -1 mA$	-0.5	-0.92	-1.5	V
Forward Transfer Admittance	y fs	$V_{DS} = -10 V$, $I_D = -1.5 A$	1	4.5		S
Drain to Source On-state Resistance	RDS(on)1	$V_{GS} = -4.5 \text{ V}, \text{ ID} = -1.5 \text{ A}$		80	115	mΩ
	RDS(on)2	$V_{GS} = -4.0 \text{ V}, \text{ ID} = -1.5 \text{ A}$		86	120	mΩ
	RDS(on)3	$V_{GS} = -2.5 V$, $I_D = -1.0 A$		130	190	mΩ
Input Capacitance	Ciss	V _{DS} = -10 V		540		pF
Output Capacitance	Coss	Vgs = 0 V		190		pF
Reverse Transfer Capacitance	Crss	f = 1 MHz		90		pF
Turn-on Delay Time	td(on)	$V_{DD} = -10 V$		140		ns
Rise Time	tr	ID = -1.5 A		500		ns
Turn-off Delay Time	td(off)	$V_{GS(on)} = -4.0 V$		420		ns
Fall Time	tr	R _G = 10 Ω		850		ns
Total Gate Charge	QG	V _{DD} = -10 V		5.0		nC
Gate to Source Charge	QGS	I⊳ = −2.5 A		1.5		nC
Gate to Drain Charge	Qgd	Vgs = -4.0 V		2.0		nC
Diode Forward Voltage	VF(S-D)	IF = 2.5 A, VGS = 0 V		0.82		V
Reverse Recovery Time	trr	IF = 2.5 A, VGS = 0 V		30		ns
Reverse Recovery Charge	Qrr	di/dt = 10 A / μ s		2.0		nC

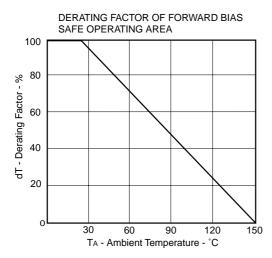
TEST CIRCUIT 1 SWITCHING TIME

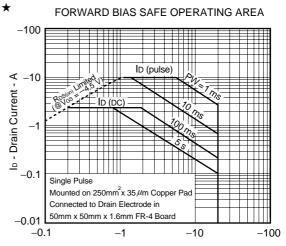


TEST CIRCUIT 2 GATE CHARGE

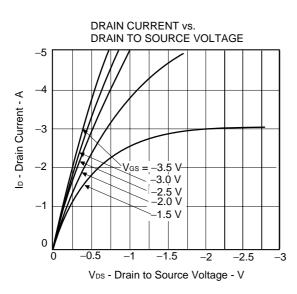


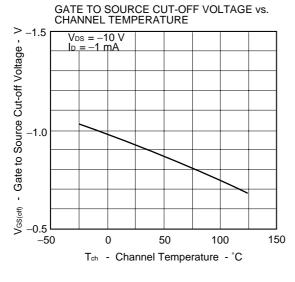
TYPICAL CHARACTERISTICS (TA = 25°C)

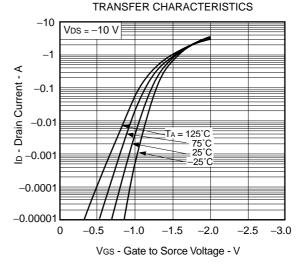




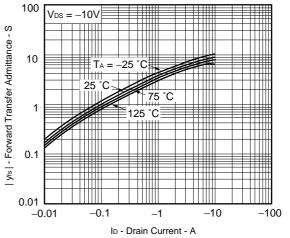
VDS - Drain to Source Voltage - V

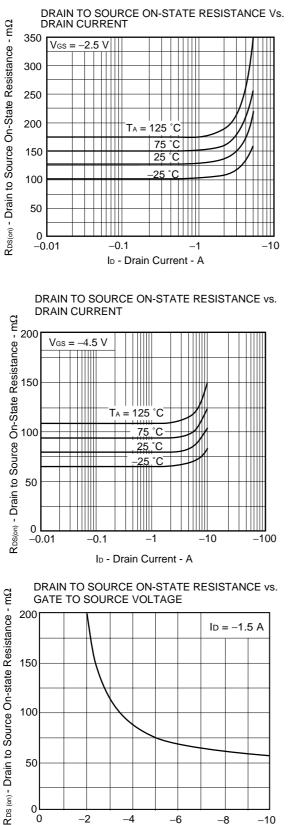






FORWARD TRANSFER ADMMITTANCE Vs. DRAIN CURRENT





DRAIN CURRENT VGS = -4.0 VT_A = 125 °C 75 °C °C 25 25 °C∦

DRAIN TO SOURCE ON-STATE RESISTANCE vs.

DRAIN TO SOURCE ON STATE RESISTANCE vs. CHANNEL TEMPERATURE

-1

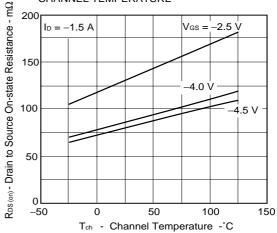
ID - Drain Current - A

-0.1

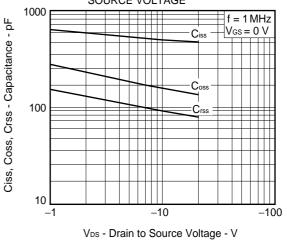
-0.01

-10

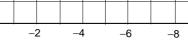
-100



CAPACITANCE vs. DRAIN TO SOURCE VOLTAGE







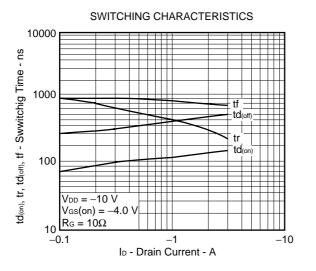


-10

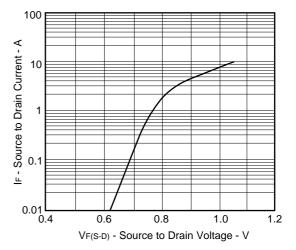
50

0

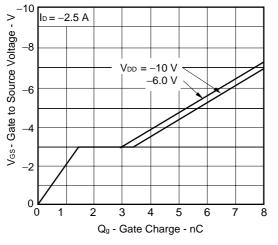
0

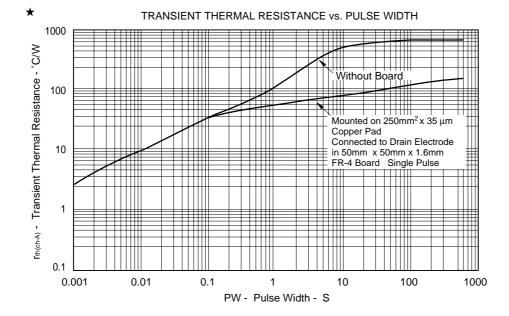


SOURCE TO DRAIN DIODE FORWARD VOLTAGE



DYNAMIC INPUT CHARACTERISTICS





Data Sheet D13455EJ2V0DS

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