TY Semicondutor®

Product specification

μPA1902

DESCRIPTION

The μPA1902 is a switching device, which can be driven directly by a 4.5 V power source.

This μPA1902 features a low on-state resistance and excellent switching characteristics, and is suitable for applications such as power management switch of portable machine and so on.

FEATURES

- 4.5 V drive available
- Low on-state resistance

  $R_{DS(on)1}$ = 17 mΩ TYP. (V_{GS} = 10 V, I_D = 3.5 A)

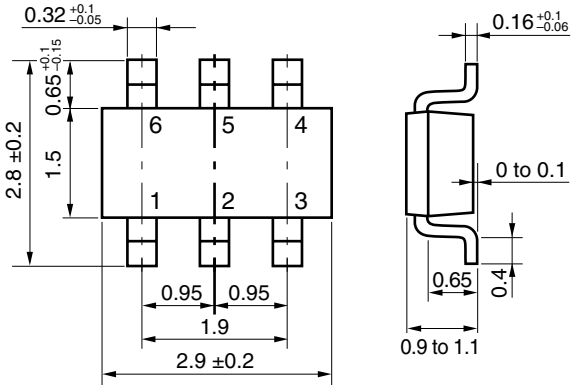
  $R_{DS(on)2}$ = 22 mΩ TYP. (V_{GS} = 4.5 V, I_D = 3.5 A)

ORDERING INFORMATION

PART NUMBER	PACKAGE
μPA1902TE	SC-95 (Mini Mold Thin Type)

Marking: TY

PACKAGE DRAWING (Unit: mm)

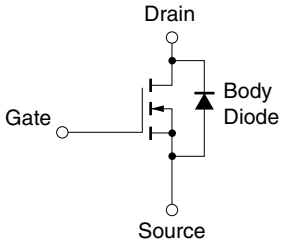


1, 2, 5, 6: Drain
3 : Gate
4 : Source

ABSOLUTE MAXIMUM RATINGS (T_A = 25°C)

Drain to Source Voltage (V_{GS} = 0 V)	V_{DSS}	30	V
Gate to Source Voltage (V_{DS} = 0 V)	V_{GSS}	±20	V
Drain Current (DC)	$I_{D(DC)}$	±7.0	A
Drain Current (pulse) Note1	$I_{D(pulse)}$	±28	A
Total Power Dissipation	P_{T1}	0.2	W
Total Power Dissipation Note2	P_{T2}	2.0	W
Channel Temperature	T_{ch}	150	°C
Storage Temperature	T_{stg}	–55 to +150	°C

EQUIVALENT CIRCUIT



Notes 1. PW ≤ 10 μs, Duty Cycle ≤ 1%

2. Mounted on FR-4 board of 50 mm x 50 mm x 1.6 mm, t ≤ 5 sec.

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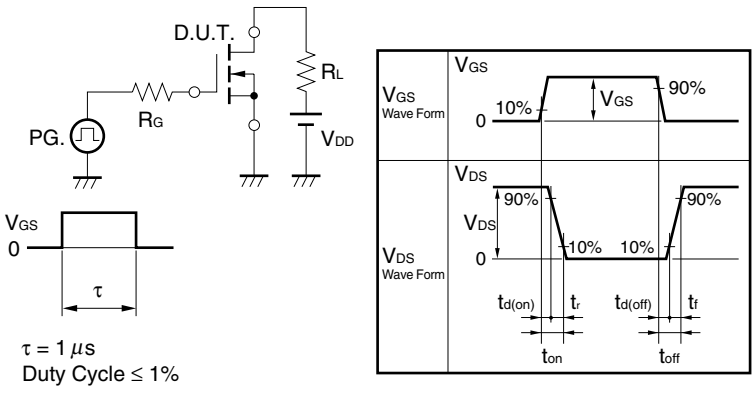
ELECTRICAL CHARACTERISTICS (T_A = 25°C)

CHARACTERISTICS	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 30 V, V_{GS} = 0 V			1.0	μA
Gate Leakage Current	I_{GSS}	V_{GS} = ±20 V, V_{DS} = 0 V			±100	nA
Gate Cut-off Voltage	$V_{GS(off)}$	V_{DS} = 10 V, I_D = 1.0 mA	1.5	2.0	2.5	V
Forward Transfer Admittance	$\|y_{fs}\|$	V_{DS} = 10 V, I_D = 3.5 A	3.0			S
Drain to Source On-state Resistance	$R_{DS(on)1}$	V_{GS} = 10 V, I_D = 3.5 A		17	22	mΩ
	$R_{DS(on)2}$	V_{GS} = 4.5 V, I_D = 3.5 A		22	30	mΩ
Input Capacitance	C_{iss}	V_{DS} = 10 V		780		pF
Output Capacitance	C_{oss}	V_{GS} = 0 V		180		pF
Reverse Transfer Capacitance	C_{rss}	f = 1 MHz		120		pF
Turn-on Delay Time	$t_{d(on)}$	V_{DD} = 15 V, I_D = 1.0 A		16		ns
Rise Time	t_r	V_{GS} = 10 V		10		ns
Turn-off Delay Time	$t_{d(off)}$	R_G = 6.0 Ω		108		ns
Fall Time	t_f			56		ns
Total Gate Charge	Q_G	V_{DD} = 15 V		8.0		nC
Gate to Source Charge	Q_{GS}	V_{GS} = 5.0 V		2.7		nC
Gate to Drain Charge	Q_{GD}	I_D = 7.0 A		3.4		nC
Body Diode Forward Voltage	$V_{F(S-D)}$	I_F = 7.0 A, V_{GS} = 0 V		0.84		V

TEST CIRCUIT 1 SWITCHING TIME



τ = 1 μs
Duty Cycle ≤ 1%

TEST CIRCUIT 2 GATE CHARGE