TY Semicondutor®

Product specification

μPA1952

DESCRIPTION

The μPA1952 is a switching device, which can be driven directly by a 1.8 V power source.

The device 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

- 1.8 V drive available
- Low on-state resistance

$R_{DS(on)1}$ = 135 mΩ MAX. (V_{GS} = –4.5V, I_D = –1.0 A)

$R_{DS(on)2}$ = 183 mΩ MAX. (V_{GS} = –2.5 V, I_D = –1.0 A)

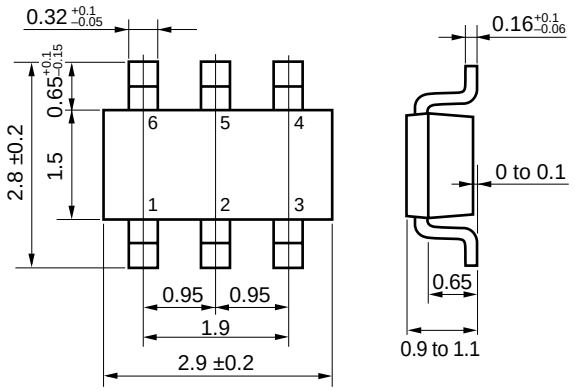
$R_{DS(on)3}$ = 284 mΩ MAX. (V_{GS} = –1.8 V, I_D = –0.5 A)

ORDERING INFORMATION

PART NUMBER	PACKAGE
μPA1952TE	SC-95 (Mini Mold Thin Type)

Marking: TP

PACKAGE DRAWING (Unit: mm)

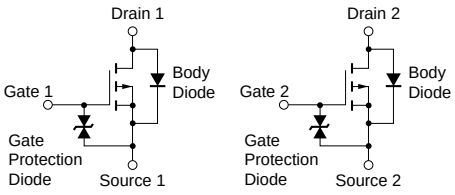


6: Drain 1
1: Gate 1
5: Source 1
4: Drain 2
3: Gate 2
2: Source 2

ABSOLUTE MAXIMUM RATINGS (T_A = 25°C)

Drain to Source Voltage (V_{GS} = 0 V)	V_{DSS}	–20	V
Gate to Source Voltage (V_{DS} = 0 V)	V_{GSS}	∓8.0	V
Drain Current (DC)	$I_{D(DC)}$	∓2.0	A
Drain Current (pulse) **Note1**	$I_{D(pulse)}$	∓8.0	A
Total Power Dissipation (2 units) **Note2**	P_{T1}	1.15	W
Total Power Dissipation (1 unit) **Note2**	P_{T2}	0.57	W
Channel Temperature	T_{ch}	150	°C
Storage Temperature	T_{stg}	–55 to +150	°C

EQUIVALENT CIRCUITS



Notes 1. PW ≤ 10 μs, Duty Cycle ≤ 1%

2. Mounted on FR-4 board of 5000 mm^2 x 1.1 mm, t ≤ 5 sec.

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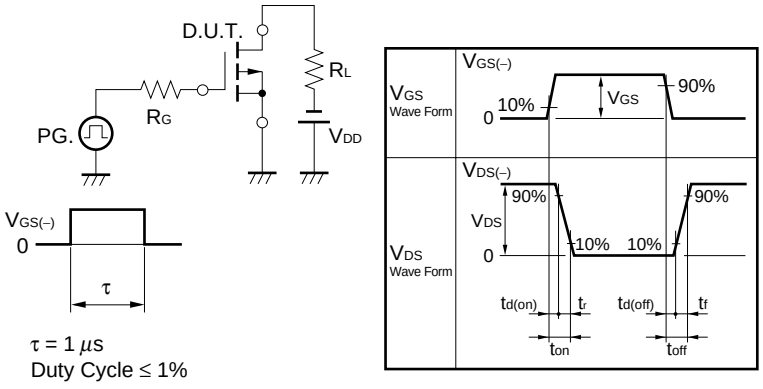
ELECTRICAL CHARACTERISTICS (T_A = 25°C)

CHARACTERISTICS	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = –20 V, V_{GS} = 0 V			–10	μA
Gate Leakage Current	I_{GSS}	V_{GS} = ∓8.0 V, V_{DS} = 0 V			∓10	μA
Gate Cut-off Voltage	$V_{GS(off)}$	V_{DS} = –10 V, I_D = –1.0 mA	–0.45	–0.75	–1.5	V
Forward Transfer Admittance	$\|y_{fs}\|$	V_{DS} = –10 V, I_D = –1.0 A	1.0	4.1		S
Drain to Source On-state Resistance	$R_{DS(on)1}$	V_{GS} = –4.5 V, I_D = –1.0 A		108	135	mΩ
	$R_{DS(on)2}$	V_{GS} = –2.5 V, I_D = –1.0 A		137	183	mΩ
	$R_{DS(on)3}$	V_{GS} = –1.8 V, I_D = –0.5 A		170	284	mΩ
Input Capacitance	C_{iss}	V_{DS} = –10 V		272		pF
Output Capacitance	C_{oss}	V_{GS} = 0 V		60		pF
Reverse Transfer Capacitance	C_{rss}	f = 1.0 MHz		30		pF
Turn-on Delay Time	$t_{d(on)}$	V_{DD} = –10 V, I_D = –1.0 A		29		ns
Rise Time	t_r	V_{GS} = –4.0 V		120		ns
Turn-off Delay Time	$t_{d(off)}$	R_G = 10 Ω		145		ns
Fall Time	t_f			148		ns
Total Gate Charge	Q_G	V_{DD} = –16 V		2.3		nC
Gate to Source Charge	Q_{GS}	V_{GS} = –4.0 V		0.6		nC
Gate to Drain Charge	Q_{GD}	I_D = –2.0 A		0.6		nC
Body Diode Forward Voltage	$V_{F(S-D)}$	I_F = 2.0 A, V_{GS} = 0 V		0.9		V

TEST CIRCUIT 1 SWITCHING TIME



τ = 1 μs
Duty Cycle ≤ 1%

TEST CIRCUIT 2 GATE CHARGE