PRELIMINARY PRODUCT INFORMATION

NEC

MOS FIELD EFFECT TRANSISTOR
μPA2463T1Q

N-CHANNEL MOS FIELD EFFECT TRANSISTOR FOR SWITCHING

DESCRIPTION

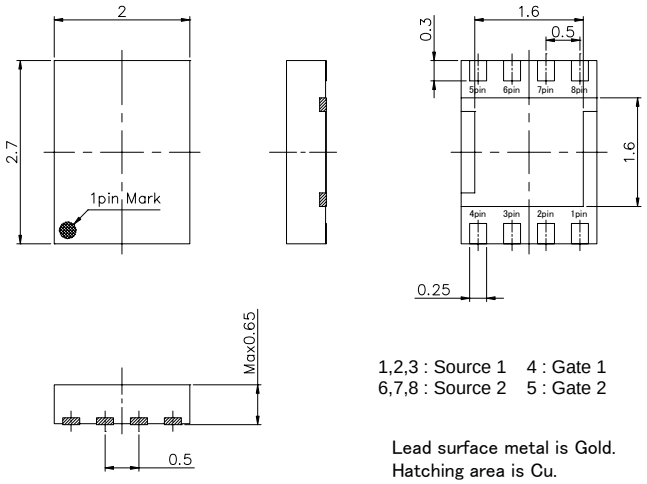
The μPA2463T1Q is a switching device, which can be driven directly by a 2.5 V power source.

The μPA2463T1Q 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

- 2.5 V drive available
- Low on-state resistance
  $R_{DS(on)1}$ = 20.0 mΩ MAX. (V_{GS} = 4.5 V, I_D = 3.0 A)
  $R_{DS(on)2}$ = 21.0 mΩ MAX. (V_{GS} = 4.0 V, I_D = 3.0 A)
  $R_{DS(on)3}$ = 24.0 mΩ MAX. (V_{GS} = 3.1 V, I_D = 3.0 A)
  $R_{DS(on)4}$ = 28.5 mΩ MAX. (V_{GS} = 2.5 V, I_D = 3.0 A)
- Built-in G-S protection diode against ESD

PACKAGE DRAWING (Unit: mm)



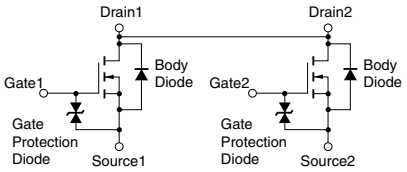
1,2,3 : Source 1 4 : Gate 1
6,7,8 : Source 2 5 : Gate 2

Lead surface metal is Gold.
Hatching area is Cu.

ABSOLUTE MAXIMUM RATINGS (T_A = 25°C)

Drain to Source Voltage (V_{GS} = 0 V)	V_{DSS}	20.0	V
Gate to Source Voltage (V_{DS} = 0 V)	V_{GSS}	±12.0	V
Drain Current (DC) Note1	$I_{D(DC)}$	± 6.0	A
Drain Current (pulse) Note2	$I_{D(pulse)}$	± 50	A
Total Power Dissipation (2 units) Note1	P_{T1}	1.0	W
Channel Temperature	T_{ch}	150	°C
Storage Temperature	T_{stg}	−55 to +150	°C

EQUIVALENT CIRCUIT



Notes 1. Mounted on FR-4 board of 25.4mm x 25.4mm x 0.8mmt
2. PW ≤ 10 μs, Duty Cycle ≤ 1%

ORDERING INFORMATION

PART NUMBER	LEAD PLATING	PACKING	PACKAGE
μPA2463T1Q-E1-A Note	Au	Reel 3000 p/reel	8PIN HUSON (2720)
μPA2463T1Q-E2-A Note			

Note Pb-free (This product does not contain Pb in the external electrode and other parts.)

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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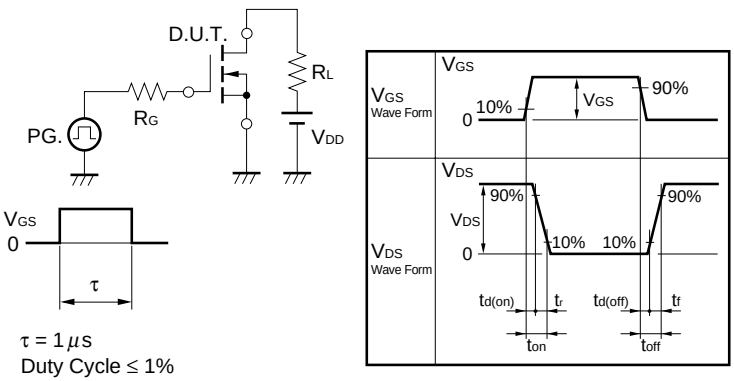
ELECTRICAL CHARACTERISTICS (T_A = 25°C)

CHARACTERISTICS	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 20.0 V, V_{GS} = 0 V			1.0	μA
Gate Leakage Current	I_{GSS}	V_{GS} = ±12.0 V, V_{DS} = 0 V			±10.0	μA
Gate to Source Cut-off Voltage	$V_{GS(off)}$	V_{DS} = 10.0 V, I_D = 1.0 mA	0.50		1.50	V
Forward Transfer Admittance Note	$\|y_{fs}\|$	V_{DS} = 10.0 V, I_D = 3.0 A	T.B.D.			S
Drain to Source On-state Resistance Note	$R_{DS(on)1}$	V_{GS} = 4.5 V, I_D = 3.0 A	12.0	16.0	20.0	mΩ
	$R_{DS(on)2}$	V_{GS} = 4.0 V, I_D = 3.0 A	13.0	16.5	21.0	mΩ
	$R_{DS(on)3}$	V_{GS} = 3.1V, I_D = 3.0 A	13.5	18.0	24.0	mΩ
	$R_{DS(on)4}$	V_{GS} = 2.5 V, I_D = 3.0 A	15.0	21.0	28.5	mΩ
Input Capacitance	C_{iss}	V_{DS} = 10.0 V,		540		pF
Output Capacitance	C_{oss}	V_{GS} = 0 V,		105		pF
Reverse Transfer Capacitance	C_{rss}	f = 1.0 MHz		25		pF
Turn-on Delay Time	$t_{d(on)}$	V_{DD} = 10.0 V,		T.B.D.		us
Rise Time	t_r	I_D = 3.0 A,		T.B.D.		us
Turn-off Delay Time	$t_{d(off)}$	V_{GS} = 4.0 V,		T.B.D.		us
Fall Time	t_f	R_G = 6 Ω		T.B.D.		us
Total Gate Charge	Q_G	V_{DD} = 16.0 V,		6.0		nC
Gate to Source Charge	Q_{GS}	V_{GS} = 4.0 V,		1.5		nC
Gate to Drain Charge	Q_{GD}	I_D = 6.0A		2.5		nC
Body Diode Forward Voltage Note	$V_{F(S-D)}$	I_F = 6.0 A, V_{GS} = 0 V		0.82		V

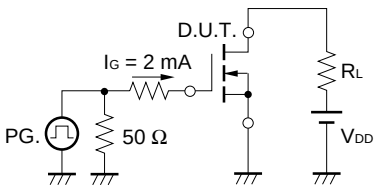
Note Pulsed: PW ≤ 350 μs, Duty Cycle ≤ 2%

TEST CIRCUIT 1 SWITCHING TIME

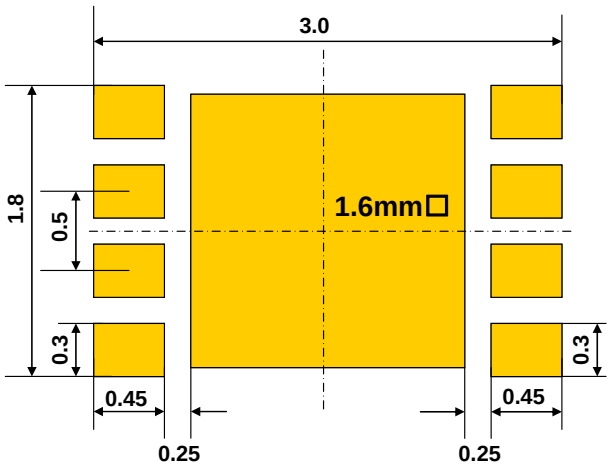


τ = 1 μs
Duty Cycle ≤ 1%

TEST CIRCUIT 2 GATE CHARGE



(Mount Pad Design example)



Unit：mm

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