

2.5V Drive Nch+Nch MOS FET

UM6K1N

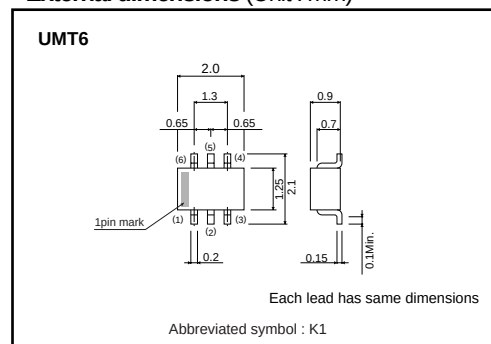
●Structure

Silicon N-channel MOS FET

●Features

- 1) Two 2SK3018 transistors in a single UMT package.
- 2) The MOS FET elements are independent, eliminating mutual interference.
- 3) Mounting cost and area can be cut in half.
- 4) Low On-resistance.
- 5) Low voltage drive (2.5V drive) makes this device ideal for portable equipment.

●External dimensions (Unit : mm)



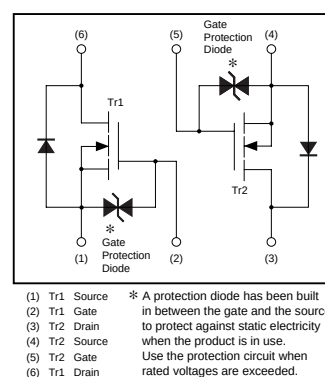
●Applications

Interfacing, switching (30V, 100mA)

●Packaging specifications

Type	Package	Taping
	Code	TN
	Basic ordering unit (pieces)	3000
UM6K1N		○

●Inner circuit



●Absolute maximum ratings (Ta=25°C)

<It is the same ratings for Tr1 and Tr2.>

Parameter		Symbol	Limits	Unit
Drain-source voltage		V_{DS}	30	V
Gate-source voltage		V_{GS}	± 20	V
Drain current	Continuous	I_D	± 100	mA
	Pulsed	I_{DP} *1	± 400	mA
Total power dissipation		P_D *2	150	mW
Channel temperature		T_{ch}	150	°C
Range of storage temperature		T_{stg}	-55 to +150	°C

*1 $P_w \leq 10\mu s$, Duty cycle $\leq 1\%$

*2 With each pin mounted on the recommended lands.

●Thermal resistance

Parameter	Symbol	Limits	Unit
Channel to ambient	$R_{th(ch-a)}$ *	833	°C / W / TOTAL
		1042	°C / W / ELEMENT

* With each pin mounted on the recommended lands.

Transistors

●Electrical characteristics (Ta=25°C)

<It is the same characteristics for Tr1 and Tr2.>

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Gate-source leakage	I_{GSS}	—	—	± 1	μA	$V_{GS}=\pm 20V, V_{DS}=0V$
Drain-source breakdown voltage	$V_{(BR)DSS}$	30	—	—	V	$I_D=10\mu A, V_{GS}=0V$
Zero gate voltage drain current	I_{DSS}	—	—	1.0	μA	$V_{DS}=30V, V_{GS}=0V$
Gate threshold voltage	$V_{GS(th)}$	0.8	—	1.5	V	$V_{DS}=3V, I_D=100\mu A$
Static drain-source on-state resistance	$R_{DS(on)}$	—	5	8	Ω	$I_D=10mA, V_{GS}=4V$
		—	7	13	Ω	$I_D=1mA, V_{GS}=2.5V$
Forward transfer admittance	$ Y_{fs} $	20	—	—	mS	$I_D=10mA, V_{DS}=3V$
Input capacitance	C_{iss}	—	13	—	pF	$V_{DS}=5V$
Output capacitance	C_{oss}	—	9	—	pF	$V_{GS}=0V$
Reverse transfer capacitance	C_{rss}	—	4	—	pF	$f=1MHz$
Turn-on delay time	$t_{d(on)}$	—	15	—	ns	$V_{DD}=5V$
Rise time	t_r	—	35	—	ns	$I_D=10mA$
Turn-off delay time	$t_{d(off)}$	—	80	—	ns	$V_{GS}=5V$
Fall time	t_f	—	80	—	ns	$R_L=500\Omega$
						$R_G=10\Omega$

●Electrical characteristic curves

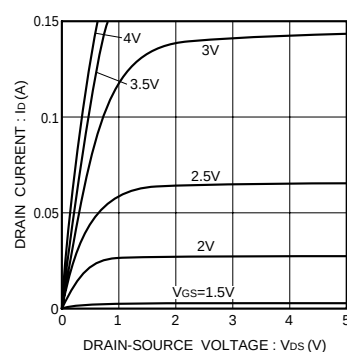


Fig.1 Typical Output Characteristics

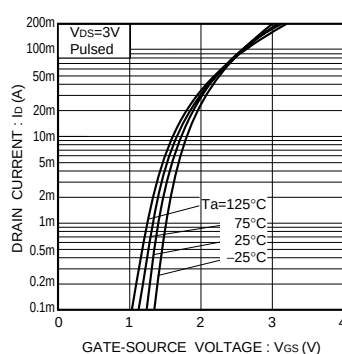


Fig.2 Typical Transfer Characteristics

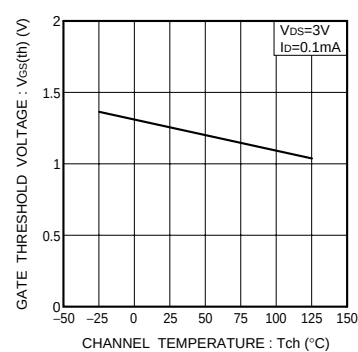


Fig.3 Gate Threshold Voltage vs. Channel Temperature

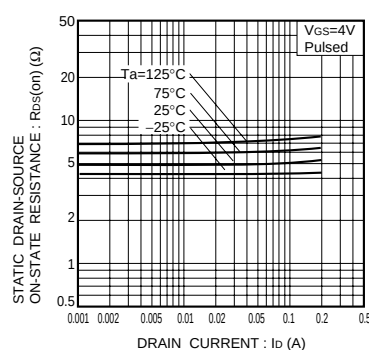


Fig.4 Static Drain-Source On-State Resistance vs. Drain Current (I)

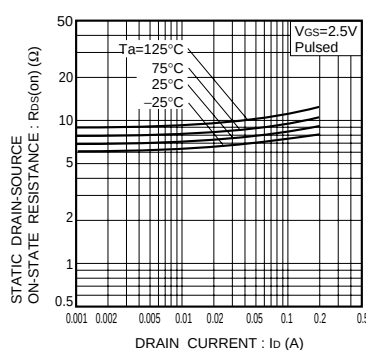


Fig.5 Static Drain-Source On-State Resistance vs. Drain Current (II)

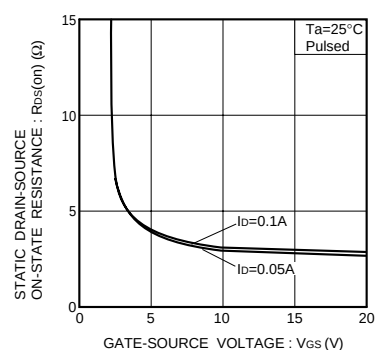


Fig.6 Static Drain-Source On-State Resistance vs. Gate-Source Voltage

Transistors

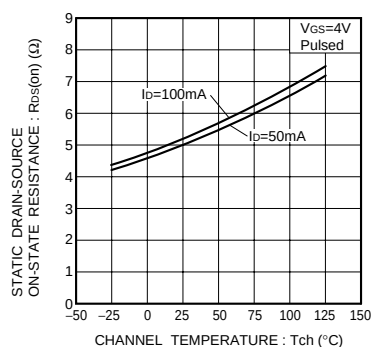


Fig.7 Static Drain-Source On-State Resistance vs. Channel Temperature

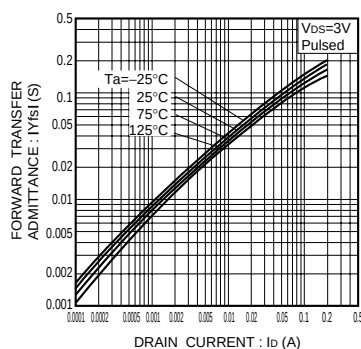


Fig.8 Forward Transfer Admittance vs. Drain Current

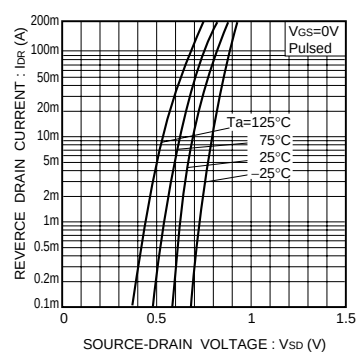


Fig.9 Reverse Drain Current vs. Source-Drain Voltage (I)

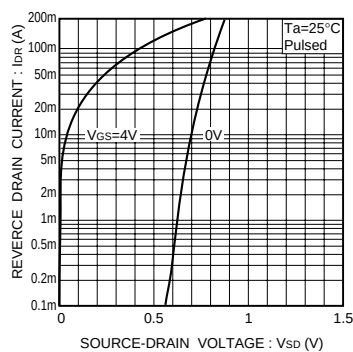


Fig.10 Reverse Drain Current vs. Source-Drain Voltage (II)

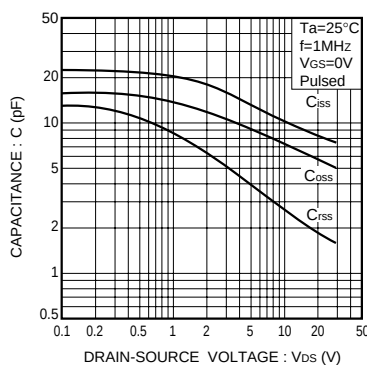


Fig.11 Typical Capacitance vs. Drain-Source Voltage

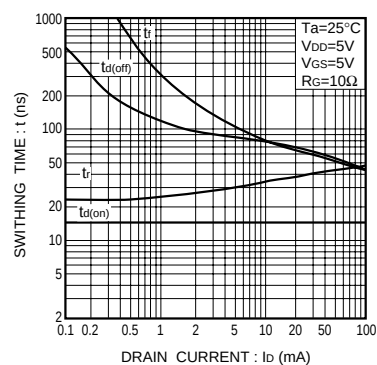


Fig.12 Switching Characteristics

●Switching characteristics measurement circuit

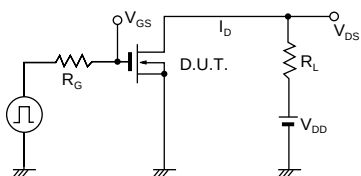


Fig.13 Switching Time Test Circuit

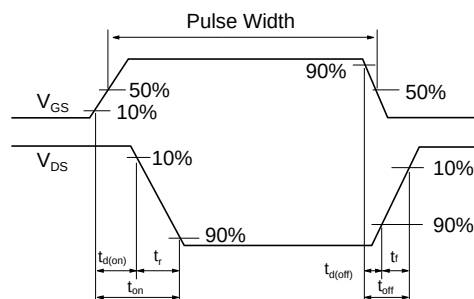


Fig.14 Switching Time Waveforms

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