

2.5V Drive Nch+Nch MOSFET

US6K1

Structure

Silicon N-channel MOSFET

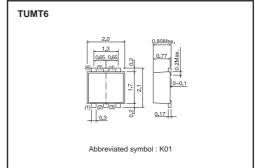
● Features

- 1) Low On-resistance.
- 2) Space savingsmall surface mount package (TUMT6).
- 3) Low voltage drive (2.5V drive).

Applications

Switching

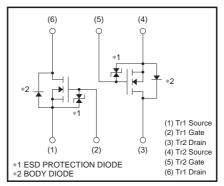
●Dimensions (Unit : mm)



Packaging specifications

	Package	Taping
Type	Code	TR
	Basic ordering unit (pieces)	3000
US6K1		0

•Inner circuit



●Absolute maximum ratings (Ta=25°C)

Parameter		Symbol	Limits	Unit	
Drain-source voltage		V _{DSS}	30	V	
Gate-source voltage		V _{GSS}	12	V	
Drain augrent	Continuous	ID	±1.5	A	
Drain current	Pulsed	IDP *1	±6	А	
Source current	Continuous	Is	0.6	А	
(Body diode)	Pulsed	I _{SP} *1	6	А	
Total power dissipation		Pp *2	1.0	W / TOTAL	
		I D	0.7	W / ELEMENT	
Channel temperature		Tch	150	°C	
Range of storage temperature		Tstg	-55 to +150	°C	

^{*1} Pw≤10μs, Duty cycle≤1%

*2 Mounted on a ceramic board

●Thermal resistance

Parameter	Symbol	Limits	Unit
Channel to ambient	Rth(ch-a)*	125	°C/W / TOTAL
Chariner to ambient	Kiii(CII-a)	179	°C/W / ELEMENT

^{*} Mounted on a ceramic board

●Electrical characteristics (Ta=25°C)

Parameter	Symbol	Min.	Тур.	Max.	Unit	Conditions
Gate-source leakage	Igss	-	-	10	μΑ	V _{GS} =12V, V _{DS} =0V
Drain-source breakdown voltage	$V_{(BR)\;DSS}$	30	-	_	V	I _D = 1mA, V _{GS} =0V
Zero gate voltage drain current	IDSS	_	-	1	μΑ	V _{DS} = 30V, V _{GS} =0V
Gate threshold voltage	V _{GS (th)}	0.5	-	1.5	V	V _{DS} = 10V, I _D = 1mA
Static drain-source on-state resistance		-	170	240	mΩ	I _D = 1.5A, V _{GS} = 4.5V
	R _{DS (on)} *	_	180	250	mΩ	I _D = 1.5A, V _{GS} = 4.0V
		_	240	340	mΩ	I _D = 1.5A, V _{GS} = 2.5V
Forward transfer admittance	Y _{fs} *	1.5	-	_	S	V _{DS} = 10V, I _D = 1.5A
Input capacitance	Ciss	-	80	_	pF	V _{DS} = 10V
Output capacitance	Coss	_	13	_	pF	V _{GS} =0V
Reverse transfer capacitance	Crss	_	12	_	pF	f=1MHz
Turn-on delay time	t _{d (on)} *	-	7	-	ns	Vdd≒ 15V
Rise time	tr *	-	9	_	ns	ID= 0.75A
Turn-off delay time	td (off) *	_	15	_	ns	V _{GS} = 4.5V R _L = 20Ω
Fall time	t _f *	_	6	_	ns	R _G =10Ω
Total gate charge	Qg *	-	1.6	2.2	nC	V _{DD} ≒15V
Gate-source charge	Qgs *	-	0.5	_	nC	Vgs= 4.5V
Gate-drain charge	Q _{gd} *	_	0.3	_	nC	I _D = 1.5A

^{*}Pulsed

●Body diode characteristics (Source-drain) (Ta=25°C)

Parameter	Symbol	Min.	Тур.	Max.	Unit	Conditions
Forward voltage	VsD	_	_	1.2	V	I _S = 0.6A, V _{GS} =0V

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•Electrical characteristics curves

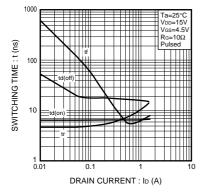


Fig.1 Switching Characteristics

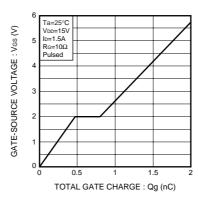


Fig.2 Dynamic Input Characteristics

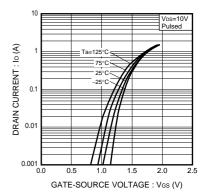


Fig.3 Typical Transfer Characteristics

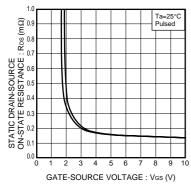


Fig.4 Static Drain-Source On-State Resistance vs. Gate source Voltage

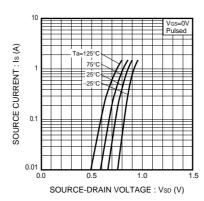


Fig.5 Source Current vs. Source-Drain Voltage

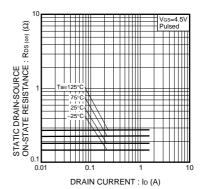


Fig.6 Static Drain-Source On-State Resistance vs. Drain Current (I)

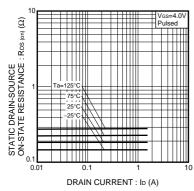


Fig.7 Static Drain-Source On-State Resistance vs. Drain Current (II)

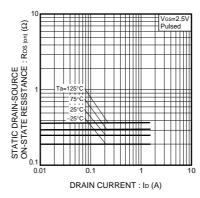


Fig.8 Static Drain-Source On-State Resistance vs. Drain Current (III)

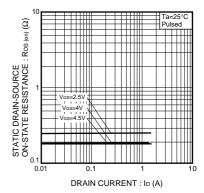


Fig.9 Static Drain-Source On-State Resistance vs. Drain Current (IV)

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