

Transistors

4V Drive Nch+Nch MOSFET

US6K2

●Structure

Silicon N-channel MOSFET

●Features

- 1) Two Nch MOSFETs are put in TUMT6 package.
- 2) High-speed switching, Low On-resistance.
- 3) 4V drive.

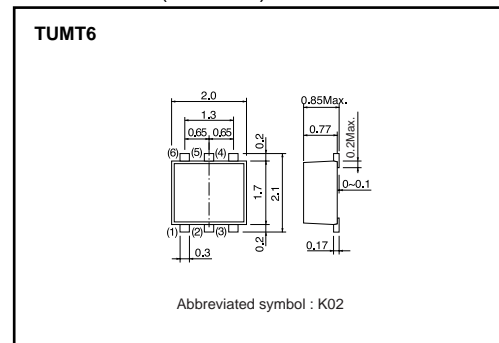
●Applications

Switching

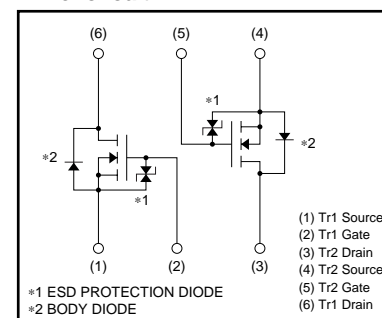
●Packaging specifications

Type	Package	Taping
	Code	TR
	Basic ordering unit (pieces)	3000
US6K2		○

●Dimensions (Unit : mm)



●Inner circuit



●Absolute maximum ratings (Ta=25°C)

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

Parameter	Symbol	Limits	Unit	
Drain-source voltage	V_{DSS}	30	V	
Gate-source voltage	V_{GSS}	20	V	
Drain current	Continuous	I_D	± 1.4	A
	Pulsed	I_{DP} *1	± 5.6	A
Source current (Body diode)	Continuous	I_S	0.6	A
	Pulsed	I_{SP} *1	5.6	A
Total power dissipation	P_D *2	1.0	W / TOTAL	
		0.7	W / ELEMENT	
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 Mounted on a ceramic board

●Thermal resistance

Parameter	Symbol	Limits	Unit
Channel to ambient	$R_{th}(ch-a)$ *	125	°C/W / TOTAL
		179	°C/W / ELEMENT

* Mounted on a ceramic board

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●Electrical characteristics (Ta=25°C)

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

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Gate-source leakage	I _{GSS}	–	–	10	μA	V _{GS} =20V, V _{DS} =0V
Drain-source breakdown voltage	V _{(BR) DSS}	30	–	–	V	I _D = 1mA, V _{GS} =0V
Zero gate voltage drain current	I _{DSS}	–	–	1	μA	V _{DS} = 30V, V _{GS} =0V
Gate threshold voltage	V _{GS(th)}	1.0	–	2.5	V	V _{DS} = 10V, I _D = 1mA
Static drain-source on-state resistance	R _{DS(on)} *	–	170	240	mΩ	I _D = 1.4A, V _{GS} = 10V
		–	250	350	mΩ	I _D = 1.4A, V _{GS} = 4.5V
		–	270	380	mΩ	I _D = 1.4A, V _{GS} = 4V
Forward transfer admittance	Y _{fs} *	1	–	–	S	V _{DS} = 10V, I _D = 1.4A
Input capacitance	C _{iss}	–	70	–	pF	V _{DS} = 10V
Output capacitance	C _{oss}	–	15	–	pF	V _{GS} =0V
Reverse transfer capacitance	C _{rss}	–	12	–	pF	f=1MHz
Turn-on delay time	t _{d(on)} *	–	6	–	ns	V _{DD} ≐ 15V
Rise time	t _r *	–	6	–	ns	I _D = 0.7A
Turn-off delay time	t _{d(off)} *	–	13	–	ns	V _{GS} = 10V
Fall time	t _f *	–	8	–	ns	R _L = 21Ω
Total gate charge	Q _g *	–	1.4	2.0	nC	V _{DD} ≐ 15V, V _{GS} = 5V
Gate-source charge	Q _{gs} *	–	0.6	–	nC	I _D = 1.4A
Gate-drain charge	Q _{gd} *	–	0.3	–	nC	R _L = 11Ω, R _G = 10Ω

*Pulsed

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

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

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

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●Electrical characteristics curves

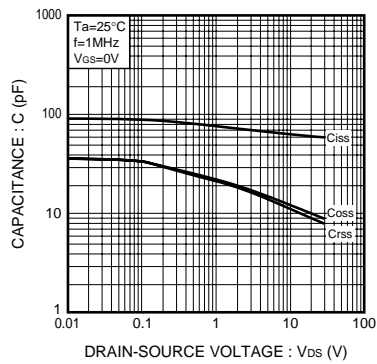


Fig.1 Typical Capacitance vs. Drain-Source Voltage

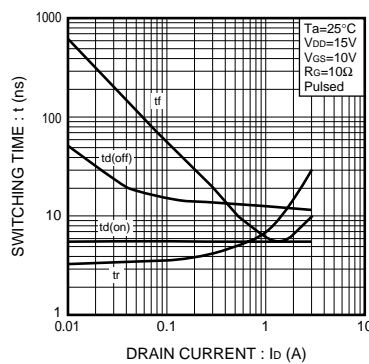


Fig.2 Switching Characteristics

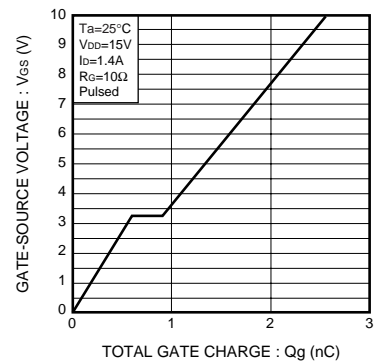


Fig.3 Dynamic Input Characteristics

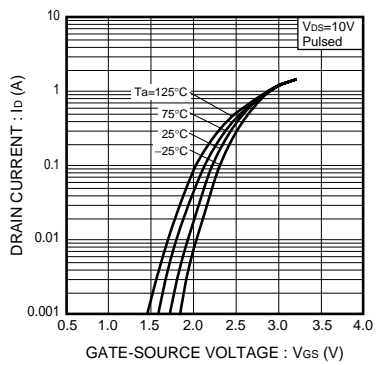


Fig.4 Typical Transfer Characteristics

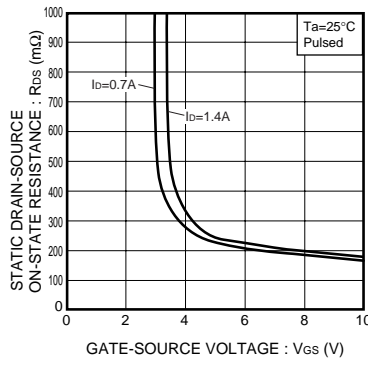


Fig.5 Static Drain-Source On-State Resistance vs. Gate source Voltage

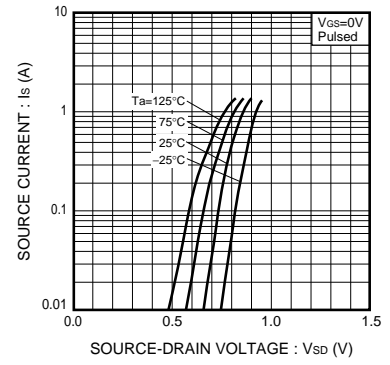


Fig.6 Source Current vs. Source-Drain Voltage

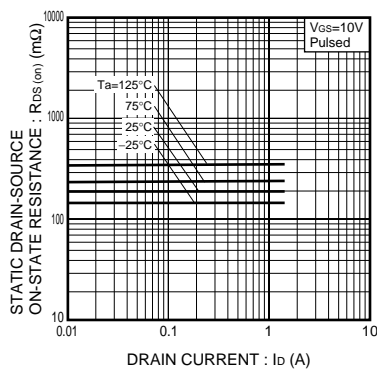


Fig.7 Static Drain-Source On-State Resistance vs. Drain Current (I)

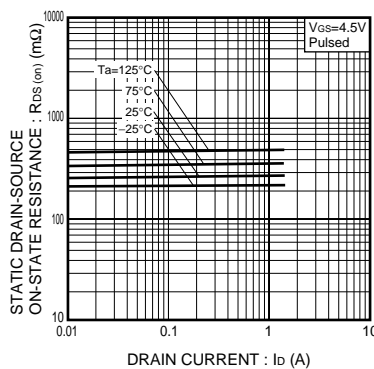


Fig.8 Static Drain-Source On-State Resistance vs. Drain Current (II)

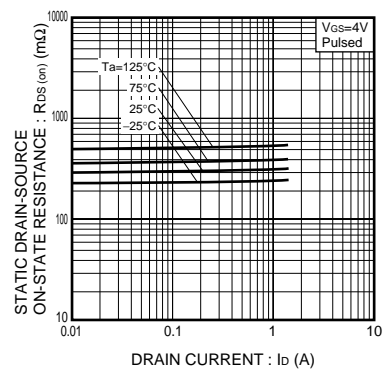


Fig.9 Static Drain-Source On-State Resistance vs. Drain Current (III)

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