

4V Drive Nch+Nch MOS FET

SM6K2

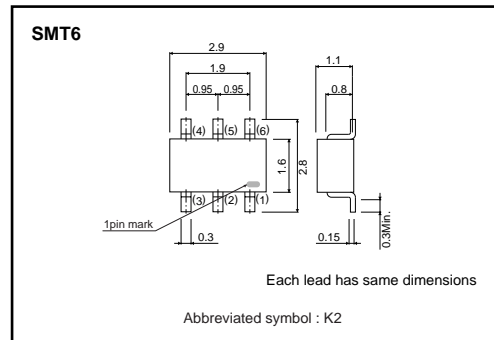
●Structure

Silicon N-channel
MOSFET transistor

●Features

- 1) Two RHU002N06 chips in a SMT package.
- 2) Mounting possible with SMT3 automatic mounting machines.
- 3) Transistor elements are independent, eliminating mutual interference.
- 4) Mounting cost and area can be cut in half.

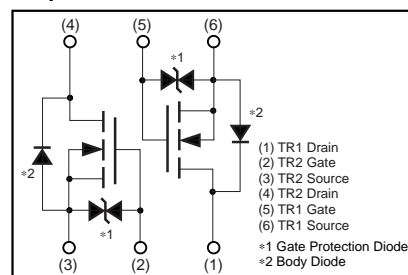
●External dimensions (Unit : mm)



●Packaging specifications

	Package	Taping
	Code	T110
Type	Basic ordering unit (pieces)	3000
SM6K2		○

●Equivalent circuit



* A protection diode has been built in between the gate and the source to protect against static electricity when the product is in use.
Use the protection circuit when fixed voltages are exceeded.

●Absolute maximum ratings (Ta=25°C)

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

Parameter	Symbol	Limits	Unit
Drain-source voltage	V_{DS}	60	V
Gate-source voltage	V_{GS}	± 20	V
Drain current	Continuous	I_D	200 mA
	Pulsed	I_{DP} *1	800 mA
Drain reverse current	Continuous	I_{DR}	200 mA
	Pulsed	I_{DRP} *1	800 mA
Total power dissipation	P_D *2	300	mW / TOTAL
		200	mW / ELEMENT
Channel temperature	T_{ch}	150	°C
Storage temperature	T_{stg}	-55 to +150	°C

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

*2 With each pin mounted on the recommended lands.

●Thermal resistance

Parameter	Symbol	Limits	Unit
Channel to ambient	$R_{th(ch-a)}$ *	416.7	°C / W / TOTAL
		625	°C / W / ELEMENT

* With each pin mounted on the recommended lands.

Transistors

●Electrical characteristics (Ta=25°C)

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

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Gate leakage current	I _{GSS}	–	–	±10	μA	V _{GS} =±20V, V _{DS} =0V
Drain-source breakdown voltage	V _{(BR)DSS}	60	–	–	V	I _D =1mA, V _{GS} =0V
Drain cutoff current	I _{DSS}	–	–	1	μA	V _{DS} =60V, V _{GS} =0V
Gate threshold voltage	V _{GS(th)}	1	–	2.5	V	V _{DS} =10V, I _D =1mA
Drain-source on-state resistance	R _{DS(on)} *	–	1.7	2.4	Ω	I _D =200mA, V _{GS} =10V
		–	2.8	4.0		I _D =200mA, V _{GS} =4V
Forward transfer admittance	Y _{fs} *	0.1	–	–	S	V _{DS} =10V, I _D =200mA
Input capacitance	C _{iss}	–	15	–	pF	V _{DS} =10V
Output capacitance	C _{oss}	–	8	–	pF	V _{GS} =0V
Reverse transfer capacitance	C _{rss}	–	4	–	pF	f=1MHz
Turn-on delay time	t _{d(on)} *	–	6	–	ns	I _D =100mA, V _{DD} =30V
Rise time	t _r *	–	5	–	ns	V _{GS} =10V
Turn-off delay time	t _{d(off)} *	–	12	–	ns	R _L =300Ω
Fall time	t _f *	–	95	–	ns	R _G =10Ω
Total gate charge	Q _g *	–	2.2	4.4	nC	V _{DD} =30V
Gate-source charge	Q _{gs} *	–	0.6	–	nC	V _{GS} =10V
Gate-drain charge	Q _{gd} *	–	0.3	–	nC	I _D =200mA

* 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 =200mA, V _{GS} =0V

Transistors

●Electrical characteristic curves

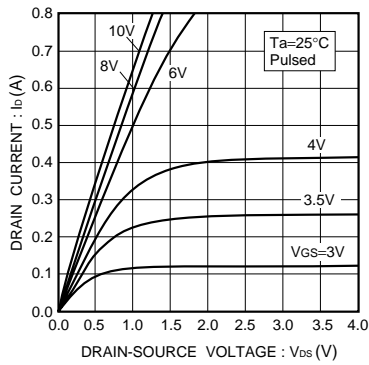


Fig.1 Typical output characteristics

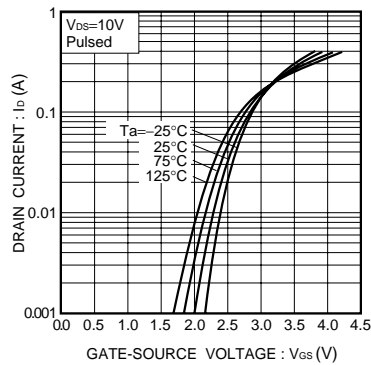


Fig.2 Typical transfer characteristics

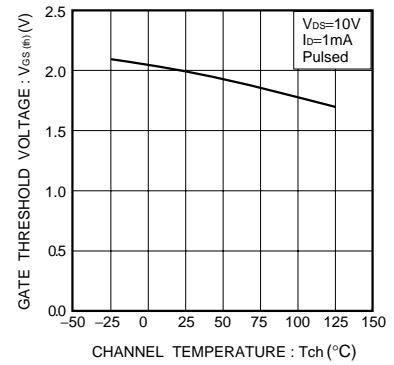


Fig.3 Gate threshold voltage vs. channel temperature

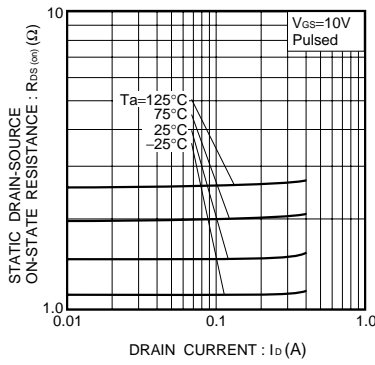


Fig.4 Static drain-source on-State resistance vs. drain current (I)

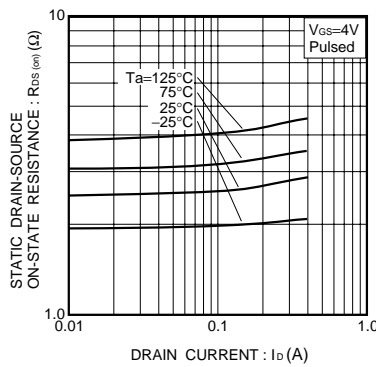


Fig.5 Static drain-source on-state resistance vs. drain current (II)

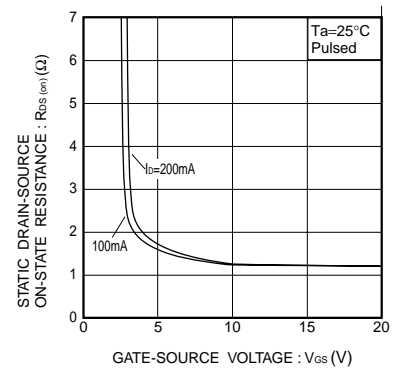


Fig.6 Static drain-source on-state resistance vs. gate-source voltage

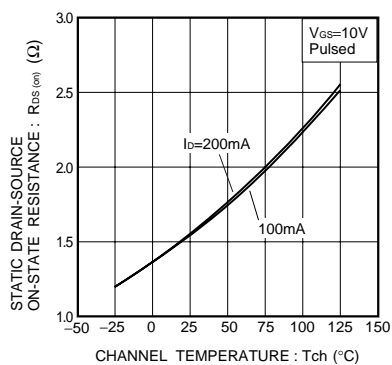


Fig.7 Static drain-source on-state resistance vs. channel temperature

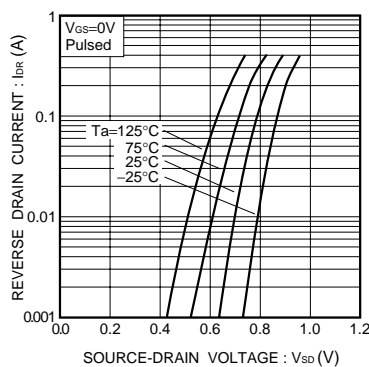


Fig.8 Reverse drain current vs. source-drain voltage (I)

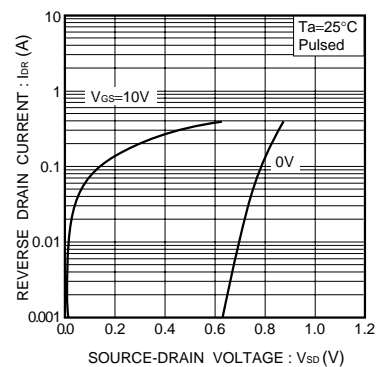


Fig.9 Reverse drain current vs. source-drain voltage (II)

Transistors

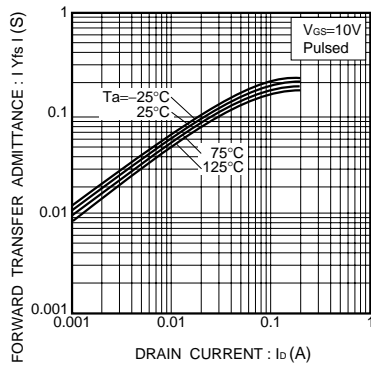


Fig.10 Forward transfer admittance vs. drain current

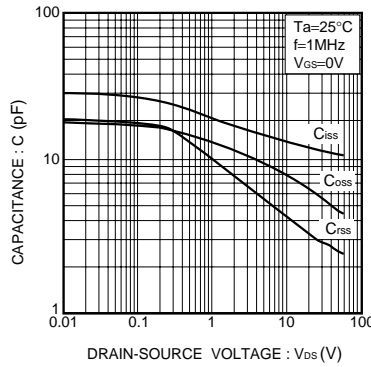


Fig.11 Typical capacitance vs. drain-source voltage

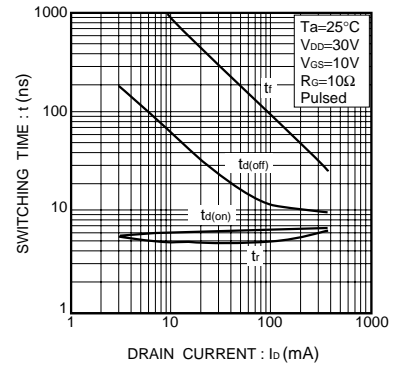


Fig.12 Switching characteristics

● Switching characteristics measurement circuit

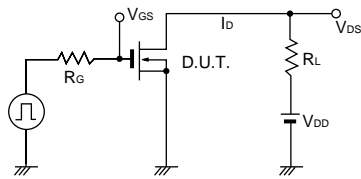


Fig.13 Switching time test circuit

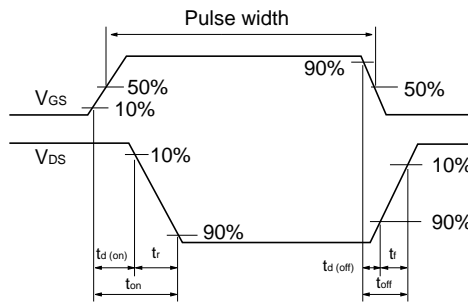


Fig.14 Switching time waveforms

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