

QS5K2

Silicon N-channel MOSFET

- 1) Low On-resistance.
- 3) Space saving, small surface mount package (TSMT5).

Switching

Type	Package	Taping
	Code	TR
	Basic ordering unit (pieces)	3000
OS5K2		○

The drawing shows the mechanical specifications for a TSMT5 package. The top view (left) indicates a total width of 2.9 mm, with a central lead pitch of 1.9 mm. Individual lead widths are 0.95 mm, and the distance between the center of a lead and the package centerline is 0.95 mm. Lead positions are numbered (1) through (5). The side view (right) shows a maximum height of 1.0 mm, a lead thickness of 0.85 mm, and a lead height of 0.7 mm. The package body height is 1.6 mm, and the total height including the lead is 2.8 mm. The lead angle is specified as 0-0.1 degrees. The lead width at the base is 0.16 mm, and the distance from the package body to the lead base is 0.4 mm. The lead length is 0.3-0.6 mm.

TSMT5

Each lead has same dimensions

Abbreviated symbol : K02

(1) Tr1 Gate
 (2) Tr1 Source
 Tr2 Source
 (3) Tr2 Gate
 (4) Tr2 Drain
 (5) Tr1 Drain

*1 ESD PROTECTION DIODE
 *2 BODY DIODE

<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}	12	V
Drain current	Continuous	I_D	± 2.0	A
	Pulsed	I_{DP}^{*1}	± 8.0	A
Source current (Body diode)	Continuous	I_S	0.8	A
	Pulsed	I_{SP}^{*1}	3.2	A
Total power dissipation		P_D^{*2}	1.25	W / TOTAL
			0.9	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

Parameter	Symbol	Limits	Unit
Channel to ambient	Rth(ch-a) *	100	°C/W
		139	°C/W

* Mounted on a ceramic board

Transistors

●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	$V_{GS}=12V, V_{DS}=0V$
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	$V_{GS(th)}$	0.5	—	1.5	V	$V_{DS}=10V, I_D=1mA$
Static drain-source on-state resistance	$R_{DS(on)}^*$	—	71	100	m Ω	$I_D=2A, V_{GS}=4.5V$
		—	76	107	m Ω	$I_D=2A, V_{GS}=4.0V$
		—	110	154	m Ω	$I_D=2A, V_{GS}=2.5V$
Forward transfer admittance	$ Y_{fs} ^*$	1.5	—	—	S	$V_{DS}=10V, I_D=2A$
Input capacitance	C_{iss}	—	175	—	pF	$V_{DS}=10V$
Output capacitance	C_{oss}	—	50	—	pF	$V_{GS}=0V$
Reverse transfer capacitance	C_{rss}	—	25	—	pF	$f=1MHz$
Turn-on delay time	$t_{d(on)}^*$	—	8	—	ns	$V_{DD} \doteq 15V$
Rise time	t_r^*	—	10	—	ns	$I_D=1A$
Turn-off delay time	$t_{d(off)}^*$	—	21	—	ns	$V_{GS}=4.5V$
Fall time	t_f^*	—	8	—	ns	$R_L=15\Omega$
Total gate charge	Q_g^*	—	2.8	3.9	nC	$V_{DD} \doteq 15V$
Gate-source charge	Q_{gs}^*	—	0.6	—	nC	$V_{GS}=4.5V$
Gate-drain charge	Q_{gd}^*	—	0.8	—	nC	$I_D=2A$

*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	$I_S=3.2A, V_{GS}=0V$

* Pulsed

Transistors

●Electrical characteristics curves

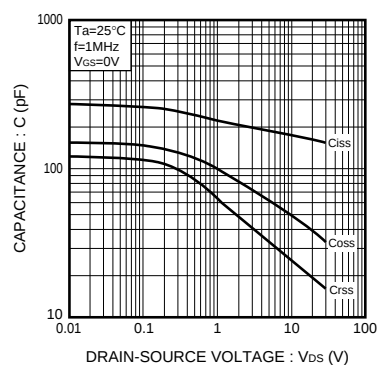


Fig.1 Typical Capacitance vs. Drain-Source Voltage

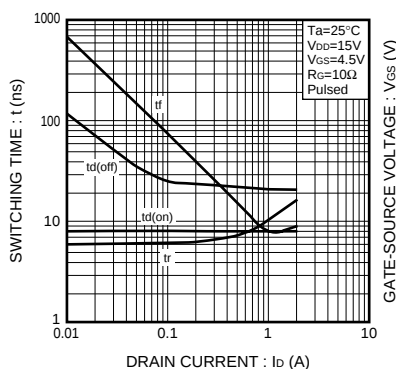


Fig.2 Switching Characteristics

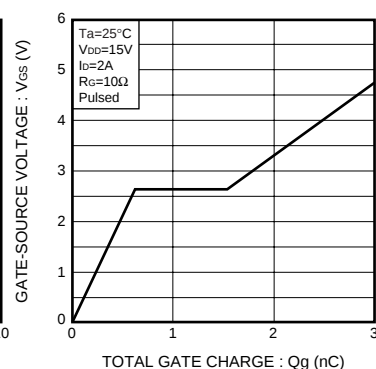


Fig.3 Dynamic Input Characteristics

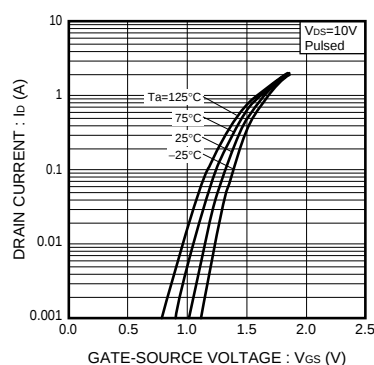


Fig.4 Typical Transfer Characteristics

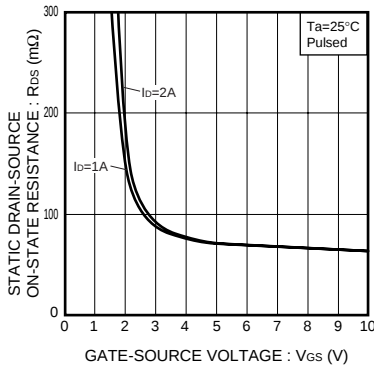


Fig.5 Static Drain-Source On-State Resistance vs. Gate source Voltage

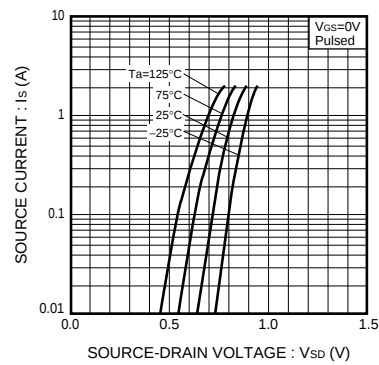


Fig.6 Source Current vs. Source-Drain Voltage

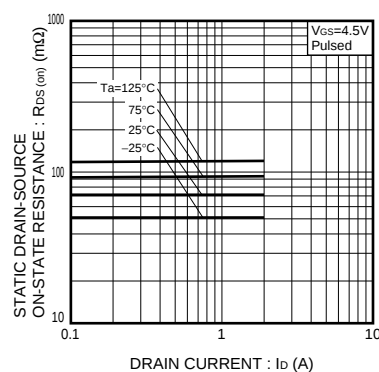


Fig.7 Static Drain-Source On-State Resistance vs. Drain Current (I)

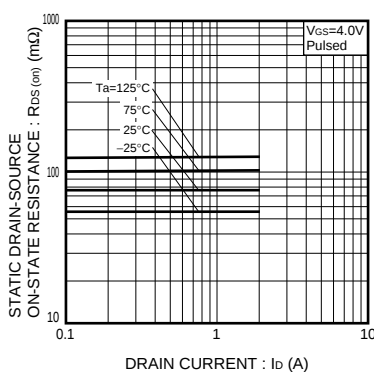


Fig.8 Static Drain-Source On-State Resistance vs. Drain Current (II)

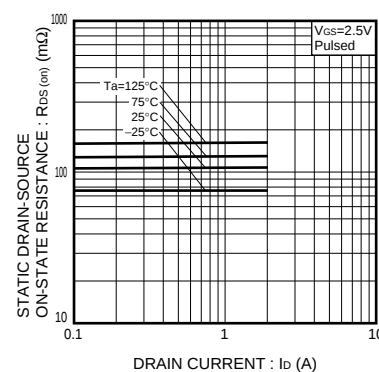


Fig.9 Static Drain-Source On-State Resistance vs. Drain Current (III)

Notes

- No technical content pages of this document may be reproduced in any form or transmitted by any means without prior permission of ROHM CO.,LTD.
- The contents described herein are subject to change without notice. The specifications for the product described in this document are for reference only. Upon actual use, therefore, please request that specifications to be separately delivered.
- Application circuit diagrams and circuit constants contained herein are shown as examples of standard use and operation. Please pay careful attention to the peripheral conditions when designing circuits and deciding upon circuit constants in the set.
- Any data, including, but not limited to application circuit diagrams information, described herein are intended only as illustrations of such devices and not as the specifications for such devices. ROHM CO.,LTD. disclaims any warranty that any use of such devices shall be free from infringement of any third party's intellectual property rights or other proprietary rights, and further, assumes no liability of whatsoever nature in the event of any such infringement, or arising from or connected with or related to the use of such devices.
- Upon the sale of any such devices, other than for buyer's right to use such devices itself, resell or otherwise dispose of the same, no express or implied right or license to practice or commercially exploit any intellectual property rights or other proprietary rights owned or controlled by
- ROHM CO., LTD. is granted to any such buyer.
- Products listed in this document are no antiradiation design.

The products listed in this document are designed to be used with ordinary electronic equipment or devices (such as audio visual equipment, office-automation equipment, communications devices, electrical appliances and electronic toys).

Should you intend to use these products with equipment or devices which require an extremely high level of reliability and the malfunction of which would directly endanger human life (such as medical instruments, transportation equipment, aerospace machinery, nuclear-reactor controllers, fuel controllers and other safety devices), please be sure to consult with our sales representative in advance.

About Export Control Order in Japan

Products described herein are the objects of controlled goods in Annex 1 (Item 16) of Export Trade Control Order in Japan.

In case of export from Japan, please confirm if it applies to "objective" criteria or an "informed" (by MITI clause) on the basis of "catch all controls for Non-Proliferation of Weapons of Mass Destruction.