

Interface and switching (60V, 115mA)

RK7002

●Structure

Silicon N-channel
MOSFET

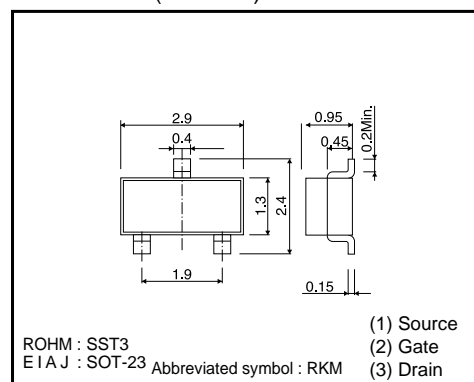
●Features

- 1) Low on-resistance.
- 2) High-speed switching.
- 3) Low-voltage drive(5V).

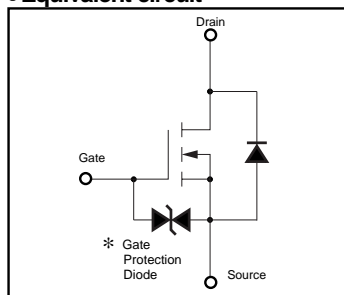
●Application

Switching

●Dimensions (Unit : mm)



●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)

Parameter	Symbol	Limits	Unit
Drain-source voltage	V_{DSS}	60	V
Gate-source voltage	V_{GSS}	± 20	V
Drain current	Continuous	I_D	115 mA
	Pulsed	I_{DP}^{*1}	800 mA
Reverse drain current	Continuous	I_{DR}	115 mA
	Pulsed	I_{DRP}^{*1}	800 mA
Total power dissipation	P_D^{*2}	225	mW
Channel temperature	T_{ch}	150	°C
Storage temperature	T_{stg}	-55 to +150	°C

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

*2 When mounted on a 1x0.75x0.062 inch glass epoxy board.

Transistors

●Electrical characteristics (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Gate-source leakage	I_{GSS}	-	-	±10	μA	$V_{GS} = \pm 20V, V_{DS} = 0V$
Drain-source breakdown voltage	$V_{(BR)DSS}$	60	-	-	V	$I_D = 10\mu A, V_{GS} = 0V$
Zero gate voltage drain current	I_{DSS}	-	-	1.0	μA	$V_{DS} = 60V, V_{GS} = 0V$
Gate threshold voltage	$V_{GS(th)}$	1.0	1.85	2.5	V	$V_{DS} = 10V, I_D = 1mA$
Static drain-source on-state resistance	$R_{DS(on)}$ *	-	-	7.5	Ω	$I_D = 0.5A, V_{GS} = 10V$
		-	-	7.5		$I_D = 0.05A, V_{GS} = 5V$
Forward transfer admittance	$ Y_{fs} $ *	80	-	-	mS	$I_D = 0.2A, V_{DS} = 10V$
Input capacitance	C_{iss}	-	25	50	pF	$V_{DS} = 25V$
Output capacitance	C_{oss}	-	10	25	pF	$V_{GS} = 0V$
Reverse transfer capacitance	C_{rss}	-	3.0	5.0	pF	$f = 1MHz$
Turn-on delay time	$t_{d(on)}$ *	-	12	20	ns	$I_D = 0.2A, V_{DD} \approx 30V, V_{GS} = 10V,$
Turn-off delay time	$t_{d(off)}$ *	-	20	30	ns	$R_L = 150\Omega, R_G = 10\Omega$

* $P_w \leq 300\mu s$, Duty cycle $\leq 1\%$

●Electrical characteristic curves

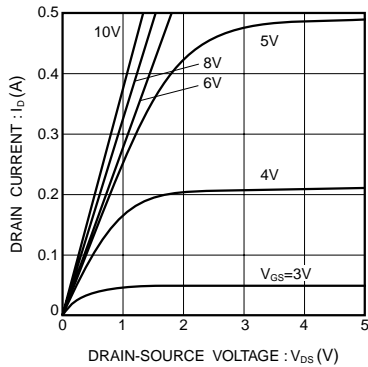


Fig.1 Typical Output Characteristics

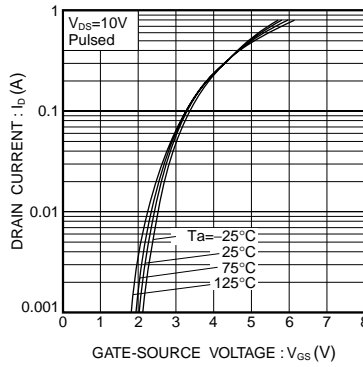


Fig.2 Typical Transfer Characteristics

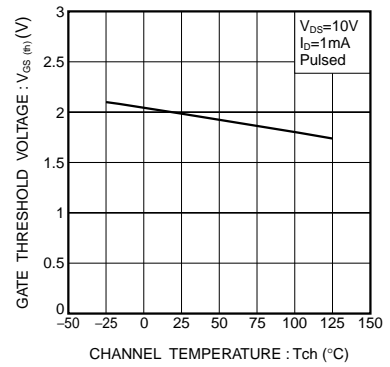


Fig.3 Gate Threshold Voltage vs. Channel Temperature

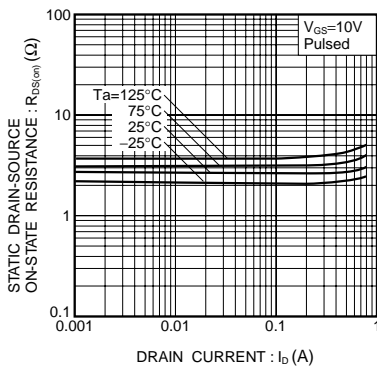


Fig.4 Static Drain-Source On-State Resistance vs. Drain Current (I)

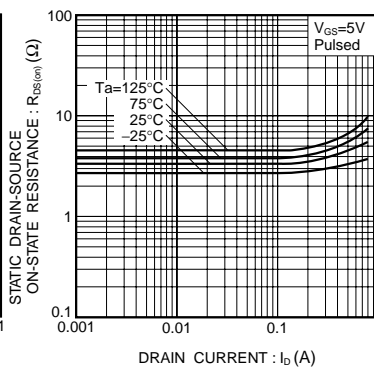


Fig.5 Static Drain-Source On-State Resistance vs. Drain Current (II)

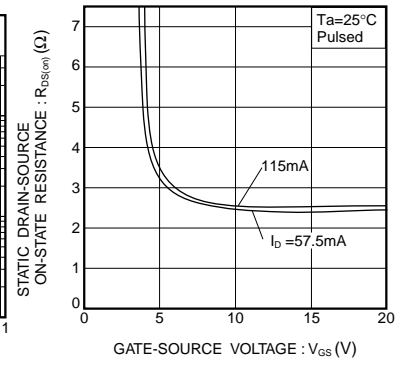


Fig.6 Static Drain-Source On-State Resistance vs. Gate-Source Voltage

Transistors

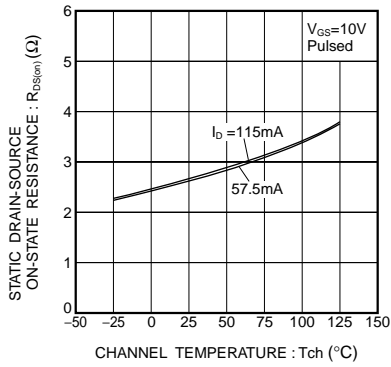


Fig.7 Static Drain-Source On-State Resistance vs. Channel Temperature

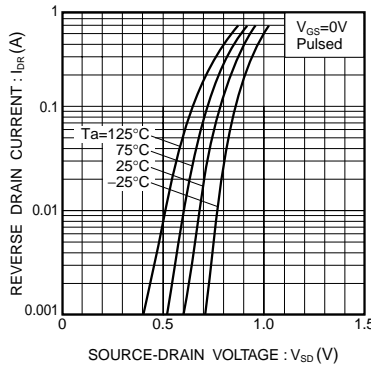


Fig.8 Reverse Drain Current vs. Source-Drain Voltage (I)

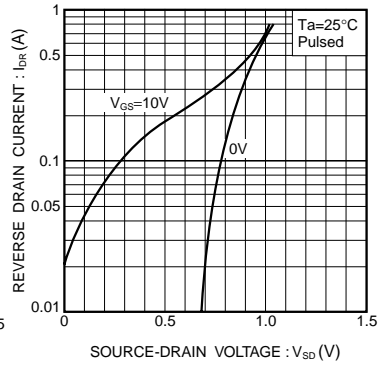


Fig.9 Reverse Drain Current vs. Source-Drain Voltage (II)

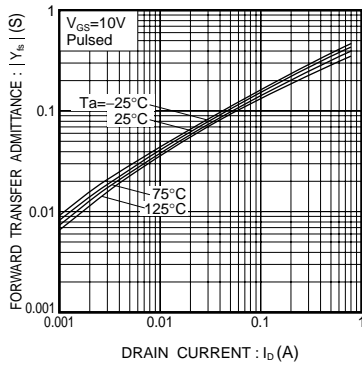


Fig.10 Reverse Drain Current vs. Source-Drain Voltage (II)

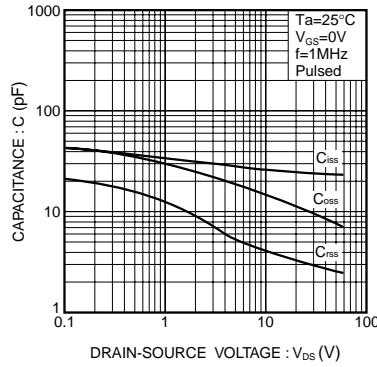


Fig.11 Typical Capacitance vs. Drain-Source Voltage

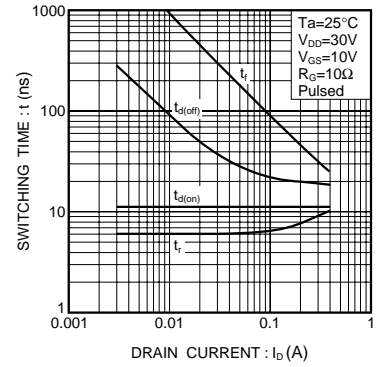


Fig.12 Switching Characteristics (See Figure. 13 and 14 for measurement circuits)

●Measurement circuit

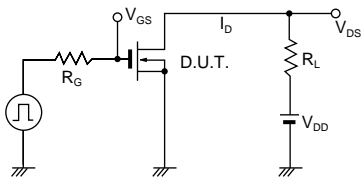


Fig.13 Switching Time Test Circuit

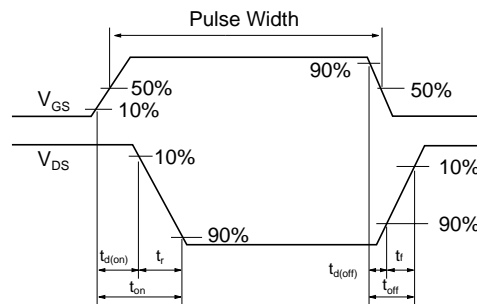


Fig.14 Switching Time Waveforms

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.

It is our top priority to supply products with the utmost quality and reliability. However, there is always a chance of failure due to unexpected factors. Therefore, please take into account the derating characteristics and allow for sufficient safety features, such as extra margin, anti-flammability, and fail-safe measures when designing in order to prevent possible accidents that may result in bodily harm or fire caused by component failure. ROHM cannot be held responsible for any damages arising from the use of the products under conditions out of the range of the specifications or due to non-compliance with the NOTES specified in this catalog.

Thank you for your accessing to ROHM product informations.

More detail product informations and catalogs are available, please contact your nearest sales office.

ROHM Customer Support System

THE AMERICAS / EUROPE / ASIA / JAPAN

www.rohm.com

Contact us : webmaster@rohm.co.jp