

Structure	Silicon Monolithic Integrated Circuit
Product series	PWM Driver for combi drive
Type	BH5502KV
Function	<ul style="list-style-type: none"> <li>3-phase-sensor-less system, therefore don't need three hall sensors for spindle motor driver.</li> <li>Stability high-speed start from the state of the step for spindle motor driver.</li> </ul>

## ○Absolute maximum ratings

Parameter	Symbol	Limits	Unit
Power MOS supply voltage	PVcc	6	V
Control circuit power supply voltage	Vcc	6	V
Maximum driver output current	IoMAX	3 # 1	A
Power dissipation	Pd	1.18 # 2	W
Operating temperature range	Topr	-30~85	°C
Storage temperature range	Tstg	-55~150	°C
Joint part temperature	Tjmax	150	°C

#1 The current is guaranteed 3.0A in case of the current is turned on/off in a duty-ratio of less than 1/10 with a maximum on-time of 5msec.

#2 PCB (70mm×70mm×1.6mm,occupied copper foil is less than 3%,glass epoxy standard board) mounting.  
Reduce power by 9.5mW for each degree above 25°C.

## ○Recommended operating conditions(Ta=-10~+70°C)

[Set the power supply voltage taking allowable dissipation into considering]

Parameter	Symbol	MIN	TYP	MAX	Unit
Power MOS supply voltage	PVcc	4.0	5.0	5.5	V
Control circuit power supply voltage	Vcc	4.0	5.0	5.5	V

This product described in this specification isn't judged whether it applies to COCOM regulations. Please confirm in case of export.  
This product isn't designed for protection against radioactive rays.

### Application example

The application circuit is recommended for use. Make sure to confirm the adequacy of the characteristics.

When using the circuit with changes to the external circuit constants, make sure to leave an adequate margin for external components including static and transitional characteristics as well as dispersion of the IC.

Note that ROHM cannot provide adequate confirmation of patents.

The product described in this specification is 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 this product 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.

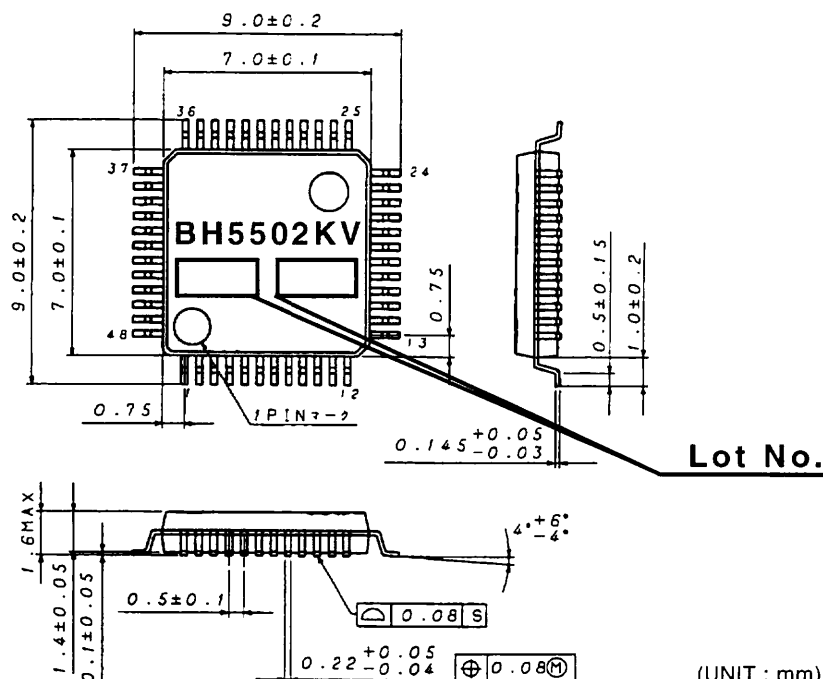
ROHM assumes no responsibility for use of any circuits described herein, conveys no license under any patent or other right, and makes no representation that the circuits are free from patent infringement.

○Electrical characteristics

(Unless otherwise noted Ta=25°C, Vcc=PVcc=5V, Vref=1.25V, RL(ACT,STP,Eject)=8Ω+47μH, RL(SP)=2Ω+47μH, RNF=0.22Ω, VST=5V, VGV=0V, VIN1,2,3,4,5,6=OPEN, VCOM=OPEN, VCCOM=OPEN, VCOUT=OPEN)

Parameter		Symbol	MIN.	TYP.	MAX.	Unit	Condition
Circuit current	Quiescent current	ICC	—	8	20	mA	VST=2.0V
	Current in standby mode	IST	—	—	0.2	mA	VST=0.5V
Stepping driver block	Input dead zone (one side)	VDZ4,5	10	30	50	mV	
	Output offset voltage	VOO4,5	-50	—	50	mV	
	Voltage gain	GVC4,5	16.0	18.0	20.0	dB	
	Output On resistor (top and bottom)	RON4,5	—	1.6	2.4	Ω	Io=500mA
	PWM frequency	f4,5CH	240	300	360	kHz	
Spindle driver block	Input dead zone of gm1(one side)	VDZSP1	2	30	100	mV	
	Input dead zone of gm2(one side)	VDZSP2	2	90	300	mV	
	Input output gain 1	gm1	0.8	1.0	1.2	A/V	
	Input output gain 2	gm2	0.23	0.33	0.43	A/V	
	Output On resistor (top and bottom)	RONSP	—	0.6	1.4	Ω	Io=500mA
	Output limit voltage	VLIMSP	0.18	0.22	0.26	V	
	PWM frequency	fSP	125	167	217	kHz	
Actuator driver block	Output offset voltage	VOO1,2,3	-50	—	50	mV	
	Voltage gain(CH1,2)	GVC1,2	15.5	17.5	19.5	dB	External input resistor 10kΩ
	Voltage gain(CH3)	GVC3	6.0	8.0	10.0	dB	External input resistor 10kΩ
	Output On resistor (top and bottom)	RON1,2,3	—	1.2	1.8	Ω	Io=500mA
	PWM frequency	f1,2,3CH	280	350	420	kHz	
Eject driver block	Input L level voltage range	INL	0	—	1.0	V	
	Input M level voltage range	INM	1.6	—	2.0	V	OPEN(Hi-z) is also available.
	Input H level voltage range	INH	2.6	—	3.3	V	
	Output On resistor (top and bottom)	RON6	—	2.0	3.0	Ω	Io=500mA
Others	Vref drop mute ON threshold voltage	VMVref	—	0.7	1.0	V	
	Vcc drop mute ON threshold voltage	VMVccD	3.2	3.6	4.0	V	

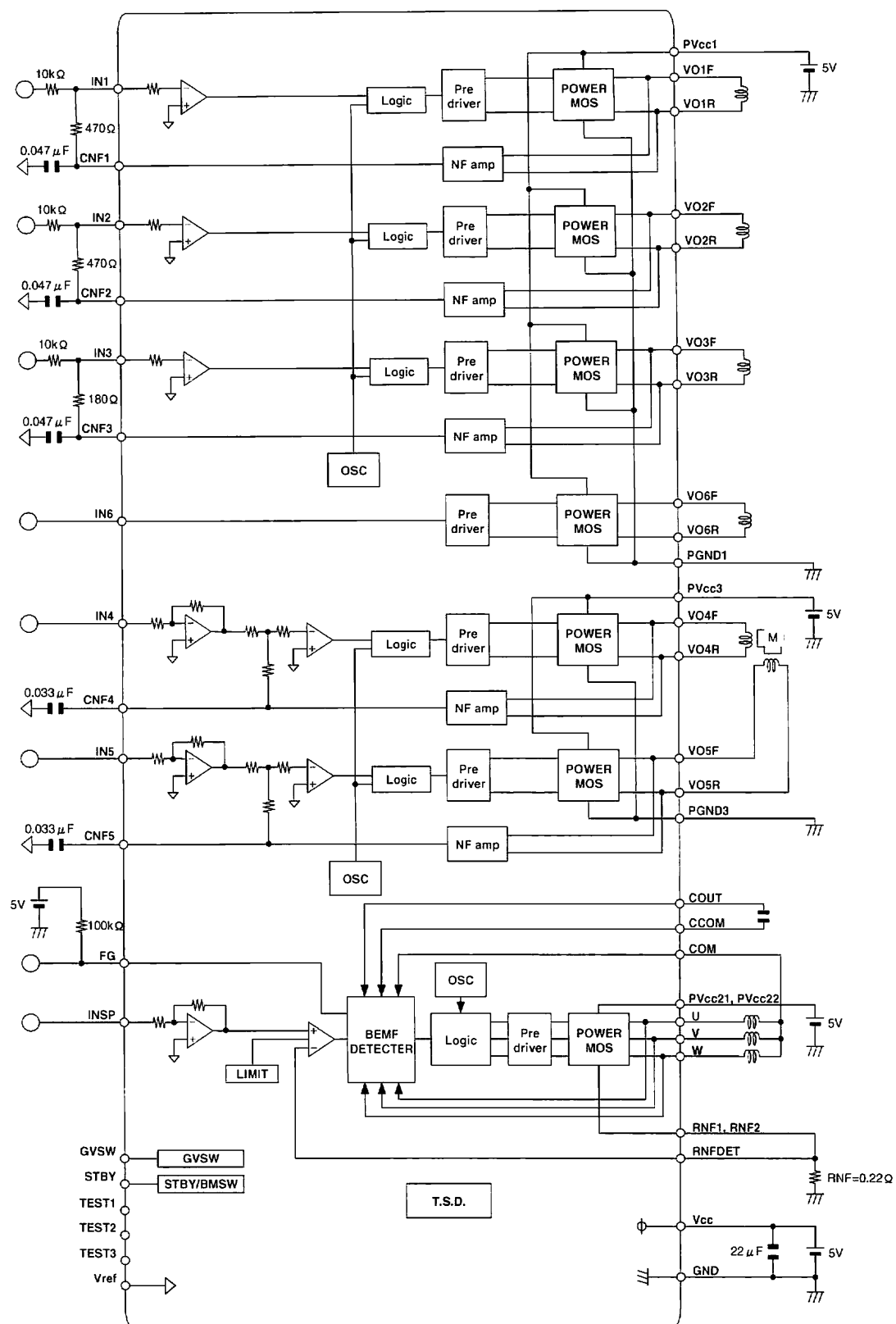
○Package outlines



(UNIT : mm)

Figure No. ; EX259-5001-1

## Block diagram / Application circuit



### 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.

Thank you for your accessing to ROHM product informations.  
More detail product informations and catalogs are available,  
please contact your nearest sales office.

Please contact our sales offices for details ;

U.S.A / San Diego	TEL : +1(858)625-3630	FAX : +1(858)625-3670
Atlanta	TEL : +1(770)754-5972	FAX : +1(770)754-0691
Dallas	TEL : +1(972)312-8818	FAX : +1(972)312-0330
Germany / Dusseldorf	TEL : +49(2154)9210	FAX : +49(2154)921400
United Kingdom / London	TEL : +44(1)908-282-666	FAX : +44(1)908-282-528
France / Paris	TEL : +33(0)1 56 97 30 60	FAX : +33(0) 1 56 97 30 80
China / Hong Kong	TEL : +852(2)740-6262	FAX : +852(2)375-8971
Shanghai	TEL : +86(21)6279-2727	FAX : +86(21)6247-2066
Dilian	TEL : +86(411)8230-8549	FAX : +86(411)8230-8537
Beijing	TEL : +86(10)8525-2483	FAX : +86(10)8525-2489
Taiwan / Taipei	TEL : +866(2)2500-6956	FAX : +866(2)2503-2869
Korea / Seoul	TEL : +82(2)8182-700	FAX : +82(2)8182-715
Singapore	TEL : +65-6332-2322	FAX : +65-6332-5662
Malaysia / Kuala Lumpur	TEL : +60(3)7958-8355	FAX : +60(3)7958-8377
Philippines / Manila	TEL : +63(2)807-6872	FAX : +63(2)809-1422
Thailand / Bangkok	TEL : +66(2)254-4890	FAX : +66(2)256-6334

Japan /  
(Internal Sales)

Tokyo	2-1-1, Yaesu, Chuo-ku, Tokyo 104-0082	
	TEL : +81(3)5203-0321	FAX : +81(3)5203-0300
Yokohama	2-4-8, Shin Yokohama, Kohoku-ku, Yokohama, Kanagawa 222-8575	
	TEL : +81(45)476-2131	FAX : +81(45)476-2128
Nagoya	Dainagayo Building 9F 3-28-12, Meieki, Nakamura-ku, Nagoya, Aichi 450-0002	
	TEL : +81(52)581-8521	FAX : +81(52)561-2173
Kyoto	579-32 Higashi Shiokouji-cho, Karasuma Nishi-iru, Shiokoujidori, Shimogyo-ku, Kyoto 600-8216	
	TEL : +81(75)311-2121	FAX : +81(75)314-6559

(Contact address for overseas customers in Japan)

Yokohama	TEL : +81(45)476-9270	FAX : +81(045)476-9271
----------	-----------------------	------------------------