Structure Silicon Monolithic Integrated Circuit

Product series PWM Driver for combi drive

Type **BH5510KV**

Function
- Super silent spindle drive by S!PWM$^{\times 2}$ technology.
- Built in 2mode of spindle driver's gain for low-speed stability rotation.

○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	-40～85	℃
Storage temperature range	Tstg	-55～150	℃
Joint part temperature	Tjmax	150	℃

#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℃.

○Recommended operating conditions(Ta=-10～+70℃)

〔Set the power supply voltage taking allowable dissipation into considering〕

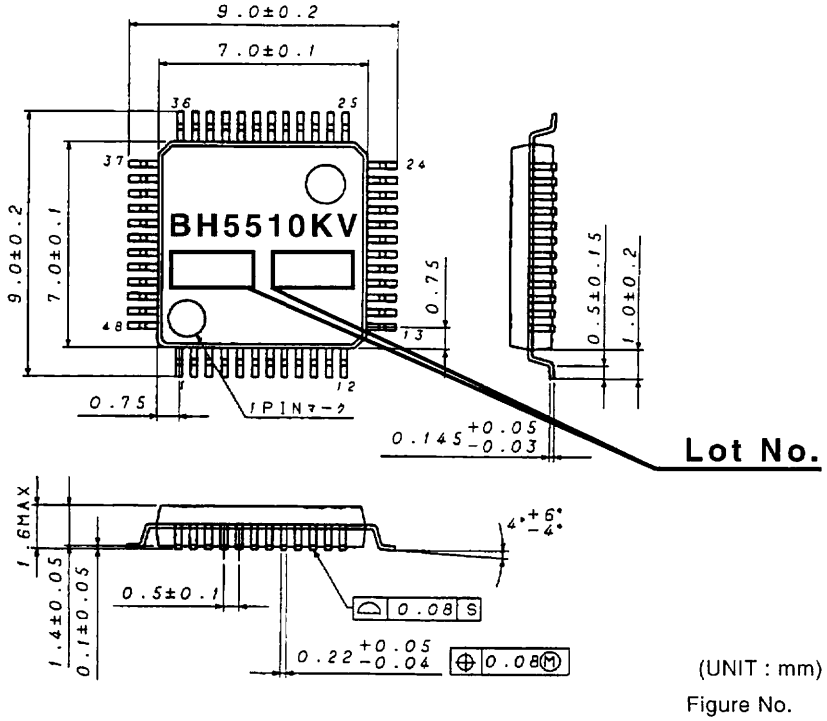
Parameter	Symbol	MIN.	TYP.	MAX.	Unit
Power MOS supply voltage	PVcc	3.0	5.0	5.5	V
Control circuit power supply voltage	Vcc	4.0	5.0	5.5	V

○Electrical characteristics

(Unless otherwise noted Ta=25℃, Vcc=PVcc=5V, Vref=1.25V, RL(act)=8Ω+47μH, RL(SP)=2Ω+47μH, SPRNF=0.2Ω)

Parameter		Symbol	MIN.	TYP.	MAX.	Unit	Condition
Circuit current	Quiescent current	ICC	–	10.5	20	mA	VST=2.6V
	Current in standby mode	IST	–	–	0.1	mA	VST=1.0V
Stepping driver block	Input dead zone (one side)	VDZSTP4,5	10	30	50	mV	
	Output offset voltage	VOO4,5	-50	–	50	mV	
	Voltage gain	GVC4,5	12.0	14.0	16.0	dB	
	Output On resistor (top and bottom)	RON4,5	–	1.5	2.3	Ω	Io=500mA
	PWM frequency	f4,5CH	240	300	360	kHz	
Spindle driver block	Input dead zone of gm1(one side)	VDZSP1	2	50	100	mV	GVSW=L
	Input dead zone of gm2(one side)	VDZSP2	10	210	460	mV	GVSW=H
	Input output gain 1	gm1	0.8	1.0	1.2	A/V	SPRNF=0.2Ω GVSW=L
	Input output gain 2	gm2	0.16	0.2	0.24	A/V	SPRNF=0.2Ω GVSW=H
	Output On resistor (top and bottom)	RONSP	–	0.6	1.2	Ω	Io=500mA
	Output limit voltage	VLIMSP	0.16	0.20	0.24	V	SPRNF=0.2Ω
	PWM frequency	fSP	60	80	100	kHz	
Actuator driver block	Input dead zone (one side)	VDZACT1,2,3	–	–	3	mV	Value of design guarantee
	Output offset voltage	VOO1,2,3	-50	–	50	mV	
	Voltage gain	GVC1,2,3	12.0	14.0	16.0	dB	
	Output On resistor (top and bottom)	RON1,2,3	–	1.3	2.0	Ω	Io=500mA
	PWM frequency	f1,2,3CH	240	300	360	kHz	
Others	Vref drop mute ON threshold voltage	VMVref	–	0.7	1.0	V	
	Vcc drop mute ON threshold voltage	VMVcc	3.2	3.6	4.0	V	
	Standby High level voltage range	VSTH	2.6	–	3.3	V	
	Standby Hi-Z level voltage range	VSTHZ	1.6	–	2.0	V	OPEN(Hi-z) is also available.
	Standby Low level voltage range	VSTL	0	–	1.0	V	

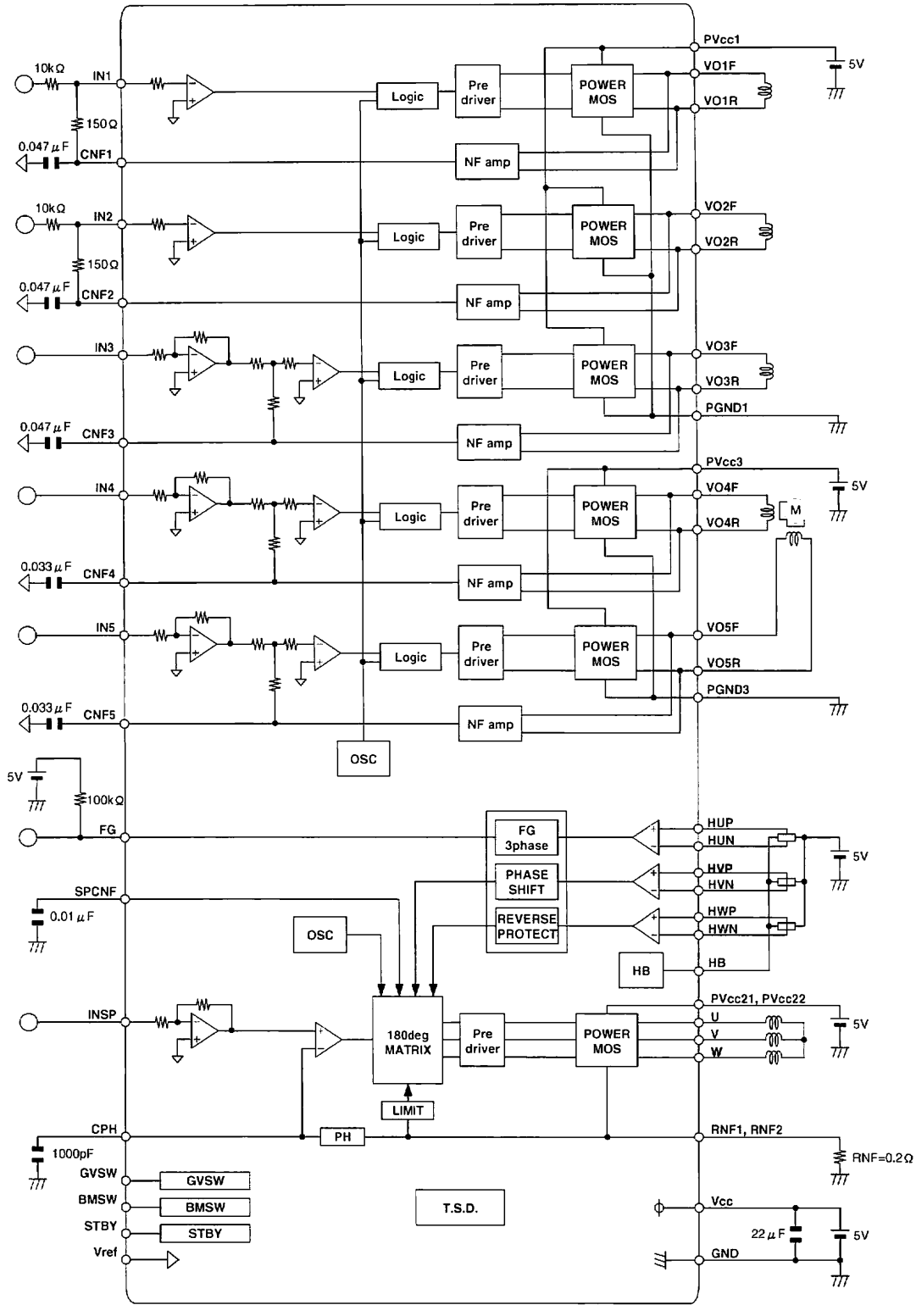
○Package outlines



(UNIT : mm)

Figure No. ; EX259-5001-1

○Block diagram / Application circuit



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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

As of 18th. April 2005