Structure Silicon Monolithic Integrated Circuit

Product series PWM Driver for combi drive

Type **BH5511KV**

Function
- Super silent spindle drive by S!PWM$^{\times 2}$ technology.
- Built in 3mode 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	-30～85	℃
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〕

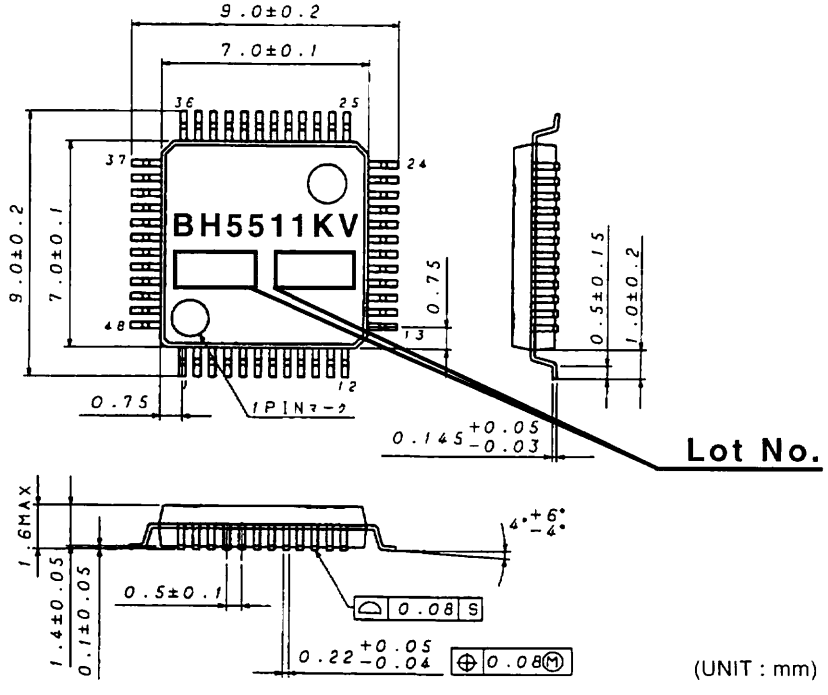
Parameter	Symbol	MIN.	TYP.	MAX.	Unit
Power MOS supply voltage	PVcc	3.0	5.0	5.5	V
Control circuit power supply voltage	Vcc	4.0	5.0	5.5	V

○Electrical characteristics

(Unless otherwise noted Ta=25℃, Vcc=PVcc=5V, Vref=1.65V, RL(act)=8Ω+47μH, RL(SP)=2Ω+47μH, RNF=0.33Ω)

Parameter		Symbol	MIN.	TYP.	MAX.	Unit	Condition
Circuit current	Quiescent current	ICC	–	12	20	mA	VST=2V VIN=3.3V
	Current in standby mode	IST	–	–	0.1	mA	VST=0.5V
Spindle driver block	Input dead zone of L (one side)	VDZSPL	2	150	300	mV	gain L (GVSW=H)
	Input dead zone of M (one side)	VDZSPM	2	75	150	mV	gain M (GVSW=M)
	Input dead zone of H (one side)	VDZSPH	2	50	100	mV	gain H (GVSW=L)
	Input output gain L	gmL	0.12	0.17	0.22	A/V	SPRNF=0.33Ω
	Input output gain M	gmM	0.23	0.33	0.43	A/V	SPRNF=0.33Ω
	Input output gain H	gmH	0.35	0.5	0.65	A/V	SPRNF=0.33Ω
	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=0.33Ω
	PWM frequency	fSP	65	85	105	kHz	
	GVSW H Voltage	VGVH	2.3	–	3.3	V	gain L
	GVSW M Voltage	VGVM	1.2	–	1.6	V	gain M
	GVSW L Voltage	VGVL	–	–	0.5	V	gain H
Actuator / Stepping driver block	Output offset voltage	VOO1～5	-50	–	50	mV	
	Voltage gain (CH1,2,4,5)	GVC1,2,4,5	15.5	17.5	19.5	dB	
	Voltage gain (CH3)	GVC3	6.0	8.0	10.0	dB	
	Output On resistor (top and bottom)	RON1,2,3	–	1.3	2.0	Ω	Io=500mA
	Output On resistor (top and bottom)	RON4,5	–	1.5	2.3	Ω	Io=500mA
	PWM frequency	fCH1～5	215	270	325	kHz	
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	
	Standby High level voltage range	VSTH	2.3	–	3.3	V	
	Standby Hi-Z level voltage range	VSTHZ	1.2	–	1.6	V	OPEN(Hi-z) is also available.
	Standby Low level voltage range	VSTL	–	–	0.5	V	

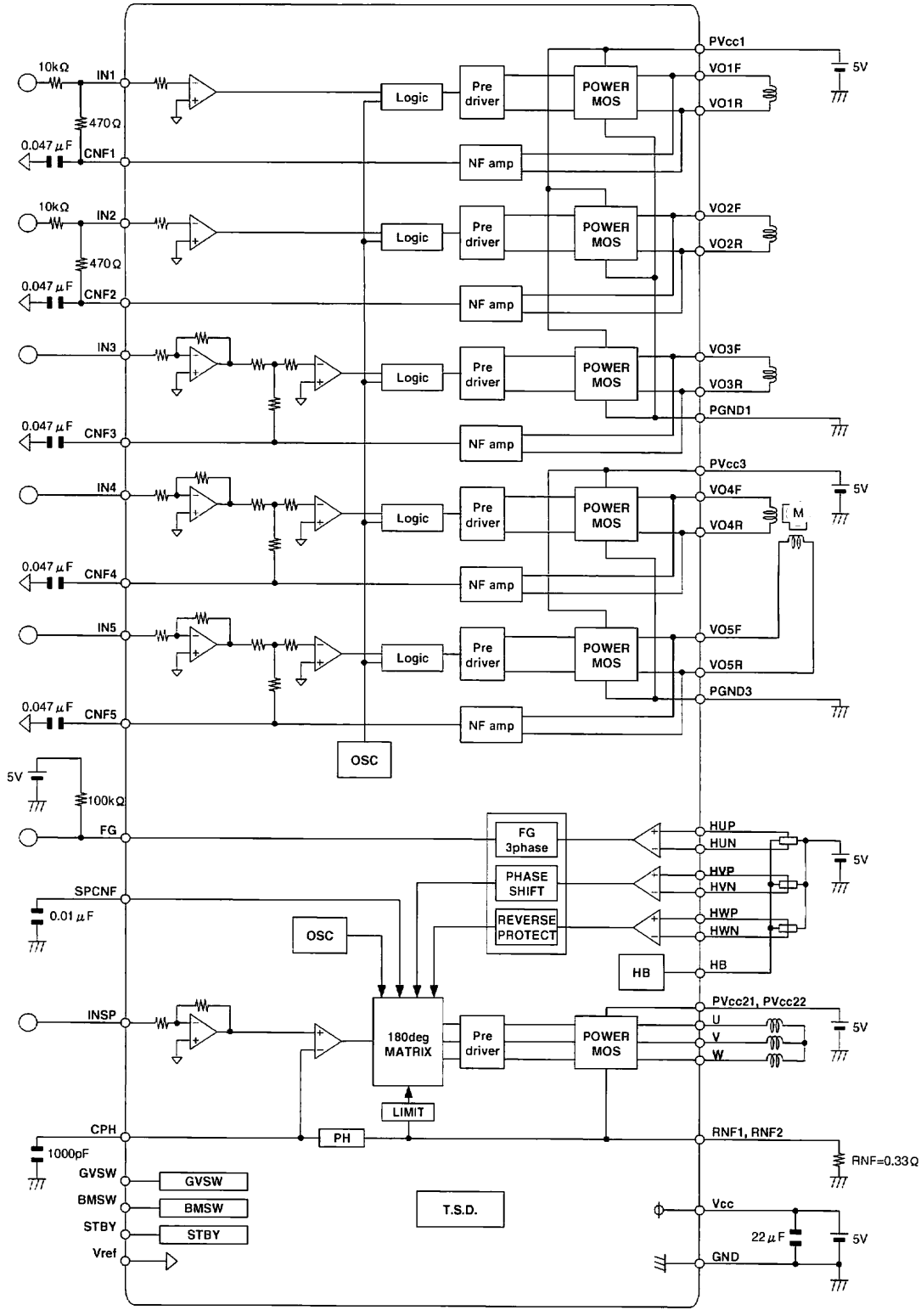
○Package outlines



(UNIT : mm)

Figure No. ; EX259-5001-1

○Block diagram / Application circuit



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