Structure Silicon Monolithic Integrated Circuit

Product series PWM Driver for combi drive

Type **BH5502KV**

Function
- 3-phase-sensor-less system, therefore don't need three hall sensors for spindle motor driver.
- Stability high-speed start from the state of the step for spindle motor driver.

○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〕

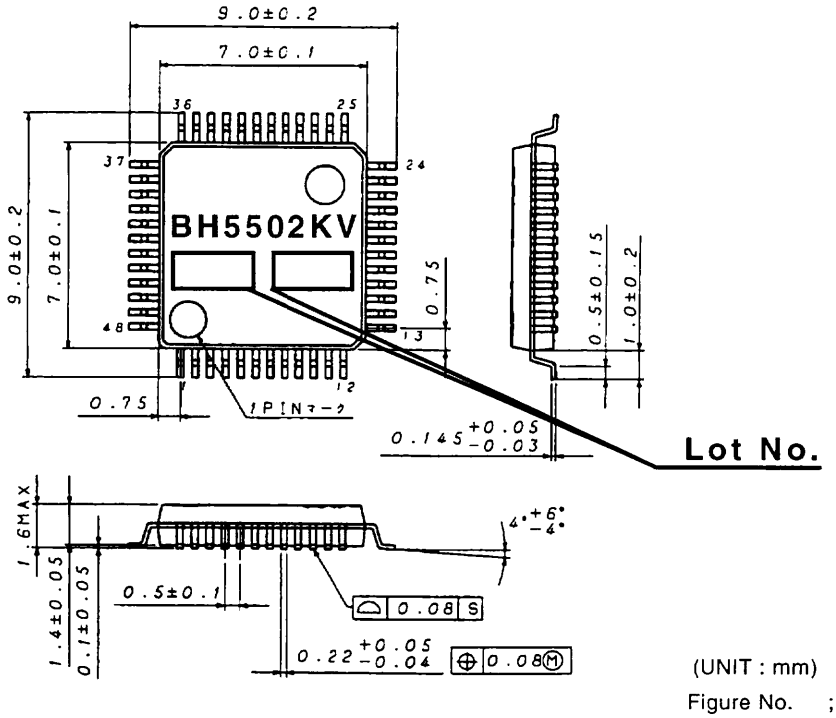
Parameter	Symbol	MIN	TYP	MAX	Unit
Power MOS supply voltage	PVcc	4.0	5.0	5.5	V
Control circuit power supply voltage	Vcc	4.0	5.0	5.5	V

○Electrical characteristics

(Unless otherwise noted Ta=25℃, Vcc=PVcc=5V, Vref=1.25V, RL(ACT,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	

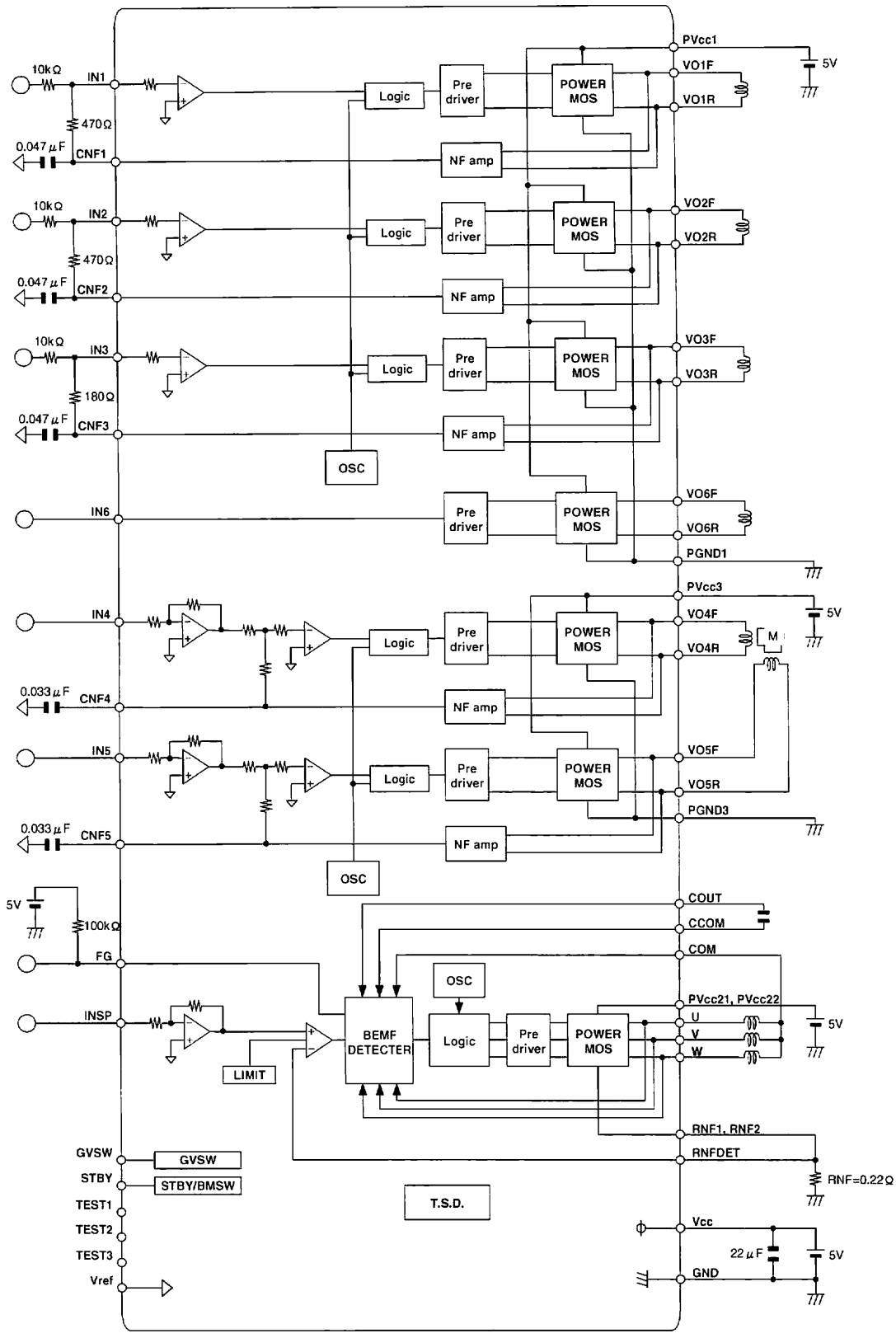
○Package outlines



(UNIT : mm)

Figure No. ; EX259-5001-1

○Block diagram / Application circuit



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