ROHM

Structure	Silicon Monolithic Integrated Circuit
Product series	7ch Power Driver for CD,DVD±RW,DVD-RAM
Type	BD7776ARFS
Characteristic	・3-phase-sensor-less system, therefore don't need three hall sensors. ・Output current detection resister is not necessary with internally equipped detection circuit.

○Absolute maximum ratings

Parameter	Symbol	Limits	Unit
POWER MOS Power supply voltage	SPVM,SLVM	15 #1	V
Preblock/BTL powerblock Power supply voltage	Vcc, AVM,LDVM	15	V
PWM control block Power supply voltage	DVcc	7	V
Power dissipation	Pd	1.5 #2	W
Operating temperature range	Topr	-20～70	℃
Storage temperature	Tstg	-55～150	℃
Junction temperature	Tjmax	150	℃

#1 POWER MOS output terminals (29～32, 35～37pin) is contained.
#2 PCB (70mm×70mm×1.6mm,occupied copper foil is less than 3%,glass epoxy standard board) mounting.
Reduce power by 12mW for each degree above 25℃.

○Recommended operating conditions (Ta=-20～+70℃)
(Set the power supply voltage taking allowable dissipation into considering)

Parameter	Symbol	MIN	TYP	MAX	Unit
Spindle driver powerblock power supply voltage	SPVM	—	Vcc#3	—	V
Sled motor driver powerblock power supply voltage	SLVM	—	Vcc#3	—	V
Preblock power supply voltage	Vcc	10.8	12	13.2	V
Loading driver power block power supply voltage	LDVM	4.3	5.0	Vcc#3	V
Actuator driver powerblock power supply voltage	AVM	4.3	5.0	5.5	V
PWM control block power supply voltage	DVcc	4.3	5.0	5.5	V
Spindle driver output current	Iosp	—	1.0	2.5#4	A
Actuator/sled motor/loading motor driver output current	Ioo	—	0.5	0.8	A

#3 Set the same supply voltage to SPVM,SLVM and Vcc.
#4 The current is guaranteed 3.5A in case of the Short-circuit braking mode and the current which is turned on/off in a duty-ratio of less than 1/10 with a maximum on-time of 5msec.

This product isn't designed for protection against radioactive rays.

Status of this document
The Japanese version of this document is the formal specification.
A customer may use this translation version only for a reference to help reading the formal version.
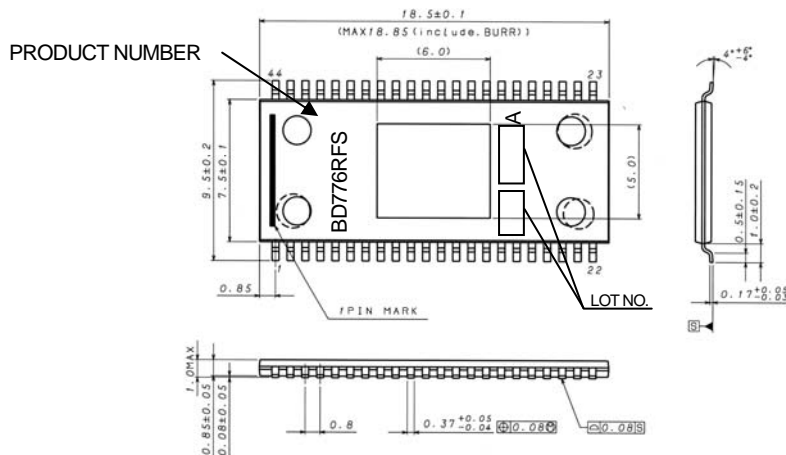**If there are any differences in translation version of this document , formal version takes priority.**
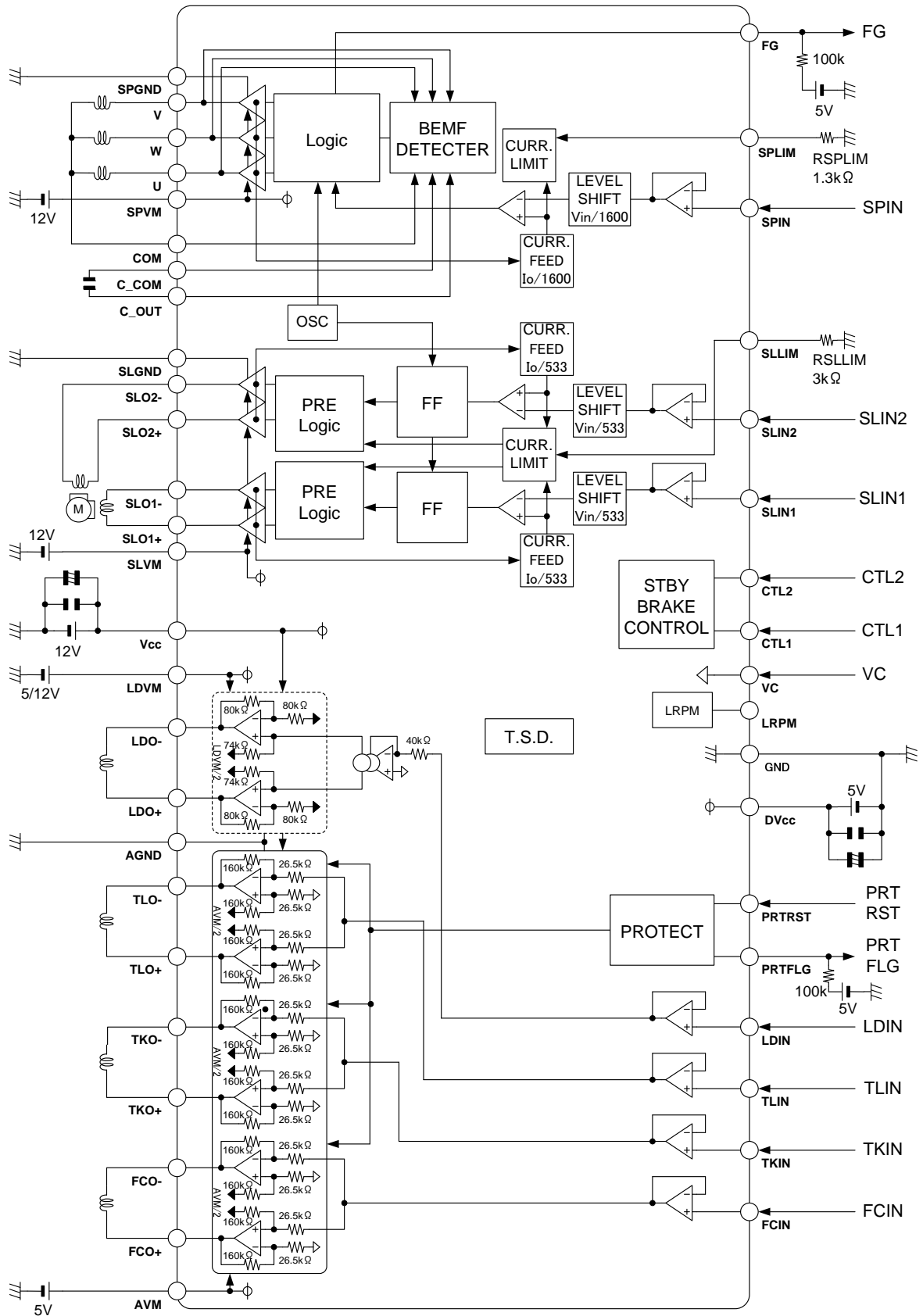
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○Electrical characteristics

(Unless otherwise noted, Ta=25℃, Vcc=SPVM=SLVM=12V, DVcc=AVM=LDVM=5V, VC=1.65V, RL=8Ω, RLSP=2Ω)

Parameter		Symbol	MIN.	TYP.	MAX.	Unit	Condition
Circuit current	Quiescent current 1	IQ1	—	14	25	mA	Vcc（When Loading OFF）
	Quiescent current 2	IQ2	—	7	12	mA	Vcc（When Loading ON）
	Quiescent current 3	IQ3	—	6.5	11	mA	DVcc
	Standby-on current1	IST1	—	0	100	μA	Vcc
	Standby-on current 2	IST2	—	0	100	μA	DVcc
Sled motor driver block	Input dead zone (one side)	VDZSL	0	20	80	mV	
	Input output gain	gmSL	0.75	1.0	1.25	A/V	RSLLIM=3kΩ
	Output ON resistor	RONSL	—	2.2	3.0	Ω	IL=500mA
	Output limit current	ILIMSL	0.85	1.0	1.15	A	RSLLIM=3kΩ
	PWM frequency	fsl	—	100	—	kHz	
Spindle driver block	Input dead zone (one side)1	VDZSP1	20	55	90	mV	VLRPM=L
	Input dead zone (one side)2	VDZSP2	20	220	450	mV	VLRPM=H
	Input output gain H	gmSPH	2.3	3.0	3.7	A/V	RSPLIM=1.3kΩ, VLRPM=L
	Input output gain L	gmSPL	0.46	0.6	0.74	A/V	RSPLIM=1.3kΩ, VLRPM=H
	Output ON resistor	RONSP	—	1.1	1.7	Ω	IL=500mA
	Output limit current	ILIMSP	1.3	1.55	1.8	A	RSPLIM=1.3kΩ
	PWM frequency	fsp	—	167	—	kHz	
Focus driver block	Output offset voltage	VOFF	-20	0	20	mV	
	Output saturation Voltage	VOHF	—	0.7	1.6	V	IL=500mA
	Voltage gain H	GVFH	19.6	21.6	23.6	dB	VLRPM=L
	Voltage gain L	GVFL	13.6	15.6	17.6	dB	VLRPM=H
Tracking driver block	Output offset voltage	VOFT	-20	0	20	mV	
	Output saturation Voltage	VOHT	—	0.7	1.6	V	IL=500mA
	Voltage gain	GVT	19.6	21.6	23.6	dB	
Tilt driver block	Output offset voltage	VOFTL	-50	0	50	mV	
	Output saturation Voltage	VOHTL	—	0.7	1.6	V	IL=500mA
	Voltage gain	GVTL	19.6	21.6	23.6	dB	
Loading driver block	Output offset voltage	VOFLD	-50	0	50	mV	
	Output saturation Voltage 1	VOLD1	—	0.6	1.6	V	IL=500mA、LDVM=5V
	Output saturation Voltage 2	VOLD2	—	1.9	3.5	V	IL=500mA、LDVM=12V
	Voltage gain	GVLD	15.5	17.5	19.5	dB	
Others	VC drop-muting	VMVC	0.4	0.7	1.0	V	
	Vcc drop-muting	VMVcc	3.45	3.85	4.25	V	

○Package outlines

PRODUCT NUMBER

BD776RFS

↑PIN MARK

LOT NO.

HTSSOP-A44R (UNIT : mm)

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○Block diagram / Application circuit

FG

100k

5V

SPGND

V

W

U

SPVM

12V

Logic

BEMF DETECTER

CURR. LIMIT

LEVEL SHIFT Vin/1600

SPLIM

RSPLIM 1.3kΩ

SPIN

COM

C_COM

C_OUT

CURR. FEED Io/1600

OSC

SLGND

SLO2-

SLO2+

SLO1-

SLO1+

SLVM

12V

PRE Logic

FF

PRE Logic

FF

CURR. FEED Io/533

CURR. LIMIT

LEVEL SHIFT Vin/533

LEVEL SHIFT Vin/533

CURR. FEED Io/533

SLLIM

RSLLIM 3kΩ

SLIN2

SLIN1

Vcc

12V

LDVM

5/12V

LDO-

LDO+

AGND

80kΩ 80kΩ

74kΩ

74kΩ

80kΩ 80kΩ

LDVM/2

40kΩ

T.S.D.

STBY BRAKE CONTROL

CTL2

CTL1

VC

LRPM

GND

DVcc

5V

TLO-

TLO+

160kΩ 26.5kΩ

160kΩ 26.5kΩ

160kΩ 26.5kΩ

160kΩ 26.5kΩ

AVM/2

PROTECT

PRTRST

PRT RST

PRTFLG

PRT FLG

100k

5V

TKO-

TKO+

160kΩ 26.5kΩ

160kΩ 26.5kΩ

160kΩ 26.5kΩ

160kΩ 26.5kΩ

AVM/2

LDIN

TLIN

TKIN

FCIN

FCO-

FCO+

160kΩ 26.5kΩ

160kΩ 26.5kΩ

160kΩ 26.5kΩ

160kΩ 26.5kΩ

AVM/2

AVM

5V

M

REV. A

Notes

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