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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

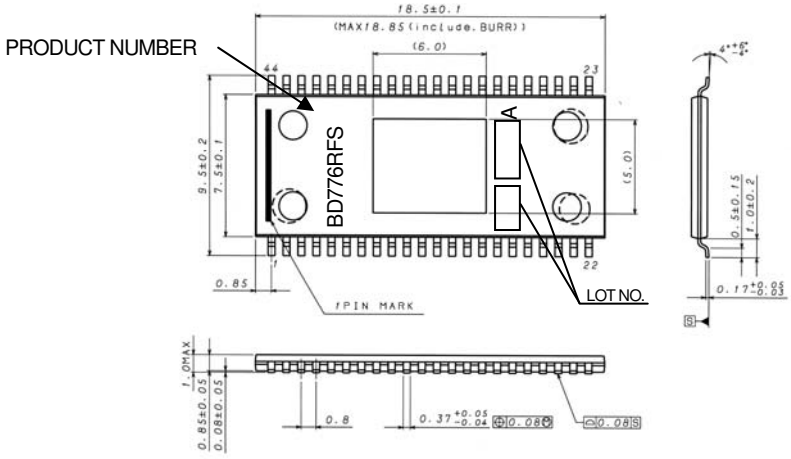
#3 Set the same supply voltage to SPVM,SLVM and Vcc.
#4 The current is guaranteed 3.5A in case of the Short-circuit braking mode and the current which is turned on/off in a duty-ratio of less than 1/10 with a maximum on-time of 5msec.

○Electrical characteristics

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

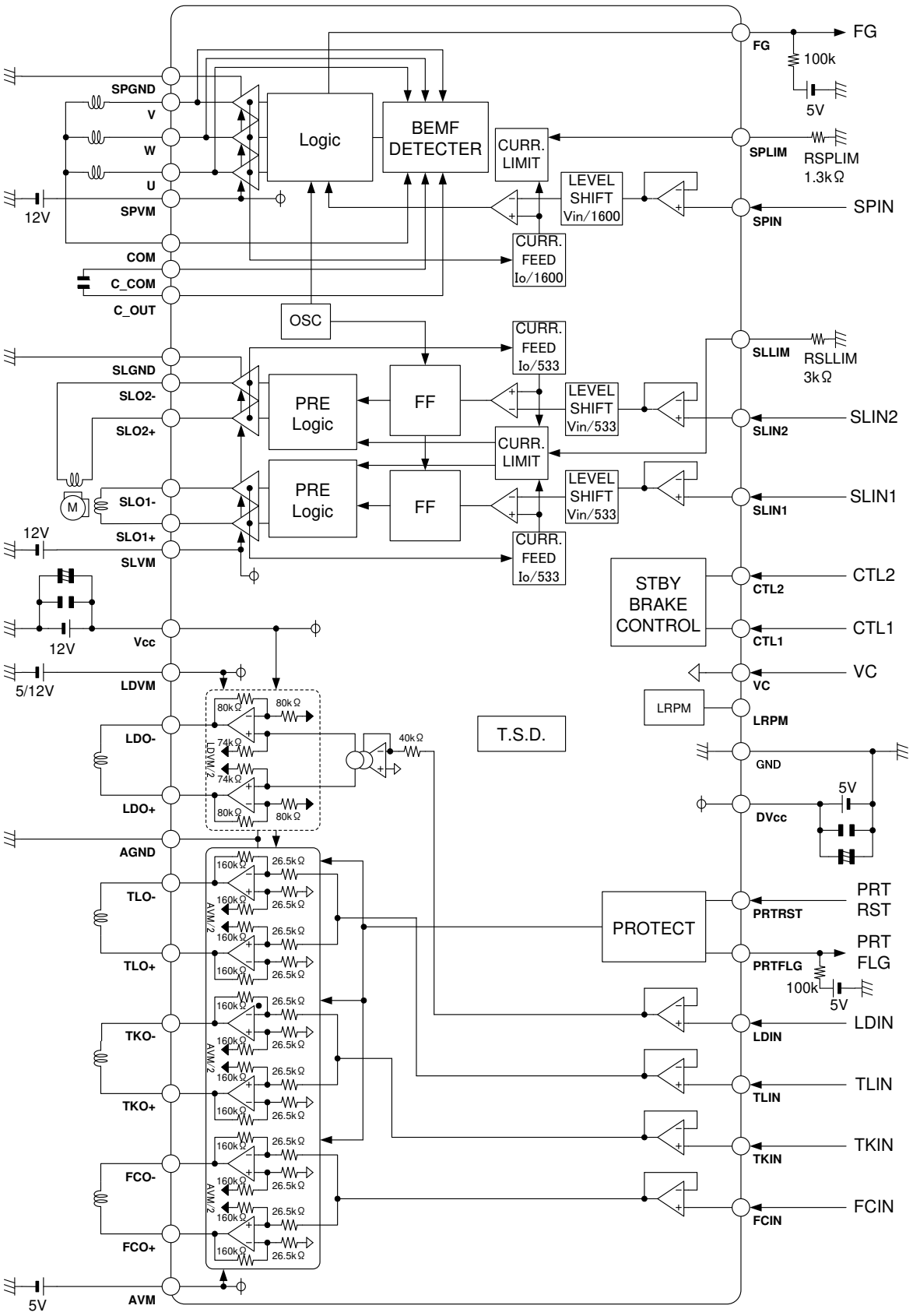
Parameter		Symbol	MIN.	TYP.	MAX.	Unit	Condition
Circuit current	Quiescent current 1	IQ1	—	14	25	mA	Vcc (When Loading OFF)
	Quiescent current 2	IQ2	—	7	12	mA	Vcc (When Loading ON)
	Quiescent current 3	IQ3	—	6.5	11	mA	DVcc
	Standby-on current1	IST1	—	0	100	μA	Vcc
	Standby-on current 2	IST2	—	0	100	μA	DVcc
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



HTSSOP-A44R (UNIT : mm)

○Block diagram / Application circuit



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