High Performance Class-D Speaker Amplifier Series

BD5424EFS Evaluation Board Information

BD5424EFS-EVK-001

●General

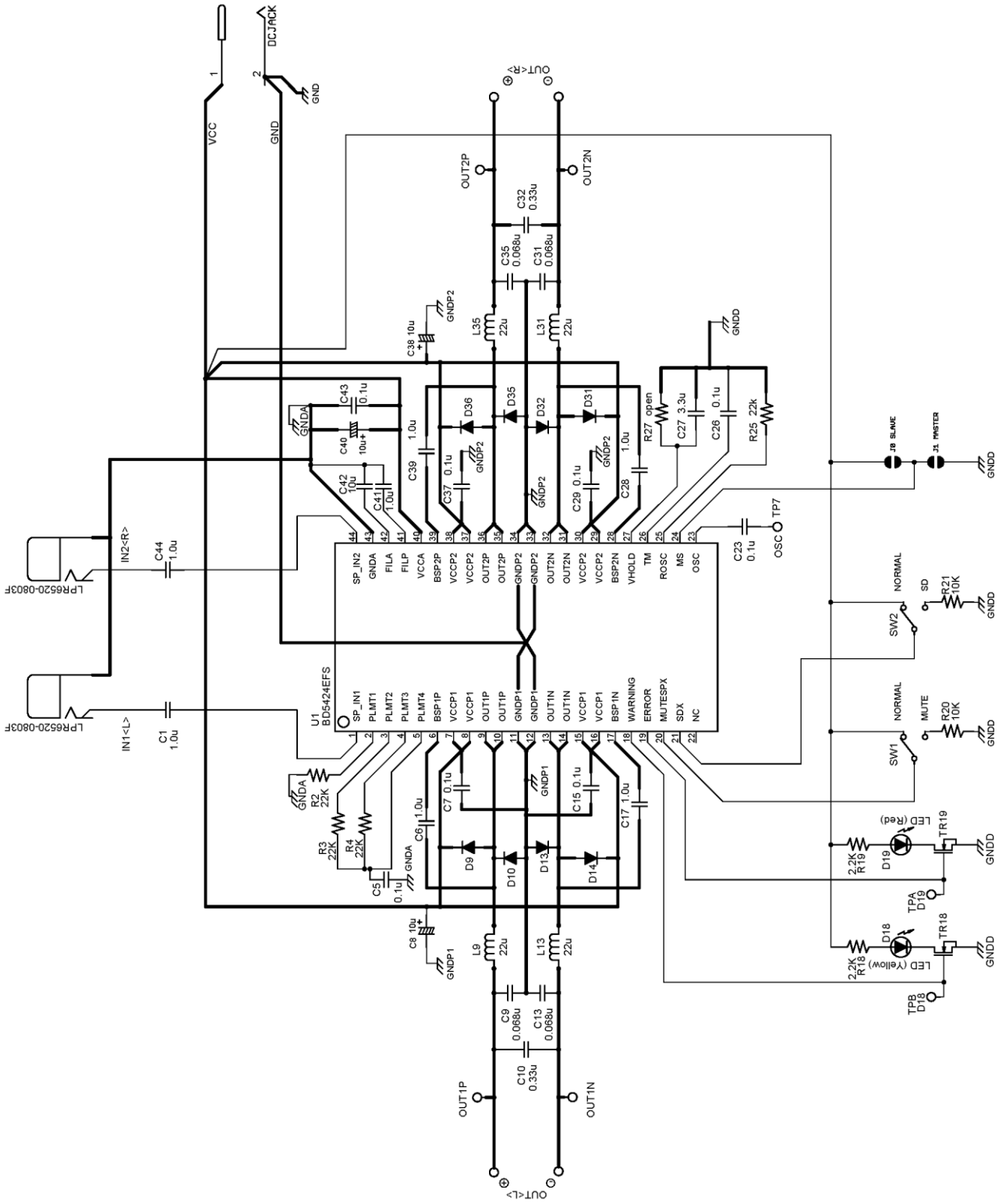
BD5424EFS is a 20W + 20W stereo class-D power amplifier IC, developed for space-saving and low heat-generation applications such as low-profile TV sets. The IC employs state-of-the-art Bipolar, CMOS, and DMOS (BCD) process technology that eliminates turn-on resistance in the output power stage and internal loss due to line resistances up to an ultimate level. With this technology, the IC has achieved high efficiency of 91% (10W + 10W output with 8Ω load), which is the top class in the industry. The IC, in addition, employs a compact back-surface heat radiation type power package to achieve low power consumption and low heat generation and eliminates necessity of installing an external radiator, up to a total output of 40W. This product satisfies both needs for drastic downsizing, low-profile structures and powerful, high-quality playback of the sound system.

●Index

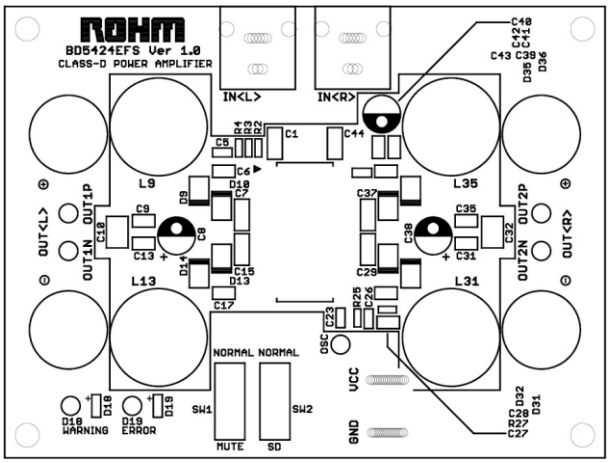
●Conditions

Item	Symbol	Range	Unit
Supply Voltage	V_{CC}	+10 ～ +18	V
Input Voltage	V_{IN}	-0.2 ～ V_{CC}+0.2	V
Load Impedance	R_L	3.6≦	Ω

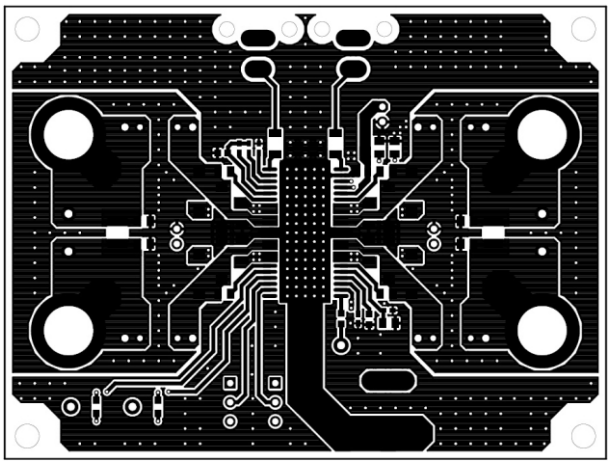
●Circuit Diagram



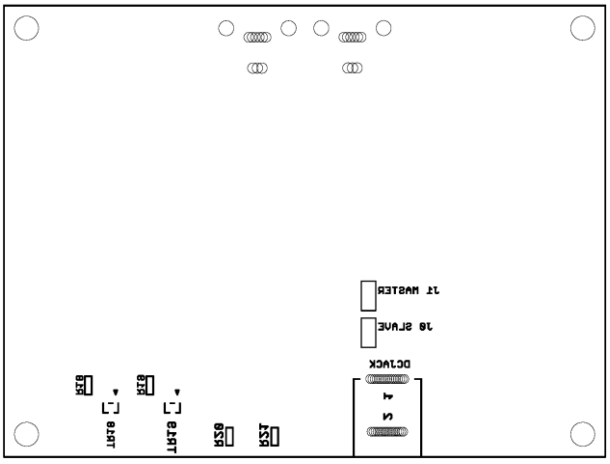
●PCB layout



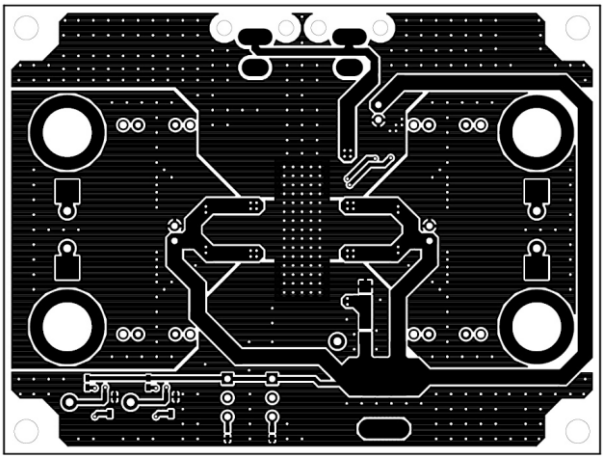
TOP SILKSCREEN – TOP VIEW



TOP LAYER – TOP VIEW

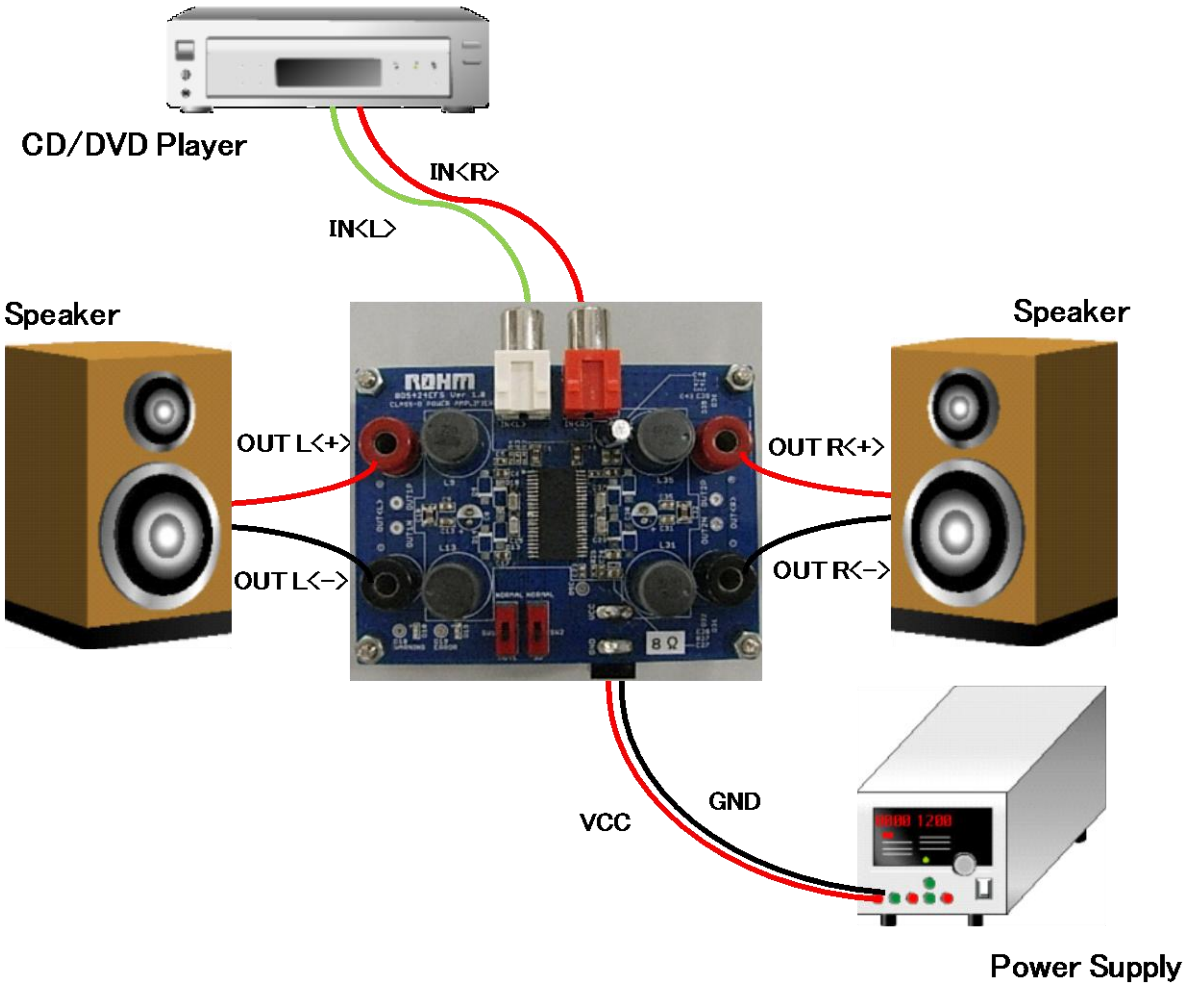


BOTTOM SILKSCREEN – TOP VIEW



BOTTOM LAYER – TOP VIEW

●Usage



① Please set the switches SD (Shutdown mode) and MUTE (Mute mode).
② Connect Power supply, Speaker, and Audio Source.
③ Set Power supply 12V(Typ.).
④ Set the switches in order of SD → NORMAL (Normal mode) and MUTE → NORMAL (Sound output mode)
⑤ In the end of operation, set the switches in order of NORMAL → MUTE（Mute mode）, NORMAL → SD (Shutdown mode), and set supply voltage OFF.

●BOM List

[RL=8Ω]

Parts	Parts No.	Value	Company	Product No.	Rated Voltage	Tolerance
IC	IC1	—	ROHM	BD5424EFS	—	—
SBD	D9, D10, D13, D14, D31, D32, D35, D36 (Not mount)	—	ROHM	RB162M-40	40V	—
Inductor	L9, L13, L31, L35	22μH	TOKO	A7503AY-220M	-	(±20%)
Resister	R2, R3, R4	22kΩ	-	1005 size	1/16W	F(±1%)
	R18, R19	2.2kΩ		1005 size		
	R20, R21	10kΩ		1005 size		
	R25	22kΩ		1005 size		
	R27	open		-		
Capacitor	C6, C17, C28, C39	1.0uF	-	2012 size	50V	B(±10%)
	C7, C15,C29, C37	0.1uF		2012 size	50V	B(±10%)
	C9, C13 C31, C35	0.068uF		1608 size	50V	B(±10%)
	C10, C32	0.33uF		2012 size	50V	B(±10%)
	C27	3.3μF		2012 size	25V	B(±10%)
	C5, C23, C26, C43	0.1μF		1608 size	50V	R(±10%)
	C42	10μF		2012 size	16V	B(±10%)
	C41	1μF		2012 size	25V	B(±10%)
	C1, C44	1.0μF		1608 size	25V	B(±10%)
Electrolytic Capacitor	C8, C38	100uF		φ8.0mm×11.5mm	25V	±20%
	C40	10uF		φ5.0mm×11mm	50V	±20%
LED	D19	RED		1608 size		—
	D18	YELLOW		1608 size		-
MOSFET	Tr18, Tr19	Nch	ROHM	RSU002N06	60V	—
PIN Jack	IN<L>	—			—	—
	IN<R>	—			—	—
Chip Jack	OUT+	—		(Red)		—
	OUT−	—		(Black)		—

Notes

1) The information contained herein is subject to change without notice.

2) Before you use our Products, please contact our sales representative and verify the latest specifications :

3) Although ROHM is continuously working to improve product reliability and quality, semiconductors can break down and malfunction due to various factors.
Therefore, in order to prevent personal injury or fire arising from failure, please take safety measures such as complying with the derating characteristics, implementing redundant and fire prevention designs, and utilizing backups and fail-safe procedures. ROHM shall have no responsibility for any damages arising out of the use of our Poducts beyond the rating specified by ROHM.

4) Examples of application circuits, circuit constants and any other information contained herein are provided only to illustrate the standard usage and operations of the Products. The peripheral conditions must be taken into account when designing circuits for mass production.

5) The technical information specified herein is intended only to show the typical functions of and examples of application circuits for the Products. ROHM does not grant you, explicitly or implicitly, any license to use or exercise intellectual property or other rights held by ROHM or any other parties. ROHM shall have no responsibility whatsoever for any dispute arising out of the use of such technical information.

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7) For use of our Products in applications requiring a high degree of reliability (as exemplified below), please contact and consult with a ROHM representative : transportation equipment (i.e. cars, ships, trains), primary communication equipment, traffic lights, fire/crime prevention, safety equipment, medical systems, servers, solar cells, and power transmission systems.

8) Do not use our Products in applications requiring extremely high reliability, such as aerospace equipment, nuclear power control systems, and submarine repeaters.

9) ROHM shall have no responsibility for any damages or injury arising from non-compliance with the recommended usage conditions and specifications contained herein.

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