

STRUCTURE Silicon Monolithic Integrated Circuit

TYPE Low Current Consumption MOS System Power Supply

PRODUCT SERIES BD4912-V4

FEATURES • Very low current consumption

· With low ESR capacitor for output

○ABSOLUTE MAXIMUM RATINGS (Ta=25°C)

PARAMETER	SYMBOL	LIMITS	UNIT
Supply Voltage 1	Vcc1	36	٧
Supply Voltage 2	Vcc2	36	V
SEL1 Supply Voltage	SEL1	12	V
SEL2 Supply Voltage	SEL2	12	٧
Power Dissipation	Pd	3400	mW
Operating Temperature Range	Topr	-40~+85	C
Storage Temperature Range	Tstg	-55~+150	C
Peak Supply Voltage 1	Vcc1 PEAK	50(*1)	V
Peak Supply Voltage 2	Vcc2 PEAK	50(*1)	V

^(*1)tr(rising time)is over 1msec, Bias voltage is less than 200msec.

ORECOMMENDED OPERATING RANGES (Ta=25°C)

PARAMETER	SYMBOL	LIMITS			UNIT	COMMENT
TANAMETER	STIVIBOL	MIN.	TYP.	MAX.	OINIT	COMMENT
Recommended Supply Voltage Range 1	Vcc1	10	14.4	18	٧	Except VDD and ILM output
Recommended Supply Voltage Range 2	Vcc1'	11.5	14.4	18	>	ILM output
Recommended Supply Voltage Range 3	Vcc2	6.3	14.4	18	>	VDD output

The above conditions may not meet electrical characteristic.

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.

^{*}This product is not designed for protection against radioactive rays.

^{*}The product described in this specification is a strategic product (and/or service) subject to COCOM regulations. It should not be exported without authorization from the appropriate government.

^{*}Status of this document



OELECTRICAL CHARACTERISTICS (Unless otherwise specified, Ta=25°C, Vcc1=Vcc2=14.4V)

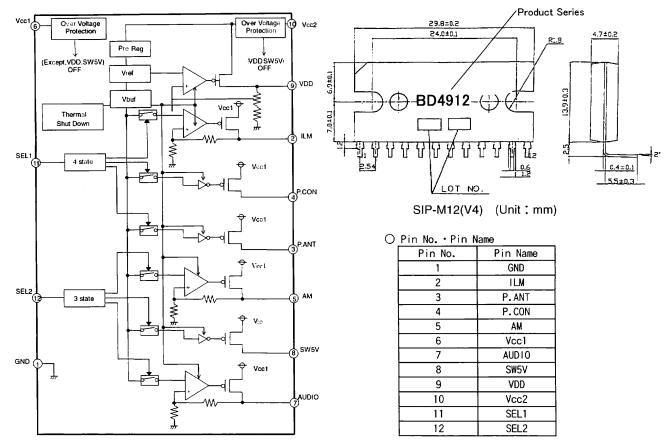
ELECTRICAL CHARACTERIS	TICS (Unless	otnerwise	LIMITS	i, ia=25 C	, VCC 1=VC	562=14.4V)
PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITION
Standby Circuit Current	lst			110	μΑ	
VDD						T
Output Voltage (VDD) 1	Vo1	4.80	5.00	5.20	V	lo=300mA,Vcc2=10~18V
Dropout Voltage	△Vo1	-	0.8	1.1	V	lo=300mA,Vcc2-Vo1
Peak Output Current	lo1	400	•	-	mA	Vo1≥4.8V
Ripple Rejection Ratio	R.R1	50	55	-	dB	f=100Hz,VRR=-10dBV,Io=300mA
Low VCC Output Voltage	Vo1'	4.8		•	V	Vcc2=5V,lo=10mA
AUDIO (SEL2>2.0V)						
Output Voltage (AUDIO) 2	Vo2	7.8	8.12	8.3	٧	lo2=200mA,Vcc1=10~18V
Dropout Voltage	△Vo2	-	0.4	0.7	V	lo2=200mA,Vcc1-Vo2
Peak Output Current	lo2	200	-	-	mA	Vo2≧7.8V
Ripple Rejection Ratio	R.R2	45	55	-	dB	f=100Hz,VRR=-10dBV,io=200mA
P.CON (SEL1>3.5V)			•			
Dropout Voltage (P.CON) 3	△Vo3	-	0.4	0.7	V	Io3=350mA,Vcc1-Vo3
Peak Output Current	lo3	350	-		mA	Vo3≧13.7V
P.ANT (SEL1>7.0V)	L		1.	ı		<u> </u>
Dropout Voltage (P.ANT) 4	△Vo4	-	0.4	0.7	V	lo4=300mA,Vcc1-Vo4
Peak Output Current	104	300	-	-	mA	Vo4≧13.7V
AM (SEL2>3.5V)			l	l	1	1
Output Voltage (AM) 5	Vo5	7.5	7.9	8.3	l v	lo5=25mA,Vcc1=10~18V
Dropout Voltage	△Vo5	- 7.5	0.4	0.7	V	Io5=25mA,Vcc1-Vo5
Peak Output Current	lo5	25	0.4	0.7	mA	Vo5≥7.5V
Ripple Rejection Ratio	R.R5	45	55	_	dB	
SW5V (SEL2>2.0V)	n.no	1 45		-	L db	f=100Hz,VRR=-10 d BV,Io=25mA
· · · · · · · · · · · · · · · · · · ·	T 414-6	т	0.45	1 00	Τ	La Carron A MDD Mag
Dropout Voltage (SW5V) 6	△V06	-	0.15	0.3	V	106=30mA,VDD-V06
Peak Output Current	lo6	30	-	-	mA	Vo6≧VDD-0.2V
ILM (SEL1>1.5V)					т	1-2
Output Voltage (ILM) 7	Vo7	9.9	10.3	10.7	V	lo7=200mA,Vcc1=12~18V
Dropout Voltage	△Vo7	<u> </u>	0.5	0.8	V	lo7=200mA,Vcc1-Vo7
Peak Output Current	107	200	•		mA	Vo7≧9.9V
Ripple Rejection Ratio	R.R7	40	50	•	dB	f=100Hz,VRR=-10dBV,lo=200mA
Input (SEL1)		т	· -			
Standby Level	Vth1-1	-	-	1.0	V	
ILM ON	Vth1-2	1.5	-	3.0	V	
ILM, P-CON ON	Vth1-3	3.5	-	5.0	٧	
ILM, P-CON, P-ANT ON	Vth1-4	7.0	-	12.0	V	
SW1 Input Impedance	Rin1	100	-	-	kΩ	
Input (SEL2)						
Standby Level	Vth2-1	-	-	1.0	V	
AUDIO, SW5V ON	Vth2-2	2.0	-	3.0	V	
AUDIO, SW5V, AM ON	Vth2-3	3.5	-	VDD	V	1
SW2 Input Impedance	Rin2	100	-	-	kΩ	
	1	1				<u> </u>
Overvoltage	Vovp	27	30	33	l v	

^{*}Use Peak Output Current less than Limits Min. values.



OBLOCK DIAGRAM

OPHYSICAL DIMMENSIONS, MARKING



*Refer to the Technical Note about the details of the application.

NOTES FOR USE

1 .Ovre Voltage Protection Circuit

The Over Voltage Protection Circuit function is that when the difference voltage of Vcc1 and GND exceeds over about 30V(room temperature), the each output except VDD and SW5V turn off, and when the difference voltage of Vcc2 and Gnd exceeds over about 30V, VDD and SW5V output turn off. Please be sure of the power supply voltage range you use.

Bypass Capacitor between Vcc1,2 and Gnd It recommend to put into bypass capacitor with 0.47 μ F degree into the nearest position between Vcc1, 2 and Gnd.

${\tt 3}\,\,$. The oscillation stopper of output capacitor

Please use the oscillation stopper between VDD, AUDIO, AM, SW5V, P.CON, P.ANT and ILM each output and Gnd. The capacitor is over 0.1 μ F and recommended the small temperature change and over B-class DC characteristics. When selecting the value of the output capacitor, please make sure that the transient response.

4 . Over current Protection Circuit

Each output, VDD, AUDIO, AM, SW5V, P.CON, P.ANT and ILM have the Over Current Protection circuit that is enough for the each output current ability, and it protects the IC destruction against the huge current load.

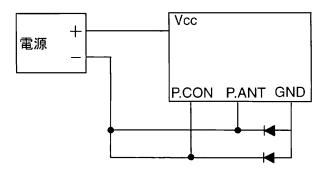
The protection circuits are "Down Type" for VDD and SW5V and "fold back typer" for others and designed not as to occur the Latch Up by the huge current in a moment by the huge capacitor. But, these protection circuits are effective for preventing destruction by unexpected accident. Please don't use in the situation of continuous protection circuit ON and off. And for the peak output current ability, because this chip has minus characteristic, be careful for the thermal design.



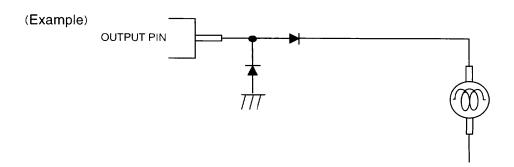
5 .Thermal Shut Down Circuit

The Thermal Shut Down circuit is built in IC to prevent the damage due to over heating. Therefore, all the output except VDD are turned off when it works, and turned on when the temperature goes down to the specified level. But, built-in the IC a temperature control circuit to protect itself. Make sure of the thermal design under 150°C.

6 .P.CON, P.ANT terminals short to Gnd In case of the P.CON, P.ANT connect to Battery (-) terminal: short to Gnd, and IC Gnd(1pin) is Open, The parasitic element occurs in the IC and IC might be destroyed. We recommend taking countermeasure as the using shotteky diode between P.CON, P.ANT and Gnd.



- 7 .In the application, in case of the each terminal is lower than Gnd, it recommends to use the bypass circuit.
- 8. We recommend using Diode for protection purpose in case of output pin connected with large loads of impedance or reverse current at initial stages or output off stage.



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                                                 FAX: +86(411)8230-8537
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                        TEL: +86(10)8525-2483
                                                 FAX: +86(10)8525-2489
Taiwan / Taipei
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                                                 FAX: +866(2)2503-2869
Korea / Seoul
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                                                 FAX: +82(2)8182-715
Singapore
                        TEL: +65-6332-2322
                                                 FAX: +65-6332-5662
Malaysia / Kuala Lumpur
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                                                 FAX: +60(3)7958-8377
Philippines / Manila
                        TEL: +63(2)807-6872
                                                 FAX: +63(2)809-1422
Thailand / Bangkok
                        TEL: +66(2)254-4890
                                                 FAX: +66(2)256-6334
```

Japan / (Internal Sales)

Tokyo 2-1-1, Yaesu, Chuo-ku, Tokyo 104-0082

TEL: +81(3)5203-0321 FAX: +81(3)5203-0300

Yokohama 2-4-8, Shin Yokohama, Kohoku-ku, Yokohama, Kanagawa 222-8575

TEL: +81(45)476-2131 FAX: +81(45)476-2128

Nagoya Dainagayo Building 9F 3-28-12, Meieki, Nakamura-ku, Nagoya, Aichi 450-0002

TEL: +81(52)581-8521 FAX: +81(52)561-2173

Kyoto 579-32 Higashi Shiokouji-cho, Karasuma Nishi-iru, Shiokoujidori, Shimogyo-ku,

Kyoto 600-8216

TEL: +81(75)311-2121 FAX: +81(75)314-6559

(Contact address for overseas customers in Japan)

Yokohama TEL: +81(45)476-9270 FAX: +81(045)476-9271