

STRUCTURE	Silicon Monolithic Integrated Circuit
TYPE	Bipolar System Power Supply
PRODUCT SERIES	B A 4 9 1 1 — V 4
FEATURES	<ul style="list-style-type: none"> • Terminal for micro controller power supply hold • 5ch Regulator Outputs • 2ch High Side Switches

○ABSOLUTE MAXIMUM RATINGS (Ta=25°C)

Parameter	Symbol	Limits	Unit
Supply Voltage	VCC	36	V
Power Dissipation	Pd	3400	mW
Operating Temperature Range	Topr	-30~+85	°C
Storage Temperature Range	Tstg	-55~+150	°C
Maximum Junction Temperature	Tjmax	150	°C
Peak Supply Voltage	VCC PEAK	50 (*1)	V

(*1)tr \geq 1msec Bias voltage less than 200msec

○RECOMMENDED OPERATING RANGES(Ta=25°C)

Parameter	Limits	Unit	Comment
Recommended Supply Voltage 1	10~18	V	Except VDD and ILM output
Recommended Supply Voltage 2	8.2~18	V	VDD output
Recommended Supply Voltage 3	11.4~18	V	ILM output

*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

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.

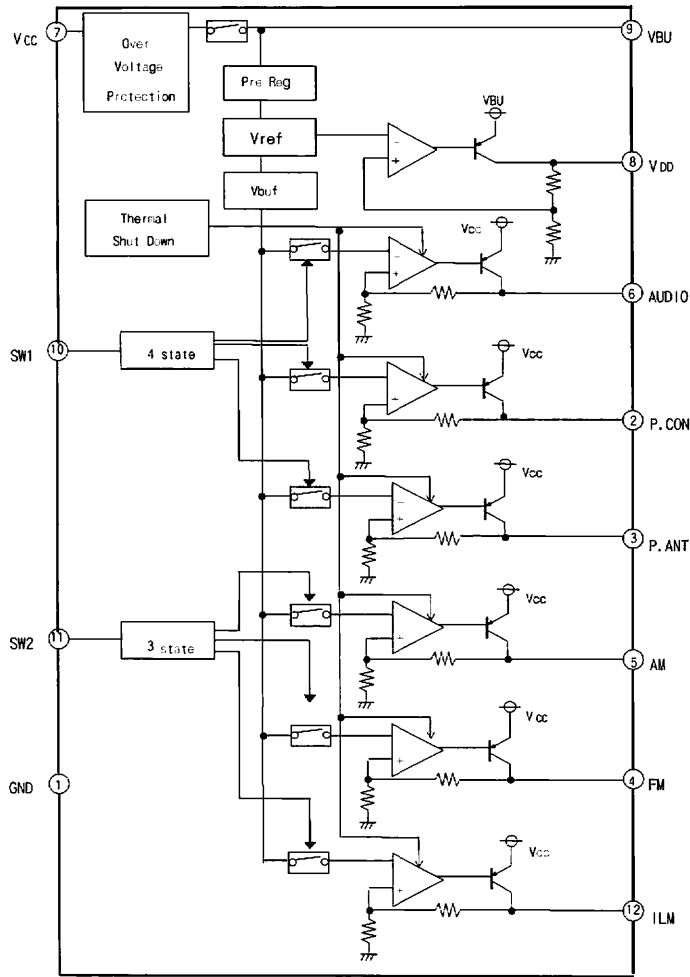
○ELECTRICAL CHARACTERISTICS(Unless otherwise specified Ta=25°C, VCC= 14.4V)

Parameter	Symbol	Limits			Unit	Condition
		Min.	Typ.	Max.		
Standby Circuit Current 1	Ist1	-	100	150	μA	VCC=13.2V
Standby Circuit Current 2	Ist2	-	100	150	μA	
Output Voltage (VDD) 1	V01	4.80	5.00	5.20	V	I0=300mA VCC=10~18V
Dropout Voltage 1	ΔV01	-	0.4	0.7	V	I0=300mA, VBU-V01
Dropout Voltage 2	ΔV01'	-	2.5	3.0	V	I0=300mA, VCC-V01
Peak Output Current	I01	300	-	-	mA	V01 ≥ 4.8V
Ripple Rejection	R.R1	-	55	-	dB	f=100Hz, VRR=-10dBV
Low Vcc Output Voltage	V01'	3.7	4.0	-	V	VCC=5V, I0=10mA
Output Voltage (AUDIO) 2	V02	7.8	8.12	8.3	V	I02=200mA, VCC=10~18V, -30°C~80°C *1
Dropout Voltage 3	ΔV02	-	0.4	0.7	V	I02=200mA, VCC-V02
Peak Output Current	I02	200	-	-	mA	V0 2 ≥ 7.8V
Ripple Rejection	R.R2	-	55	-	dB	f=100Hz, VRR=-10dBV
Dropout Voltage (P.CON) 3	ΔV03	-	0.4	0.7	V	I03=200mA
Peak Output Current	I03	300	-	-	mA	V03 ≥ 13.7V
Dropout Voltage (P.ANT) 4	ΔV04	-	0.4	0.7	V	I04=200mA
Peak Output Current	I04	300	-	-	mA	V04 ≥ 13.7V
Output Voltage (AM) 5	V05	7.5	7.9	8.3	V	I05=50mA, VCC=10~18V, -30°C~80°C *1
Dropout Voltage	ΔV05	-	0.4	0.7	V	I05=50mA
Peak Output Current	I05	50	-	-	mA	V05 ≥ 7.5V
Ripple Rejection	R.R5	-	55	-	dB	f=100Hz, VRR=-10dBV
Output Voltage (FM) 6	V06	7.8	8.12	8.3	V	I06=50mA, VCC=10~18V, -30°C~80°C *1
Dropout Voltage	ΔV06	-	0.4	0.7	V	I06=50mA, VCC-V06
Peak Output Current	I06	50	-	-	mA	V06 ≥ 7.8V
Ripple Rejection	R.R6	-	55	-	dB	f=100Hz, VRR=-10dBV
Output Voltage (ILM) 7	V07	9.9	10.3	10.7	V	I07=250mA, VCC=10~18V
Dropout Voltage	ΔV07	-	0.4	0.7	V	I07=250mA, VCC-V07
Peak Output Current	I07	250	-	-	mA	V07 ≥ 9.9V
Ripple Rejection	R.R7	-	50	-	dB	f=100Hz, VRR=-10dBV
Input Pin (SW1)						
Standby Input Voltage	Vth1-1	-	-	1.0	V	
AUDIO ON	Vth1-2	1.5	-	3.0	V	
AUDIO, P-CON ON	Vth1-3	3.5	-	5.0	V	
AUDIO, P-CON, P-ANT ON	Vth1-4	7.0	-	VCC	V	
SW1 Input Impedance	Rin1	100	-	-	kΩ	
Input Pin (SW2)						
Standby Input Voltage	Vth2-1	-	-	1.0	V	
ILM, FM ON	Vth2-2	2.0	-	3.0	V	
ILM, AM ON	Vth2-3	4.0	-	VCC	V	
SW2 Input Impedance	Rin2	100	-	-	kΩ	

*1 Design Guarantee (Output Inspection is not done on all products)

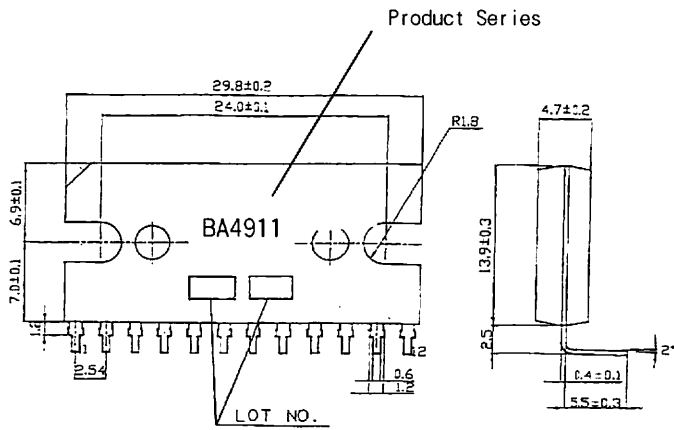
- Use Peak Output Current less than Limits Min. values.

○BLOCK DIAGRAM



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

○PHYSICAL DIMENSIONS • MARKING



SIP-M12(V4) (Unit:mm)

○PIN NO. / PIN NAME

PIN NO.	PIN NAME.
1	GND
2	P. CON
3	P. ANT
4	FM
5	AM
6	AUDIO
7	VCC
8	VDD
9	VBU
10	SW1
11	SW2
12	ILM

NOTES FOR USE

1. Over Voltage Protection Circuit

The Over Voltage Protection Circuit function is that when the difference voltage of VIN1 and GND exceeds over about 27V (room temperature), the each output turn off. Please be sure of the power supply voltage range you use.

2. The oscillation stopper of output capacitor

Please use the oscillation stopper between the every output and GND. The capacitor is over 10 μ F and recommended the small temperature change Tantalum Electronic Capacitor.

In case of the capacitor temperature change is big, it may get characteristic improvement to use the serial 1 μ F ceramic capacitor and 1 Ω resistor in parallel.

3. Over Current Protection Circuit

Each output, has 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 circuit is fold back type current limiter and designed not as to occur the Latch Up by the huge current in a moment by the huge capacitor.

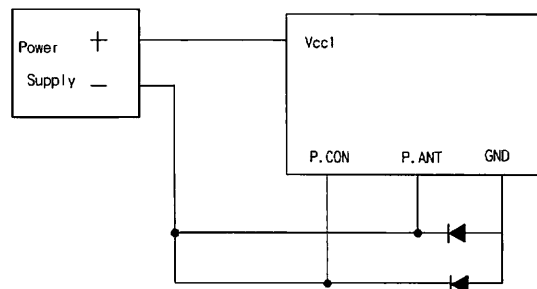
But, these protection circuits are effective for preventing destruction by unexpected accident. Please don't use in the situation of continuous protection circuit on and off. And for the peak current ability, because this chip has minus characteristic, be careful for the thermal design.

4. 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.

5. P.CON, PANT terminals short to GND

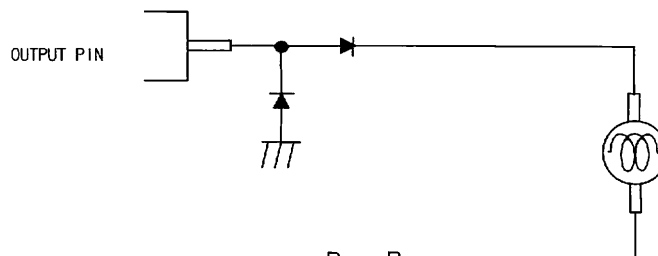
In case of the P.CON(2pin), P.ANT(3pin) connects to Battery (-) terminal (short to GND) and IC GND (1pin) is Open, The parasitic element occurs in the IC and IC might be destroyed. We recommend to take countermeasure as the using shotteky diode between P.CON, PANT and GND.



6. In the application, in case of the each terminal is lower than GND, it recommend to use the bypass circuit.

7. 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.

(Example)



Rev . B

Notes

- No technical content pages of this document may be reproduced in any form or transmitted by any means without prior permission of ROHM CO.,LTD.
- The contents described herein are subject to change without notice. The specifications for the product described in this document are for reference only. Upon actual use, therefore, please request that specifications to be separately delivered.
- Application circuit diagrams and circuit constants contained herein are shown as examples of standard use and operation. Please pay careful attention to the peripheral conditions when designing circuits and deciding upon circuit constants in the set.
- Any data, including, but not limited to application circuit diagrams information, described herein are intended only as illustrations of such devices and not as the specifications for such devices. ROHM CO.,LTD. disclaims any warranty that any use of such devices shall be free from infringement of any third party's intellectual property rights or other proprietary rights, and further, assumes no liability of whatsoever nature in the event of any such infringement, or arising from or connected with or related to the use of such devices.
- Upon the sale of any such devices, other than for buyer's right to use such devices itself, resell or otherwise dispose of the same, no express or implied right or license to practice or commercially exploit any intellectual property rights or other proprietary rights owned or controlled by
- ROHM CO., LTD. is granted to any such buyer.
- Products listed in this document are no antiradiation design.

The products listed in this document are designed to be used with ordinary electronic equipment or devices (such as audio visual equipment, office-automation equipment, communications devices, electrical appliances and electronic toys).

Should you intend to use these products with equipment or devices which require an extremely high level of reliability and the malfunction of which would directly endanger human life (such as medical instruments, transportation equipment, aerospace machinery, nuclear-reactor controllers, fuel controllers and other safety devices), please be sure to consult with our sales representative in advance.

About Export Control Order in Japan

Products described herein are the objects of controlled goods in Annex 1 (Item 16) of Export Trade Control Order in Japan.

In case of export from Japan, please confirm if it applies to "objective" criteria or an "informed" (by MITI clause) on the basis of "catch all controls for Non-Proliferation of Weapons of Mass Destruction.

Thank you for your accessing to ROHM product informations.
More detail product informations and catalogs are available,
please contact your nearest sales office.

Please contact our sales offices for details ;

U.S.A / San Diego	TEL : +1(858)625-3630	FAX : +1(858)625-3670
Atlanta	TEL : +1(770)754-5972	FAX : +1(770)754-0691
Dallas	TEL : +1(972)312-8818	FAX : +1(972)312-0330
Germany / Dusseldorf	TEL : +49(2154)9210	FAX : +49(2154)921400
United Kingdom / London	TEL : +44(1)908-282-666	FAX : +44(1)908-282-528
France / Paris	TEL : +33(0)1 56 97 30 60	FAX : +33(0) 1 56 97 30 80
China / Hong Kong	TEL : +852(2)740-6262	FAX : +852(2)375-8971
Shanghai	TEL : +86(21)6279-2727	FAX : +86(21)6247-2066
Dilian	TEL : +86(411)8230-8549	FAX : +86(411)8230-8537
Beijing	TEL : +86(10)8525-2483	FAX : +86(10)8525-2489
Taiwan / Taipei	TEL : +866(2)2500-6956	FAX : +866(2)2503-2869
Korea / Seoul	TEL : +82(2)8182-700	FAX : +82(2)8182-715
Singapore	TEL : +65-6332-2322	FAX : +65-6332-5662
Malaysia / Kuala Lumpur	TEL : +60(3)7958-8355	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
----------	-----------------------	------------------------