Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!

Contact us

Tel: +86-755-8981 8866 Fax: +86-755-8427 6832
Email & Skype: info@chipsmall.com Web: www.chipsmall.com
Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China

AN33013UA
Evaluation Board Manual

Panasonic Corporation
Automotive & Industrial Systems Company
Semiconductor Business Division

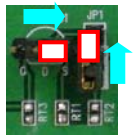
Panasonic

AN33013UA Evaluation board (front side)

SYNC input terminal
(external clock input)

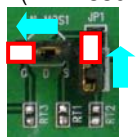
RT resistor.

To set the switching frequency to 490KHz, connect the jumper switches like below. (RT2=130KΩ)

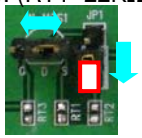


(Default settings)

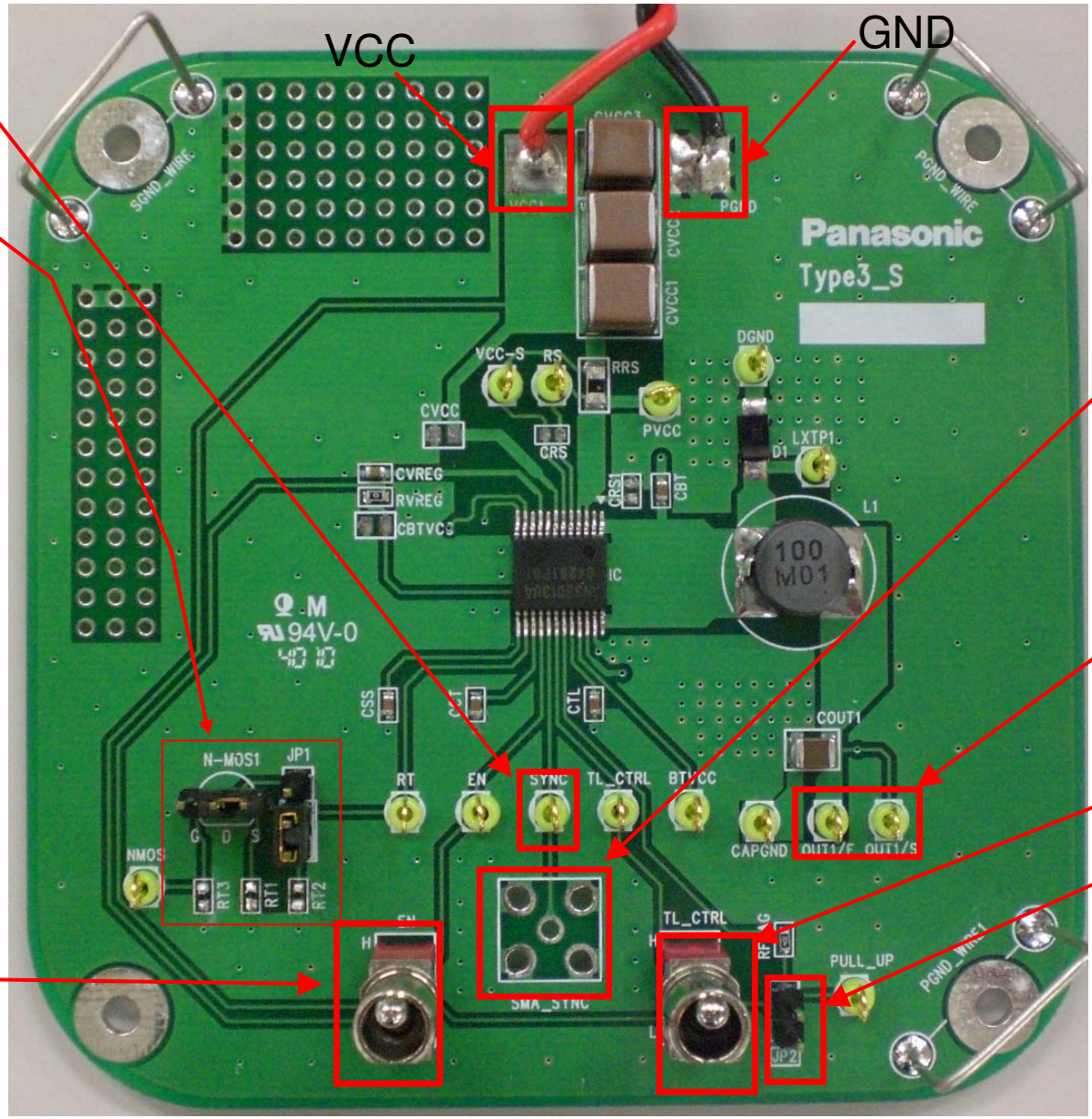
To set the switching frequency to 205KHz , connect the jumper switches like below. (RT1=330KΩ)



To set the switching frequency to 2067KHz , connect the jumper switches like below. (RT1=22KΩ)



SW1
Enable control switch
Upper side (high): DCDC ON
Lower side (low): DCDC OFF



SMA_SYNC
(BNC terminal for external clock)

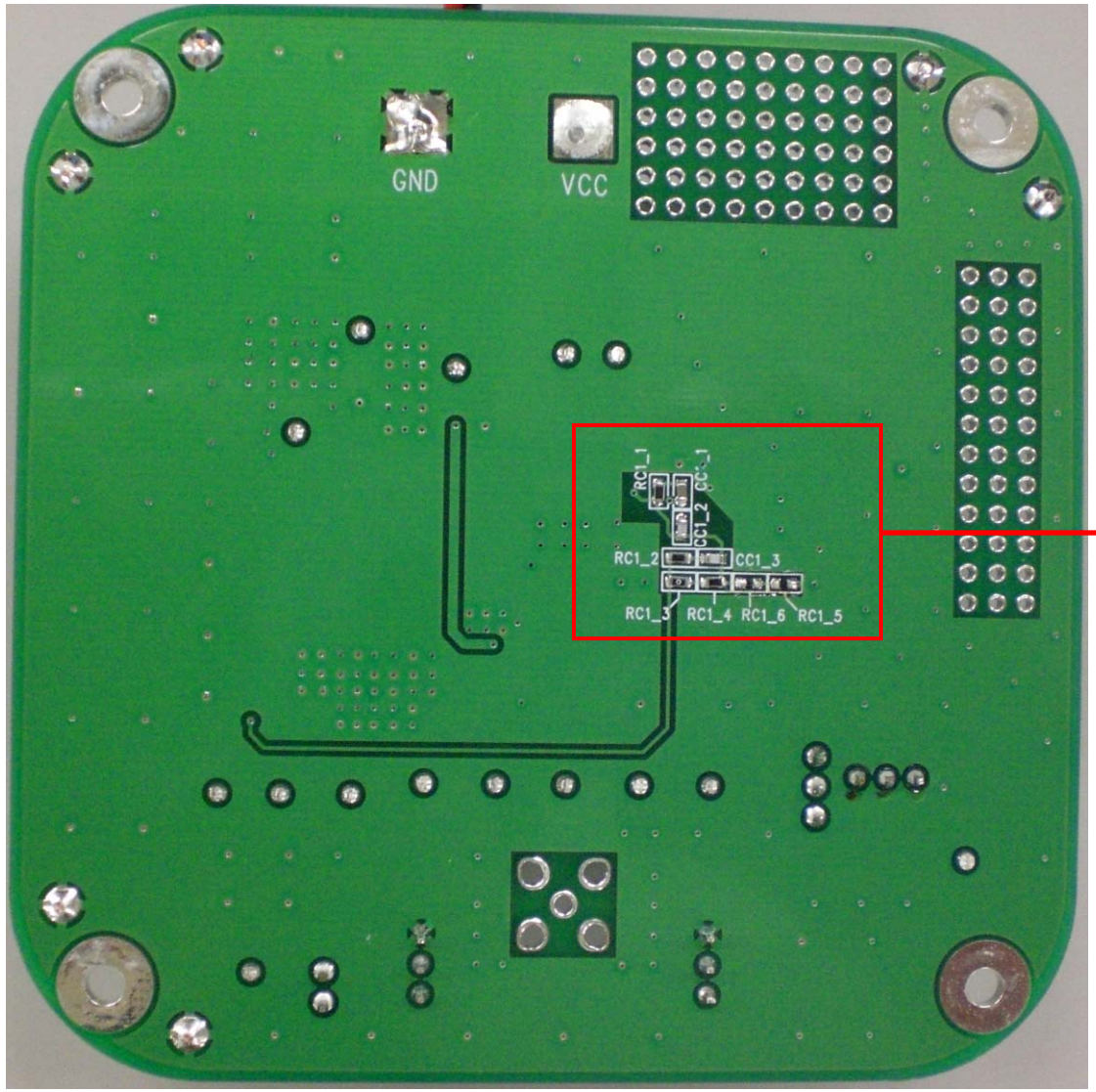
DCDC output pin
(sense pin / force pin)
Output voltage setting:
5.0V

SW2
TL_CTRL control switch

JP2
If you connect this jumper switch, the FLAG pin will be connected to VREG(4.9V) via a 200kΩ-register.

AN33013UA Evaluation board (back side)

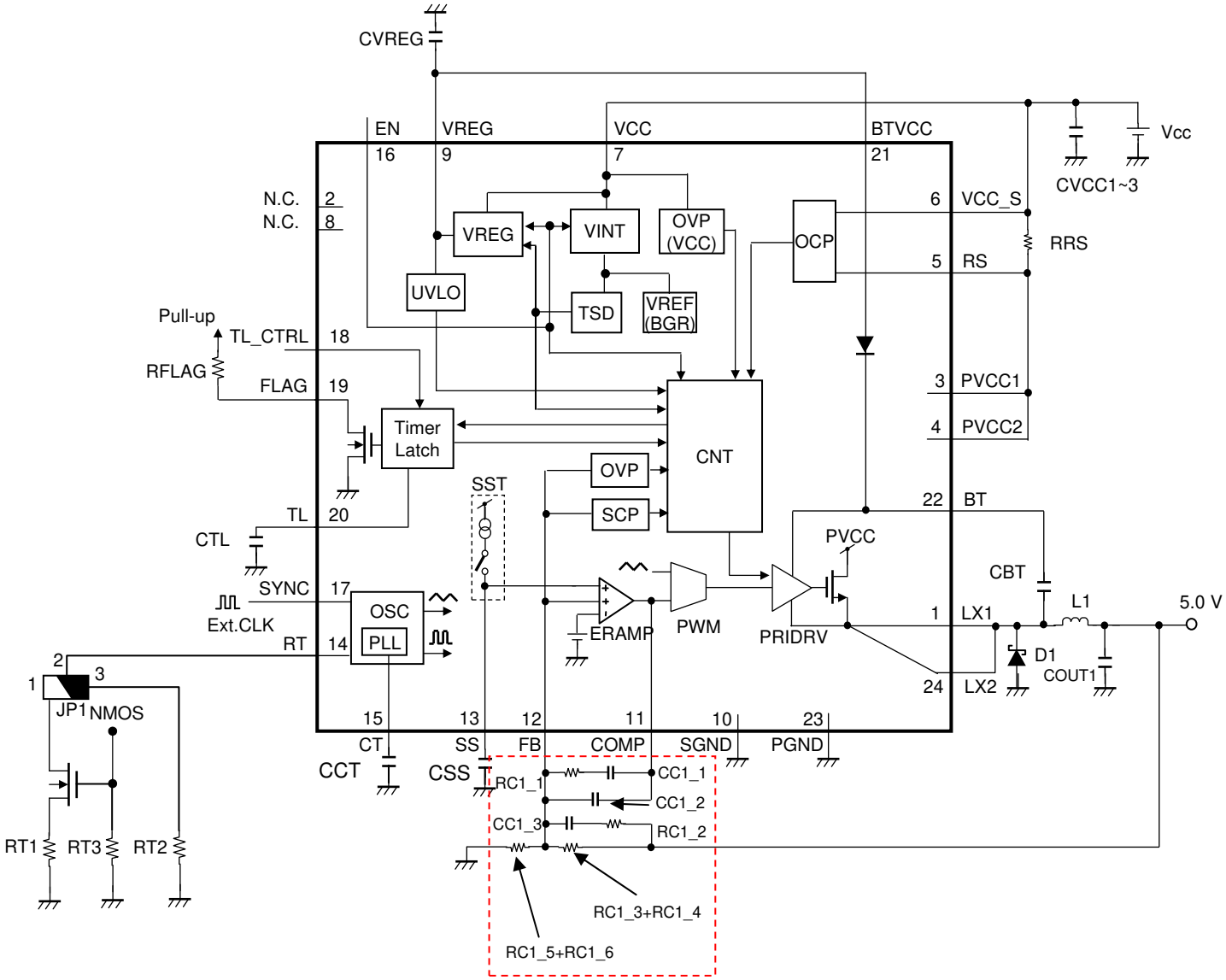
This is a two layer circuit board. The back side is shown below. (The front side is shown on the previous page.)



The RC constant for phase compensation is set for output voltage 5.0V.

AN33013UA Evaluation board (schematic)

The block diagram of the board is shown below.



Constant for phase compensation + Constant for setting output voltage

AN33013UA Evaluation board (components)

The BOM of this board is shown below.

Table 1 : component on the evaluation board (reference)

Board Component Name	Part Name	Size	Value	Maker	Description
CBT,CCT,CSS,CTL	GCM188R11C104KA01J	JIS1608_[EIA0603]	0.1µF	Murata	Setting Capacitor
CC1_1	GCM1882C1H222JA01J	JIS1608_[EIA0603]	2.2nF	Murata	Compensation Capacitor
CC1_2	GCM1882C1H240JA01J	JIS1608_[EIA0603]	24pF	Murata	Compensation Capacitor
CC1_3	GCM1882C1H471JA01J	JIS1608_[EIA0603]	470pF	Murata	Compensation Capacitor
CVREG	GCM188R71C105KA49J	JIS1608_[EIA0603]	1µF	Murata	VREG Capacitor
CVCC1,CVCC2, CVCC3	CKG57NX7R1H226MT	JIS5750[EIA2220]	22µF	TDK	Input Capacitor
COUT1	TMK325C7226MM-T	JIS3225_[EIA1210]	22µF	TAIYO YUDEN	Output Capacitor
L1	CDRH8D43-100NC	8.3(L) x 8.3(W)	10µH	SUMIDA	Inductor
LSI1	AN33013UA		—	Panasonic	1ch DC-DC Converter
D1	DB24416	3.8(L) x 2.4(W)	—	Panasonic	Schottky Diode
RC1_1	ERA3AEB752V	JIS1608_[EIA0603]	R=7.5K	Panasonic	Compensation & Feedback Resistor
RC1_2	ERA3AEB152V	JIS1608_[EIA0603]	R=1.5K	Panasonic	Compensation & Feedback Resistor
RC1_3	ERJ3GEY0R00V	JIS1608_[EIA0603]	R=0	Panasonic	Compensation & Feedback Resistor
RC1_4	ERA3AEB303V	JIS1608_[EIA0603]	R=30K	Panasonic	Compensation & Feedback Resistor
RC1_5	ERJ3GEY0R00V	JIS1608_[EIA0603]	R=0	Panasonic	Compensation & Feedback Resistor
RC1_6	ERA3AEB752V	JIS1608_[EIA0603]	R=7.5K	Panasonic	Compensation & Feedback Resistor
RFLAG	ERA3AEB204V	JIS1608_[EIA0603]	R=200K	Panasonic	Pull-up Resistor
RT1	ERA3AEB134V	JIS1608_[EIA0603]	R=130K	Panasonic	OSC Setting Resistor
RRS	ERJ8BWFR030V	JIS3216_[EIA1206]	R=30m	Panasonic	OCP Sense Resistor

Note: The specifications of the BOM are reference values. Other components might be mounted depending on target values of output voltage, frequency, etc.

Request for your special attention and precautions in using the technical information and semiconductors described in this book

(1) If any of the products or technical information described in this book is to be exported or provided to non-residents, the laws and regulations of the exporting country, especially, those with regard to security export control, must be observed.

(2) The technical information described in this book is intended only to show the main characteristics and application circuit examples of the products. No license is granted in and to any intellectual property right or other right owned by Panasonic Corporation or any other company. Therefore, no responsibility is assumed by our company as to the infringement upon any such right owned by any other company which may arise as a result of the use of technical information de-scribed in this book.

(3) The products described in this book are intended to be used for general applications (such as office equipment, communications equipment, measuring instruments and household appliances), or for specific applications as expressly stated in this book.
Please consult with our sales staff in advance for information on the following applications, moreover please exchange documents separately on terms of use etc.: Special applications (such as for in-vehicle equipment, airplanes, aerospace, automotive equipment, traffic signaling equipment, combustion equipment, medical equipment and safety devices) in which exceptional quality and reliability are required, or if the failure or malfunction of the products may directly jeopardize life or harm the human body.
Unless exchanging documents on terms of use etc. in advance, it is to be understood that our company shall not be held responsible for any damage incurred as a result of or in connection with your using the products described in this book for any special application.

(4) The products and product specifications described in this book are subject to change without notice for modification and/or improvement. At the final stage of your design, purchasing, or use of the products, therefore, ask for the most up-to-date Product Standards in advance to make sure that the latest specifications satisfy your requirements.

(5) When designing your equipment, comply with the range of absolute maximum rating and the guaranteed operating conditions (operating power supply voltage and operating environment etc.). Especially, please be careful not to exceed the range of absolute maximum rating on the transient state, such as power-on, power-off and mode-switching. Otherwise, we will not be liable for any defect which may arise later in your equipment.
Even when the products are used within the guaranteed values, take into the consideration of incidence of break down and failure mode, possible to occur to semiconductor products. Measures on the systems such as redundant design, arresting the spread of fire or preventing glitch are recommended in order to prevent physical injury, fire, social damages, for example, by using the products.

(6) Comply with the instructions for use in order to prevent breakdown and characteristics change due to external factors (ESD, EOS, thermal stress and mechanical stress) at the time of handling, mounting or at customer's process. We do not guarantee quality for disassembled products or the product re-mounted after removing from the mounting board.
When using products for which damp-proof packing is required, satisfy the conditions, such as shelf life and the elapsed time since first opening the packages.

(7) When reselling products described in this book to other companies without our permission and receiving any claim of request from the resale destination, please understand that customers will bear the burden.

No.010618