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# AN33013UA

## Evaluation Board Manual

**Panasonic Corporation**  
**Automotive & Industrial Systems Company**  
**Semiconductor Business Division**

# AN33013UA Evaluation board (front side)

**VCC**

**GND**

**SYNC input terminal**  
(external clock input)

**RT resistor.**

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

(Default settings)

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

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

**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

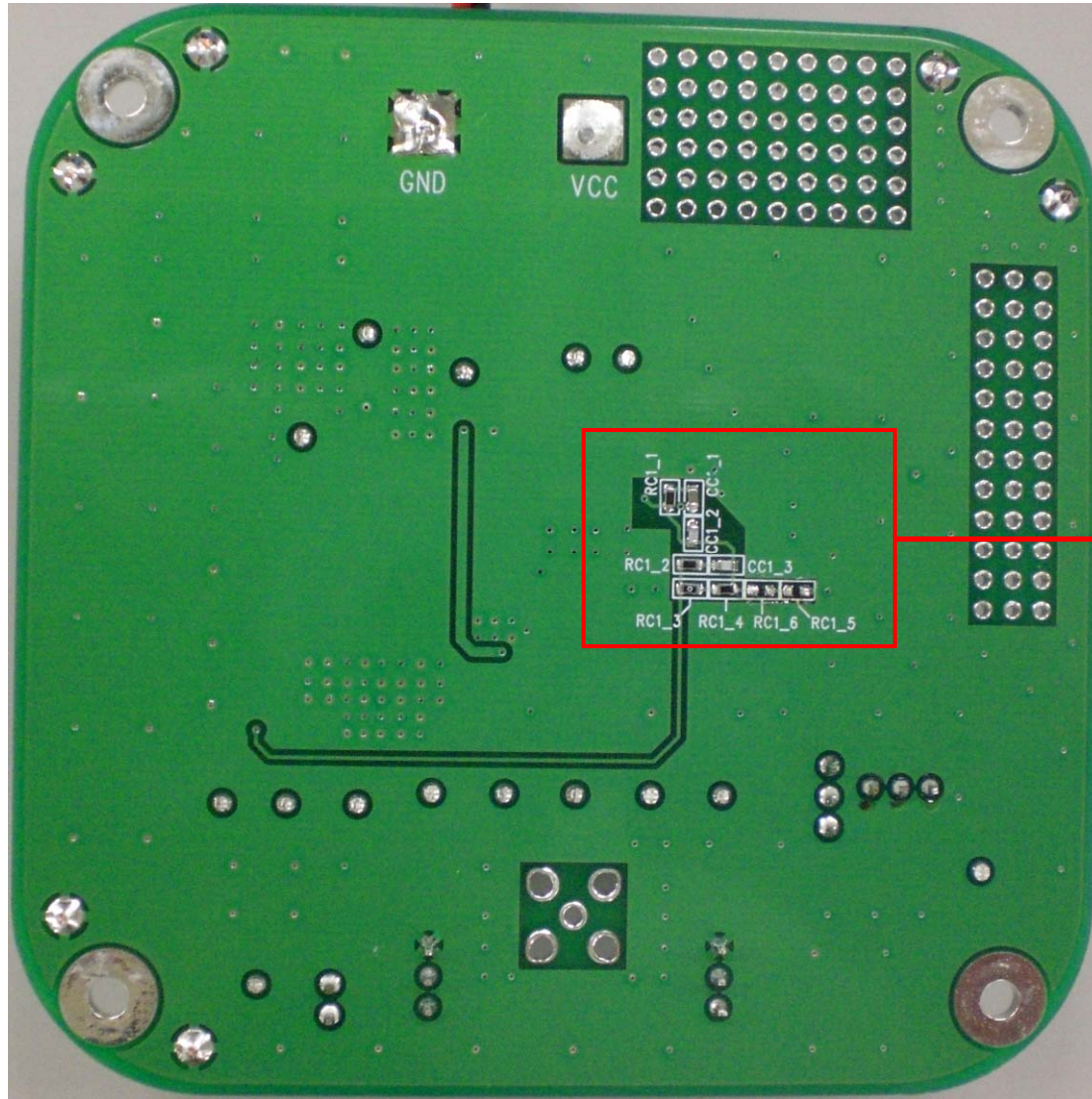
**JP2**  
If you connect this jumper switch, the FLAG pin will be connected to VREG(4.9V) via a 200k $\Omega$ -register.

Other labels on the board include: PGM1, PGM2, PGM3, PGM4, PGM5, PGM6, PGM7, PGM8, PGM9, PGM10, PGM11, PGM12, PGM13, PGM14, PGM15, PGM16, PGM17, PGM18, PGM19, PGM20, PGM21, PGM22, PGM23, PGM24, PGM25, PGM26, PGM27, PGM28, PGM29, PGM30, PGM31, PGM32, PGM33, PGM34, PGM35, PGM36, PGM37, PGM38, PGM39, PGM40, PGM41, PGM42, PGM43, PGM44, PGM45, PGM46, PGM47, PGM48, PGM49, PGM50, PGM51, PGM52, PGM53, PGM54, PGM55, PGM56, PGM57, PGM58, PGM59, PGM60, PGM61, PGM62, PGM63, PGM64, PGM65, PGM66, PGM67, PGM68, PGM69, PGM70, PGM71, PGM72, PGM73, PGM74, PGM75, PGM76, PGM77, PGM78, PGM79, PGM80, PGM81, PGM82, PGM83, PGM84, PGM85, PGM86, PGM87, PGM88, PGM89, PGM90, PGM91, PGM92, PGM93, PGM94, PGM95, PGM96, PGM97, PGM98, PGM99, PGM100.



## 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 (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]	0.1 $\mu$ F	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]	1 $\mu$ F	Murata	VREG Capacitor
CVCC1,CVCC2, CVCC3	CKG57NX7R1H226MT	JIS5750[EIA2220]	22 $\mu$ F	TDK	Input Capacitor
COUT1	TMK325C7226MM-T	JIS3225_[EIA1210]	22 $\mu$ F	TAIYO YUDEN	Output Capacitor
L1	CDRH8D43-100NC	8.3(L) x 8.3(W)	10 $\mu$ H	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.

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