●Design Support Tools

Online tools to support device selection and purchasing

Power Device Simulator

The Power Device Simulator (free) is a web-based simulation tool for our DC-DC regulator ICs∗ and switching MOSFETs. This tool allows you to verify the product specifications, to analyze the characteristics, to make a BOM list, and to purchase desired products, thus reducing your time for product selection.

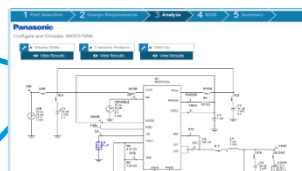∗Currently, DC-DC regulator IC with built-in power MOS only is available.

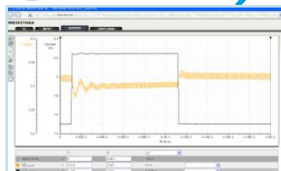| IC Designer | --- Power circuit simulation for DC-DC regulator IC |
| Active Datasheet | --- Performance simulation for switching MOSFET |
| Buck Analyzer | --- Power circuit simulation for switching MOSFET |
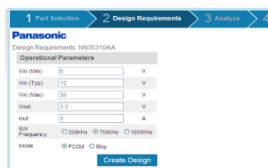
Operation procedure

1 Requirement

2 Circuit / Analyze

3 Result

4 BOM list

DC-DC Circuit Calculator

The DC-DC Circuit Calculator (free) is a web-based tool that calculates the recommended peripheral circuit constants for our DC-DC regulator IC∗ to meet your power system design specifications. Use this calculator together with the "Power Device Simulator" to make the simulation more effective.

∗Currently, DC-DC regulator IC with built-in power MOS only is available.

Panasonic offers a variety of devices as "Total Power simulations." Please visit the URL below to learn more about coil, capacitor, components for suppressing noise or surge, etc.
http://industrial.panasonic.com/ww/index_e.html

●Evaluation Board

· We have prepared the DC-DC evaluation boards

NN30195A evaluation board
NN30195A-EVB-R2

NN30312A evaluation board
NN30312A-EVB-R2

NN30196A evaluation board
NN30196A-EVB-R2

NN30320A evaluation board
NN30320A-EVB-R2

NN30295A evaluation board
NN30295A-EVB-0

NN30321A evaluation board
NN30321A-EVB-R2

NN30310AA evaluation board
NN30310AA-EVB-R2

Step down DC-DC Regulator

www.semicon.panasonic.co.jp/en

Power device solution, ENELEAD

ENELEAD

Panasonic provides ENELEAD, the "Total solution of power devices," which supports from power system design to purchasing of components, allowing you to select a suitable small, high-efficiency power device, to easily perform a design and evaluation of power systems by using web-based tools, and to purchase peripheral components.

Design Support Tools
Power supplies by application
Power Devices

Panasonic will continue to offer the power solutions that satisfy our customers along with the "ENELEAD."

www.semicon.panasonic.co.jp/en/applications/power/

or | Panasonic power device simulator global | **Click**

Thank you for your interest in Panasonic Step down DC-DC Regulator. We provide a variety of regulators with wide ranges of input voltage and output current, based on the low power technologies that have been cultivated through the development of customized power supplies for mobile phones. In the next generation, we are going to expand its application for industrial and infrastructure such as server, network and so on with a view to high current not just low power of several hundred mA degree.

Wide product lineup for various applications
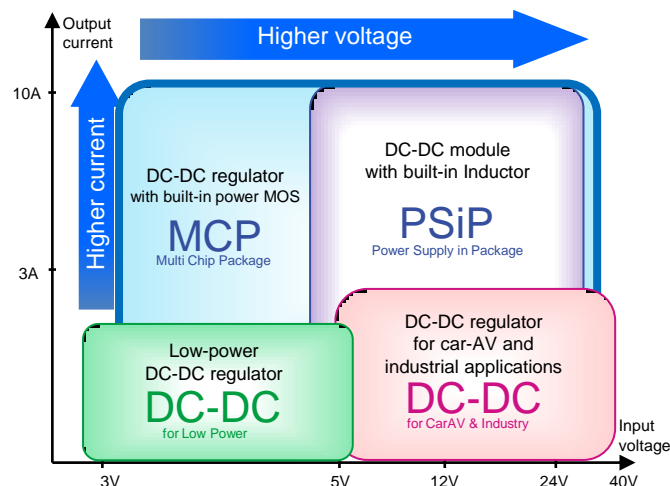
Provides DC-DC solutions with high efficiency, fast response, and small size.

High efficiency	Fast response	Small size
Characteristics curve of efficiency	Variation of load current	DC-DC control IC / MOS FET / MOS FET
1A / 10mA	Waveform of output voltage	1package & smaller size / DCDC
Achieves high efficiency for a wide load range (from light to heavy).	Suppresses the transient variation of load.	Reduces the footprint of parts for power supply.
Achieves low power consumption and low heat generation.	Supplies a stable voltage to equipments.	Achieves miniaturization of equipments.

●DC-DC Regulator with Built-in Power MOS

DC-DC regulators including both Fast-response control IC with hysteretic control and MOSFET with low ON-resistance in a single package (MCP).

●Feature 1　　　~High efficiency~

Core Technology
(1) Built-in MOSFET with low ON-resistance

[Trench-MOSFET]　The optimization of the structure reduces the capacity, and improves the Qg/ON-resistance significantly.

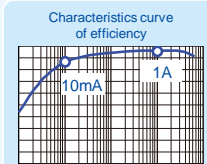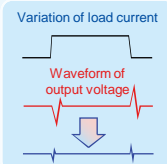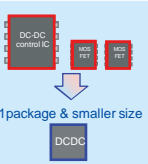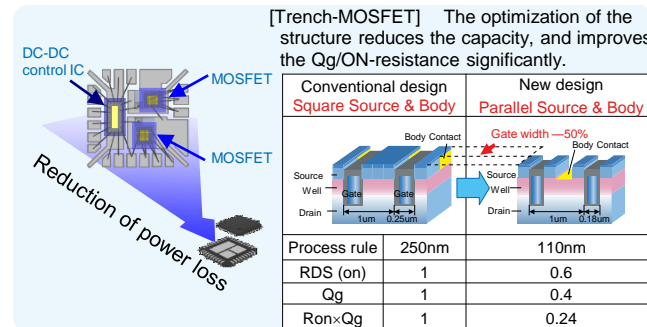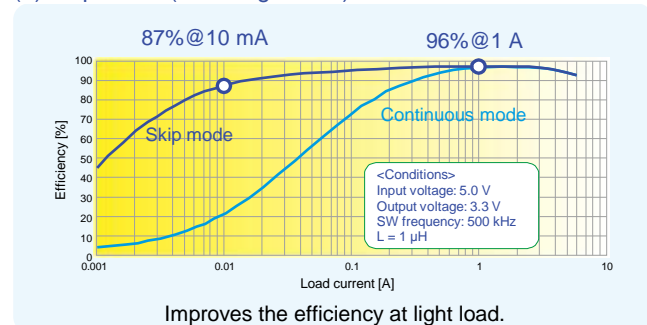|	Conventional design Square Source & Body	New design Parallel Source & Body
Process rule	250nm	110nm
RDS (on)	1	0.6
Qg	1	0.4
Ron×Qg	1	0.24

Core Technology
(2) Skip mode (Set at light load)

87%@10 mA　　96%@1 A

<Conditions>
Input voltage: 5.0 V
Output voltage: 3.3 V
SW frequency: 500 kHz
L = 1 µH

Improves the efficiency at light load.

➡ Achieves low power consumption and low heat generation.

●Feature 2　　　~Fast response~

Core Technology
Hysteretic control method

Load current	10 µA⇒1 A	1 A⇒10 µA
Load transient Vin = 5.0 V, Vout = 1.2 V Cout: 44 µF L: 1.0 µH	Undershoot: 9 mV	Overshoot: 11 mV

Reduces the overshoot/undershoot due to load current transient to ±10 mVpp.

➡ Ensures stable operation of equipments.

●Feature 3　　　~Small size~

Core Technology
MCP (Multi-Chip Package)

Footprint : 48 mm²　　Footprint : 16 mm²

Both DC-DC control IC and MOSFET are included in a single package.
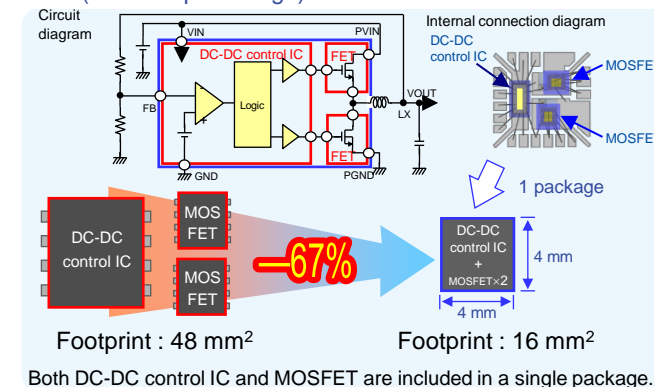
➡ Small footprint, achieving miniaturization of equipments

Line-up

		NN30195A	NN30295A	NN30297A	NN30196A	NN30310AA	NN30320A	NN30321A	NN30421A	NN30331A	NN30332A	NN30312A
Input voltage 1		4.5 to 5.6V	4.5 to 5.6V	4.0 to 5.6V	4.5 to 5.6V	6.0 to 30V	4.5 to 28V	4.5 to 28V	4.75 to 24V	4.5 to 24V		4.5 to 30V
Input voltage 2 (∗1)		—	—	—	—	—	—	—	4.5 to 5.5V	4.5 to 5.5V		—
Absolute maximum rating		6V				33V			30V			33V
Output voltage		0.6 to 3.5V	0.6 to 3.5V		0.6 to 3.5V	0.75 to 5.5V			0.75 to 3.6V	0.75 to 3.6V		0.75 to 5.5V
Output current (max)		6A			9A	3A			6A	8A		10A
Control method		Hysteretic							Hysteretic			
Ron (Ω)	Hi/Lo	25m/25m	25m/25m	28m/25m	9m/9m	25m/25m	20m/20m	20m/10m	20m/10m	20m/6m	20m/6m	9m/9m
I2C control (∗2)		—	Yes	Yes	—	—	—	—	—	—	—	—
Synchronous rectification		Yes							Yes			
Skip mode (∗3)		○							○			
Package	Type	HQFN24	HQFN24	HQFN24	HQFN40	HQFN24	HQFN24	HQFN24	HQFN24	HQFN24	HQFN24	HQFN40
	Size	4.0x4.0mm	4.0x4.0mm	4.0x4.0mm	6.0x6.0mm	4.0x4.0mm	4.0x4.0mm	4.0x4.0mm	4.0x 4.0mm	4.0x4.0mm	4.0x4.0mm	6.0x6.0mm
	Pin-pitch	0.5mm							0.5mm			
Selectable frequency		0.5/1.0 /2.0 MHz	0.5 to 2.0 MHz (∗2)	0.5 to 2.0 MHz (∗2)	0.5/1.0 /2.0 MHz	0.25/0.75 /1.25 MHz	0.21/0.43 /0.65 MHz	0.21/0.43 /0.65 MHz	0.22/0.41 /0.58 MHz	0.43/0.63 MHz	0.43/0.63 MHz	0.25/0.75 /1.25 MHz
Function		OCP, OVD, SCP, UVLO, TSD							OCP, OVD, SCP, UVLO, TSD			
Product life cycle stage		MP										

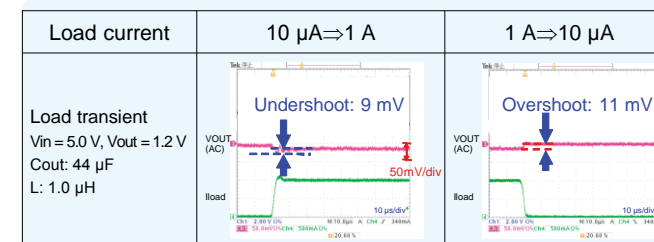(∗1) Ultra-high efficiency at light load achieved by a 5-V input voltage　　(∗2) For NN30295 & NN30297, the I2C interface can be used to select from among seven frequency values and change the output voltage.
(∗3) Skip mode: High efficiency mode at light load

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  [NN30320A-EVB-R2](#)

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ЭЛЕКТРОННЫХ КОМПОНЕНТОВ

многоканальный
+7 495 668 12 70
info@moschip.ru

Общество с ограниченной ответственностью «МосЧип» ИНН 7719860671 / КПП 771901001
Адрес: 105318, г.Москва, ул.Щербаковская д.3, офис 1107

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В нашем ассортименте представлены ведущие мировые производители активных и пассивных электронных компонентов.

Нашей специализацией является поставка электронной компонентной базы двойного назначения, продукции таких производителей как XILINX, Intel (ex.ALTERA), Vicor, Microchip, Texas Instruments, Analog Devices, Mini-Circuits, Amphenol, Glenair.

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Офис по работе с юридическими лицами:

105318, г.Москва, ул.Щербаковская д.3, офис 1107, 1118, ДЦ «Щербаковский»

Телефон: +7 495 668-12-70 (многоканальный)

Факс: +7 495 668-12-70 (доб.304)

E-mail: info@moschip.ru

Skype отдела продаж:
moschip.ru   moschip.ru_6
moschip.ru_4   moschip.ru_9