

# 6 A Synchronous DC-DC Step down Regulator ( $V_{IN} = 4.5\text{ V to }28\text{ V}$ , $V_{OUT} = 0.75\text{ V to }5.5\text{ V}$ )

## FEATURES

- High-Speed Response DC-DC Step Down Regulator Circuit that employs Hysteretic Control System
- Hi-side 20 mΩ (Typ) and Low-side 10 mΩ (Typ) MOSFETs for High Efficiency at 6 A
- Skip (discontinuous) Mode for Light Load Efficiency
- Maximum Output Current : 6 A
- Input Voltage Range :  $AV_{IN} = 4.5\text{ V to }28\text{ V}$ ,  
 $PV_{IN} = 4.5\text{ V to }28\text{ V}$
- Output Voltage Range : 0.75 V to 5.5 V
- Selectable Switching Frequency  
: 210 kHz, 430 kHz, 650 kHz
- Adjustable Soft Start
- Low Operating and Standby Quiescent Current
- Power Good Indication for Output Over and Under Voltage
- Built-in Under Voltage Lockout (UVLO), Thermal Shut Down (TSD), Over Voltage Detection (OVD), Under Voltage Detection (UVD), Over Current Protection (OCP), Short Circuit Protection (SCP)
- 24 pin Plastic Quad Flat Non-leded Package Heat Slug Down (QFN Type)  
(Size : 4 mm × 4 mm × 0.7 mm, 0.5 mm pitch)

## DESCRIPTION

NN30321A is a synchronous DC-DC Step down Regulator (1-ch) comprising of a Controller IC and two power MOSFETs and employs the hysteretic control system.

By this system, when load current changes suddenly, it responds at high speed and minimizes the changes of output voltage.

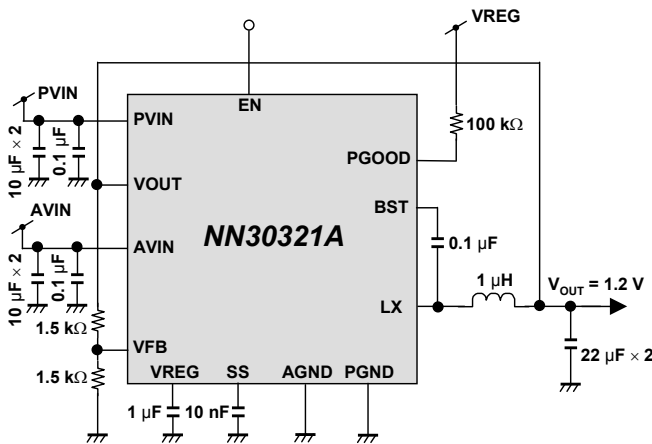
Since it is possible to use capacitors with small capacitance and it is unnecessary to add external parts for system phase compensation, this IC realizes downsizing of set and reducing in the number of external parts. Output voltage is adjustable by user. Maximum current is 6 A.

## APPLICATIONS

High Current Distributed Power Systems such as

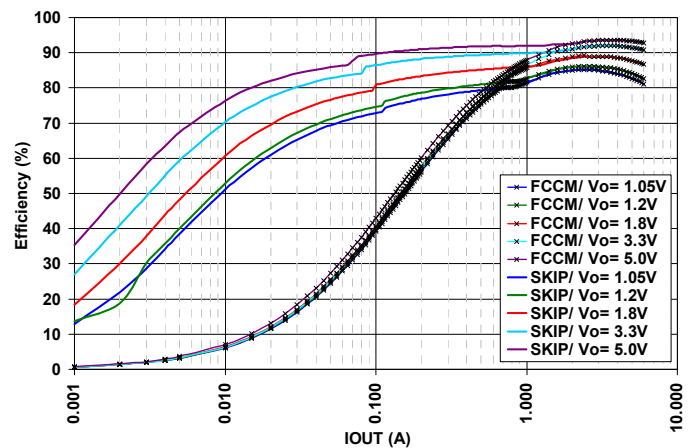
- HDDs (Hard Disk Drives)
- SSDs (Solid State Drives)
- PCs
- Game consoles
- Servers
- Security Cameras
- Network TVs
- Home Appliances
- OA Equipment etc.

## APPLICATION CIRCUIT EXAMPLE



Note : The application circuit is an example. The operation of the mass production set is not guaranteed. Sufficient evaluation and verification is required in the design of the mass production set. The Customer is fully responsible for the incorporation of the above illustrated application circuit in the design of the equipment.

## EFFICIENCY CURVE



Condition :

$V_{IN} = 12\text{ V}$ ,  $V_{OUT}$  Setting = 1.05 V, 1.2 V, 1.8 V, 3.3 V, 5.0 V,  
Switching Frequency = 650 kHz, FCCM / Skip Mode,  
 $L_O = 1\text{ }\mu\text{H}$ ,  $C_O = 44\text{ }\mu\text{F}$  (22  $\mu\text{F} \times 2$ )