

6 A Synchronous DC-DC Step down Regulator with I²C Interface ($V_{IN} = 4.0\text{ V to }5.6\text{ V}$, $V_{OUT} = 0.6\text{ V to }3.5\text{ V}$)

FEATURES

- High-Speed Response DC-DC Step Down Regulator Circuit that employs Hysteretic Control System
- Integrated one 25 mΩ (Typ) and one 28 mΩ (Typ) MOSFET for High Efficiency at 6 A
- Mode Selection Option via I²C:
 - (1) Pulse Skip Mode (PSM) with coast mode function for high efficiency at light load
 - (2) Forced Continuous Conduction Mode (FCCM) for quick load transient response
- Maximum Output Current : 6A
- Input Voltage Range : $V_{IN} : 4.0\text{ V to }5.6\text{ V}$,
 $V_{DD} : 1.6\text{ V to }3.3\text{ V}$
Output Voltage Range : 0.6 V to 3.5 V
Selectable Switching Frequency 500 kHz to 2 MHz
(7 steps) using I²C : Default 1 MHz
- Adjustable Soft Start
- Low Operating and Standby Quiescent Current
- Open Drain Power Good Indication for Output Over / Under Voltage
- Built-in Under Voltage Lock-Out (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-leaded Package Heat Slug Down (QFN Type)
(Size : 4 mm × 4 mm × 0.7 mm, 0.5 mm pitch)

DESCRIPTION

NN30297A is a synchronous DC-DC Step down Regulator (1-ch) comprising of a Controller IC and two power MOSFETs and employs a hysteretic control system.

This system responds rapidly to sudden variations in load current, thus maintaining the fluctuations in the output voltage to a minimum level. The system does not require external components for phase compensation.

Together with the use of capacitors with small capacitance, this IC realizes downsizing of the set and reduces to a great extent, the number of external parts required for the system.

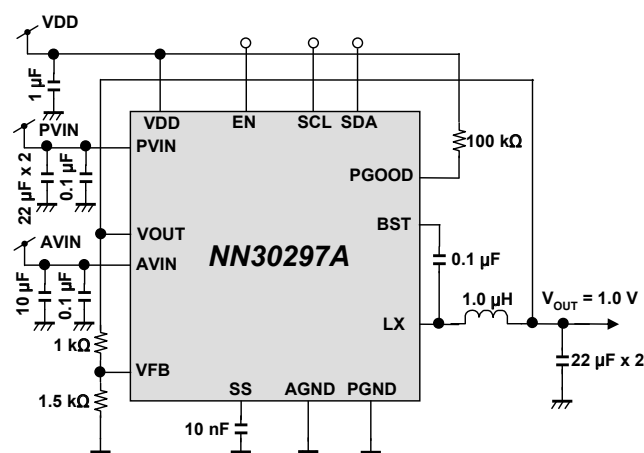
Output voltage is adjustable by user.
Maximum current is 6 A.

APPLICATIONS

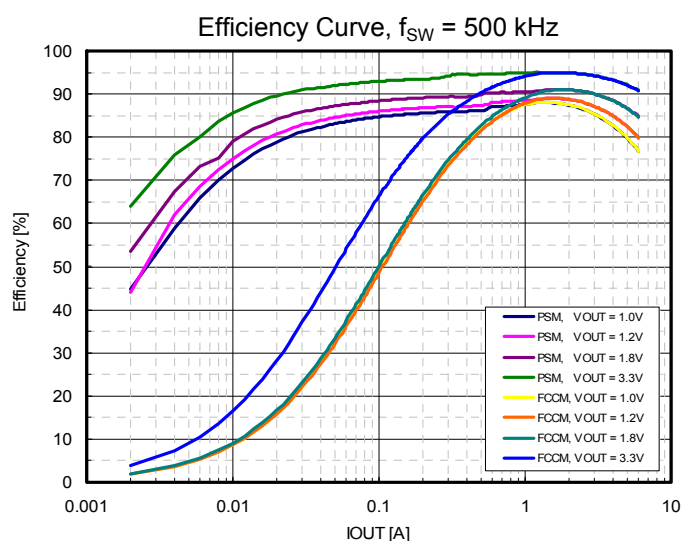
High Current Distributed Power Systems such as :

- 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.



Condition:

$V_{IN} = 5.0\text{ V}$, $V_{OUT} = 1.0\text{ V}, 1.2\text{ V}, 1.8\text{ V}, 3.3\text{ V}$,
 $L_o = 1\text{ μH}$, $C_o = 44\text{ μF}$ ($22\text{ μF} \times 2$), $f_{SW} = 500\text{ kHz}$