

SiVi-DCBU11V1A

TSMC 180nm (1P5M) non-pure 5V



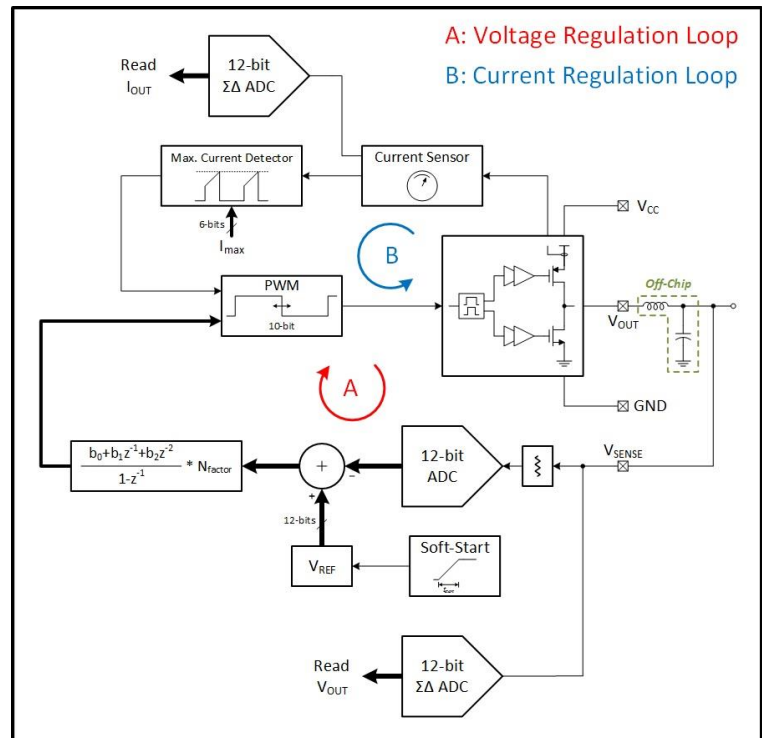
MAIN FEATURES

- Designed on TSMC 180nm non pure 5V process
- Operate from 3V up to 5.5V output voltage
- System supervisor circuit to provide Power on Reset
- Output voltage accuracy $\pm 1\%$ over temperature
- Output current accuracy $\pm 2\%$ over temperature
- Minimum of 81% at the minimum input voltage, minimum output voltage and maximum load current
- Programmable load current and output voltage
- Built in Temperature sensor
- Switching frequency >1Mhz, with low power inductor value <2.2uH and low output voltage ripples <10mVpp
- Digital control interface through an I2C
- Automatic calibration and overcurrent shut-off
- Operational temperature range from -40°C to 125°C

IP DESCRIPTION

SiVi-DCBU11V1A is a high efficient high accurate step down DC to DC converter on a non-pure 5V 180nm TSMC process. The IP is designed with the flexibility to support a majority of applications for processors that require a wide range of voltages with efficient power management. The startup configuration is programmable via the integrated OTP non-volatile memory and can be dynamically adjusted during operation via the I2C interface to achieve the most optimized system power.

The IP contains an on-chip high accurate current monitoring circuit which is capable to switch the channel into the current regulation mode once it exceeds its maximum current limit. The same loop reverts the channel back to the voltage regulation mode once the over-current condition is removed. SiVi-DCBU11V1A operates with a relatively high switching PWM clock generator in order to minimize the BoM value while maintaining very low output voltage ripples. The IP is provided with an auto-calibration state machine for providing the optimum settings required for operation in addition to an I2C digital interface for easy chip communication



Abstract Diagram for the DC to DC Channel

ELECTRICAL SPECIFICATIONS

Spec / Result		Min	Typ	Max	Unit
Input Voltage		3		5.5	V
Temperature Range		-40	27	125	°C
Output Voltage		0.8	1.1	3.5*	V
Output Voltage step			1	4	mV
Output Voltage accuracy over temp		-1		1	%
Output Current			0.8	1.0	A
PWM Switching Frequency			1		MHz
Efficiency	Vin=5.5V, Vout=3.5	91		92	%
	Vin=3.0V, Vout=1.1	84		85.5	%
	Vin=3.0V, Vout=0.8	81		82	%

* Vout = 3.5V only at VDD ≥ 5V

PIN DESCRIPTION

Pin Name	Direction	Description
VDD	Power	Input Supply Voltage
Vout	Output	Output DC-DC converter voltage
Vsense	Input	Sensed voltage feedback to the voltage regulation loop
Bypass	InOut	Used for a 100nF bypass cap, optional
Rext	InOut	External resistor required for constant current biasing
SCL	Input	I2C Clock Input, open drain
SDA	InOut	I2C serial data input/output pin, open drain
VSS	Power	Ground of the DC to DC channel
Reset	Output	External reset signal
power_good	Output	Digital flag asserted when Vout is ready

CONTACT US

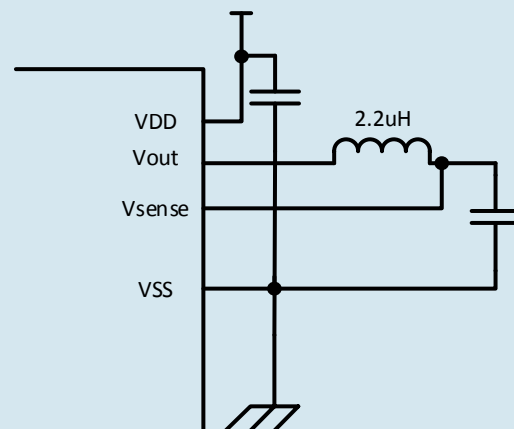
Silicon Vision

79 Almultaqa Alaraby, Cairo, Egypt, P.O. Box 11361

Tel: +202-22669160

info@si-vision.com

APPLICATION DIAGRAM



ABOUT SILICON VISION

Si-Vision is a fabless semiconductor company which provides complete custom solutions in Analog/Mixed and RF design fields. Our vision is to be one of the top IP Providers. Si-Vision believes in combining the sense of innovation and the deep practical experience to provide high performance and low power analog and mixed signal IPs to its customers, using a well-defined and robust design process