

Brief Description of the chip

This chip is a 1.5MHz step-down converter with an input voltage range of 2.7V to 5.5V and output voltage as low as 0.6V. It is optimized to react quickly to a load variation. This chip has a fixed voltage version with internal feedback and a programmable version with external feedback resistors. It can deliver 600mA of load current while maintaining a low 25 μ A no load quiescent current. The 1.5MHz switching frequency minimizes the size of external components while keeping switching losses low. This chip is designed to maintain high efficiency throughout the operating range, which is critical for portable applications.

Brief Product Highlights

- Synchronous rectified, current mode controlled DCDC buck converter chip
- No Load Quiescent Current < 25 μ A
- High Efficiency 98.00 % Max
- Maximum Load current 600mA
- Fixed output voltage option : from 0.6V to V_{in} with steps of 50mV ; programmable using metal3 mask option
- User Variable output voltage option : from 0.6 to V_{in} ; programmable using external resistor divider
- 120 μ s of Soft start time
- 1.5MHz switching frequency
- Fast Load transient
- Automatic change between PWM and PFM regulation modes
- Built-in UVLO, SCP, OCP, Thermal shutdown
- Less than 1 μ A of shut down current
- The chip was designed in 0.6 micron 3 M 1 P CMOS technology
- Chip size 0.86mm X 1.56mm

Pin	Symbol	Description
1	EN	Enable Input. EN is a digital input that turns the regulator on or off. Drive EN high to turn on the regulator, drive it low to turn it off.
2	FB	Output Voltage Feedback Input
3	IN	Power Input
4	SW	Power Switching Output
5	AGND	Analog Ground
6	PGND	Power Ground

Chip Specifications

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General Electrical Characteristics

T_A = -40°C to 85°C, unless otherwise noted. Typical values are T_A = 25°C, V_{IN} = 3.6V

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Supply Voltage						
Operating Input Voltage	V _{IN}		2.7	-	5.5	V
Quiescent Current	I _Q	No Load	-	25	50	uA
Standby Current	I _{STB}	EN = AGND = PGND	-	-	1	uA
UVLO Threshold		V _{IN} Rising	-	-	2.7	V
		Hysteresis	-	100	-	mV
		V _{IN} Falling	1.8		-	V
Feed Back (FB)						
Reference Voltage			591	600	609	mV
Feedback Bias Current		FB = 0.6V, EN = high	-	0.001	0.05	uA
Thermal Shutdown (TSD)						
TSD Trip Point			-	150	-	°C
TSD Hysteresis			-	20	-	°C
Oscillator & Output (SW)						
Switching Current Limitation			0.8	-	-	A
Output Voltage Tolerance		I ₀ = 0 to 600mA, V _{IN} = 2.7V to 5.5V	-3.0	-	3.0	%
NMOS Switch On Resistance			-	400	-	mOhm
PMOS Switch On Resistance			-	400	-	mOhm
Line Regulation		V _i = 2.7V to 5.5V		0.1		%/V
Oscillator Frequency		V _{FB} = 0.6V, T _A = 25°C	1.3	1.5	1.7	MHz
Maximum Duty			90	-	-	%
Start-Up Time		From enable to output regulation	-	150	-	uS
Enable (EN)						
High Level Input Voltage			1.4	-	-	V
Low Level Input Voltage			-	-	0.6	V
Input Bias Current		V _i = V _o = 5.5V	-	0.01	0.1	uA

Applications

- Mobile phones
- Digital Cameras
- Hand held instruments
- USB Devices
- Other portable devices



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