

General Description

This cell is a step up (boost) converter to generate an output voltage of up to 30V. The output voltage can be set with an external feedback. The output current can be up to 6mA. Required external components are a coil, a schottky diode and a storage capacitor. The switching transistor is integrated.

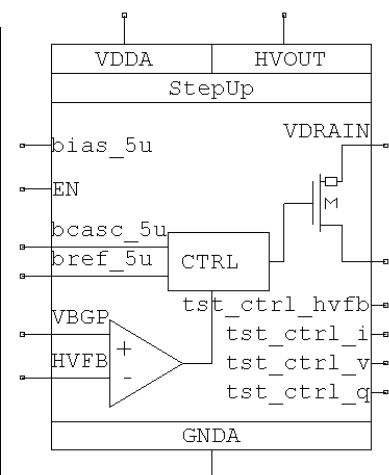
Ratings, Parameters and Conditions

Absolute Maximum Ratings						
Parameter / Condition	Symbol	Min	Typ	Max	Unit	Comment
Operating Temperature	T_{OP}	-40		120	°C	
Supply Voltage	V_{DD}	-0.3		5.5	V	
Input Voltage	V_{IN}	-0.3		$V_{DD}+0.7$	V	
Output Voltage	V_{OUT}	-0.3		$V_{DD}+0.7$	V	

Electrical Parameters						
Parameter / Condition	Symbol	Min	Typ	Max	Unit	Comment
Operating Temperature	T_{OP}	0		80	°C	
Supply Voltage	V_{DD}	3.0	3.5	4.5	V	
External Coil	L_{SU}	10		100	μH	
Bias Current	I_B		5		μA	
Coil Current	I_{COIL}			300	mA	
Output Voltage	V_{OUT}	V_{DD}		30	V	
Output Current	I_{OUT}			6	mA	
Power Efficiency	P_{EFF}		75		%	1mA load
Standby Current	I_{SB}			1	nA	

Interface and Symbol

IO-Description			
Interface	I/O	Function	Comment
EN	Input	Enable	
bias_5u	Input	Bias input current	
bcasc_5u	Input	Bias input current	5uA
bcasc_5u	Input	Bias input current	5uA
bref_5u	Input	Reference input current	5uA
VBGP	Input	Reference voltage	1.25V
HVFB	Input	Feedback voltage	
tst_xxx	Output	Test signals	
VDRAIN	Output	Switching transistor drain	
VSOURCE	Output	Switching transistor source	connect to ground
HVOUT	Power	HV voltage at storage cap	
VDDA, GNDA	Power	Supply voltage	



Analog IP Cell

StepUp Converter

StepUp – XFAB XC10

Layout Size

970 μm x 450 μm = 0.44 mm²

Simulation Results

The simulation shows the generated output voltage at 5kOhms // 1uF load.

