

Analog IP Cell

Single Cell Low Power Charge Pump TMSCP XL035

General Description

In battery powered applications, single primary cell operation is often considered as the most cost efficient way for power supply generation. Hence the typical supply voltage is between 1.1VDC and 1.6VDC, which is too low for high performance analogue signal processing. Charge pumps fit perfectly into this requirements profile because of their monolithic implementation and low standby current. The TMSCP charge pump IP cell presented here transform a single battery cell supply voltage into a regulated output voltage of 2.5V, what is sufficient for common analogue amplifier and reference architectures. The maximum output current of 500µA are a trade off between efficient operation under boot tight and light load conditions. A push-pull drive scheme ensures low ripple on the output voltage line using only on chip capacitors for smoothing.

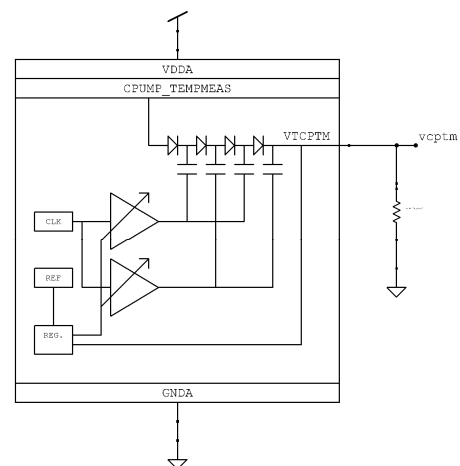
Ratings, Parameters and Conditions

Parameter / Condition	Symbol	Min	Typ.	Max	Unit	Comment
Electrical Parameters:						
Supply Voltage	V_{dd}	1.1	1.5	1.6	V	
Supply Current	I_{dd}		800		µA	@ $I_{out}=100\mu A$
No Load Supply Current	I_{ddidle}		265		µA	@ $I_{out}=0$
Output Current	I_{out}	0		500	µA	
Output Voltage	V_{out}	2.5	2.52	2.55	V	regulated by Bandgap Reference
Output Voltage Ripple	V_{outrip}		10		mV	@ $I_{out}=100\mu A$
StartUp Time	$T_{startup}$	50	75	100	µs	@ $I_{out}=100\mu A$
Int. Oscillator Clock Frequency	F_{CLKOSC}		10		MHz	
Absolute Maximum Ratings:						
Operating Temperature	T_{range}	-40		140	°C	
Supply Voltage	V_{dd}	-0.3		6	V	
Input Voltage	V_{in}	-0.3		$V_{dd}+0.7$		
Output Voltage	V_{out}	-0.3		$V_{dd}+0.7$		
Operating Conditions:						
Ambient Temperature	T_{amb}	-20	27	80	°C	

IO-Description

Interface	I/O	Function	Comment
GNDA	input	Supply	
VDDA	Input	Supply	
VTCPTM	Output	Charge Pump Output	

Block schematic, ext. component diagram



Dieses Projekt wird im Rahmen der Technologieförderung mit Mitteln des Europäischen Fonds für regionale Entwicklung (EFRE) und mit Mitteln des Freistaates Sachsen gefördert.