

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 500 μ A 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.

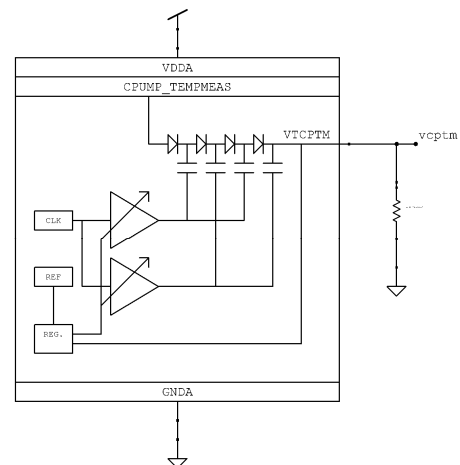
Ratings, Parameters and Conditions

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		μ A	@ I _{out} =100 μ A
No Load Supply Current	I _{ddidle}		265		μ A	@ I _{out} =0
Output Current	I _{out}	0		500	μ A	
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 μ A
StartUp Time	T _{startup}	50	75	100	μ s	@ I _{out} =100 μ A
Int. Oscillator Clock Frequency	F _{CLKOSC}		10		MHz	
Absolute Maximum Ratings:						
Operating Temperature	T _{range}	-40		140	$^{\circ}$ 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	$^{\circ}$ C	

IO-Description

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

Block schematic, ext. component diagram



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