AN1201SM

Polarity inverting charge pump DC/DC converter IC

■ Overview

AN1201SM is a negative voltage generation IC for bias voltage of transmission power module of cellular phones. This IC is a polarity inverting DC/DC converter to change from positive voltage into negative voltage.

■ Features

- High power conversion efficiency: 89% typ. (when output current is 5 mA.)
- Low output resistance: 20 Ω typ.
- High voltage conversion efficiency: 99.9%
- Small (S-MINI) package

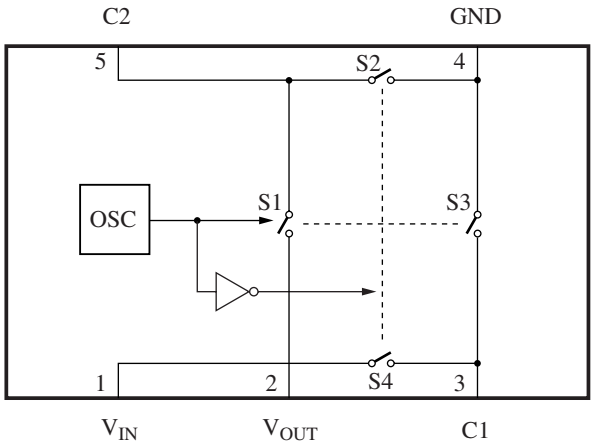
■ Applications

- Cellular phones

■ Package

- SMINI-5DA

■ Block Diagram



■ Pin Descriptions

Pin No.	Symbol	Description
1	V_{IN}	Supply voltage pin
2	V_{OUT}	Inverted output pin
3	C1	Charge pump capacitor's positive polarity side connecting pin
4	GND	Ground pin
5	C2	Charge pump capacitor's negative polarity side connecting pin

■ Absolute Maximum Ratings

Parameter	Symbol	Rating	Unit
Supply voltage	V_{IN}	3.3	V
Supply current	I_{IN}	10	mA
Output current	I_O	20	mA
Power dissipation *2	P_D	48	mW
Operating ambient temperature *2	T_{opr}	−30 to +85	°C
Storage temperature *1	T_{stg}	−55 to +125	°C

Note) 1. Do not apply external currents or voltages to any pins not specifically mentioned.
For circuit currents, (+) denotes current flowing into the IC, and (−) denotes current flowing out of the IC.
2. *1: Except for the power dissipation, operating ambient temperature and storage temperature, all ratings are for T_a = 25°C.
*2: T_a = 85°C, For the independent IC without a heat sink.

■ Recommended Operating Range

Parameter	Symbol	Range	Unit
Supply voltage	V_{IN}	2.0 to 3.0	V

■ Electrical Characteristics at V_{IN} = 2.5 V, C1 = 1 µF, T_a = 25°C

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Consumption current	I_{CC}	No load	—	0.25	1	mA
Oscillator frequency	f_{OSC}	No load	90	125	160	kHz
Output resistance	R_{OUT}	Load 500 Ω	—	—	50	Ω
Voltage conversion efficiency	V_η	No load	95.0	99.9	—	%
Power efficiency	P_η	Load 500 Ω	80	89	—	%
Consumption current in Sleep mode	I_{OFF}	V_{IN} = 0.2 V, no load	—	—	1	µA

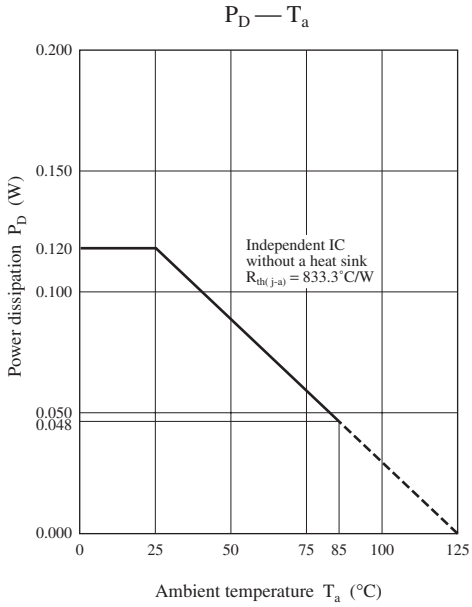
• Design reference data

Note) The characteristics listed below are theoretical values based on the IC design and are not guaranteed.
Unless otherwise specified: V_{IN} = 2.5 V, T_a = 25°C

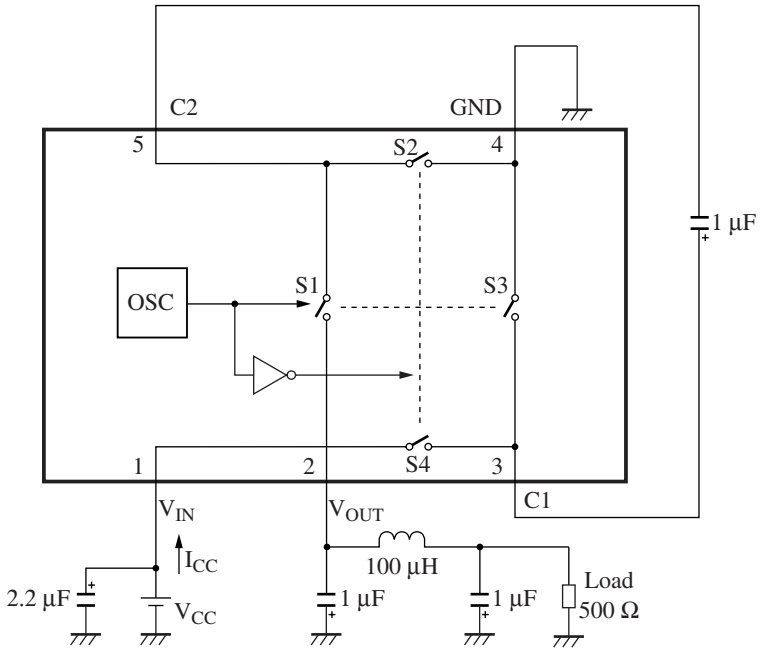
Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Oscillator frequency	f_{OSC}	V_{IN} = 2.5 V, no load T_a = −30°C to 85°C	66	125	198	kHz

■ Technical Data

• P_D — T_a curves of SMINI-5DA



■ Application Circuit Example



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