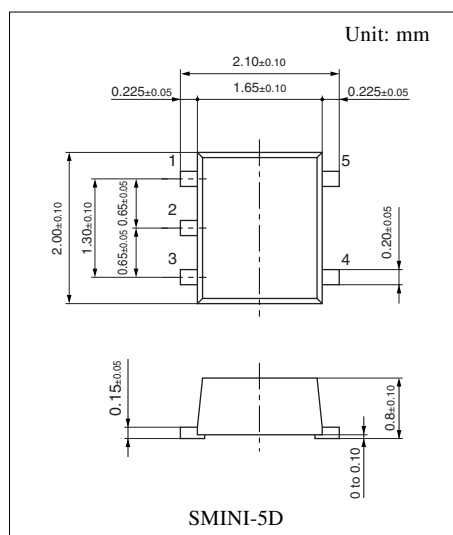


Polarity inverting charge pump DC/DC converter IC

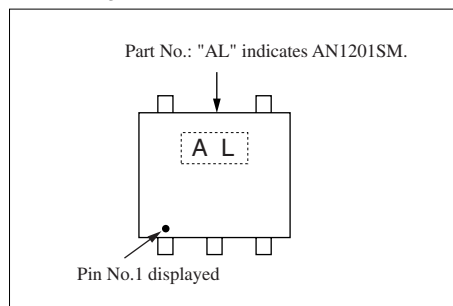
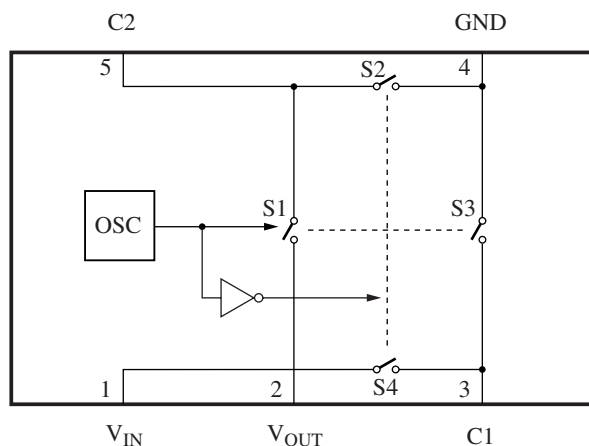
AN1201SM is a negative voltage generation IC for bias voltage of transmission power module of cellular phones. This IC is a polarity inverting DC/DC converter to change from positive voltage into negative voltage.

- 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

- Cellular phones



Note) The package of this product will be changed to lead-free type (SMINI-5DA). See the new package dimensions section later of this datasheet.



■ 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 $T_a = 25^\circ\text{C}$.

*2: $T_a = 85^\circ\text{C}$, 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 $V_{IN} = 2.5\text{ V}$, $C1 = 1\text{ }\mu\text{F}$, $T_a = 25^\circ\text{C}$

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}	$V_{IN} = 0.2\text{ V}$, no load	—	—	1	μA

• Design reference data

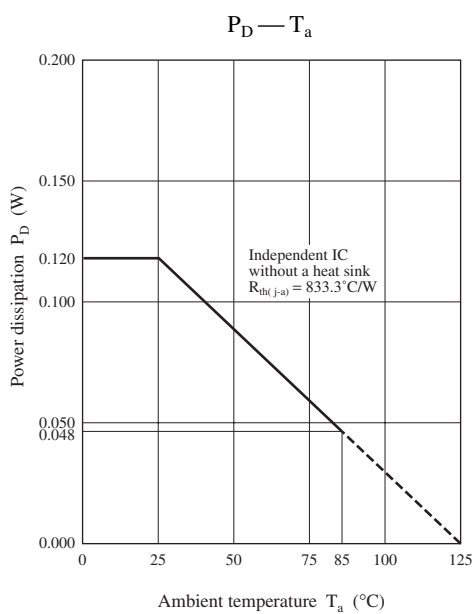
Note) The characteristics listed below are theoretical values based on the IC design and are not guaranteed.

Unless otherwise specified: $V_{IN} = 2.5\text{ V}$, $T_a = 25^\circ\text{C}$

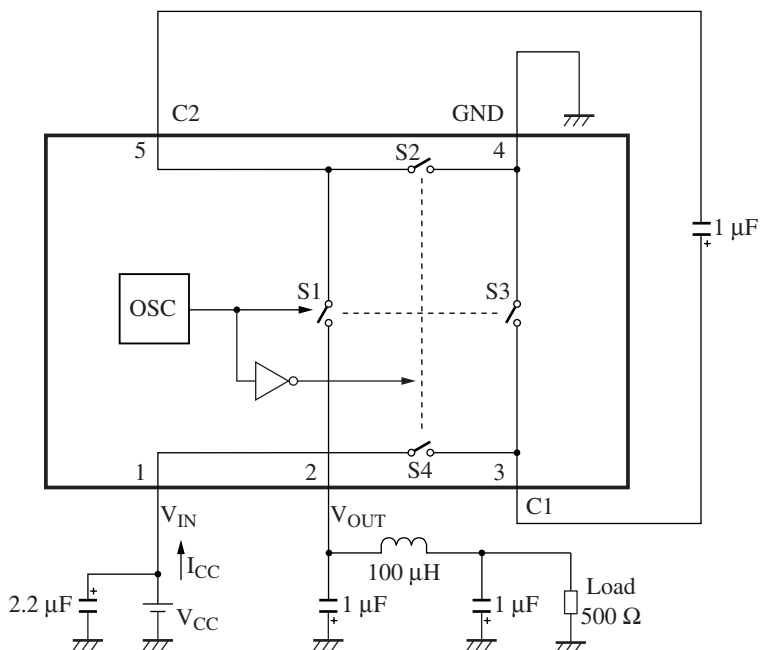
Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Oscillator frequency	f_{OSC}	$V_{IN} = 2.5\text{ V}$, no load $T_a = -30^\circ\text{C}$ to 85°C	66	125	198	kHz

■ Technical Data

- $P_D - T_a$ curves of SMINI-5D

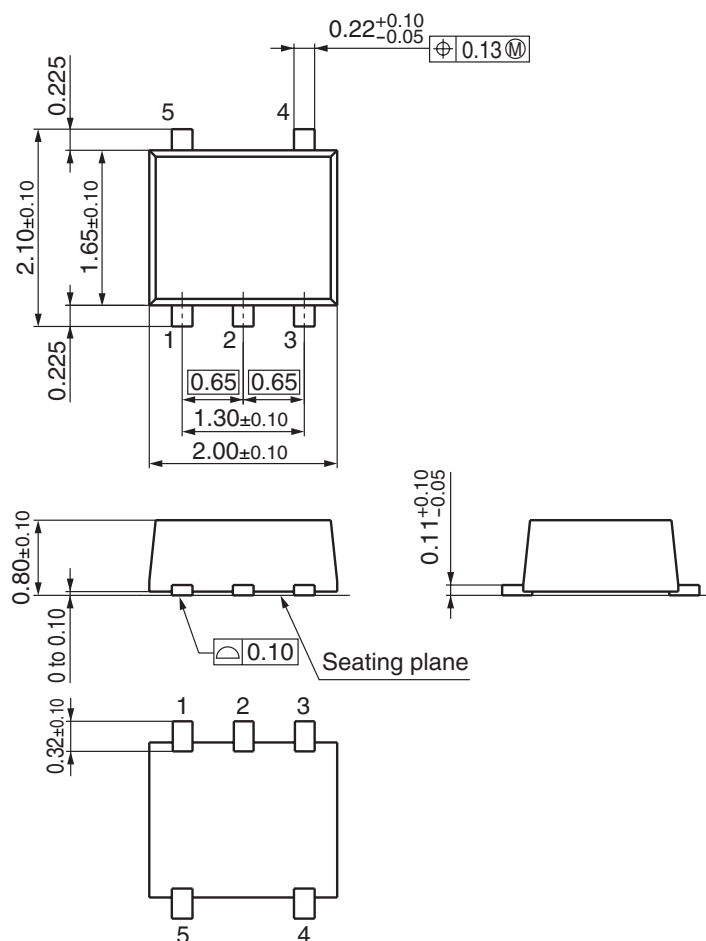


■ Application Circuit Example



■ New Package Dimensions (Unit: mm)

- SMINI-5DA (Lead-free package)



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