

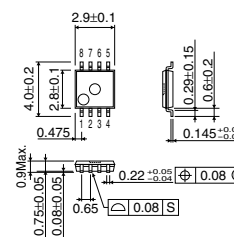
Programmable negative supply IC

BD6112FVM

● Description

BD6112FVM is a charge-pump negative supply IC with a built-in regulator. The charge-pump block inverts the positive supply voltage in the VBAT pin into a negative voltage, which generates from the NEGOUT pin. The regulator block stabilizes this negative voltage with low-noise that produces from the OUT pin. Output voltage values of this regulator can be controlled by voltage value inputted to the VIN pin and determined by $OUT = -1.6 \times VIN$.

● Dimension (Units : mm)



MSOP8

● Features

- 1) Built-in high efficiency, inverting charge-pump
- 2) Built-in negative voltage regulator
(low noise, output voltage variable)
- 3) Built-in standby SW (pull down resistance 1MΩ)
- 4) Ultra small MSOP8 package

● Applications

Small terminal devices such as cellular phones, PHS, and PDA etc.
Other equipments driven by battery required for negative voltage.

● Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit
Maximum applied supply voltage	VBAT	-0.3 ~ +6.0	V
Maximum applied input voltage	VIN	-0.3 ~ +6.0	V
Power dissipation	Pd	350 *	mW
Operating temperature range	Topr	-30 ~ +85	°C
Storage temperature range	Tstg	-55 ~ +125	°C

* Derating : 3.5mW/°C for operation above Ta=25°C

● Recommended Operating Conditions (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit
Power supply voltage	V _{BAT}	2.5	3.6	5.5	V

● Electrical characteristics (Unless otherwise noted; Ta=25°C, V_{BAT}=3.6V, STBY=3.6V)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions	
Circuit current	I _{Q1}	–	0.5	3	mA	No load, V _{IN} =1.25V	
Stand-by current	I _{Q2}	–	–	5	μA	No load, V _{IN} =0V, STBY=0V	
<Regulator block>							
Output voltage 1	V _O	–2.1	–2.0	–1.9	V	V _{IN} =1.25V, I _{OUT} =5mA	
Output voltage 2	V _{O2}	V _O x 0.95	V _O	V _O x 1.05	V	V _{IN} =0.5~1.8V, V _O =–1.6 x V _{IN} , I _{OUT} =5mA	
Output ripple voltage	V _{RR}	–	–70	–60	dBV	V _{IN} =1.25V, I _{OUT} =5mA	
Maximum output current	I _{OMAX}	10	–	–	mA	V _{IN} =1.25V, V _{OUT} ≤V _O +0.1V	
Load regulation	ΔV _{OL}	–	2	40	mV	V _{IN} =1.25V, I _o =0~5mA	
Line regulation	ΔV _{OI}	–	10	40	mV	V _{BAT} =3.0~6.0V, I _o =5mA	
V _{IN} pin inflow current	I _{IN}	–	0	2	μA	V _{IN} =1.25V	
<Charge-pump block>							
Oscillation frequency	f _{osc}	–	120	–	kHz		
Voltage conversion efficiency	V _{CE}	–	97	–	%	No load, NEGOUT monitor	
Stand-by pin pull down resistance	R _{STBY}	0.6	1.0	1.6	MΩ		
Stand-by pin control voltage	Operating	V _{IH}	2.0	–	–	V	
	Non-operating	V _{IL}	–0.3	–	0.3	V	

● Application Circuit

