

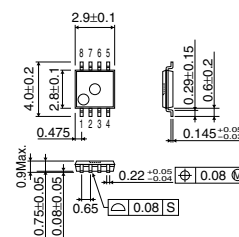
Programmable negative supply IC

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

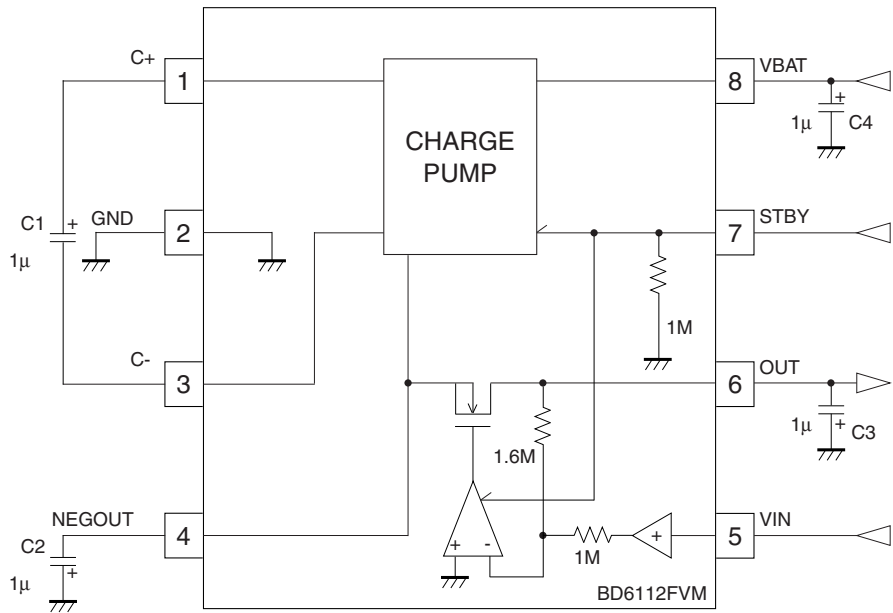
● Recommended Operating Conditions (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit
Power supply voltage	VBAT	2.5	3.6	5.5	V

● Electrical characteristics (Unless otherwise noted; Ta=25°C, VBAT=3.6V, STBY=3.6V)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Circuit current	Iq1	—	0.5	3	mA	No load, VIN=1.25V
Stand-by current	Iq2	—	—	5	μA	No load, VIN=0V, STBY=0V
<Regulator block>						
Output voltage 1	Vo	−2.1	−2.0	−1.9	V	VIN=1.25V, IOUT=5mA
Output voltage 2	Vo2	Vo x 0.95	Vo	Vo x 1.05	V	VIN=0.5~1.8V, Vo=−1.6 x VIN, IOUT=5mA
Output ripple voltage	VRR	—	−70	−60	dBV	VIN=1.25V, IOUT=5mA
Maximum output current	IOMAX	10	—	—	mA	VIN=1.25V, VOUT≤Vo+0.1V
Load regulation	ΔVOL	—	2	40	mV	VIN=1.25V, Io=0~5mA
Line regulation	ΔVOI	—	10	40	mV	VBAT=3.0~6.0V, Io=5mA
VIN pin inflow current	IIN	—	0	2	μA	VIN=1.25V
<Charge-pump block>						
Oscillation frequency	fosc	—	120	—	kHz	
Voltage conversion efficiency	VCE	—	97	—	%	No load, NEGOUT monitor
Stand-by pin pull down resistance	RSTBY	0.6	1.0	1.6	MΩ	
Stand-by pin control voltage	Operating	VIH	2.0	—	V	
	Non-operating	VIL	−0.3	—	V	

● Application Circuit



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