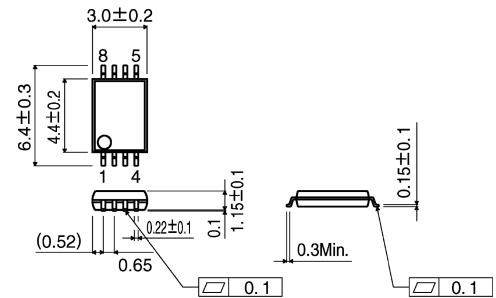


## Variable output, negative voltage IC BD6111FV

### Description

The BD6111FV is a charge-pump, negative supply IC containing a regulator. The charge pump block inverts a positive power supply voltage that is inputted to VBAT pin into a negative voltage and outputs it from the NEGOUT pin. The regulator block stabilizes this negative voltage with low-noise and outputs it from OUT pin. Output voltage values of this regulator can be controlled by voltage value inputted to VIN pin and determined by  $OUT = -1.6 \times VIN$ .

### Dimension (Units:mm)



SSOP-B8

### Features

- 1) Highly efficient, built-in inverting charge pump
- 2) Built-in variable, negative voltage linear regulator.
- 3) Built-in stand-by switch circuit (pull down resistor 1M  $\Omega$ )
- 4) Compact SSOP-B8 package

### Applications

Compact information computer terminal, such as PDC, PHS and PDA.  
Battery driving apparatus requiring negative voltage.

### Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit
Maximum applied power supply voltage	$V_{BAT}$	-0.3 ~ +6.0	V
Maximum applied input voltage	$V_{IN}$	-0.3 ~ +6.0	V
Power dissipation	$P_d$	300*	mW
Operating temperature range	$T_{opr}$	-20 ~ +70	°C
Storage temperature	$T_{stg}$	-55 ~ +125	°C

\*Derating: 3.0mW/°C for operation above Ta=25°C.

### Recommended Operating Conditions (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit
Power supply voltage	V <sub>BAT</sub>	2.5	-	5.5	V

### Electrical characteristics (Unless otherwise noted: Ta=25°C, V<sub>BAT</sub>=3.6V, STBY=3.6V)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Circuit current	I <sub>Q1</sub>	-	0.6	3	mA	No-load, V <sub>IN</sub> =1.25V
Stand-by current	I <sub>Q2</sub>	-	-	5	μA	No-load, V <sub>IN</sub> =0V, STBY=0V
<Regulator block>						
Output voltage	V <sub>O</sub>	-2.1	-2.0	-1.9	V	V <sub>IN</sub> =1.25V, I <sub>OUT</sub> =10mA
Output ripple voltage	V <sub>RR</sub>	-	-70	-60	dBV	V <sub>IN</sub> =1.25V, I <sub>OUT</sub> =10mA
Maximum output current	I <sub>OMAX</sub>	20	-	-	mA	V <sub>IN</sub> =1.25V, V <sub>OUT</sub> ≤ V <sub>O</sub> +0.1V
Load stability	ΔV <sub>OL</sub>	-	2	40	mV	V <sub>IN</sub> =1.25V, I <sub>O</sub> =0~10mA
Input stability	ΔV <sub>OI</sub>	-	5	40	mV	
V <sub>IN</sub> pin inflow current	I <sub>IN</sub>	-	0	2	μA	V <sub>IN</sub> =1.25V
<Charge pump block>						
Oscillation frequency	f <sub>osc</sub>	-	120	-	kHz	
Voltage conversion efficiency	V <sub>CE</sub>	-	97	-	%	No-load, NEGOUT monitor
Stand-by pin pull down resistor	R <sub>STBY</sub>	0.6	1.0	1.6	MΩ	
Stand-by pin Control voltage	Operation	V <sub>IH</sub>	2.0	-	-	V
	Non-operation	V <sub>IL</sub>	-0.3	-	0.3	V

### Application circuit

