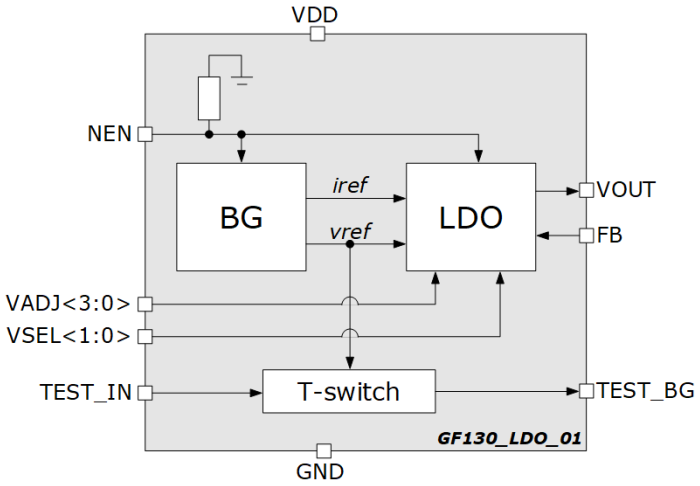
3mA LDO voltage regulator (1.3V – 3.6V to 1.2V/1.3V/1.5V/1.65V)

OVERVIEW

130GF_LDO_01 is a capacitor-less regulator designed to supply integrated circuits with stable and precise voltage.
The LDO inputs voltage VDD 1.3… 3.6V and converts this voltage into a voltage VOUT 1.2V/1.3V/1.5V/1.65V with 3mA load capacity. This voltage programmed using the bus VADJ<3:0>.

IP technology: Global Foundries Embedded EEPROM 130 nm.
IP status: silicon verification.
Area: 0.13mm^2.



ELECTRICAL CHARACTERISTICS

Parameter	Symbol	Conditions		Value min	Value typ.	Value max	Units
Supply voltage	V_{DD}	-		1.3	3	3.6	V
	*1.5V bat	-		1.3	1.5	1.6	
	*3.0V bat	-		2.0	3.0	3.6	
Operating temperature range	T_j	-		-40	+27	+85	ºC
Reference voltage	V_{ref}	-		-	603	-	mV
Reference voltage deviation	ΔV_{ref}	-		-	5	-	%
Voltage regulator output	V_{OUT}	I_{LOAD}=0uA÷ I_{MAX}, V_{DD}=1.3 ÷1.6V		1.153	1.2	1.26	V
		I_{LOAD}=0uA÷ I_{MAX}, V_{DD}=2 ÷3.6V		1.155	1.205	1.265	
		I_{LOAD}=0uA÷ I_{MAX}, V_{DD}=1.3 ÷3.6V	V_{SEL}=<01>	-	1.5	-	
			V_{SEL}=<10>	-	1.3	-	
			V_{SEL}=<11>	-	1.65	-	
V_{REF} thermal drift	ΔV_{ref_T}	-		-	50	-	ppm/ºC
Load regulation	Reg_{LOAD}	I_{LOAD}=0uA÷ I_{MAX}, V_{DD}=1.3 ÷1.6V		-	0.02	-	%
		I_{LOAD}=0uA÷ I_{MAX}, V_{DD}=2 ÷3.6V		-	0.01	-	
Line regulation	Reg_{LINE}	I_{LOAD}=1nA, V_{DD}=1.3 ÷3.6V		-	0.39	-	%
Output voltage deviation	ΔV_{OUT}	From programmed value V_{ADJ}<3:0>		-7	-	+8	%
Maximum load current	I_L	-		-	-	3	mA
Current consumption	I_{cc}	V_{SEL}=<00>, (V_{OUT}=1.2V)		-	30	48	uA
Power Supply Rejection Ration	PSRR	V_{DD}=3.0V, I_{LOAD}=1mA, V_{SEL}=default	F=10Hz	-	50	-	dB
			F=10kHz	-	20	-	
			F=100kHz	-	10	-	
Load Transient Amplitude on Vout	$\Delta V_{OUT}/V_{OUT}$	I_{LOAD}=20uA to 1mA in 1us, V_{SEL}= default	C_L=350pF	-	5	10	%
			C_L=450pF	-	5.1	10	
		I_{LOAD}=1mA to 20uA in 1us, V_{SEL}= default	C_L=350pF	-	6.4	10	
			C_L=450pF	-	6.4	10	
Power-up time	t_{ON}	No current load, C_L=350pF, V_{TH}=0.95V_{OUT}		-	100	320	us
Logic load capacitance	C_L	-		100	350	1000	pF
Input nEN pin current	I_{nEN}	V_{NEN}=3.6V, VDD = 3.6V		-	250	-	nA
Current consumption	I_{STB}	Stand-by mode, V_{NEN}=1.2V, V_{DD}=3.0V		-	440	-	nA
Input logic-high level	V_{IH}	For NEN input		0.7V_{DD}	-	-	V
Input logic-low level	V_{IL}			-0.25	-	0.3	V
Input logic-high level	V_{IH}	For V_{ADJ}<3:0> input, V_{SEL}<1:0> input		0.7V_{OUT}	-	-	V
Input logic-low level	V_{IL}			-	-	0.3V_{OUT}	V