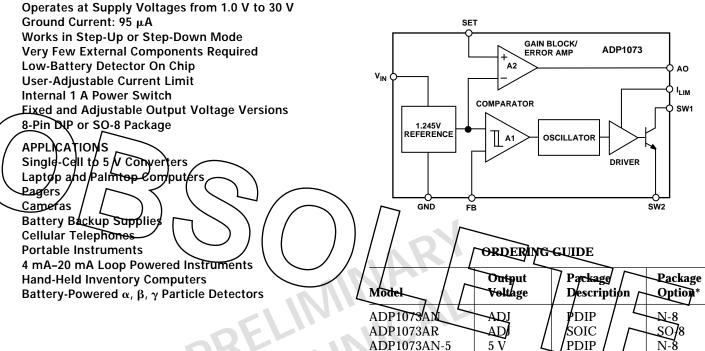


FEATURES

Micropower DC-DC Converter Adjustable and Fixed 5 V, 12 V

ADP1073





ADP1073AR-5

ADP1073AN-12

ADP1073AR-12

GENERAL DESCRIPTION

The ADP1073 is part of a family of step-up/step-down switching regulators which operates from an input supply voltage of as little as 1.0 V. This extremely low input voltage allows the ADP1073 to be used in applications that require using a single cell battery as the primary power source.

The ADP1073 can be configured to operate in either step-up or step-down mode; but for input voltages greater than 3 V, the ADP1173 is recommended.

An auxiliary gain amplifier can serve as a low-battery detector or linear regulator. Quiescent current on the ADP1073-5 is only $135 \ \mu$ A unloaded, making it ideal for systems where long battery life is required.

The ADP1073 can deliver 40 mA at 5 V from an input voltage range as low as 1.25 V, or 10 mA at 5 V from a 1.0 V input. Current limiting is available by adding an external resistor. Battery protection circuitry keeps reverse currents to safe levels at reverse supply voltages of up to 1.6 V.

*For outline information see Package Information section.

5 V

12 V

12 V

PIN CONFIGURATIONS

SOIC

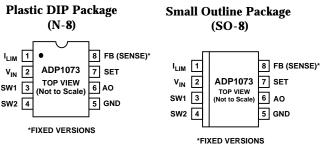
PDIP

SOIC

SO-8

SO-8

N-8



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ADP1073—SPECIFICATIONS (@ $T_A = +25^{\circ}C$, $V_{IN} = 1.5$ V, unless otherwise noted)

Model	Conditions ¹	Vs		ADP1073		
			Min	Тур	Max	Units
QUIESCENT CURRENT*	Switch Off	I _Q		95	130	μΑ
QUIESCENT CURRENT, STEP-UP MODE CONFIGURATION	No Load, ADP1073-5 ADP1073-12	I_Q		135 250		μA
INPUT VOLTAGE*	Step-Up Mode	V _{IN}	1.15 1.0		12.6 12.6	V V
	Step-Down Mode				30	V
COMPARATOR TRIP POINT VOLTAGE*	ADP1073 ¹		202	212	222	mV
OUTPUT SENSE VOLTAGE*	ADP1073-5 ² ADP1073-12 ²	V _{OUT}	4.75 11.4	5.00 12.00	$5.25 \\ 12.6$	V V
COMPARATOR HYSTERESIS*	ADP1073			5	10	mV
OUTPUT HYSTERESIS*	ADP1073-5 ADP1073-12			125 300	250 600	mV mV
OSCILLATOR FREQUENCY*		f _{OSC}	15	19	23	kHz
DUTY CYCLE*	Full Load (V _{FB} < V _{REF})	7 dc	65	72	80	%
SWITCH ON TIME*		t _{on}	30	738	50	μs
FEEDBACK PIN BIAS CURRENT*	ADP10 $X_3 V_{FB} = 0 V$	I _{FB}		10-	50 1	nA
SET PIN BIAS CURRENT*	V _{SET} = V _{REF}	-Isey	$\overline{}$	60	120	/mA_
AO OUTPUT LOW*	$I_{AO} = 100 \ \mu A$	VAO		0.15	0.4	L-4-
REFERENCE LINE REGULATION*	$\begin{array}{l} 1.0 \ V \leq V_{IN} \leq 1.5 \ V \\ 1.5 \ V \leq V_{IN} \leq 12 \ V \end{array}$			0. 8 5 0.05	1.0 0.1	%/V %/V
SWITCH SATURATION VOLTAGE*	$V_{IN} = 1.5 \text{ V}, \text{ I}_{SW} = 400 \text{ mA}$	V _{CESAT}		300	400	mV
STEP-UP MODE	$V_{IN} = 1.5 \text{ V}, \ I_{SW} = 500 \text{ mA}$			400	600 550 750	mV mV mV
	$V_{\rm IN} = 5 \text{ V}, I_{\rm SW} = 1 \text{ A}$			700	1000 1500	mV mV mV
A2 ERROR AMP GAIN*	$R_L = 100 k\Omega^3$	A _V	400	1000		V/V
REVERSE BATTERY CURRENT	(Note 4)	I _{REV}		750		mA
CURRENT LIMIT CURRENT LIMIT TEMPERATURE COEFFICIENT	220 Ω Between I_{LIM} and V_{IN}			400 -0.3		mA %/°C
SWITCH OFF LEAKAGE CURRENT	Measured at SW1 Pin	I _{LEAK}		1	10	μA
MAXIMUM EXCURSION BELOW GND	$I_{SW1} \le 10 \ \mu A$, Switch Off	V _{SW2}		-400	-350	mV

NOTES

*Denotes the specifications that apply over the full operating temperature range.

¹This specification guarantees that both the high and low trip point of the comparator fall within the 210 mV to 230 mV range.

²This specification guarantees that the output voltage of the fixed versions will always fall within the specified range. The waveform at the sense pin will exhibit a sawtooth shape due to the comparator hysteresis.

 $^{3}100~k\Omega$ resistor connected between a 5 V source and the AO pin.

⁴The ADP1110 is guaranteed to withstand continuous application of +1.6 V applied to the GND and SW2 pins while V_{IN}, I_{LIM}, and SW1 pins are grounded.

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