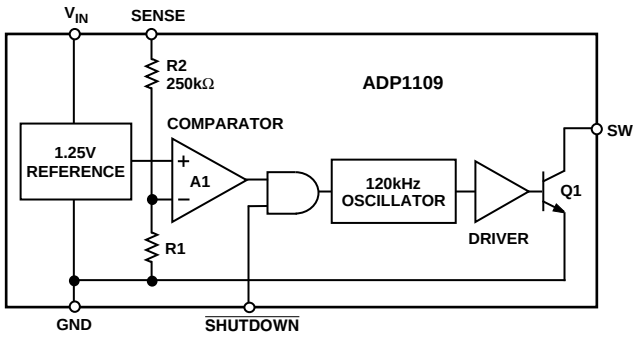
Micropower; Low Cost; Fixed 5 V, 12 V and Adjustable DC-to-DC Converter

ADP1109

FEATURES
Operates at Supply Voltages 2 V to 12 V
Fixed 5 V, 12 V and Adjustable Output
Minimum External Components Required
Ground Current 320 μA
120 kHz Oscillator Frequency
Logic Shutdown
8-Pin DIP and SO Package

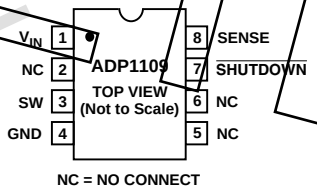
APPLICATIONS
Cellular Telephones
Single-Cell to 5 V Converters
Laptop and Palmtop Computers
Pagers
Cameras
Battery Backup Supplies
Portable Instruments
Laser Diode Drivers
Hand-Held Inventory Computers

FUNCTIONAL BLOCK DIAGRAM



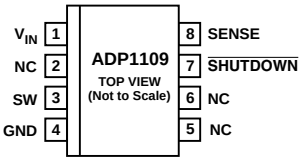
PIN CONFIGURATIONS

8-Lead Plastic DIP
(N-8 Package)



NC = NO CONNECT

8-Lead SOIC
(SO-8 Package)



NC = NO CONNECT

GENERAL DESCRIPTION

The ADP1109 is a versatile step-up switching regulator. The device requires only minimal external components to operate as a complete switching regulator.

The ADP1109-5 can deliver 100 mA at 5 V from a 3 V input, and ADP1109-12 can deliver 60 mA at 12 V from a 5 V input. The device also features a logic controlled shutdown capability that when a logic low is applied it will shut the oscillator down. The 120 kHz operating frequency allows for the use of small surface mount components.

The gated oscillator capability eliminates the need for frequency compensation.

ORDERING GUIDE

Model	Output Voltage	Package Description	Package Option*
ADP1109AN	ADJ	PDIP	N-8
ADP1109AR	ADJ	SOIC	SO-8
ADP1109AN-5	5 V	PDIP	N-8
ADP1109AR-5	5 V	SOIC	SO-8
ADP1109AN-12	12 V	PDIP	N-8
ADP1109AR-12	12 V	SOIC	SO-8

*For outline information see Package Information section.

ADP1109–SPECIFICATIONS (@ T_A = +25°C, V_{IN} = 3 V, unless otherwise noted)

Parameter	Conditions[1]	V_S	ADP1109 Min	Typ	Max	Units
QUIESCENT CURRENT*	Switch Off	I_Q		320	550	µA
INPUT VOLTAGE*		V_{IN}	3			V
COMPARATOR TRIP POINT VOLTAGE*	ADP1109		1.20	1.25	1.30	V
OUTPUT VOLTAGE*						
ADP1109-5	3 V ≤ V_{IN} ≤ 5 V	V_{OUT}	4.75	5.00	5.25	V
ADP1109-12	3 V ≤ V_{IN} ≤ 12 V		11.45	12.00	12.55	V
OUTPUT VOLTAGE RIPPLE*	ADP1109-5			25	50	mV
	ADP1109-12			60	120	mV
OSCILLATOR FREQUENCY*		f_{OSC}	100	120	140	kHz
			90		150	kHz
DUTY CYCLE*	Full Load	DC	45	50	60	%
SWITCH ON TIME*		t_{ON}	3.3	4.2	5.3	µs
			3.0		5.5	µs
SWITCH SATURATION VOLTAGE*	I_{SW} = 500 mA	V_{CESAT}		0.4	0.7	
ADP1109-5	V_{IN} = 3 V			0.5	0.8	V
ADP1109-12	V_{IN} = 5 V			0.5	0.8	V
SWITCH LEAKAGE CURRENT	V_{SW} = 12 V			1	10	µA
SHUTDOWN PIN HIGH*		V_{IH}	2.0			V
SHUTDOWN PIN LOW*		V_{IL}			0.8	V
SHUTDOWN PIN INPUT CURRENT*	$V_{SHUTDOWN}$ = 4 V	I_{IH}			10	µA
SHUTDOWN PIN INPUT CURRENT*	$V_{SHUTDOWN}$ = 0 V	I_{IL}			20	µA

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

Specifications subject to change without notice.