

CONTACT FACTORY FOR
COMPLETE DATA SHEET

MAXIM

Adjustable, Step-Down, Current-Mode PWM Regulators

General Description

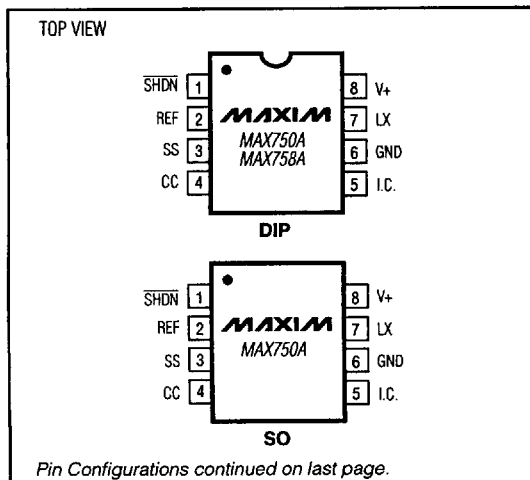
The MAX750A/MAX758A are adjustable-output, CMOS, step-down, DC-DC switching regulators. The MAX758A accepts inputs from 4V to 16V and delivers 750mA, while the MAX750A accepts inputs from 4V to 11V and delivers 450mA. Typical efficiencies are 85% to 90%. Typical quiescent current is 1.7mA, or only 6 μ A in shutdown mode. The output does not exhibit any ripple at subharmonics of the switching frequency over its specified range.

Pulse-width-modulation (PWM) current-mode control provides precise output regulation and excellent transient responses. Output voltage accuracy is guaranteed to be $\pm 4.5\%$ plus feedback-resistor tolerance over line, load, and temperature variations. Fixed-frequency switching and absence of subharmonic ripple allows easy filtering of output ripple and noise, as well as the use of small external components. These regulators require only a single inductor value to work in most applications, so no inductor design is necessary.

Applications

Cellular Phones & Radios
Portable Communications Equipment
Portable Instruments
Computer Peripherals

Pin Configurations



Features

- ◆ Up to 750mA Load Currents
- ◆ 160kHz High-Frequency, Current-Mode PWM
- ◆ 85% to 96% Efficiencies
- ◆ 33 μ H or 100 μ H Pre-Selected Inductor Value, No Component Design Required
- ◆ 1.7mA Quiescent Supply Current
- ◆ 6 μ A Shutdown Supply Current
- ◆ Adjustable Output Voltage
- ◆ Overcurrent, Soft-Start, and Undervoltage Lockout Protection
- ◆ Cycle-by-Cycle Current Limiting
- ◆ 8-Pin DIP/SO Packages (MAX750A)

Ordering Information

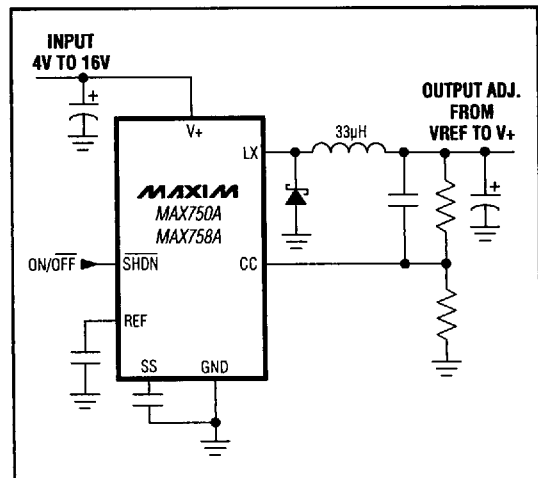
PART	TEMP. RANGE	PIN-PACKAGE
MAX750ACPA	0°C to +70°C	8 Plastic DIP
MAX750ACSA	0°C to +70°C	8 SO
MAX750AC/D	0°C to +70°C	Dice*
MAX750AEPA	-40°C to +85°C	8 Plastic DIP
MAX750AESA	-40°C to +85°C	8 SO
MAX750AMJA	-55°C to +125°C	8 CERDIP**

Ordering Information continued on last page.

* Contact factory for dice specifications.

**Contact factory for availability and processing to MIL-STD-883.

Typical Operating Circuit



MAXIM

Maxim Integrated Products 4-99

Call toll free 1-800-998-8800 for free samples or literature.

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MAX750A/MAX758A

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ABSOLUTE MAXIMUM RATINGS

Pin Voltages

V+ (MAX750A).....	+12V, -0.3V
V+ (MAX758A).....	+18V, -0.3V
LX (MAX750A).....	(V+ - 12V) to (V+ + 0.3V)
LX (MAX758A).....	(V+ - 21V) to (V+ + 0.3V)
SS, CC, SHDN	-0.3V to (V+ + 0.3V)
Peak Switch Current (ILX).....	2A
Reference Current (IREF).....	2.5mA
Power Dissipation (TA = +70°C)	
8-Pin Plastic DIP (derate 9.09mW/°C above +70°C).....	727mW
8-Pin SO (derate 5.88mW/°C above +70°C).....	471mW
16-Pin Wide SO (derate 9.52mW/°C above +70°C).....	762mW
8-Pin CERDIP (derate 8.00mW/°C above +70°C).....	640mW

Operating Temperature Ranges:

MAX75_AC_ _	0°C to +70°C
MAX75_AE_ _	-40°C to +85°C
MAX75_AMJA	-55°C to +125°C
Junction Temperatures:	
MAX75_AC_ _/AE_ _	+150°C
MAX75_AMJA	+175°C
Storage Temperature Range	-65°C to +160°C
Lead Temperature (soldering, 10sec)	+300°C

Stresses beyond those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

ELECTRICAL CHARACTERISTICS

(Circuit of Figure 3, V+ = 9V for the MAX750A, V+ = 12V for the MAX758A, VOUT = 5V, R2 = 40.20kΩ, R3 = 13.0kΩ, ILOAD = 0mA, TA = TMIN to TMAX, unless otherwise noted.)

PARAMETER	CONDITIONS	MAX750A			MAX758A			UNITS
		MIN	TYP	MAX	MIN	TYP	MAX	
Output Voltage (Note 1)	V+ = 6.0V to 11.0V; 0mA < ILOAD < 450mA for MAX750AC, 0mA < ILOAD < 450mA for MAX750AE, 0mA < ILOAD < 300mA for MAX750AM	4.75	5.00	5.25				V
	V+ = 6.0V to 16.0V; 0mA < ILOAD < 450mA for MAX758AC/AE, 0mA < ILOAD < 350mA for MAX758AM				4.75	5.00	5.25	
	V+ = 10.2V to 16.0V, 0mA < ILOAD < 750mA				4.75	5.00	5.25	
Input Voltage Range		4.0		11.0	4.0		16.0	V
Line Regulation	V+ = 4.0V to 11.0V		0.15					%V
	V+ = 4.0V to 16.0V					0.15		
Load Regulation	ILOAD = 0mA to 450mA		0.0005					%mA
	ILOAD = 0mA to 750mA					0.0005		
Efficiency	V+ = 9.0V, ILOAD = 300mA		92			90		%
	V+ = 12V, ILOAD = 750mA					87		
Supply Current			1.7	3.0		1.7	3.0	mA
Shutdown Supply Current (Note 2)	SHDN = 0V		6.0	100.0		6.0	100.0	μA
Shutdown Input Threshold	V _{IH}	2.0			2.0			V
	V _{IL}			0.25			0.25	
Shutdown Input Leakage Current				1.0			1.0	μA
Short-Circuit Current			1.5			1.5		A