

3MHz 1.5A Buck Converter

Features

- ◆ Input Voltage Range: 2.5V~5.5V
- ◆ Output Voltage Range: 0.3V~2.75V
- ◆ Factory Programmable Fixed Output Voltage
- ◆ Maximum Output Current: 1.5A
- ◆ 3MHz PWM with Seamless PWM/PFM Switching for Light-load Efficiency
- ◆ Excellent Load and Line Transient
- ◆ Quiescent Current in PFM Tristate: 42µA
- ◆ Comprehensive Protection
 - Input Under-Voltage Lockout (UVLO)
 - Over Current and Short-Circuit Protection
 - Thermal Shut-down
- ◆ 1.6 x 1.6mm DFN-6 Package

Applications

- Memory, Hard Disk Drive and SSD
- Data Cards
- Smart Phones
- Tablets
- Handheld Devices

Order Information

Part Number	Default VOUT	Max Load Current	Package	Packing Method
HL7507FN00	0.600V	1.5A	DFN-6	Tape & Reel
HL7507FN01	1.100V	1.5A		
HL7507FN02	1.800V	1.5A		
HL7507FN03	1.200V	1.5A		
HL7507FN04	1.225V	1.5A		
HL7507FN05	2.200V	1.5A		
HL7507FN06	0.900V	1.5A		
HL7507FN07	1.350V	1.5A		

For other default output voltage and maximum load current options, contact a Halo Micro sales representative.

Typical Application Diagram

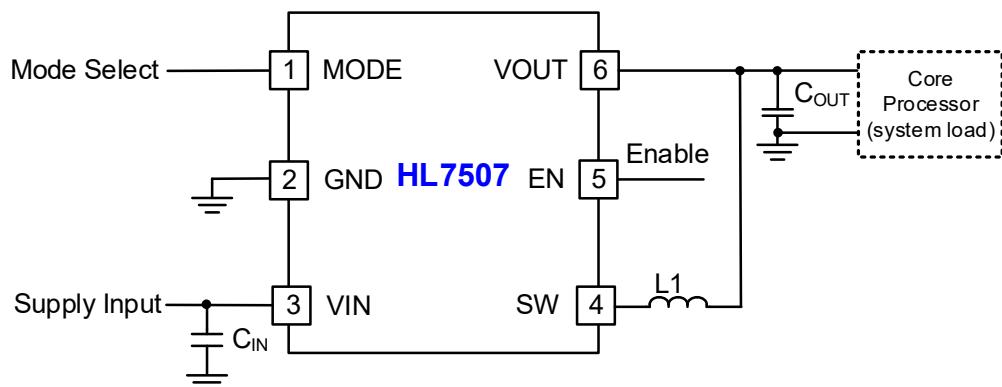


Figure 1 HL7507 Typical Application Diagram

Component	Part Number	Value	Description	Vendor
L	See Table2	See Table2	See Table2	See Table2
C_{IN}	C1608X5R0J105M	10uF/6.3V, X5R	0603	TDK
C_{OUT}	C1608X5R0J226M	22uF/6.3V, X5R	0603	TDK

Table 1 Recommended External Components

Manufacturer	Part Number	L (nH)	DCR(mΩ)	$I_{MAXDC}^{(1)}$	Component Dimensions		
					L	W	H
INPAQ	WFP201610Y-1R0MLA7	1000	37	2.9	2.0	1.6	1.0
INPAQ	WFP201610Y-R47MLA7	470	19	5.3	2.0	1.6	1.0

Table 2 Recommended Inductors

Notes:

- I_{MAXDC} is the smaller current to produce 40°C temperature rise or 30% effective inductance reduction.



Description

HL7507 is a synchronous buck converter optimized to supply different sub systems of portable applications. Its input voltage range is 2.5V to 5.5V. Its output voltage is a factory pre-set value, and 2 optional output ranges are available for various application fields.

HL7507 can deliver up to 1.5A with 80% efficiency, while maintaining over 80% efficiency at load currents as low as 10mA. It operates at a high frequency of 3MHz, which greatly reduces the value of the external components. A wide range of output capacitors can be used to optimize VOUT stability during load transients. Inductors from 0.33uH to 1.0uH may be used without affecting loop stability.

At moderate to light loads, Pulse Frequency Modulation (PFM) is used to maintain conversion efficiency with a typical non-switching quiescent current of 42 μ A. Even with such a low quiescent current, HL7507 maintains

excellent load and line transient responses. At higher loads, the system automatically switches to fixed-frequency Pulse Width Modulation (PWM) operation at 3MHz for minimum VOUT ripple and optimal load transient response. In Shutdown Mode, the supply current drops below 1 μ A, reducing power consumption. PFM Mode can be disabled if needed by setting MODE pin high.

HL7507 can also synchronize to an external clock signal at MODE pin if it is qualified to have the correct frequency value around 1.5MHz.

The HL7507 is available in a 1.6mm*1.6mm DFN-6 package.



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