Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!

Contact us

Tel: +86-755-8981 8866 Fax: +86-755-8427 6832
Email & Skype: info@chipsmall.com Web: www.chipsmall.com
Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China

AS1325

Data Sheet

300mA Step-Up DC-DC Converter

1 General Description

The AS1325 is a high-efficiency step-up DC-DC converter designed to generate a fixed output voltage of +3.3V or +5V.

The AS1325 achieves an efficiency of up to 96% and the minimum input voltage is 1.5V. The AS1325-BSTT-33 delivers up to 300mA output current at the fixed output voltage of +3.3V (@ 2V V_{BATT}). With the fixed output voltage of +5V the AS1325-BSST-50 supplies up to 185mA output current (@ 2V V_{BATT}).

In order to save power the AS1325 features a shutdown mode, where it draws less than 1µA. In shutdown mode the battery is connected directly to the output enabling the supply of real-time-clocks.

The AS1325 provides a power-on reset output that goes high-impedance when the output reaches 90% of its regulation point.

The SHDNN trip threshold of the AS1325 can be used as an input voltage detector that disables the device when the battery voltage falls to a predetermined level.

An internal synchronous rectifier is included.

The AS1325 is available in a 6-pin SOT23 package.

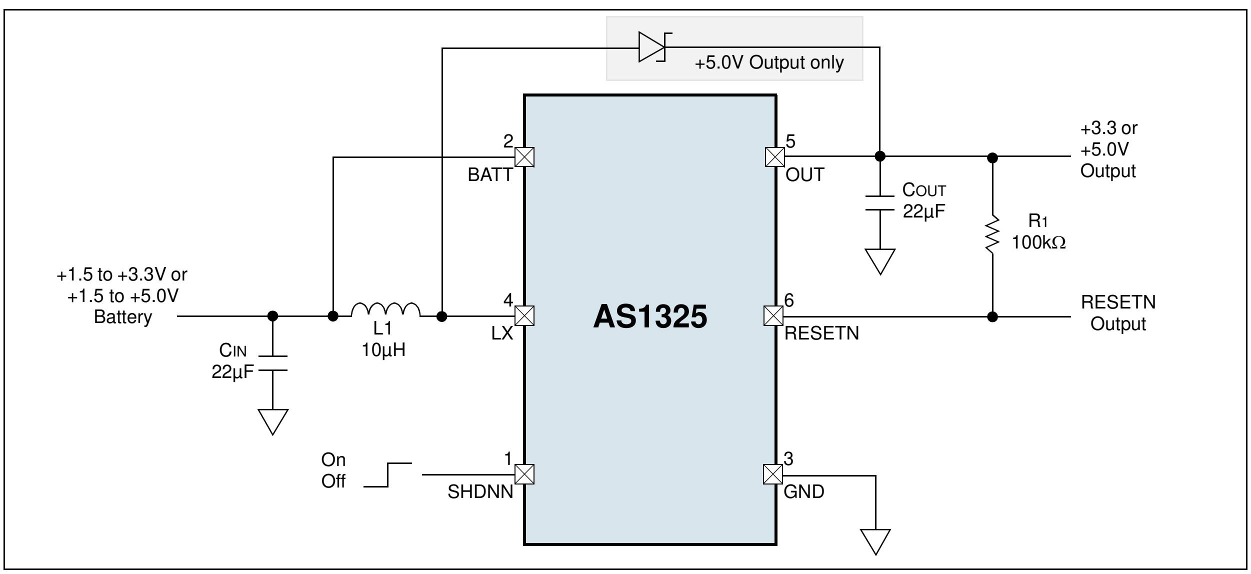
2 Key Features

- Fixed Output Voltage:
  - 3.3V (AS1325-BSTT-33) or 5V (AS1325-BSST-50)
- Output Current:
  - Up to 300mA (AS1325-BSTT-33) @ 2V V_{BATT}
  - Up to 185mA (AS1325-BSST-50) @ 2V V_{BATT}
- Internal Synchronous Rectifier
- Shutdown Mode Supply Current: Less Than 1µA
- Efficiency: Up to 96%
- Minimum Input Voltage: +1.5V
- Accurate Shutdown Low-Battery Cutoff Threshold
- Battery Input Connected to Pin OUT in Shutdown Mode for Backup Power
- Antiringing Control Minimizes EMI
- Ripple Reduction at Light Loads
- 6-pin SOT23 Package

3 Applications

The AS1325 is ideal for low-power applications where ultra-small size is critical as in medical diagnostic equipment, hand-held instruments, pagers, digital cameras, remote wireless transmitters, cordless phones, and PC cards. The device is also perfect as a local supply or as a battery backup.

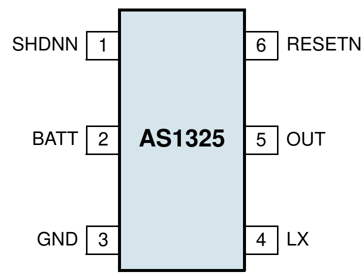
Figure 1. Application Diagram



4 Pinout

Pin Assignments

Figure 2. Pin Assignments (Top View)



Pin Descriptions

Table 1. Pin Descriptions

Name	Pin Number	Description
SHDNN	1	**Active-Low Logic Shutdown Input** 0 = The AS1325 is off and the supply current is ≤ 1µA (typ). 1 = The AS1325 is on.
BATT	2	**Battery Voltage Input**
GND	3	**Ground**
LX	4	**External Inductor Connection**
OUT	5	**Output Voltage**
RESETN	6	**Active-Low reset output**

5 Absolute Maximum Ratings

Stresses beyond those listed in Table 2 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 Section 6 Electrical Characteristics on page 4 is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

Table 2. Absolute Maximum Ratings

Parameter	Min	Max	Units	Comments
All Pins to GND	-0.3	7	V	
LX Current		1	A	
Latch-Up	-100	100	mA	*JEDEC 78*
Package Power Dissipation (T_{AMB} = +70ºC)		500	mW	(Θ_{JA} = 9.1mW/ºC above +70ºC)
Operating Temperature Range	-40	+85	ºC	
Electrostatic Discharge	-500	+500	V	*HBM MIL-Std. 883E 3015.7* methods
Humidity (Non-Condensing)	5	85	%	
Storage Temperature Range	-55	125	ºC	
Junction Temperature		150	ºC	
Package Body Temperature		260	ºC	The reflow peak soldering temperature (body temperature) specified is in compliance with *IPC/JEDEC J-STD-020C "Moisture/ Reflow Sensitivity Classification for Non-Hermetic Solid State Surface Mount Devices"*.

6 Electrical Characteristics

3.3V Output

T_{AMB} = -40 to +85ºC, V_{BATT} = +2V, V_{OUT} = +3.3, V_{SHDNN} = +1.5V (unless otherwise specified). Typ values @ T_{AMB} = +25ºC.

Table 3. Electrical Characteristics

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Battery Input Range	V_{BATT}		1.5		3.5	V
Startup Battery Input Voltage [1]	V_{SU}	R_{LOAD} = 47Ω, T_{AMB} = +25ºC		1.22	1.5	V
		R_{LOAD} = 47Ω, T_{AMB} = -40 to +85ºC		1.24		
Output Voltage [2]	V_{OUT}	T_{AMB} = +25ºC	3.267	3.300	3.333	V
		T_{AMB} = -40 to +85ºC	3.217		3.373	
N-Channel On-Resistance	R_{NCH}	I_{LX} = 100mA, T_{AMB} = +25ºC		0.3	1.2	Ω
		I_{LX} = 100mA, T_{AMB} = -40 to +85ºC			1.5	
P-Channel On-Resistance	R_{PCH}	I_{LX} = 100mA, T_{AMB} = +25ºC		0.4	1.3	Ω
		I_{LX} = 100mA, T_{AMB} = -40 to +85ºC			1.6	
Light Load N-Channel Switch Current Limit				400		mA
Maximum N-Channel Switch Current Limit [1]	I_{MAX}	T_{AMB} = +25ºC	550	700	850	mA
		T_{AMB} = -40 to +85ºC	450		950	
N-Channel Maximum On-Time	t_{ON}	T_{AMB} = +25ºC	5	7	9	µs
		T_{AMB} = -40 to +85ºC	4		10	
P-Channel Minimum On-Time				2		µs
Synchronous Rectifier Zero-Crossing Current		T_{AMB} = +25ºC	8	30	60	mA
		T_{AMB} = -40 to +85ºC	0		65	
Quiescent Current into OUT		V_{OUT} = +3.5V, T_{AMB} = +25ºC		35	55	µA
		V_{OUT} = +3.5V, T_{AMB} = -40 to +85ºC			60	
Shutdown Current into OUT		V_{SHDNN} = 0V, T_{AMB} = +25ºC		0.01	1	µA
		V_{SHDNN} = 0V, T_{AMB} = -40 to +85ºC			2	
Shutdown Current into BATT		V_{SHDNN} = 0V, T_{AMB} = +25ºC		0.01	1	µA
		V_{SHDNN} = 0V, T_{AMB} = -40 to +85ºC			2	
SHDNN Logic Low [1]		V_{BATT} = +1.5 to +3.5V			0.3	V
SHDNN Threshold		Rising Edge, T_{AMB} = +25ºC	1.185	1.228	1.271	V
		Rising Edge, T_{AMB} = -40 to +85ºC	1.170		1.286	
SHDNN Threshold Hysteresis				0.02		V
RESETN Threshold		Falling Edge, T_{AMB} = +25ºC	2.830	3.000	3.110	V
		Falling Edge, T_{AMB} = -40 to +85ºC	2.800		3.140	
RESETN Voltage Low		I_{RESETN} = 1mA, V_{OUT} = +2.5V, T_{AMB} = +25ºC			0.15	V
		I_{RESETN} = 1mA, V_{OUT} = +2.5V, T_{AMB} = -40 to +85ºC			0.2	
RESETN Leakage Current		V_{RESETN} = +5.5V, T_{AMB} = +25ºC		0.1	100	nA
		V_{RESETN} = +5.5V, T_{AMB} = +85ºC		1		
LX Leakage Current		T_{AMB} = +25ºC		0.1	1000	nA
		T_{AMB} = +85ºC		10		
Maximum Load Current	I_{LOAD}	V_{BATT} = +2V		300		mA
Efficiency	η	V_{BATT} = +3V, I_{LOAD} = 100mA		96		%

1. Guaranteed by design.

2. Voltage which triggers next loading cycle. Ripple and rms value depend on external components.

5.0V Output

TAMB = -40 to +85ºC, VBATT = +2V, VOUT = +5.0, VSHDNN = +1.5V (unless otherwise specified). Typ values @ TAMB = +25ºC.

Table 4. Electrical Characteristics

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Battery Input Range	VBATT		1.5		5.0	V
Startup Battery Input Voltage [1]	VSU	RLOAD = 100Ω, TAMB = +25ºC		1.22	1.5	V
		RLOAD = 100Ω, TAMB = -40 to +85ºC		1.24		
Output Voltage [2]	VOUT	TAMB = +25ºC	4.950	5.000	5.050	V
		TAMB = -40 to +85ºC	4.875		5.125	
N-Channel On-Resistance	RNCH	ILX = 100mA, TAMB = +25ºC		0.3	1.2	Ω
		ILX = 100mA, TAMB = -40 to +85ºC			1.5	
P-Channel On-Resistance	RPCH	ILX = 100mA, TAMB = +25ºC		0.4	1.3	Ω
		ILX = 100mA, TAMB = -40 to +85ºC			1.6	
Light Load N-Channel Switch Current Limit				400		mA
N-Channel Switch Current Limit [1]	IMAX	TAMB = +25ºC	550	700	850	mA
		TAMB = -40 to +85ºC	450		950	
Switch Maximum On-Time	tON	TAMB = +25ºC	5	7	9	µs
		TAMB = -40 to +85ºC	4		10	
P-Channel Minimum On-Time				1		µs
Synchronous Rectifier Zero-Crossing Current		TAMB = +25ºC	8	30	60	mA
		TAMB = -40 to +85ºC	0		65	
Quiescent Current into OUT		VOUT = +5.5V, TAMB = +25ºC		35	55	µA
		VOUT = +5.5V, TAMB = -40 to +85ºC			60	
Shutdown Current into OUT		VSHDNN = 0V, TAMB = +25ºC		0.01	1	µA
		VSHDNN = 0V, TAMB = -40 to +85ºC			2	
Shutdown Current into BATT		VSHDNN = 0V, TAMB = +25ºC		0.01	1	µA
		VSHDNN = 0V, TAMB = -40 to +85ºC			2	
SHDNN Logic Low [1]		VBATT = +1.5 to +5.0V			0.3	V
SHDNN Threshold		Rising Edge, TAMB = +25ºC	1.185	1.228	1.271	V
		Rising Edge, TAMB = -40 to +85ºC	1.170		1.286	
SHDNN Threshold Hysteresis				0.02		V
RESETN Threshold		Falling Edge, TAMB = +25ºC	4.288	4.500	4.712	V
		Falling Edge, TAMB = -40 to +85ºC	4.242		4.758	
RESETN Voltage Low		IRESETN = 1mA, VOUT = +2.5V, TAMB = +25ºC			0.15	V
		IRESETN = 1mA, VOUT = +2.5V, TAMB = -40 to +85ºC			0.2	
RESETN Leakage Current		VRESETN = +5.5V, TAMB = +25ºC		0.1	100	nA
		VRESETN = +5.5V, TAMB = +85ºC		1		
LX Leakage Current		TAMB = +25ºC		0.1	1000	nA
		TAMB = +85ºC		10		
Maximum Load Current	ILOAD	VBATT = +2V		185		mA
Efficiency	η	VBATT = +3V, ILOAD = 100mA		91		%

1. Guaranteed by design.
2. Voltage which triggers next loading cycle. Ripple and rms value depend on external components.

7 Typical Operating Characteristics

3.3V Characteristics

V_{OUT} = 3.3V, V_{BATT} = +2V, T_{AMB} = +25ºC, 10µH (MOS6020-103ML) Inductor, 22µF (C1210C226K9PAK) C_{IN} and C_{OUT}

Figure 3. V_{OUT} vs. V_{BATT}; On, 16Ω

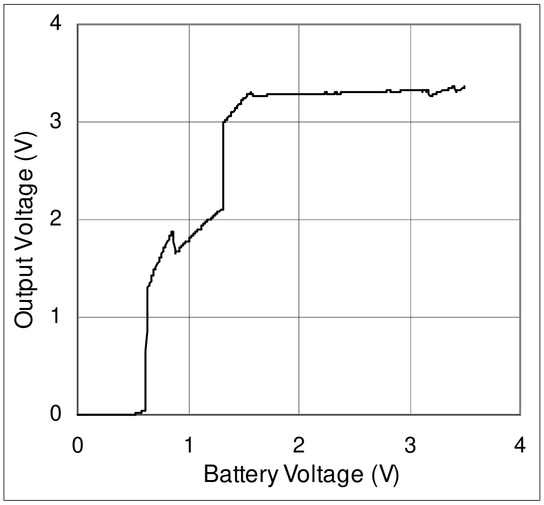


Figure 4. V_{OUT} vs. V_{BATT}; On, 330Ω

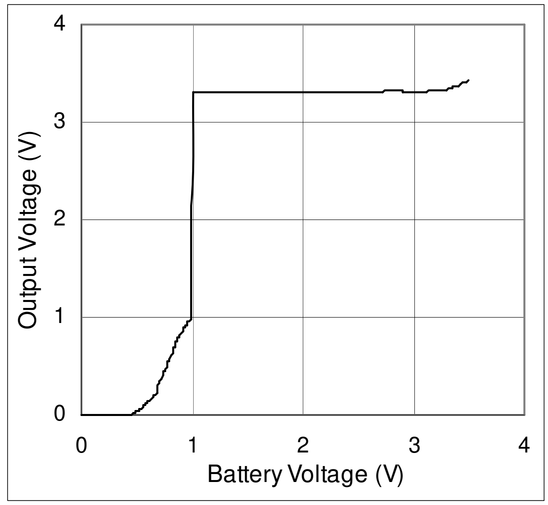


Figure 5. V_{OUT} vs. V_{BATT}; Shutdown, 300mA Load

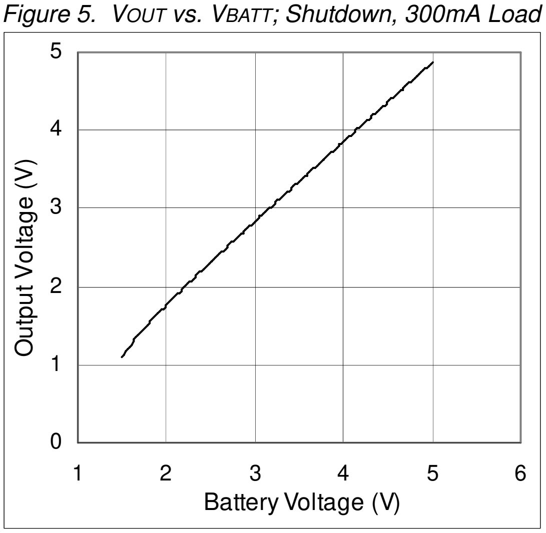


Figure 6. V_{OUT} vs. V_{BATT}; Shutdown, No Load

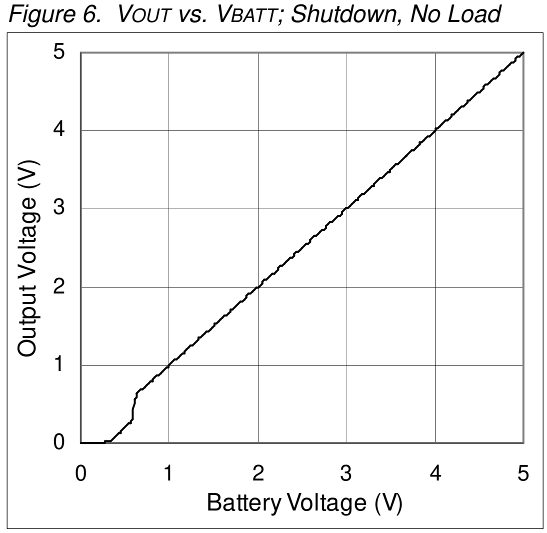


Figure 7. Maximum Output Current vs. V_{BATT}

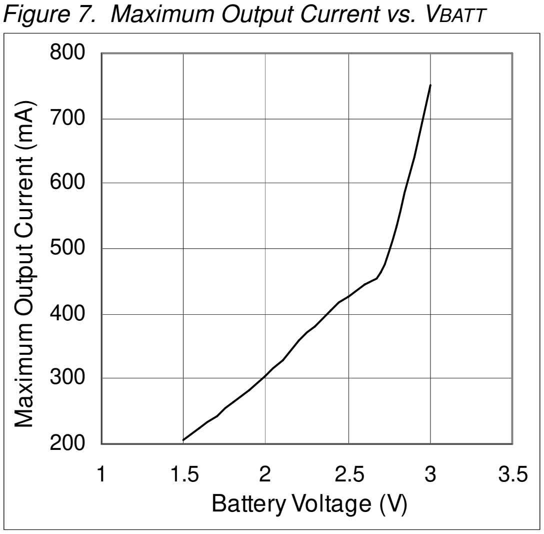


Figure 8. Startup Voltage vs. Load Resistance

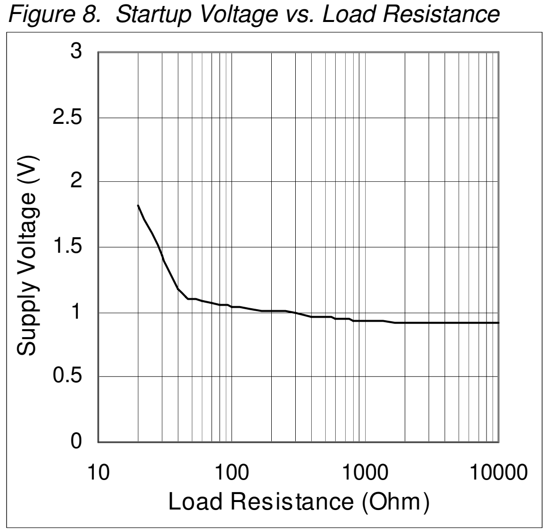


Figure 9. Line Transient

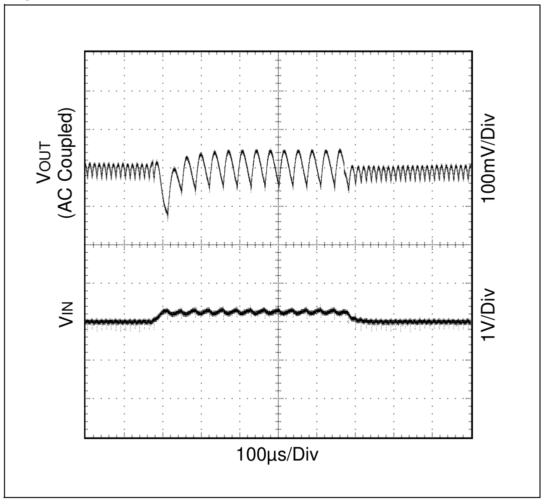


Figure 10. Load Transient

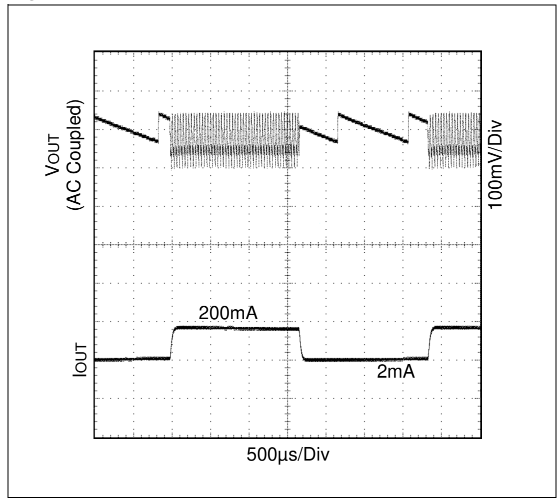


Figure 11. On/Off Response; R_{LOAD} = 33Ω

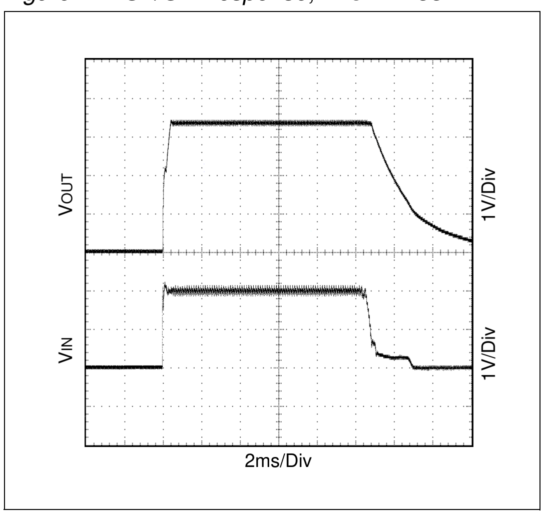


Figure 12. Shutdown Response; R_{LOAD} = 33Ω

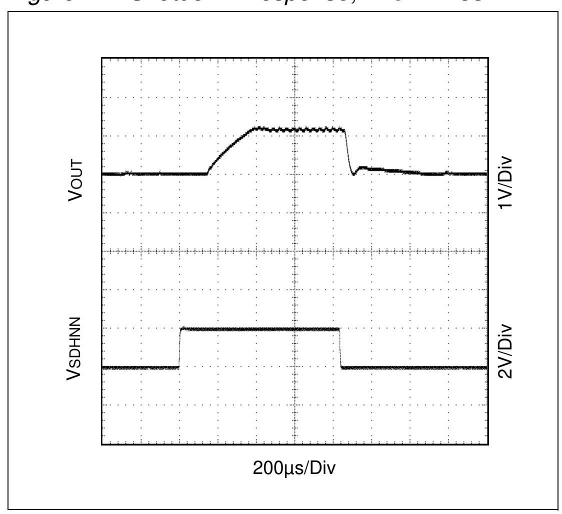


Figure 13. Waveforms; R_{LOAD} = 33Ω

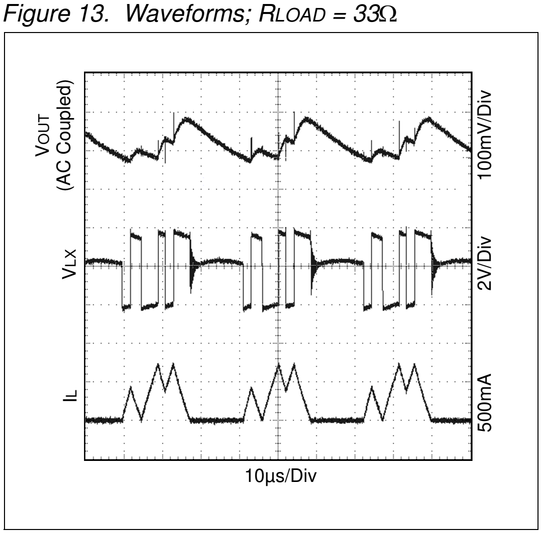
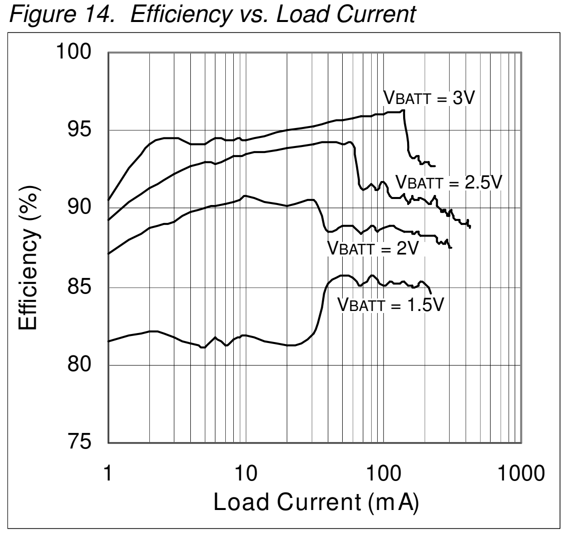


Figure 14. Efficiency vs. Load Current



5.0V Characteristics

V_{OUT} = 5.0V, V_{BATT} = +2V, T_{AMB} = +25ºC, 10µH (MOS6020-103ML) Inductor, 22µF (C1210C226K9PAK) C_{IN} and C_{OUT}

Figure 15. V_{OUT} vs. V_{BATT}; On, 39Ω

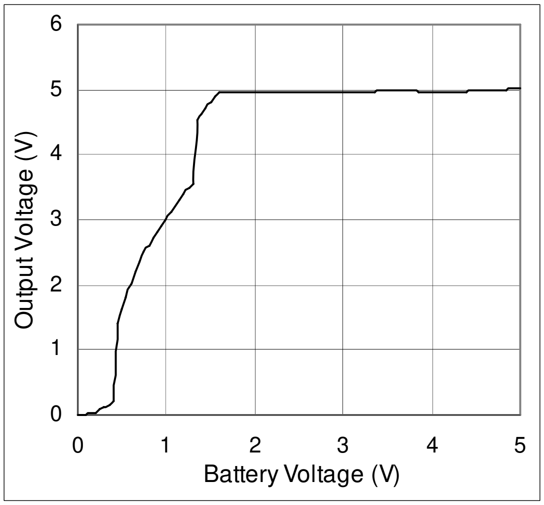


Figure 16. V_{OUT} vs. V_{BATT}; On, 470Ω

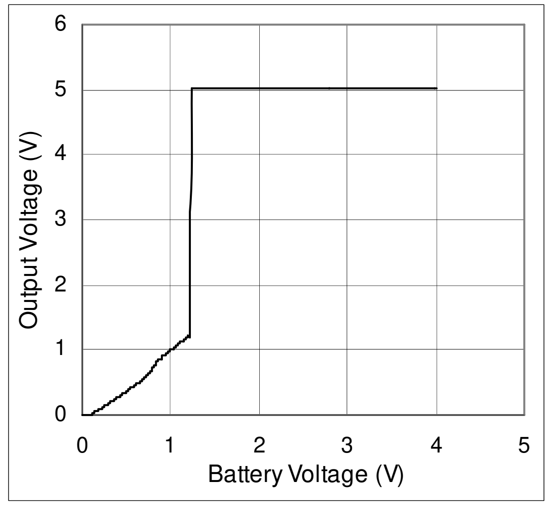


Figure 17. V_{OUT} vs. V_{BATT}; Shutdown, 180mA Load

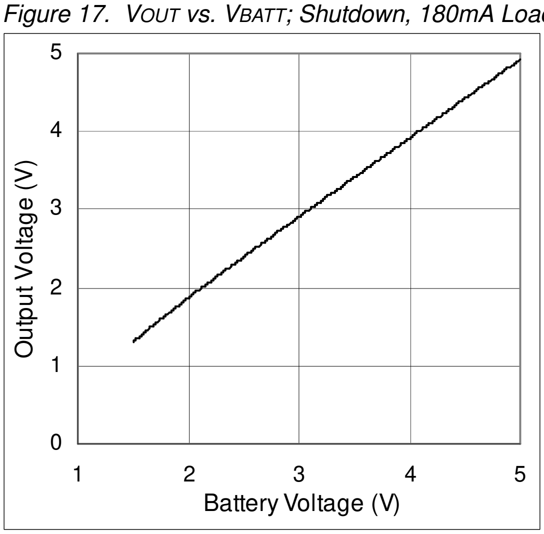


Figure 18. V_{OUT} vs. V_{BATT}; Shutdown, No Load

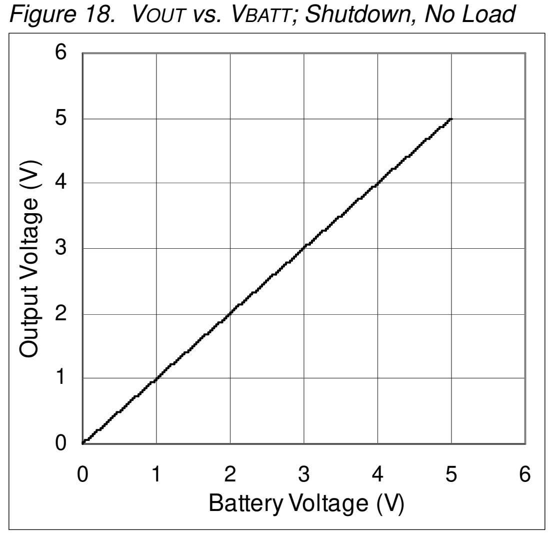


Figure 19. Maximum Output Current vs. V_{BATT}

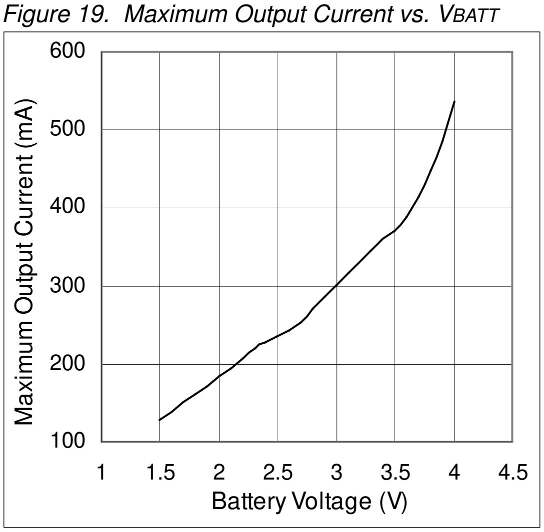


Figure 20. Startup Voltage vs. Load Resistance

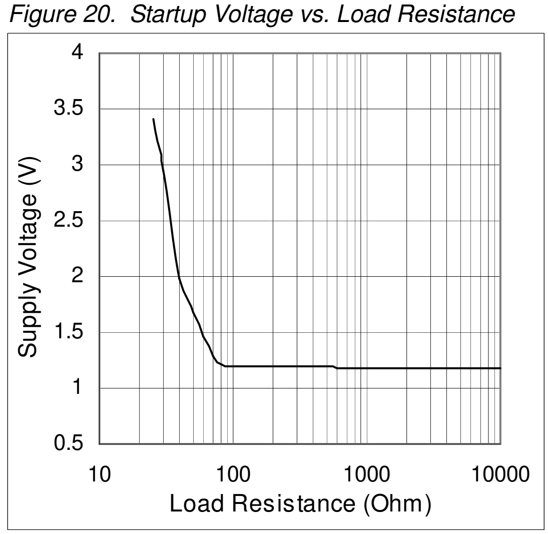


Figure 21. Line Transient

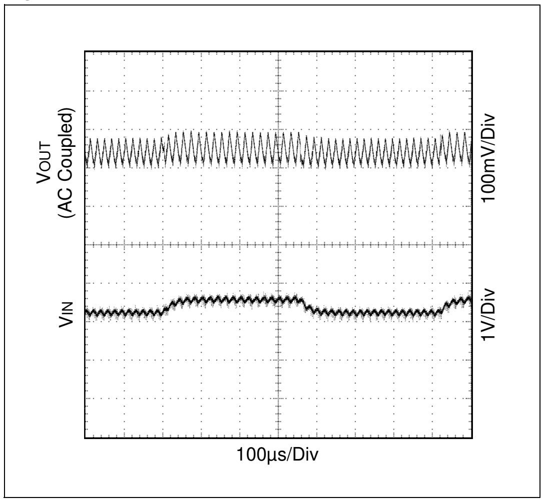


Figure 22. Load Transient

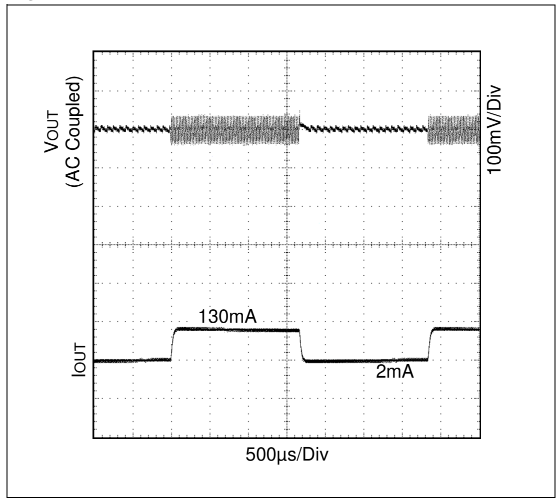


Figure 23. On/Off Response; R_{LOAD} = 100Ω

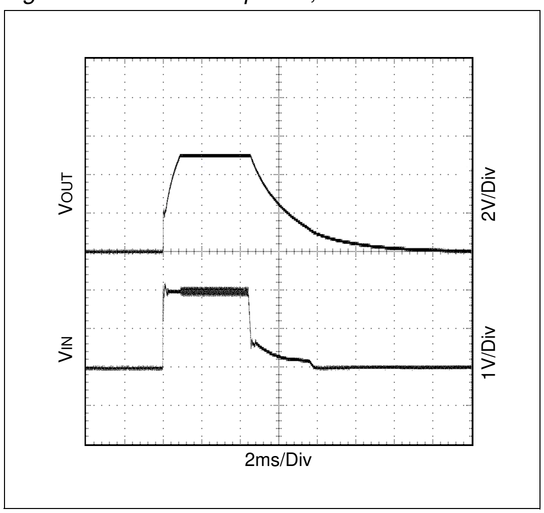


Figure 24. Shutdown Response; R_{LOAD} = 100Ω

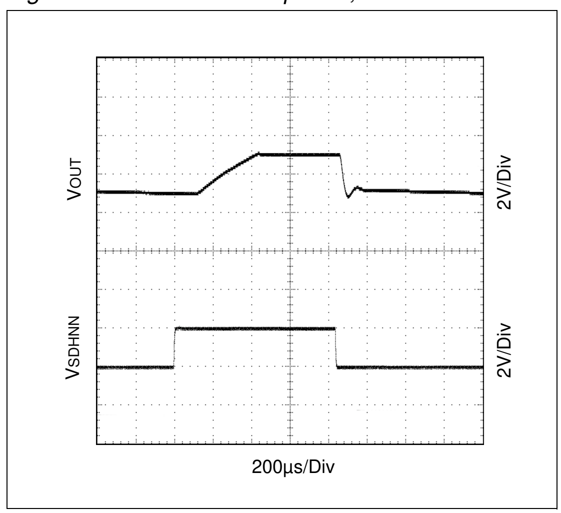


Figure 25. Waveforms; R_{LOAD} = 68Ω

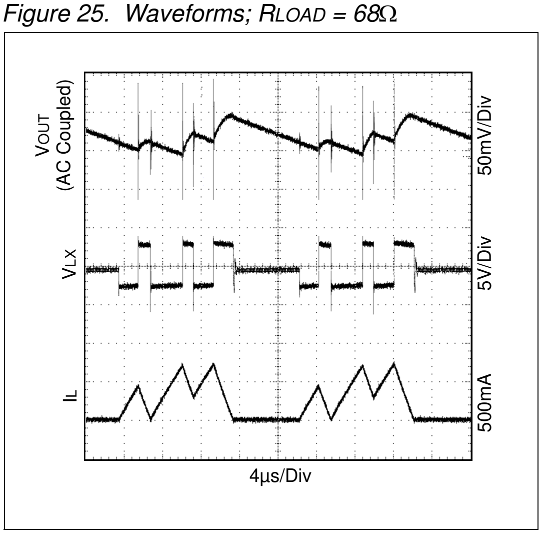
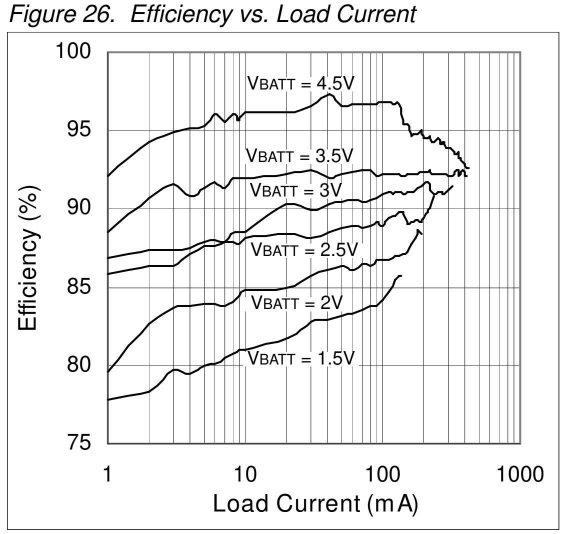


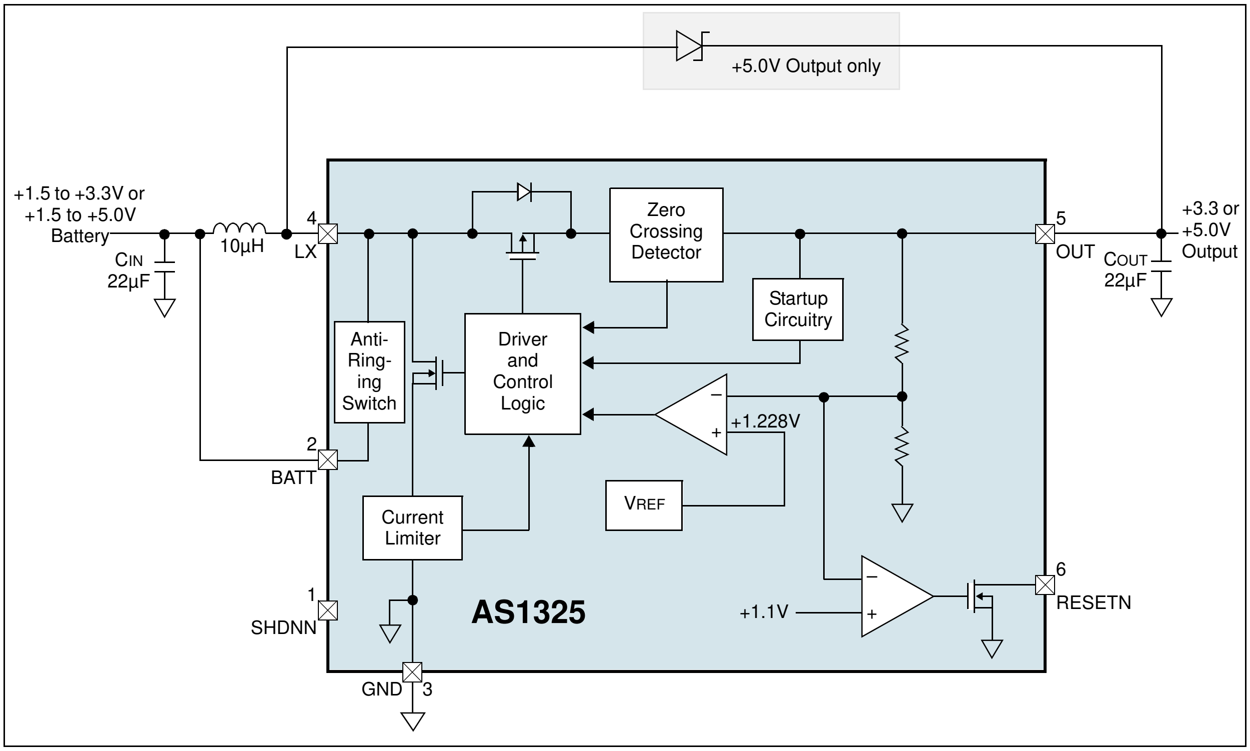
Figure 26. Efficiency vs. Load Current



8 Detailed Description

The AS1325 is a high-efficiency, compact step-up converter with 35µA quiescent supply current which ensures the highest efficiency over a wide load range. With a minimum of +1.5V input voltage, the device is well suited for applications with one- or two-cells, such as lithium ion (Li+), nickel-metal-hydride (NiMH), or alkaline.

Figure 27. Block Diagram



The input battery is connected to the device through an inductor and an internal P-FET when pin SHDNN is low. In this state, the step-up converter is off and the voltage drop across the P-FET body diode is eliminated, and the input battery can be used as a battery-backup or real-time-clock supply.

The built-in synchronous rectifier significantly improves efficiency.

Control Circuitry

The AS1325 integrated current-limited key circuitry provides low quiescent current and extremely-high efficiency over a wide V_{OUT} range without the need for an oscillator.

Light Loads:

Inductor current is limited by the 0.4A N-channel current limit or by the 7µs switch maximum on-time. The lower current limit reduces the ripple of the output voltage. At each cycle, the inductor current must ramp down to zero before the next cycle may start. When the error comparator senses that the output has fallen below the regulation threshold, another cycle begins.

Higher Loads:

If after the first light load cycle the output voltage has not reached its target value of 3.3V or 5.0V, the inductor current limit is increased to 0.7A. After the P-channel minimum on-time the next loading cycle is started if the output voltage is still below its target value. If the target value is reached, the inductor current must ramp down to zero before the next cycle may start. When the error comparator senses that the output has fallen below the regulation threshold, another load cycle begins (see Figure 13 on page 7 and Figure 25 on page 9).

Shutdown

When pin SHDNN is low the AS1325 is switched off and no current is drawn from battery; when pin SHDNN is high the device is switched on. If SHDNN is driven from a logic-level output, the logic high-level (on) should be referenced to V_{OUT} to avoid intermittently switching the device on.

Note: If pin SHDNN is not used, it should be connected directly to pin OUT.

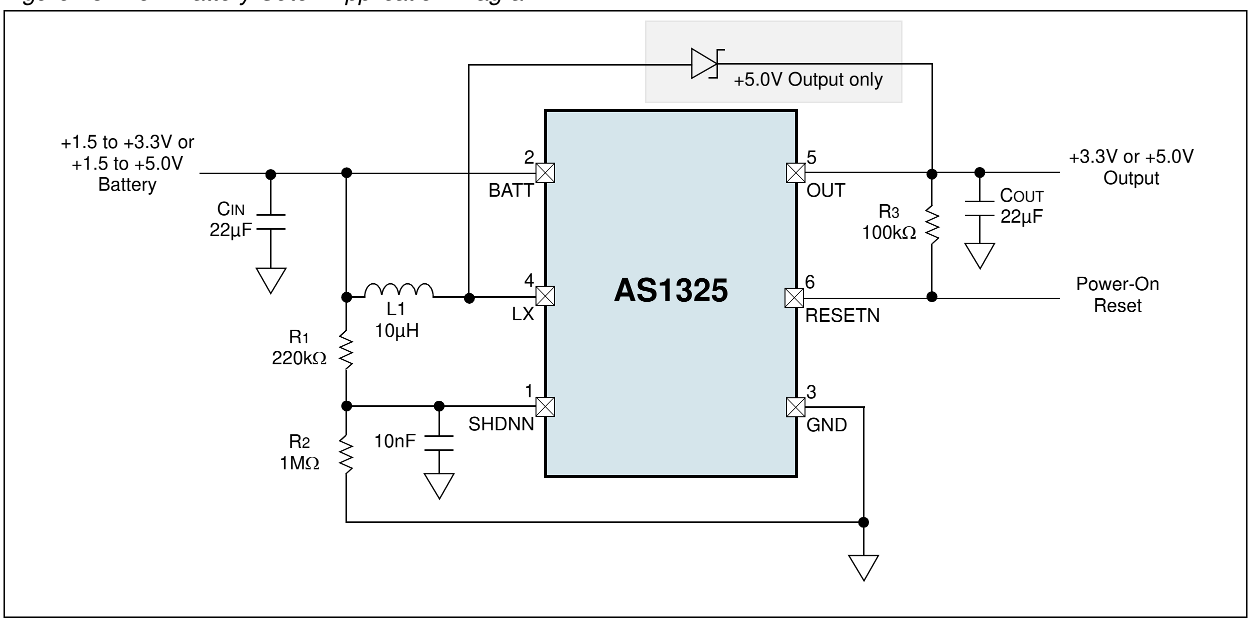
In shutdown the battery input is connected to the output through the inductor and the internal synchronous rectifier P-FET. This allows the input battery to provide backup power for devices such as an idle microcontroller, memory, or real-time-clock, without the usual diode forward drop. In this way a separate backup battery is not needed.

In cases where there is residual voltage during shutdown, some small amount of energy will be transferred from pin OUT to pin BATT immediately after shutdown, resulting in a momentary spike of the voltage at pin BATT. The ratio of C_{IN} and C_{OUT} partly determine the size and duration of this spike, as does the current-sink ability of the input device.

Low-Battery Cutoff

The AS1325 SHDNN trip threshold (1.228V) can be used as an input voltage detector that disables the device when the battery input voltage falls to a pre-set level. An external resistor-divider network can be used to set the battery-detection voltage (see Figure 28).

Figure 28. Low-Battery Cutoff Application Diagram



For the resistor-divider network shown in Figure 28, calculate the value for R_1 by:

$$R_1 = R_2 \times ((V_{OFF}/V_{SHDNN}) - 1) \quad \text{(EQ 1)}$$

Where:

V_{OFF} is the battery voltage at which the AS1325 shuts down.
V_{SHDNN} = 1.228V

The value of R_2 should be between 100kΩ and 1MΩ to minimize battery drain.

Note: Input ripple can cause false shutdowns, therefore to minimize the effect of ripple, a low-value capacitor from SHDNN to GND should be used to filter out input noise. The value of the capacitor should be such that the R/C time constant is > 2ms.

Power-On Reset

The AS1325 provides a power-on reset output (RESETN) that goes high-impedance when the output reaches 90% of its regulation point. RESETN goes low when the output is below 90% of the regulation point. A 100kΩ to 1MΩ pullup resistor between pin RESETN and pin OUT can provide a microprocessor logic control signal.

Note: Connect pin RESETN to GND when the power-on reset feature is not used.

Antiringing Control

If the inductor current falls to zero, an internal 100Ω (typ) antiringing switch is connected from LX to BATT to minimize EMI. The antiringing control can be deactivated by not connecting the pin BATT. The device is supplied by the pin OUT - no supply current flows into pin BATT.

9 Application Information

Inductor Selection

The control circuitry of the AS1325 permits a wide range of inductor values to be selected – from 4.7 to 22µH; The system is optimized for 10µH.

The intended application should dictate the value of L. The trade-off between required PCB surface area and desired output ripple are the determining factors: smaller values for L require less PCB space, larger values of L reduce output ripple. If the value of L is large enough to prevent I_{MAX} from being reached before t_{ON} expires, the AS1325 output power will be reduced.

Note: Coils should be able to handle 500mA_{RMS} and have a I_{SAT} ≥ 1A and should have a R_{IND} ≤ 100mΩ.

Table 5. Recommended Inductors

Part Number	L	DCR	Current Rating	Dimensions (L/W/T)	Manufacturer
MOS6020-103ML	10µH	93mΩ	1A	6.8x6.0x2.4mm	Coilcraft www.coilcraft.com
MOS6020-472ML	4.7µH	50mΩ	1.5A	6.8x6.0x2.4mm	
MOS6020-332ML	3.3µH	46mΩ	1.8A	6.8x6.0x2.4mm	
CDRH4D18-100	10µH	200mΩ	0.61A	6.9x5.0x2.0mm	Sumida www.sumida.com
CDRH4D18-6R8	6.8µH	200mΩ	0.76A	6.9x5.0x2.0mm	
CR43-6R8	6.8µH	131.2mΩ	0.95A	4.8x4.3x3.5mm	
CDRH4D18-4R7	4.7µH	162mΩ	0.84A	6.9x5.0x2.0mm	
SD0403-6R8M	6.8µH	132mΩ	0.95A	4.9x4.5x3.2mm	ACT www.act1.com
SD0403-4R7M	4.7µH	109mΩ	1.15A	4.9x4.5x3.2mm	

Figure 29. Efficiency Comparison of Different Inductors; V_{IN} = 2.5V, V_{OUT} = 3.3V

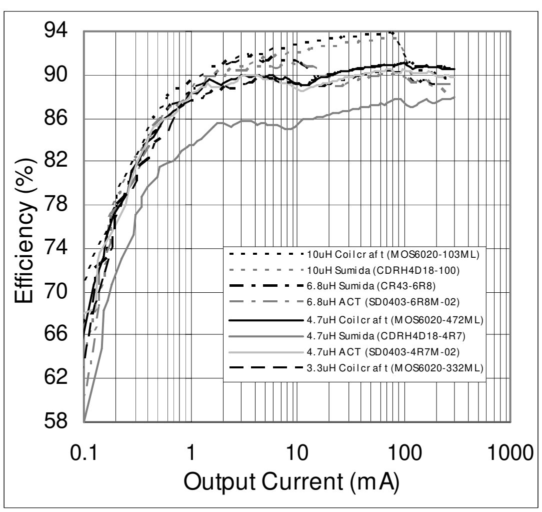
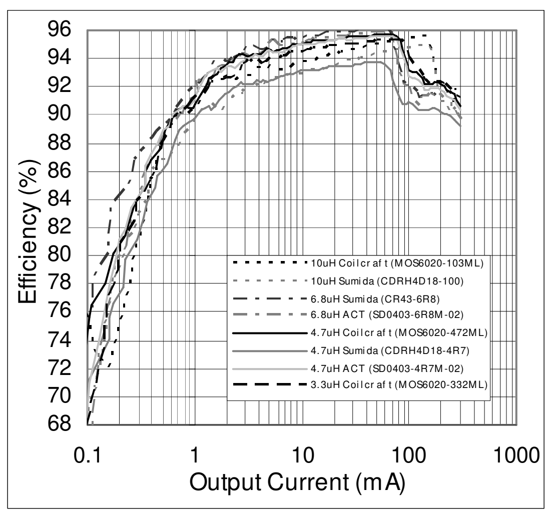


Figure 30. Efficiency Comparison of Different Inductors; V_{IN} = 3.0V, V_{OUT} = 3.3V



Capacitor Selection

Low ESR capacitors (X5R or X7R) should be used to minimize the output voltage ripple.

C_{OUT} Selection

Choose a C_{OUT} value to achieve the desired output ripple. A 22µF ceramic capacitor is a good initial value. A larger value for C_{OUT} can be used to further reduce ripple and improve AS1325 efficiency.

Table 6. Recommended Output Capacitor

Part Number	C	TC Code	Rated Voltage	Dimensions (L/W/T)	Manufacturer
C1210C226K9PAK	22µF ±10%	X5R	6.3V	3.2x2.5x1.5mm	Kemet www.kemet.com
JMK212BJ226MG-T	22µF ±20%	X5R	6.3V	2x1.3x1.3mm	Taiyo Yuden www.t-yuden.com

C_{IN} Selection

C_{IN} reduces the peak current drawn from the battery and can be the same value as C_{OUT}.

Table 7. Recommended Input Capacitor

Part Number	C	TC Code	Rated Voltage	Dimensions (L/W/T)	Manufacturer
C1210C226K9PAK	22µF ±10%	X5R	6.3V	3.2x2.5x1.5mm	Kemet www.kemet.com
GRM31CR70J106KA01L	10µF ±10%	X7R	6.3V	3.2x1.6x1.6mm	Murata www.murata.com

External Diode (5V Output only)

An external Schottky diode must be connected, in parallel with the on-chip synchronous rectifier, from LX to OUT. Use diodes such as MBR0520L, EP05Q03L, or the generic 1N5817. The diode should be rated for 500mA, since it carries current during startup and after the synchronous rectifier turns off. The Schottky diode must be connected as close to the IC as possible. Ordinary rectifier diodes must not be used, since the slow recovery rate will compromise efficiency.

PC Board Layout and Grounding

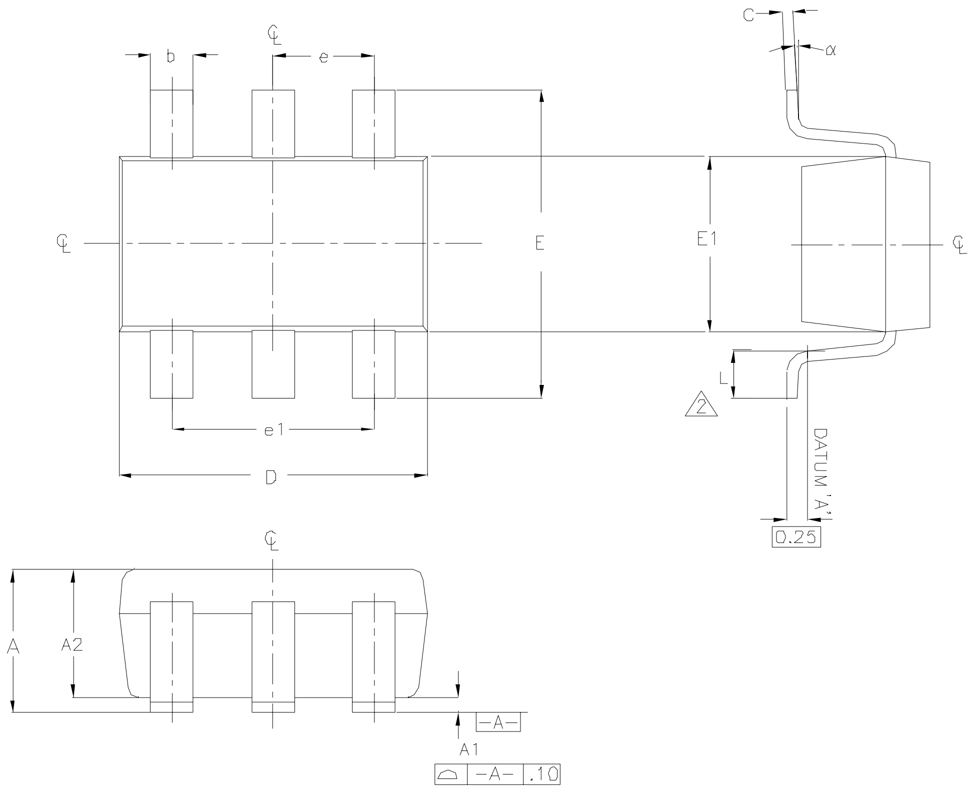
Well-designed printed circuit-board layout is important for minimizing ground bounce and noise.

- Place pin GND lead and the ground leads of C_{IN} and C_{OUT} as close to the device as possible.
- Keep the lead to pin LX as short as possible.
- To maximize output power and efficiency and minimize output ripple voltage, use a ground plane and solder the GND pin directly to the ground plane.

10 Package Drawings and Markings

The AS1325 is available in a 6-pin SOT23 package.

Figure 31. 6-pin SOT23 Package



Notes:

1. All dimensions are in millimeters.
2. Foot length is measured at the intercept point between datum A and lead surface.
3. Package outline exclusive of mold flash and metal burr.
4. Pin 1 is the lower left pin when reading the top mark from left to right.
5. Pin 1 identifier dot is 0.3mm.ϕ min and is located above pin 1.
6. Meets *JEDEC MO178*.

Symbol	Min	Max
A	0.90	1.45
A1	0.00	0.15
A2	0.90	1.30
b	0.35	0.50
C	0.08	0.20
D	2.80	3.00
E	2.60	3.00
E1	1.50	1.75
L	0.35	0.55
e	0.95 REF	
α	0º	10º

11 Ordering Information

The AS1325 is available as the standard products shown in Table 8.

Table 8. Ordering Information

Part	Marking	Description	Delivery Form	Package
AS1325-BSTT-33	ASKY	300mA Step-Up DC-DC Converter	Tape and Reel	6-pin SOT23
AS1325-BSTT-50	ASK6	185mA Step-Up DC-DC Converter	Tape and Reel	6-pin SOT23

Copyrights

Disclaimer

Devices sold by austriamicrosystems AG are covered by the warranty and patent indemnification provisions appearing in its Term of Sale. austriamicrosystems AG makes no warranty, express, statutory, implied, or by description regarding the information set forth herein or regarding the freedom of the described devices from patent infringement. austriamicrosystems AG reserves the right to change specifications and prices at any time and without notice. Therefore, prior to designing this product into a system, it is necessary to check with austriamicrosystems AG for current information. This product is intended for use in normal commercial applications. Applications requiring extended temperature range, unusual environmental requirements, or high reliability applications, such as military, medical life-support or life-sustaining equipment are specifically not recommended without additional processing by austriamicrosystems AG for each application. For shipments of less than 100 parts the manufacturing flow might show deviations from the standard production flow, such as test flow or test location.

The information furnished here by austriamicrosystems AG is believed to be correct and accurate. However, austriamicrosystems AG shall not be liable to recipient or any third party for any damages, including but not limited to personal injury, property damage, loss of profits, loss of use, interruption of business or indirect, special, incidental or consequential damages, of any kind, in connection with or arising out of the furnishing, performance or use of the technical data herein. No obligation or liability to recipient or any third party shall arise or flow out of austriamicrosystems AG rendering of technical or other services.

austriamicrosystems

Contact Information

Headquarters
austriamicrosystems AG
A-8141 Schloss Premstaetten, Austria

Tel: +43 (0) 3136 500 0
Fax: +43 (0) 3136 525 01

For Sales Offices, Distributors and Representatives, please visit:

http://www.austriamicrosystems.com/contact