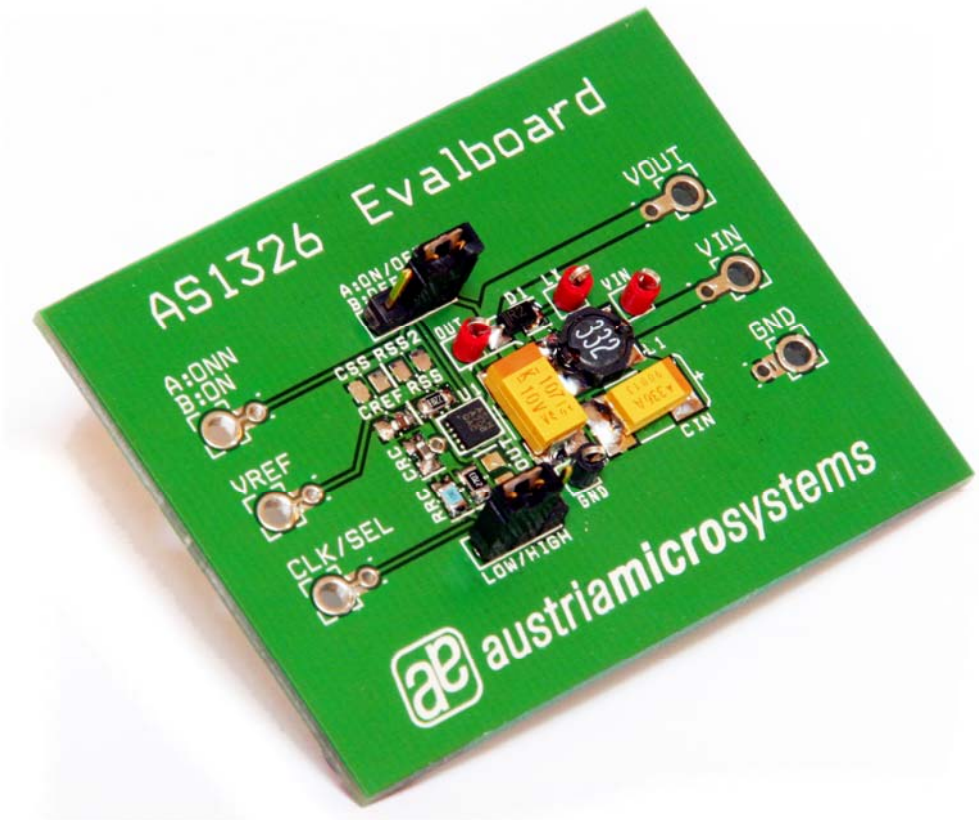
AS1326

Evaluation Board Application Note



General Description

Board Description

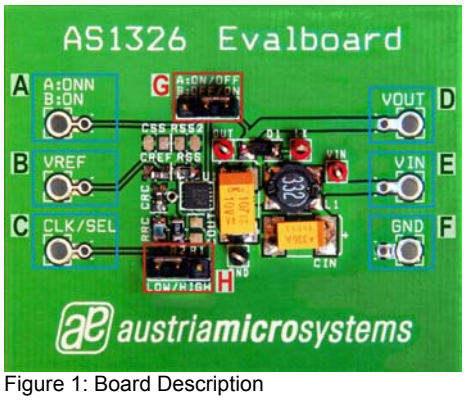


Figure 1: Board Description

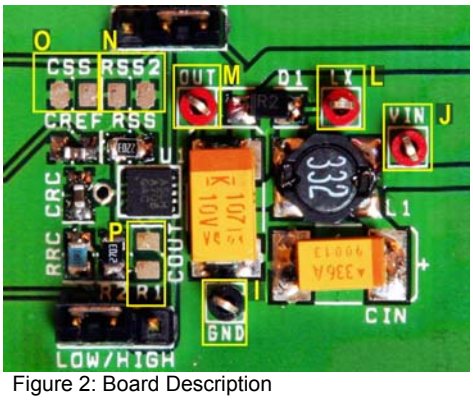


Figure 2: Board Description

Connector Description

Label	Name	Description	Info
A	**A:ONN** **B:ON**	Enable Input	AS1326A: 0=ON, 1=OFF AS1326B: 0=OFF, 1=ON
B	**VREF**	Internal Reference Bypass Pin	
C	**CLK/SEL**		0: Normal operation enabling automatic powersave mode 1: Forced PWM-mode Clocked: Forced PWM-mode with the internal oscillator synchronized to this pin between 500kHz and 1.2MHz.
D	**VOUT**	Power Output Connector	
E	**VIN**	Input Voltage	Input voltage ranging from 0.7V to 5V
F	**GND**	Ground	

Jumper Description

Label	Name	Description	Info	
G	**A:OFF/ON** **B:ON/OFF**	Enable Jumper	AS1326A:	ON OFF
			AS1326B:	ON OFF
H	**LOW/HIGH**	Mode Selection	LOW	Normal Operation Mode
			HIGH	Forced PWM Mode

Measurement Points Description

Label	Name	Description	Info
I	**GND**	Power Supply Connectors for VBATT and Ground.	
J	**VIN**		
L	**LX**	External Conductor	
M	**OUT**	Power Output Connector	

Additional Components

Label	Name	Description	Info
N	**RSS2**	Current Limit Resistance	I_{LIMIT}=1.6A*RSS2/(RSS+RSS2)
O	**CSS**	Softstart Capacitance	t_{SS}=(RSS*RSS2/(RSS+RSS2))CSS
P	**R1**	Output Voltage Resistance	R1=R2*(V_{OUT}/V_{FB}-1)

Operational sequence

This evaluation board comes with the AS1326A. The output voltage is set to the default 3.3V but can be adjusted if an additionally resistor R1 **"P"** is soldered on the board.

1. If not present get the datasheet for the AS1326 from www.austriamicrosystems.com. Drive the IC on the Demoboard only with the recommended settings and values as described in the datasheet.
2. Connect a +0.7V to V_{OUT} power supply (VIN **"E"** and GND **"F"**).
3. Perform measurements at the measurement points **"I"** to **"M"**.

If there are questions do not hesitate to contact us. See contact information at the end of the application note.

Optional Features

Setting the output voltage

The AS1326 has a default output voltage of 3.3V. Additionally the output voltage can be set between 2.5 and 5V via an additionally resistor R1 which can be placed at "P". The required resistor value for a certain output voltage can be calculated as shown in equation 1.

$$R1=R2*(V_{OUT}/V_{FB}-1) \quad (Eq1)$$

$$R1=270k\Omega*(V_{OUT}/1.24V-1) \quad (Eq2)$$

Using the current limiter

The ISET pin is used to adjust the inductor current limit and to implement the soft-start feature. With pin ISET connected to pin REF, the inductor current limit is set to 1.6A. With ISET connected to a resistor-divider network from pin REF to GND, the current limit is calculated as:

$$I_{LIMIT}=1.6A*RSS2/(RSS+RSS2) \quad (Eq3)$$

$$I_{LIMIT}=1.6A*RSS2/(220k\Omega+RSS2) \quad (Eq4)$$

Setting the soft-start

On default the soft-start feature is disabled. The soft-start feature can be implemented by placing a resistor RSS (already soldered) between pin ISET and pin REF and a capacitor CSS between pin ISET and GND.
At power-up, ISET is 0V and the LX current is

$$t_{SS}=RSS*CSS \quad (Eq5)$$

$$t_{SS}=220k\Omega*CSS \quad (Eq6)$$

If the current limiter resistance is also in use, the equation for the soft-start time would be:

$$t_{SS}=(RSS*RSS2/(RSS+RSS2))CSS \quad (Eq7)$$

$$t_{SS}=(220k\Omega*RSS2/(220k\Omega+RSS2))CSS \quad (Eq8)$$

Layout of evaluation board

Board schematics and layout

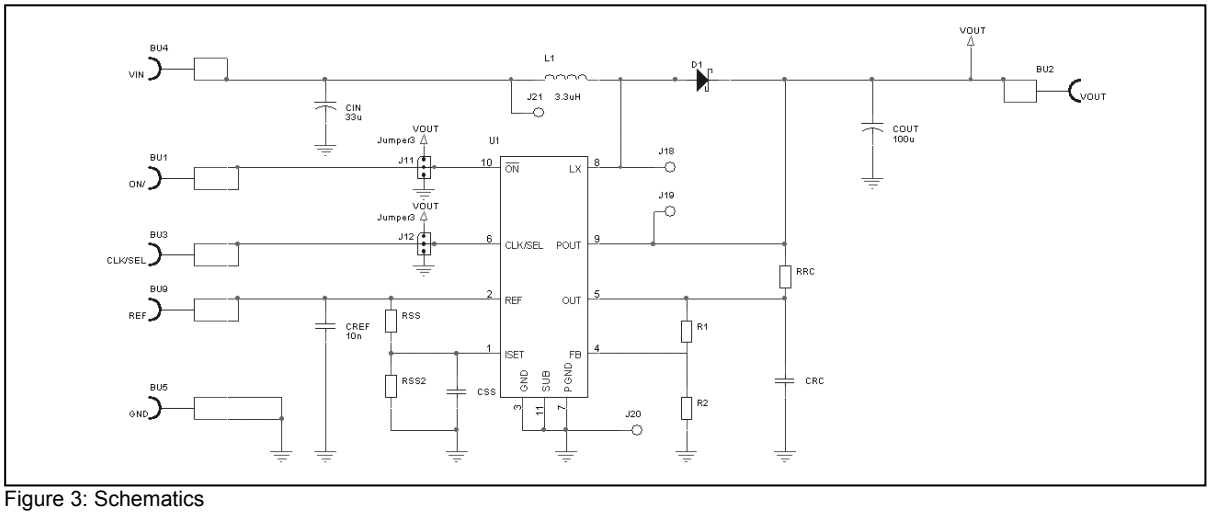


Figure 3: Schematics

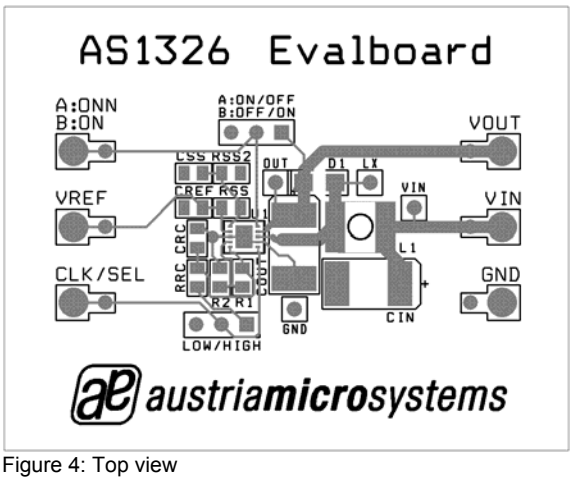


Figure 4: Top view

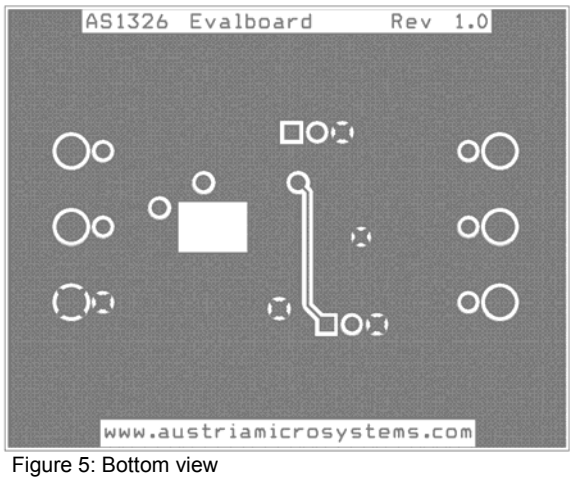


Figure 5: Bottom view

Assembly List

Label	Info	Type	Manufacturer
CIN	33µF, ±10%, 10V, 150mΩ	TPSC336K010R0150	AVX
COUT	100µF , ±10%, 10V, 50mΩ	T495D107M010ATE050	Kemet
or	82µF , ±20%, 6.3V, 18mΩ	A700V826M006ATE018	Kemet
L1	3.3µH, 46mΩ, 1.8A	MOS6020-332	Coilcraft
RSS	220kΩ		
R1	270kΩ		
RCC	10Ω		
CRC	330nF		
RCC	10nF		