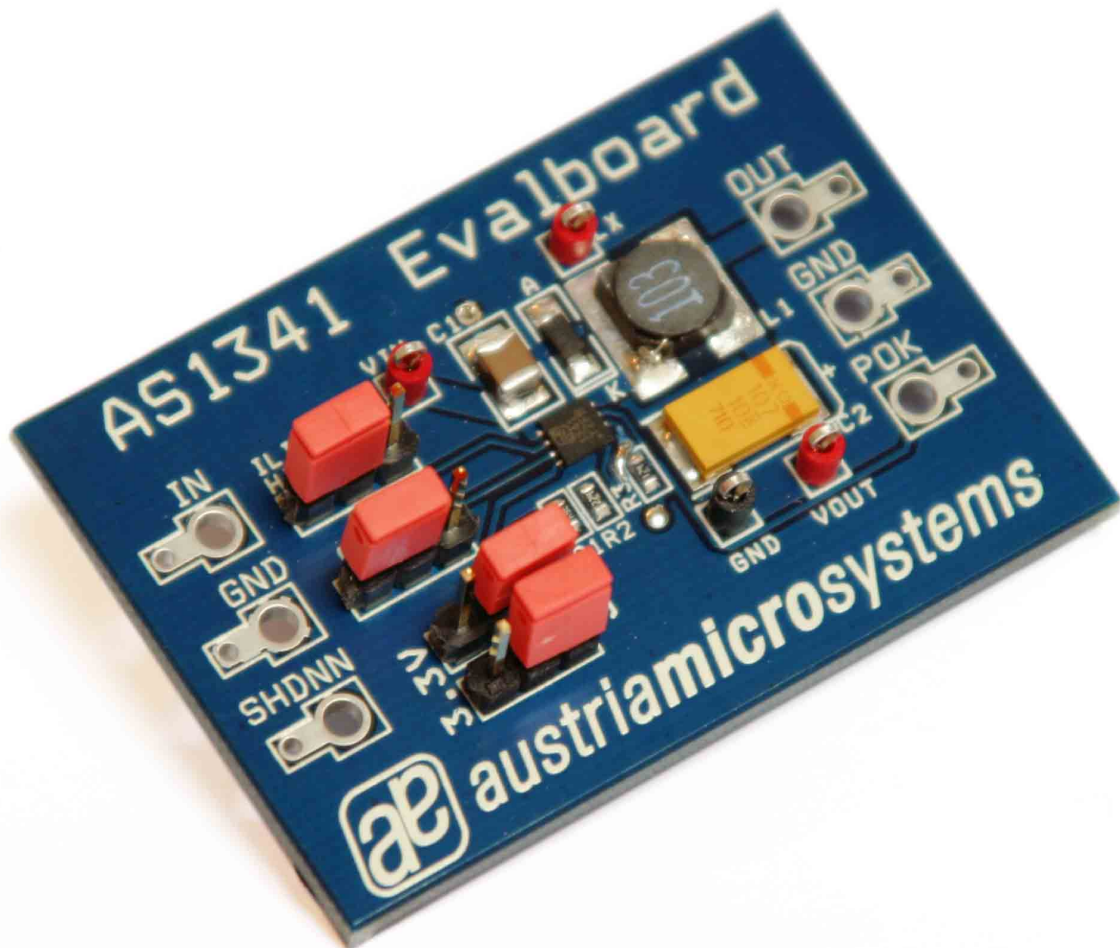# AS1341

## Evaluation Board Application Note

# General Description

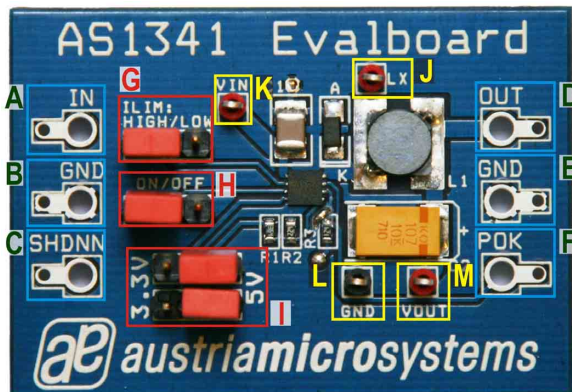## Board Description



Figure 1: Board Description

## Connector Description

| Label | Name | Description | Info |
|-------|------|-------------|------|
| A | **VIN** | Input Voltage | Input voltage ranging from 4.5V to 20V |
| B | **GND** | Ground | |
| C | **SHDNN** | Enable Jumper | |
| D | **OUT** | Power Output Connector | |
| E | **GND** | Ground | |
| F | **POK** | Power-OK Signal | |

## Jumper Description

| Label | Name | Description | Info |
|-------|------|-------------|------|
| G | **ILIM: HIGH/LOW** | Current Limiter | LOW ILIMIT: 0.7A<br>HIGH ILIMIT: 1.4A |
| H | **ON/OFF** | Enable Jumper | ON<br>OFF |
| I | **3.3V 5V** | | |

## Measurement Points Description

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

# Operational sequence

This evaluation board comes with the AS1341.

1.  If not present get the datasheet for the AS1341 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 4.5V to 20V power supply (VIN **"A"** and GND **"B"**).

3.  Perform measurements at the measurement points **"J"** to **"K"**.

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:

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

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

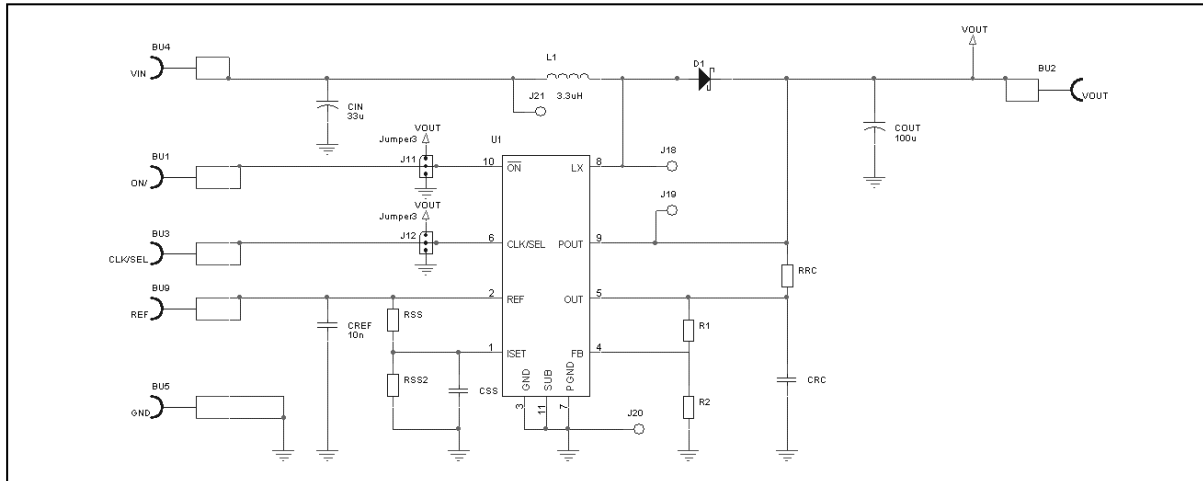# Layout of evaluation board

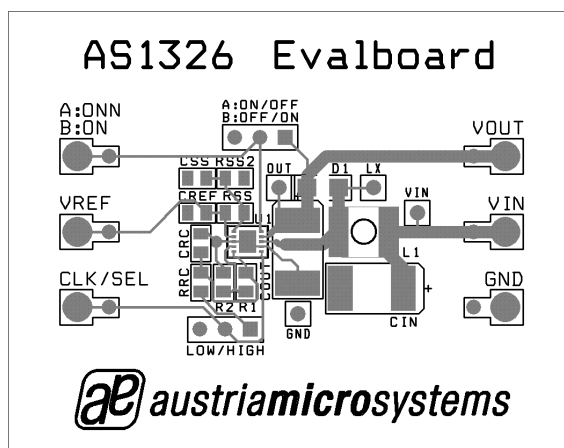## Board schematics and layout



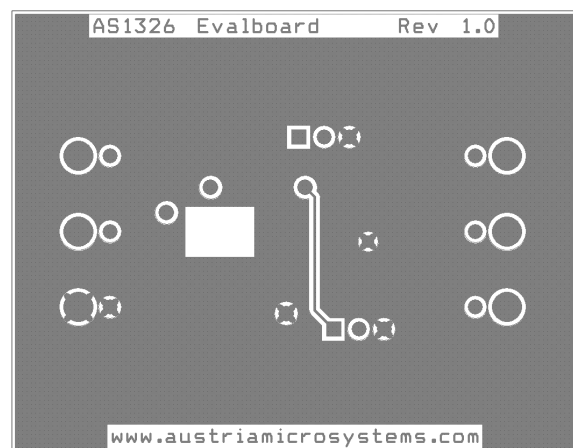Figure 3: Schematics



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 | | |

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