High Speed Pulse Width Modulator Controller Evaluation Board

PWM5031-EVAL / PWM5032-EVAL
PWM5031 / 5032 Evaluation Board Application Note

The PWM5031 / 5032 Evaluation board (Aeroflex part number PWM5031-EVAL/PWM5032-EVAL) provides a convenient way for customers to evaluate the PWM5031 / PWM5032 for their application. The board comes initially configured with a basic Buck Converter with a +1.5 Volt output (See Figure 1). This can be conveniently reconfigured for a wide variety of configurations using three 16 pin dip carriers (J1, J2, J3) and test points that can provide additional circuit configurations.

The schematic PWM5031-411 (See Figure 2) shown on page 4 provides all the connection information for the Evaluation Board with the component configuration on J1, J2, and J3 for Buck Converter configuration. The drawing below provides a schematic for the interconnection of the Buck Converter that is configured on J1, J2, and J3.

The Evaluation Board has been designed to provide circuit configuration flexibility and room around the PWM5031 chip to allow an Air Jet to be used for testing at various temperatures. For this reason this Evaluation Board will not have an optimum layout for parametrics, noise, and stability.

Figure 1 – PWM5031-EVAL Board Buck Converter Configuration
### 5031/5032 Standard Controls

**S1  Soft Set**  
This is a 5 position switch that selects the origin of the signal supplied to pin 7 (Soft), the selections are:
- 1) Internal, which is determined by components installed on J2.
- 2) External, which is available from test point TP4.
- 3) 3 Volt reference.
- 4) ON, which is connected to +5 Volts.
- 5) OFF, which is connected to ground.

**S2  Frequency**  
This is a 6 position switch that selects the capacitor that controls the frequency of operation. Once the frequency range is selected the variable resistor R13 can be used to sweep the range of frequencies selected. Note: Due to the stray capacitance in the layout the higher frequencies will not be obtainable.

**S3  Output Mode**  
Selects 100% or 50% mode of operation

**S4  Sleep Mode**  
Selects Normal or Sleep mode

**S5  5031 Enable**  
Toggles Enable or Disable operation for the chip

**S6  OP-AMP**  
Toggles Enable or Disable of Auxiliary Op-Amp

### Test Points

<table>
<thead>
<tr>
<th>Test Points</th>
<th>Signal Name</th>
<th>Connected To</th>
</tr>
</thead>
<tbody>
<tr>
<td>TP1</td>
<td>Out_A</td>
<td>UUT pin 21</td>
</tr>
<tr>
<td>TP2</td>
<td>Out_B</td>
<td>UUT pin 20</td>
</tr>
<tr>
<td>TP3</td>
<td>Vref</td>
<td>UUT pin 11</td>
</tr>
<tr>
<td>TP4</td>
<td>EXT_SOFT</td>
<td>S1 pin 2</td>
</tr>
<tr>
<td>TP5</td>
<td>Isense</td>
<td>J2 pin 4</td>
</tr>
<tr>
<td>TP6</td>
<td>Vfb</td>
<td>UUT pin 5</td>
</tr>
<tr>
<td>TP7</td>
<td>COMP</td>
<td>UUT pin 4</td>
</tr>
<tr>
<td>TP8</td>
<td>GND</td>
<td></td>
</tr>
<tr>
<td>TP9</td>
<td>+OP_IN</td>
<td>J1 pin 7</td>
</tr>
<tr>
<td>TP10</td>
<td>-OP_IN</td>
<td>J1 pin 1</td>
</tr>
<tr>
<td>TP11</td>
<td>OP_OUT</td>
<td>UUT pin 15</td>
</tr>
<tr>
<td>TP12</td>
<td>+5 Volts</td>
<td></td>
</tr>
<tr>
<td>TP13</td>
<td>GND</td>
<td></td>
</tr>
</tbody>
</table>

### Component Headers

**J1**  
Used to condition the Error Amp and Op Amp

**J2**  
Used to condition Isense, Error Amp

**J3**  
Used to implement Buck Regulator
Figure 2 – PWM5031-411 Schematic
Our passion for performance is defined by three attributes represented by these three icons: solution-minded, performance-driven and customer-focused.

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Application Note AN5031-1 2/21/07

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