Features
• High output current
• Pump-up circuit
• Low dissipation
• Minimum number of external parts required
• Direct drive to the deflection coils
• Internal thermal shutdown circuit

Applications
• Power Amplifier
• Thermal Protection
• Flyback Generator

Description
The KA2142 is a monolithic linear IC designed for color TV and monitor vertical deflection output. It is intended for direct drive of the deflection coils with a high efficiency.

internal Block Diagram
## Pin Assignments

<table>
<thead>
<tr>
<th>Pin Number</th>
<th>Pin Name</th>
<th>I/O</th>
<th>Pin Function Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Vin ( - )</td>
<td>I</td>
<td>Inverting Input</td>
</tr>
<tr>
<td>2</td>
<td>Vcc(L)</td>
<td>I</td>
<td>Supply Voltage</td>
</tr>
<tr>
<td>3</td>
<td>-</td>
<td>-</td>
<td>N.C.</td>
</tr>
<tr>
<td>4</td>
<td>F.G</td>
<td>O</td>
<td>Flyback Generator</td>
</tr>
<tr>
<td>5</td>
<td>GND</td>
<td>-</td>
<td>Ground</td>
</tr>
<tr>
<td>6</td>
<td>VO</td>
<td>O</td>
<td>Output</td>
</tr>
<tr>
<td>7</td>
<td>-</td>
<td>-</td>
<td>N.C.</td>
</tr>
<tr>
<td>8</td>
<td>-</td>
<td>-</td>
<td>N.C.</td>
</tr>
<tr>
<td>9</td>
<td>Vcc(H)</td>
<td>I</td>
<td>Output Stage Supply Voltage</td>
</tr>
<tr>
<td>10</td>
<td>Vin ( + )</td>
<td>I</td>
<td>Non-Inverting Input</td>
</tr>
</tbody>
</table>
## PIN Definitions

<table>
<thead>
<tr>
<th>Pin Number</th>
<th>Pin Name</th>
<th>WAVEFORM</th>
<th>EQUIVALENT CIRCUIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Inverting Input</td>
<td><img src="image1.png" alt="Waveform" /></td>
<td><img src="circuit1.png" alt="Circuit" /></td>
</tr>
<tr>
<td>2</td>
<td>Voltage Supply</td>
<td>DC</td>
<td>-</td>
</tr>
<tr>
<td>4</td>
<td>Flyback Generator</td>
<td><img src="image2.png" alt="Waveform" /></td>
<td><img src="circuit2.png" alt="Circuit" /></td>
</tr>
<tr>
<td>5</td>
<td>Ground</td>
<td>DC</td>
<td>-</td>
</tr>
<tr>
<td>6</td>
<td>Output Voltage</td>
<td><img src="image3.png" alt="Waveform" /></td>
<td><img src="circuit3.png" alt="Circuit" /></td>
</tr>
<tr>
<td>9</td>
<td>Output Stage Voltage Supply</td>
<td><img src="image4.png" alt="Waveform" /></td>
<td>-</td>
</tr>
<tr>
<td>10</td>
<td>Non-Inverting Input</td>
<td>DC</td>
<td>-</td>
</tr>
</tbody>
</table>
Absolute Maximum Rating (Ta = 25°C)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Value</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supply Voltage</td>
<td>Vcc(L)</td>
<td>35</td>
<td>V</td>
</tr>
<tr>
<td>Flyback Peak Voltage</td>
<td>V6, V9</td>
<td>70</td>
<td>V</td>
</tr>
<tr>
<td>Flyback Generator Voltage</td>
<td>V6</td>
<td>35</td>
<td>V</td>
</tr>
<tr>
<td>Input Voltage</td>
<td>V1, V10</td>
<td>V cc(L) - 0.5</td>
<td>V</td>
</tr>
<tr>
<td>Peak - to - Peak Output Current*</td>
<td>I0(p-p)</td>
<td>3</td>
<td>A</td>
</tr>
<tr>
<td>Peak - to - Peak Flyback Current</td>
<td>I4(p-p)</td>
<td>3</td>
<td>A</td>
</tr>
<tr>
<td>Total Power Dissipation (Ta = 25°C)</td>
<td>PD</td>
<td>15</td>
<td>W</td>
</tr>
<tr>
<td>Storage Temperature Range</td>
<td>Tstg</td>
<td>-40 ~ +150</td>
<td>°C</td>
</tr>
<tr>
<td>Operating Ambient Temperature</td>
<td>Topt</td>
<td>-25 ~ +70</td>
<td>°C</td>
</tr>
</tbody>
</table>

* Maximum output peak to peak current in TV or Monitor set.

Thermal Data

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Value</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thermal Resistance Between Junction and Case</td>
<td>Rth (j-c)</td>
<td>12</td>
<td>°C/W</td>
</tr>
<tr>
<td>Thermal Resistance Between Junction and Ambient</td>
<td>Rth (j-a)</td>
<td>60</td>
<td>°C/W</td>
</tr>
<tr>
<td>Thermal Shut down Temperature</td>
<td>Tsd</td>
<td>150</td>
<td>°C</td>
</tr>
</tbody>
</table>

Electrical Characteristic

(Refer to the test circuit, V cc(L)= 35V, unless otherwise specified)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Conditions</th>
<th>Min.</th>
<th>Typ.</th>
<th>Max.</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supply Voltage</td>
<td>Vcc(L)</td>
<td>-</td>
<td>15</td>
<td>25</td>
<td>35</td>
<td>V</td>
</tr>
<tr>
<td>Supply Voltage</td>
<td>Vcc(H)</td>
<td>-</td>
<td>15</td>
<td>-</td>
<td>70</td>
<td>V</td>
</tr>
<tr>
<td>Supply Quiescent Current</td>
<td>ICC(L)</td>
<td>-</td>
<td>-</td>
<td>6</td>
<td>16</td>
<td>mA</td>
</tr>
<tr>
<td>Supply Quiescent Current</td>
<td>ICC(H)</td>
<td>-</td>
<td>-</td>
<td>22</td>
<td>36</td>
<td>mA</td>
</tr>
<tr>
<td>Pin4 Saturation Voltage to Gnd</td>
<td>V4SAT</td>
<td>I4 = 20mA</td>
<td>-</td>
<td>0.5</td>
<td>1</td>
<td>V</td>
</tr>
<tr>
<td>Saturation Voltage to supply</td>
<td>VHSAT</td>
<td>I6 = -1.2A</td>
<td>-</td>
<td>1.6</td>
<td>2.2</td>
<td>V</td>
</tr>
<tr>
<td>Saturation Voltage to ground</td>
<td>VLSAT</td>
<td>I6 = -0.7A</td>
<td>-</td>
<td>1.3</td>
<td>1.8</td>
<td>V</td>
</tr>
<tr>
<td>Output Center Voltage</td>
<td>VMID</td>
<td>R1=5.6K,Rfb=45K</td>
<td>18</td>
<td>-</td>
<td>-</td>
<td>V</td>
</tr>
<tr>
<td>Input Bias Current</td>
<td>IBIAS</td>
<td>V1 = 1V, V10 = 2V</td>
<td>-</td>
<td>-0.1</td>
<td>-1</td>
<td>μA</td>
</tr>
</tbody>
</table>
Typical Performance Characteristic

Figure 1. Vs-V4L

Figure 2. I4-V4L

Figure 3. Isink-V6H

Figure 4. Isource-V6L

Figure 5. Vs-I2, I9
DC Test Circuit

<table>
<thead>
<tr>
<th>ITEM</th>
<th>INPUT VOLTAGE (V)</th>
<th>SWITCH STATE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>V1</td>
<td>V10</td>
</tr>
<tr>
<td>I2, I9</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>I1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>V4L</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>V6L</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>V6H</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>
AC Test Circuit

Typical Application Circuit
Mechanical Dimensions

Package

Dimensions in millimeters

10-SIP H/S
## Ordering Information

<table>
<thead>
<tr>
<th>Product Number</th>
<th>Package</th>
<th>Operating Temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>KA2142</td>
<td>10-SIP H/S</td>
<td>-20°C ~ +70°C</td>
</tr>
</tbody>
</table>
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