The i6A4W series of non-isolated DC-DC step-down converters are ideal for creating additional high current output voltage rails from a single output 12V, 24V or 48V AC-DC or DC-DC power supply. The highly efficient i6A4W series accepts a very wide DC input and has a wide output adjustment range, with a choice of 1/16th brick footprint or SIP package. Output trim, remote sense, negative or positive logic remote On-Off comes as standard features. Power good, frequency synchronization and output sequencing are optional features.

**Features**
- Up to 250W in a 1/16th brick or SIP package
- Very high Efficiency up to 97%
- Wide Output Adjustment 3.3 to 15V & 3.3 to 40V
- Minimal External Components Needed
- Low Airflow With Minimal Derating Requirements

**Benefits**
- Very High Power Density
- Easier Thermal Management
- One Part For Multiple Applications
- Less Board Area Required
- Easier To Cool In End System

### Model Selector

<table>
<thead>
<tr>
<th>Model</th>
<th>Output Voltage (V)</th>
<th>Max Current (A)</th>
<th>Max Power (W)</th>
<th>Positive Logic On/Off</th>
<th>Negative Logic On/Off</th>
<th>Full Feature</th>
<th>Package</th>
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<tbody>
<tr>
<td>i6A4W010A033V-001-R</td>
<td>3.3 to 40</td>
<td>10</td>
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<td>DIP</td>
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<td>10</td>
<td>250</td>
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<tr>
<td>i6A4W020A033V-000-R</td>
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<td>20</td>
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<tr>
<td>i6A4W020A033V-001-R</td>
<td>3.3 to 15</td>
<td>20</td>
<td>250</td>
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<tr>
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<td>20</td>
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<td>i6A4W020A033V-0S2-R</td>
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<td>SIP</td>
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<tr>
<td>i6A4W020A033V-0S3-R</td>
<td>3.3 to 15</td>
<td>20</td>
<td>250</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes(2)</td>
<td>SIP</td>
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</table>

Preferred model

### Related Products

<table>
<thead>
<tr>
<th>Type</th>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC-DC Buck Converter</td>
<td>i3A</td>
<td>100W, Input 9-53V, Output 5-30V 4.5A or 3.3-16.5V 8A</td>
</tr>
<tr>
<td>DC-DC Buck Converter</td>
<td>i6AN</td>
<td>75W, Input 9-40V, Negative Output -3.3 to -30V, 8A</td>
</tr>
<tr>
<td>DC-DC Buck Converter</td>
<td>i6A24</td>
<td>250W, Input 9-40V, Output 3.3-24V 14A</td>
</tr>
<tr>
<td>DC-DC Buck-Boost Converter</td>
<td>i7A</td>
<td>500-750W, Input 18-60V or 18-32V, Output 3.3-24V 33A or 3.3-18V 45A</td>
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<tr>
<td>Evaluation Kit</td>
<td>i6A10A-001-EVK-S1PX</td>
<td>Evaluation kit with i6A4W020A033V-001-R modules</td>
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<td>i6A10A-001-EVK-S1CC</td>
<td>Evaluation kit with i6A4W020A033V-001-R modules set for constant current operation</td>
</tr>
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<td>i6A10A-001-EVK-S1PX</td>
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### Specification

<table>
<thead>
<tr>
<th>Model</th>
<th>i6A4W010A033V</th>
<th>i6A4W020A033V</th>
</tr>
</thead>
</table>

#### Input
- **Input Voltage Range**
  - Vdc: 9 to 53V (Turn on at 8V typ)
- **Input Current** A
- **Efficiency** %
  - 94 - 97.5
  - 90 - 97.0
- **Safety Agency Certifications** IEC/UL/CSA/EN 62368-1, IEC/UL/CSA/EN 60950-1, CE Mark

#### Output
- **Output Voltage Tolerance** % ±4
- **Switching Frequency** kHz 400
- **Line Regulation** %
  - 0.3
  - 0.4
- **Load Regulation** %
  - 0.9
  - 1.2
- **External Load Capacitance** uF 0 - 1500
- **Output Ripple & Noise (pk-pk)** mV 50
- **Overcurrent Protection Threshold** A
  - 15
  - 27
- **Remote On / Off** See options table
- **Remote Sense** (+) Sense, compensating up to 5% of output voltage
- **Power Good** Optional (Full Feature Version)
- **Frequency Synchronization** Optional (Full Feature Version)
- **Output Sequencing** Optional (Full Feature Version)
- **Parallel Operation** Not possible
- **Series operation** Not possible

#### Environmental
- **Operating Temperature** °C
  - -40 to 125 (see thermal data on website)
- **Storage Temperature** °C
  - -55 to 125
- **Cooling** Convection or forced air

#### Other
- **Weight** g 15
- **Size (LxWxH)** mm
  - DIP Version: 33 x 22.9 x 12.1, SIP Version: 33 x 11.4 x 24.8
- **Size (LxWxH)** ln
  - DIP Version: 1.30 x 0.9 x 0.74, SIP Version: 1.30 x 0.45 x 0.98
- **MTBF - Telcordia SR-332**
  - > 12 Mhrs; 100% Load; Ta = 40 °C
- **Warranty** yrs 3

#### Notes
See website for detailed specifications.
1. (1) Output voltage cannot exceed input voltage. Refer to Input vs. Output graphs provided.
2. Full Feature module but without the SEQ (Sequencing) Pin 34 installed. This eliminates the need for external pull-up resistor when Sequencing feature is not being used.
3. If the Sequencing feature will not be used, the SEQ Pin 34 needs to be tied to a 1.8-3.3V source via a 10k resistor. See Full specification for details.

### Typical Application Circuit

![Typical Application Circuit](image)

**Recommendation**
1. TRIM resistor Rup should be connected to the i6A module as close as possible.
**Output vs. Input Voltage Operating Range**

- **i6A4W020A033V**
- **i6A4W010A033V**

**Mechanical Specification (Horizontal Mount Through Hole)**

**Recommended Hole Pattern (top view)**

**Pinout**

<table>
<thead>
<tr>
<th>PIN</th>
<th>Function</th>
<th>PIN</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>VIN (+)</td>
<td>7</td>
<td>SENSE (+)</td>
</tr>
<tr>
<td>2</td>
<td>ON / OFF</td>
<td>8</td>
<td>VOUT (+)</td>
</tr>
<tr>
<td>3</td>
<td>VIN (-)</td>
<td>32</td>
<td>Sync (Option)</td>
</tr>
<tr>
<td>4</td>
<td>VOUT (-)</td>
<td>33</td>
<td>MS (Option)</td>
</tr>
<tr>
<td>5</td>
<td>PWR GOOD (Option)</td>
<td>34</td>
<td>SEQ (Option)</td>
</tr>
<tr>
<td>6</td>
<td>TRIM</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Pin base material is brass or copper with gold over nickel plating.

**Mechanical Specification**

- Pin 1: Chamfer 1.3 [0.05] DIA Pins
- 1.3 [0.05] DIA Stand-offs
- 2 Places

- Pin 3: 2.5 [0.10] DIA Pins
- 33.0 [1.30] Max

- Pin 8: 3.8 [0.15] DIA Pins
- 3.8 [0.15] DIA Stand-offs
- up to 9 Places

- Pin 33: 33.0 [1.30] Max
- 2.5 [0.10] DIA Pins
- 7.6 [0.300] DIA Stand-offs
- up to 9 Places

- Pin 32: 2.5 [0.10] DIA Pins
- 33.0 [1.30] Max
- 2.5 [0.10] DIA Stand-offs

- Pin 2: 15.2 [0.600] DIA Pins
- 2.5 [0.10] DIA Stand-offs
- up to 9 Places

- Pin 4: 22.9 [0.90] DIA Pins
- 24.1 [0.950] DIA Stand-offs
- up to 9 Places

- Pin 5: 20.3 [0.800] DIA Pins
- 27.9 [1.100] DIA Stand-offs
- up to 9 Places

- Pin 6: 11.4 [0.450] DIA Pins
- 15.2 [0.600] DIA Stand-offs
- up to 9 Places

- Pin 7: 3.8 [0.15] DIA Pins
- 7.6 [0.300] DIA Stand-offs
- up to 9 Places

- Pin 34: 33.0 [1.30] Max
- 2.5 [0.10] DIA Pins
- 7.6 [0.300] DIA Stand-offs
- up to 9 Places

Pin base material is brass or copper with gold over nickel plating.
Mechanical Specification (SIP - Through Hole)

Recommended Hole Pattern (top view)

Pinout

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<th>PIN</th>
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<td>3</td>
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<td>MS (Option)</td>
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<td>VOUT (+)</td>
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<td>7</td>
<td>Sync (Option)</td>
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<tr>
<td>9</td>
<td>PWR GOOD (Option)</td>
<td>18</td>
<td>VOUT (+)</td>
</tr>
</tbody>
</table>

Mechanical Specification

Pin base material is brass or copper with matte tin over nickel plating.