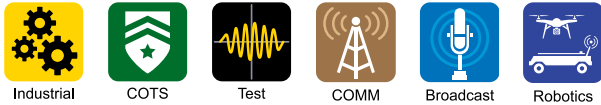
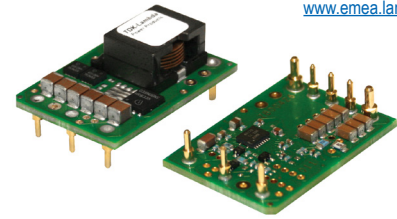


250W, 9 to 40V Input Non-Isolated Step-Down DC-DC Buck Converter

<https://product.tdk.com/en/power/i6a>
www.emea.lambda.tdk.com/i6a



The i6A series of non-isolated DC-DC step-down converters are ideal for creating additional high current output voltage rails from a single output 12V or 24V AC-DC or DC-DC power supply. The highly efficient i6A series accepts a wide DC input and has a wide output adjustment range in compact 1/16th brick 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 | Benefits |
|---|---|
| • Up to 250 W in a 1/16th brick package | • High Power Density, Less Board Area Needed |
| • High Efficiency Up to 98% | • Longer Battery Life / Less Power Consumed |
| • Wide Output Adjustment 3.3 to 24 V | • One Part Supports Multiple System Voltages |
| • 9 to 40V Input Range | • Can Operate From Different DC Source Voltages Including Batteries |
| • Low Component Count With Minimal External Components | • Low Cost |
| • Minimal Derating Requirements in Low Airflow Environments | • Easy to Cool in End System |

| Model Selector | | | | | | | |
|-------------------------------------|-------------------|--------------------|-----------------|---------------|-----------------------|-----------------------|--------------|
| Model | Input Voltage (V) | Output Voltage (V) | Max Current (A) | Max Power (W) | Negative Logic On/Off | Positive Logic On/Off | Full Feature |
| i6A24014A033V-000-R | 9 - 40 | 3.3 - 24 | 14 | 250 | - | Yes | - |
| i6A24014A033V-001-R | 9 - 40 | 3.3 - 24 | 14 | 250 | Yes | - | - |
| i6A24014A033V-002-R | 9 - 40 | 3.3 - 24 | 14 | 250 | - | Yes | Yes |
| i6A24014A033V-003-R | 9 - 40 | 3.3 - 24 | 14 | 250 | Yes | - | Yes |

Preferred model

| Related Products | | |
|----------------------------|-------------------------------------|--|
| Type | Part Number | Description |
| DC-DC Buck Converter | i3A | 100W, Input 9-53V, Output 5-30V 4.5A or 3.3-16.5V 8A |
| DC-DC Buck Converter | i6A4W | 250W, Input 9-53V, Output 3.3-40V 10A or 3.3-15V 20A |
| DC-DC Buck Converter | i6AN | 75W, Input 9-40V, Negative Output -3.3 to -30V, 8A |
| DC-DC Buck Converter | i7A | 500-750W, Input 18-60V or 18-32V, Output 3.3-24V 33A or 3.3-18V 45A |
| DC-DC Buck-Boost Converter | i7C | 300W, Input 9-53V or 9-36V, Output 9.6-48V 8A, 5-28V 12.5A or 8-24V 20A |
| Evaluation Kit | i6A14A-C01-EVK-S1 | Compact Evaluation kit with i6A24014A033V-001-R module |
| Evaluation Kit | i6A14A-001-EVK-S1PX | Evaluation kit with i6A24014A033V-001-R module |
| Evaluation Kit | i6A14A-001-EVK-D2PN | Evaluation kit with i6A24014A033V-001-R module and i6A24008A033V-N01-R modules |

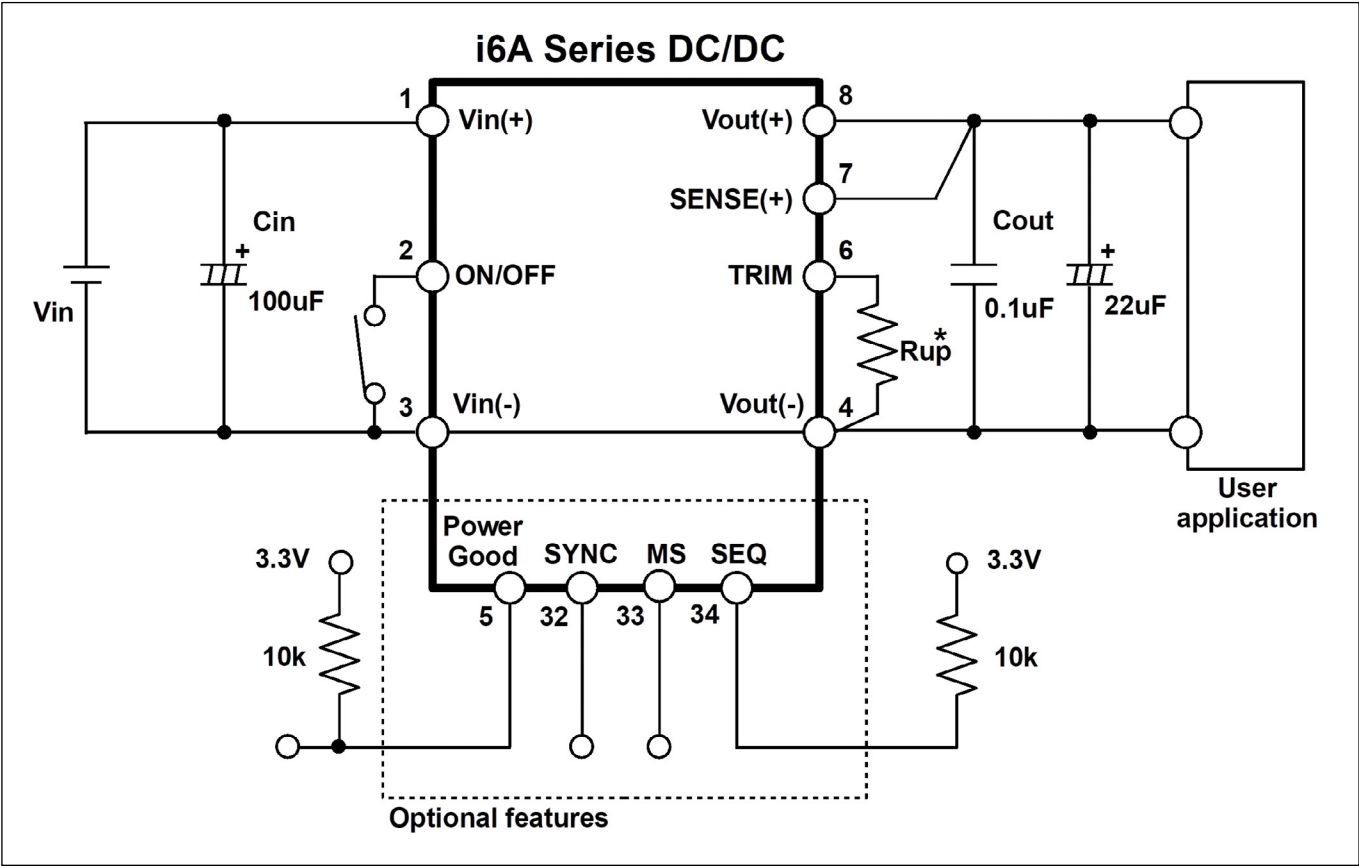
| Specification | | | |
|--|--------|---|--|
| Model | | i6A24014A033V | |
| Input | | | |
| Input Voltage Range | Vdc | 9 - 40 | |
| Input Current (max) | A | 15 | |
| Turn-ON Input Voltage | Vdc | 8 | |
| Turn-OFF Input Voltage | Vdc | 7 - 9 | |
| Efficiency | % | 92.5 - 98 | |
| Safety Certifications and Markings | - | IEC/UL/CSA/EN 62368-1, 60950-1, CE Mark and UKCA Mark | |
| Output | | | |
| Output Voltage Tolerance | % | ± 4 | |
| Line Regulation | % | 0.3 | |
| Load Regulation | % | 1 | |
| External Load Capacitance | µF | 0 - 2000 | |
| Ripple & Noise | mVpp | 20 | |
| Switching Frequency | kHz | 400 | |
| Overcurrent Protection Threshold (typ) | A | 22 | |
| Overtemperature Protection | - | Yes | |
| Output Voltage Adjustment Range | | 3.3 to 24 | |
| | | See product specifications for output trim equation | |
| Remote Sense | - | (+) Sense, compensating up to 5% of output voltage | |
| Remote On/Off | - | Negative or Positive Logic | |
| Power Good | - | Optional (Full Feature Version) | |
| Frequency Synchronization | - | Optional (Full Feature Version) | |
| Output Sequencing | - | Optional (Full Feature Version) | |
| Environmental | | | |
| Operating Temperature (Tref) | °C | -40 to 125 | |
| Storage Temperature | °C | -55 to 125 | |
| Humidity (non condensing) | %RH | 5 - 95 (Operating & Storgae) | |
| Cooling | - | Convection or forced air | |
| Other | | | |
| Weight (Typ) | g | 15 | |
| Size (LxWxH) | mm | 33.0 x 22.9 x 12.1 | |
| Size (LxWxH) | Inches | 1.30 x 0.90 x 0.47 | |
| MTBF - Telcordia SR-332 | - | > 10 Mhrs; 100% Load; Ta = 40 °C | |
| Warranty | yrs | 3 years | |

See website for detailed [product specifications](#).

| Pinout | | | |
|---------------|---------------------|-----|---------------|
| PIN | Function | PIN | Function |
| 1 | Vin (+) | 7 | Sense + |
| 2 | On / Off | 8 | Vout (+) |
| 3 | Vin (-) / GND | 32 | SYNC (Option) |
| 4 | Vout (-) / GND | 33 | MS (Option) |
| 5 | Power Good (Option) | 34 | SEQ (Option) |
| 6 | Trim | | |

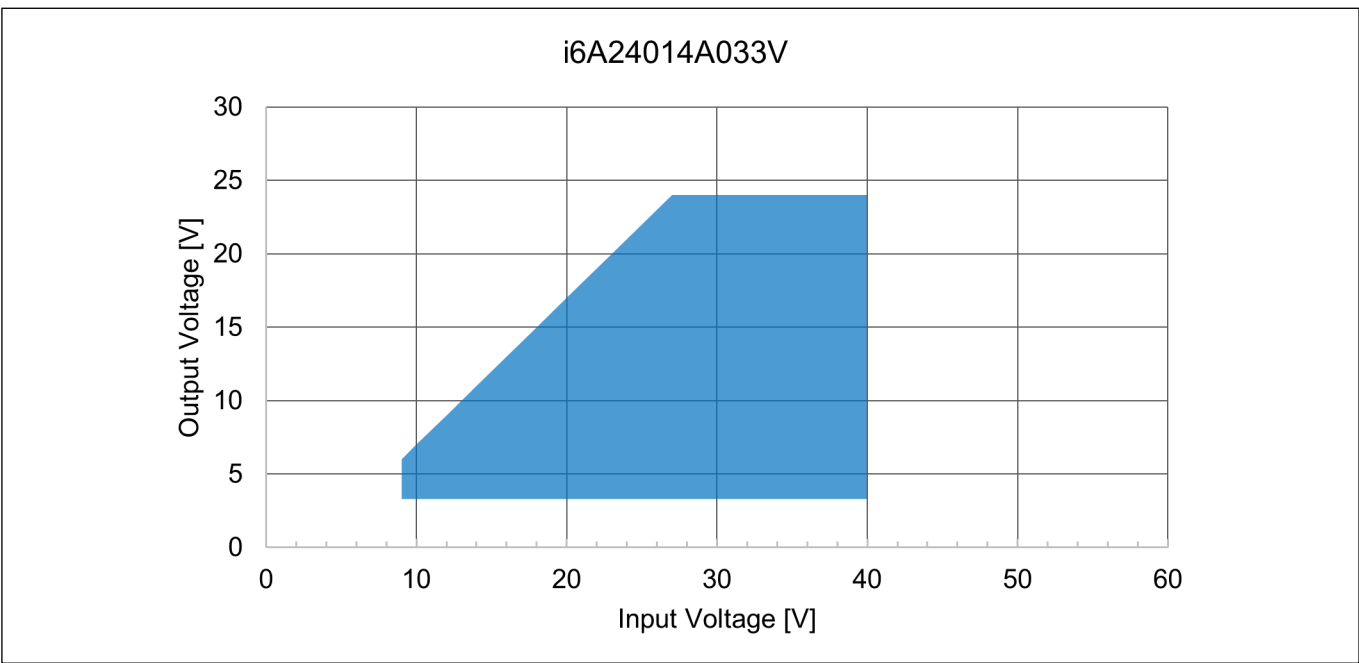
Pin base material is brass or copper with gold over nickel plating.

Typical Application Circuit (i6A)



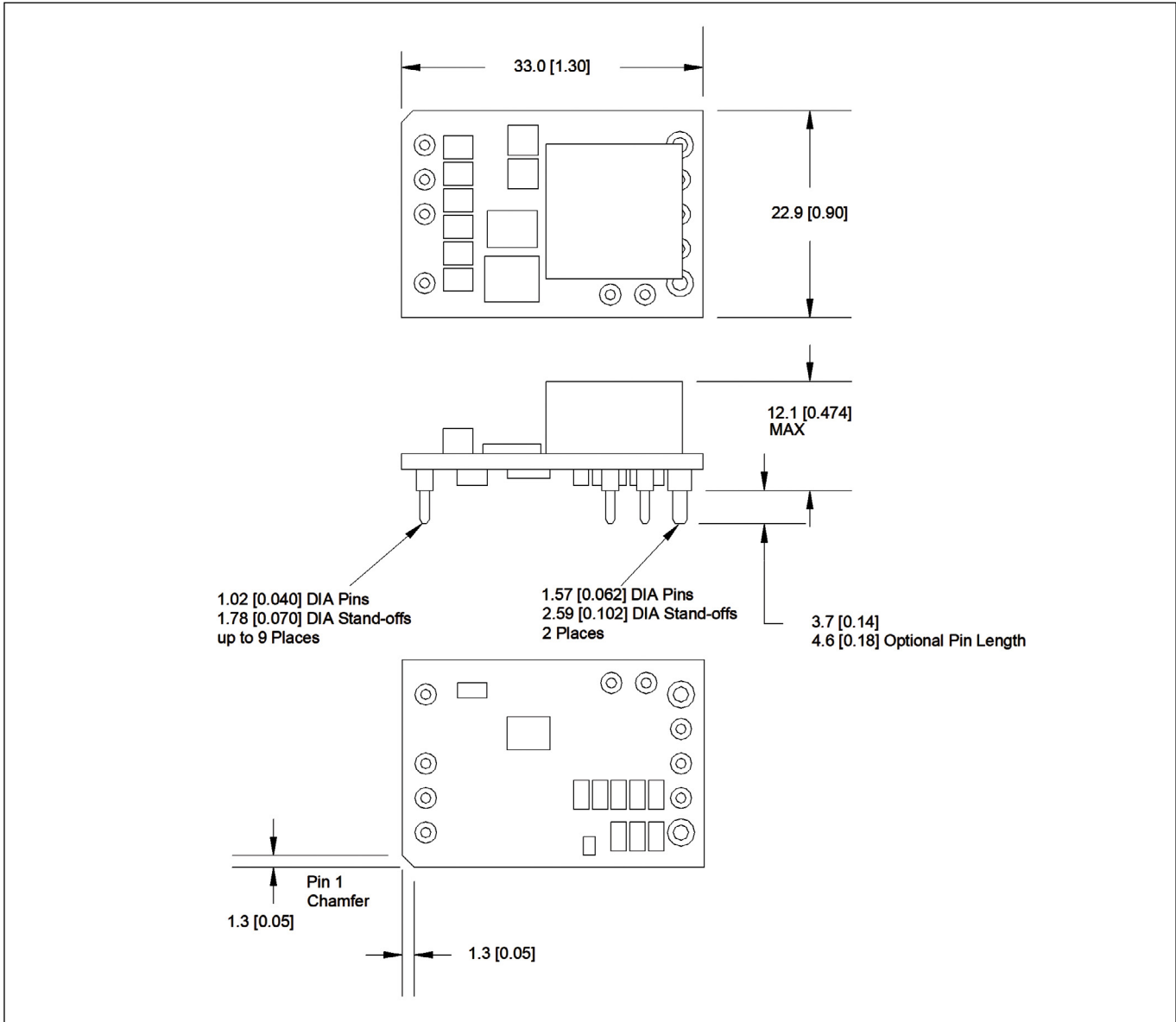
Recommendation:
 1. TRIM resistor R_{up} should be connected to the i6A module as close as possible.

Output vs. Input Voltage Operating Range

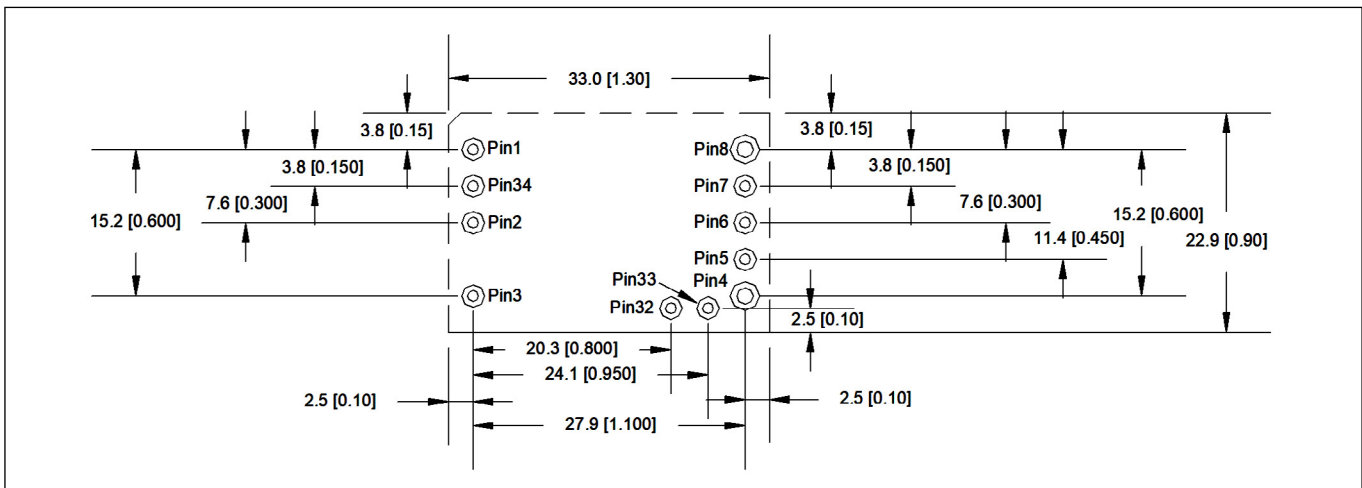


Mechanical Specification

Dimensions are in mm [in]. Unless otherwise specified tolerances are: $x.x \pm 0.5$ [0.02], $x.xx \pm 0.25$ [0.010]



Recommended Hole Pattern (Top View)





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