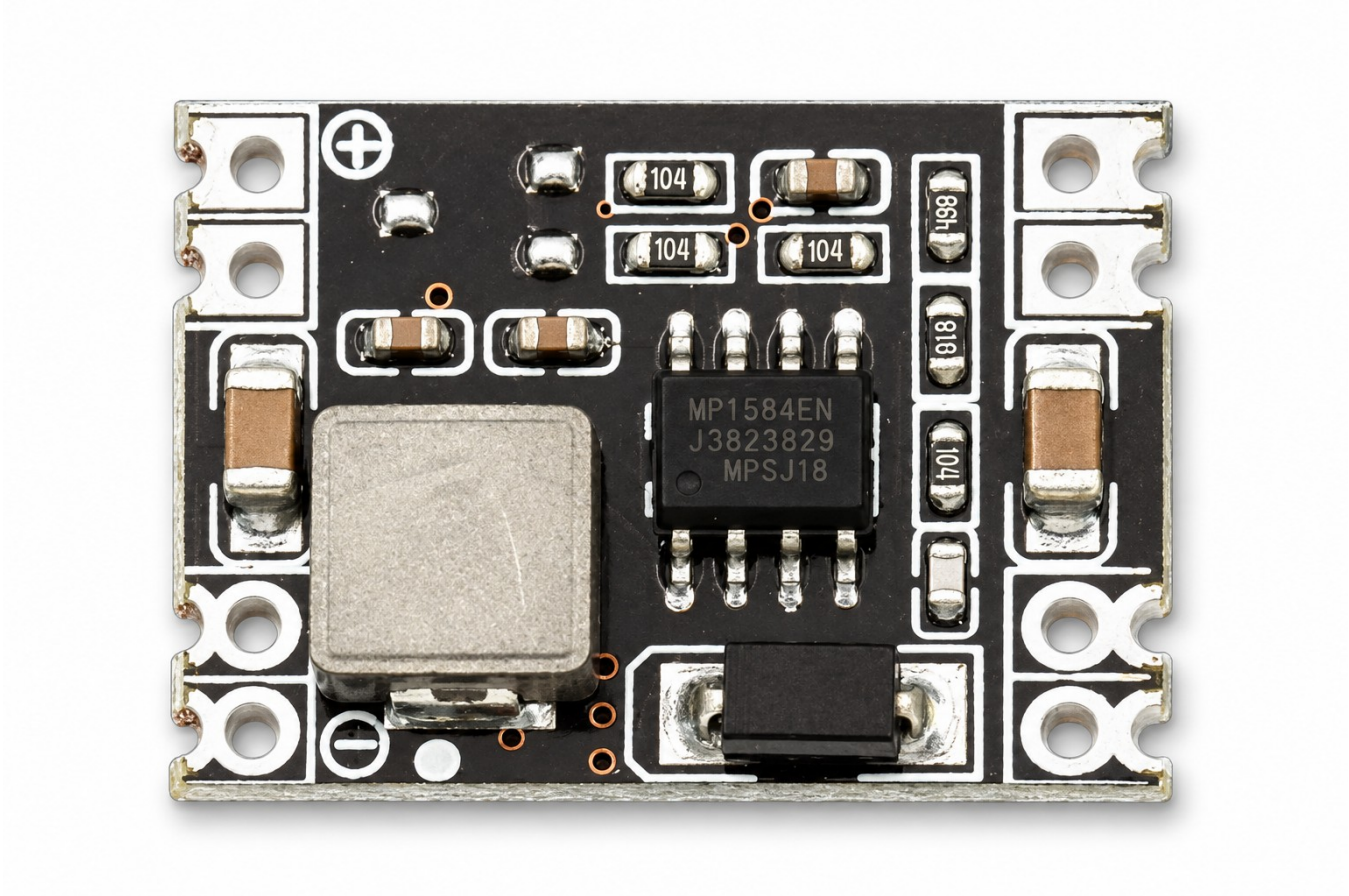
MP1584EN 3.3V Fixed Output Buck Converter

PRODUCT SPECIFICATION AND USER GUIDE



MP1584EN fixed 3.3 V step-down converter module

Product Description

This compact MP1584EN-based DC-DC buck converter accepts a 5.3–26 V DC input and provides a fixed regulated 3.3 V output. The module is designed for space-constrained low-voltage power conversion in embedded controllers, sensors, communications equipment, model electronics, monitoring systems and battery-powered devices.

Important: This is a step-down converter. The input must remain above the 3.3 V output, and the source must maintain adequate voltage under load. Verify input polarity and output voltage before connecting the load.

Electrical Specifications

Parameter	Specification	Conditions and notes
Converter type	Non-isolated DC-DC buck	Input and output grounds are common
Controller	MP1584EN	Synchronous step-down regulator module
Input voltage	5.3–26 V DC	Maintain correct polarity; do not exceed the listed range
Output voltage	3.3 V fixed	No user adjustment
Peak output current	3 A	Short-duration peak rating
Recommended continuous current	≤1.8 A	Use airflow and suitable wiring; derate for high ambient temperature
Peak efficiency	Up to 96%	Higher efficiency when VIN − VOUT is at least 2 V
Output ripple	<30 mV	Measurement bandwidth and load are not specified
Operating temperature	−40 to +85 °C	Electrical and thermal derating may be required
Module dimensions	Approx. 21.5 × 16 mm	Board outline excluding connected wiring
Terminal spacing	Approx. 8 mm	Center-to-center spacing within each terminal pair

Absolute Application Limits

- Do not reverse the input polarity.
- Do not short the output.
- Do not apply voltage to the output when the input is unpowered unless the complete system has been verified for backfeed behavior.
- Do not use this fixed 3.3 V version where another output voltage is required.
- Peak-current and peak-efficiency values are not continuous guarantees; verify the module under the actual load and enclosure temperature.

Connections

Terminal	Function	Wiring
IN+	Positive DC input	Connect to the positive terminal of the 5.3–26 V source
IN−	Input return / ground	Connect to source negative
OUT+	Regulated +3.3 V output	Connect to load positive
OUT−	Output return / ground	Connect to load negative

Input and output negative terminals share a common ground. The module is not galvanically isolated.

Installation

1. Inspect the module for damage, solder bridges or loose components.
2. With power disconnected, solder short and adequately sized wires to IN+, IN−, OUT+ and OUT−.
3. Before connecting the load, apply the input voltage and verify approximately 3.3 V between OUT+ and OUT− with a multimeter.
4. Disconnect input power, connect the 3.3 V load with correct polarity, then restore power.
5. Measure the loaded output voltage and monitor module temperature during the first extended test.
6. If continuous current approaches 1.8 A, provide airflow and confirm acceptable temperature rise in the final enclosure.

Recommended Wiring

- Keep input and output leads short to reduce voltage drop and noise.
- Use conductor size appropriate for the expected current.
- Place additional input/output capacitors near the module if the source or load has long wires or severe transients.
- Add an input fuse when the source can supply high fault current.
- For vehicle or industrial systems, evaluate surge, reverse-polarity and EMI protection at the system level.

Typical Applications

Input source	3.3 V load example	Design consideration
12 V adapter	Embedded controller or sensor hub	Confirm startup and peak load current
24 V system	Monitoring and interface electronics	Add transient protection where required
Vehicle electrical system	Low-voltage embedded electronics	Automotive surges can exceed the nominal supply voltage
Model battery pack	Telemetry or control electronics	Verify battery voltage range and radio-frequency noise
Portable DC supply	3.3 V communications equipment	Check cable drop and enclosure temperature

Troubleshooting

Symptom	Likely cause	Corrective action
No output	No input, reversed polarity, broken connection or damaged module	Remove power and verify source voltage, polarity and solder joints
Output below 3.3 V	Input sag, overload or excessive wiring resistance	Measure VIN under load; reduce load and shorten or enlarge conductors
Module overheats	Continuous current too high, poor airflow or high ambient temperature	Disconnect power; reduce current and improve cooling
Load resets	Transient current exceeds available margin	Add local output capacitance and verify startup current
Excessive noise	Long wiring, poor grounding or sensitive load layout	Shorten wiring, improve grounding and add appropriate filtering

Safety and Revision Note

This open-frame module is a component for integration, not a certified finished power supply. Protect it from moisture, conductive debris, accidental contact and short circuits. This specification applies only to the MP1584EN fixed 3.3 V version. Component markings and board revisions may vary; verify received hardware before production or safety-critical use.