TRACO POWER

Unregulated DC/DC Converter

TBA 2 Series, 2 Watt

- **Continuous short circuit protection**
- **I/O isolation: 1’500 VDC**
- **Operating temperature range -40 to +80 °C without derating**
- **Input voltage ranges (±10%): 5, 12, 24 VDC**
- **High efficiency up to 84%**
- **SIP-7 package**
- **Unregulated outputs**
- **3-year product warranty**



The TBA 2 is a 2 Watt DC/DC SIP converter series which is specifically designed to offer a low-cost solution with no concession on quality and lifetime. The new design improves on the industry standard features and offers an integrated continuous short circuit protection circuit, an operating temperature range from –40°C to 80°C without derating and I/O-isolation of 1’500 VDC. It offers a broad application range in any space and cost critical application.

Models

Order Code	Input Voltage Range	Output 1		Output 2		Efficiency
		Vnom	Imax	Vnom	Imax	typ.
TBA 2-0511	4.5 - 5.5 VDC (5 VDC nom.)	5 VDC	400 mA			78 %
TBA 2-0512		12 VDC	165 mA			82 %
TBA 2-0513		15 VDC	130 mA			82 %
TBA 2-0521		+5 VDC	200 mA	–5 VDC	200 mA	79 %
TBA 2-0522		+12 VDC	80 mA	–12 VDC	80 mA	82 %
TBA 2-0523		+15 VDC	65 mA	–15 VDC	65 mA	82 %
TBA 2-1211	10.8 - 13.2 VDC (12 VDC nom.)	5 VDC	400 mA			79 %
TBA 2-1212		12 VDC	165 mA			82 %
TBA 2-1213		15 VDC	130 mA			84 %
TBA 2-1221		+5 VDC	200 mA	–5 VDC	200 mA	79 %
TBA 2-1222		+12 VDC	80 mA	–12 VDC	80 mA	83 %
TBA 2-1223		+15 VDC	65 mA	–15 VDC	65 mA	84 %
TBA 2-2411	21.6 - 26.4 VDC (24 VDC nom.)	5 VDC	400 mA			78 %
TBA 2-2412		12 VDC	165 mA			84 %
TBA 2-2413		15 VDC	130 mA			84 %
TBA 2-2421		+5 VDC	200 mA	–5 VDC	200 mA	80 %
TBA 2-2422		+12 VDC	80 mA	–12 VDC	80 mA	84 %
TBA 2-2423		+15 VDC	65 mA	–15 VDC	65 mA	84 %

Input Specifications

Surge Voltage		5 Vin models:	**9 VDC max.** (1 s max.)
		12 Vin models:	**18 VDC max.** (1 s max.)
		24 Vin models:	**30 VDC max.** (1 s max.)
Recommended Input Fuse		5 Vin models:	**1'000 mA** (slow blow)
		12 Vin models:	**400 mA** (slow blow)
		24 Vin models:	**200 mA** (slow blow)
			(The need of an external fuse has to be assessed in the final application.)
Input Filter			**Internal Capacitor** (add. external 22 µF, ESR <0.1Ω, recommended)

Output Specifications

Voltage Set Accuracy			**±3% max.** (at 60% for 5VDC models)
			±3% max. (at 80% for other models)
Regulation (Unregulated)	- Input Variation (1% Vin step)	single output models:	**1.5% max.**
		dual output models:	**1.5% max.**
	- Load Variation	See application note:	www.tracopower.com/tba2-cc
	- Voltage Balance (symmetrical load)	dual output models:	**1% max.**
Ripple and Noise	- 20 MHz Bandwidth		**250 mVp-p max.**
			120 mVp-p typ.
Capacitive Load	- single output	5 Vout models:	**470 µF max.**
		12 Vout models:	**470 µF max.**
		15 Vout models:	**470 µF max.**
	- dual output	5 / -5 Vout models:	**220 / 220 µF max.**
		12 / -12 Vout models:	**220 / 220 µF max.**
		15 / -15 Vout models:	**220 / 220 µF max.**
Minimum Load		See application note:	www.tracopower.com/tba2-cc
Temperature Coefficient			±0.02 %/K max.
Start-up Time			10 ms max.
Short Circuit Protection			Continuous, Automatic recovery

Safety Specifications

Standards	- IT / Multimedia Equipment	**Designed for IEC/EN/UL 62368-1** (not certified)
Over Voltage Category		Not mains connected

General Specifications

Relative Humidity			**95% max.** (non condensing)
Temperature Ranges	- Operating Temperature		–40°C to +90°C
	- Case Temperature		+95°C max.
	- Storage Temperature		–55°C to +125°C
Power Derating	- High Temperature		6.67 %/K above 80°C
		See application note:	www.tracopower.com/tba2-cc
Cooling System			Natural convection (20 LFM)
Switching Frequency			30 - 200 kHz (PWM)
Insulation System			Functional Insulation
Isolation Test Voltage	- Input to Output, 60 s		1'500 VDC
Isolation Resistance	- Input to Output, 500 VDC		1'000 MΩ min.
Isolation Capacitance	- Input to Output, 100 kHz, 1 V		20 pF typ.
Reliability	- Calculated MTBF		2'000'000 h (MIL-HDBK-217F, ground benign)
Washing Process			Not allowed
Housing Material			Plastic (UL 94 V-0 rated)
Potting Material			Epoxy (UL 94 V-0 rated)
Pin Material			Nickel-Iron (Alloy 42)

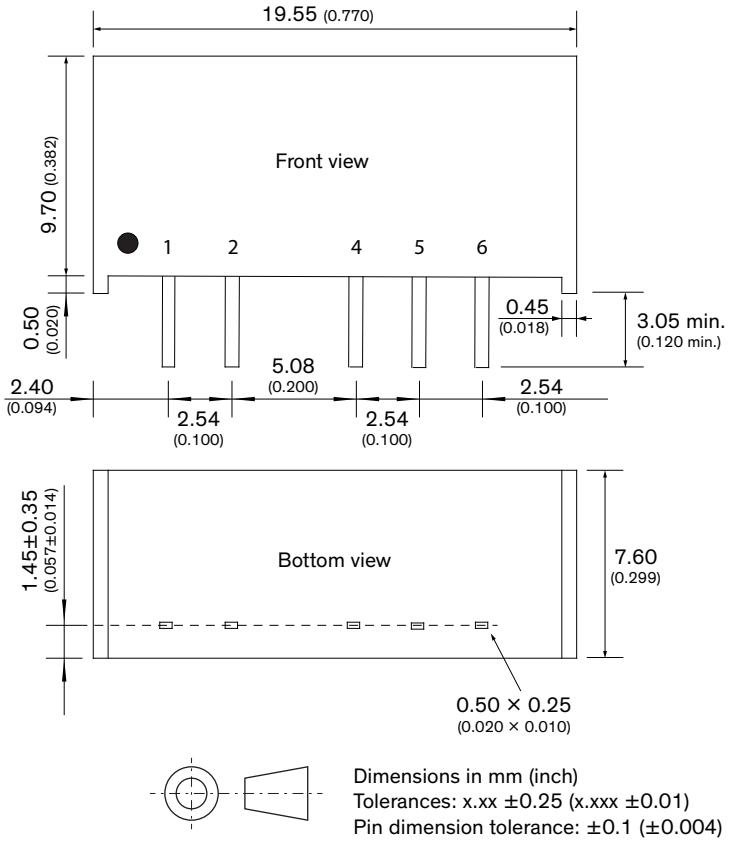
All specifications valid at nominal voltage, resistive full load and +25°C after warm-up time, unless otherwise stated.

Pin Foundation Plating	Nickel (1.5 µm min.)
Pin Surface Plating	Tin (3 µm min.), bright
Housing Type	Plastic Case
Mounting Type	PCB Mount
Connection Type	THD (Through-Hole Device)
Footprint Type	SIP7
Soldering Profile	Lead-Free Wave Soldering 265 °C / 5 s max.
Weight	2.8 g
Environmental Compliance - REACH Declaration	www.tracopower.com/info/reach-declaration.pdf REACH SVHC list compliant REACH Annex XVII compliant
- RoHS Declaration	www.tracopower.com/info/rohs-declaration.pdf Exemptions: 7(a), 7(c)-I (RoHS exemptions refer to the component concentration only, not to the overall concentration in the product (O5A rule).)
- SCIP Reference Number	374bcf02-a65e-4583-a8ac-ef81e512a6a2

Additional Information

Supporting Documents	www.tracopower.com/overview/tba2
Frequently Asked Questions	www.tracopower.com/glossary-faq
Glossary	www.tracopower.com/info/glossary.pdf

Outline Dimensions



Dimensions in mm (inch)
Tolerances: x.xx ±0.25 (x.xxx ±0.01)
Pin dimension tolerance: ±0.1 (±0.004)

Pinout

Pin	Single	Dual
1	+Vin (Vcc)	+Vin (Vcc)
2	–Vin (GND)	–Vin (GND)
4	–Vout	–Vout
5	No pin	Common
6	+Vout	+Vout

© Copyright 2025 Traco Electronic AG