



BD5003

4W DC/DC CONVERTERS IN 24-PIN DIP

$24V_{IN}$ $\pm 80V_{OUT}$ @ $\pm 25mA$

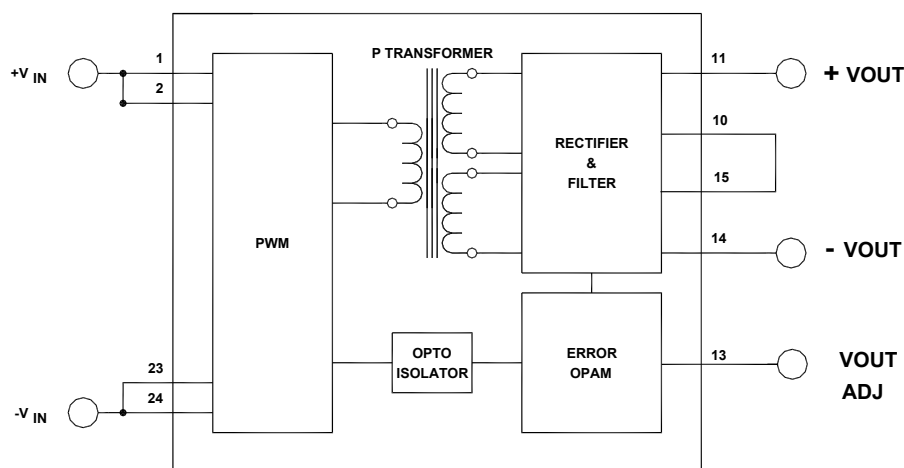
Key Features

- Efficiency up to 82%
- 1500Vdc isolation
- Short circuit and thermal protection
- 2:1 wide input voltage range
- Metal case
- Six-sided shielding
- Industry standard pinout



Functional Description

The BD5003 is a 4W DC/DC Converter in a 24-pin DIP configuration. It accepts $18-36V_{IN}$ and provide a dual isolated $\pm 80V$ @ $25mA$ each. Standard features include 1500Vdc isolation, and short circuit . The convertor is packaged in a standard 24-pin DIP metallic case for EMI/RFI reduction and thermal protection. The BD5003 operates from $-40^{\circ}C$ to $+85^{\circ}C$.



Typical Block Diagram

Unless otherwise specified, all parameters are given under typical +25°C with nominal input voltage and under full output load conditions.

Electrical Specifications

ABSOLUTE MAXIMUM RATINGS

PARAMETER	CONDITION / NOTE	MIN	TYP	MAX	UNIT
Input Voltage		18	24	36	Vdc
Output Short Circuit Duration	Continuous				
Internal Power Dissipation				1.2	W

INPUT SPECIFICATIONS

PARAMETER	CONDITION / NOTE	MIN	TYP	MAX	UNIT
Input Voltage Range (2:1)		18	24	36	Vdc
No Load Input Current			10		mA
Full Load Input Current			200		mA
Reverse Polarity	External series-blocking diode				
Reflected Ripple	$I_O = FL, C_{IN} = 100F$				
Input Surge Current (20µS Spike)				10	A
Short Circuit Current Limit	See Short Circuit Protection		150		% I_{IN}

OUTPUT SPECIFICATIONS

PARAMETER	CONDITION / NOTE	MIN	TYP	MAX	UNIT
Output Voltage			±80		Vdc
Output Voltage Accuracy			±1	±2	%
Ripple & Noise	With specified minimum output capacities		1	2	% V_{PP} of V_{OUT}
Output Current			±25		mA
Line Regulation			±1	±2	%
Load Regulation	With balanced loads		±1	±2	%
Temperature Coefficient @ FL			0.02		%/°C
Transient Response Time	50% FL to FL to 50% FL, See Figures 2 & 3		1	2	mS
Short Circuit Protection ²	By input current limiting				
Output Adjust Range	See Figure 2;	±5		±10	%

GENERAL SPECIFICATIONS

PARAMETER	CONDITION / NOTE	MIN	TYP	MAX	UNIT
Efficiency			82		%
Isolation Voltage (1 min.), Input to Output			1500		Vdc
Isolation Resistance			10 ⁹		Ω
Isolation Capacitance			1000		pF
Switching Frequency			125		kHz
Turn On Delay	See Figure 3		5	10	mS
Soft Start Time	See Figure 3		20		mS

ENVIRONMENTAL SPECIFICATIONS

PARAMETER	CONDITION / NOTE	MIN	TYP	MAX	UNIT
Operating Temperature Range (Ambient)		-40		+85	°C
Storage Temperature Range		-60		+105	°C
Thermal Shutdown ²	Case temperature (Input power must be recycled)	96	100	104	°C
Thermal Resistance	Maximum case temperature is 36°C above ambient		36	43	°C/W
Humidity	Up to 95% non-condensing				
Cooling	Free-air convection				
MTBF	per MIL-HNBK-217F (Ground benign, +25°C)		1.3x10 ⁶		hours

PHYSICAL CHARACTERISTICS

PARAMETER	CONDITION / NOTE	MIN	TYP	MAX	UNIT
Dimensions (L×W×H)	1.25×0.80×0.40 in. (31.75×20.32×10.16mm)				
Weight	0.65 oz. (20.2g)				
Case Material	Coated metal				
Shielding	Six-sided continuous				
Case Connection					

¹ With a 10μH input inductor and 10μF input capacitor.

² Input power may need to be recycled if the input overcurrent threshold is exceeded after a hard output short circuit or thermal shutdown.

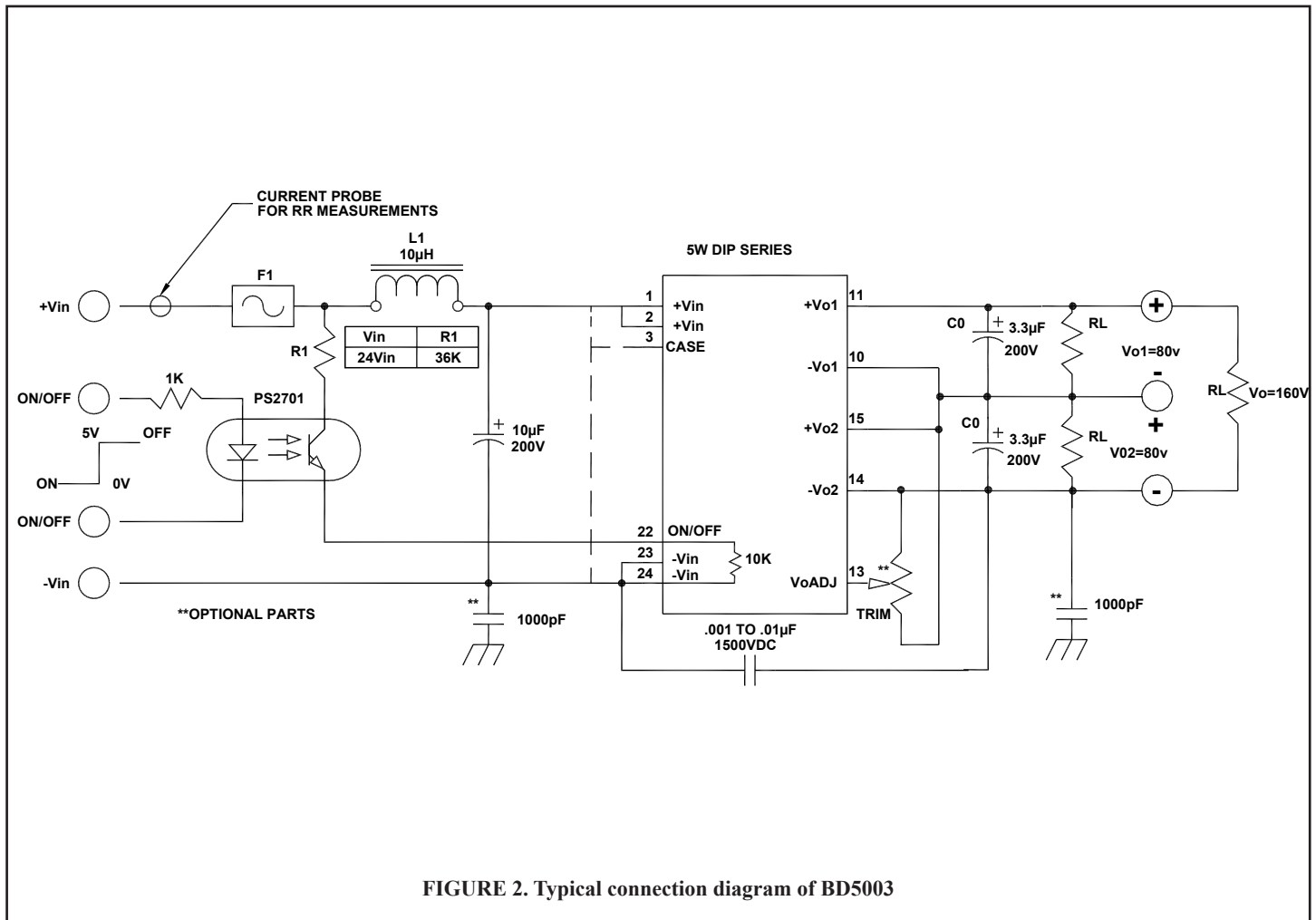
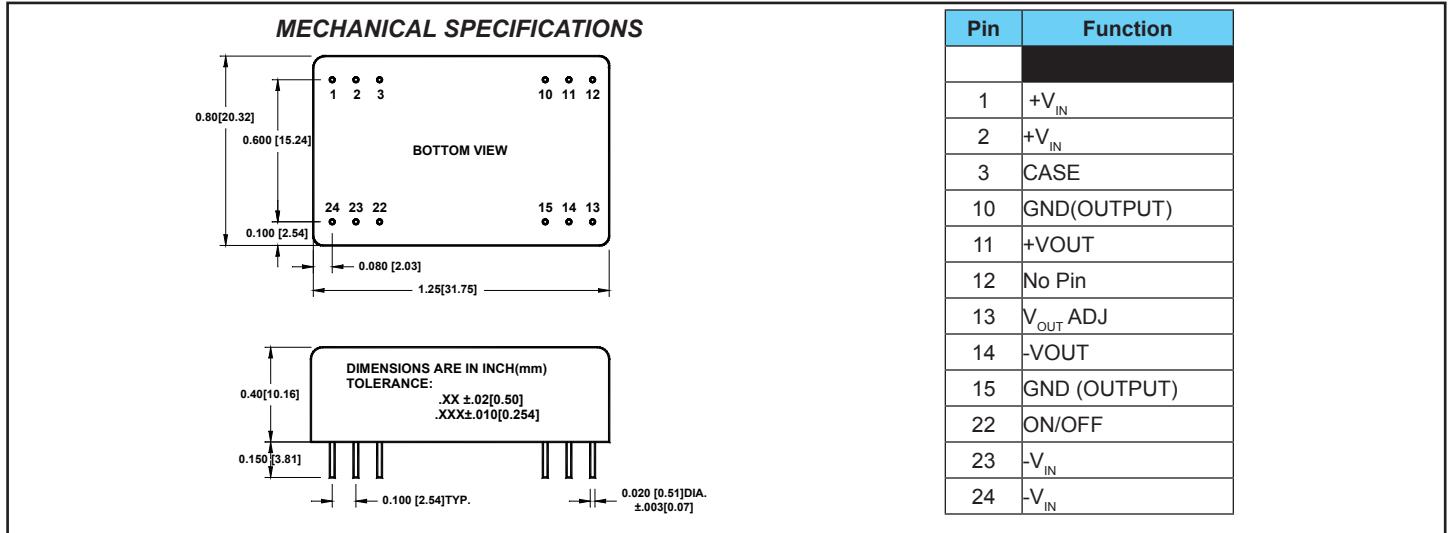


FIGURE 2. Typical connection diagram of BD5003