



BD150012

80W DUAL DC/DC CONVERTER

$24V_{IN}$, $100V_{OUT}@533mA$

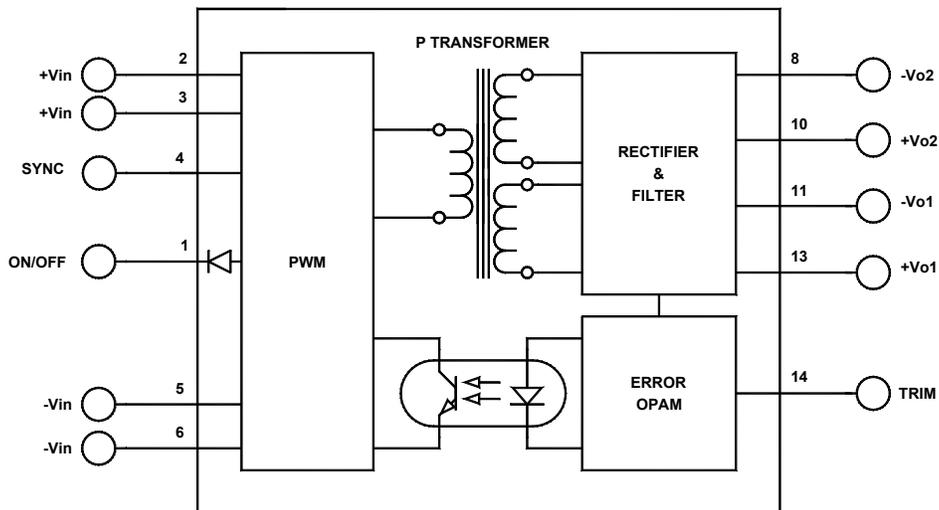
Key Features

- Efficiency up to 93%
- 1500Vdc input-to-output isolation
- 2:1 input voltage range
- Input undervoltage protection
- Output overvoltage protection
- Soft start
- Adjustable output
- 80kHz switching frequency
- Thermal protection
- Six-sided shielding



Functional Description

The BD150012 is an 53W dual output, isolated DC/DC converter that accepts $24V_{IN}$ and delivers $100V_{OUT}@533mA$ to the load. The converter can be synchronized to an external square wave 5V TTL/CMOS clock with a frequency of 160kHz AC-coupled through a 220pF capacitor to Pin 4. Its high switching frequency, SMD design, and thermal management improves efficiency and reliability. The converter is designed and thoroughly tested for an input-to-output isolation of 1500Vdc.



Typical Block Diagram

Electrical Specifications

INPUT SPECIFICATIONS

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

PARAMETER	CONDITION / NOTE	MIN	TYP	MAX	UNIT
Input Voltage Range		21	24	27	Vdc
Input Startup Voltage		20			Vdc
Input Filter	C				
Reverse Polarity	External series-blocking diode				
Reflected Ripple			120		mA
No Load Input Current			50		mA
Full Load Input Current			2440		mA
Input Surge Current (20µS Spike)				10	A
Short Circuit Current Limit			150		% I _{IN}
Off State Current			1		mA
Remote ON/OFF Control					
Supply ON	Pin 1 Open (Open circuit voltage: 13V max.)				
Supply OFF		0	.100	.150	Vdc
ON/OFF Current			1	1.50	mA
Logic Input Reference	-Input for ON/OFF				
Logic Compatibility for Reference	TTL Open Collector or CMOS Open Drain				
Sync Input	TTL (AC Coupled)	2.5		5	Vdc
Sync Input Frequency Range		160	170	180	kHz

OUTPUT SPECIFICATIONS

PARAMETER	CONDITION / NOTE	MIN	TYP	MAX	UNIT
Output Voltage			100		Vdc
Output Voltage Accuracy			±1	±2	%
Output Current			533		mA
Ripple & Noise			1	2	%V _{PP} of V _{OUT}
Line Regulation			±0.5	±1	%
Load Regulation			±1	±2	%
Output Overvoltage Protection			120		% of V _{OUT}
Temperature Coefficient @ FL			0.02		%/°C
Transient Response Time (to within 1% of V)	50% FL to FL to 50% FL, See Figure 7		250		µS
Short Circuit Protection	By input current limiting				
Output Adjust Range			±5		%

GENERAL SPECIFICATIONS

PARAMETER	CONDITION / NOTE	MIN	TYP	MAX	UNIT
Efficiency			91		%
Isolation Voltage (1 min.), Input to Output	100% Tested in production		1500		Vdc
Isolation Resistance			10 ⁹		Ω
Isolation Capacitance			180		pF
Switching Frequency			80		kHz
Turn On Delay			7	10	mS
Soft Start Time			7	15	mS

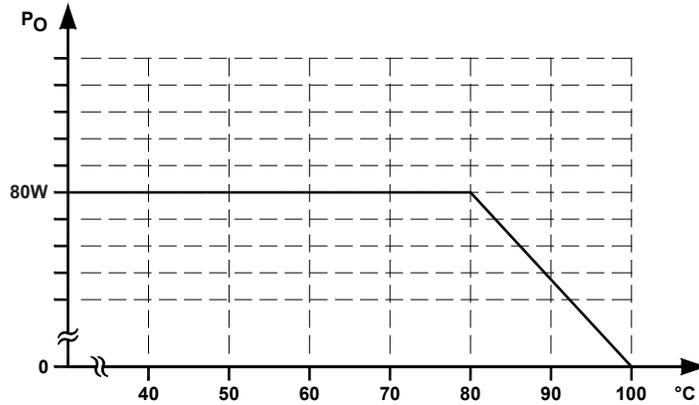


FIGURE 2. Typical derating curve with free air cooling

EXTERNAL TRIMMING OF OUTPUT VOLTAGES

To trim the output voltage DOWN, connect a 5% 1/4W resistor between the +V_{O1} output and trim pin of the converter. To trim the output voltage UP, connect a 5% 1/4W resistor between the -V_{O1} output and trim pins of the converter. For UP/DOWN trimming capability, connect a 100kΩ potentiometer between the + and - output pins, with the wiper arm connected to the trim pin.

The trim resistors/potentiometer can be connected at the converter output pins or the load. However, if connected at the load,

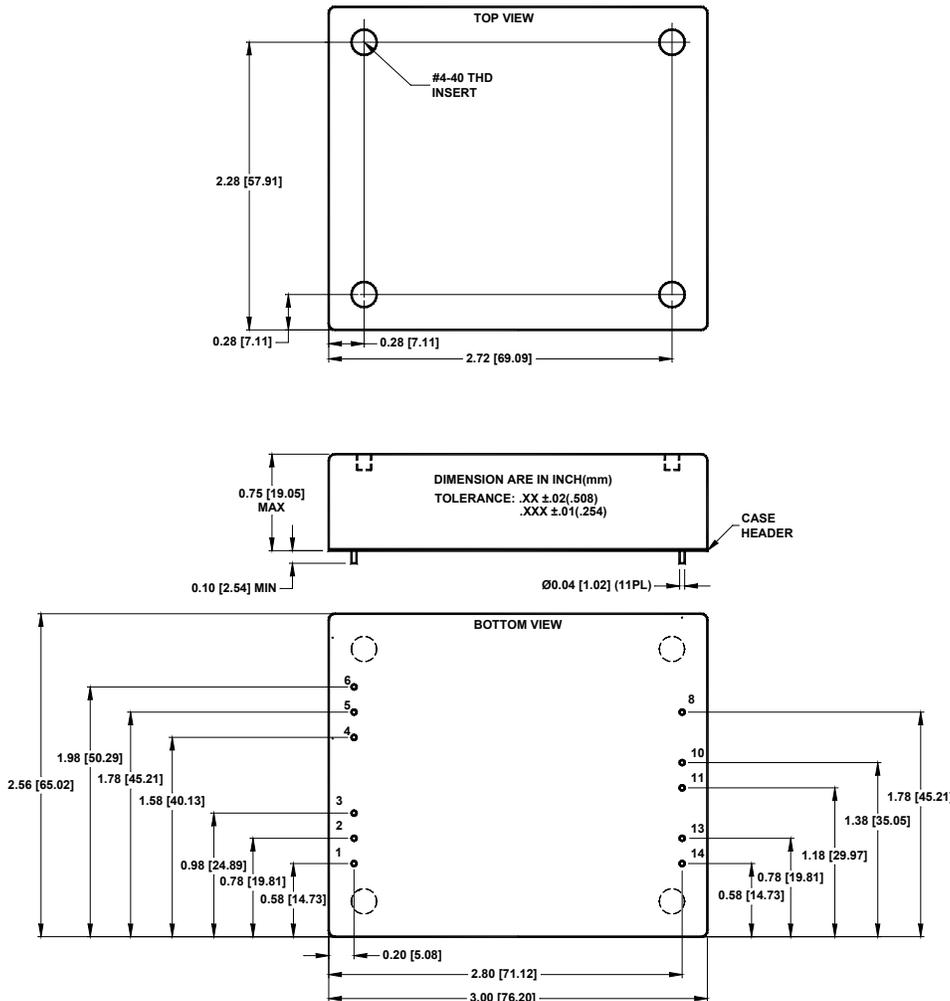
the resistance of the runs becomes part of the feedback network which improves load regulation. If the load is some distance from the converter, the use of #20 gauge wire is recommended to avoid excessive voltage drop due to the resistance of the circuit paths.

See our application notes:

DC-001: Testing Transient Response in DC/DC Converters

DC-004: Thermal Consideration for DC/DC Converters

MECHANICAL SPECIFICATIONS



Pin	Function
	DUAL
1	ON/OFF
2	+V _{IN}
3	+V _{IN}
4	SYNC
5	-V _{IN}
6	-V _{IN}
8	-V _{OUT}
10	COM
11	COM
13	+V _{OUT}
14	V _{OUT} ADJ