



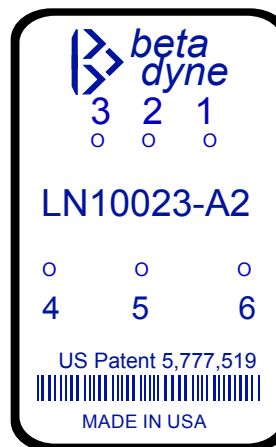
LN10023-A2

LOW-NOISE 10W DUAL DC/DC CONVERTER

18-36 V_{IN} +/-3.3 V_{OUT} @ +/-1.0A

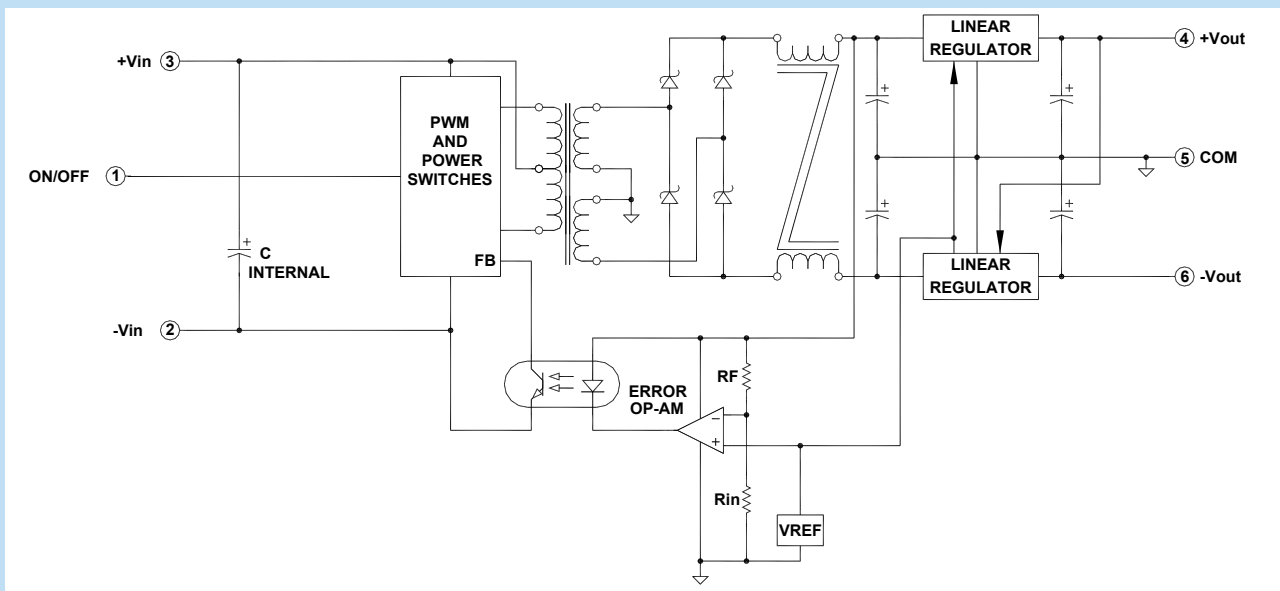
Key Features

- 10mV output noise
- Six-sided shielding
- Soft start
- Dual output
- Short circuit protection
- Adjustable output
- 750µA off state current
- 250mV dropout linear regulators
- Dual output tracking linear regulator
- 5µS transient response
- Industry pinouts



Functional Description

The LN10023 is a dual output, isolated DC/DC converter that accepts 18 to 36V_{IN}, and provides 3.3V_{OUT} @ 1.0A and -3.3 V_{OUT} @ -1.0A. The converter's design is based on Beta Dyne's patents and offers low noise with an operating temperature range from -25°C to +72°C.



Typical Block Diagram of Dual Output Converter

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		18	24	36	Vdc
No Load Input Current			30		mA
Full Load Input Current@ $V_{IN}=24V$	$V_{OUT}=3.3V @ 1.0A$, $-V_{OUT}=-3.3V @ -1.0A$		395		mA
Input Filter	C				
Reverse Polarity Input Current	External series-blocking diode			12	A
Input Surge Current (20 μ S Spike)				10	A
Short Circuit Current Limit			150		% I_{IN}
Undervoltage Shutdown		4.5			Vdc
Off State Current			750		μ A
Remote ON/OFF Control					
Converter ON	Open (Open circuit voltage at Pin 1: 10V Max.)				
Converter OFF		-0.6	0	0.2	Vdc
Logic Input Reference	-Input				
Logic Compatibility	TTL Open Collector or CMOS Open Drain				

OUTPUT SPECIFICATIONS

PARAMETER	CONDITION / NOTE	MIN	TYP	MAX	UNIT
Output Voltage +Vo	Pin 7(+) to Pin 8 (-)		3.3		Vdc
Output Voltage -Vo	Pin 8 (+) to Pin 9 (-)		-3.3		Vdc
Output Voltage Accuracy			± 1	± 1.5	%
Output Voltage Adjustment			3	± 5	%
Voltage Balance, Dual ¹			± 0.5	± 1.0	%
Output Current +Vo	FL		1.0		A
Output Current -Vo			-1.0		mA
Minimum Load ¹		10			% of FL
Ripple & Noise	See Figure 3		10	20	mV _{PP}
Line Regulation	Minimum V_{IN} to maximum V_{IN}		0.05	0.1	%
Load Regulation ²			± 1		%
Temperature Coefficient @ FL			0.02		%/°C of V_{OUT}
Transient Response Time (to within 0.5% of V_{OUT})	50% of FL to FL to 50% of FL, See Figure 1		5		μ S
Short Circuit Protection	All outputs, by input current limiting				

¹ In applications where the $-V_{OUT}$ is loaded more than $+V_{OUT}$, a minimum load is required between $+V_{OUT}$ and GND. If the load is connected between $+V_{OUT}$ and $-V_{OUT}$, no minimum load is required.

² For dual converters if only the $-V_{OUT}$ is loaded. A 10% FL must be connected from $+V_{OUT}$ to Ground.

GENERAL SPECIFICATIONS

PARAMETER	CONDITION / NOTE	MIN	TYP	MAX	UNIT
Efficiency	$V=24V$, $I=\pm 1.0A$		70		%
Isolation Voltage (1 min.)			1500		Vdc
Isolation Resistance			10^9		Ω
Isolation Capacitance			80		pF
Switching Frequency		300	320	333	kHz

ENVIRONMENTAL SPECIFICATIONS

PARAMETER	CONDITION / NOTE	MIN	TYP	MAX	UNIT
Operating Temperature, Extended		-25		+72	°C
Storage Temperature Range		-55		+125	°C
Thermal Resistance			3.5	4	°C/W _{DISS}
Maximum Operating Case Temperature				105	°C
Humidity	Up to 95% non-condensing				
Cooling	Free-air convection				
EMI/RFI	Six-sided continuous shielded metal case				
MTBF	per MIL-HNBK-217F (Ground benign, +25°C)		1×10^6		hours

PHYSICAL CHARACTERISTICS

PARAMETER	CONDITION / NOTE	MIN	TYP	MAX	UNIT
Dimensions (L×W×H)	2.00×1.00×0.395 in. (50.80×25.40×10.03mm)				
Weight	1.04 oz. (30g)				
Case Material	Coated metal				
Shielding Connection	-Input (Pin 3)				

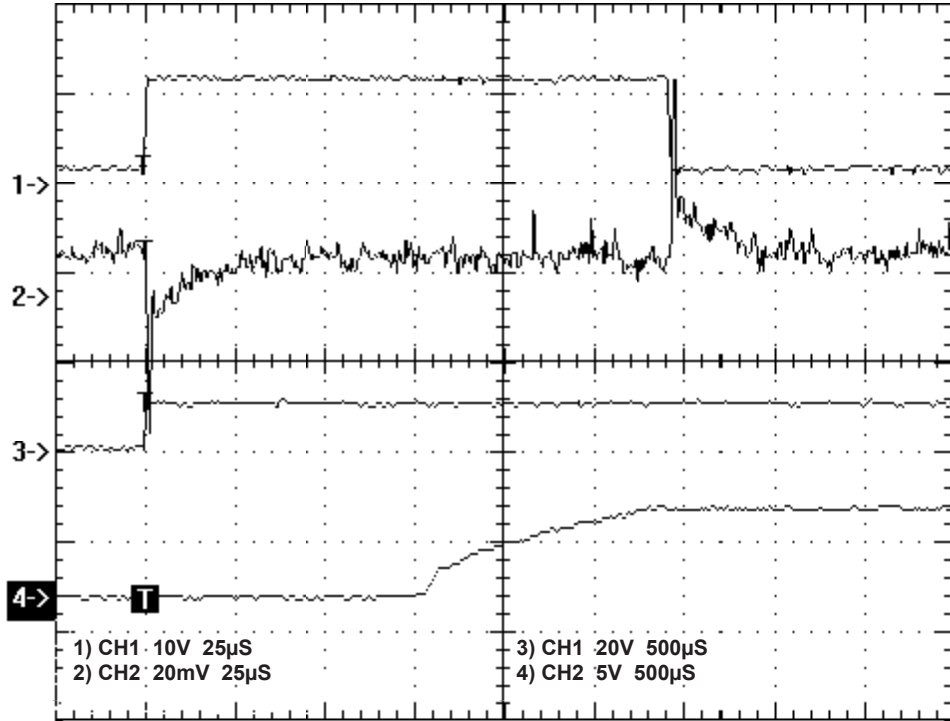


FIGURE 1. Typical transient response and turn on delay with soft start for LN10Dual Units.

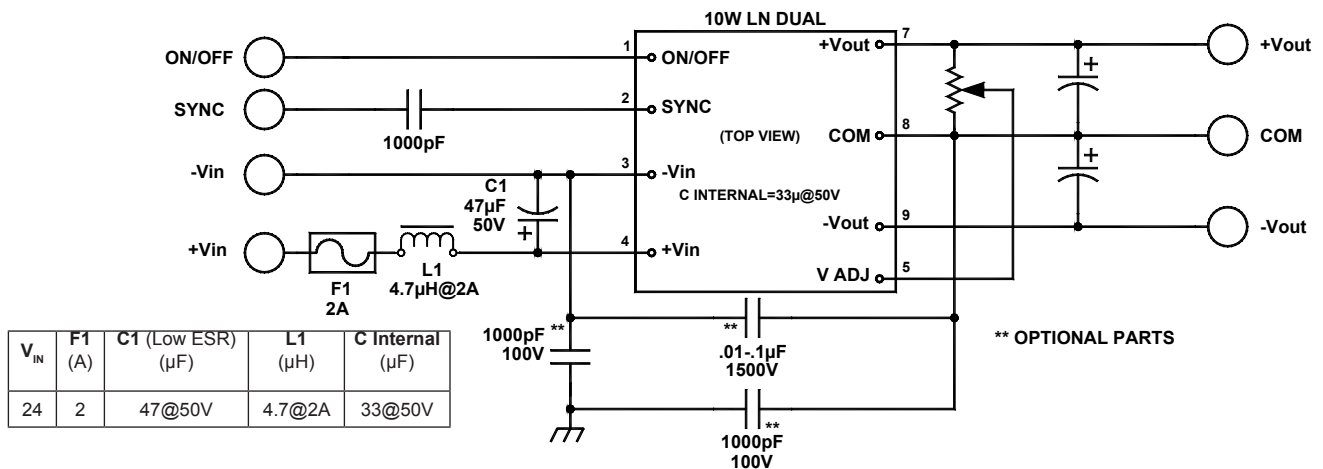
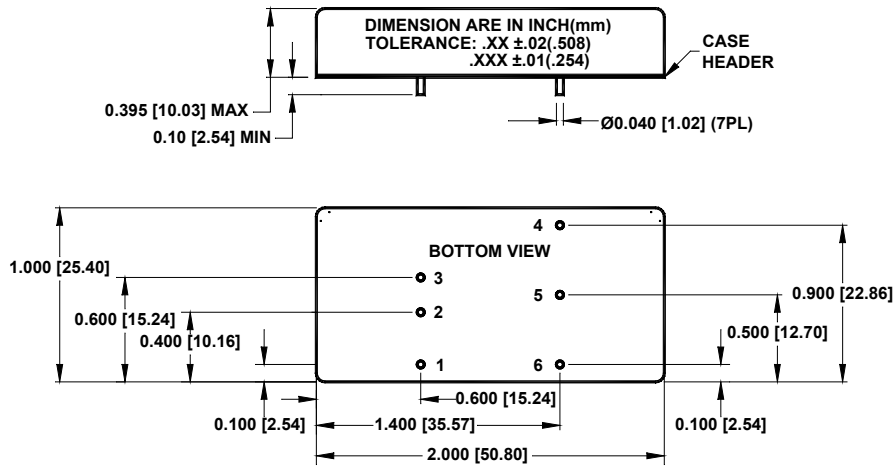


FIGURE 2. Typical connection diagram of Low-Noise 10W Dual DC/DC Converter

MECHANICAL SPECIFICATIONS



Pin	Function
	<i>DUAL</i>
1	ON/OFF
2	-V _{IN}
3	+V _{IN}
4	+V _{OUT}
5	COM
6	-V _{OUT}