

MAXIM

100 μ H Toroid Inductor

MAXL001

General Description

The MAXL001 is a 100 μ H inductor designed as the main magnetic component for simple flyback DC-DC converters with up to 3W output. Quieter than bobbin inductors and less costly than Molypermalloy Powder (MPP) or pot-core inductors, the MAXL001 is ideal for distributed power supplies and portable equipment. The MAXL001 core material is an iron-powder compound selected for good circuit efficiency at switching frequencies up to 200kHz. The MAXL001 has radial leads for Printed-Circuit (PC) board mounting.

Features

- ◆ Low Electromagnetic Interference
- ◆ Toroid Construction
- ◆ Low-Cost, Iron-Powder Core
- ◆ 200kHz Operation
- ◆ 1.75A Saturation Current
- ◆ 0.08 Ω DC Resistance

Applications

Switching Regulators
DC-DC Converters
Power Supplies
DC Filters

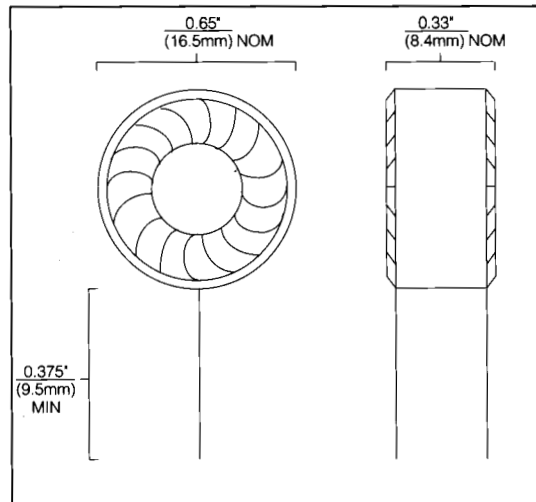
Ordering Information

PART	TEMP. RANGE	VALUE
MAXL001	-55°C to +105°C	100 μ H \pm 15%

Physical Characteristics

Diameter	0.65" (16.5mm) Nominal 0.7" (17.8mm) Max
Width	0.33" (8.4mm) Nominal 0.375" (9.5mm) Max
Lead Length	0.375" (9.5mm) Min 26 AWG
Lead Spacing	0.33" (8.4mm) Nominal
Tape	3M #27 or Equivalent
Finish	Saturated with Varnish

MAXL001 PC-Mount Toroid



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ABSOLUTE MAXIMUM RATINGS

Peak Current	5A	Operating Temperature Range	-55°C to +105°C
DC Current	1.5A	Storage Temperature Range	-65°C to +105°C
Peak Voltage	100V		

Stresses beyond those listed under Absolute Maximum Ratings may cause permanent damage to the inductor. These are stress ratings only, and functional operation at these conditions is not implied. Expose to absolute maximum rating conditions for extended periods may affect device reliability.

ELECTRICAL CHARACTERISTICS

(T_A = +25°C, Note 1.)

PARAMETERS	CONDITIONS	MIN	TYP	MAX	UNITS
Inductance	1kHz	85	100	115	μ H
Incremental Current	For a 10% change in inductance		1.75		A
DC Resistance			0.08	0.2	Ω
Q	F=100kHz, V=0.1V _{RMS}	22	29		

Note 1: Maxim sample tests these parameters to LTPD = 10.

Applications Information

Flyback Inductors for DC-DC Converters

While designed specifically for the MAX743 dual-output current-mode +5V to ± 15 V or ± 12 V converter (Figure 1), the MAXL001 works well for many low-power DC-DC converter applications. The 100 μ H value is fairly low, so caution must be exercised when connecting the MAXL001 to ICs other than the MAX743; calculate the worst-case peak inductor current using equations from the data sheet to be sure the power-transistor ratings are not exceeded. The MAXL001 works well for the following list of products, especially if the supply voltage is 10V or less.

MAXL001 Compatible DC-DC Converter ICs

STEP UP	INVERTING	STEP DOWN	LOW VOLTAGE	DUAL OUTPUT
MAX630	MAX634	MAX638	MAX654	MAX742
MAX631	MAX635		MAX655	MAX743
MAX632	MAX636		MAX656	
MAX633	MAX637		MAX657	
MAX4193	MAX4391		MAX658	
MAX641			MAX659	
MAX642				
MAX643				

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Smaller Inductors: MPP and Pot Core

If cost is not important, consider a MPP toroid inductor such as the 51-559 from Gowanda Electronics, or a miniature surface-mount pot core such as the 41540 from Pico Electronics. Both are much smaller than the MAXL001 and have nearly equal energy storage capabilities.

Gowanda Electronics, Gowanda, NY (716) 532-2234
Pico Electronics, Mt. Vernon, NY (914) 699-5514

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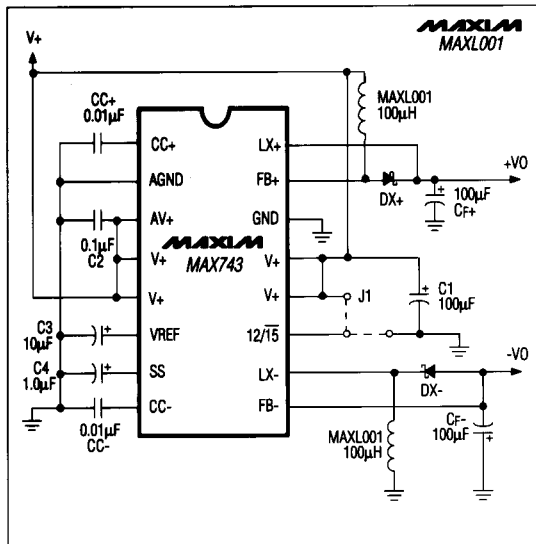


Figure 1. Example Application for MAXL001 (Dual-Output Switching Regulator)