



VRD/POL Inductor

ICL501-3



Features

- Designed for use with IKOR's proprietary coupled inductor multi-phase DC-DC converter topology
- Low height and small size allows use in both imbedded (VRD) and module (VRM) applications
- Robust SMD package is compatible with SMT assembly process handling
- Provides increase in VR efficiency compared to ICL501-1

Applications

- VRDs (Imbedded)
- VRMs (Module)
- POLs
- VRM 10.x / VRM11 based designs.
- DDR2/3 memory

The ICL 501-3 using IKOR's coupled inductor technology solves the most pressing problem facing IA-32 VRDs and VRMs. This patented technology solves the trade-off between efficiency and elimination of bulk capacitors by dramatically lowering the VRM output inductance while using industry-standard components and relatively low switching frequencies. This technology provides superior transient response performance to higher frequency solutions due to the unique method of coupling between phases, and enables high-current designs with little or no electrolytic output bypass capacitance. The ICL501-3 coupled inductor can be used in both VRD and module VRM applications. Its small size and low height make it possible to design high-density VRMs and to fit the inductors very close to the CPU socket in VRD applications. This device can also be used in high-current System VRM (SVRM) applications where small size, high efficiency, and low total BOM cost is critical.

Electrical Specifications

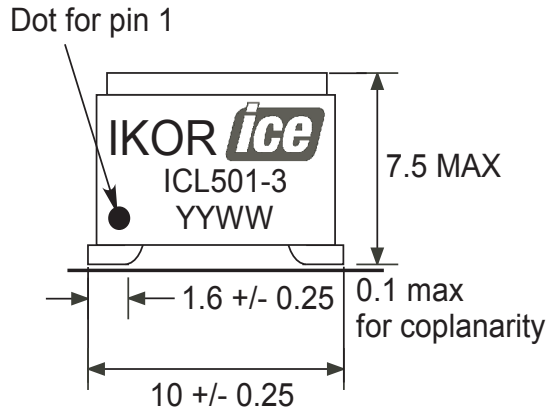
Parameter	Test Conditions	Min	Typ	Max	Unit
Turns Ratio (1 - 2) : (4 - 3)				1:1	-
L_S (1-2)	100mV @ 500 kHz rms	350	500	650	nH
L_S (4-3)	100mV @ 500 kHz rms	350	500	650	nH
LL (1-2)	short 4+3, 1.0 Vrms @ 1 MHz	45		60	nH
DCR (each winding)				0.3	mΩ

1. Electrical specifications at 25°C unless noted otherwise.
2. DC current, PCB layout, trace thickness and width, airflow, and proximity to other devices will affect inductor temperature rise.
3. Operating temperature range: 0°C to 100°C.
4. Meets UL 94V-0.

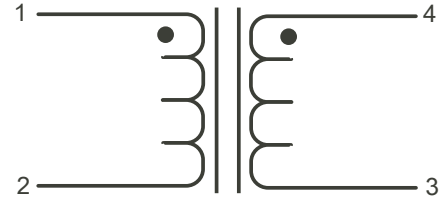


VRD/POL Inductor ICL501-3

Front View

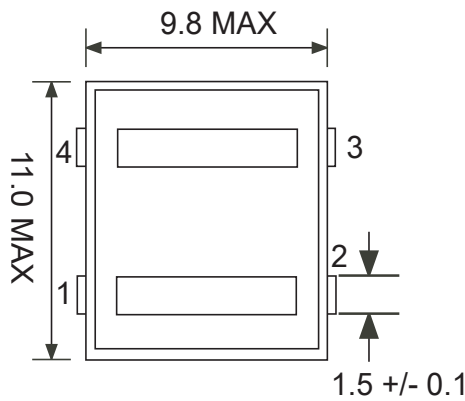


Schematic

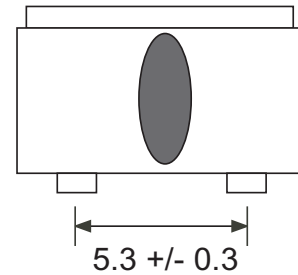


units: mm

Top View

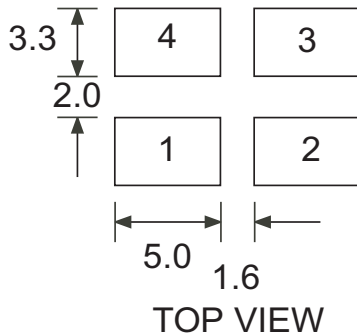


Side View

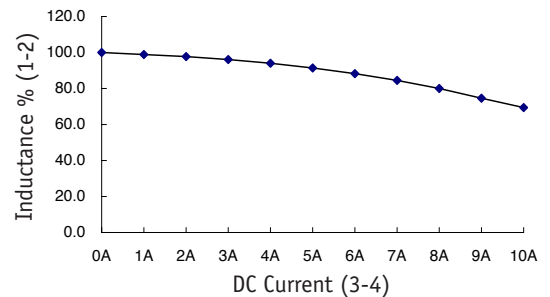


units: mm

Layout



Inductance vs. Current



Magnetizing inductance (1-2) vs. DC current applied (3-4)

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