

## Zettler Magnetics Toroid Capabilities

This information pack is designed to give you a better understanding of Zettler Magnetics Toroid Capabilities, where these products are used and what information is required to design and quote.

Zettler Magnetics manufactures:

- Current Sensing transformers
- Earth leakage circuit breaker zero phase current sensor transformers
- Ground fault interrupter current transformers
- PFC choke inductors
- Toroid inductors within the following parameters:
  - Wire diameter: 0.05~0.5mm
  - Max final coil OD: 8-80mm
  - Min final coil ID: 5mm
  - Max final coil height: 25mm

See below for application and specification information for these types of products:

## Current Sensing Transformer

1.



Fig 1 Sealed Version



Fig 2 Open frame Version

## 2. Application

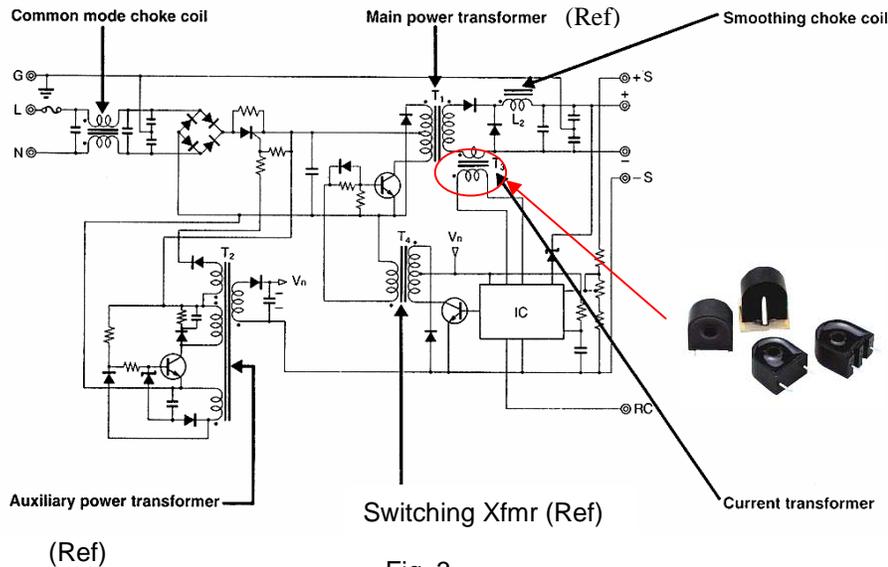


Fig. 3

2.1. High Power Switching mode power supply. Figure 3 is a typical switching mode power supply circuit, the current sensing transformer has very wide application in high power switching power supply current feedback control loop circuit.

2.2 Precision-measurement transformers for instrumentation applications.

3. Common Specifications to be confirmed before submitting.

- Inductance (A must)
- Turns Ratio (A must)
- "Q" Quality factor [Performance] (Optional)
- Self resonating frequency (Optional)

The inductance and turns ratio are the two most important requirements for current sensing transformers. Some customers may also require Q and self resonating frequency.

### **Earth leakage circuit breaker (ELCB) zero phase current sensor**

The North American and European markets have a large demand for ELCB's, each of which have a zero phase sequence current sensing transformer.



Fig 4 Lead type



Fig 5 PCB Mount Type



Fig 6 Wire Type



Fig 7 ELCB

Fig 4-6 is the typical packaging of the ELCB sensor transformer. Fig 7 is a single phase ELCB.

## 2. Major applications

- Residual current circuit breaker
- Earth leakage protection switch
- Leakage circuit protection breaker
- Leakage circuit protection plug (appliance leakage circuit protection interrupter)

## 3. Common specifications to confirm with your customer:

- Rated Current, Normally 10A, 20A, 30A, 40A, 50A and etc.
- Input current (Which is the minimum current to trip the breaker), normally 11.25mA, 20mA, 22.5mA, 30mA, 100mA, 300mA, etc.
- Output voltage, normally from few mV to 100mV.
- RL. Normally 100ohms, 270ohms, 1000ohms, etc.

## Ground fault interrupter (GFI) current transformer

Each FGI uses one current transformer, and normally will have around 1000 turns with our machines favoring higher turn ratios.



Fig 8 GFI current transformer



Fig 9 GFI socket/interrupter

1. Major applications
  - GFCI plugs
  - GFCI socket
  - Kitchen equipment, rest room, car washing room equipment, etc.
2. Common specifications for you to confirm with your customer.
  - Hipot
  - Inductance
  - Turns ratio (normally few 100 to 1000 turns)
  - Input current. Normally few mA
  - Output voltage. Normally few mV.

## PFC Chokes

This is also for switching mode power supply PFC circuit. Only start from median to high power. Normally 30 to 100 turns.

1.



Fig 10. PFC Choke

2. Major Applications
  - UPS
  - Telecom power
  - High power switching power supplies

## Other markets

As our machines can wind up to 80mm diameter toroids, they are capable of serving industrial needs, like power panel current sensors, and large power line filter inductors.