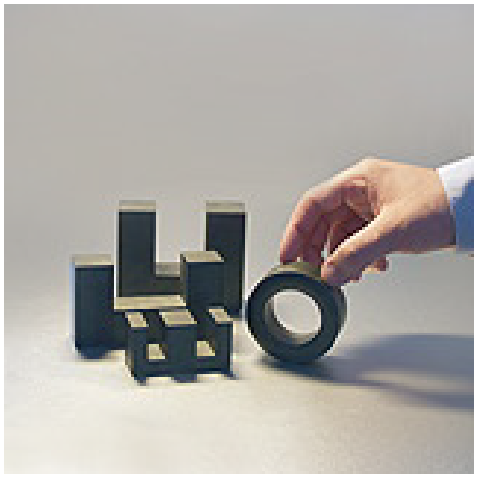
TECH ALERT

TT electronics
Magnetics Division

Large ferrite cores for increased power transmission, heavy duty current suppression and much more



Supply power in excess of 1KW

- **Industrial HF welding**
- **Base stations**
- **Power supplies for railway industry**
- **Power generation**

To facilitate such large power capacity it is necessary to use large cores with a large cross sectional area and winding window. This, coupled with materials that exhibit low loses at high flux densities and high frequencies, allow for more throughput power.
MMG now has the capability to offer a comprehensive range of large cores, including U cores, E cores and ring cores in a range of power and specialist ferrite materials.

The Power handling capabilities of a transformer can be determined by the following equation.

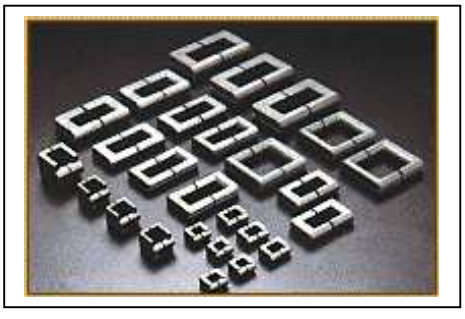
$$P_{trans} = K.\Delta B.f.A_e.A_w.J_{max}.F_{Cu}$$

Where: -

K = Topology factor
Ae = Effective core area
F_{Cu} = Copper fill factor
ΔB = Flux density
Aw = Core winding area
F = Switching frequency
$J_{max.}$ = Current density

U Cores

U cores are ideal for high power applications as they have the largest core area and a very large winding area to facilitate large diameter wires. U cores are also easily stackable for achieving even higher power outputs. As an example; the typical throughput power for a UU100 pair in a half bridge converter operating at 100kHz, 200mT, assuming the design is optimized such that copper losses and core losses are equal, can be estimated as follows: -



P_{trans} = 1 x 400mt x 100kHz x 645mm^2 x 3970mm^2 x 460amp/cm^2 x 0.4 = 7.6KW

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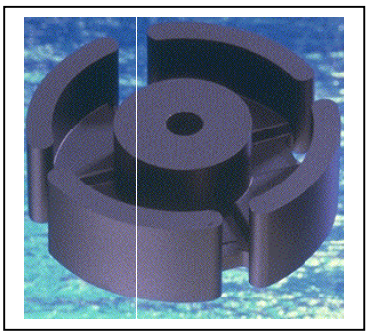
Components for filters and transformers include: -

- U 100 and U 93 for transformers supplying power in excess of 1.5kW and filters in F48 material.

- Ring cores up to 63mm are ideal for filters and common mode chokes in F9C material
- Ring cores up to 102mm are available for custom applications

- PC80 and PM74 for power transformers in F48 materials, where good magnetic shielding is required.



In applications where standard parts are not suitable MMG can provide bespoke tooling to produce customised parts to suit our customer's requirements.

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