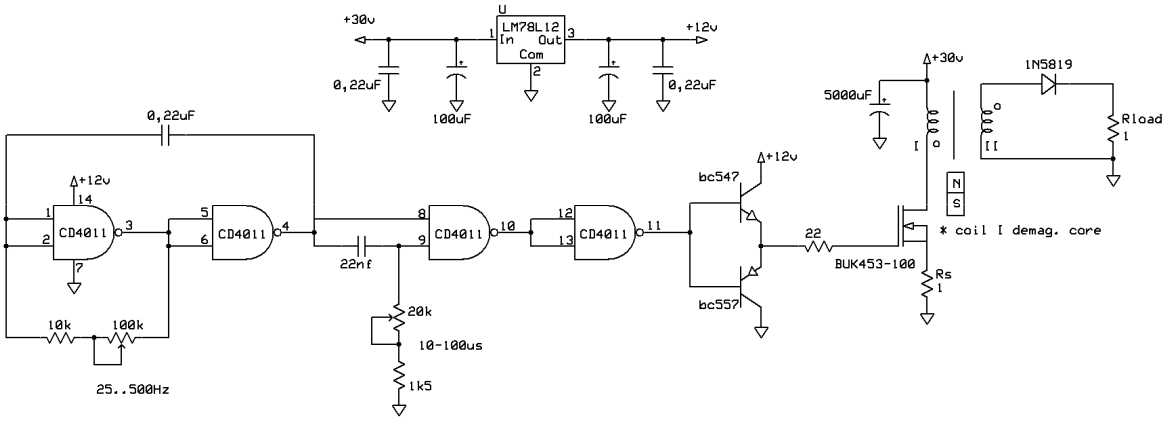
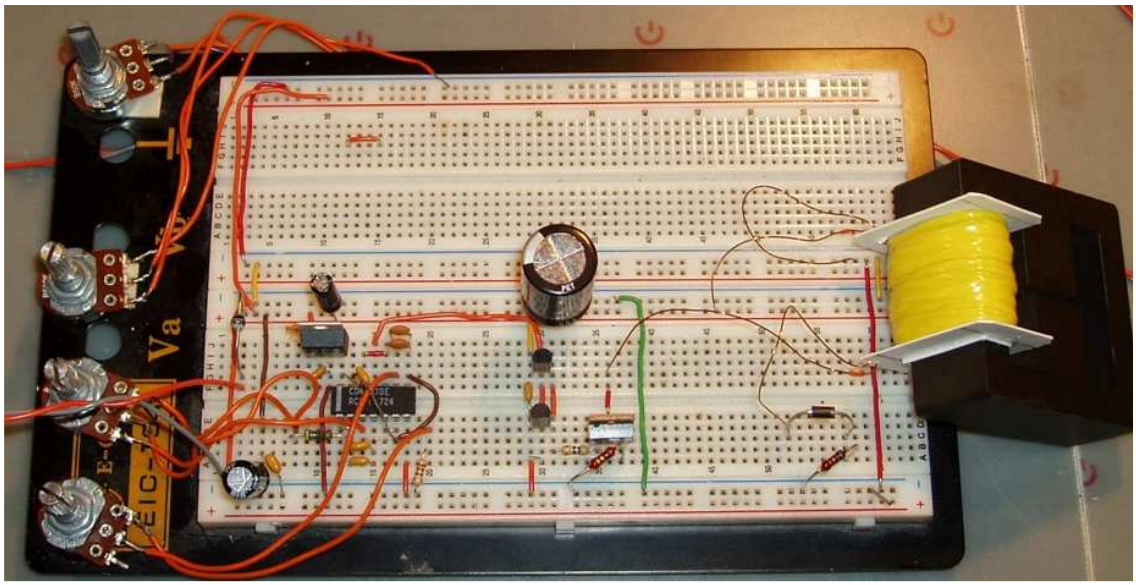
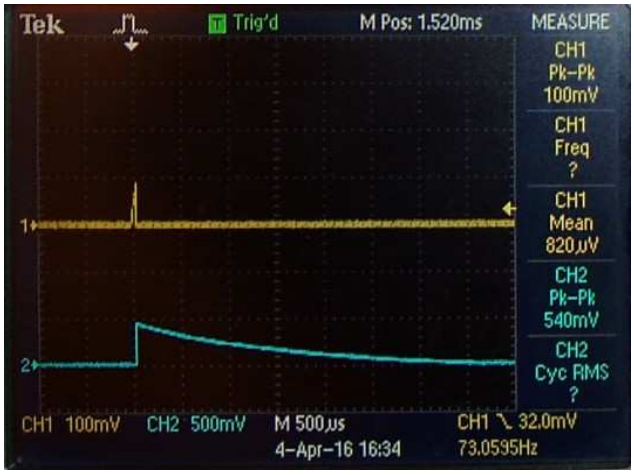
How build your own tiny MEG



pic.1 driver schematic



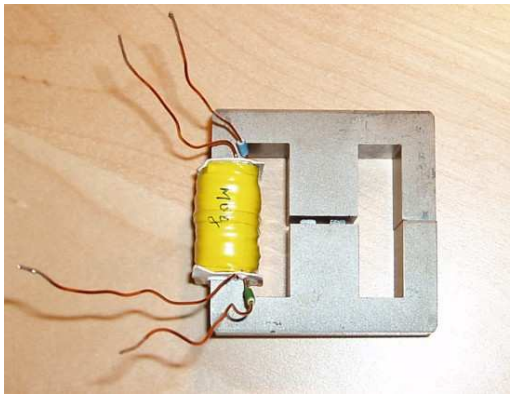
pic.2 experimental setup



pic.3 Scope traces

top – current thru primary coil (observed on Rs)

bottom – output voltage (on Rload)



pic.4 core construction

- core E55/21 N27, B66335-G1000-X127
- 9 Q-05-04-1.5-N magnets inserted into core's central leg gap
- two coils 100 turns each, wound with 0.3mm wire, both placed on one of side core legs

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Data sheet article Q-05-04-1.5-N

Technical data and application safety

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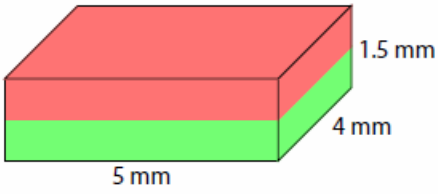
1. Technical information

Article	Q-05-04-1.5-N	
Shape	Block	
Side 1	5 mm	
Side 2	4 mm	
Side 3	1,5 mm	
Tolerance in size	+/- 0,1 mm	
Direction of magnetisation	parallel to side 3	
Pole faces	5 x 4 mm	
Material	NdFeB (Neodymium Iron Boron)	
Type of coating	Nickel (Ni-Cu-Ni)	
Strength	approx. 500 g	approx. 4,9 N
Weight	0,228 g	
Manufacturing method	sintered	
Magnetisation (Grade)	N48	
Max. working temperature	80°C	
Curie temperature	310 °C	
Residual magnetism Br	13700-14200 G	1.37-1.42 T
Coercive field strength bHc	10.8-12.5 kOe	860-995 kA/m
Coercive field strength iHc	≥12 kOe	≥955 kA/m
Energy product (BxH)max	45-48 MGOe	358-382 kJ/m³

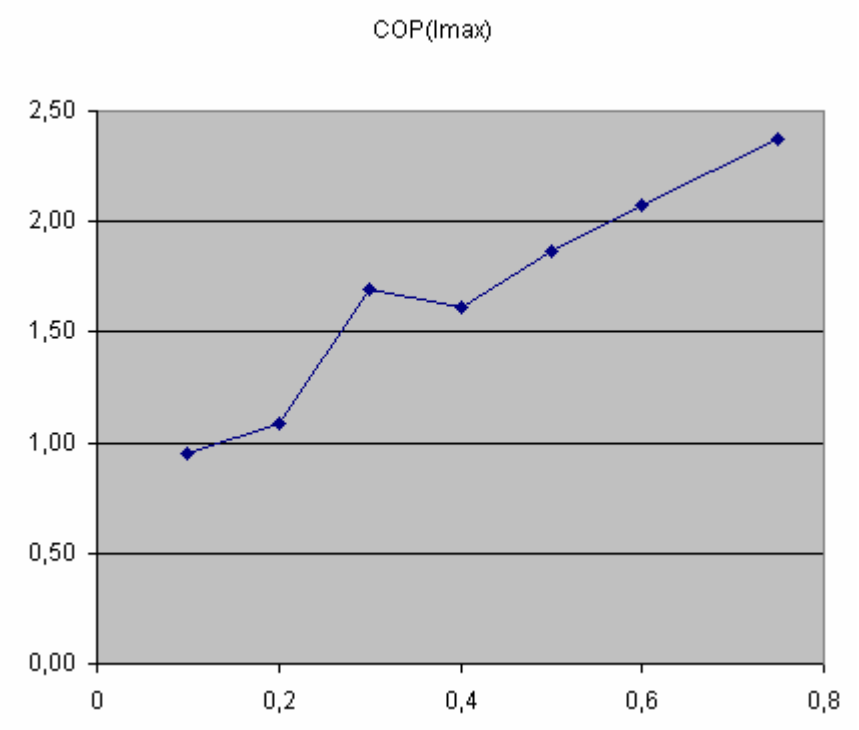


Pollutant-free according to RoHS Directive 2011/65/EU.
Exempt from registration according to REACH.

pic.5 magnet's datasheet

Here a set of measurements with a different pulse length (max primary coil current)

Ups,v	Ts,uS	Tp,uS	Imax,A	Q=Tp/Ts	Ps, mW	Uout,v	Tout,uS	Q=Tout/Ts	Pout, mW	COP
30	20000	11	0,1	0,00055	0,8	0,5	750	0,0375	0,8	0,95
30	20000	28	0,2	0,0014	4,2	1	1100	0,055	4,6	1,09
30	20000	42	0,3	0,0021	9,5	1,6	1500	0,075	16,0	1,69
30	20000	55	0,4	0,00275	16,5	2	1600	0,08	26,7	1,62
30	20000	65	0,5	0,00325	24,4	2,5	1750	0,0875	45,6	1,87
30	20000	75	0,6	0,00375	33,8	3,1	1750	0,0875	70,1	2,08
30	20000	100	0,75	0,005	56,3	4	2000	0,1	133,3	2,37



pic.6 setup COP vs primary coil max current