

4.5.02-00 Coupled oscillating circuits



What you can learn about ...

- Resonance
- Q factor
- Dissipation factor
- Bandwidth
- Critical or optimum coupling
- Characteristic impedance
- Pauli method
- Parallel conductance
- Band-pass filter
- Sweep

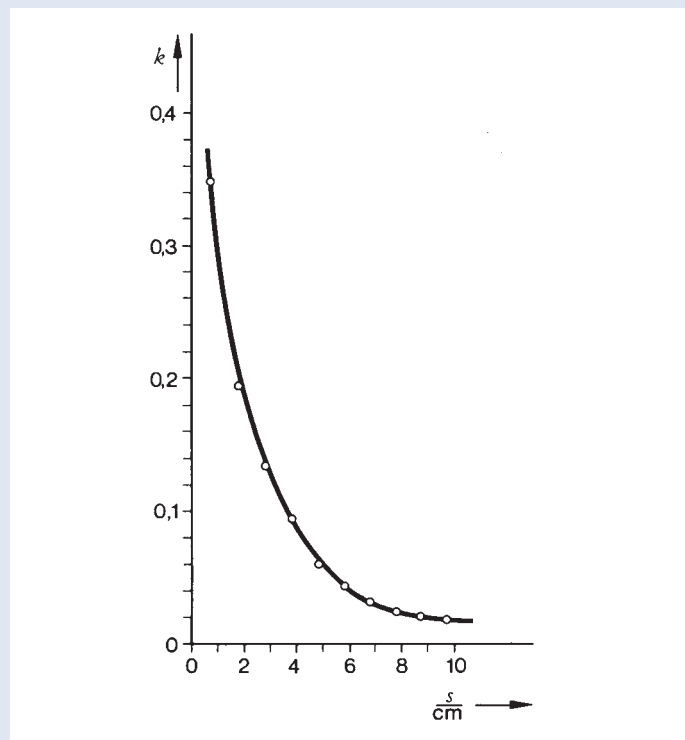
Principle:

The Q factor of oscillating circuits is determined from the bandwidth and by the Pauli method. In inductively coupled circuits (band-pass filters) the coupling factor is determined as a function of the coil spacing.

What you need:

Wobble-functiongenerator 1 Hz-10 MHz	11766.95	1
Oscilloscope 30 MHz, 2 channels	11459.95	1
HF coils, 35 turns; 75 μH	06915.00	2
HF coils, 50 turns, 150 μH	06916.00	2
HF coils, 75 turns, 350 μH	06917.00	2
Coil, 150 turns, short	06520.01	1
Variable capacitor, Casing G3	06049.10	2
Carbon resistor 22 k Ω , 1W, G1	39104.34	1
Carbon resistor 47 k Ω , 1W, G1	39104.38	1
Carbon resistor 100 k Ω , 1W, G1	39104.41	1
Carbon resistor 1 M Ω , 1W, G1	39104.52	2
Carbon resistor G1, 82 k Ω , 1 W	39104.40	1
Capacitor 470 pF/100 V, G2	39105.07	1
Connecting plug white 19 mm pitch	39170.00	7
Connection box	06030.23	2
G-clamp	02014.00	2
Meter Scale, $l = 1000 \times 27 \text{ mm}$	03001.00	1
Adapter BNC socket/4 mm plug pair	07542.27	2
Connecting cable, 4 mm plug, 32 A, yellow, $l = 25 \text{ cm}$	07360.02	2
Screened cable, BNC, $l = 750 \text{ mm}$	07542.11	2
Screened cable, BNC, $l = 1500 \text{ mm}$	07542.12	1

Complete Equipment Set, Manual on CD-ROM included
Coupled oscillating circuits P2450200



Coupling constant k as a function of the distance s between the coils when the coupling is supercritical.

Tasks:

- To determine the dissipation factor $\tan \delta_k$ and the quality factor Q from the bandwidth of oscillating circuits.
- To determine the dissipation factor and Q factor of oscillating circuits from the resonant frequency
- To determine the coupling factor k and the bandwidth Δ_f of a band-pass filter as a function of the coil spacing s .