

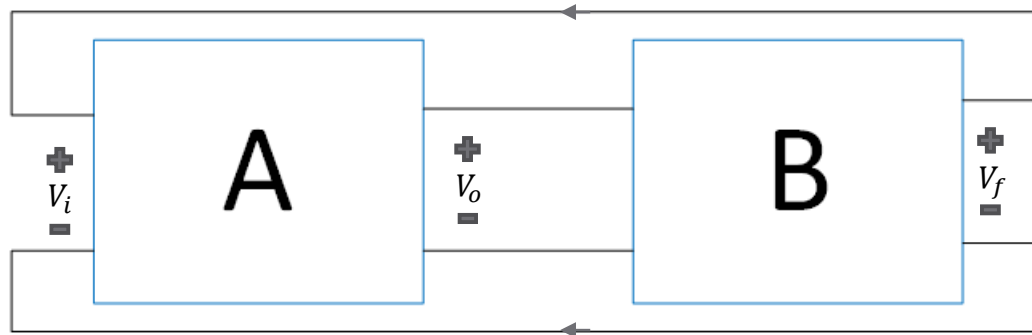
# ELM320 ANALOG ELEKTRONİK

Ders Materyali

## OSİLATÖRLER

# OSİLATÖRLER

Barkhausen osilasyon kriteri:

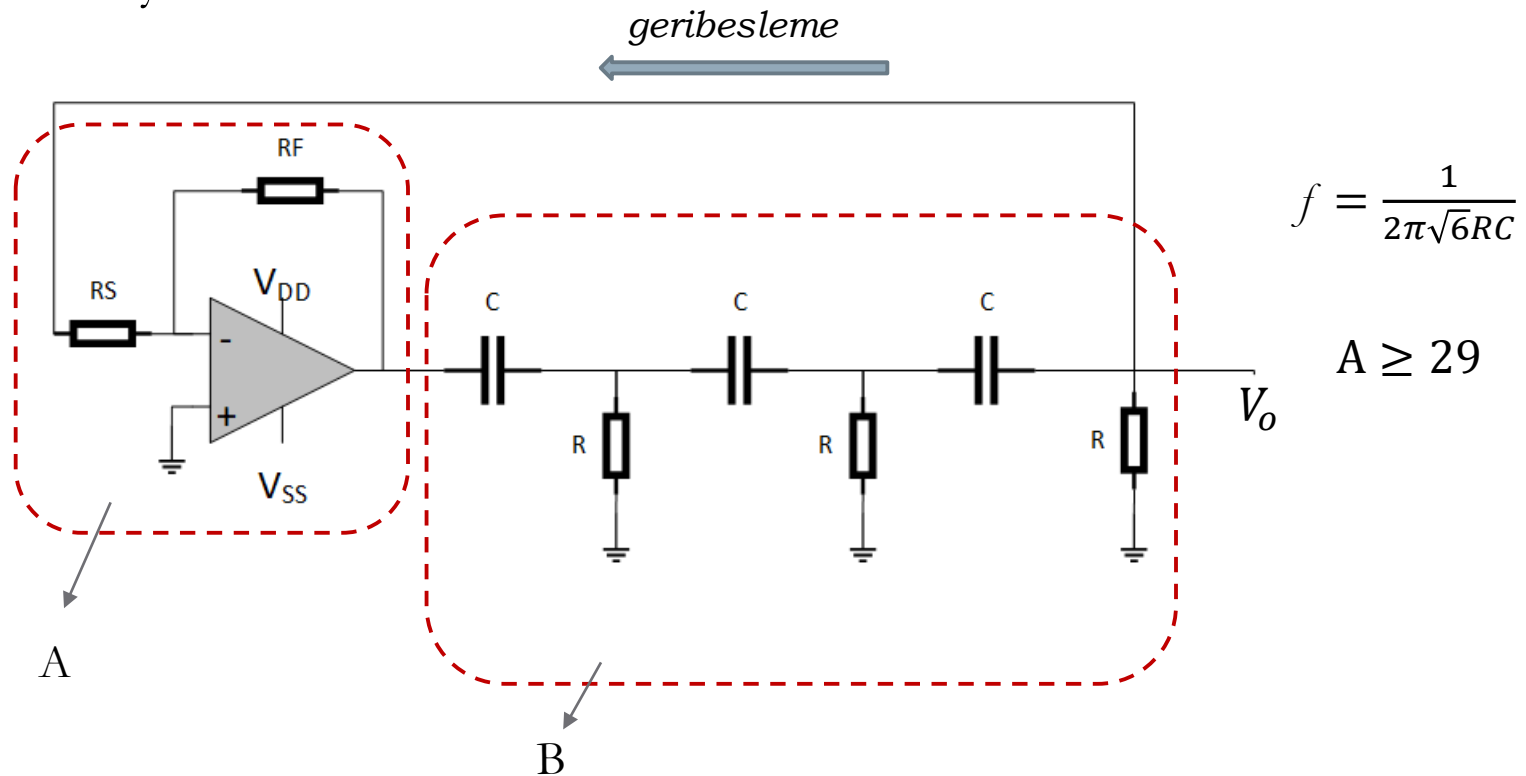


$$V_f = ABV_i$$

$$Ax B = 1 \angle 180^\circ$$

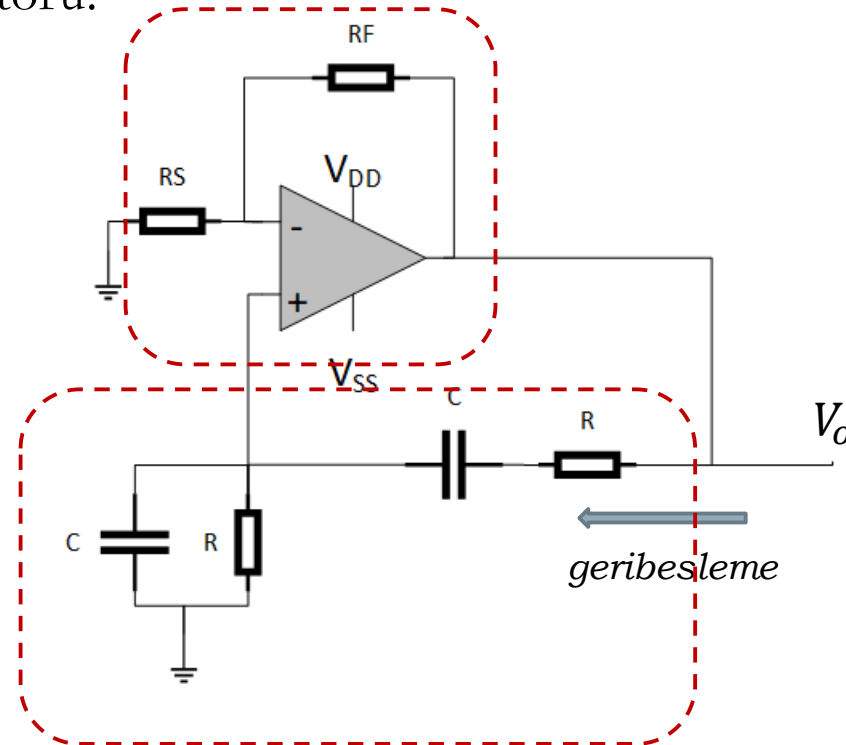
# OSİLATÖRLER

RC faz kaydırmalı osilatör:



# OSİLATÖRLER

Wien köprü osilatörü:

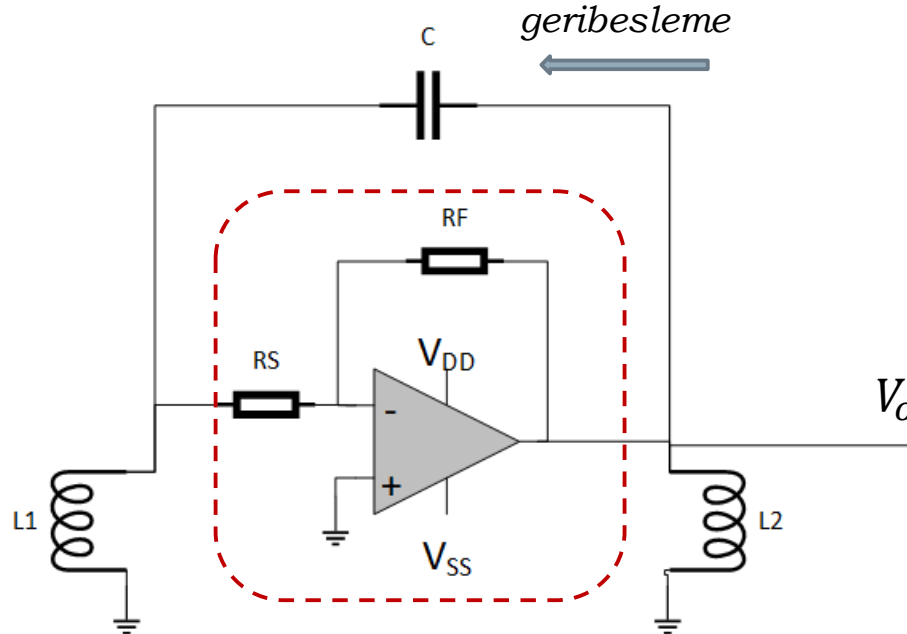


$$f = \frac{1}{2\pi RC}$$

$$A \geq 3$$

# OSİLATÖRLER

Hartley osilatörü:

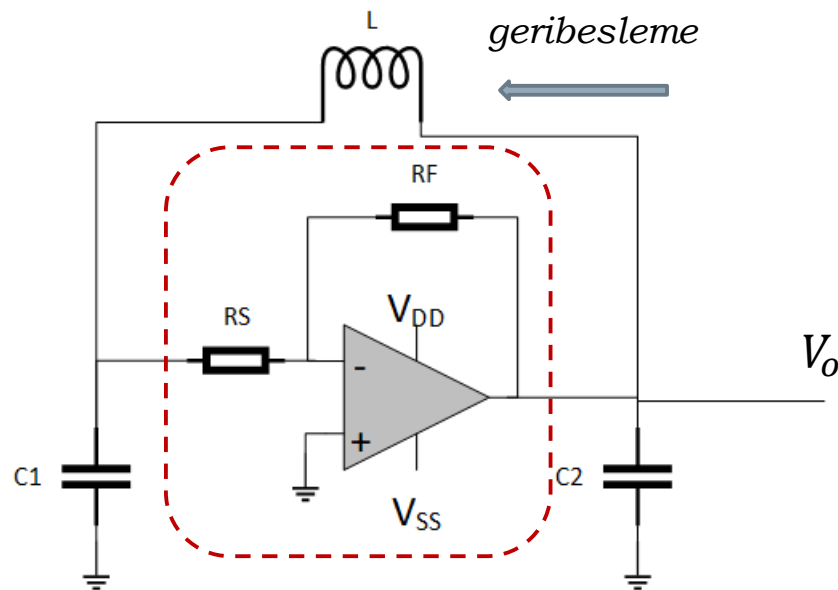


$$L_T = L_1 + L_2$$

$$f = \frac{1}{2\pi\sqrt{L_T C}}$$

# OSİLATÖRLER

Colpitts osilatörü:

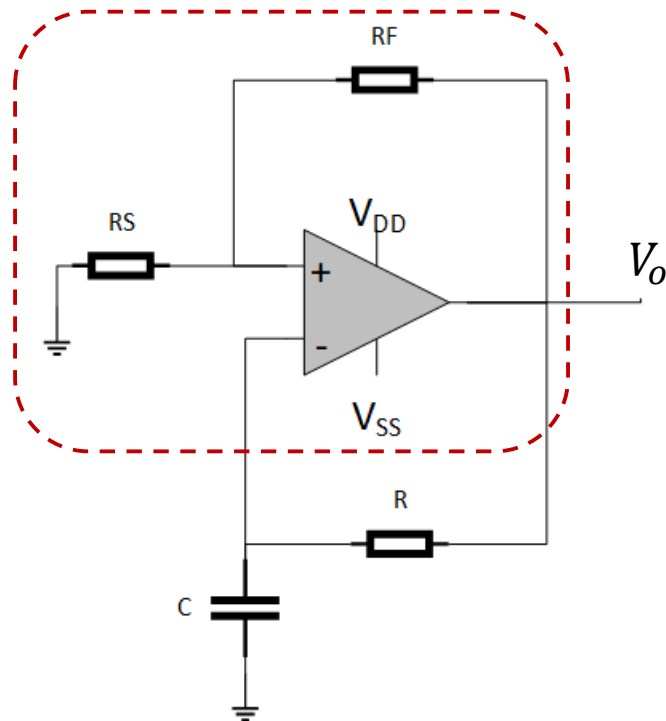


$$C_T = \frac{C_1 \times C_2}{C_1 + C_2}$$

$$f = \frac{1}{2\pi\sqrt{LC_T}}$$

# OSİLATÖRLER

Kararsız multivibratör:



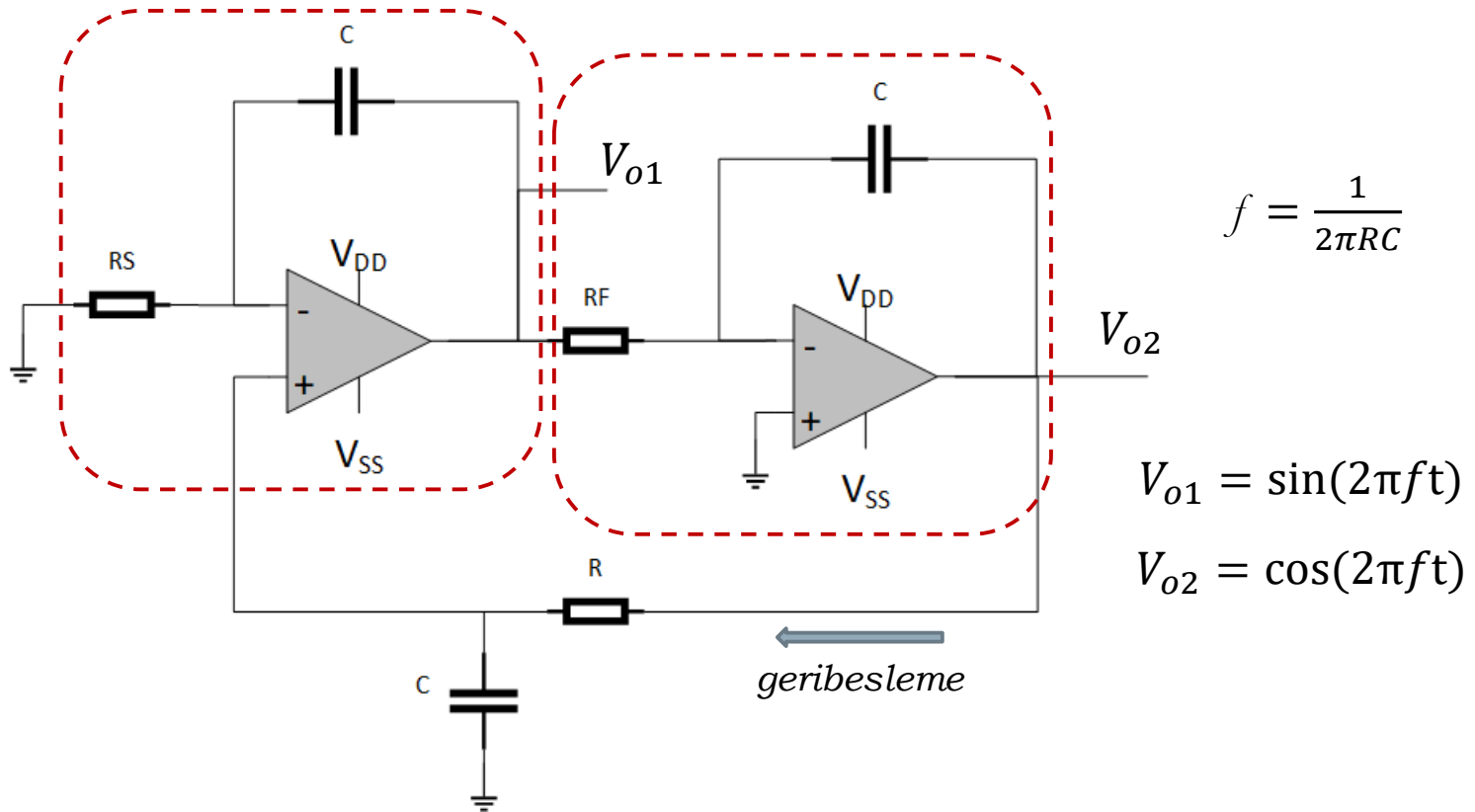
$$\beta = \frac{R_F}{R_S + R_F}$$

$$T = 2RC \ln \left( \frac{1+\beta}{1-\beta} \right)$$

$$f = \frac{1}{T}$$

# OSİLATÖRLER

Quadrature osilatör:





# KAYNAKLAR

- Robert Boylestad, Louis Nashelsky, Electronic Devices and Circuit Theory, Prentice Hall, 1998.
- Art Kay, Timothy Claycomb, TI Designs –Precision: VerifiedDesignComparator with HysteresisReference Design, Texas Instruments Application Note, TIDU020A, 2013.
- Electronics tutorials website: <https://www.electronics-tutorials.ws>
- Tim Regan, Jon MunsonGreg Zimmer, Michael Stokowski, Current Sense Circuit Collection, Linear Technology Application Note 105 (an105fa), 2005.
- Neil Zhao, Wenshuai Liao, and Henri Sino, High-Side Current Sensing with Wide Dynamic Range: Three Solutions, Analog Dialogue 44-12, December 2010.
- CircuitsToday website: <http://www.circuitstoday.com/log-amplifier>
- Learning about Electronics website: <http://www.learningaboutelectronics.com/Articles/Difference-between-a-single-and-dual-supply-op-amp.php>
- OKAWA Electric Design website: <http://sim.okawa-denshi.jp/en/>
- Analog Devices website: <https://www.analog.com/designtools/en/filterwizard/>
- Hank Zumbahlen, Multiple Feedback Filters, Analog Devices Mini Tutorial (MT-220), 2012.
- Website: <http://www.righto.com/2015/10/inside-ubiquitous-741-op-amp-circuits.html>
- Ron Mancini and Richard Palmer, Sine-Wave Oscillator, Texas Instruments Application Report, SLOA060, 2001.