# Ölçme Kontrol ve Otomasyon Sistemleri 6

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Ankara Üniversitesi Ziraat Fakültesi
Tarım Makinaları ve Teknolojileri Mühendisliği Bölümü

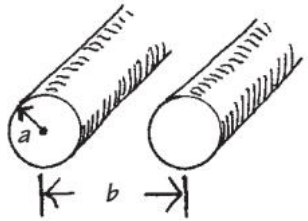
# Temel elektronik devre bileşenleri

1. Kablo çeşitleri
2. Fiş ve konektör çeşitleri
3. Dirençler
4. Kondansatörler
5. Bobinler
6. Pil ve akü

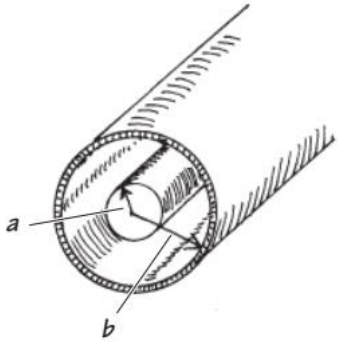
# Temel elektronik devre bileşenleri

**Kablolar:**

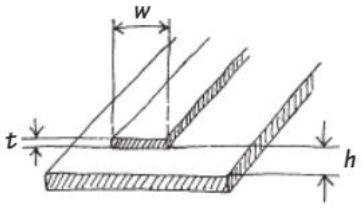
**Twin Lead**



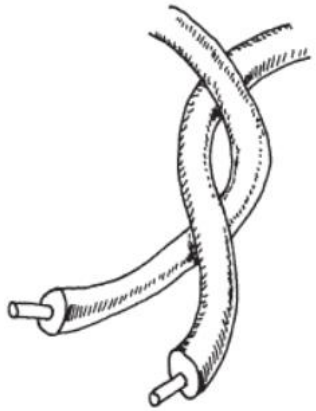

**Coaxial**



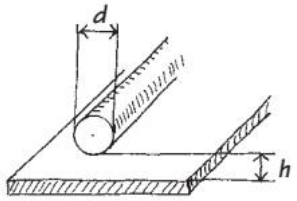

**Ribbon and Plane**



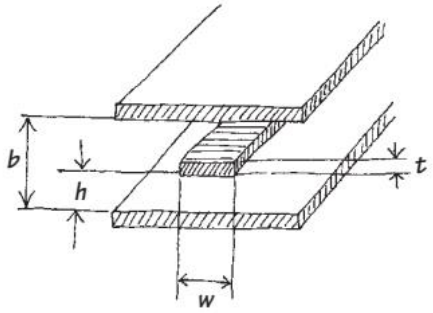

**Twisted Pair**



**Wire and Plane**



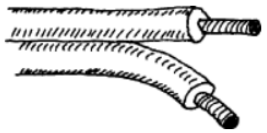

**Strip Line**



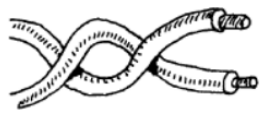
# Temel elektronik devre bileşenleri

**Kablolar:**

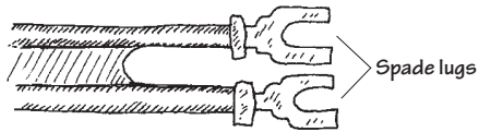
**Paired Cable**



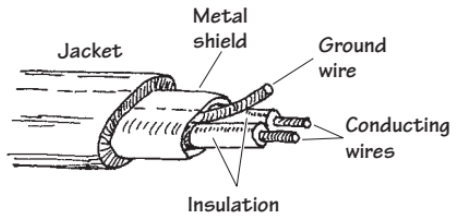
**Twisted Pair**



**Twin Lead**



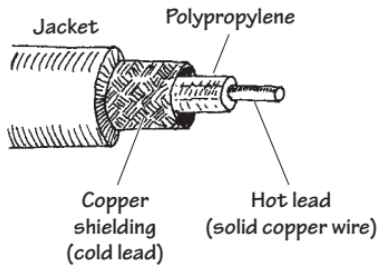

**Shielded Twin Lead**



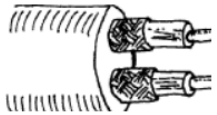
# Temel elektronik devre bileşenleri

**Kablolar:**

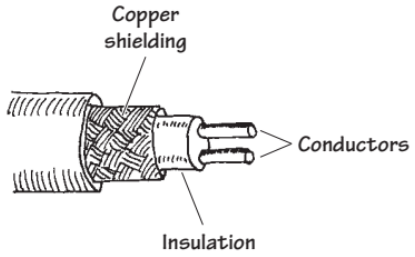
**Unbalanced Coaxial**




**Dual Coaxial**



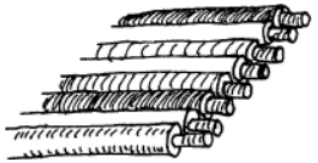
**Balanced Coaxial**



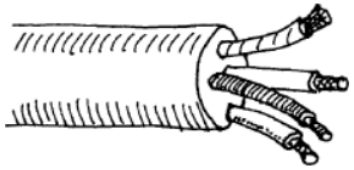
# Temel elektronik devre bileşenleri

**Kablolar:**

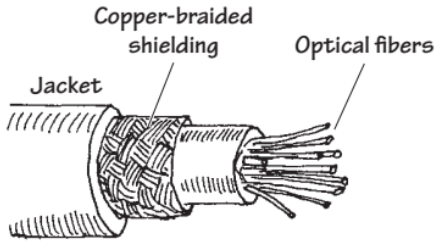
**Ribbon**



**Multiple Conductor**

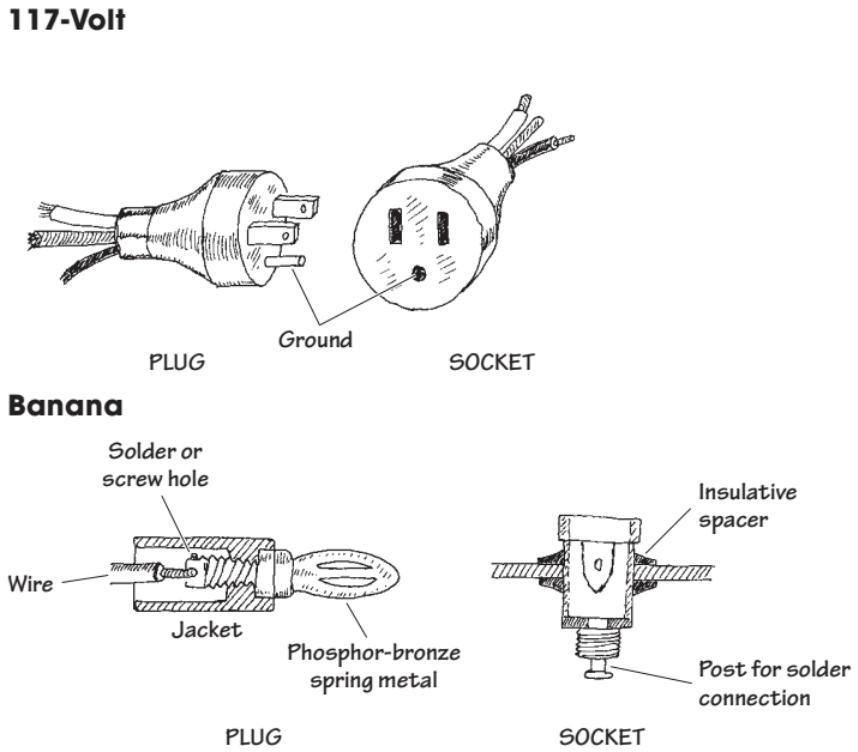


**Fiberoptic**



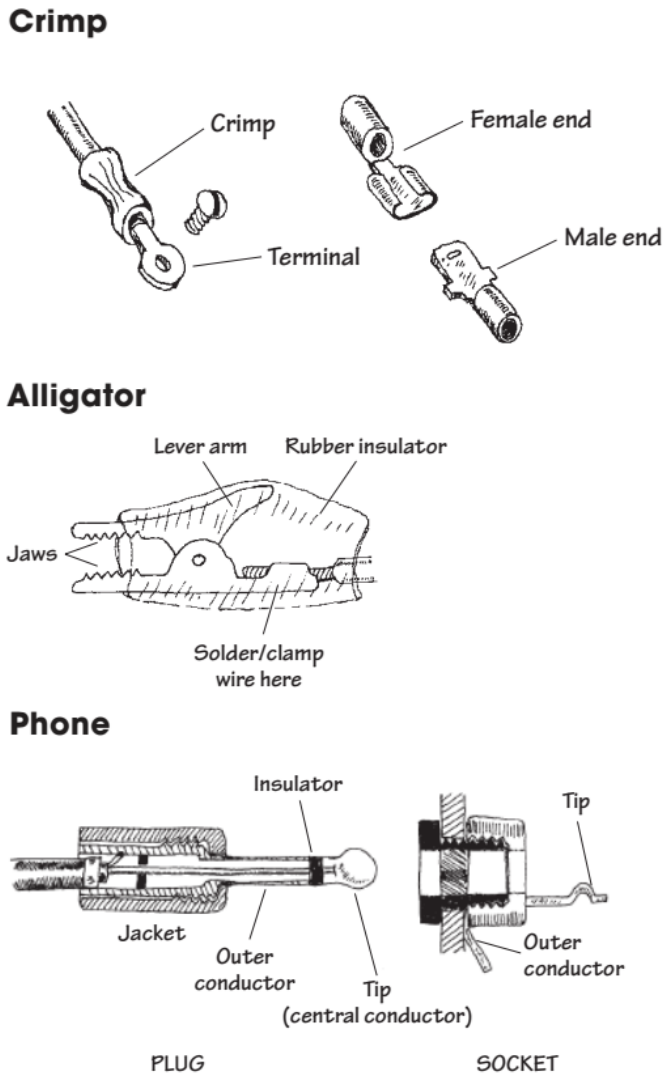
# Temel elektronik devre bileşenleri

**Fiş - konektör**



# Temel elektronik devre bileşenleri

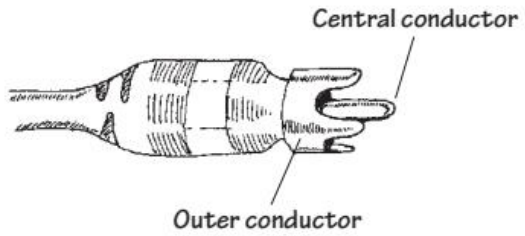
**Fiş - konektör**



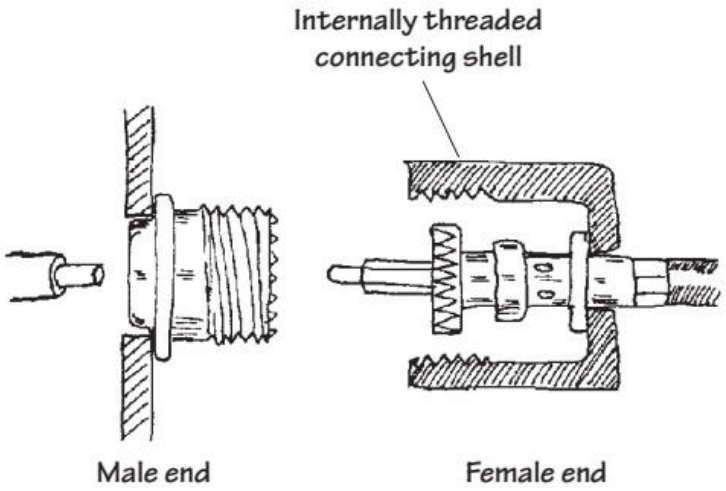
# Temel elektronik devre bileşenleri

**Fiş - konektör**

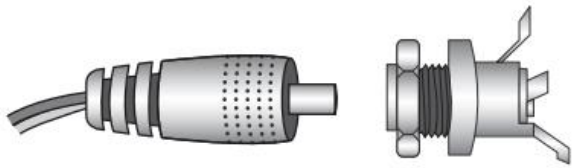
**Phono**




**F-Type**



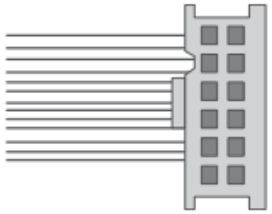

**Tip**



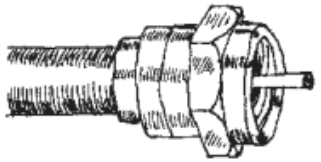
# Temel elektronik devre bileşenleri

**Fiş - konektör**

**Mini**



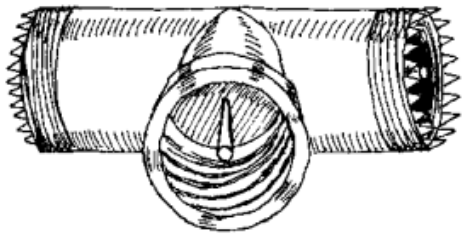
**PL-259**



**BNC**

Female end Male end

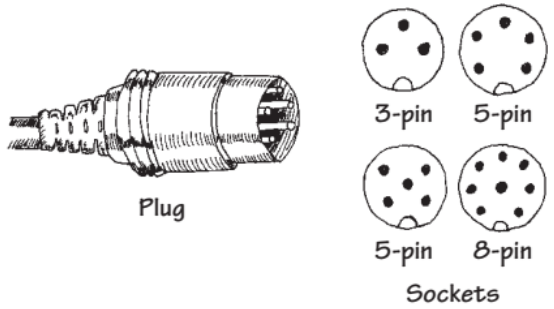
**T-Connector**



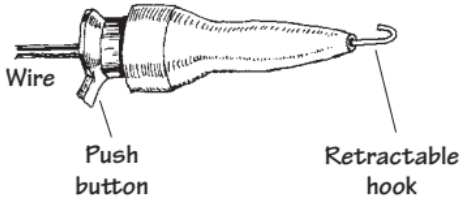
# Temel elektronik devre bileşenleri

**Fiş - konektör**

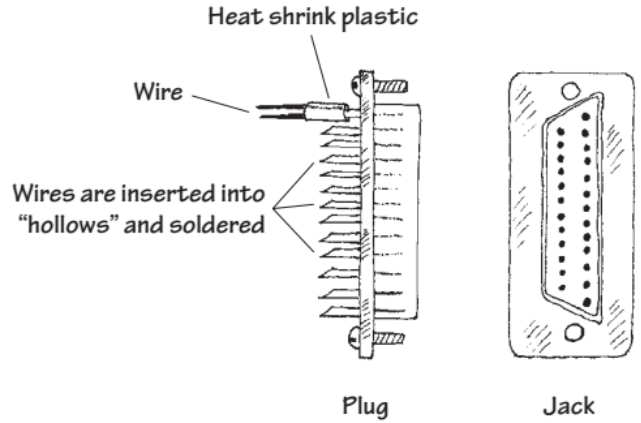
**DIN Connector**




**Meat Hook**

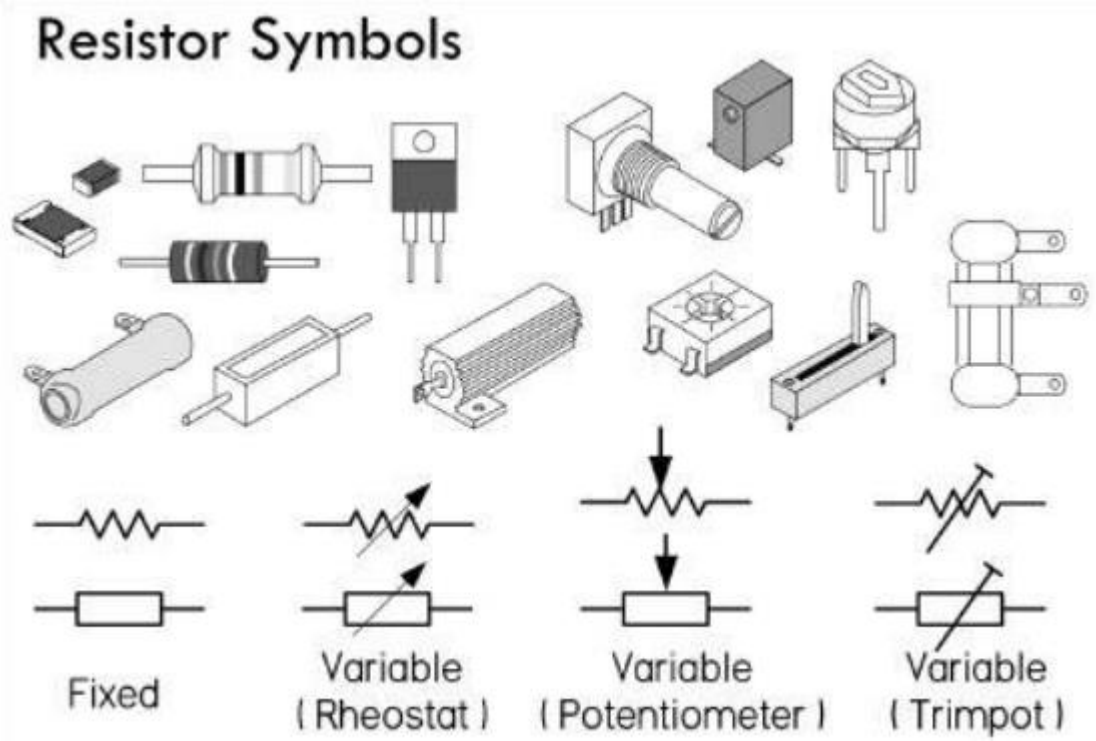



**D-Connector**



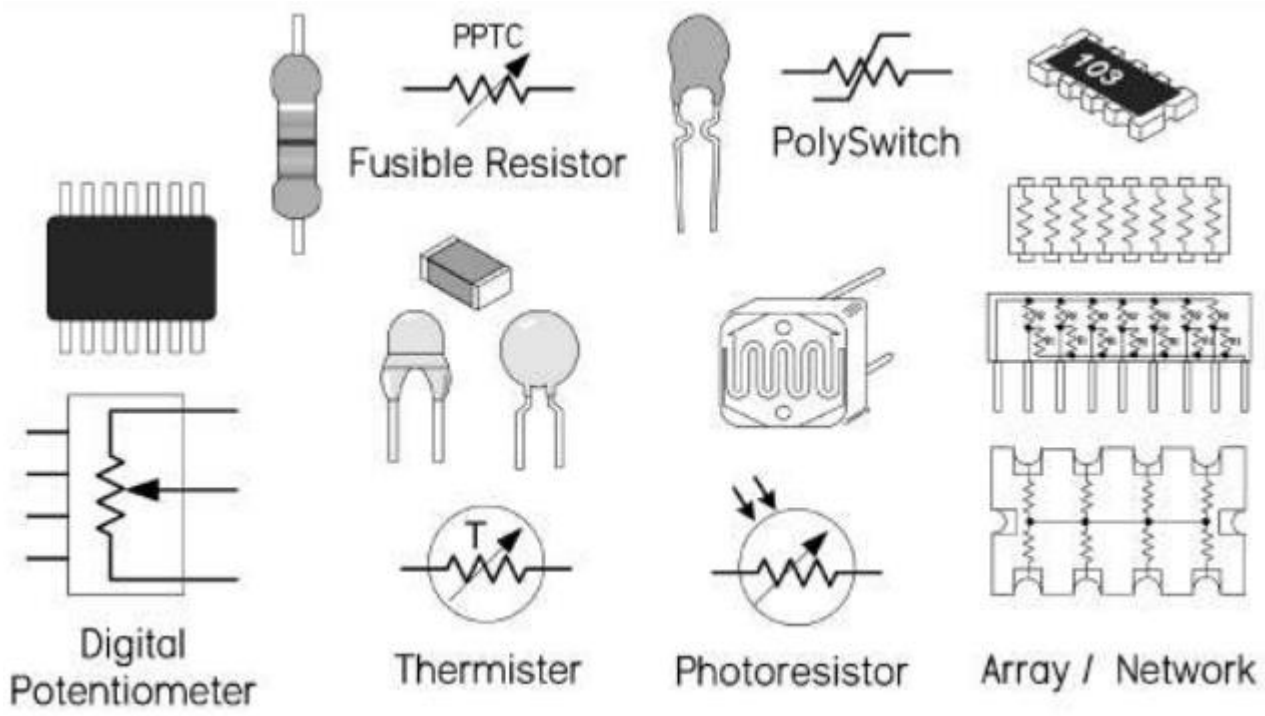
# Temel elektronik devre bileşenleri

**Dirençler**



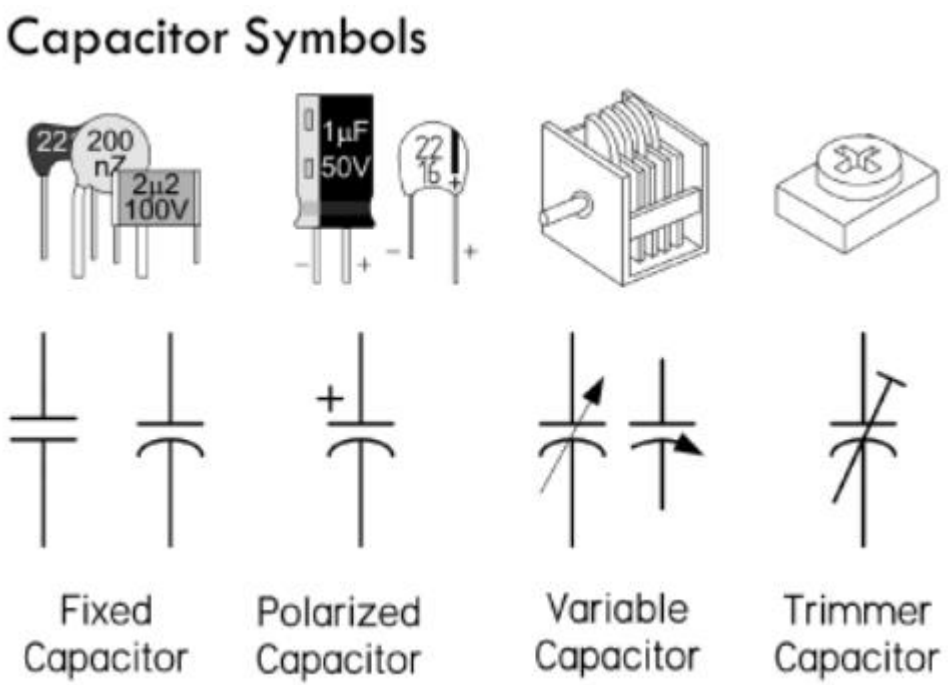
# Temel elektronik devre bileşenleri

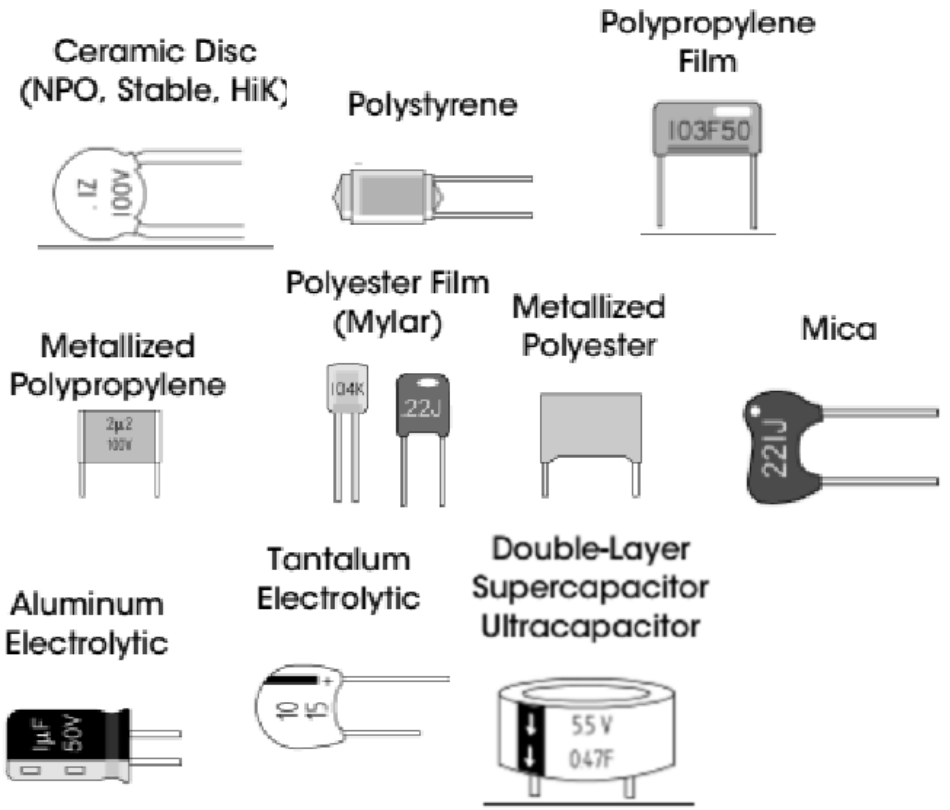
**Dirençler**



# Temel elektronik devre bileşenleri

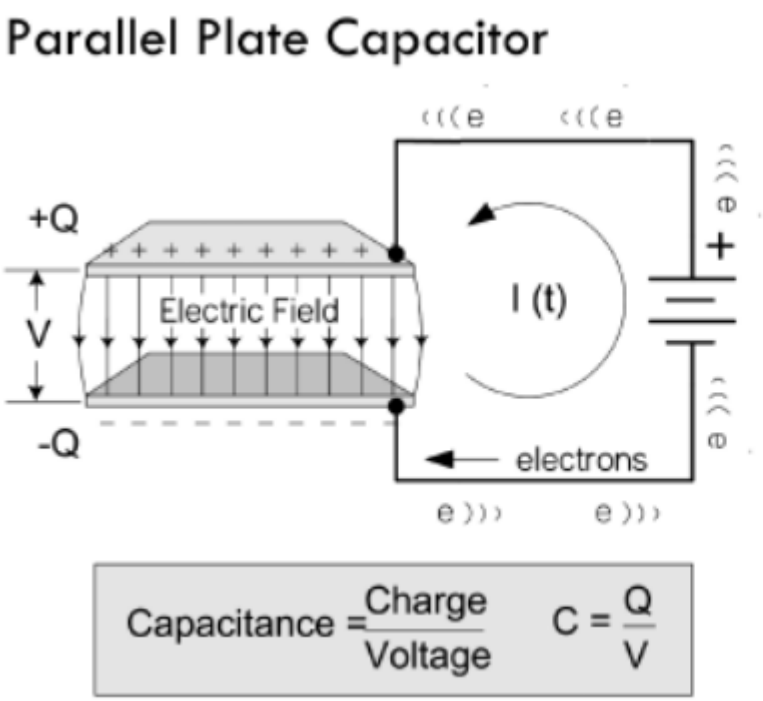
**Kondansatörler**

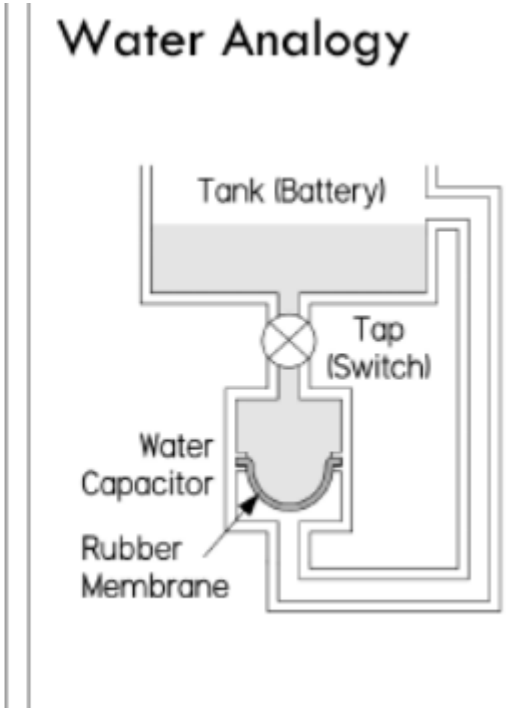


# Temel elektronik devre bileşenleri

**Kondansatörler**



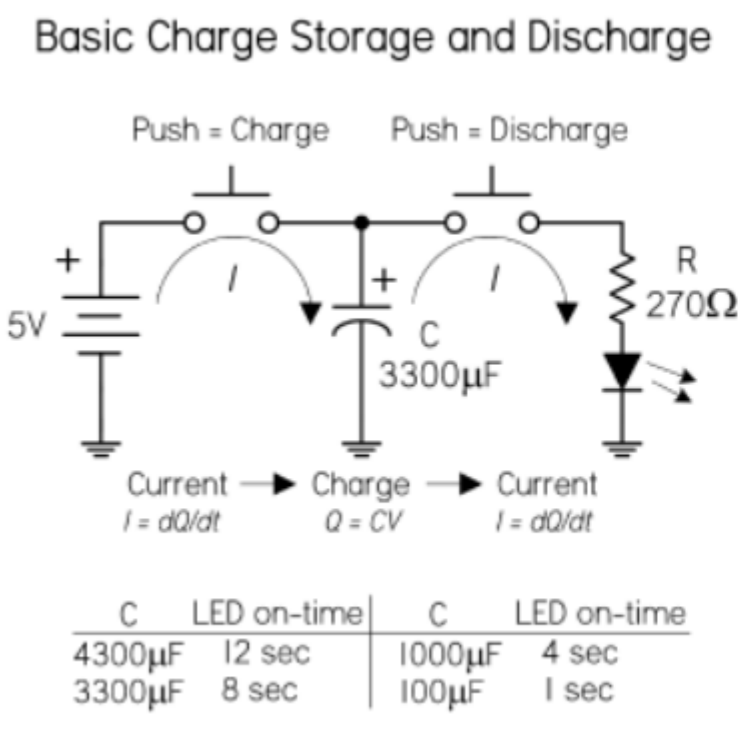



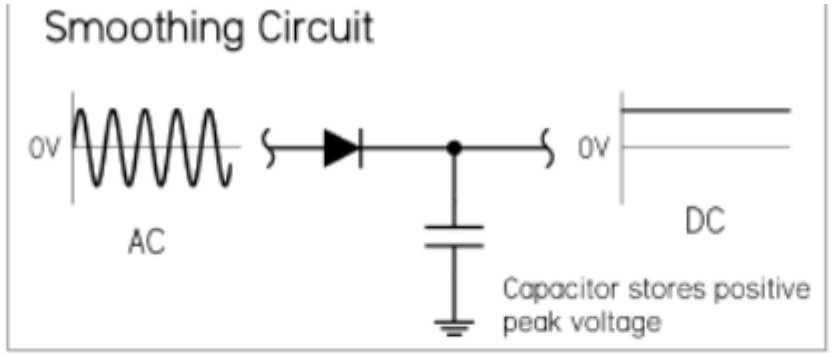

Kapasitans:

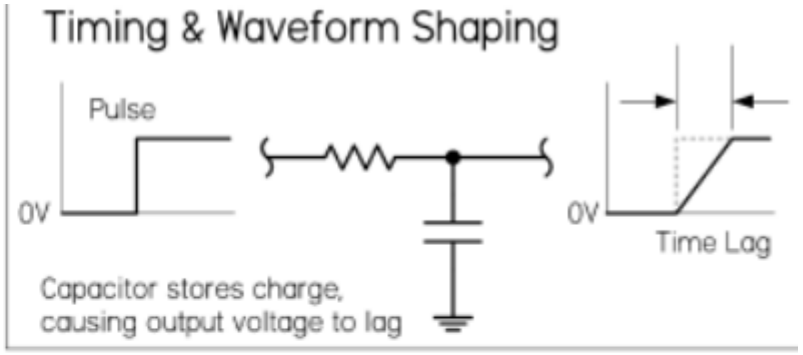
Q = C . V

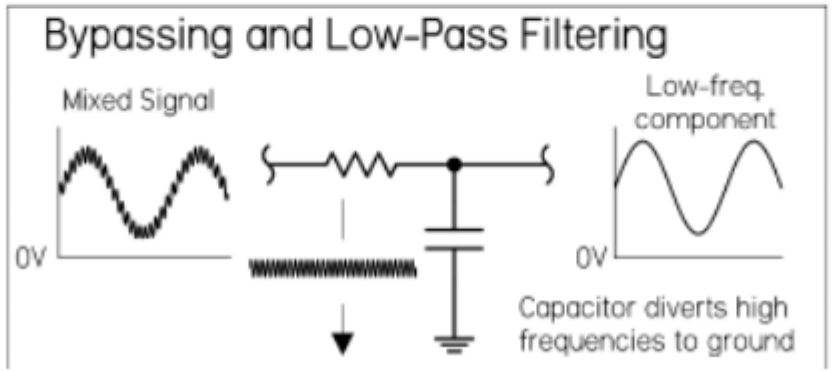
# Temel elektronik devre bileşenleri

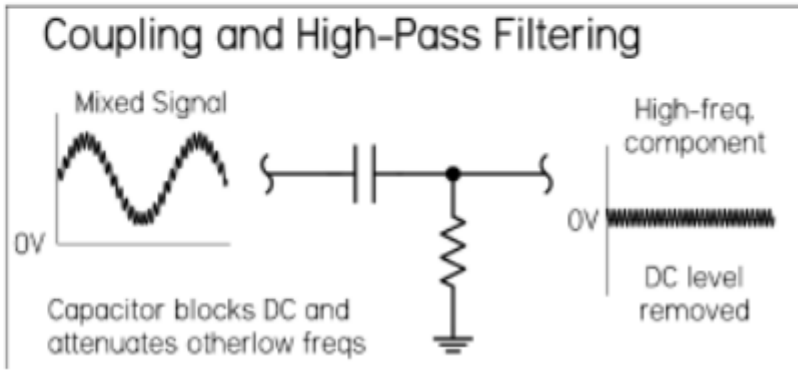
**Kondansatörler**



# Temel elektronik devre bileşenleri

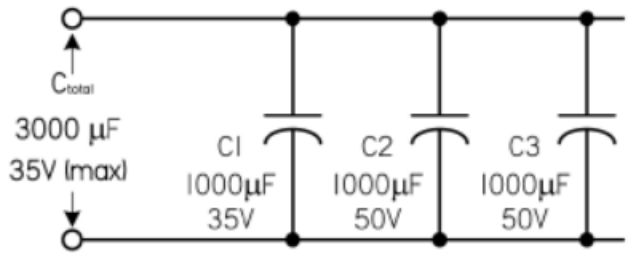
**Kondansatörler**

Kapasitans:

$Q = C \cdot V$

## Capacitors In Parallel

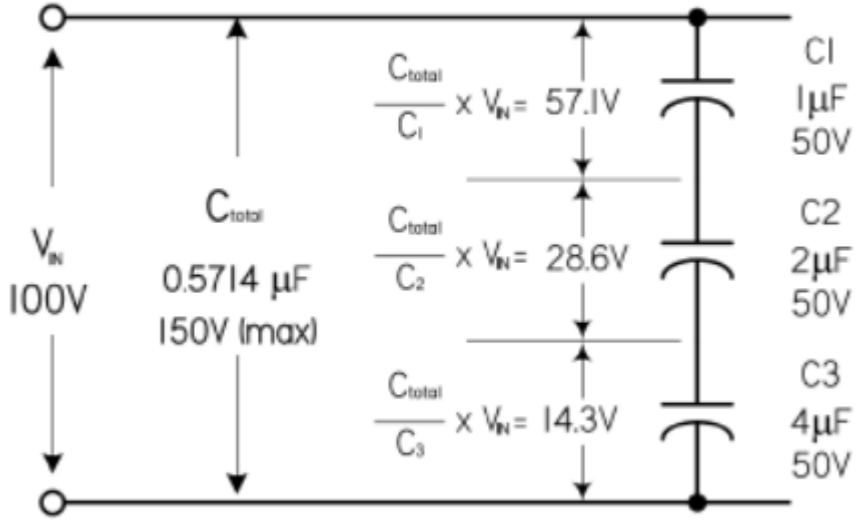
Increases the total capacitance, but limits max. voltage rating to that of smallest rated capacitor.




$$C_{total} = C1 + C2 + C3 + \ldots + C_n$$

## Capacitors In Series

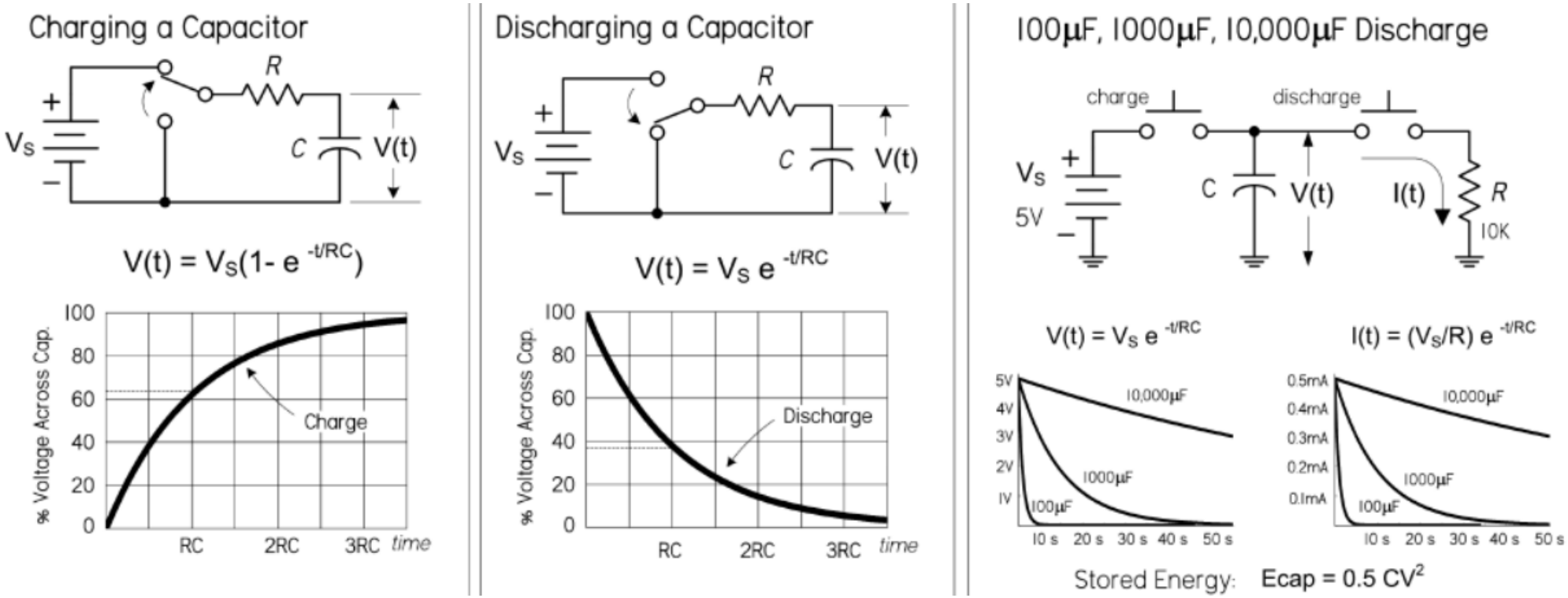
Increases max voltage rating, but decreases capcitance.




$$C_{total} = \frac{1}{1/C1 + 1/C2 + 1/C3 + \ldots + 1/C_n}$$

# Temel elektronik devre bileşenleri

**RC zaman sabiti**

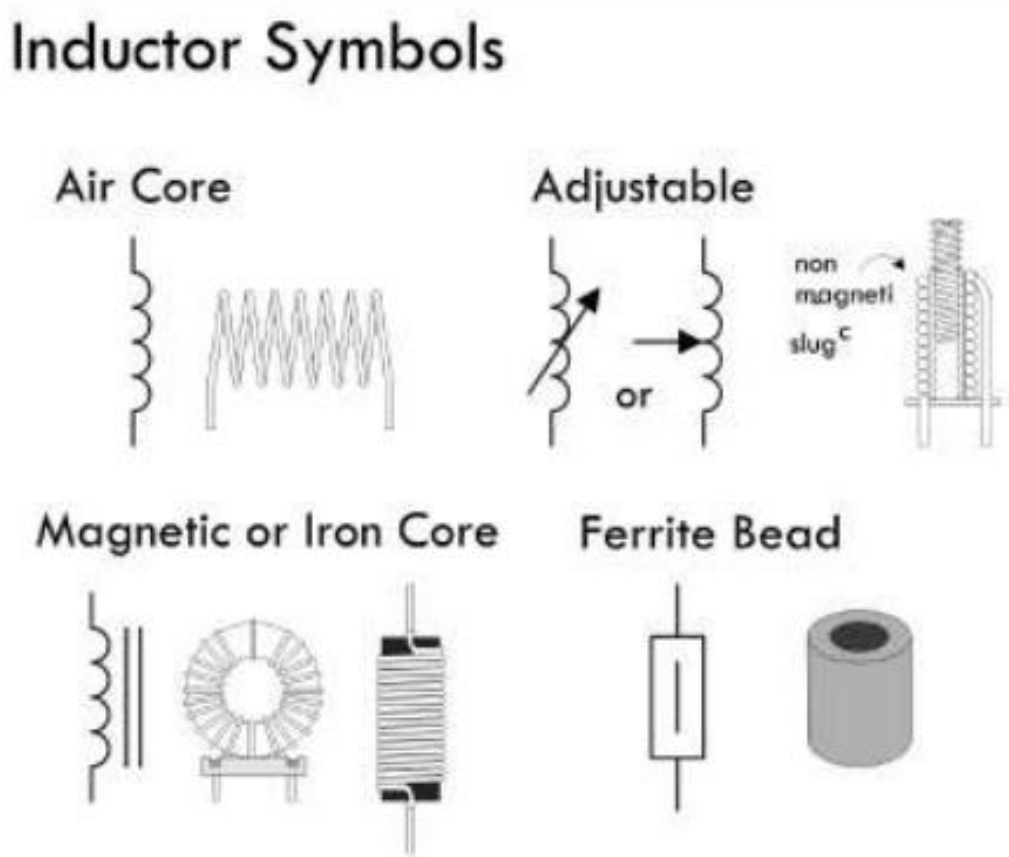



$$V(t) = V_S\,(1 - e^{-(t/\mathrm{RC})})\ \text{(Charging RC)}$$

$$V(t) = V_S e^{-(t/\mathrm{RC})}\ \text{(Discharging RC)}$$

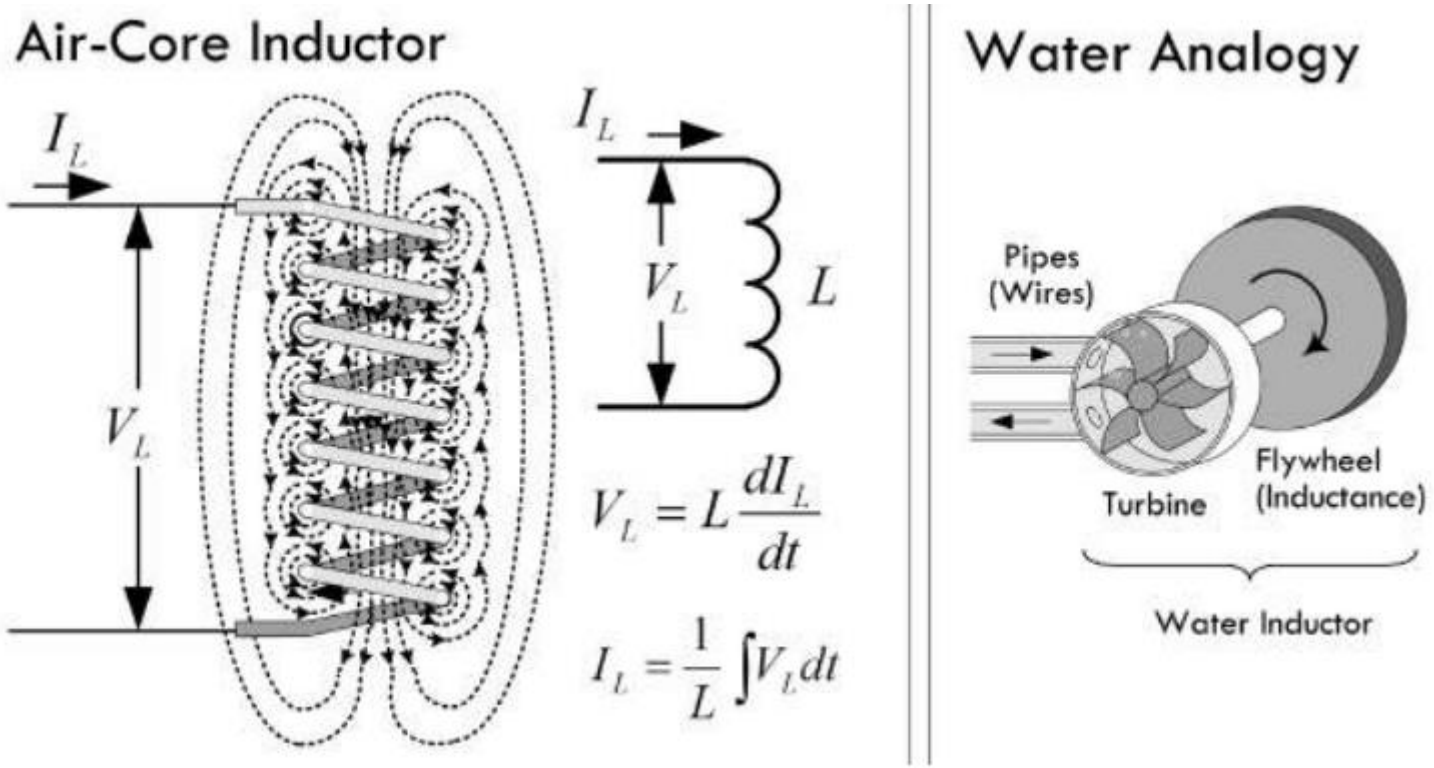
# Temel elektronik devre bileşenleri

**Bobinler**



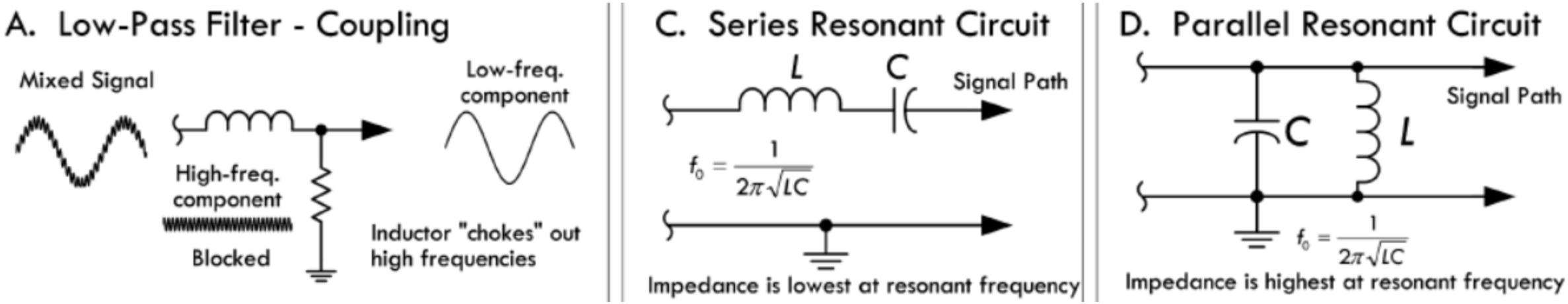
# Temel elektronik devre bileşenleri

**Bobinler**



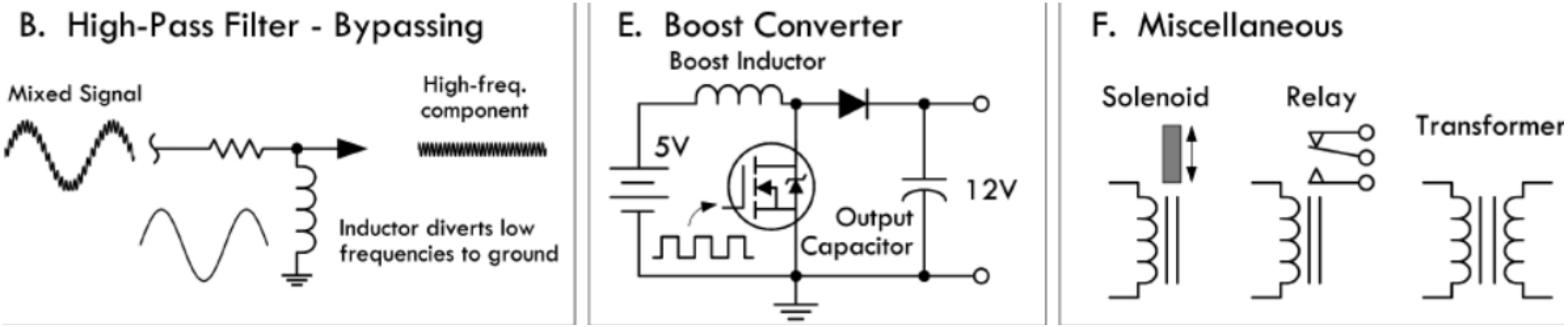
# Temel elektronik devre bileşenleri

**Bobinler**



# Temel elektronik devre bileşenleri

**Bobinler**



# Kaynaklar (References)


1. M. Nacar, 2015. Elektrik – Elektronik Ölçmeleri ve İş Güvenliği, Ankara Ofset Matbaacılık
2. J. P. Holman, 2012. Experimental methods for engineers —8th ed., McGraw-Hill series in mechanical engineering
3. S. Monk , P. Scherz, 2016. Practical Electronics for Inventors,Yayınevi : McGraw-Hill Education
4. D. J. Curtis, 2014. Process Control Instrumentation Technology, Pearson, Eighth Edition
5. M. A. Dayıoğlu, 2017. 6. Ünite: Seralarda Bilişim ve Otomasyon Teknolojisi, Sayfa: 102 – 134, Kitap Adı: Örtüaltı Üretim Sistemleri, 3. BaskıAnadolu Üniversitesi Yayın No: 2275
6. M. W. Birimicombe, M.A. D. Phil, 2000. Introduction electronic systems, Nelson
7. H. Pastacı, 2017. Elektrik ve Elektronik Ölçmeleri, 11. Baskı, Nobel Yayıncılık, Ankara
8. W. C. Dunn, 2005. Fundamentals of Industrial Instrumentation and Process Control, McGraw-Hill
9. J. Fraden, 2010. Handbook of Modern Sensors Physics, Designs, and Applications, Fourth Edition, Springer