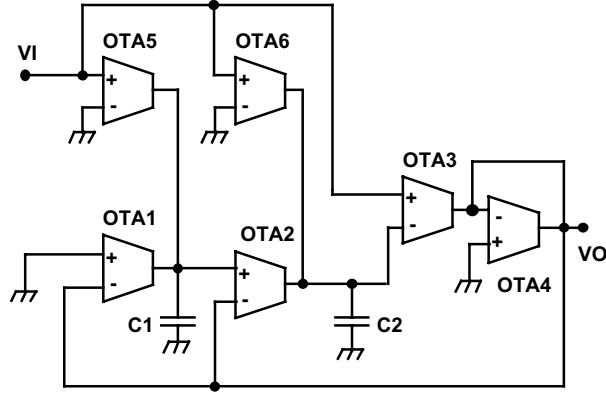


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$$G(s) = \frac{a_2 s^2 + a_1 s + a_0}{s^2 + b_1 s + b_0} \quad (4.20)$$

Bu transfer fonksiyonunu saęlayan genel devre yapısı Őekil-4.15'de verilmiřtir.



Őekil-4.15. İkinci dereceden transfer fonksiyonunu geręekleyen genel OTA-C aktif szgeę yapısı.

Bu devrede tasarım eřitlikleri

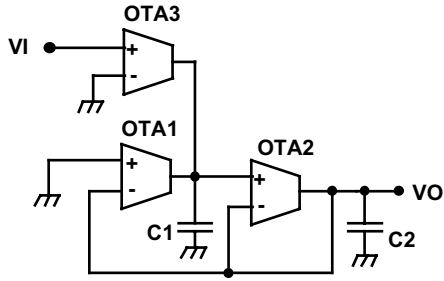
$$\begin{aligned} \frac{g_{m1}}{C_1} &= \frac{b_0}{b_1} \\ \frac{g_{m2}}{C_2} &= \frac{b_1}{a_2} \\ \frac{g_{m3}}{g_{m4}} &= a_2 \\ \frac{g_{m5}}{C_1} &= \frac{a_0}{b_1} \\ \frac{g_{m6}}{C_2} &= \frac{a_1}{a_2} \end{aligned} \quad (4.21)$$

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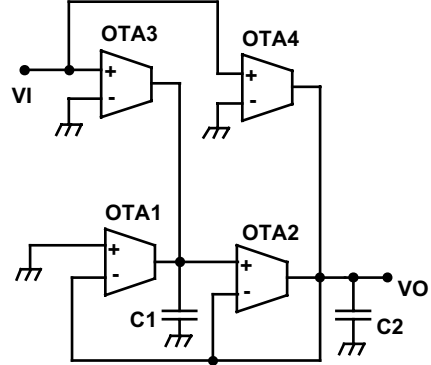
Tablo-4.1. Őekil-4.16'daki szgeçlerin transfer fonksiyonları ve eleman baęıntıları

Szgeç	Transfer fonksiyonu	Eleman deęerleri
Őekil-4.16a Alçak geçiren	$\frac{a_0}{s^2 + b_1s + b_0}$	$\frac{g_{m1}}{C_1} = \frac{b_0}{b_1}$ $\frac{g_{m2}}{C_2} = b_1$ $\frac{g_{m3}}{C_1} = \frac{a_0}{b_1}$
Őekil-4.16b Alçak geçiren	$\frac{a_0}{s^2 + b_1s + b_0}$	$a_0 = b_0$, $\frac{g_{m1}}{C_1} = \frac{b_0}{b_1}$, $\frac{g_{m2}}{C_2} = b_1$
Őekil-4.16c Band geçiren	$\frac{a_1s}{s^2 + b_1s + b_0}$	$\frac{g_{m1}}{C_1} = \frac{b_0}{b_1}$ $\frac{g_{m2}}{C_2} = b_1$ $\frac{g_{m3}}{C_2} = a_1$
Őekil-4.16d Yksek geçiren	$\frac{a_2s^2}{s^2 + b_1s + b_0}$	$\frac{g_{m1}}{C_1} = \frac{b_0}{b_1}$ $\frac{g_{m3}}{g_{m4}} = a_2$ $\frac{g_{m2}}{C_2} = \frac{b_1}{a_2}$
Őekil-4.16e Band geçiren	$\frac{a_1s + a_0}{s^2 + b_1s + b_0}$	$\frac{g_{m1}}{C_1} = \frac{b_0}{b_1}$ $\frac{g_{m2}}{C_2} = b_1$ $\frac{g_{m3}}{C_1} = \frac{a_0}{b_1}$, $\frac{g_{m4}}{C_2} = a_1$
Őekil-4.16.f Band geçiren	$\frac{a_1s + a_0}{s^2 + b_1s + b_0}$	$\frac{g_{m1}}{C_1} = \frac{b_0}{b_1}$ $\frac{g_{m2}}{C_2} = b_1$ $a_1 = \frac{b_0}{b_1}$, $a_0 = b_0$
Őekil-4.16g Band sndren	$\frac{a_2s^2 + a_0}{s^2 + b_1s + b_0}$	$\frac{g_{m1}}{C_1} = \frac{b_0}{b_1}$ $\frac{g_{m2}}{C_2} = \frac{b_1}{a_2}$ $a_0 = b_0$, $\frac{g_{m3}}{g_{m4}} = a_2$
Őekil-4.16h Band sndren	$\frac{a_2s^2 + a_0}{s^2 + b_1s + b_0}$	$\frac{g_{m1}}{C_1} = \frac{b_0}{b_1}$ $\frac{g_{m2}}{C_2} = \frac{b_1}{a_2}$ $\frac{g_{m5}}{C_1} = \frac{a_0}{b_1}$ $\frac{g_{m3}}{g_{m4}} = a_2$
Őekil-4.16i Tmgeçiren	$\frac{s^2 - b_1s + b_0}{s^2 + b_1s + b_0}$	$\frac{g_{m1}}{C_1} = \frac{b_0}{b_1}$, $\frac{g_{m2}}{C_2} = \frac{b_1}{a_2}$, $\frac{g_{m5}}{C_2} = b_1$, $\frac{g_{m3}}{g_{m4}} = 1$

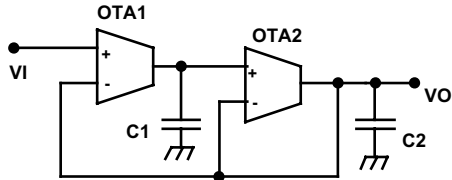
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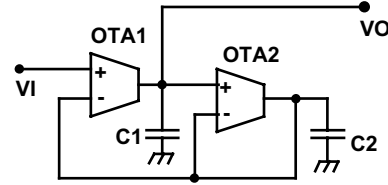
(a) alçak geiren szge: $a_0 \neq b_0$



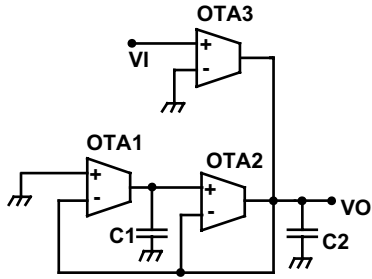
(e) band geiren szge



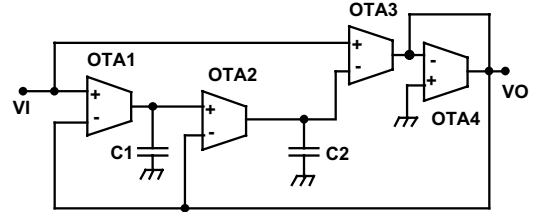
(b) alçak geiren szge: $a_0 = b_0$



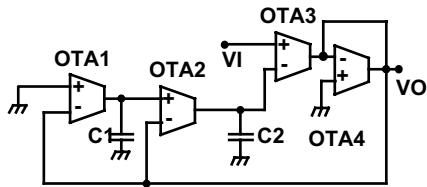
(f) band geiren szge



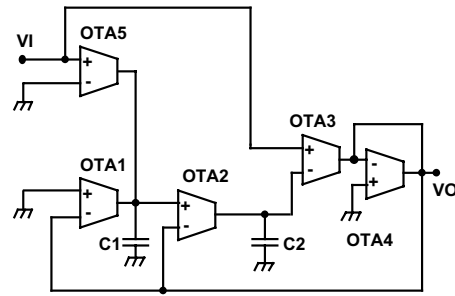
(c) band geiren szge



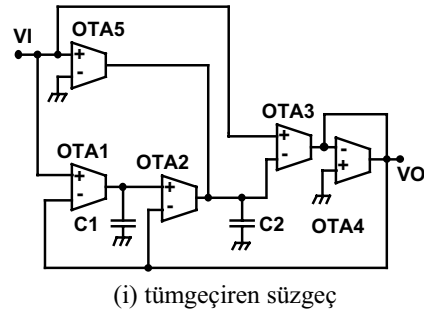
(g) band sndren szge $a_0 = b_0$



(d) yksek geiren szge



(h) band sndren szge $a_0 \neq b_0$



ekil-4.16. OTA-C alak geiren, band geiren, yksek geiren, band sndren ve tm geiren aktif szge yapıları.