# Apéndice B

# Tablas de Diseño

En este apéndice están contenidas las tablas para diseñar filtros elípticos con Amax = 0.1 dB y Amax = 1 dB. Las funciones de transferencia que se presentan en las tablas son de filtros pasa-bajas.

Tabla B.1

## Odd and case $A$ even: 0.1-dB passband ripple

| $n$ | $\omega_s$ | $K_s$ (dB) | $c_i$ | $p_i$ | $a_i$ | $b_i$ |
|---|---|---|---|---|---|---|
| 2 | 1.05 | .343 | 1.438664 | $-.075407 \pm j1.180400$ | .150814 | 1.399030 |
|   | 1.10 | .559 | 1.714083 | $-.129483 \pm j1.268507$ | .258966 | 1.625877 |
|   | 1.20 | 1.075 | 2.235990 | $-.236268 \pm j1.393844$ | .472537 | 1.998624 |
|   | 1.50 | 3.210 | 3.927051 | $-.534107 \pm j1.568367$ | 1.068213 | 2.745046 |
|   | 2.00 | 7.418 | 7.464102 | $-.843443 \pm j1.581991$ | 1.686887 | 3.214092 |
| 3 | 1.05 | 1.748 | 1.205410 | $-.044853 \pm j1.079332$ $-2.812966$ | .089707 | 1.166969 |
|   | 1.10 | 3.374 | 1.370314 | $-.085421 \pm j1.121848$ $-2.240832$ | .170843 | 1.265840 |
|   | 1.20 | 6.691 | 1.699617 | $-.156766 \pm j1.170259$ $-1.744102$ | .313532 | 1.394082 |
|   | 1.50 | 14.848 | 2.806014 | $-.289646 \pm j1.212428$ $-1.298182$ | .579292 | 1.553876 |
|   | 2.00 | 24.010 | 5.153209 | $-.381858 \pm j1.217905$ $-1.116765$ | .763717 | 1.629108 |
| 4 | 1.05 | 6.397 | 1.153634 | $-.618576 \pm j1.143244$ | 1.237152 | 1.689644 |
|   |      |        | 3.312518 | $-.037598 \pm j1.045948$ | .075196 | 1.095422 |
|   | 1.10 | 10.721 | 1.290925 | $-.703816 \pm j .976495$ | 1.407633 | 1.448899 |
|   |      |        | 4.349930 | $-.066734 \pm j1.066126$ | .133467 | 1.141079 |
|   | 1.20 | 17.051 | 1.572430 | $-.108448 \pm j1.086869$ | .216897 | 1.193044 |
|   |      |        | 6.224402 | $-.726853 \pm j .798154$ | 1.453706 | 1.165365 |
|   | 1.50 | 29.064 | 2.535553 | $-.698734 \pm j .616949$ | 1.397469 | .868855 |
|   |      |        | 12.099310 | $-.173627 \pm j1.108114$ | .347253 | 1.258062 |
|   | 2.00 | 41.447 | 4.593261 | $-.670443 \pm j .535639$ | 1.340886 | .736403 |
|   |      |        | 24.227201 | $-.216254 \pm j1.116820$ | .432509 | 1.294053 |
| 5 | 1.05 | 13.841 | 1.133422 | $-.266902 \pm j1.015887$ | .533804 | 1.103263 |
|   |      |        | 1.773739 | $-.030115 \pm j1.028040$ $-1.128858$ | .060229 | 1.057772 |
|   | 1.10 | 20.050 | 1.259320 | $-.329692 \pm j .953299$ | .659383 | 1.017475 |
|   |      |        | 2.193093 | $-.049533 \pm j1.039346$ $-.932112$ | .099067 | 1.082694 |
|   | 1.20 | 28.303 | 1.521127 | $-.379155 \pm j .875398$ | .758311 | .910081 |
|   |      |        | 2.968367 | $-.075430 \pm j1.051645$ $-.782858$ | .150860 | 1.111647 |
|   | 1.50 | 43.415 | 2.425515 | $-.417037 \pm j .775766$ | .834075 | .775733 |
|   |      |        | 5.437645 | $-.114129 \pm j1.066151$ $-.649753$ | .228259 | 1.149703 |
|   | 2.00 | 58.901 | 4.364951 | $-.429092 \pm j .721329$ | .858183 | .704436 |
|   |      |        | 10.567732 | $-.138913 \pm j1.073567$ $-.590933$ | .277825 | 1.171844 |
| 6 | 1.05 | 22.088 | 1.123326 | $-.647026 \pm j .628506$ | 1.294052 | .813662 |
|   |      |        | 1.438664 | $-.151511 \pm j .985417$ | .303023 | .994002 |
|   |      |        | 6.528768 | $-.023386 \pm j1.018380$ | .046771 | 1.037644 |
|   | 1.10 | 29.686 | 1.243362 | $-.599771 \pm j .517581$ | 1.199542 | .627615 |
|   |      |        | 1.714083 | $-.194450 \pm j .951604$ | .388900 | .943361 |
|   |      |        | 8.826455 | $-.036964 \pm j1.025840$ | .073927 | 1.053714 |
|   | 1.20 | 39.630 | 1.495035 | $-.547628 \pm j .429686$ | 1.095257 | .484527 |
|   |      |        | 2.235990 | $-.235429 \pm j .907696$ | .470859 | .879339 |
|   |      |        | 12.952671 | $-.054595 \pm j1.034294$ | .109189 | 1.072744 |
|   | 1.50 | 57.772 | 2.369289 | $-.487832 \pm j .349732$ | .975663 | .360292 |
|   |      |        | 3.927051 | $-.277388 \pm j .846778$ | .554775 | .793976 |
|   |      |        | 25.827242 | $-.080385 \pm j1.044897$ | .160770 | 1.098271 |

## Tabla B.2

**Odd and case $A$ even: 1.0-dB passband ripple**

| $n$ | $\omega_s$ | $K_s$ (dB) | $c_i$ | $p_i$ | $a_i$ | $b_i$ |
|---|---|---|---|---|---|---|
| 2 | 1.05 | 2.816 | 1.438664 | $-.157083 \pm j1.068900$ | .314166 | 1.167222 |
|  | 1.10 | 4.025 | 1.714083 | $-.229129 \pm j1.075841$ | .458258 | 1.209934 |
|  | 1.20 | 6.150 | 2.235990 | $-.320565 \pm j1.064452$ | .641131 | 1.235820 |
|  | 1.50 | 11.194 | 3.927051 | $-.439709 \pm j1.010488$ | .879418 | 1.214431 |
|  | 2.00 | 17.095 | 7.464102 | $-.499471 \pm j\ .959482$ | .998942 | 1.170077 |
| 3 | 1.05 | 8.134 | 1.205410 | $-.065504 \pm j1.017106$ | .131007 | 1.038796 |
|  |  |  |  | $-.947805$ |  |  |
|  | 1.10 | 11.480 | 1.370314 | $-.097651 \pm j1.016303$ | .195302 | 1.042407 |
|  |  |  |  | $-.816161$ |  |  |
|  | 1.20 | 16.209 | 1.699617 | $-.136461 \pm j1.010059$ | .272923 | 1.038841 |
|  |  |  |  | $-.701999$ |  |  |
|  | 1.50 | 25.176 | 2.806014 | $-.187698 \pm j\ .994225$ | .375396 | 1.023714 |
|  |  |  |  | $-.591015$ |  |  |
|  | 2.00 | 34.454 | 5.153209 | $-.217034 \pm j\ .981575$ | .434067 | 1.010594 |
|  |  |  |  | $-.539958$ |  |  |
| 4 | 1.05 | 15.840 | 1.153634 | $-.400926 \pm j\ .723958$ | .801852 | .684857 |
|  |  |  | 3.312518 | $-.036963 \pm j1.004642$ | .073925 | 1.010671 |
|  | 1.10 | 20.832 | 1.290925 | $-.399229 \pm j\ .638481$ | .798458 | .567042 |
|  |  |  | 4.349930 | $-.054484 \pm j1.003351$ | .108969 | 1.009681 |
|  | 1.20 | 27.432 | 1.572430 | $-.386971 \pm j\ .560447$ | .773942 | .463847 |
|  |  |  | 6.224402 | $-.075673 \pm j1.000256$ | .151346 | 1.006238 |
|  | 1.50 | 39.518 | 2.535553 | $-.364988 \pm j\ .480692$ | .729977 | .364281 |
|  |  |  | 12.099310 | $-.104409 \pm j\ .993937$ | .208819 | .998811 |
|  | 2.00 | 51.906 | 4.593261 | $-.351273 \pm j\ .442498$ | .702546 | .319197 |
|  |  |  | 24.227201 | $-.121478 \pm j\ .989176$ | .242957 | .993226 |
| 5 | 1.05 | 24.135 | 1.133422 | $-.181185 \pm j\ .858432$ | .362371 | .769820 |
|  |  |  | 1.773739 | $-.023559 \pm j1.001164$ | .047118 | 1.002885 |
|  |  |  |  | $-.511794$ |  |  |
|  | 1.10 | 30.471 | 1.259320 | $-.202145 \pm j\ .804785$ | .404289 | .688541 |
|  |  |  | 2.193093 | $-.034621 \pm j1.000221$ | .069241 | 1.001640 |
|  |  |  |  | $-.446562$ |  |  |
|  | 1.20 | 38.757 | 1.521127 | $-.217568 \pm j\ .748167$ | .435136 | .607089 |
|  |  |  | 2.968367 | $-.048084 \pm j\ .998478$ | .096167 | .999271 |
|  |  |  |  | $-.391579$ |  |  |
|  | 1.50 | 53.875 | 2.425515 | $-.228875 \pm j\ .681678$ | .457749 | .517069 |
|  |  |  | 5.437645 | $-.066541 \pm j\ .995254$ | .133081 | .994957 |
|  |  |  |  | $-.337846$ |  |  |
|  | 2.00 | 69.360 | 4.364951 | $-.232338 \pm j\ .646440$ | .464676 | .471866 |
|  |  |  | 10.567732 | $-.077625 \pm j\ .992914$ | .155249 | .991903 |
|  |  |  |  | $-.312599$ |  |  |
| 6 | 1.05 | 32.523 | 1.123326 | $-.340554 \pm j\ .466561$ | .681109 | .333656 |
|  |  |  | 1.438664 | $-.099253 \pm j\ .910440$ | .198505 | .838752 |
|  |  |  | 6.528768 | $-.016283 \pm j1.000095$ | .032567 | 1.000456 |
|  | 1.10 | 40.142 | 1.243362 | $-.315089 \pm j\ .409244$ | .630179 | .266762 |
|  |  |  | 1.714083 | $-.118730 \pm j\ .874514$ | .237461 | .778873 |
|  |  |  | 8.826455 | $-.023927 \pm j\ .999416$ | .047854 | .999404 |