

# Zacks Small-Cap Research

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## BrainChip Hldgs (BRCHF-OTC)

Reducing revenue estimates, prospects for AI solutions remain high

### OUTLOOK

- BrainChip Holdings released full year results for 2022 and the lumpiness of early licensing revenues remains significant as no licensing revenue was recorded in the second half.
- The company has announced a number of partnerships and agreements in early 2023 which should be net positives in the long run.
- We are adjusting our model to reflect the weak second half 2022 results and lowering our valuation for the company from 0.75 to 0.50 based on lower revenue forecasts for 2024 and continued growth of the share count.

The path to commercialization of BrainChip's Akida IP remains bumpy as second half 2022 results missed our expectations by a wide margin. Realizing recurring license revenue will be a key milestone toward building investor confidence.

Current Price (02/4/23) \$0.36  
Valuation \$0.50

### SUMMARY DATA

52-Week High \$0.97  
52-Week Low \$0.34  
One-Year Return (%) -62%  
Beta N/A  
Average Daily Volume (sh) 63,312

Shares Outstanding (mil) 1,767  
Market Capitalization (\$mil) \$636  
Short Interest Ratio (days) N/A  
Institutional Ownership (%) 0  
Insider Ownership (%) 27%

Annual Cash Dividend \$0.00  
Dividend Yield (%) 0.00

5-Yr. Historical Growth Rates  
Sales (%) N/A  
Earnings Per Share (%) N/A  
Dividend (%) N/A

P/E using TTM EPS N/A  
P/E using 2023 Estimate N/A  
P/E using 2024 Estimate N/A

Zacks Rank N/A

Risk Level High, Speculative  
Type of Stock N/A  
Industry N/A

### ZACKS ESTIMATES

Revenue  
(in millions of \$)

|      | Q1 | H1<br>(Jun) | Q3 | H2<br>(Dec) | Year<br>(Dec) |
|------|----|-------------|----|-------------|---------------|
| 2021 |    |             |    |             | 1.59 A        |
| 2022 |    | 4.83 A      |    | 0.24 A      | 5.1 A         |
| 2023 |    | 5.71 E      |    | 6.06 E      | 11.8 E        |
| 2024 |    |             |    |             | 39.3 E        |

|      | Q1 | H1<br>(Jun) | Q3 | H2<br>(Dec) | Year<br>(Dec) |
|------|----|-------------|----|-------------|---------------|
| 2021 |    |             |    |             | -\$0.01 A     |
| 2022 |    | -\$0.00 A   |    | -\$0.01 A   | -\$0.01 A     |
| 2023 |    | -\$0.01 E   |    | -\$0.00 E   | -\$0.01 E     |
| 2024 |    |             |    |             | -\$0.01 E     |

Zacks Projected EPS Growth Rate - Next 5 Years % N/A

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## WHAT'S NEW

BrainChip published its 2022 Annual Report which by default becomes the release of second half 2022 results for the company. Our initial read is that many early licensing deals for the Akida IP that were signed in the first half of 2022 have not translated to additional commercial deployments as of 12/31/2022 as revenue significantly missed our expectations.

Revenue for the 6 months ended 12/31/22 was just \$240 thousand down sharply from the first half total of \$4.8 million and well below our estimate of \$5.6 million. The company reported no new license revenue in the second half of 2022 and only nominal development service revenue. This was the second year in a row where a strong first half did not translate into recurring revenues in the second half of the year. The company does not host an earnings call but we can infer that the early revenues in the first half of the year were from customers evaluating the company's technology but delays in commercial rollouts or integration of the Akida IP into chip designs lead to the sequential revenue decline.

Operating costs were roughly in line with our model (\$14 million actual vs. 13.8 million forecast) for the second half of 2022. BrainChip is not an earnings story today given where the market is with regards to AI deployment on devices, so the larger net loss reported is less of an issue than the revenue miss in our opinion.

As we noted in our initiation report, the company has a very high share count that continues to expand as the total outstanding shares have grown from 1.72 billion to 1.77 billion at the end of 2022. This represents roughly another 3% dilution for existing shareholders before the pending capital raise discussed below. Given the very high share count, the loss per share for the second half of 2022 was still in line with our estimates at (\$0.01)/share despite the higher than expected net loss reported.

The second half results are disappointing but we believe that the company remains on track to be a part of the conversation as AI becomes more ingrained our daily lives. We believe the timeline to cash flow breakeven will likely be pushed out to 2025 unless commercial deployments ramp sooner than expected.

Balance Sheet: As of 12/31/22 the company had cash and equivalents of \$23.2 million, down roughly \$5.2 million from 6/30/22. The company would likely have about 2 years of runway at the current burn rate but as discussed below, the company has already announced plans to conduct an additional capital raise in the first half of 2023 which could sustain operations for another year.

BrainChip has indicated that they will use the proceeds of the latest capital raises to invest in additional sales and marketing resources. It is worth noting though that at the end of 2022 the company's headcount was at 66, just 3 more employees than reported at the end of 2021, so we anticipate that hiring and the burn rate could accelerate in 2023.

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## RECENT NEWS

In late February, BrainChip announced a partnership with emotion3D to demonstrate in-cabin analysis that will hopefully lead to safer driving experiences. While driver monitoring systems are not necessarily new, the latest iterations of the technology are combining computer vision, image-based analysis and AI tools to make predictions in near real-time. We believe emotion3D is still a relatively small player in this market (fewer than 20 employees listed) but they have received several accolades including being a top startup disrupting mobility in 2020 so this partnership could be a strong use case to demonstrate a real-world application of BrainChip's technology.

In early February, BrainChip announced that they had been granted an additional patent for accessing learned functions which was an extension of previous patents. The core of the patent protects the structure and function of a digital neuron which acts similarly to a biological neuron. We are encouraged by the additional R&D work and patent success but we would note that patents are often expensive to defend in the world of technology.

Also, in early February, the company announced a collaboration with AI Labs to bring the AI Labs Minsky AI Engine to industrial customers. While exact use cases are undetermined at this point, the target markets will be industrial customers with advanced equipment that requires monitoring. Increasingly the complex nature of these systems has created more potential points of failure and the companies believe that the combination of BrainChip's on device learning and AI Labs simplified modeling will identify potential problems in systems before they reach the point of failure.

In late January, the company announced that they had achieved "tape out" of its AKD1500 on GlobalFoundries' (NASDAQ: GFS) 22nm fully depleted silicon-on-insulator technology. Tape out is a legacy term in the semiconductor industry referring to a time when designs were literally recreated with tape but currently it refers to the foundry approving a computer aided design (CAD) file for the photomask (outline that allows circuits to be printed on very thin material). The commercial impact of this announcement is probably negligible but it is a step in the right direction toward demonstrating that BrainChip's IP can be deployed at various foundries and that will give BrainChip partners additional flexibility with regards to manufacturing.

In early January, the company indicated that it would raise additional capital under their existing relationship with LDA Capital. This capital call notice is for up to 30 million shares issued at 91.5% of the volume weighted average price of the stock from mid-January through late March or early April. We estimate that this will provide the company with roughly \$11 million of proceeds and if the over-allotment of an additional 10 million shares is exercised they could receive close to an additional \$3.0 mil. The proceeds have principally been earmarked for investments in sales and marketing. The company has added an additional 3% or another 47.5 million shares to its outstanding shares as of January 2023 prior to the announcement of the LDA Capital call notice. Continued dilution and the very high share count (now over 1.767 billion shares outstanding) will likely remain an issue for investors to deal with until the company can turn cash flow positive.

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## VALUATION

Valuing BrainChip is an incredibly difficult task and has been complicated by the latest results which appear to indicate that commercialization efforts are going slower than anticipated. Countering the recent weak operating results is the emerging interest in anything associated with the artificial intelligence industry which remains the focus of BrainChip's core technology.

We have lowered our revenue estimates for 2024 since commercialization seems to be going slower than initially expected. Additionally, the company's share count continues to rise faster than we expected and thus, we are lowering our target price to \$0.50/share.

We believe that there is a possibility that our current model proves to be conservative and we do expect that our model will continue to be refined over time as the company's IP is licensed for commercial applications. The consistent growth of license revenue and commercial deployments of BrainChip's IP will be the keys to our model and the company's valuation over the next twelve to twenty-four months. Potential dilution from additional capital raises beyond the latest announcement will also be a factor in our valuation calculations.

Finally, we would note that the company has a large and very active retail investor base in Australia. While it's impossible to know what the risk tolerance of this class of investors is, the stock is trading near 52-week lows and many of the retail investors have been invested in BrainChip since it was trading at \$0.03-\$0.05/share on the Australian exchange in 2020. The risk of retail profit-taking is fairly high on a stock with a public float of over 1.4 billion shares.

# PROJECTED INCOME STATEMENT

BrainChip  
(in 000s US\$)

|   | 2018          | 2019          | 2020          | 2021          | 6 Months      |               | 2022A         | 6 Months      |               | 2023E         | 2024E         |
|---|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
|   |               |               |               |               | Jun-22        | Dec-22        |               | Jun-23        | Dec-23        |               |               |
| <b>Revenues:</b>                                      |               |               |               |               |               |               |               |               |               |               |               |
| Product revenue                                       | 108.1         | 10.2          | 30.0          | 196.2         | 218.6         | 227.7         | 446.2         | 232.2         | 267.6         | 499.8         | 584.8         |
| % change (yoy)  | NA            | -91%          | 196%          | 554%          |               |               | 127%          |               |               | 12%           | 17%           |
| License revenue                                       | 327.3         | 2.2           | -             | 825.0         | 4,049.9       | -             | 4,049.9       | 4,859.9       | 5,143.4       | 10,003.2      | 37,312.0      |
| % change (yoy)  | NA            | -99%          | -100%         | NA            |               |               | 391%          |               |               | 147%          | 273%          |
| Development service revenue                           | 512.5         | 63.2          | 90.8          | 567.3         | 562.6         | 12.4          | 575.0         | 618.9         | 649.8         | 1,268.7       | 1,370.2       |
| % change (yoy)  | NA            | -88%          | 44%           | 525%          |               |               | 1%            |               |               | 121%          | 8%            |
| Revenues from contracts with customers                | 948           | 76            | 121           | 1,589         | 4,831         | 240           | 5,071         | 5,711         | 6,061         | 11,772        | 39,267        |
| % change (yoy)  | NA            | -92%          | 60%           | 1215%         |               |               | 219%          | 18%           | 2425%         | 132%          | 588%          |
| Cost of Revenues                                      | -             | -             | 49            | 287           | 402           | 78            | 480           | 885           | 970           | 1,855         | 2,825         |
| Gross Profit  | 948           | 76            | 72            | 1,301         | 4,429         | 162           | 4,591         | 4,826         | 5,091         | 9,917         | 32,356        |
| % change (yoy)  |               | -92%          | -4%           | 1702%         |               |               | 253%          |               |               | 116%          | 226%          |
| Gross Profit Margin                                   | 100.0%        | 100.0%        | 59.8%         | 81.9%         | 91.7%         | 67.4%         | 90.5%         | 84.5%         | 84.0%         | 84.2%         | 82.4%         |
| <b>Operating Expenses:</b>                            |               |               |               |               |               |               |               |               |               |               |               |
| Selling & Marketing Expense                           | 1,465         | 1,062         | 1,427         | 2,487         | 1,742         | 1,421         | 3,163         | 2,142         | 2,182         | 4,323         | 10,209        |
| % of Sales  | 154.6%        | 1405.3%       | 1180.9%       | 156.6%        | 36.1%         | 592.1%        | 62.4%         | 37.5%         | 36.0%         | 36.7%         | 26.0%         |
| General & Administrative Expense                      | 4,170         | 3,795         | 3,228         | 5,252         | 3,311         | 3,027         | 6,338         | 3,784         | 4,919         | 8,703         | 10,008        |
| Research & Development Expense                        | 4,661         | 4,511         | 5,152         | 9,133         | 4,281         | 4,085         | 8,366         | 4,902         | 5,882         | 10,784        | 12,941        |
| Share-based payment expense                           | 7,306         | 1,636         | 1,436         | 4,362         | 3,656         | 5,493         | 9,148         | 3,729         | 3,803         | 7,532         | 7,909         |
| Net Finance Expense/(Income)                          | (131)         | 546           | 5,514         | (67)          | 0             | 0             | -             | 0             | 0             | -             | -             |
| Fair value gain through profit and loss               | 0             | (165)         | 10,138        | 1,376         | 0             | 0             | -             | 0             | 0             | -             | -             |
| Total Operating Expenses                              | 17,471        | 11,386        | 26,894        | 22,543        | 12,990        | 14,026        | 27,016        | 14,556        | 16,786        | 31,342        | 41,067        |
| % change (yoy)  |               | -35%          | 136%          | -16%          |               |               | 20%           |               |               | 16%           | 31%           |
| Operating Income (Loss)                               | (16,523)      | (11,310)      | (26,822)      | (21,242)      | (8,561)       | (13,864)      | (22,425)      | (9,730)       | (11,695)      | (21,426)      | (8,711)       |
| Remeasurement (losses)/gains on defined benefit plans | 34            | (17)          | (24)          | (23)          | 0             | 0             | -             | 0             | 0             | -             | -             |
| Foreign Exchange Gain (Loss)                          | (1)           | (8)           | 42            | 18            | 0             | 0             | 85            | 0             | 0             | -             | -             |
| Other Income  | 0             | 0             | 0             | 413           | 112           | 57            | 170           | 0             | 0             | -             | -             |
| Other Gain/(Expenses)                                 | 0             | 0             | 0             | 0             | 204           | 0             | 204           | 0             | 0             | -             | -             |
| Income before Taxes                                   | (16,490)      | (11,335)      | (26,804)      | (20,834)      | (8,244)       | (13,807)      | (21,966)      | (9,730)       | (11,695)      | (21,426)      | (8,711)       |
| IncomeTax (Expense) / Benefit                         | 0             | 0             | 0             | 153           | (11)          | (25)          | (37)          | 0             | 0             | -             | -             |
| Net Income (Loss) reported                            | (16,490)      | (11,335)      | (26,804)      | (20,987)      | (8,256)       | (13,832)      | (22,002)      | (9,730)       | (11,695)      | (21,426)      | (8,711)       |
| EPS reported  | (0.02)        | (0.01)        | (0.02)        | (0.01)        | (0.00)        | (0.01)        | (0.01)        | (0.01)        | (0.01)        | (0.01)        | (0.00)        |
| Diluted Shares (weighted average)                     | 1,006,859,664 | 1,187,151,663 | 1,527,522,665 | 1,719,177,338 | 1,719,177,338 | 1,786,841,984 | 1,786,841,984 | 1,822,578,824 | 1,822,578,824 | 1,822,578,824 | 1,859,030,400 |
| <b>Margins:</b>                                       |               |               |               |               |               |               |               |               |               |               |               |
| Gross Margin  | 100.0%        | 100.0%        | 59.8%         | 81.9%         | 91.7%         | 67.4%         | 90.5%         | 84.5%         | 84.0%         | 84.2%         | 82.4%         |
| Operating Margin (reported)                           | NA            | NA            | NA            | NA            | NA            | NA            | NA            | NA            | NA            | NA            | NA            |

Source: Zacks SCR, Brian Lantier, Company Filings

## BALANCE SHEET

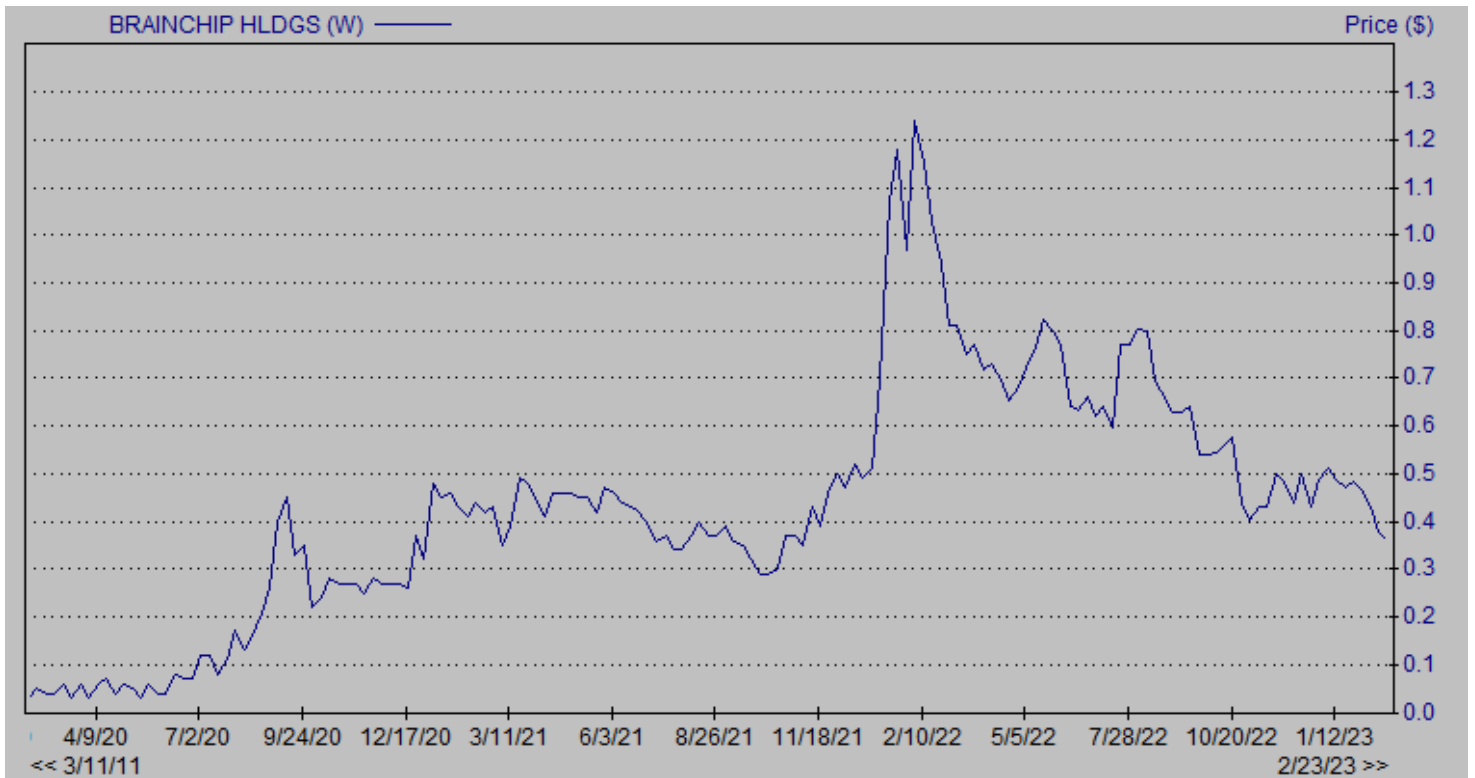
### BrainChip Holdings

Balance Sheet in 000's USD

| <b>Assets</b>                                       | <b><u>12/31/22</u></b>      |
|---|-----------------------------|
| <b>Current Assets</b>                               |                             |
| Cash and Cash Equivalents                           | 23,165                      |
| Accounts Receivable (net)                           | 2,350                       |
| Inventory   | 397                         |
| Other Assets  | 204                         |
| <b>Total Current Assets</b>                         | <b><u>26,116</u></b>        |
| <b>Non-Current Assets</b>                           |                             |
| Right of use assets                                 | 1,750                       |
| Intangible Assets (net)                             | 674                         |
| Plant and equipment                                 | 435                         |
| Other Non-current Assets                            | 202                         |
| <b>Total Assets</b>                                 | <b><u><u>29,178</u></u></b> |
| <b>Liabilities</b>                                  |                             |
| <b>Current Liabilities</b>                          |                             |
| Trade and other payables                            | 2,669                       |
| Deferred Revenue                                    | 50                          |
| Financial liabilities                               | 45                          |
| Lease liabilities                                   | 345                         |
| Employee Benefits liabilities                       | 542                         |
| <b>Total Current liabilities</b>                    | <b><u>3,650</u></b>         |
| <b>Non-Current Liabilities</b>                      |                             |
| Financial liabilities                               | 66                          |
| Lease liabilities                                   | 1,591                       |
| Defined benefit plan                                | 151,551                     |
| <b>Total Liabilities</b>                            | <b><u>5,459</u></b>         |
| <b>Shareholder's Equity</b>                         |                             |
| Contributed equity                                  | 135,115                     |
| Share-based payments reserve                        | 33,365                      |
| Foreign currency translation reserve                | 119                         |
| Other equity reserve                                | 248                         |
| Accumulated losses                                  | <b>(145,128)</b>            |
| <b>Shareholder's Equity (Deficiency)</b>            | <b><u>23,718</u></b>        |
| <b>Total Liabilities &amp; Shareholder's Equity</b> | <b><u><u>29,178</u></u></b> |

Source: Company filing

# HISTORICAL STOCK PRICE



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