

## Discovery Group

## 2024 Was Challenging but Improving Order Trends Point to a Potential Early-Stage Recovery; Upgrading from Neutral to Buy, PT from \$24.50 to \$28.50

Josh Nichols, CFA

310-689-2218

jnichols@brileyfin.com

Griffin Boss

310-689-5231

gboss@brileyfin.com

## Summary and Recommendation

We are upgrading Vishay Precision Group, Inc. (VPG) from Neutral to Buy and increasing our PT from \$24.50 to \$28.50. While 2024 was a challenging year and 4Q results were below expectations, the recent improvement in order activity indicates that an early-stage recovery could be underway and VPG is already trading below the company's book value of \$24+ per share. Pivoting back to the quarter, revenue of \$73M was -19% Y/Y and below our and consensus \$74M (guidance of \$70M-\$78M). EBITDA of \$5.1M (7.0% margin) also came in below consensus \$6.9M and our \$7.0M, including ~\$0.7M in one-time costs—primarily related to R&D projects and operational fixed costs. However, orders were +5.7% Q/Q, marking a return to sequential growth after six quarters, and book-to-bill improved Y/Y from 0.84x to 1.00x. The recent improvement in order activity has given us increased confidence that the company will be able to return to Y/Y growth in 2H25 against what we believe are easy comps. We are also optimistic about some of the company's newer markets, including humanoid robots. VPG generated \$18M of revenue from humanoid robotics and other new product categories in 2024 and is targeting \$100M of cumulative revenue from various new business initiatives through 2027/28. The sales outlook for 1Q of \$70M-\$76M (-9.6% Y/Y at the midpoint) was roughly in line with our prior \$74M estimate, and we maintain our 2025 sales projection of \$309M (+0.7% Y/Y). While it often takes a couple of quarters for order activity to flow through to revenue, we expect sales activity to improve throughout 2025 and believe shares are attractively priced at 7.0x 2025E EV/EBITDA.

## Key Points

- **Order activity is improving.** Revenue of \$72.7M was -18.8% Y/Y (Sensors -25%, Weighing Solutions -16%, and Measurement Systems -15%) and was slightly below the midpoint of management's \$70M-\$78M guidance. The gross margin of 38.2% was -480 bps Y/Y and includes a \$0.7M impact from unfavorable product mix as well as \$0.2M of one-time material adjustments. VPG's backlog of \$96M (4.0 months of sales) was -4.0% Q/Q from \$100M and -18.0% compared to \$117M in 4Q23. However, the book-to-bill ratio improved Q/Q from 0.91x to 1.0x and was also up from 0.84x in 4Q23—both the Sensors and Weighing solutions segments achieved a book-to-bill above 1.00x. Orders of \$72M were also +5.7% Q/Q, marking a return to sequential growth after six quarters, as improvements in Sensors and Weighing Solutions were partially offset by lower orders for Measurement Systems. EBITDA of \$5.1M (7.0% margin) declined Y/Y from \$16.5M (18.5% margin), GAAP EPS was \$0.06, and pro forma EPS came in at \$0.03—excluding \$1.9M of FX gains. VPG ended 2024 with \$79M in cash and \$31M of debt (net cash of \$48M or \$3.61/share) with FCF of \$4.6M during the quarter.
- **Sensing a potential early-stage recovery.** The Sensors business (36% of sales) was -24.7% Y/Y to \$25.8M and was -8.5% Q/Q. The Y/Y decrease in revenues was primarily attributable to lower sales of precision resistors in the T&M market and lower sales of advanced sensors in other markets for consumer applications. The sequential decline primarily reflected lower sales in T&M and other markets. The gross profit margin for the sensors segment of 32.0% was -820 bps compared to 40.2% in 4Q23 due to lower sales volume and an unfavorable product mix, which was partially offset by improved manufacturing efficiencies. While sales and margins struggled, orders of \$26.9M were +7.2% sequentially to the highest levels in 2024 due to higher bookings for precision resistors, mainly in the semiconductor backend equipment. After ten consecutive quarters of book-to-bill below 1.00x, book-to-bill of 1.04x improved from 0.89x in 3Q24.

## STOCK DATA

Market Cap (mil)	\$304.8
52-Week Range	\$20.83–\$35.98
3-Month ADTV	67,634
Shares Outstanding (mil)	13.2
Float (%)	92.5
Short Interest	178,916
Enterprise Val. (mil)	\$256.6
Fiscal Year-End	December

## FINANCIAL DATA

EPS (Pro Forma)	2024A	2025E	2026E
1Q	\$0.42	\$0.05	-
2Q	\$0.31	\$0.12	-
3Q	\$0.19	\$0.28	-
4Q	\$0.03	\$0.45	-
FY	\$0.95	\$0.90	\$1.27
EBITDA (mil)	2024A	2025E	2026E
1Q	\$12.3	\$5.5	-
2Q	\$10.2	\$6.8	-
3Q	\$8.1	\$9.9	-
4Q	\$5.1	\$12.9	-
FY	\$35.7	\$35.1	\$42.4
FCF	2024A	2025E	2026E
1Q	\$10.7	\$16.0	\$18.8
2Q	\$10.2	\$16.0	\$18.8
3Q	\$8.1	\$9.9	\$12.9
4Q	\$5.1	\$12.9	\$18.8
FY	\$35.7	\$35.1	\$42.4
FCF Yield	2024A	2025E	2026E
1Q	3.5%	5.2%	6.1%
2Q	3.5%	5.2%	6.1%
3Q	3.5%	5.2%	6.1%
4Q	3.5%	5.2%	6.1%
FY	3.5%	5.2%	6.1%
Rev. (mil)	2024A	2025E	2026E
1Q	\$306.5	\$308.7	\$326.9
2Q	\$306.5	\$308.7	\$326.9
3Q	\$306.5	\$308.7	\$326.9
4Q	\$306.5	\$308.7	\$326.9
FY	\$306.5	\$308.7	\$326.9
EV/Revenue	2024A	2025E	2026E
1Q	0.8x	0.8x	0.7x
2Q	0.8x	0.8x	0.7x
3Q	0.8x	0.8x	0.7x
4Q	0.8x	0.8x	0.7x
FY	0.8x	0.8x	0.7x
EV/EBITDA	2024A	2025E	2026E
1Q	7.2x	7.0x	5.3x
2Q	7.2x	7.0x	5.3x
3Q	7.2x	7.0x	5.3x
4Q	7.2x	7.0x	5.3x
FY	7.2x	7.0x	5.3x
EBITDA %	2024A	2025E	2026E
1Q	11.6%	11.4%	13.0%
2Q	11.6%	11.4%	13.0%
3Q	11.6%	11.4%	13.0%
4Q	11.6%	11.4%	13.0%
FY	11.6%	11.4%	13.0%
P/E	2024A	2025E	2026E
1Q	24.2x	25.4x	18.1x
2Q	24.2x	25.4x	18.1x
3Q	24.2x	25.4x	18.1x
4Q	24.2x	25.4x	18.1x
FY	24.2x	25.4x	18.1x
BV/Share	2024A	2025E	2026E
1Q	\$24.29	\$24.80	\$26.06
2Q	\$24.29	\$24.80	\$26.06
3Q	\$24.29	\$24.80	\$26.06
4Q	\$24.29	\$24.80	\$26.06
FY	\$24.29	\$24.80	\$26.06

## BALANCE SHEET DATA

	4Q24
Cash & Equivalents	\$79.3
Accounts Receivable	\$51.2
Inventories	\$84.2
Accounts Payable	\$48.2
Total Debt	\$31.4
Shareholders' Equity	\$321.9

\$ in millions.

Analyst certification and important disclosures can be found on pages 5 - 8 of this report.

This document represents an abbreviated discussion of the subject issuer and should not be used as the sole basis for an investment decision. Contact your B. Riley Securities representative for complete research concerning the subject issuers, including research briefs and reports.

- **Weighing Solutions.** Weighing Solutions revenue was -15.6% Y/Y to \$25.7M (35% of sales) but was +2.1% Q/Q. The Y/Y decrease in revenue was attributable to lower revenues in other markets from OEM customers for precision agriculture and construction applications and lower revenues in the transportation and general Industrial markets. The sequential increase in revenues reflected higher revenue in the industrial weighing market and other markets, which offset lower revenue in the transportation market. The gross margin for Weighing Solutions was -140 bps Y/Y to 34.2% due to lower volume. Orders of \$28.9M were +14.7% Q/Q to the highest level in 2024 amid strength in transportation and other markets (namely medical and construction) and resulted in a book-to-bill of 1.12x compared to 1.00x in 3Q24.
- **Measurement Systems.** The Measurement Systems business was -14.6% Y/Y to \$21.2M (29% of sales) and was -5.2% Q/Q, as \$5M of orders were pushed to 2025, \$2M of which is expected to be booked in 1Q25. The Y/Y decline was primarily attributable to lower sales of Dynamic Systems Inc. (DSI) and Diversified Technical Systems, Inc. (DTS) products. The sequential decline in revenue was primarily attributable to lower sales of DSI products, which was partially offset by the added revenue related to the acquisition of Nokra Optische Prüftechnik und Automation (Nokra) on 9/30/2024. Gross margin for Measurement Systems was -520 bps Y/Y to 50.8% due to a favorable product mix, which offset the impact from lower volume. Orders of \$18.2M were -16.9% Q/Q, primarily due to lower volume. Book-to-bill was 0.78x as orders of \$16.6M were -8.8% Q/Q. This reflected lower bookings of DSI to the steel market and lower DTS orders to the AMS and transportation markets.
- **Industrial production improvement.** The U.S. Manufacturing Purchasing Managers' Index (PMI) has improved for the past three quarters with the January reading of 50.9 up from 49.2 in December as economic activity in the manufacturing sector expanded for the first time after 26 consecutive months of contraction, which we believe could lead to a more sustainable recovery this year.
- **Emerging business opportunities.** We believe VPG's long-term secular tailwinds remain intact and are pleased to see ongoing progress in newer markets including humanoid robots, where VPG is now in the pre-production phase with one customer and is providing prototypes to other customers. While the total prototype revenue that VPG has received to date is ~\$1.5M, we believe this could become a more meaningful market in the future as potentially thousands of robots are deployed in customer factories over the next two to three years. In this regard, we believe that if VPG successfully moves into the production phase for humanoid robots, initial customers would prefer to sole-source the entire system from VPG—including sensors and associated higher-value modules that hold the sensors. Altogether, VPG generated \$18M of revenue from this and other new product opportunities in 2024, and the company is targeting a cumulative total of at least \$30M in 2025. By 2027 or 2028, VPG expects to have added an aggregate of \$100M in revenue from new business initiatives, which could include new customers, new applications, and/or new products.
- **Model updates.** As for our model, our 1Q revenue estimate is reduced by \$1M to \$73M (vs. guidance of \$70M–\$76M), while our 1Q EBITDA estimate comes in from \$7.7M to \$5.5M as gross margin expectations tick down from 40.5% to 39.6% in the quarter. However, we leave our 2025 revenue projection unchanged at \$309M (+0.7% Y/Y) given the recent improvement in ordering patterns as we continue to expect VPG to return to Y/Y growth in 2H. We also introduce our 2026 projections with sales +5.9% Y/Y and EBITDA margin expanding 160 bps to 13.0%, although we believe these initial projections could prove to be quite conservative depending on how quickly the company can replenish its backlog.

Estimates	1Q25			2025		2026		
	Old	New	Guidance	Old	New	Old	New	
Revenues (M)	\$ 74	\$ 73	\$70-\$76	\$ 309	\$ 309	NA	\$ 327	
EBITDA (M)	\$ 7.7	\$ 5.5		\$ 38.0	\$ 35.1	NA	\$ 42.4	
GAAP EPS	\$ 0.15	\$ 0.03		\$ 0.99	\$ 0.83	NA	\$ 1.19	
Pro forma EPS	\$ 0.17	\$ 0.05		\$ 1.06	\$ 0.90	NA	\$ 1.27	

## Valuation

Our new Buy rating (upgraded from Neutral) and increased \$28.50 PT (up from \$24.50) PT is based on a 9x 2025E EV/EBITDA valuation methodology (previously 7x), as order activity is showing signs of improvement that give us increasing confidence that the company is positioned for a return to Y/Y growth in 2H25 against easy comps. Shares are also already trading below the company's book value of \$24+ per share and management is pursuing new business development activities for high-value applications (e.g., electrification, industrial automation, and AMS) that could support sales and gross margin expansion.

## Risks

**M&A integration.** VPG has historically been, and may continue to be, highly acquisitive. If the company is unable to successfully integrate future acquisitions, the business could be negatively affected.

**Execution risk.** There is the risk that management may not execute well on its restructuring efforts as it allocates capital and human resources toward acquisitions and related integration, possibly resulting in lower margins and cash flow than expected.

**Competition.** VPG maintains a significant share of the foil resistor and foil strain gage markets it serves. Should competitors succeed in developing and introducing superior products, VPG's operating results could be negatively affected.

**Dual class structure.** The company has two classes of common stock; holders of VPG common stock are entitled to one vote per share, while holders of VPG Class B common stock are entitled to 10 votes per share, and the shares are convertible to common stock on a one-for-one basis. The ownership of Class B convertible common stock represents ~45% of the total voting power of VPG.

**Intellectual property rights.** VPG relies on applicable patent, trademark, copyright, and trade secret laws, as well as nondisclosure and confidentiality arrangements, to protect the rights to its technology. There can be no assurance that the protection of VPG's IP will be enough to deter misappropriation or misuse.

**International exposure.** The company generates significant revenue from international customers and has manufacturing operations in foreign countries, exposing the company to a variety of risks, including foreign currency translation risk.

**Loss of key personnel.** We believe that the current management team will be instrumental in executing the company's growth strategy. The resignation of a key member of management could have a negative impact on the company.

**Economy.** A decline in economic growth or economic disruptions may have a negative impact on operating results.

**Cyclicality.** Certain end markets that VPG serves have historically shown varying degrees of cyclicality; cyclical downturns in these markets, domestically or abroad, may lead to a material deterioration in the company's results.

**Sales cycle.** VPG dedicates significant resources to obtain design wins without assurance that it will be successful. Additionally, customers often require a lengthy period of on-site testing before committing to purchase products or systems. The sales cycle could lengthen beyond what is normal, which may negatively affect operating results.

**Third-party suppliers.** VPG sources raw materials from several third-party vendors, but certain materials are available only from a limited number of suppliers. Any future delays or price increases from these third parties could negatively impact operating results.

**Commodity price fluctuations.** VPG relies on obtaining certain raw materials for its products; price increases for raw materials could have negative impacts on operating results if VPG is unable to pass on increased costs to customers. Declining prices for raw materials could also result in inventory write-downs, as the company records inventory at the lower of cost or market.

**Leverage.** VPG's debt may adversely affect the company's financial condition if sufficient cash flow cannot be generated to service the debt or if the company fails to comply with related covenant restrictions.

**Trading volume.** Positions in VPG may be difficult to accumulate or exit, as the average daily trading volume is relatively low.

Vishay Precision Group Model - VPG																		
B. Riley Securities																		
(\$000's)	2021	2022	Mar Q1a	Jun Q2a	Sep Q3a	Dec Q4a	2023	Mar Q1a	Jun Q2a	Sep Q3a	Dec Q4a	2024	Mar Q1e	Jun Q2e	Sep Q3e	Dec Q4e	2025	2026
Revenue:																		
Net Revenue	317,919	362,580	88,864	90,802	85,854	89,528	355,048	80,783	77,359	75,727	72,653	306,522	73,102	74,302	78,277	82,974	308,655	326,946
Cost of products sold	192,777	212,978	51,665	52,090	49,919	51,032	204,706	45,689	44,952	45,467	44,882	180,990	44,154	44,284	45,322	46,797	180,557	190,261
Gross profit	125,142	149,602	37,199	38,712	35,935	38,496	150,342	35,094	32,407	30,260	27,771	125,532	28,948	30,018	32,955	36,177	128,098	136,685
Selling, general, and administrative expenses	95,273	104,285	27,159	26,755	26,558	26,356	106,828	27,394	26,501	26,337	27,273	107,505	27,528	27,403	27,303	27,403	109,637	111,777
Impairment, restructuring and other costs	2,497	1,518	116	162	1,153	129	1,560	782	-	82	299	1,163	250	250	250	250	1,000	1,000
EBIT	27,372	43,799	9,924	11,795	8,224	12,011	41,954	6,918	5,906	3,841	199	16,864	1,170	2,365	5,402	8,524	17,461	23,908
Nonrecurring, noncash, or unusual items	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Operating income	27,372	43,799	9,924	11,795	8,224	12,011	41,954	6,918	5,906	3,841	199	16,864	1,170	2,365	5,402	8,524	17,461	23,908
Interest expense	1,230	2,269	997	1,079	1,119	779	3,974	628	649	648	587	2,512	609	589	569	549	2,315	1,995
Other income (expense)	(230)	3,558	275	1,019	1,671	(2,509)	456	1,860	1,701	(2,646)	2,297	3,212	-	-	-	-	-	-
Income before provision for income taxes	25,912	45,088	9,202	11,735	8,776	8,723	38,436	8,150	6,958	546	1,910	17,564	562	1,776	4,833	7,975	15,145	21,913
Income tax expense (benefit)	5,469	8,535	2,220	3,384	2,419	4,403	12,426	2,318	2,316	1,874	1,222	7,730	152	480	1,305	2,153	4,089	5,917
Income from continuing operations	20,443	36,553	6,982	8,351	6,357	4,320	26,010	5,832	4,642	(1,328)	688	9,834	410	1,297	3,528	5,822	11,056	15,996
Less: Net income attributable to non-controlling interest	222	490	18	115	77	93	303	(59)	39	23	(80)	(77)	-	-	-	-	-	-
Net income attributable to shareholders	20,221	36,063	6,964	8,236	6,280	4,227	25,707	5,891	4,603	(1,351)	768	9,911	410	1,297	3,528	5,822	11,056	15,996
Suppl Disc: Pro-forma net income	25,606	35,883	7,035	7,957	6,441	8,235	29,668	5,669	4,150	2,482	400	12,701	660	1,547	3,778	6,072	12,056	16,996
Earnings per share:																		
Pro-forma EPS	1.87	2.62	0.52	0.58	0.47	0.61	2.17	0.42	0.31	0.19	0.03	0.95	0.05	0.12	0.28	0.45	0.90	1.27
GAAP	1.48	2.63	0.51	0.60	0.46	0.31	1.88	0.44	0.34	(0.10)	0.06	0.74	0.03	0.10	0.27	0.43	0.83	1.19
Diluted shares outstanding	13,657	13,688	13,652	13,670	13,686	13,604	13,653	13,468	13,389	13,254	13,252	13,385	13,272	13,405	13,292	13,425	13,349	13,417
Common Size:																		
Gross margin	39.4%	41.3%	41.9%	42.6%	41.9%	43.0%	42.3%	43.4%	41.9%	40.0%	38.2%	41.0%	39.6%	40.4%	42.1%	43.6%	41.5%	41.8%
SG&A expense	30.0%	28.8%	30.6%	29.5%	30.9%	29.4%	30.1%	33.9%	34.3%	34.8%	37.5%	35.1%	37.7%	36.9%	34.9%	33.0%	35.5%	34.2%
EBIT margin	8.6%	12.1%	11.2%	13.0%	9.6%	13.4%	11.8%	8.6%	7.6%	5.1%	0.3%	5.5%	1.6%	3.2%	6.9%	10.3%	5.7%	7.3%
EBITDA margin	15.7%	17.1%	15.9%	17.6%	16.0%	18.5%	17.0%	15.3%	13.2%	10.7%	7.0%	11.6%	7.6%	9.1%	12.6%	15.6%	11.4%	13.0%
Tax rate	21.1%	18.9%	24.1%	28.8%	27.6%	50.5%	32.3%	28.4%	33.3%	343.2%	64.0%	44.0%	27.0%	27.0%	27.0%	27.0%	27.0%	27.0%
Pro-forma tax rate	31.1%	18.8%	24.5%	26.2%	26.7%	40.3%	29.1%	25.5%	21.3%	189.6%	2.9%	26.5%	27.0%	27.0%	27.0%	27.0%	27.0%	27.0%
Growth Y-O-Y																		
Net sales	17.8%	14.0%	1.4%	2.5%	-4.7%	-7.0%	-2.1%	-9.1%	-14.8%	-11.8%	-18.8%	-13.7%	-9.5%	-4.0%	3.4%	14.2%	0.7%	5.9%
EBIT	20.8%	60.0%	19.4%	11.8%	-30.8%	-8.0%	-4.2%	-30.3%	-49.9%	-53.3%	-98.3%	-59.8%	-83.1%	-60.0%	40.6%	4183.2%	3.5%	36.9%
EBITDA	31.4%	24.2%	12.1%	1.3%	-14.9%	-5.4%	-2.6%	-12.9%	-36.2%	-41.2%	-69.3%	-40.9%	-55.1%	-33.5%	22.1%	155.0%	-1.5%	20.8%
FCF	33.3%	-28.7%	-208.0%	41.6%	17.8%	99.0%	161.8%	-15.6%	-23.9%	-150.1%	-66.0%	-65.3%	42.2%	-71.6%	-202.6%	22.6%	50.0%	17.4%
Net income	89.3%	78.8%	4.5%	-23.2%	-37.4%	-51.1%	-28.8%	-16.5%	-44.4%	-120.9%	-84.1%	-62.2%	-93.0%	-72.1%	-365.7%	746.2%	12.4%	44.7%
EPS	42.1%	39.8%	6.0%	-14.6%	-31.9%	-20.6%	-17.1%	-18.3%	-46.8%	-60.2%	-95.0%	-56.3%	-88.2%	-62.8%	51.8%	1398.3%	-4.8%	40.3%
Selected Financial Information																		
Price	\$ 23.02	\$ 23.02	\$ 23.02	\$ 23.02	\$ 23.02	\$ 23.02	\$ 23.02	\$ 23.02	\$ 23.02	\$ 23.02	\$ 23.02	\$ 23.02	\$ 23.02	\$ 23.02	\$ 23.02	\$ 23.02	\$ 23.02	\$ 23.02
Market cap	315,075	314,845	314,269	314,683	315,052	313,164	313,164	310,033	308,215	305,107	305,061	305,061	305,521	308,583	305,982	309,044	309,044	308,203
Cash & investments	84,335	88,562	93,281	98,521	95,632	83,965	83,965	83,016	84,128	81,077	79,272	79,272	84,207	84,589	86,632	91,246	91,246	106,000
Debt, short and long-term	60,714	60,799	60,803	60,799	53,827	31,856	31,856	31,885	31,914	31,383	31,441	31,441	30,441	29,441	28,441	27,441	27,441	23,441
Enterprise value	291,454	287,082	281,791	276,961	273,247	261,055	261,055	258,902	256,001	255,413	257,230	257,230	251,756	253,435	247,791	245,239	245,239	225,644
Sales (LTM)	317,919	362,580	363,779	365,963	361,760	355,048	355,048	346,967	333,524	323,397	306,522	306,522	298,841					

\*Closing price of last trading day immediately prior to the date of this publication unless otherwise indicated.

## Important Information

This report has been prepared by B. Riley Securities, Inc. ("B. Riley Securities") and may be distributed by its affiliates and subsidiaries as third-party research pursuant to FINRA Rule 2241. B. Riley Wealth Management, Inc. ("B. Riley Wealth") is a subsidiary of B. Riley Financial, Inc., which is the parent company to B. Riley Securities and B. Riley Wealth. As such, B. Riley Wealth may distribute B. Riley Securities research pursuant to Rule 2241 and by mutual agreement.

B. Riley Securities, B. Riley Wealth, is a broker-dealer registered with the SEC and are members of FINRA, SIPC, and the NASDAQ stock market.

The principal business address of B. Riley Securities is 11100 Santa Monica Blvd., Suite 800, Los Angeles, CA 90025.

## Company-Specific Disclosures

B. Riley Securities, Inc. acts as a market maker or liquidity provider for Vishay Precision Group, Inc.'s securities.

For up-to-date B. Riley Securities, Inc. company disclosures, please click on the following link or paste the URL in a web browser: <https://brileysecurities.bluematrix.com/sellside/Disclosures.action>.

## General Disclosures

### Information about the Research Analyst Responsible for this report:

The primary analyst(s) covering the issuer(s), Josh Nichols, CFA, certifies (certify) that the views expressed herein accurately reflect the analyst's personal views as to the subject securities and issuers and further certifies that no part of such analyst's compensation was, is, or will be, directly or indirectly, related to the specific recommendations or views expressed by the analyst in the report. The analyst(s) responsible for this research report has received and is eligible to receive compensation, including bonus compensation, based on B. Riley Securities, Inc.'s overall operating revenues, including revenues generated by its investment banking activities.

### Information about B. Riley Securities, Inc.'s Conflicts Management Policy:

B. Riley Securities, Inc.'s Research conflicts management policy is available at: <https://brileyfin.com/conflicts-management-policy/>.

### Information about investment banking:

In the normal course of its business, B. Riley Securities, Inc. or any of their affiliates seek to perform investment banking and other services for various companies and to receive compensation in connection with such services. As such, investors should assume that B. Riley Securities, Inc., or any of their affiliates intend to seek investment banking or other business relationships with the companies covered in their research reports.

### Information about lending activity

From time to time, affiliates of B. Riley Securities, Inc. may seek to engage in lending activities and other similar services for various companies and to receive compensation in connection with such services. As such, investors should assume that B. Riley Securities, Inc. or any of its affiliates intends to seek to engage in lending activities or other similar services with the companies covered in their research reports.

### Information about our recommendations, holdings and investment decisions:

The information and rating(s) included in this report represent the long-term view as described more fully below. The analyst may have different views regarding short-term trading strategies with respect to the stocks covered by the rating(s), options on such stocks, and/or other securities or financial instruments issued by the company, and such views may be made available to all or some of our clients from time to time. Our brokers also may make recommendations to their clients, and our affiliates may make investment decisions that are contrary to the recommendations contained in this research report. Such recommendations

or investment decisions may be based on the particular investment strategies, risk tolerances, and other investment factors of that particular client or affiliate. From time to time, B. Riley Securities, Inc., its affiliated entities, or their respective directors, officers, employees, or members of their immediate families may have a long or short position in the securities or other financial instruments mentioned in this report.

We provide to certain customers on request specialized research products or services that focus on covered stocks from a particular perspective. These products or services include, but are not limited to, compilations, reviews, and analysis that may use different research methodologies or focus on the prospects for individual stocks as compared to other covered stocks or over differing time horizons or under assumed market events or conditions. Readers should be aware that we may issue investment research on the subject companies from a technical perspective and/or include in this report discussions about options on stocks covered in this report and/or other securities or financial instruments issued by the company. These analyses are different from fundamental analysis, and the conclusions reached may differ. Technical research and the discussions concerning options and other securities and financial instruments issued by the company do not represent a rating or coverage of any discussed issuer(s). The disclosures concerning distribution of ratings and price charts refer to fundamental research and do not include reference to technical recommendations or discussions concerning options and other securities and financial instruments issued by the company.

Our analysts' short-term views, recommendations by our brokers, views contained in products and services provided to customers on an individualized basis, and/or strategies, analysis, or decisions made by B. Riley Securities, Inc. or its affiliates and their respective directors, officers, employees, or members of their immediate families may be different from those published by the analyst in this report and could impact the price of the securities mentioned in this report.

#### Information about our rating system:

B. Riley Securities, Inc. uses the following three-tiered rating system for securities covered in their research reports:

- **Buy:** We generally expect "Buy" rated stocks to have an above-average risk-adjusted total return over the next 12 months. We recommend that investors buy the securities at the current valuation.
- **Neutral:** We generally believe "Neutral" rated stocks will have an average risk-adjusted total return over the next 12 months.
- **Sell:** We generally expect "Sell" rated stocks to have a below-average risk-adjusted total return over the next 12 months. We recommend that investors reduce their positions until the valuation or fundamentals become more compelling.

Rating	B. Riley Securities, Inc. Research Distribution <sup>1</sup>	B. Riley Securities, Inc. Banking Services in the past 12 months <sup>1</sup>
BUY [Buy]	79.94%	40.93%
HOLD [Neutral]	19.44%	12.70%
SELL [Sell]	0.62%	0.00%

(1) As of midnight on the business day immediately prior to the date of this publication.

#### General Information about B. Riley Securities, Inc. Research:

Additional information on the securities mentioned in this report is available upon request. This report is based on data obtained from sources we believe to be reliable but is not guaranteed as to accuracy and does not purport to be complete. Opinions are as of the date of the report unless labeled otherwise and are subject to change without notice. Updates may be provided based on developments and events and as otherwise appropriate. Updates may be restricted based on regulatory requirements or other considerations. Consequently, there should be no assumption that updates will be made. B. Riley Securities, Inc. or any of their affiliates disclaim any warranty of any kind, whether express or implied, as to any matter whatsoever relating to this research report and any analysis, discussion, or trade ideas contained herein. This research report is provided on an "as is" basis for use at your own risk, and B. Riley Securities, Inc. or any of their affiliates are not liable for any damages or injury resulting from use of this information. This report should not be construed as advice designed to meet the particular investment needs of any investor or as an offer or solicitation to buy or sell the securities or financial instruments mentioned herein, and

any opinions expressed herein are subject to change. Some or all of the securities and financial instruments discussed in this report may be speculative, high risk, and unsuitable or inappropriate for many investors. B. Riley Securities, Inc. or any of their affiliates make no representation as to the suitability or appropriateness of these securities or financial instruments for individual investors. Investors must make their own determination, either alone or in consultation with their own advisors, as to the suitability or appropriateness of such investments based upon factors including their investment objectives, financial position, liquidity needs, tax status, and level of risk tolerance. These securities and financial instruments may be sold to or purchased from customers or others by B. Riley Securities, Inc. or any of their affiliates acting as principal or agent.

Securities and financial instruments issued by foreign companies and/or issued overseas may involve certain risks, including differences in accounting, reporting, and registration, as well as foreign currency, economic, and political risks.

This report and the securities and financial instruments discussed herein may not be eligible for distribution or sale in all jurisdictions and/or to all types of investors. This report is provided for information purposes only and does not represent an offer or solicitation in any jurisdiction where such offer would be prohibited. Commentary regarding the future direction of financial markets is illustrative and is not intended to predict actual results, which may differ substantially from the opinions expressed herein.

B. Riley Securities, Inc. utilizes a tiered approach to service its clients. The services provided by B. Riley Securities, Inc.'s research analysts to clients vary based upon a variety of factors, including, but not limited to, client preferences and the extent of a client's total relationship with the Firm. B. Riley Securities, Inc. does not provide any of the Firm's clients with access to unpublished research opinions. B. Riley Securities, Inc. provides clients across all tiers equal access to research reports.

#### Paired Trade Disclaimer

From time to time, B. Riley Securities, Inc. Research Analysts will offer short-term trading ideas, including identifying a paired trade. In a paired trade, an investor buys the securities of one company and sells the securities of another company. The idea to buy the securities of one company and sell the securities of the other company is based on the expected short-term price move or relative value between the two companies mentioned in the paired trade, not between the companies and any other companies. In contrast, the recommendations in a Research Analyst's published report reflect the Research Analyst's views on a company over the long term (i.e., the next 12 months) relative to other companies covered by the Research Analyst. The trade idea in a paired trade is unrelated to the Research Analyst's long-term view of the companies as expressed in the Research Analyst's most recently published research report. A paired trade idea to sell a company that is rated as Neutral or higher, or to buy a security that is rated Neutral or lower, is not inconsistent because the call to sell or buy the company is relative to the other company mentioned in the paired trade over the short term; it is not a long-term view relative to other companies covered by the Research Analyst.

#### Important information for B. Riley Securities, Inc. Clients with French Addresses and Potential Investors:

Addresses and potential investors based in France expressly acknowledge that they have not been subject to any kind of solicitation by B. Riley Securities, Inc. or its affiliates, as defined under Article L.341-1 and seq. of the French Monetary and Financial code.

The above analyses have not been prepared in the context of a public offering of financial instruments in France within the meaning of Article L.411-1 and seq. of the French Monetary and Financial code and shall not be deemed to be drawn up for the purpose of providing investment services as defined under Article L.321-1 and seq. of the French Monetary and Financial code. In this respect, the above analyses shall not be qualified as personalized investment advice related to financial instruments under French law and shall, therefore, not be deemed to be qualified as investment advice provided by B. Riley Securities, Inc. or its affiliates.

Addresses and potential investors based in France may initiate the first contact with B. Riley Securities, Inc. in order to get additional information on financial analyses and services provided by the latter. By doing so, addresses and potential investors based in France expressly acknowledge that the banking and financial solicitation regime as defined under Article L.341-1 and seq. of the French Monetary and Financial code shall not be applicable.

#### Information for Clients of B. Riley Securities, Inc.:

This publication has been approved by B. Riley Securities, Inc. which accepts responsibility for its contents and its distribution to our clients. Any B. Riley Securities, Inc. client who receives this research and wishes to effect a transaction in the securities or financial instruments discussed should contact and place orders with a B. Riley Securities, Inc. Sales representative.

Copyright 2025 B. Riley Securities, Inc.

