



Ronen Wyrick

Joseph McDonald

Edward Xin

5/2/23

# Keysight Technologies (KEYS)

Current Price:	\$142.04
Target Price:	\$171
Upside:	18%

- I. Solid historical growth and attractive prospects for future growth driven by macroeconomic trends.
- II. Substantial R&D spending and cutting-edge products ensure Keysight's future relevance
- III. Recent price drops present attractive entry point.

**Order Type:**

Market

**Allocation:**

21 shares (~\$3,000)

PHIG President

PHIG Director

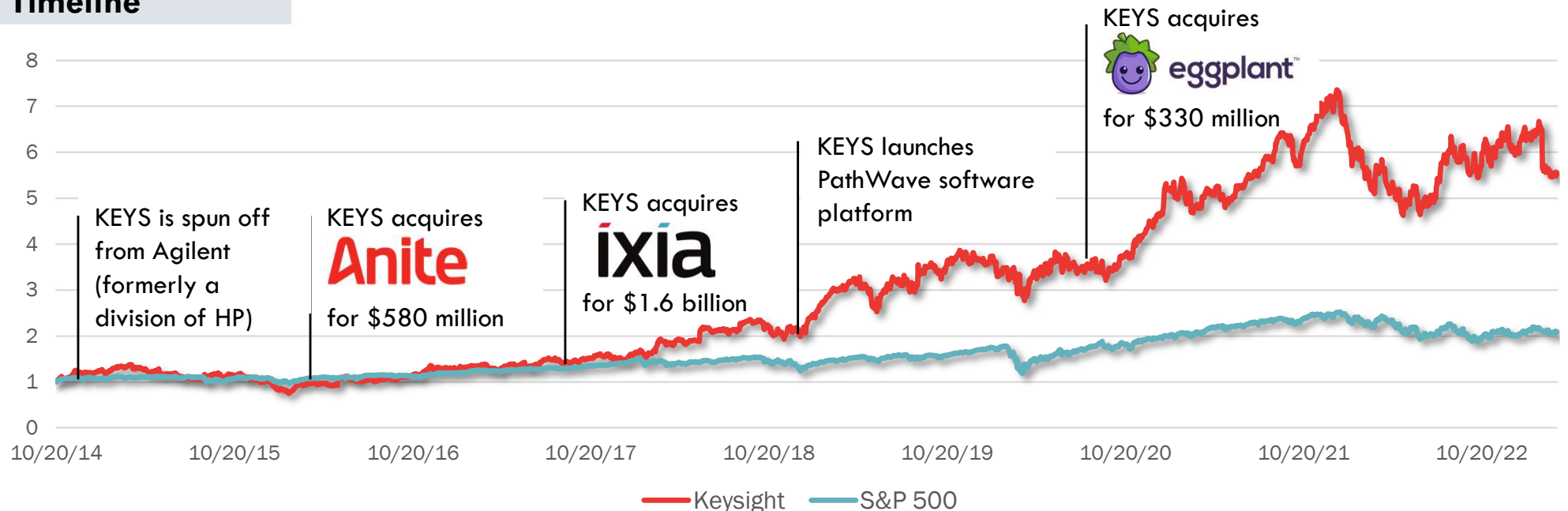
VP of Finance

# Company Overview

## Key Highlights

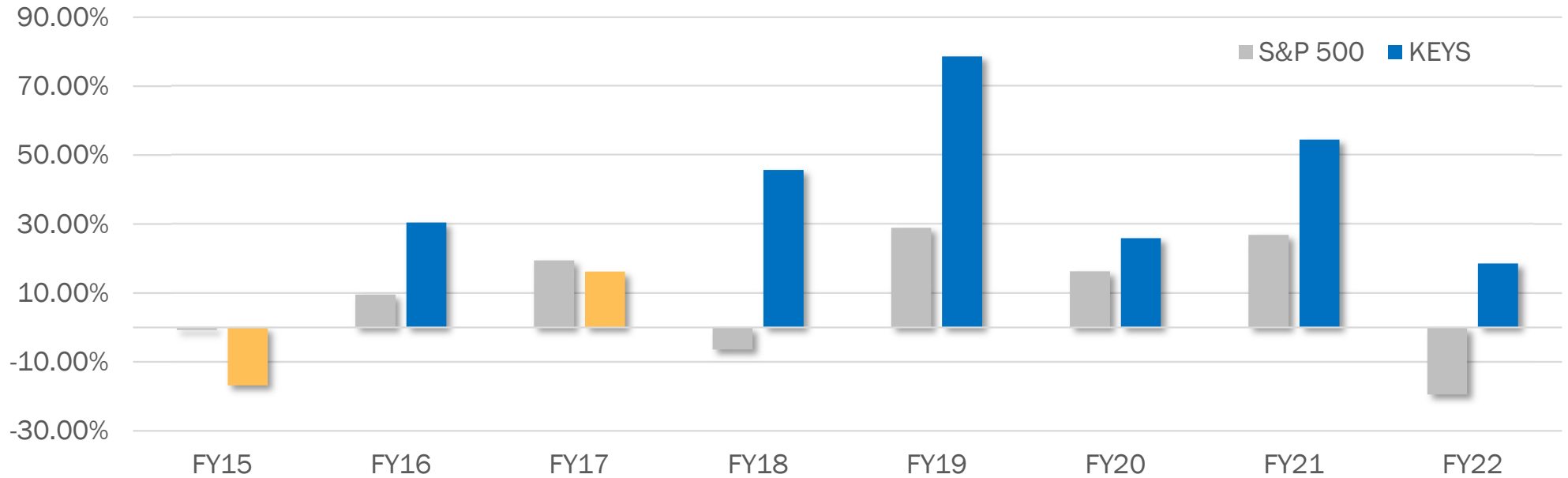
- Keysight Technologies is the market leader for **electronic testing and optimization technology**.
- Keysight has **2 main operating segments** servicing 2 types of customers: the **Communications Solutions Group** and the **Electronic Industrial Solutions Group**. Keysight has **30,000 customers** with none making up more than **10% of revenue**.
- **Products and Services:** In each segment, Keysight focuses on delivering end-to-end testing solutions through:
  - Hardware & Equipment
  - Testing Software
  - Professional Services.
- Keysight is working to expand its software & services revenue to increase stickiness and margins. **Last year service revenue saw a 6% increase.**

## Timeline

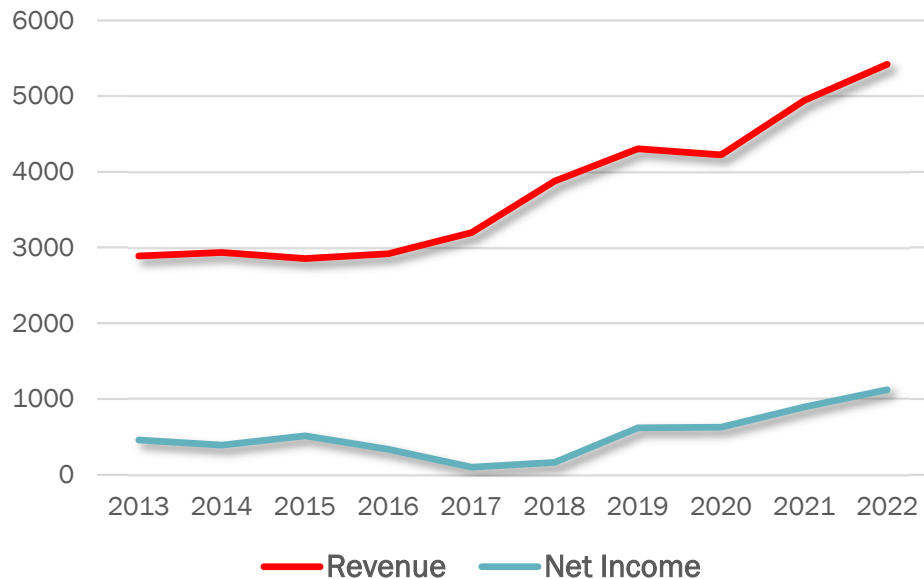


# Financial Overview

## Historical Performance



## Revenue and Profit



## Summary

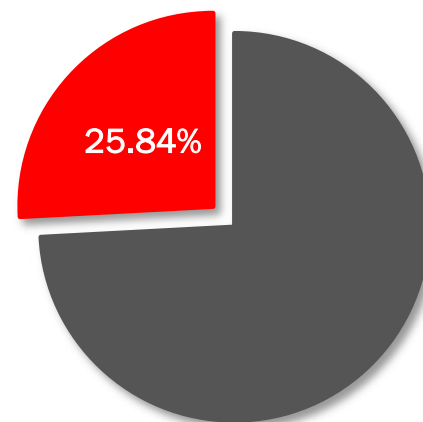
- KEYS has outperformed the S&P 500 6 out of the past 8 years.
- KEYS revenue is broken down between the **CSG** and **EISG** segments. CSG accounts for **68%** of revenue. EISG accounts for **32%** of revenue.
- KEYS has seen reliable growth in both revenue and profit. Since the company's spinoff in 2014, revenue has had a **9% CAGR**, while net income has had an **11% CAGR**.

# Industry Analysis: Summary

## Industry Overview

- Electronic Testing & Optimization companies produce and service instruments and software enabling electronic innovation.
- These companies are essential for electronics manufacturing and enjoy high margins.
- While there are 5-8 significant players in the market, Keysight controls the largest chunk of market share – nearly 26%.

## Keysight's Market Share



## Porter's Five Forces

Competitive Rivalry	New Entrants	Power of Suppliers	Power of Buyers	Substitutes
<b>High</b>	<b>Medium/Low</b>	<b>Low</b>	<b>Medium</b>	<b>Low</b>
<ul style="list-style-type: none"> <li>▪ 8+ Testing companies already in market.</li> <li>▪ Innovating market reduces durability of competitive advantages.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Innovation allows new entrants</li> <li>▪ Significant entry-level capital requirements.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Large choice of suppliers for electric components (semiconductors, cables, sensors, etc.)</li> </ul>	<ul style="list-style-type: none"> <li>▪ Large customer base (most electronics companies and network providers).</li> <li>▪ Relatively low switching costs.</li> <li>▪ Companies become integrated into product ecosystem.</li> </ul>	<ul style="list-style-type: none"> <li>▪ No replacement for electronic testing equipment.</li> </ul>

# Sustainable Competitive Advantage

## Generic Business Unit Strategy



### Product Leadership

Leapfrog of New Products: Innovation



### Operational Excellence

Unmatched Focus; Quality, Price & Ease



### Customer Intimacy

1:1 Bonding; Specific Customer Needs



### Product Differentiation

Unique Features, Product, and/or Service



### Operational Competency

Std Product, Good Quality, Capable Delivery



### Customer Responsive

Loyalty thru Broad Marketing/Service Focus

## Advantage - Strategic Dimensions & Distinctives (*Economic Moat*)

- **Product Leadership:** Keysight is the market leader for electronic testing equipment. Not only does Keysight have the largest product offering, the company maintains that lead by introducing numerous new devices every year.
  - Keysight has 3800+ U.S. and foreign patents and 73+ types of active products.
  - Keysight leads the field for R&D spending. **In 2022, Keysight spent \$841 million on R&D – 90% more than its nearest competitor.**
- Keysight is increasing stickiness and widening its economic moat via **end-to-end product offerings and increasing its revenue from services and software.**
  - Keysight's wide portfolio of products and PathWave integration software create an ecosystem that encourages customers to use more Keysight devices.
  - Software and services have low costs and increase margins and profitability. Keysight has successfully grown its services revenue by 13% and 6% the last two years.
- **Operational Efficiency:**
  - Keysight has solid gross and net margins that it has grown over the last 5 years. **Keysight's net margin is currently at 20.7% – a 1760 bp increase from 2017.**
  - Keysight has a solid balance sheet with high cash levels and low debt.

# Investment Summary

## Investment Thesis

- Keysight is in a market with significant macroeconomic tailwinds. As the leading electronic testing company, Keysight is well positioned to capitalize on **growth in 5g, cloud networks, semiconductor manufacturing, and electric vehicles.**
  - 5g growth is already evident in the CSG segment, which saw 8% growth in 2022.
  - Electric vehicle-oriented sales drove 18% growth in the EISG segment in 2022.
- **Substantial R&D Spending ensures that Keysight will remain a leader in the market.**
- **Market fears have driven down Keysight's price. However, we believe that the macroeconomic trends in Keysight's favor outweigh the possible detrimental effects of a recession. Thus, this price drop offers an attractive entry point.**

## Historical Valuation

Market Summary > Keysight Technologies Inc

**144.64** USD

+114.89 (386.18%) ↑ all time

Closed: Apr 28, 4:11 PM EDT • Disclaimer

After hours 144.64 0.00 (0.00%)

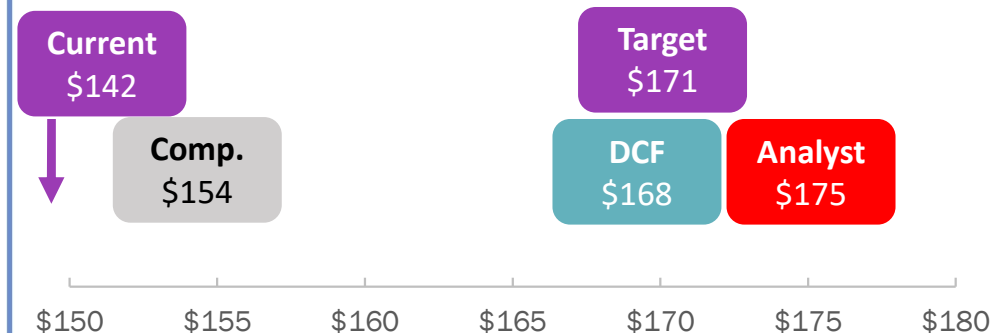
1D | 5D | 1M | 6M | YTD | 1Y | 5Y | Max



Sources: 10-K, Morningstar

## Target Prices

- Keysight's P/E of **24.3** is the lowest it has been since 2016 and far below the **average of 49.**
- DCF and Analysts project \$168-175 share price, giving an average of **\$171.**



Patrick Henry Investment Group



# Appendix: Keysight Technologies

- 1) Relative Valuations
- 2) Discounted Cash Flows
- 3) Industry Tailwinds
- 4) Industry Headwinds

# Relative Valuation

## KEYS Relative Valuation

Company	Ticker	Market Data			Financials (LTM)			Valuation (LTM)		
		Share Price	Equity Value	Enterprise Value	Revenue	EBITDA	Net Income	EV/Revenue	EV/EBITDA	P/E
Keysight Technologies	KEYS	154.51	27,524	27,940	5,551	1,649	1,155	5.0x	16.9x	23.8x
Emerson Electric	EMR	82.17	46,952	57,910	19,846	4,940	4,666	2.9x	11.7x	10.1x
Teradyne	TER	101.30	15,806	15,100	3,155	955	716	4.8x	15.8x	22.1x
Fortive	FTV	64.42	22,753	26,690	5,826	1,437	755	4.6x	18.6x	30.1x
National Instruments	NI	49.66	6,530	7,130	1,657	279	140	4.3x	25.6x	46.6x
High								4.8x	25.6x	46.6x
75th Percentile								4.6x	20.3x	34.3x
<b>Average</b>								<b>4.1x</b>	<b>17.9x</b>	<b>27.2x</b>
<b>Median</b>								<b>4.4x</b>	<b>17.2x</b>	<b>26.1x</b>
25th Percentile								4.0x	14.8x	19.1x
Low								2.9x	11.7x	10.1x
<b>Valuation (Medians)</b>								<b>EV/Revenue</b>	<b>EV/EBITDA</b>	<b>P/E</b>
Implied Enterprise Value								24,658	28,350	30,152
Net Debt								- 24	- 24	
Implied Market Value								24,682	28,374	30,152
Shares Outstanding								180	180	180
<b>Implied Value Per Share</b>								<b>137.12</b>	<b>157.64</b>	<b>167.51</b>
								<b>Average:</b>	<b>154.09</b>	



## Keysight Technologies Discounted Cash Flow Analysis

(\$ in millions, fiscal year ending December 31)

Operating Scenario		Operating Scenario										Base	
Operating Scenario	1	Historical Period					CAGR	Projection Period					CAGR
Mid-Year Convention	Y	2020	2021	2022	(*20-'22)	2023	2024	2025	2026	2027	2028	(*24-'26)	
Sales		\$4,221.0	\$4,941.0	\$5,420.0	13.3%	\$5,551.0	\$5,828.6	\$6,120.0	\$6,426.0	\$6,747.3	\$7,084.6	5.0%	
% growth		NA	17.1%	9.7%		2.4%	5.0%	5.0%	5.0%	5.0%	5.0%		
Cost of Goods Sold		1,362.0	1,579.0	1,747.0		1,803.0	1,894.3	1,989.0	2,088.4	2,192.9	2,302.5		
Gross Profit		\$2,859.0	\$3,362.0	\$3,673.0	13.3%	\$3,748.0	\$3,934.3	\$4,131.0	\$4,337.5	\$4,554.4	\$4,782.1	5.0%	
% margin		67.7%	68.0%	67.8%		67.5%	67.5%	67.5%	67.5%	67.5%	67.5%		
Selling, General & Administrative		1,768.0	1,989.0	2,116.0		2,144.0	2,214.8	2,264.4	2,345.5	2,462.8	2,585.9		
EBITDA		\$1,091.0	\$1,373.0	\$1,557.0	19.5%	\$1,604.0	\$1,719.4	\$1,866.6	\$1,992.1	\$2,091.7	\$2,196.2	6.5%	
% margin		25.8%	27.8%	28.7%		28.9%	29.5%	30.5%	31.0%	31.0%	31.0%		
Depreciation & Amortization		326.0	293.0	223.0		219.0	233.1	244.8	257.0	269.9	283.4		
EBIT		\$765.0	\$1,080.0	\$1,334.0	32.1%	\$1,385.0	\$1,486.3	\$1,621.8	\$1,735.0	\$1,821.8	\$1,912.9	6.7%	
% margin		18.1%	21.9%	24.6%		25.0%	25.5%	26.5%	27.0%	27.0%	27.0%		
Taxes		137.7	118.8	173.4		180.1	193.2	210.8	225.6	236.8	248.7		
EBIAT		\$627.3	\$961.2	\$1,160.6	36.0%	\$1,205.0	\$1,293.1	\$1,411.0	\$1,509.5	\$1,584.9	\$1,664.2	6.7%	
Plus: Depreciation & Amortization		326.0	293.0	223.0		219.0	233.1	244.8	257.0	269.9	283.4		
Less: Capital Expenditures		(117.0)	(174.0)	(185.0)		(185.0)	(192.3)	(202.0)	(212.1)	(222.7)	(233.8)		
Less: Inc./(Dec.) in Net Working Capital							22.0	(39.3)	(41.3)	(43.3)	(45.5)		
<b>Unlevered Free Cash Flow</b>							\$1,355.9	\$1,414.5	\$1,513.2	\$1,588.8	\$1,668.3		
WACC		9.7%											
Discount Period							0.5	1.5	2.5	3.5	4.5		
Discount Factor							0.95	0.87	0.79	0.72	0.66		
<b>Present Value of Free Cash Flow</b>							\$1,294.5	\$1,231.1	\$1,200.5	\$1,149.1	\$1,099.9		

Enterprise Value	
Cumulative Present Value of FCF	\$5,975.1
<b>Terminal Value</b>	
Terminal Year EBITDA (2028E)	\$2,196.2
Exit Multiple	17.2x
<b>Terminal Value</b>	\$37,775.3
Discount Factor	0.63
<b>Present Value of Terminal Value</b>	\$23,778.0
% of Enterprise Value	79.9%
<b>Enterprise Value</b>	\$29,753.1

Implied Equity Value and Share Price	
Enterprise Value	\$29,753.1
Less: Total Debt	(1,793.0)
Less: Preferred Stock	-
Less: Noncontrolling Interest	-
Plus: Cash and Cash Equivalents	2,228.0
<b>Implied Equity Value</b>	\$30,188.1
Fully Diluted Shares Outstanding	180.0
<b>Implied Share Price</b>	\$167.71

Implied Perpetuity Growth Rate	
Terminal Year Free Cash Flow (2028E)	\$1,668.3
WACC	9.7%
Terminal Value	\$37,775.3
<b>Implied Perpetuity Growth Rate</b>	4.9%
<b>Implied EV/EBITDA</b>	
Enterprise Value	\$29,753.1
LTM 9/30/2012 EBITDA	1,604.0
<b>Implied EV/EBITDA</b>	18.5x

# Industry Tailwinds

## Tailwinds

### 5G and IoT Development



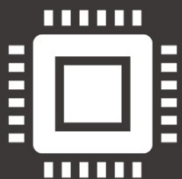
- Since 2019, 5G infrastructure/networks have seen development on a wide scale. Currently around **30% of the world has access to 5G. By 2028, analysts predict that will have grown to 85%.**
- **Electronic Testing Instruments are crucial to 5G and IoT (Internet of Things) development.** Growth in these sectors will see increased demand for testing products and contracted services.

### Electric Vehicle Utilization



- Climate concerns and energy costs are driving demands for EVs (Electric Vehicles). **Since 2015, global EV production has grown by 50% annually.**
- Looking to 2030, McKinsey projects that **EVs will account for 47% of all new auto sales.**
- Developments in EV production **require new battery, sensory, and networking technology testing instruments.**

### Semiconductor Demand



- With the CHIPS Act and other legislation, **the Federal government is subsidizing Semiconductor production infrastructure.** Semiconductors and microchips will stay in high demand looking to the future.
- Semiconductor manufacturing requires thorough testing and optimization.

# Industry Headwinds

## Headwinds

### Possible Recession



- **A potential recession would have a negative impact on consumer electronics spending and corporate investment in testing equipment.**
- Losses for tech companies will have a downward effect on testing companies' revenue. **Many companies have seen a decline in revenue in Q4 2022 and Q1 2023.**

### Supply Chain Breakdowns



- Covid-19 and labor shortages have broken many international supply chains. These disruptions slow manufacturing and create backlogs.
- **Reliant on electronic materials/components, electronic testing companies suffer in the case of supply chain breakdowns.**

### International Trade Restrictions



- Poor relations with China are leading to **enhanced international trade restrictions**. Tariffs deter exports and imports, while other **regulations prevent the export of strategic technologies**.
- Electronic testing technology can be considered strategically valuable. Recently, companies have faced government action.
- Companies will suffer if denied access to China's growing market.