

# Semiconductor WEEK:

February 4, 2022

*An overview of results and conclusions from recent reports at VLSI*

## Chip Market Research Services

### ***Order activity stayed hot amid supply chain woes***

- Order activity for semiconductor equipment held steady at a sizzling 115 degrees
- Fab Capacity Utilization by Node

## Semiconductor Analytics

### ***Last Week in the Semiconductor Market:***

Semiconductor sales continued to explode out of the normal Christmas lull, ending January near 2021's peaks. The IC weather cooled 2°F last week. Semiconductor Sales growth continued to rise above the 20% Y/Y bar. This is well above last year's levels at this time.

TechInsights' IC Supply/Demand indices loosened last week, with More than Moore Foundry dropping back to Saturated and Moore More to Loose. OSAT also slipped out of Shortage conditions to Tight. Unchanged were DRAM and Auto at Shortage levels – NAND, IDM, and Analog & Power at Tight. With the lunar New Year ahead, the loosening is still likely seasonal and not a sign of weak demand or over capacity.

Zooming in on Analog & Power this week, the 13-wk MA growth is hovering above 10% for the third week, breaking the fall from the 40-plus percent peaks in mid-2021. This is sustainable and close to TechInsights' 2022 Analog & Power forecast for sales to pass \$100B and grow at 11%.

Electronics' Retail Prices continue to soar.

## Chip History Center

**People:** Ken Schroeder, then President & CEO of KLA-Tencor, discusses the history of process control and the role K-T played in improving wafer fab yields for semiconductor companies in this 2005 video.

**Exhibits:** **The Koreans are Coming:** This landmark article from 1979 hails Korea's entry into the Semiconductor industry.

## The Chip Insider

**Strategy and Tactics:** Intel's fab in Ohio. Maxim: Trust building, Tests for and the management of trust and risk. The Three Traits of Great Leaders.

## **Semiconductor Stocks**

- *VLSI's Semiconductor Stock Indices rose this week along with the market*
- *Semiconductor Stock Index was led up by Xilinx*
  - *Xilinx was this week's biggest winner*
- *Semiconductor Equipment Stock was led up by Nikon*
- *EDA Stock Index increased*
- *Electronics Materials Stock Index slipped*
- *Hottest Stocks: Xilinx, AMD, MaxLinear, GLOBALFOUNDRIES, Nikon, and Qualcomm*

**TechInsights**

# The Chip Insider<sup>®</sup>'s Graphics File



## January 2022

### Order activity stayed hot amid supply chain woes

- Order activity for semiconductor equipment held steady at a sizzling 115 degrees
- The equipment spending profile will likely become more second-half loaded
- VLSI's Chip Price Performance Index rose



Forecast as of January 2022:	2021	2022
<b>Semi Equipment (\$B):</b>	<b>\$ 124.7</b>	<b>\$ 149.9</b>
Sequential Change	35.0%	20.2%
<b>Capacity Utilization:</b>	97.3%	96.5%
<b>ICs (\$B):</b>	<b>\$ 487.6</b>	<b>\$ 540.6</b>
Sequential Change	26.2%	10.9%
<b>IC Units (BU):</b>	394.2	434.0
Sequential Change	23.7%	10.1%
<b>Electronics (\$B) :</b>	<b>\$ 2,536</b>	<b>\$ 2,710</b>
Sequential Change	17.1%	6.8%

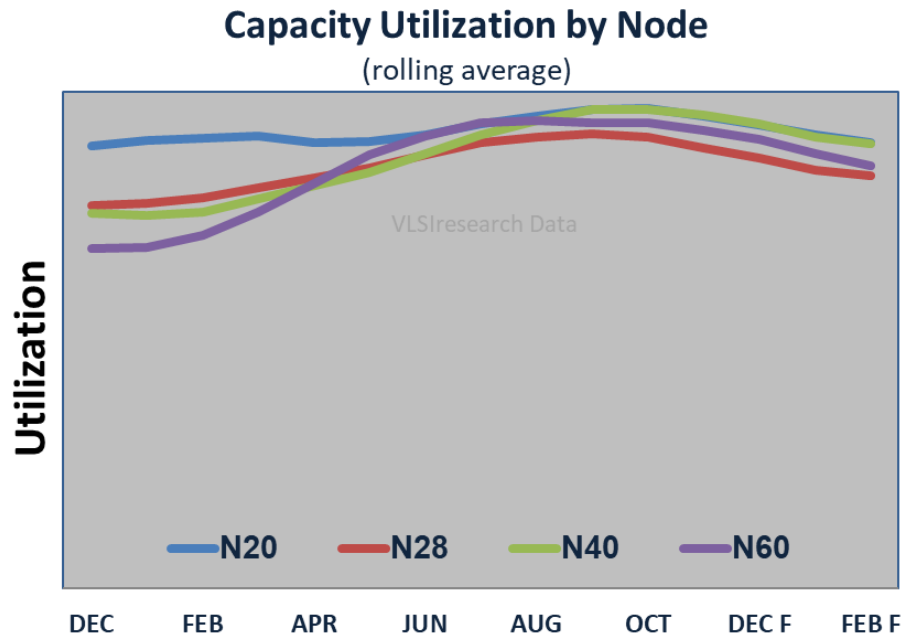
[Contact us to access more details](#)

# The Chip Insider<sup>®</sup> Graphics

## Capacity Utilization by Node:

- Utilization rates remain at very record levels

**Fab Capacity Utilization by Node:** chart gives rolling averages for 20nm 22nm 28nm 32nm 40nm 45nm 60nm 65nm and larger



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weVISION Interview:

## Memory Market Forecast 2022...

with Jim Handy of Objective  
Analysis



## What the conversation is about:

- In this video conversation, Dan talks with Jim about how 2021 unfolded, how it was different, and what he expects will happen in the markets for DRAM and NAND in 2022. Jim has been one of our most popular guests and is one of the most respected memory analysts in the world.

[Click here to watch online](#) or on the weVISION button in VLSI's mobile app

**TechInsights**



# Semiconductor Analytics

## Last Week in the Semiconductor Market:

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Electronics' Retail Prices continue to soar.



1: Measures Order Activity 2: Measures Pricing Power

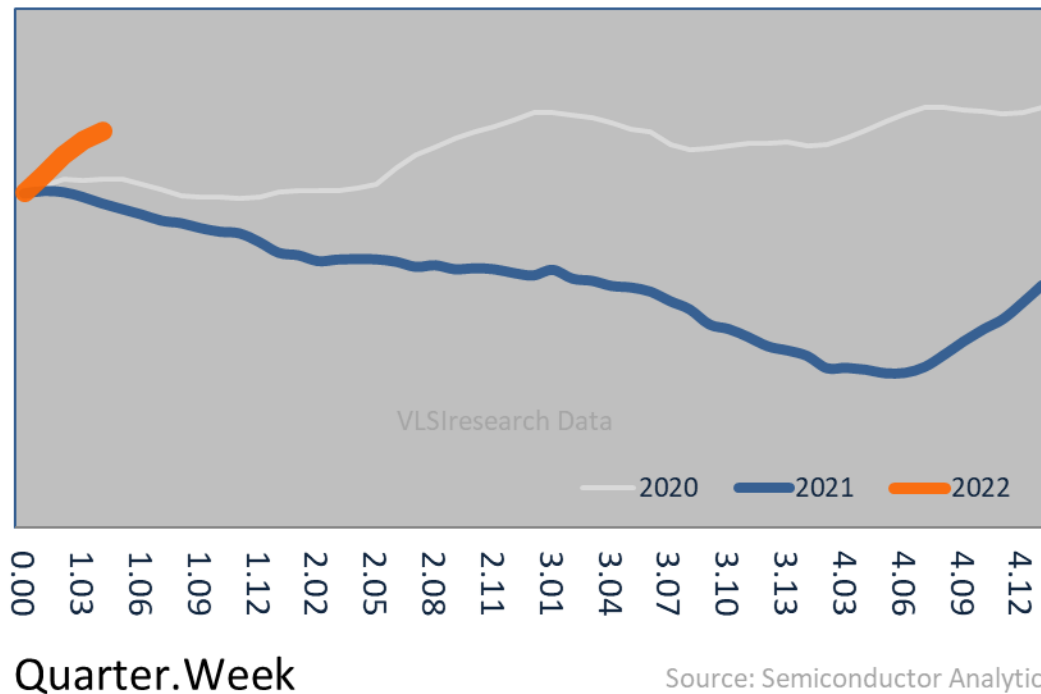
# Electronics Retail Pricing Trends:

for PC notebooks Tablets Smartphones Cell phones Digital Cameras Appliances TVs

Electronics' Retail Prices continue to soar.

## Electronics Pricing Barometer

indexed 13 week moving average



VLSIresearch Data

— 2020 — 2021 — 2022

Chart approved for public release with attribution.  
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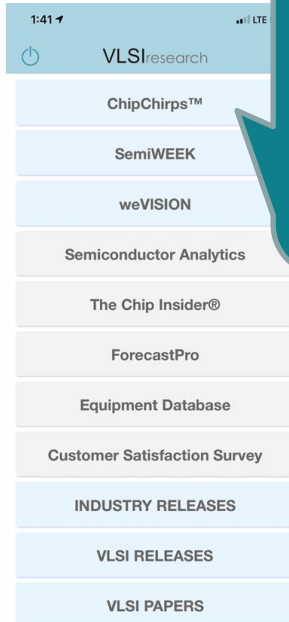
Source: Semiconductor Analytics

TechInsights

# Latest ChipChirps™

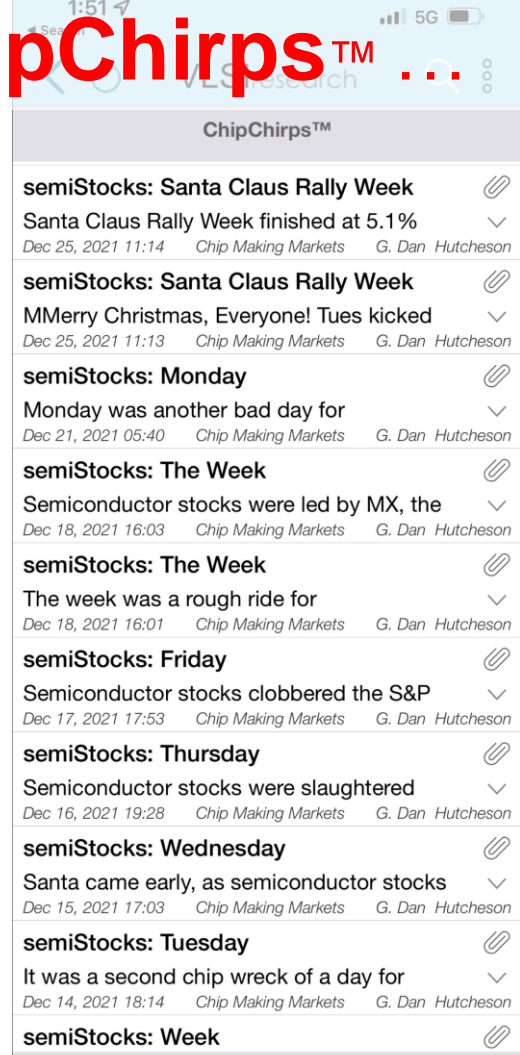
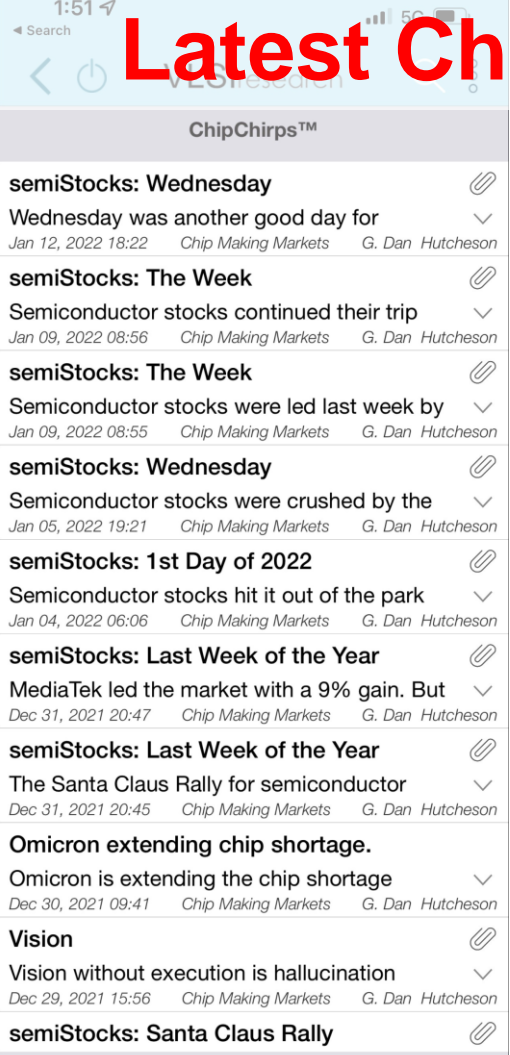
on VLSI's app

ChipChirps™ are short notifications from VLSI's analysts to alert clients about breaking news and events



Get it on iOS or Android

Search for 'VLSIresearch' at the Apple App or Google Play store



## Strategy & Tactics



**Strategy and Tactics:** Intel's fab in Ohio. Maxim: Trust building, Tests for and the management of trust and risk. The Three Traits of Great Leaders.

### Summaries:

**Intel's fab in Ohio:** Since Insiders read this I'm sure many already know of, or you already read of Intel's plans for an initial spend of >\$20 billion in the construction of two new leading-edge fabs in New Albany, Ohio. To support this, Intel pledged an additional \$100 million toward partnerships with educational institutions to build a talent pipeline and bolster research in the region. The investment is targeted at providing trusted capacity for foundry customers. But in reality, Intel's move meets multiple strategic objectives...

**Maxim:** Trust building grows value, speeds Time to Market, and accelerates Time to Solution. It is a general principle that trust between an organization and its suppliers/customers can be a competitive advantage when there is a lack of it at competitors. It is the difference between the degree to which you value your partnerships versus your how your competitors value them that matters. That difference has proved critical in past wars for market

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share. The rise of TSMC is a perfect example. It is well known how [in](#) Morris Chang built trust with fabless customers by promising to never compete with them ... and TSMC grew with it to become "the trusted capacity provider." What is not so well known is how Morris did the same with his suppliers...

**The Chip History Center:** Maxims reloaded — Tests for and the management of trust and risk. The Three Traits of Great Leaders.

**VLSIinsiders: Semiconductor Downturn Horizon 2022 Semiconductor Forecast Memory Technology Forecast** – NOW available as downloadable podcasts on the VLSI Smartphone app. Also, check out **ChipChirps™** where you'll find VLSI's Semiconductor Analytics report, semiStocks-weekday and more. – Click on the Chip Insider® button in VLSI's App for Android and iOS to [download](#) or [Click here](#) for the website.

*"When everything seems to be going against you ...  
remember that the airplane takes off against the wind"  
— Henry Ford*





**People:** [Ken Schroeder](#), then President & CEO of KLA-Tencor, discusses the history of process control and the role K-T played in improving wafer fab yields for semiconductor companies in this 2005 video. He describes the new wafer inspection tools they introduced that

year: The Puma dark-field tool and the 2800 bright-field system. Other topics include How IC makers save money using process control. Focus is on ramping 65nm and bringing 45nm to production.



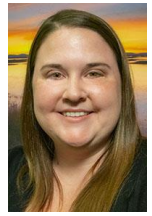
**Exhibits:** [The Koreans are Coming](#)

This landmark article from 1979 hails Korea's entry into the Semiconductor industry. It's truly amazing how little the Korean government actually allotted to get their country into the chip making game and how much they got out of it. Today's memory giants have their roots in this investment.



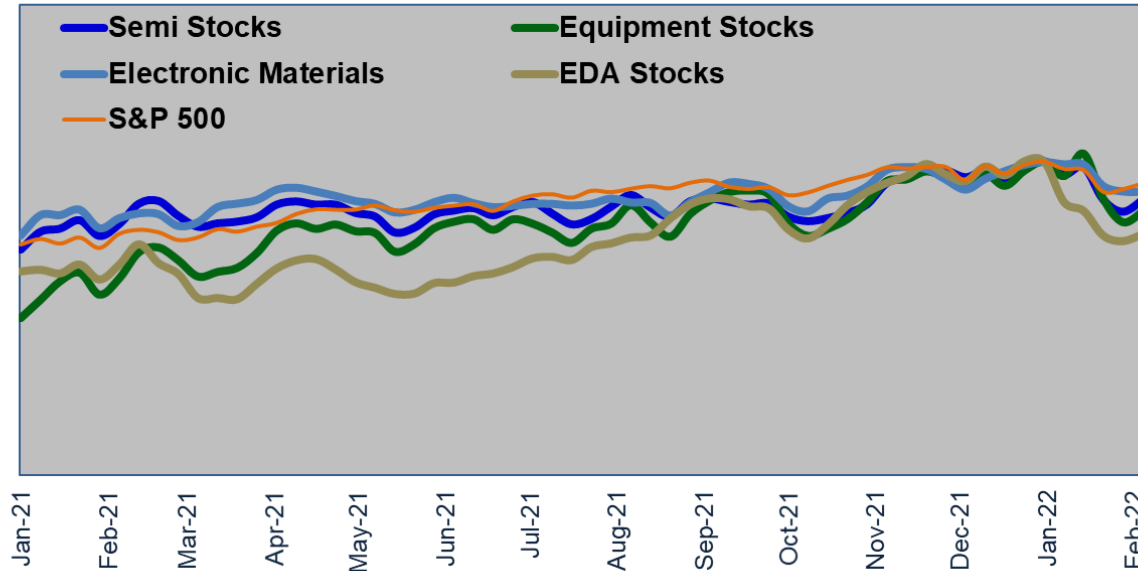
# semiStockWEEK:

VLSI's Semiconductor Stock Indices rose this week along with the market as investors focus on the release of quarterly results and a stronger than expected January job report.



## Semiconductor Industry Stock Performance Indices

(Stock Prices Indexed to 100 in last week of 2021)



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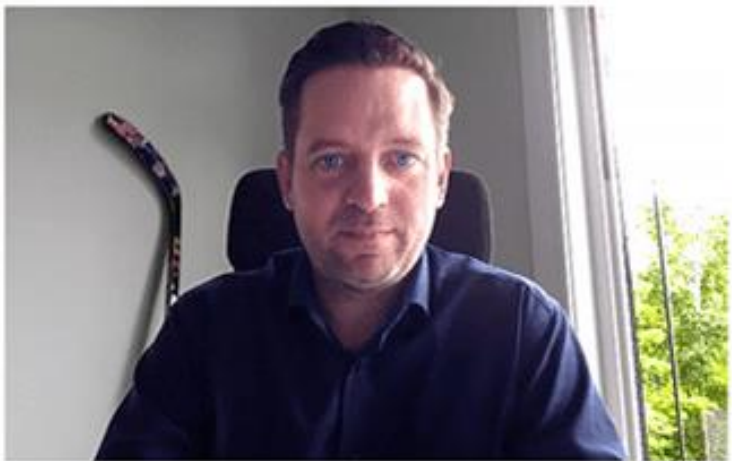
### VLSI's Stock Indices:

Semiconductors +3.5%  
Equipment +3.3%  
Electronic Materials -0.1%  
EDA +2.3%

weVISION Interview:

# Announcing a new and exciting combination: VLSIresearch joins forces with TechInsights!

Effective August 16, 2021



## What the conversation is about:

The business of technology is inseparable from the technology of the business. Unlike classic business, the business of technology is about constant change. It's time to bring core-technology and market analysis together, which explains why TechInsights has acquired VLSIresearch.

[Click here to watch online](#) or on the weVISION button in VLSI's mobile app

[Click here to read more about this development](#) or on the VLSI RELEASES button in VLSI's mobile app

**TechInsights**

# Semiconductor Stocks:

## Weekly Growth and Forward P/E Ratios by Company

Weekly Gains			2/4/2022		
Semiconductor Stocks	Price Change	Forward P/E	Semiconductor Stocks	Price Change	Forward P/E
<b>IDM</b>			<b>Fab-lite to Fabless</b>		
Intel	0.6%	13	AMD	17.4%	31
Micron	2.4%	7	Analog Devices	1.5%	19
ON Semiconductor	6.8%	16	Broadcom	5.4%	16
Samsung Electronics	1.0%	–	IBM	2.0%	13
SK hynix	3.3%		Infineon	-1.0%	19
STMicroelectronics	-1.8%	15	MagnaChip Semiconductor	6.6%	16
Western Digital	3.8%	5	MaxLinear	13.2%	17
<b>Foundry &amp; OSAT</b>			MediaTek	0.0%	–
Amkor	-0.3%	8	NVIDIA	6.5%	44
ASE	4.0%	9	Panasonic	-3.0%	10
GLOBALFOUNDRIES	13.0%	26	Qualcomm	7.6%	14
JCET	0.0%	16	Silicon Laboratories	2.6%	66
SkyWater Technology	1.6%	–	Skyworks	-3.5%	11
SMIC	0.9%	15	Texas Instruments	-3.3%	19
TSMC	2.9%	21	Xilinx	17.5%	42
UMC	6.1%	8			

Above Avg

Top 4-6

Top 1-3

### VLSI's Semiconductor Stock Index

was led up by strong gains from Xilinx, AMD, MaxLinear, GLOBALFOUNDRIES, and Qualcomm who all claimed five of the top stock spots this week.

IDM +2.3%

Foundry & OSAT +3.5%

Fabless & Fablite +4.6%

AMD<sup>AMD</sup> Analog Devices<sup>ADI</sup> Amkor<sup>AMKR</sup> ASE<sup>ASX</sup> Broadcom<sup>AVGO</sup> GLOBALFOUNDRIES<sup>GFS</sup> IBM<sup>IBM</sup> Infineon<sup>IFNNY.PK</sup> Intel<sup>INTC</sup> JCET<sup>600584.SS</sup> Micron Technology<sup>MU</sup> On Semiconductor<sup>ON</sup> Panasonic<sup>PC</sup> MagnaChip Semiconductor<sup>MX</sup> MaxLinear<sup>MXL</sup> MediaTek<sup>2454.TW</sup> NVIDIA<sup>NVDA</sup> Qualcomm<sup>QCOM</sup> Samsung Electronics<sup>005930.KS</sup> Silicon Laboratories<sup>SLAB</sup> SkyWater Technology<sup>SKYT</sup> Skyworks<sup>SWKS</sup> SMIC<sup>SMI</sup> STMicroelectronics<sup>STM</sup> Texas Instruments<sup>TXN</sup> TSMC<sup>TSM</sup> UMC<sup>STMicroelectronics</sup> Western Digital<sup>WDC</sup> Xilinx<sup>XLNX</sup>

# Chip Equipment & Related Stocks:

## Weekly Growth and Forward P/E Ratios by Company

**VLSI's Semiconductor Equipment Stock Index** was led up by Nikon who came out on top with a nearly 13% gain. Onto Innovation, Tokyo Electron, ASM International, Advantest, and Lam Research were also top performers this week finishing above the weekly average.

WFE +4.6%  
 Test +1.6%  
 Assembly +0.1%

Applied Materials <sup>AMAT</sup> Advantest <sup>ATEYY</sup>  
 ASM International <sup>ASMIY</sup>  
 ASM Lithography <sup>ASML</sup> ASM Pacific <sup>0522.HK</sup>  
 BE Semiconductor <sup>BESIY.PK</sup>  
 FormFactor <sup>FORM</sup> KLA <sup>KLAC</sup>  
 Kulicke & Soffa <sup>KLIC</sup> Lam Research <sup>LRCX</sup>  
 Onto Innovation <sup>ONTO</sup> Nikon <sup>7731</sup>  
 Teradyne <sup>TER</sup> Tokyo Electron Limited <sup>8035</sup>  
 Veeco <sup>VECO</sup>

Weekly Gains			2/4/2022		
Equipment Stocks	Price Change	Forward P/E	Equipment Stocks	Price Change	Forward P/E
<b>Wafer Fab:</b>			<b>Test:</b>		
Applied Materials	2.4%	15	Advantest	3.4%	-
ASM International	5.2%	25	Teradyne	1.7%	16
ASML	1.2%	28	FormFactor	-0.4%	23
KLA	2.9%	17			
Lam Research	3.2%	15	<b>Assembly:</b>		
Onto Innovation	6.5%	-	BESI	1.1%	-
Nikon	12.6%	-	Kulicke & Soffa	-3.1%	10
TEL	5.8%	-	ASM Pacific Technology	2.2%	
Veeco Instruments	1.5%	17			

Above Avg

Top 4-6

Top 1-3



# Electronic Materials Stocks:

## Weekly Growth and Forward P/E Ratios by Company

Weekly Gains			2/4/2022		
EDA & Electronic Materials Stocks	Price Change	Forward P/E	EDA & Electronic Materials Stocks	Price Change	Forward P/E
<b>EDA</b>			DNP	-2.5%	–
Cadence	1.4%	41	DuPont de Nemours	-0.1%	5
Synopsys	<b>4.2%</b>	33	JSR	-4.3%	–
Ansys	1.2%	41	Shin-Etsu	<b>3.2%</b>	–
<b>Electronic Materials</b>			SOITEC	-2.3%	–
BASF	-0.1%	3	Tokyo Ohka	0.3%	–
CMC Materials	<b>5.3%</b>	21			

Above Avg
Top 4-6
Top 1-3

**VLSI's EDA Stock Index** increased this week, Synopsys came out on top.

**VLSI's Electronic Materials Stock Index** slipped this week.

Ansys, Inc. <sup>ANSS</sup>    BASF <sup>BASFY</sup>  
 CMC Materials <sup>CCMP</sup>    Cadence <sup>CDNS</sup>  
 DNP <sup>7912</sup>    DuPont <sup>DD</sup>    JSR <sup>4185</sup>  
 Shin-Etsu <sup>4063</sup>    SOITEC <sup>SOI.PA</sup>  
 Synopsys <sup>SNPS</sup>    Tokyo Ohka <sup>4186</sup>

The Prior Week's Close	VLSI's Indices of Chip Industry Stocks				Weekly Growth				Companies Up	Max Growth	Companies Down	Min Growth	Range of Growth	S&P 500	S&P 500 Growth
	Semi Stocks	Equipment Stocks	Materials Stocks	EDA Stocks	Semi Stocks	Equipment Stocks	Materials Stocks	EDA Stocks							
02-Jul-21	89.6	84.1	89.2	75.2	1.5%	-1.3%	0.6%	3.1%	29	10.6%	-26	-7.6%	18.2%	91.3	1.7%
09-Jul-21	86.6	81.9	89.2	75.6	-3.3%	-2.7%	0.0%	0.5%	19	7.3%	-36	-10.5%	17.8%	91.7	0.4%
16-Jul-21	83.9	79.2	88.8	74.8	-3.2%	-3.2%	-0.5%	-1.0%	12	6.9%	-42	-10.8%	17.7%	90.8	-1.0%
23-Jul-21	85.3	82.9	89.2	78.1	1.7%	4.6%	0.5%	4.5%	36	9.4%	-18	-73.1%	82.5%	92.6	2.0%
30-Jul-21	88.4	84.2	90.6	79.1	3.7%	1.6%	1.5%	1.2%	39	24.0%	-15	-37.0%	61.0%	92.2	-0.4%
06-Aug-21	91.4	88.9	89.6	80.6	3.4%	5.6%	-1.1%	1.9%	46	29.1%	-8	-14.3%	43.4%	93.1	0.9%
13-Aug-21	88.2	84.4	89.4	81.1	-3.5%	-5.0%	-0.1%	0.6%	15	3.7%	-40	-14.0%	17.7%	93.7	0.7%
20-Aug-21	85.9	80.8	86.2	85.5	-2.6%	-4.3%	-3.6%	5.4%	7	8.1%	-48	-13.5%	21.6%	93.2	-0.6%
27-Aug-21	89.7	86.6	89.6	89.0	4.5%	7.1%	4.0%	4.2%	52	36.9%	-2	-4.3%	41.2%	94.6	1.5%
03-Sep-21	90.5	90.0	92.2	90.6	0.8%	4.0%	2.9%	1.7%	33	23.7%	-21	-6.0%	29.7%	95.2	0.6%
10-Sep-21	89.6	92.2	94.7	90.4	-1.0%	2.4%	2.7%	-0.2%	24	11.4%	-29	-8.1%	19.5%	93.5	-1.7%
17-Sep-21	88.9	92.6	94.3	88.6	-0.8%	0.4%	-0.4%	-2.0%	23	5.5%	-30	-6.8%	12.3%	93.0	-0.6%
24-Sep-21	89.2	91.7	93.1	88.1	0.3%	-1.0%	-1.3%	-0.5%	22	5.8%	-30	-5.2%	11.0%	93.5	0.5%
01-Oct-21	85.8	84.2	88.6	82.6	-3.8%	-8.2%	-4.8%	-6.2%	6	4.3%	-48	-14.7%	19.0%	91.4	-2.2%
08-Oct-21	84.7	81.0	87.3	80.3	-1.4%	-3.8%	-1.5%	-2.8%	15	2.9%	-39	-14.3%	17.2%	92.1	0.8%
15-Oct-21	85.5	82.8	90.6	83.9	1.0%	2.2%	3.8%	4.4%	39	8.1%	-14	-11.8%	19.9%	93.8	1.8%
22-Oct-21	86.8	85.3	91.3	88.9	1.5%	3.0%	0.8%	5.9%	40	15.7%	-14	-11.6%	27.3%	95.4	1.6%
29-Oct-21	89.0	89.6	93.7	92.2	2.6%	5.0%	2.6%	3.8%	38	24.6%	-16	-8.3%	32.9%	96.6	1.3%
05-Nov-21	94.4	95.0	98.0	94.6	6.1%	6.1%	4.6%	2.5%	45	30.5%	-8	-29.8%	60.3%	98.6	2.0%
12-Nov-21	95.9	95.5	98.7	96.4	1.5%	0.4%	0.7%	1.9%	31	8.5%	-16	-12.1%	20.6%	98.3	-0.3%
19-Nov-21	98.3	97.5	98.2	99.4	2.6%	2.1%	-0.4%	3.2%	39	12.2%	-16	-16.8%	29.0%	98.6	0.3%
26-Nov-21	97.7	96.0	95.5	96.8	-0.6%	-1.6%	-2.8%	-2.7%	16	11.8%	-39	-9.6%	21.4%	98.6	0.1%
03-Dec-21	95.9	94.5	92.9	95.0	-1.9%	-1.6%	-2.7%	-1.9%	12	6.0%	-44	-11.1%	17.1%	95.2	-3.5%
10-Dec-21	97.5	96.9	95.7	98.8	1.6%	2.6%	3.0%	4.0%	40	13.2%	-15	-7.5%	20.7%	98.9	3.8%
17-Dec-21	94.7	93.8	97.7	96.5	-2.9%	-3.2%	2.1%	-2.3%	12	25.6%	-43	-15.6%	41.2%	96.9	-1.9%
24-Dec-21	98.6	97.7	99.3	100.2	4.1%	4.2%	1.7%	3.8%	50	13.8%	-6	-2.8%	16.6%	99.2	2.3%
31-Dec-21	100.0	100.0	100.0	100.0	1.5%	2.3%	0.7%	-0.2%	44	8.1%	-11	-2.7%	10.8%	100.0	0.9%
07-Jan-22	96.6	96.3	99.4	89.7	-3.4%	-3.7%	-0.6%	-10.3%	10	7.4%	-45	-17.5%	24.9%	98.1	-1.9%
14-Jan-22	98.5	102.0	99.3	87.4	2.0%	5.9%	-0.1%	-2.5%	36	23.7%	-20	-4.9%	28.6%	97.8	-0.3%
21-Jan-22	90.1	90.4	93.8	81.0	-8.5%	-11.4%	-5.6%	-7.3%	3	5.1%	-53	-20.3%	25.4%	92.3	-5.7%
28-Jan-22	87.1	84.5	92.4	79.7	-3.4%	-6.6%	-1.5%	-1.7%	11	5.0%	-45	-21.8%	26.8%	93.0	0.8%
04-Feb-22	90.2	87.3	92.3	81.5	3.5%	3.3%	-0.1%	2.3%	41	17.5%	-13	-4.3%	21.8%	94.4	1.6%

# Links to Conference Call Transcripts

February 4<sup>th</sup>

[Kulicke and Soffa Industries' \(KLIC\) CEO Fusen Chen on Q1 2022 Results - Earnings Call Transcript](#)

[Infineon Technologies AG. \(IFNNY\) CEO Reinhard Ploss on Q1 2022 Results - Earnings Call Transcript](#)

[Qorvo, Inc. \(QRVO\) CEO Bob Bruggeworth on Q3 2022 Results - Earnings Call Transcript](#)

[FormFactor, Inc. \(FORM\) CEO Mike Slessor on Q4 2021 Results - Earnings Call Transcript](#)

[MaxLinear's \(MXL\) CEO Kishore Seendripu on Q4 2021 Results - Earnings Call Transcript](#)

[QUALCOMM Incorporated's \(QCOM\) CEO Cristiano Amon on Q1 2022 Results - Earnings Call Transcript](#)

[Advanced Micro Devices, Inc. \(AMD\) CEO Lisa Su on Q4 2021 Results - Earnings Call Transcript](#)

[NXP Semiconductors N.V. \(NXPI\) CEO Kurt Sievers on Q4 2021 Results - Earnings Call Transcript](#)

January 28<sup>th</sup> and before

[SK Hynix, Inc. \(HXSCF\) Q4 2021 Results - Earnings Call Transcript](#)

[National Instruments Corporation \(NATI\) CEO Eric Starkloff on Q4 2021 Results - Earnings Conference Call](#)

[Western Digital Corporation \(WDC\) CEO David Goeckeler on Q2 2022 Results - Earnings Call Transcript](#)

[Apple Inc. \(AAPL\) CEO Tim Cook on Q1 2022 Results - Earnings Call Transcript](#)

[KLA Corporation \(KLAC\) CEO Rick Wallace on Q2 2022 Results - Earning Call Transcript](#)

[MKS Instruments' \(MKS\) CEO John Lee on Q4 2021 Results - Earnings Call Transcript](#)

[Teradyne, Inc. \(TER\) CEO Mark Jagiela on Q4 2021 Results - Earnings Call Transcript](#)

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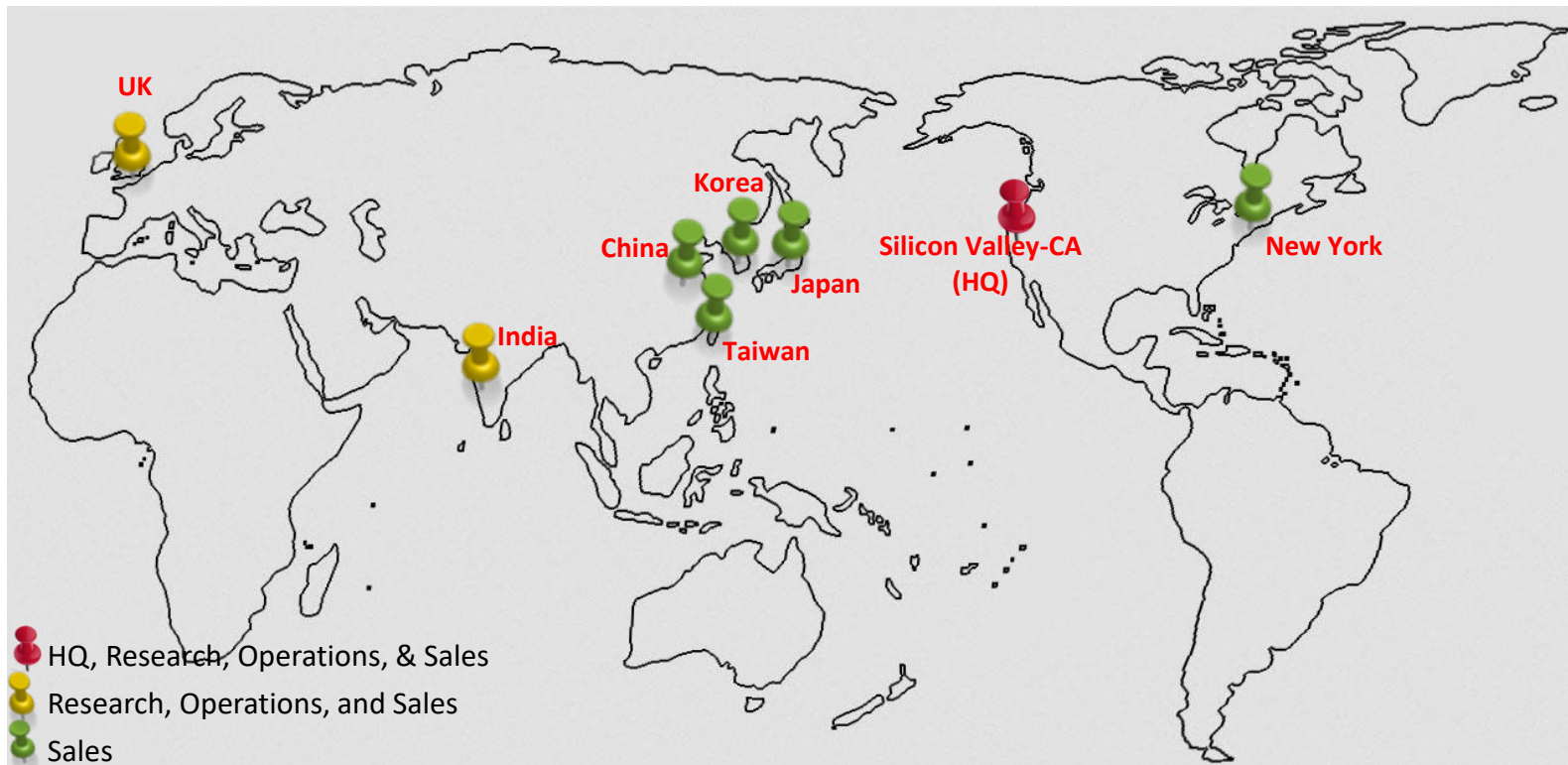
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**Shereen Vaux**



**Lyndsey Lindt**



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