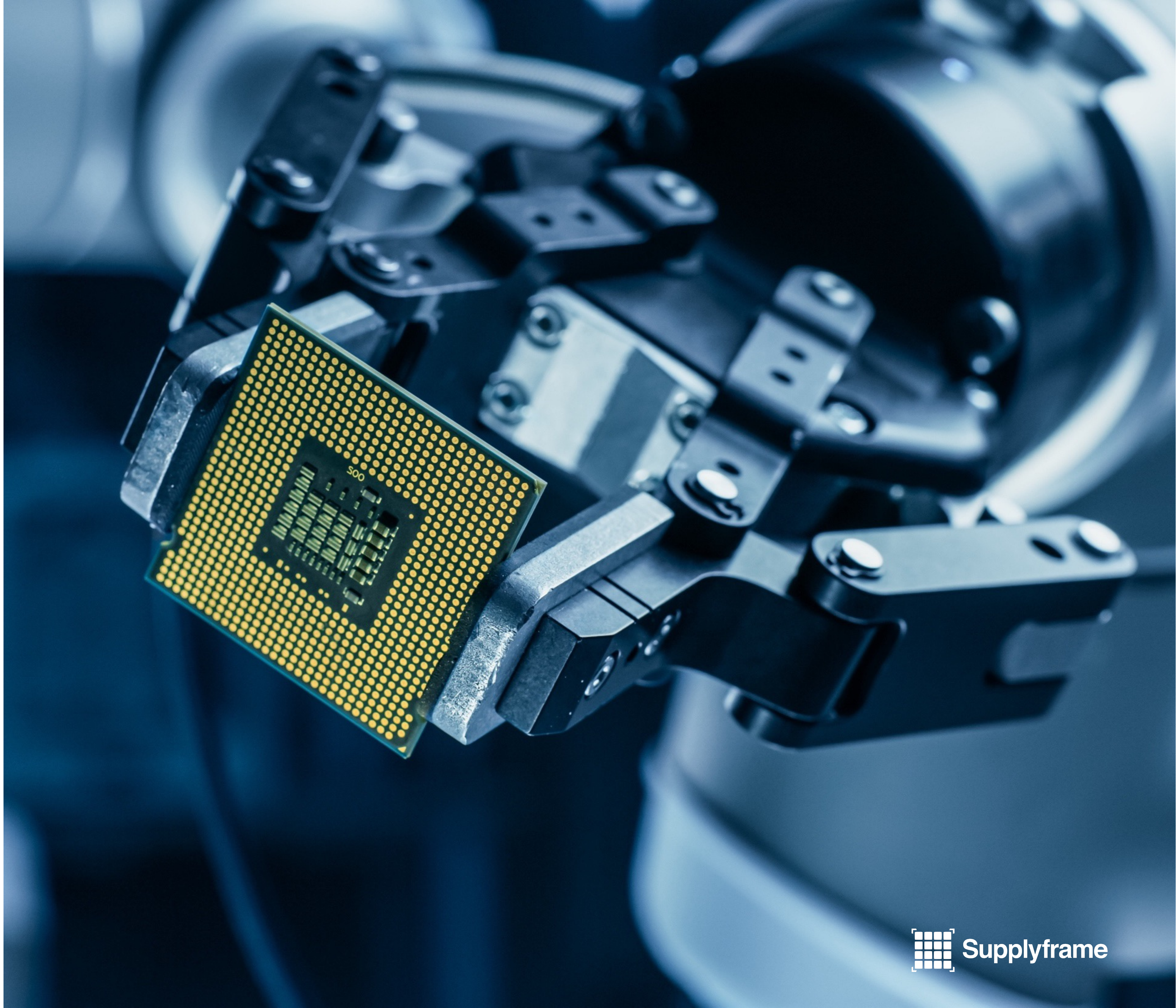


Supplyframe
Design-to-Source
Intelligence

Design-to-Source Monthly Insights

December 2023



Methodology

The following report was compiled using data available from Supplyframe's Design to Source Intelligence (DSI) Network. The DSI Network consists of more than 70+ web properties, attracting 11M+ engineers and procurement professionals from around the world on a monthly basis. Engineers and procurement professionals visit and interact with the DSI Network specifically for their work (research, consider, design, and buy), enabling Supplyframe to understand design trends, sourcing trends, and extrapolate indicators of overall market conditions and trends.

What this report provides the advertiser?

1. A proxy for "market" condition by evaluating trends in engineering design activities and procurement sourcing activities
2. Understand what product categories are in demand by engineers and buyers
3. Anticipate future sourcing demand based on where design activities are concentrated (categories and regions)

Customers can leverage the insights provided in this report to support the development of their Go-To-Market strategy, as well as campaign planning and execution to drive their organization's objectives.

To protect sensitive information, as well as provide a mechanism for insights - we have normalized and indexed much of the data used in this analyses. There are two specific indices utilized to provide trend and comparative insights:

Design Activity Index

Based on part level activity by engineers on the DSI Network. Activities included are related to part evaluation and part placement in designs via EDAs. Activities, are normalized, weighted, and scored on a scale of 0 – 100.

Index scores are relative to the dimensions of data being included in the analyses (ie. Country, manufacturer, categories). A value of 100 reflects maximum volume of activities in the given data set. A value of 50 reflects half of the maximum value in the given data set.

Sourcing Activity Index

Based on part level activity by buyers on the DSI Network. Activities included are related to buy clicks on the the DSI Network. Index is scored on a scale of 0 – 100.

Index scores are relative to the dimensions of data being included in the analyses (ie. Country, manufacturer, categories). A value of 100 reflects maximum value in the given data set. A value of 50 reflects half of the maximum value in the given data set.

What We Saw Across The Network

DECEMBER 2023

- Global design and sourcing activities decreased in December after experiencing some level of stability the last three months. Decrease in month-over-month activities were expected due to the holiday seasons. However, the actual month-over-month decrease in activities this year was larger than expected, indicating further contraction in global demand this December
- Global design activities decreased -15% month-over-month in December. This was almost doubled the seasonal average of -8% that we have historically observed during this time of the year
- Global sourcing activities decreased -21% month-over-month in December compared to the seasonal average of -9% for the same period

Q4 2023

- Q4 activity levels were in line with our quarterly forecast. Global design activities grew +7% quarter-over-quarter (vs. +7% forecast), while global sourcing activities decreased -7% quarter-over-quarter (vs. -6% forecast)

2023 full year

- For the full year 2023, global design activities grew +6% vs. 2022, while global sourcing activities decreased -25% vs. 2022

Q1 2024 outlook

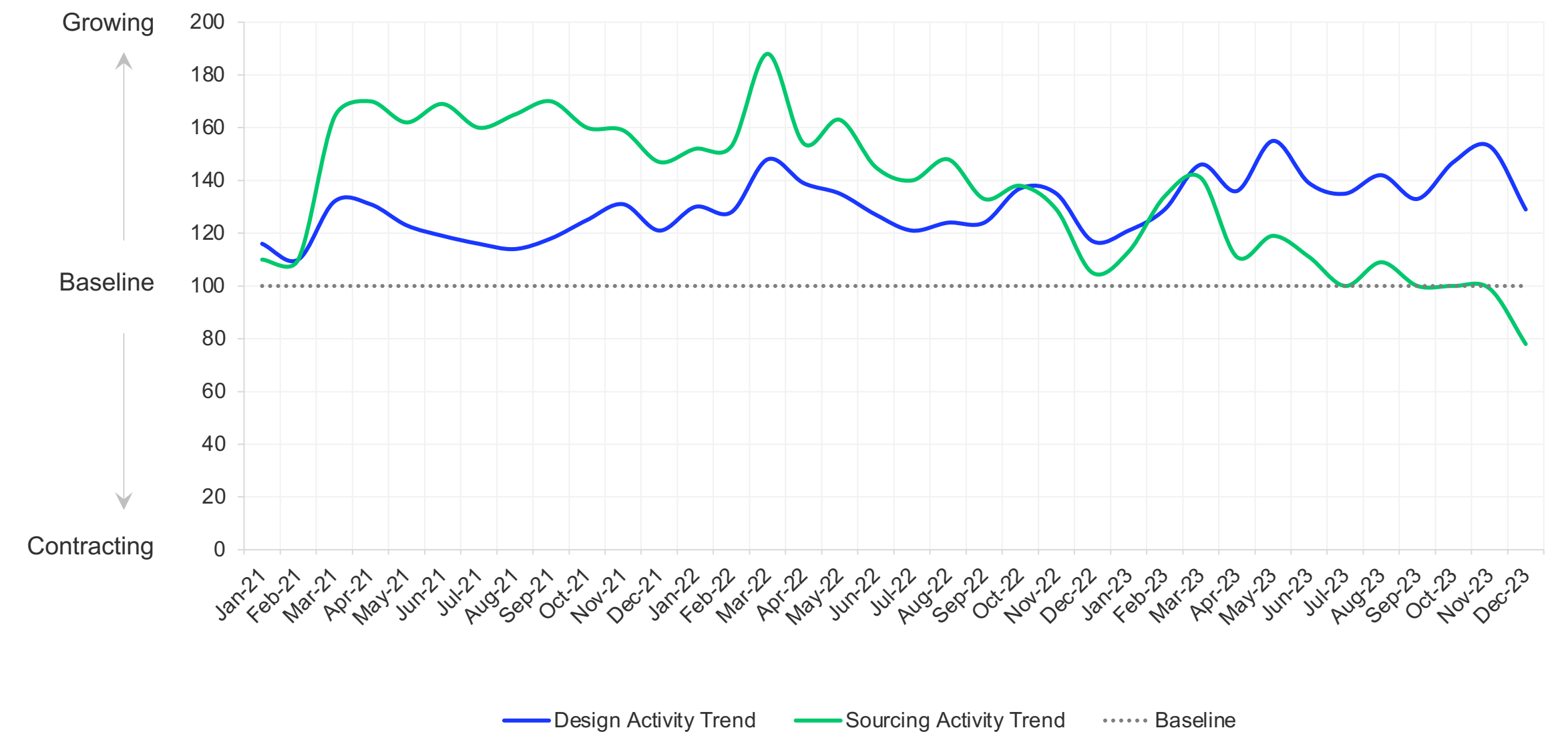
- For Q1, we anticipate global design activities to grow +2% quarter-over-quarter, and global sourcing activities to grow +3% vs. prior quarter

Global Performance

Design Activities
 ⚡ -15.4% M/M
 ⬆️ +10.5% Y/Y

Sourcing Activities
 ⚡ -21.1% M/M
 ⚡ -25.8% Y/Y

Chart 1. Design and Sourcing Activity Trends



How to read this chart:

Design and sourcing activities have been baselined to 2020 monthly median. Baseline is indicated as a value of 100. Above the baseline indicates growth, while below the baseline indicates decrease in activities.

Design Activity Overview

DECEMBER 2023

Design Activity Index

Based on part level activity by engineers on the DSI Network. Activities included are related to part evaluation and part placement in designs via EDAs. Activities, are normalized, weighted, and scored on a scale of 0 – 100.

Index scores are relative to the dimensions of data being included in the analyses (ie. Country, manufacturer, categories). A value of 100 reflects maximum volume of activities in the given data set. A value of 50 reflects half of the maximum value in the given data set.

Global design activities decreased -15% month-over-month but continued to show growth compared to prior years.

Following seasonal trends, Global design activities decreased month-over-month in December. However, we observed a much steeper decrease in design activities this year vs. prior years. Historically speaking, when we look back the last 5 years, global design activities on average decreased -8% from November to December.

This year the decrease in activities were almost double the average at -15%.

Decreases were observed across all regions, but the APAC region experienced the largest decrease compared to the seasonal average (-8% in December 2023 vs. -0.6% seasonal average), followed by EMEA (-19% in December 2023 vs. -12% seasonal average), and then the Americas (-19% in December vs. -14% seasonal average). All product categories across all regions observed decreases in month-over-month activity volume, but logic, signal circuits, amplifier circuits, inductors, transistors, and resistors observed more pronounced decreases than other categories.

Even with these decreases in activity volume, design activities continued to trend higher than prior years. All regions posted year-over-year growth in design activities with the largest growth in the Americas (+21%) and the least amount of growth in EMEA (+3%).

Table 1. Design Activity Summary

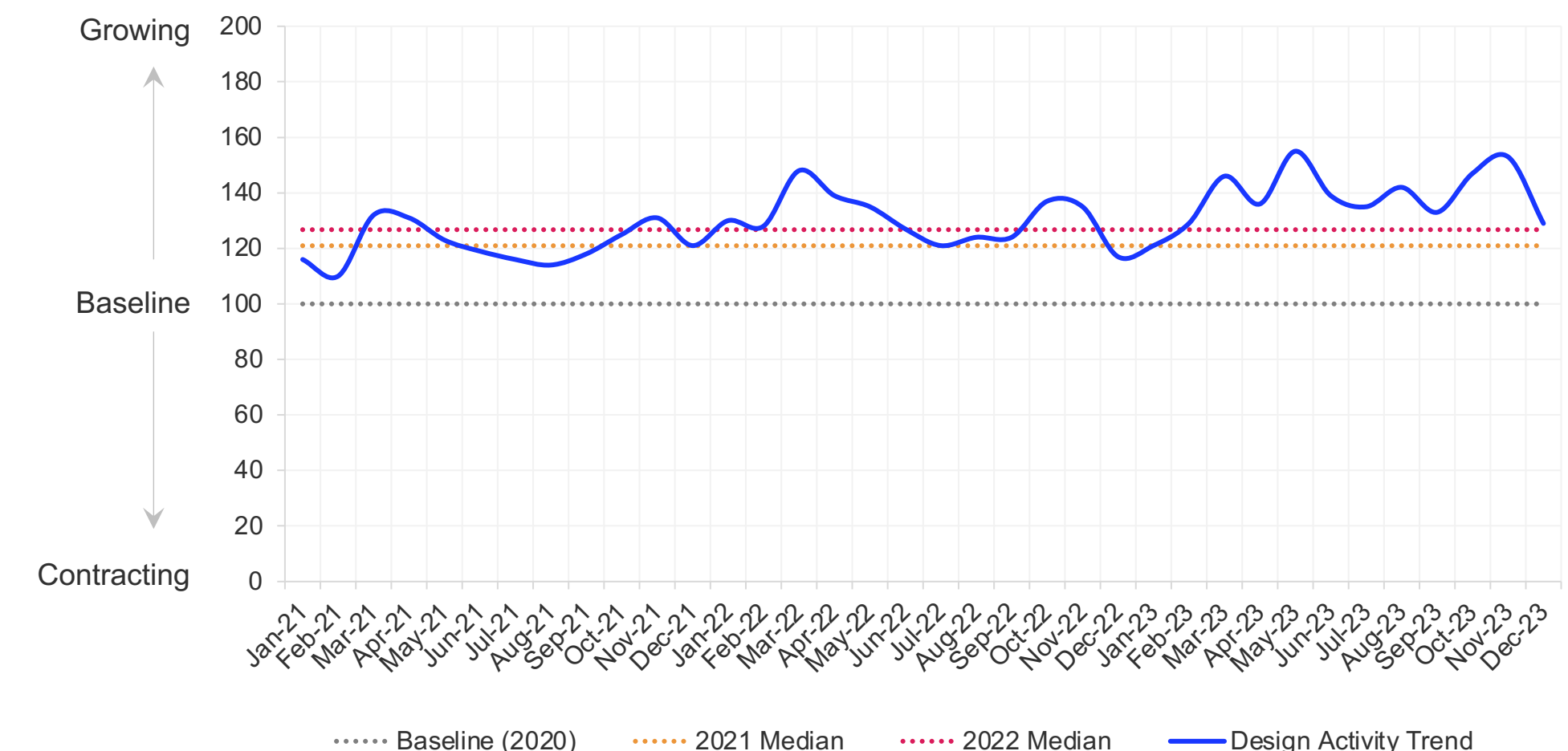
| | vs. Prior Month | vs. Prior Year | 6mo. CMGR |
|---------------|-----------------|----------------|-----------|
| Global | -15.4% | 10.5% | -1.2% |

| Region | Design Activity Index | vs. Prior Month | vs. Prior Year | 6mo. CMGR |
|--------|-----------------------|-----------------|----------------|-----------|
| EMEA | 100.0 | -19% | 3% | -2% |
| APAC | 82.9 | -8% | 15% | 0% |
| AMER | 44.6 | -19% | 21% | -3% |

Top 10 Countries / Territories

| Country / Territory | Design Activity Index | vs. Prior Month | vs. Prior Year | 6mo. CMGR |
|-------------------------|-----------------------|-----------------|----------------|-----------|
| United States | 100.0 | -15% | 17% | -3% |
| China (incl. Hong Kong) | 86.0 | -9% | 17% | 0% |
| India | 60.0 | -3% | 5% | 0% |
| Germany | 49.4 | -20% | 11% | -2% |
| Japan | 36.3 | -1% | 12% | -1% |
| United Kingdom | 28.9 | -32% | -12% | -4% |
| Turkey | 26.6 | 33% | 1% | 7% |
| France | 26.2 | -18% | 1% | -2% |
| Republic of Korea | 25.1 | -11% | 61% | 1% |
| Italy | 24.4 | -29% | -1% | -1% |

Chart 2. Global Design Activity Trends



Design Activity: Americas Trends

DECEMBER 2023

Design Activity Index
 Based on part level activity by engineers on the DSI Network. Activities included are related to part evaluation and part placement in designs via EDAs. Activities, are normalized, weighted, and scored on a scale of 0 – 100.
 Index scores are relative to the dimensions of data being included in the analyses (ie. Country, manufacturer, categories). A value of 100 reflects maximum volume of activities in the given data set. A value of 50 reflects half of the maximum value in the given data set.

Following data provides a breakdown of design activities across the DSI Network in the Americas region.

Chart 3. Americas Design Activity Trends

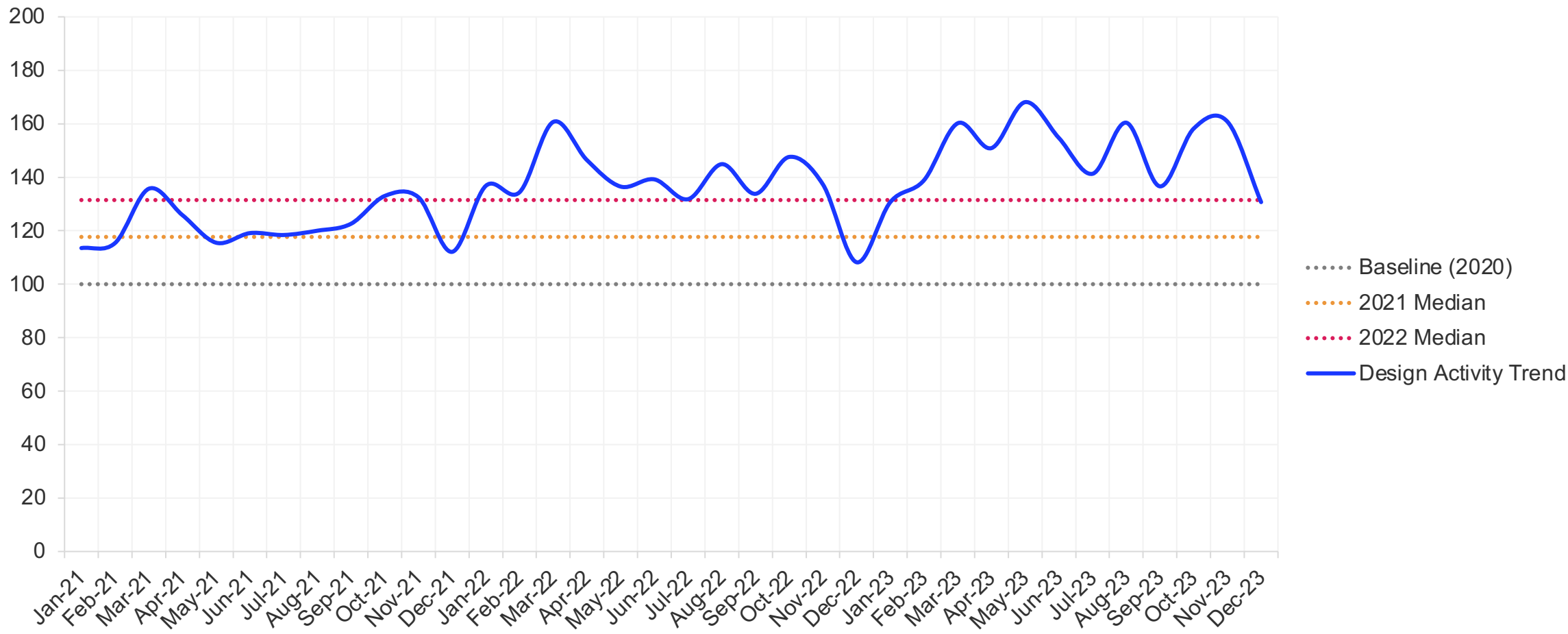


Table 2. Top 15 Product Categories in Americas

| Product Class | Design Activity Index | M/M% | Y/Y % | 6mo. CMGR |
|---------------------------------|-----------------------|------|-------|-----------|
| Connectors | 100.0 | -14% | 17% | -3% |
| Capacitors | 93.2 | -18% | 89% | -1% |
| Resistors | 57.6 | -18% | 26% | -1% |
| Power Circuits | 56.6 | -25% | 12% | -3% |
| Diodes | 39.7 | -21% | 19% | -2% |
| Transistors | 28.7 | -33% | -4% | -5% |
| Optoelectronics | 26.0 | -17% | 10% | -2% |
| Terminal Blocks | 23.8 | -4% | 28% | -1% |
| Microcontrollers and Processors | 23.6 | -22% | 3% | -4% |
| Amplifier Circuits | 22.1 | -14% | 31% | 2% |
| Inductors | 17.7 | -21% | 94% | -5% |
| Drivers And Interfaces | 17.1 | -23% | -14% | -5% |
| Signal Circuits | 15.9 | -26% | 7% | -4% |
| Switches | 14.7 | -18% | 10% | -4% |
| Logic | 14.3 | -20% | -34% | -9% |

Design Activity: EMEA Trends

DECEMBER 2023

Design Activity Index

Based on part level activity by engineers on the DSI Network. Activities included are related to part evaluation and part placement in designs via EDAs. Activities, are normalized, weighted, and scored on a scale of 0 – 100.

Index scores are relative to the dimensions of data being included in the analyses (ie. Country, manufacturer, categories). A value of 100 reflects maximum volume of activities in the given data set. A value of 50 reflects half of the maximum value in the given data set.

Following data provides a breakdown of design activities across the DSI Network in the EMEA region.

Chart 4. EMEA Design Activity Trends

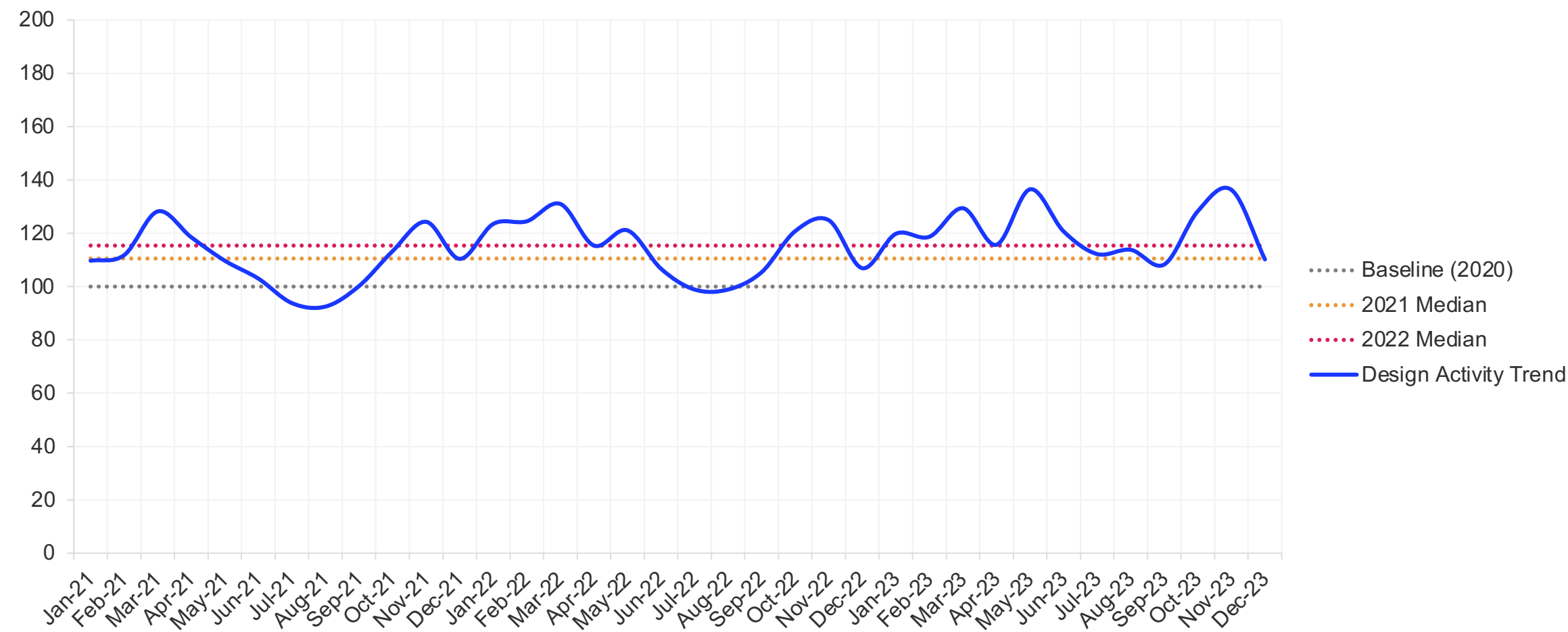


Table 3. Top 15 Product Categories in EMEA

| Product Class | Design Activity Index | M/M% | Y/Y % | 6mo. CMGR |
|---------------------------------|-----------------------|------|-------|-----------|
| Connectors | 100.0 | -24% | 3% | -3% |
| Power Circuits | 67.7 | -18% | 4% | -1% |
| Capacitors | 59.9 | -18% | 5% | -1% |
| Resistors | 55.6 | -20% | 2% | -1% |
| Diodes | 47.0 | -17% | 4% | -2% |
| Transistors | 38.1 | -19% | 0% | -1% |
| Microcontrollers and Processors | 30.7 | -18% | -8% | -1% |
| Optoelectronics | 29.8 | -19% | 3% | -1% |
| Terminal Blocks | 26.2 | -26% | 9% | -3% |
| Inductors | 25.1 | -20% | 49% | -2% |
| Drivers And Interfaces | 20.8 | -20% | -14% | -3% |
| Amplifier Circuits | 18.6 | -20% | -9% | -2% |
| Signal Circuits | 17.5 | -22% | -3% | -2% |
| Logic | 17.1 | -18% | -15% | -1% |
| Switches | 15.8 | -20% | 6% | 0% |

Design Activity: APAC Trends

DECEMBER 2023

Design Activity Index

Based on part level activity by engineers on the DSI Network. Activities included are related to part evaluation and part placement in designs via EDAs. Activities, are normalized, weighted, and scored on a scale of 0 – 100.

Index scores are relative to the dimensions of data being included in the analyses (ie. Country, manufacturer, categories). A value of 100 reflects maximum volume of activities in the given data set. A value of 50 reflects half of the maximum value in the given data set.

Following data provides a breakdown of design activities across the DSI Network in the APAC region.

Chart 5. APAC Design Activity Trends

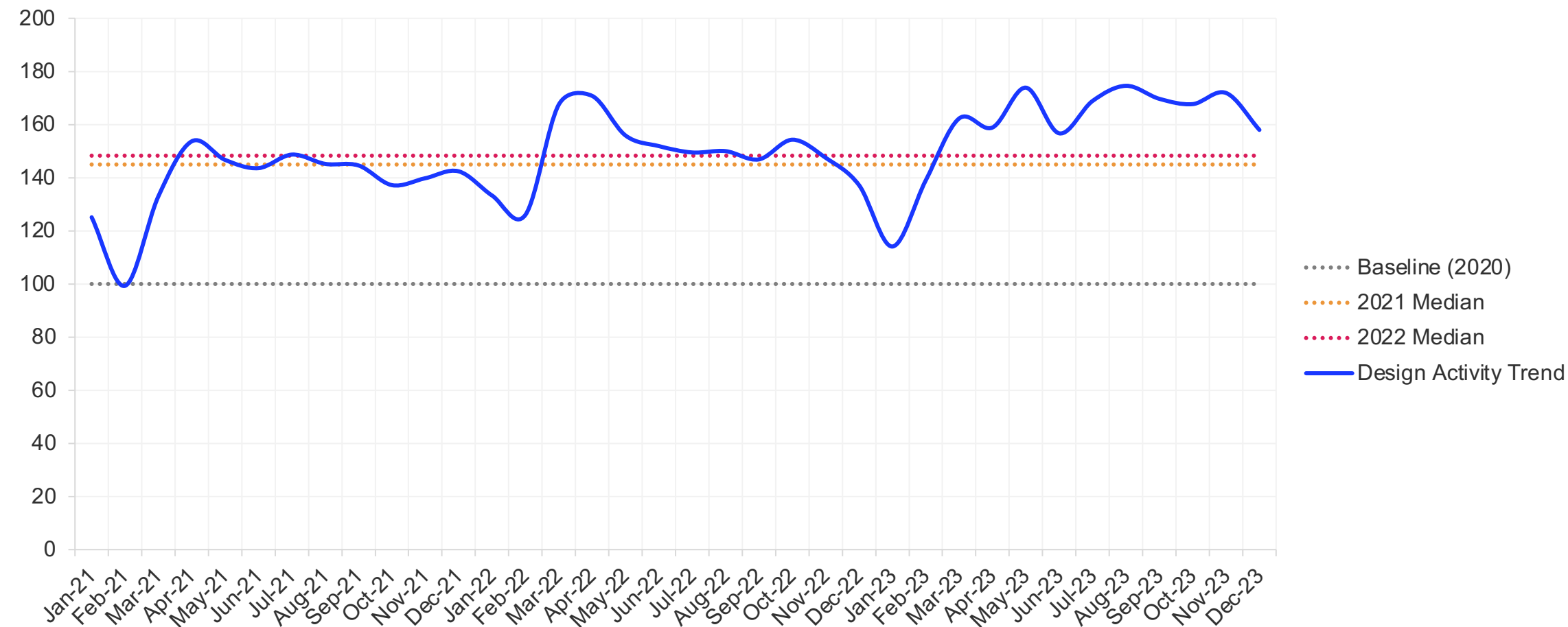


Table 4. Top 15 Product Categories in APAC

| Product Class | Design Activity Index | M/M% | Y/Y % | 6mo. CMGR |
|---------------------------------|-----------------------|------|-------|-----------|
| Connectors | 100.0 | -6% | 28% | 1% |
| Power Circuits | 76.1 | -8% | 17% | 1% |
| Capacitors | 60.8 | -8% | 36% | 1% |
| Diodes | 52.7 | -4% | 18% | 1% |
| Resistors | 48.3 | -11% | 19% | 0% |
| Microcontrollers and Processors | 38.3 | -4% | -13% | -1% |
| Transistors | 38.1 | -7% | 9% | -1% |
| Optoelectronics | 27.7 | 3% | 18% | 1% |
| Drivers And Interfaces | 26.7 | -8% | 6% | 1% |
| Amplifier Circuits | 23.3 | -19% | 6% | -2% |
| Inductors | 21.9 | -11% | 69% | 0% |
| Signal Circuits | 20.0 | -9% | 2% | 1% |
| Logic | 19.6 | -21% | -24% | -2% |
| Terminal Blocks | 14.7 | -7% | 6% | 1% |
| Filters | 14.6 | -7% | 25% | 1% |

Sourcing Activity Overview

DECEMBER 2023

Sourcing Activity Index

Based on part level activity by buyers on the DSI Network. Activities included are related to buy clicks on the the DSI Network. Index is scored on a scale of 0 – 100.

Index scores are relative to the dimensions of data being included in the analyses (ie. Country, manufacturer, categories). A value of 100 reflects maximum value in the given data set. A value of 50 reflects half of the maximum value in the given data set.

Global sourcing activities decreased -21% month-over-month as demand once again contracted in December.

Like design activities, global sourcing activities decreased more than expected in December. Historically, global sourcing activities decreased on average ~9% from November to December.

Again, like design activities, the largest decreases in activity volume compared to the seasonal averages were observed in the APAC and the EMEA regions. The APAC region performed 5-percentage points worse than the seasonal average (-18% in December 2023 vs. -3% seasonal average), while the EMEA region performed 11-percentage points worse (-30% in December 2023 vs. -19% seasonal average). The Americas region performed 9-percentage points worse this December than the seasonal average (-21% vs. -12%).

All product categories experienced decreases in sourcing activities across all regions with logic, drivers and interfaces, amplifier circuits, transistors, and resistors posting the largest decreases in activity volume.

Even with the declining demand across all regions, few countries noted growth in sourcing activities across the DSI network. Month-over-month, China (+19%), South Korea (+13%), Germany (+5%), and Canada (+1%) all experienced growth in sourcing activities. Compared to 2022, Singapore (+2%) and Malaysia (+6%) posted growth in sourcing activities in December 2023.

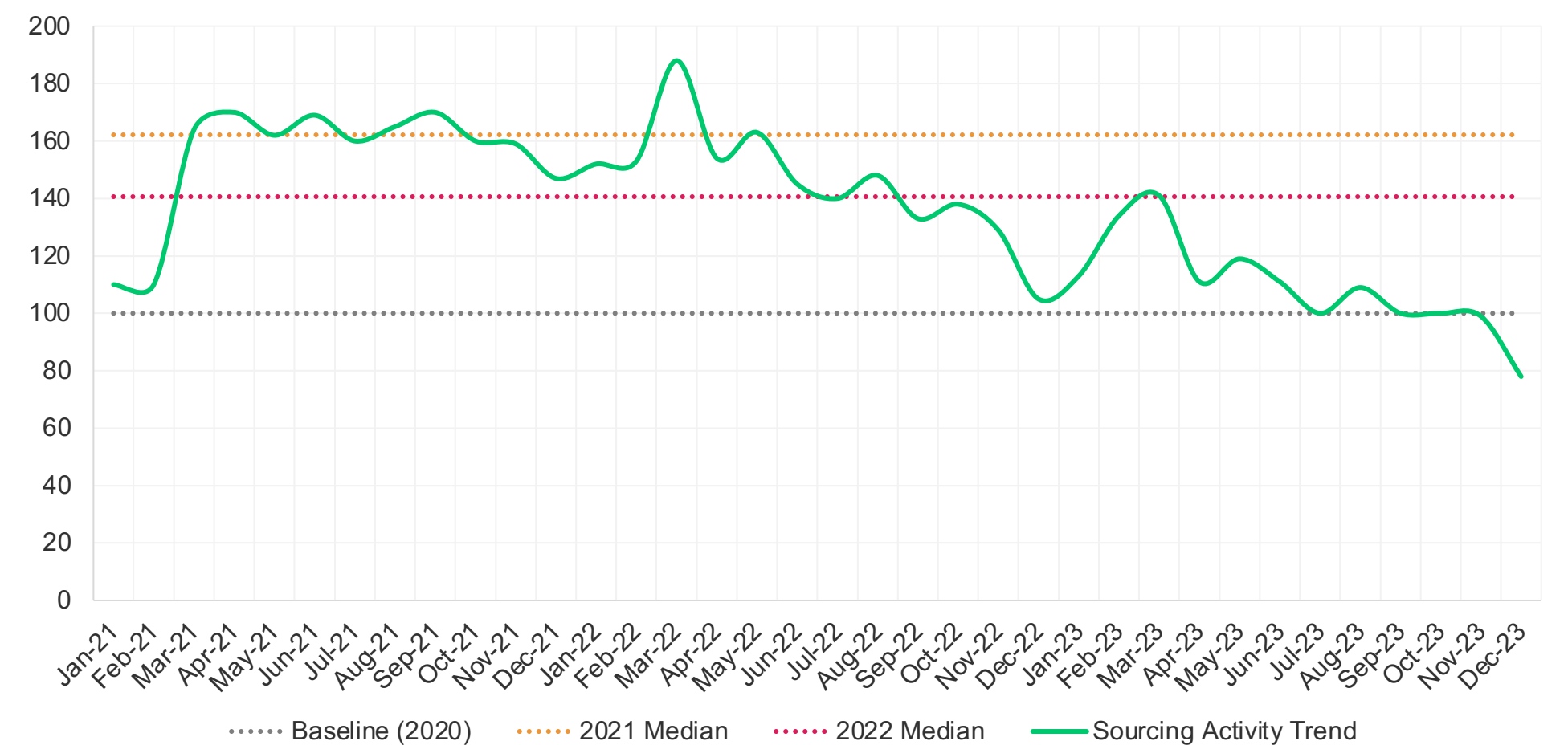
Table 5. Sourcing Activity Summary

| | | vs. Prior Month | vs. Prior Year | 6mo. CMGR |
|---------------|-------------------------|-----------------|----------------|-----------|
| Global | | -21.1% | -25.8% | -5.7% |
| Region | Sourcing Activity Index | vs. Prior Month | vs. Prior Year | 6mo. CMGR |
| APAC | 100.0 | -18.0% | -16.3% | -3.9% |
| AMER | 47.1 | -20.9% | -31.9% | -7.4% |
| EMEA | 29.4 | -30.4% | -40.4% | -8.3% |

Top 10 Countries / Territories

| Country / Territory | Sourcing Activity Index | vs. Prior Month | vs. Prior Year | 6mo. CMGR |
|-------------------------|-------------------------|-----------------|----------------|-----------|
| China (incl. Hong Kong) | 100.0 | 19% | -11% | -1% |
| United States | 71.6 | -14% | -30% | -5% |
| India | 23.9 | -10% | -32% | -6% |
| Republic of Korea | 23.6 | 13% | -7% | 0% |
| Germany | 14.1 | 5% | -37% | -3% |
| Taiwan | 11.6 | -2% | -29% | -4% |
| Canada | 9.0 | 1% | -21% | -3% |
| Singapore | 8.4 | 0% | 2% | 2% |
| Malaysia | 7.4 | -3% | 6% | 0% |
| France | 7.2 | -2% | -30% | -1% |

Chart 6. Global Sourcing Activity Trends



Sourcing Activity: Americas Trends

DECEMBER 2023

Sourcing Activity Index

Based on part level activity by buyers on the DSI Network. Activities included are related to buy clicks on the the DSI Network. Index is scored on a scale of 0 – 100.

Index scores are relative to the dimensions of data being included in the analyses (ie. Country, manufacturer, categories). A value of 100 reflects maximum value in the given data set. A value of 50 reflects half of the maximum value in the given data set.

Following data provides a breakdown of sourcing activities across the DSI Network in the Americas region.

Chart 7. Americas Sourcing Activity Trends

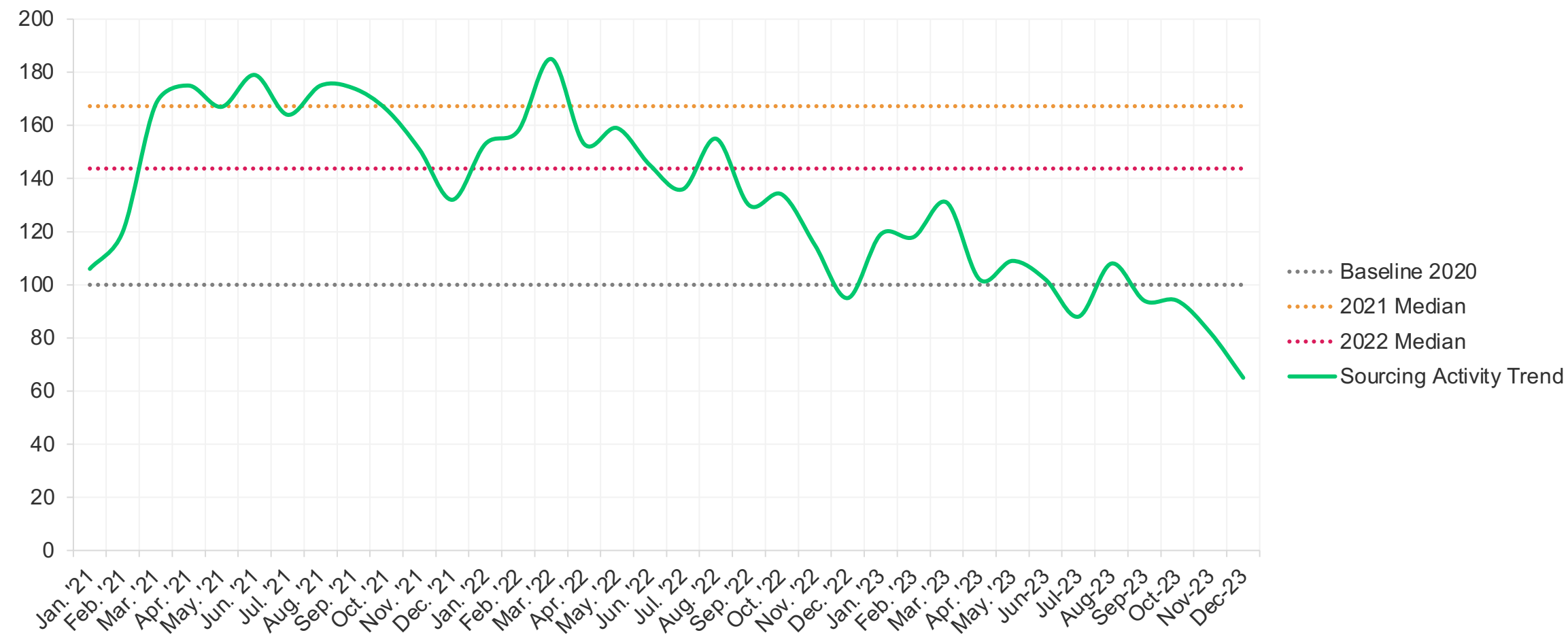


Table 6. Top 15 Product Categories in Americas

| Product Class | Sourcing Activity Index | M/M% | Y/Y % | 6mo. CMGR |
|---------------------------------|-------------------------|------|-------|-----------|
| Connectors | 100.0 | -23% | -17% | -6% |
| Capacitors | 82.1 | -19% | -16% | -6% |
| Resistors | 73.9 | -21% | -24% | -6% |
| Power Circuits | 50.7 | -20% | -46% | -10% |
| Diodes | 42.8 | -20% | -29% | -6% |
| Connector Support | 35.5 | -18% | -18% | -5% |
| Transistors | 34.0 | -26% | -46% | -9% |
| Microcontrollers and Processors | 27.9 | -24% | -58% | -13% |
| Terminal Blocks | 22.8 | -15% | -24% | -6% |
| Optoelectronics | 20.1 | -19% | -21% | -7% |
| Inductors | 18.3 | -15% | -5% | -4% |
| Amplifier Circuits | 17.9 | -22% | -46% | -12% |
| Logic | 16.3 | -21% | -43% | -8% |
| Drivers And Interfaces | 15.7 | -27% | -54% | -11% |
| Memory | 12.3 | -18% | -42% | -10% |

Sourcing Activity: EMEA Trends

DECEMBER 2023

Sourcing Activity Index

Based on part level activity by buyers on the DSI Network. Activities included are related to buy clicks on the the DSI Network. Index is scored on a scale of 0 – 100.

Index scores are relative to the dimensions of data being included in the analyses (ie. Country, manufacturer, categories). A value of 100 reflects maximum value in the given data set. A value of 50 reflects half of the maximum value in the given data set.

Following data provides a breakdown of sourcing activities across the DSI Network in the EMEA region.

Chart 8. EMEA Sourcing Activity Trends

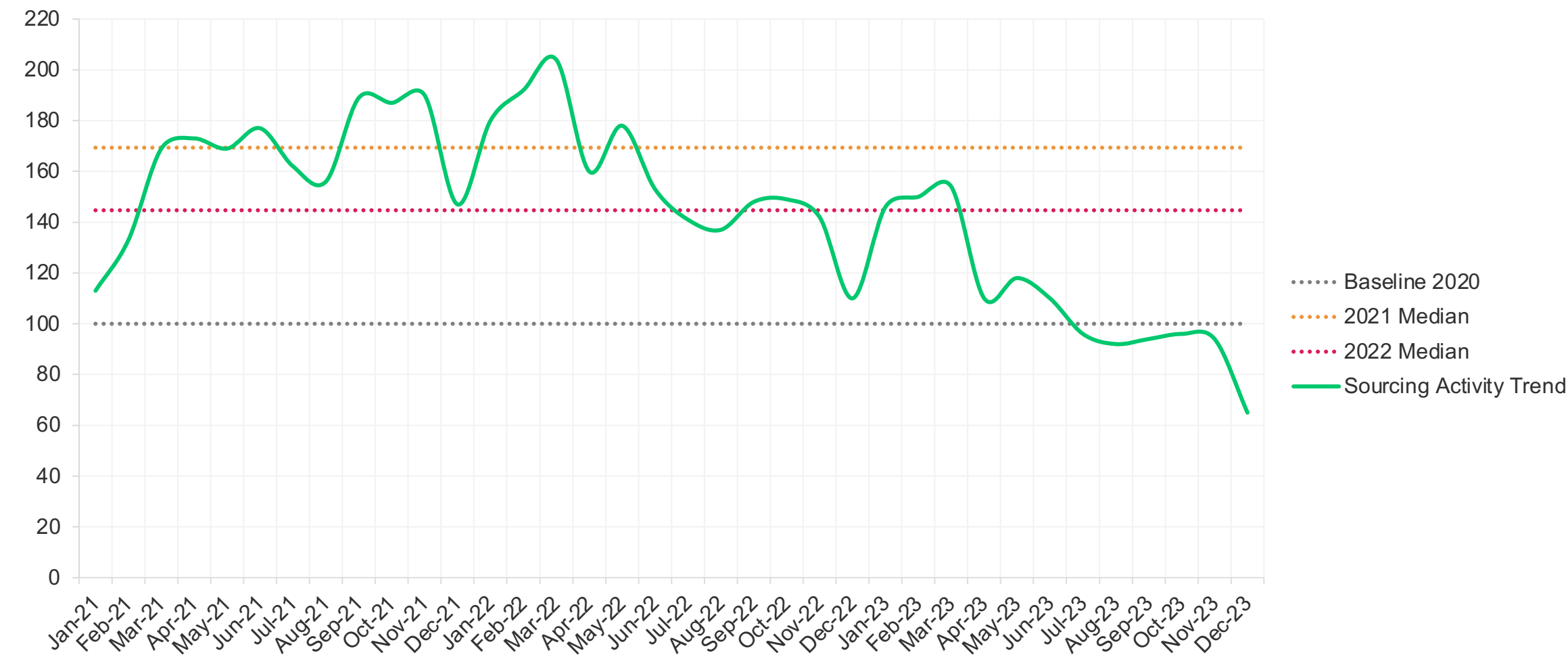


Table 7. Top 15 Product Categories in EMEA

| Product Class | Sourcing Activity Index | M/M% | Y/Y % | 6mo. CMGR |
|---------------------------------|-------------------------|------|-------|-----------|
| Capacitors | 100.0 | -26% | -17% | -6% |
| Connectors | 95.2 | -32% | -17% | -5% |
| Resistors | 79.4 | -30% | -22% | -6% |
| Power Circuits | 79.4 | -30% | -54% | -10% |
| Diodes | 58.1 | -32% | -45% | -10% |
| Transistors | 55.8 | -31% | -54% | -10% |
| Microcontrollers and Processors | 49.4 | -34% | -63% | -13% |
| Amplifier Circuits | 38.6 | -30% | -38% | -8% |
| Optoelectronics | 30.4 | -30% | -37% | -7% |
| Drivers And Interfaces | 28.1 | -32% | -61% | -12% |
| Connector Support | 28.1 | -27% | -6% | -4% |
| Inductors | 26.4 | -24% | -16% | -6% |
| Logic | 22.8 | -26% | -45% | -8% |
| Memory | 21.0 | -31% | -51% | -10% |
| Signal Circuits | 16.4 | -35% | -49% | -10% |

Sourcing Activity: APAC Trends

DECEMBER 2023

Sourcing Activity Index

Based on part level activity by buyers on the DSI Network. Activities included are related to buy clicks on the the DSI Network. Index is scored on a scale of 0 – 100.

Index scores are relative to the dimensions of data being included in the analyses (ie. Country, manufacturer, categories). A value of 100 reflects maximum value in the given data set. A value of 50 reflects half of the maximum value in the given data set.

Following data provides a breakdown of sourcing activities across the DSI Network in the APAC region.

Chart 9. APAC Sourcing Activity Trends

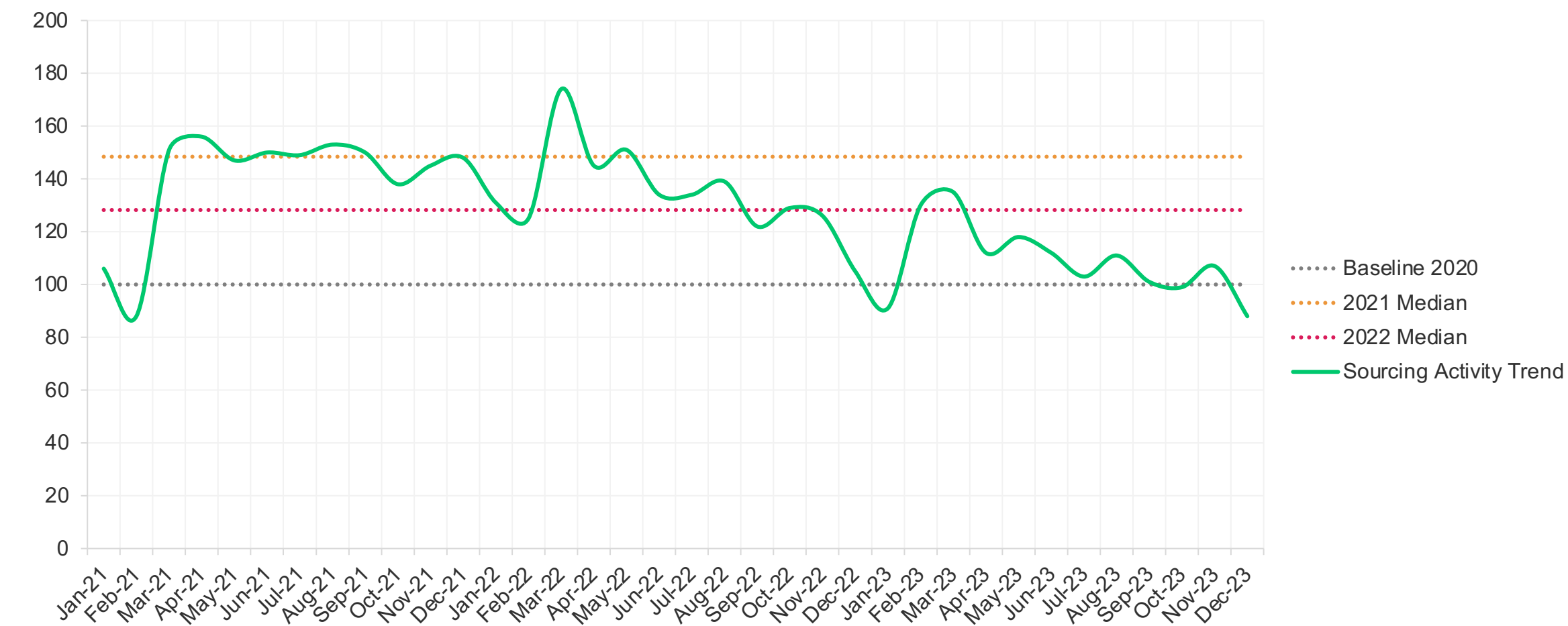


Table 8. Top 15 Product Categories in APAC

| Product Class | Sourcing Activity Index | M/M% | Y/Y % | 6mo. CMGR |
|---------------------------------|-------------------------|------|-------|-----------|
| Connectors | 100.0 | -21% | 6% | -1% |
| Capacitors | 81.4 | -15% | 6% | -3% |
| Power Circuits | 77.9 | -18% | -29% | -6% |
| Resistors | 62.6 | -20% | -6% | -4% |
| Diodes | 60.1 | -16% | -15% | -3% |
| Microcontrollers and Processors | 58.0 | -21% | -38% | -8% |
| Transistors | 57.6 | -18% | -35% | -5% |
| Connector Support | 28.6 | -18% | 6% | -1% |
| Drivers And Interfaces | 28.2 | -18% | -41% | -6% |
| Optoelectronics | 25.1 | -19% | -7% | -4% |
| Amplifier Circuits | 24.8 | -20% | -32% | -10% |
| Memory | 24.1 | -14% | -26% | -6% |
| Inductors | 23.4 | -14% | 14% | -1% |
| Logic | 22.1 | -20% | -37% | -3% |
| Converters | 20.3 | -17% | -13% | -6% |

Recap

DECEMBER 2023

- Global design and sourcing activities both experienced greater than expected decreases in activity volume in December
- Global design activities decreased by -15% month-over-month (vs. -8% seasonal average), while global sourcing activities decreased by -21% month-over-month (vs. -9% seasonal average)
- Even with these decreases, global design activities grew compared to prior year, while global sourcing activities contracted
- Q4 2023 ended as projected for both global design and sourcing activities
- We expect Q1 2024 to show positive trends in global design and sourcing activities, growing +2% to +3% quarter-over-quarter
- First half of 2024 is expected to remain somewhat slower with modest growth rates. We expect the second half of the calendar year to post stronger growth across regions and product categories.

