WÜRTH ELEKTRONIK

# Lessons Learned of MLCC Allocation

# Allocation on Passive Component Market

## *It‘s low tide for MLCC‘s*

# Allocation on Passive Component Market

**Product Withdrawal Notice Chip Monolithic Ceramic Capacitor: GR* series/ZR* series**

Dear Valued Customer,

Thank you for your business with Murata. We would like to notify you regarding product withdrawals and discontinuations due to market conditions. Please review the details of this notification and provide your response by the due date(s) below. As needed, please place any Last Time Buy orders before the end of March 2019. Your understanding and support are highly appreciated.

1. **Product Type, Customer/Murata:**
   Product Type: Chip Monolithic Ceramic Capacitor: GR* series / ZR* series
   Case Size: Select values in 0402, 0603, 0805, 1206 case sizes
   Temperature Characteristics: Code (Public Standard Code)
   B1/B3(B)・・・JIS standard ,R1(R)/R6(X5R)/R7(X7R)/C7(X7S)/C8(X6S)・・・EIA standard
   Capacitance ≧ 1uF, Voltage ≦ 100V
   Please refer to the attached documents for detailed Part Numbers' information.

2. **Reasons/Background:**
Increased demand for Multilayer ceramic capacitors (hereinafter referred to as MLCC) in consumer and automotive electronic goods has led to a MLCC supply issue globally. The gap of supply and demand in the MLCC industry continues to expand and is expected to continue to do so. In order to provide as much continued support as possible to the market Murata must adjust our production capacity away from Legacy products to those in market demand. Therefore, as for the target items of this EOL, we will gradually reduce the production capacity and restrict the supply quantity to discontinue the production.

3. **Product Withdrawal Schedule:**
   Last Time Order Due (*): Mar. 31, 2019
   Last Shipment Date: Mar. 31, 2020
   (*) Order quantities subjected to product availability and are not guaranteed. Last Time order is subjected to Minimum Order Quantity and Package Quantity. Order Cancellation and Product Return will be accepted only in the case of quality issue.

4. **Feedback Due:**
Please respond by September 28, 2018 regarding your understanding and acceptance of this Withdrawal Notice or whether you need further discussion and/or adjustment with Murata.

5. **Contact Window:**
Should you have any questions or concerns, please contact Murata Sales, Representative, or Distributor in your area.

Thank you,
Murata Manufacturing Co., Ltd.
Sales department
General Manager Shoei Miyamoto

Source: murata mailing, March 2018

**Extensive EOL**

**Significant Price up**


Source: https://epsnews.com/2018/08/30/component-shortages-worsen/

## The global MLCC shortage in 2018: What are your options?

### The state of the market

The global shortage in Multi-layer Ceramic Capacitors (MLCCs) is creating extremely challenging market conditions for the electronics industry.

There's an industry-wide shortage of MLCCs, and lead times, where quoted, are up to 50 weeks on new orders. In many cases, manufacturers have increased prices with immediate effect and have even applied price increases to back orders, regardless of when they were placed.

Source: https://www.avnet.com/wps/portal/abacus/solutions/technologies/passive/capacitors/the-global-mlcc-shortage/

According to the Japanese media reports, the Murata Manufacturing Co., Ltd. held a media meeting in Tokyo on November 29, and announced the combined sales target for 2021, which is 2 trillion yen.

The reason for setting the target at 2 trillion yen is that Murata believes that the next-generation communication standard "5G" will be put into operation in 2020 and auto-driving and other car electrification processes will increase the demand for electronic components.

According to Murata, the annual production increase rate of its main product MLCC is 10%. MLCC is a component for stabilizing voltage and noise reduction, Murata produces more than 1 trillion pieces per year and has a global market share of 40%, it is the world's largest MLCC producer. In the past two years, MLCC has been in a state of shortage, and Murata also said at the business briefing that it will raise MLCC prices from January to April next year.

Murata did not mentioned at the media meeting that which MLCC parameters prices will be increased. It is worth noting that after a year of shortages and price increases, MLCC is slowly returning to supply balance, and prices are slowly falling. If Murata announced the official price increase in January 2019, it Will have a big impact on the entire MLCC market.

Source: http://www.semimedia.cc/?p=3536

# Allocation on Passive Component Market

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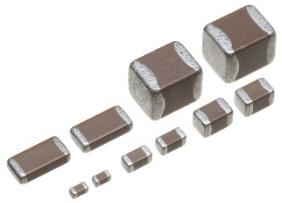
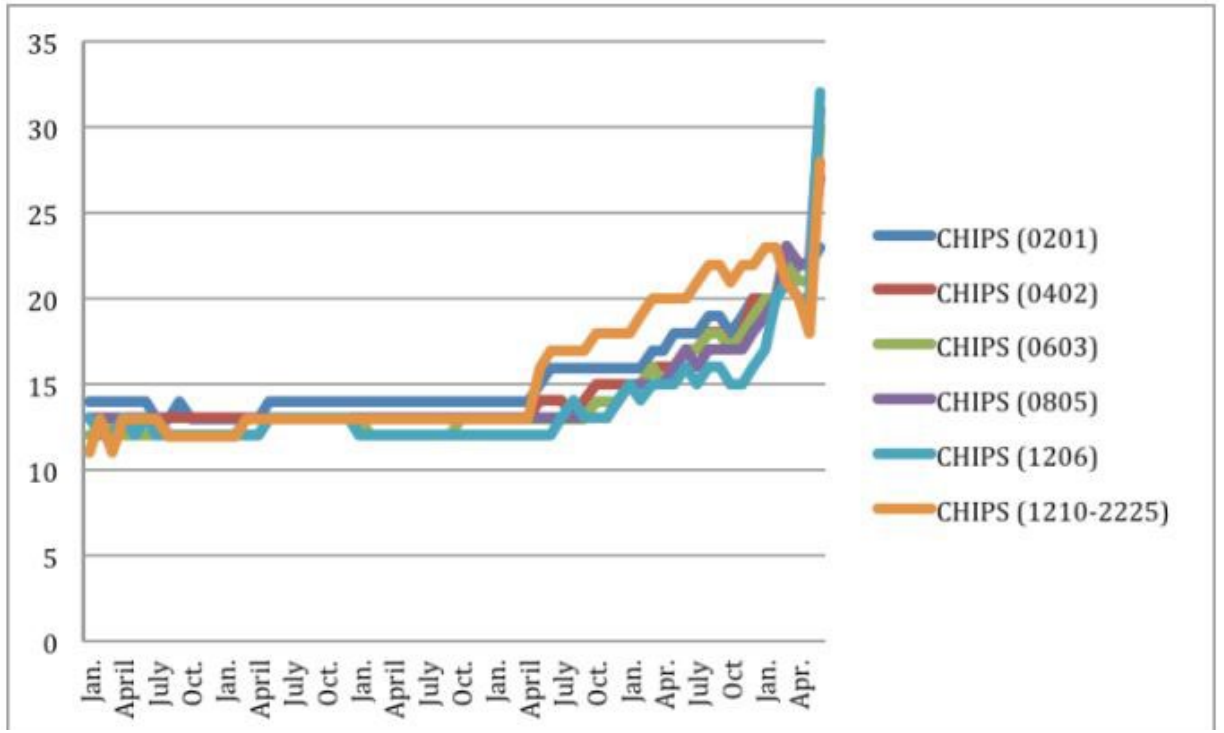
## MLCC prices to rise 40-50% in 2Q18

Source: https://passive-components.eu/mlcc-prices-to-rise-40-50-in-2q18/

## MLCC‘s



- **Massive price increase**
- **LTs > 40 weeks in average and lots not available parts**
- **Quarterly prices up to bidding procedures**



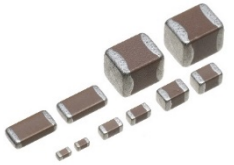

Source: Paumanok Publications, Lead Times in Weeks, Passive Components Report 2018, 2nd Edition

# Allocation on Passive Component Market

- **Where we are coming from:**

**MLCC‘s**

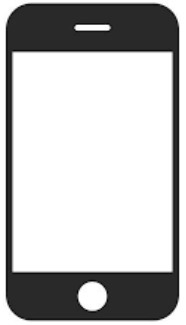

Source: MLCC Selling Price Development, 1990 – 2016, Paumanok Publications, World Markets Report 2016

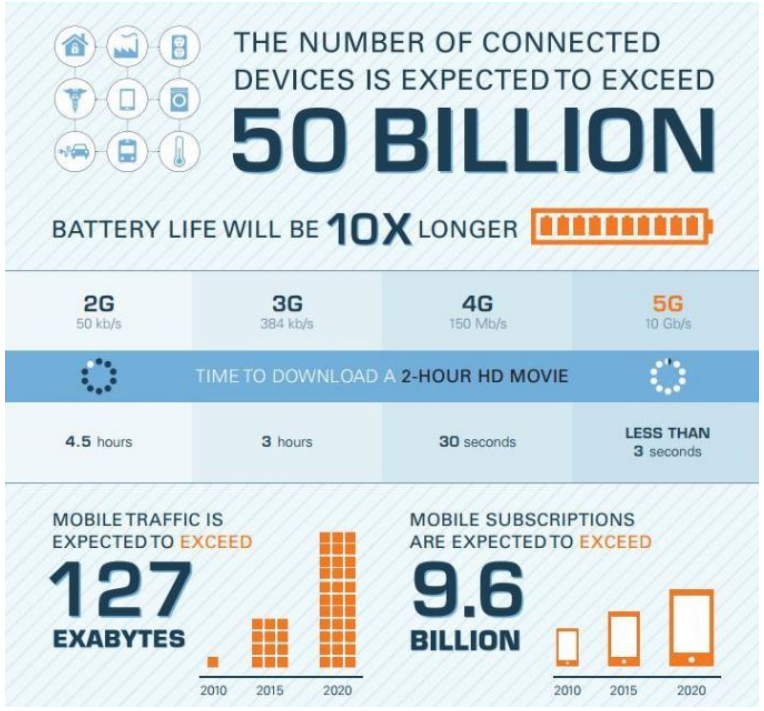


- **Massive price decrease over 27 years, prices down to less than a fifth of the origin**
- **Korea – Japan – Taiwan - Battling for lower prices over a decade**
- **Huge increase in demand from consumer based applications**

# What Triggers the Situation ?

- Generally good market situation before allocation
- Worldwide E-Mobility / EV market creates high demand
- IPhone X generation, Huawei mate, Samsung Galaxy have generated massive cap needs
- Enrolled 5G standard
- No or small investments into MLCC productions because of low margin business
- EOL messages from major manufacturers






Source: https://www.innovationtoronto.com/2017/04/the-5g-wireless-communications-standard-is-creating-the-conditions-required-for-the-tactile-internet/

# Why do Some Emphasize the Use of Smaller Sizes?

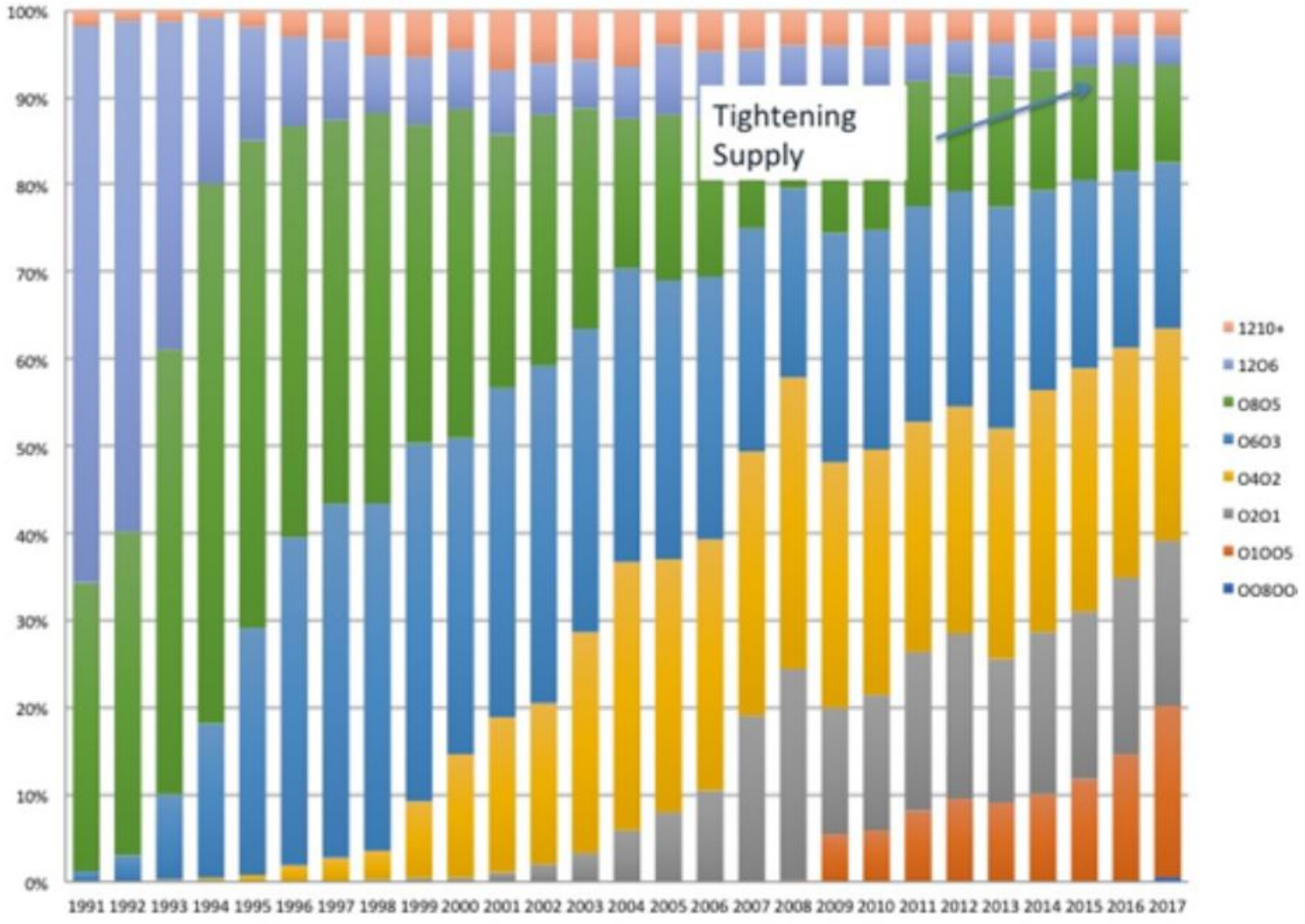
- Production optimization
- Resource optimization
- Technology progress
- Market demand
- Optimize earnings per space

| Global Share | Size (inch) | Size (mm) | Quantity per Production Wafer | Factor |
|---|---|---|---|---|
| 10% | < 0201 | | | |
| 33% | 0201 | 0.6 x 0.3 | 108.000 | 1 |
| 38% | 0402 | 1.0 x 0.5 | 27.000 | 4 |
| 7% | 0603 | 1.6 x 0.8 | 12.000 | 9 |
| 6% | 0805 | 2.0 x 1.25 | 5.400 | 20 |
| 4% | 1206 | 3.2 x 1.6 | 3.000 | 36 |
| 2% | >1206 | | | |

# Allocation on Passive Component Market

## MLCC‘s

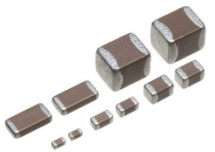
- Supply based on sizes
- Small sizes getting more and more volume



# Which Sizes Maintain in Future?

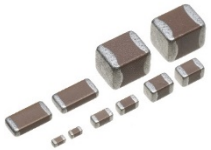
- EOL announcements @ Murata, Taiyo Yuden, TDK and others on sizes ≥0603
- Customers are doubtful:


  - How to maintain designs with 0603, 0805 and larger?
  - What to do with application life cycles longer than consumer business?
  - Which sizes should be in focus for new developments?

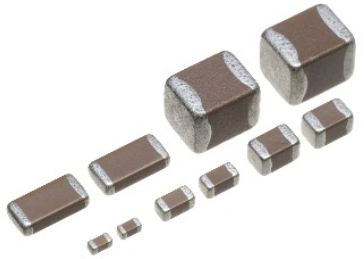


# Disadvantages of Changing to Smaller Sizes?

- **Worse electrical stability / performance**
  - For class 2 ceramics X7R / X5R >> higher capacity loss due to DC bias
- **Physics – mechanical & electrical**
  - Less stability of smaller components with thinner layers especially with higher voltages
- **New production equipment**
  - New feeder benches, nozzles and pick & place machines
- **Re-design necessary**
  - Engineering resources blocked for ages instead of creating new designs
  - Releases (such as e.g. UL) must be renewed
  - Changes in the manufacturing process needed

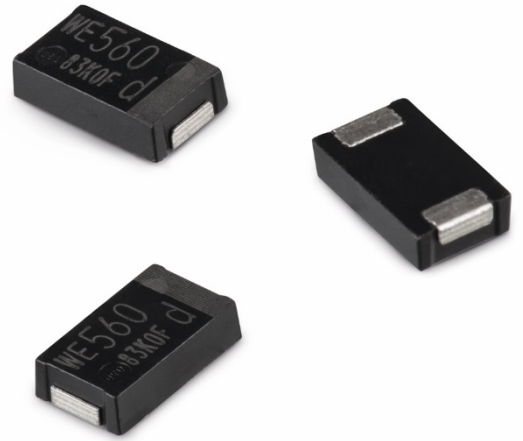


# How to Overcome the Actual Situation?



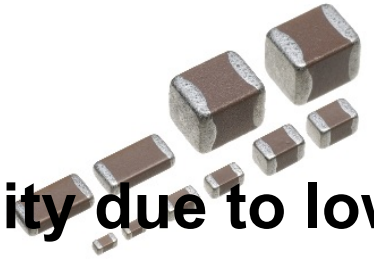
## Searching for long-term stability

- Some confirm larger MLCC case sizes (>0603) at least until end of 2023
- Different technologies for new designs
  - H-Chip Aluminum Polymer
  - Miniaturization of E-Caps (Ø3mm)



# Future Remains Thrilling

## Conclusion



- MLCC market remains tight, actual slight step back to normality due to lower quantities in mobiles and other market influences
- Lots of EOL announcements, but still manufacturers maintain larger sizes
- Consider alternatives for new designs, e.g. H-Chip Aluminum Polymer
- Miniaturization of E-Caps (Ø3mm) as another alternative
- Long-term cooperation to ensure component availability