Right first time

Steven Van Hout

VDL TBP ELECTRONICS

OUR IDENTITY

PRAGMATIC
ENTREPRENEURSHIP

INFORMAL
OPEN
ATMOSPHERE

FLAT ORGANISATION STRUCTURE
WITH SHORT LINES

STRENGTH THROUGH COOPERATION

STRENGHT OF A
MULTINATIONAL

RESULT
ORIENTED

CULTURE OF A
FAMILY COMPANY

EXCELLENT
CRAFTMANSHIP

COMMITTED
EMPLOYEES

The way to a high quality product

VDL TBP Electronics

ELECTRONICS & APPLICATIONS '23

The way to a high quality product

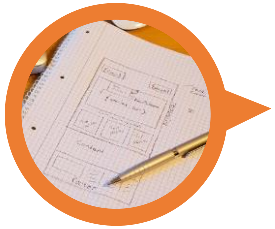
01 STEP

IDEA

The way to a high quality product

01 STEP

IDEA



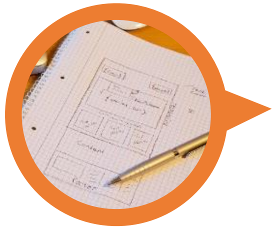
02 STEP

BLOCK DIAGRAM

The way to a high quality product

01 STEP

IDEA



02 STEP

BLOCK DIAGRAM

03 STEP

BOM KEY COMPONENTS

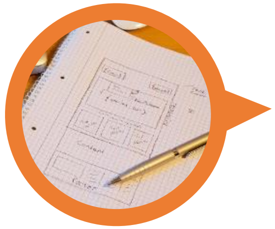
The way to a high

03 STEP

BOM KEY COMPONENTS

01 STEP

IDEA



02 STEP

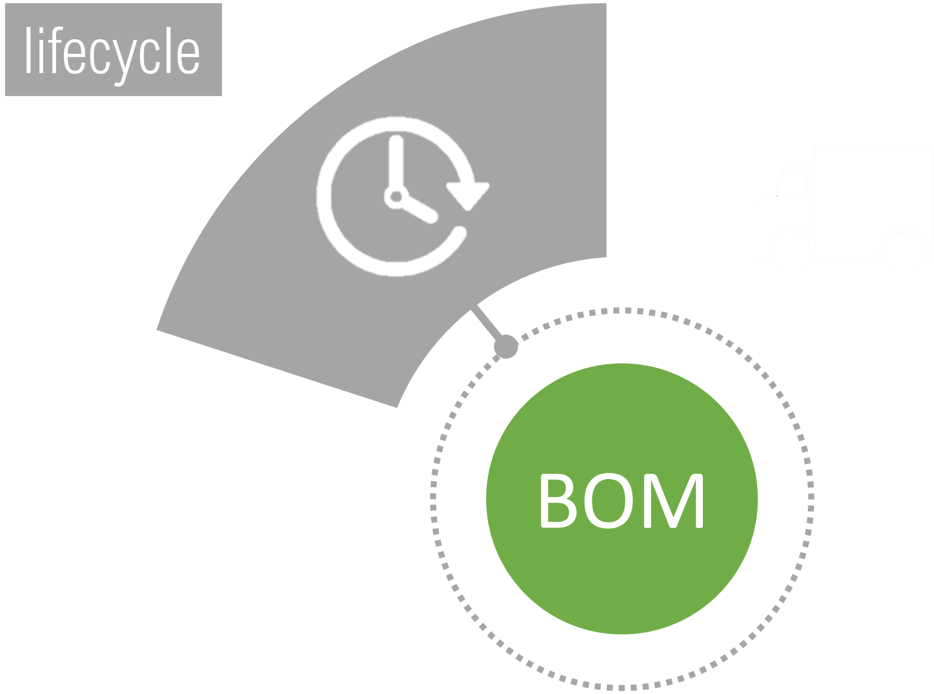
BLOCK DIAGRAM

03 STEP

BOM KEY COMPONENTS

03 STEP

BOM KEY COMPONENTS



lifecycle

BOM

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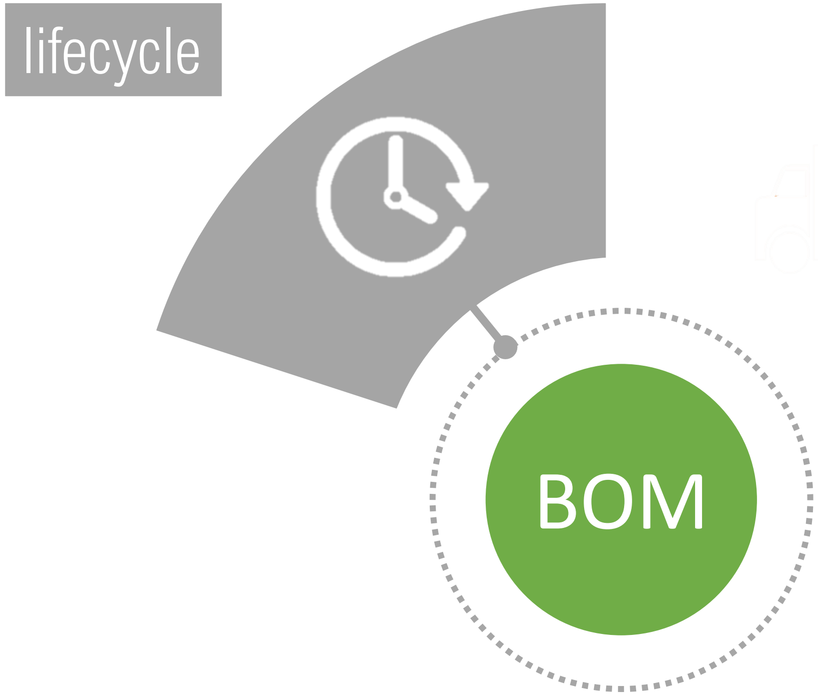
ELECTRONICS & APPLICATIONS '23

03 STEP

BOM KEY COMPONENTS

lifecycle



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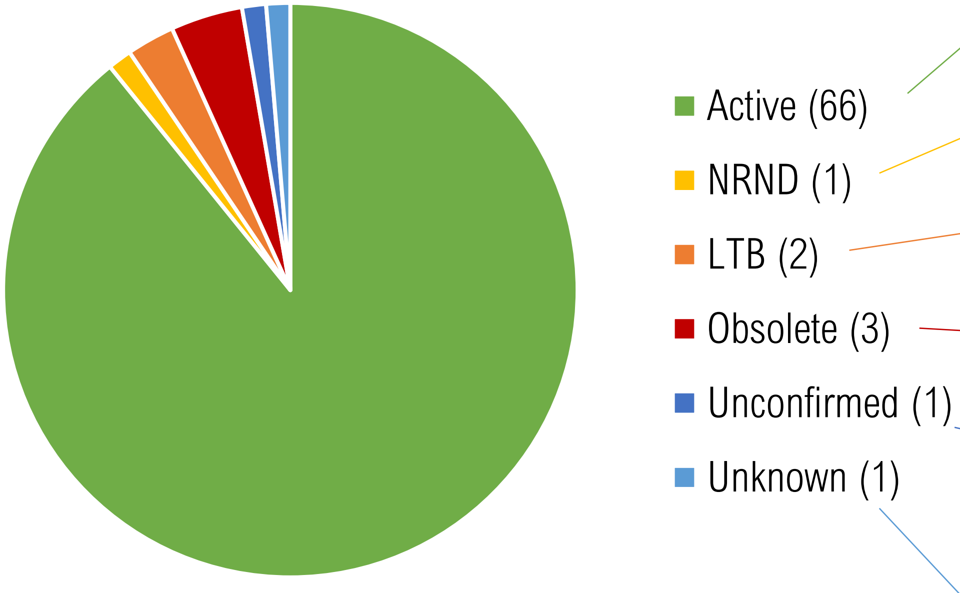
03 STEP

BOM KEY COMPONENTS

lifecycle



Lifecycle status

Active Part

Not **R**ecommended for **N**ew **D**esigns. Try to avoid these parts.

Last **T**ime **B**uy: Part will be obsolete in a few months.

Part is no longer available

Part is active, but his lifecycle status is not clear

Status of part is unknown. This can have several causes, namely
- Incorrect Manufacturing Part Number (MPN) in BOM
- MPN is unknown in database
- No information is found from this MPN

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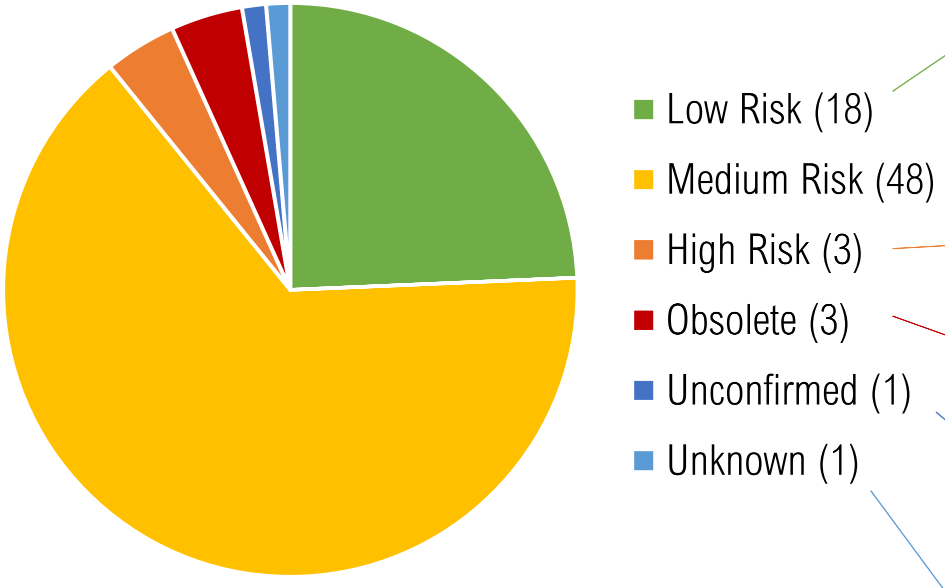
03 STEP

BOM KEY COMPONENTS

lifecycle



Lifecycle risk

Prediction of risk on End Of Life (EOL)

Low risk to EOL

Medium risk to EOL. Part could be EOL in the future.

High risk to EOL. Part could be EOL in the near future.

Part is no longer available.

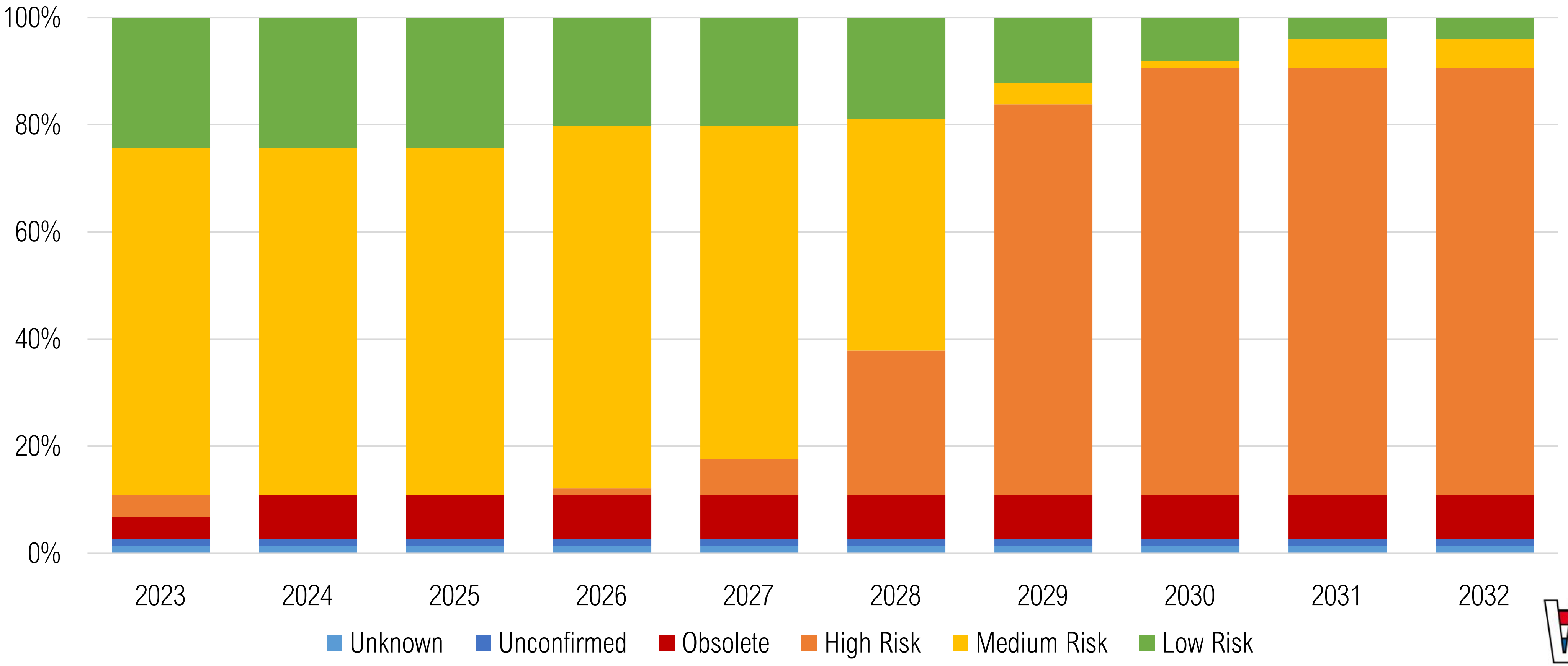
Part is active, but his lifecycle risk is not clear

Risk of part is unknown. This can have several causes, namely
- Incorrect Manufacturing Part Number (MPN) in BOM
- MPN is unknown in database
- No information is found from this MPN

03 STEP

BOM KEY COMPONENTS

lifecycle



Lifecycle risk trend

Design for Logistics - DfL

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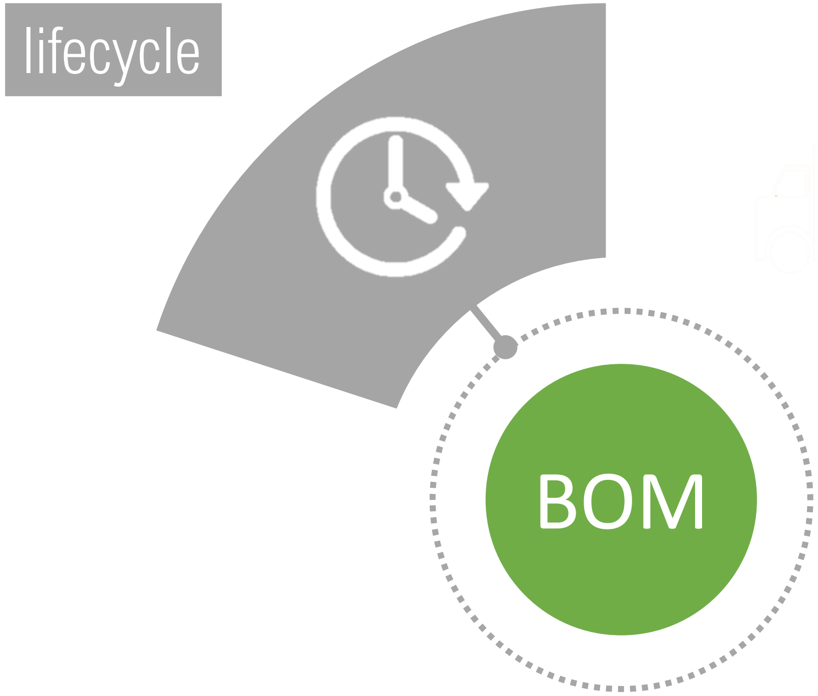
03 STEP

BOM KEY COMPONENTS

lifecycle



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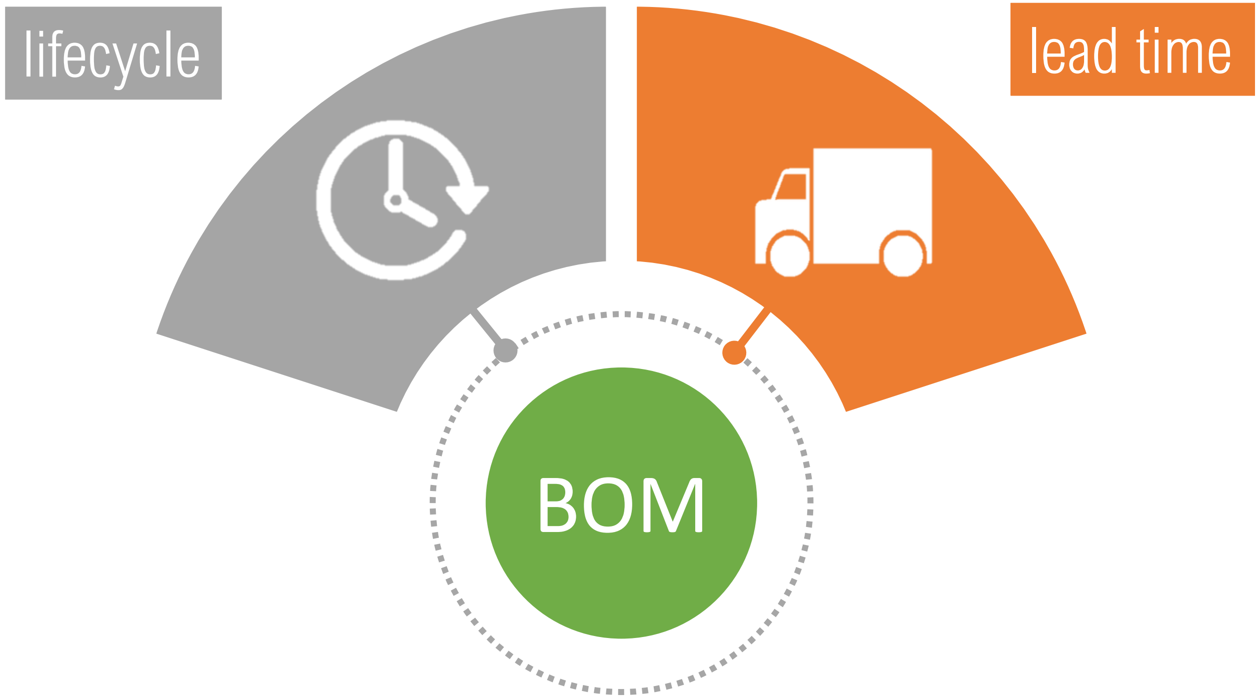
03 STEP

BOM KEY COMPONENTS



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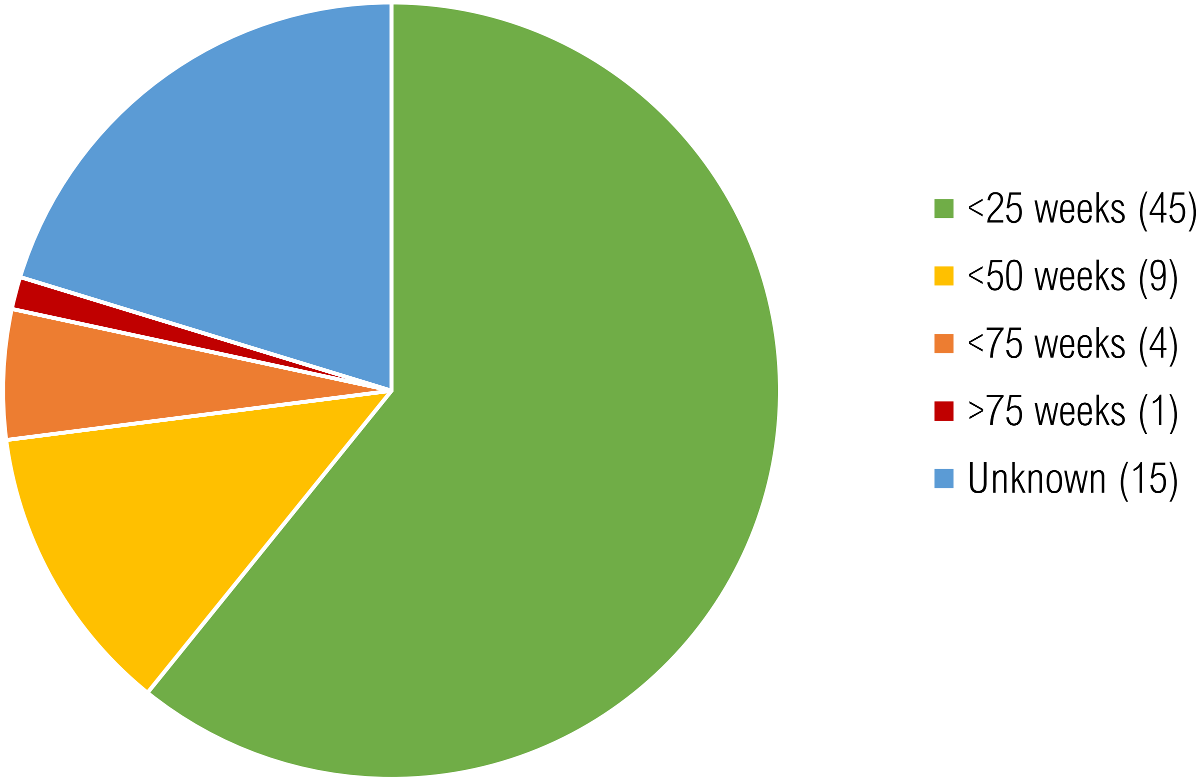
03 STEP

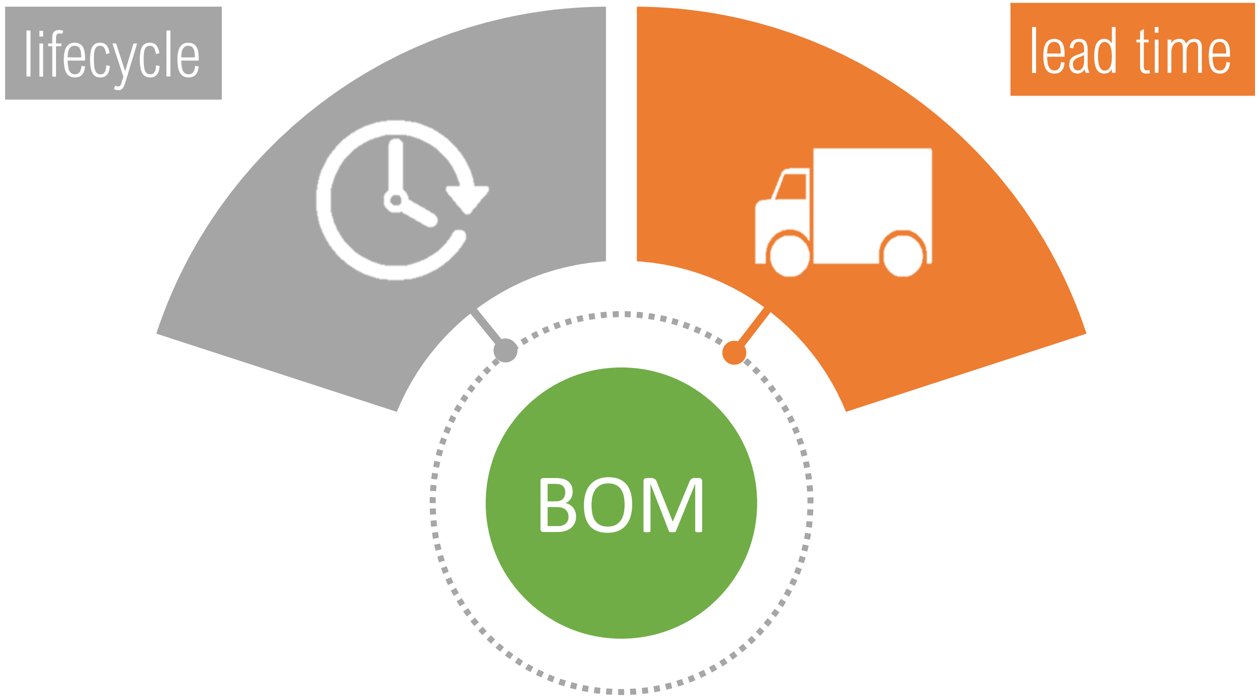
BOM KEY COMPONENTS — lead time



03 STEP

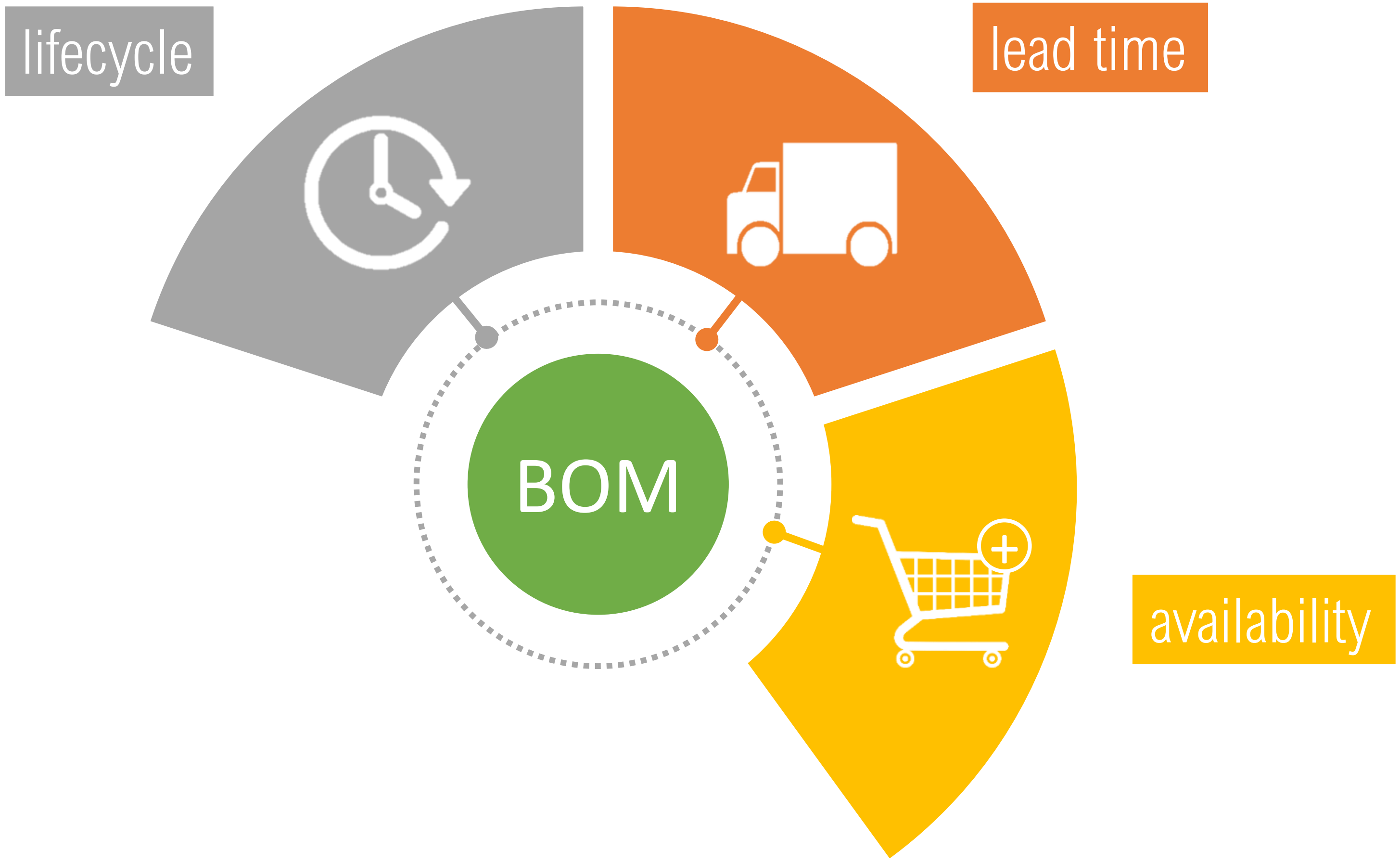
BOM KEY COMPONENTS

lead time



03 STEP

BOM KEY COMPONENTS



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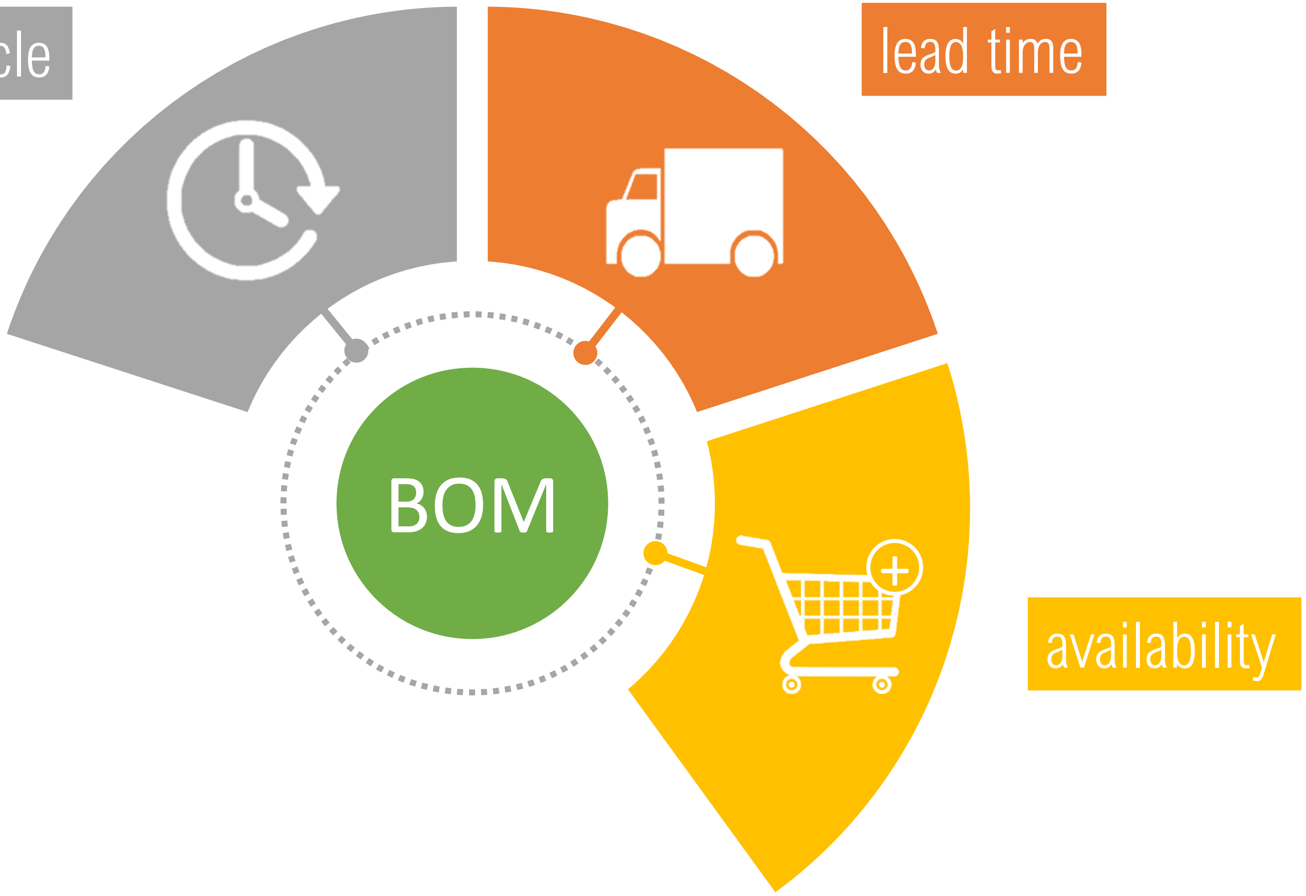
03 STEP

BOM KEY COMPONENTS

availability



lifecycle

lead time

BOM

availability

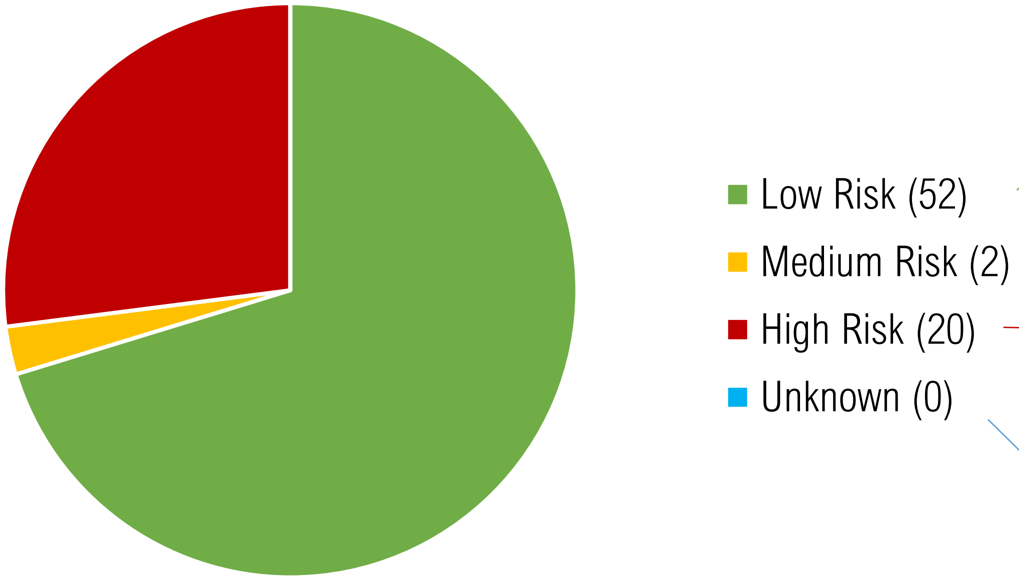
VDL TBP Electronics

E&A ELECTRONICS & APPLICATIONS '23

03 STEP

BOM KEY COMPONENTS

availability



Availability risk

These components have sufficient stock

These components have a risk of insufficient stock

These components have a risk of no stock

Risk of part is unknown. This can have several causes, namely
- Incorrect Manufacturing Part Number (MPN) in BOM
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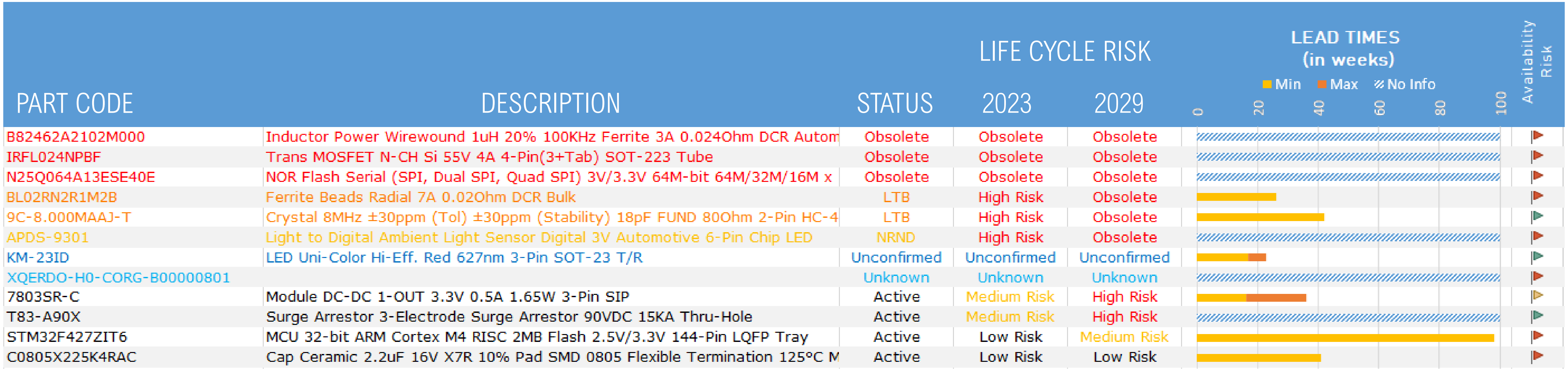
- No information is found from this MPN

03 STEP

BOM KEY COMPONENTS

availability



PART CODE	DESCRIPTION	STATUS	LIFE CYCLE RISK 2023	LIFE CYCLE RISK 2029	LEAD TIMES (in weeks)	Availability Risk
B82462A2102M000	Inductor Power Wirewound 1uH 20% 100KHz Ferrite 3A 0.024Ohm DCR Autom	Obsolete	Obsolete	Obsolete	▨	🟥
IRFL024NPBF	Trans MOSFET N-CH Si 55V 4A 4-Pin(3+Tab) SOT-223 Tube	Obsolete	Obsolete	Obsolete	▨	🟥
N25Q064A13ESE40E	NOR Flash Serial (SPI, Dual SPI, Quad SPI) 3V/3.3V 64M-bit 64M/32M/16M x	Obsolete	Obsolete	Obsolete	▨	🟥
BL02RN2R1M2B	Ferrite Beads Radial 7A 0.02Ohm DCR Bulk	LTB	High Risk	Obsolete		🟥
9C-8.000MAAJ-T	Crystal 8MHz ±30ppm (Tol) ±30ppm (Stability) 18pF FUND 80Ohm 2-Pin HC-4	LTB	High Risk	Obsolete		🟩
APDS-9301	Light to Digital Ambient Light Sensor Digital 3V Automotive 6-Pin Chip LED	NRND	High Risk	Obsolete	▨	🟥
KM-23ID	LED Uni-Color Hi-Eff. Red 627nm 3-Pin SOT-23 T/R	Unconfirmed	Unconfirmed	Unconfirmed		🟩
XQERDO-H0-CORG-B00000801		Unknown	Unknown	Unknown	▨	🟥
7803SR-C	Module DC-DC 1-OUT 3.3V 0.5A 1.65W 3-Pin SIP	Active	Medium Risk	High Risk		🟧
T83-A90X	Surge Arrestor 3-Electrode Surge Arrestor 90VDC 15KA Thru-Hole	Active	Medium Risk	High Risk	▨	🟩
STM32F427ZIT6	MCU 32-bit ARM Cortex M4 RISC 2MB Flash 2.5V/3.3V 144-Pin LQFP Tray	Active	Low Risk	Medium Risk		🟥
C0805X225K4RAC	Cap Ceramic 2.2uF 16V X7R 10% Pad SMD 0805 Flexible Termination 125°C M	Active	Low Risk	Low Risk		🟥

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Design for Logistics - DfL

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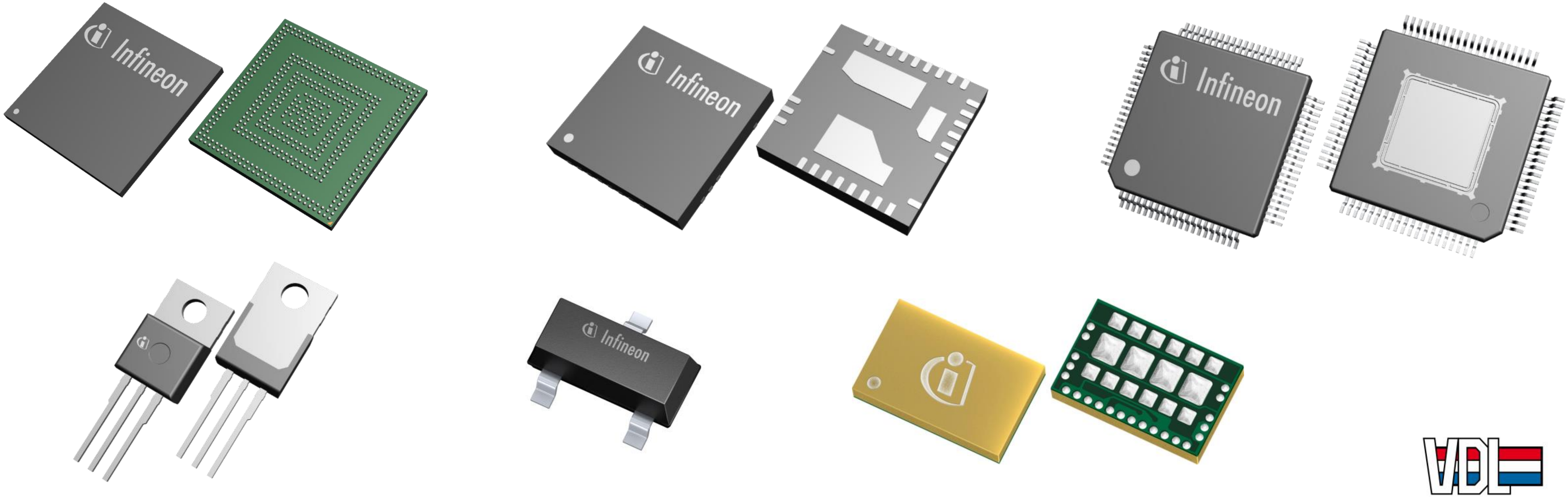
03 STEP

BOM KEY COMPONENTS

availability

The choice of package depends on its availability, the size of the board, soldering reliability, etc.



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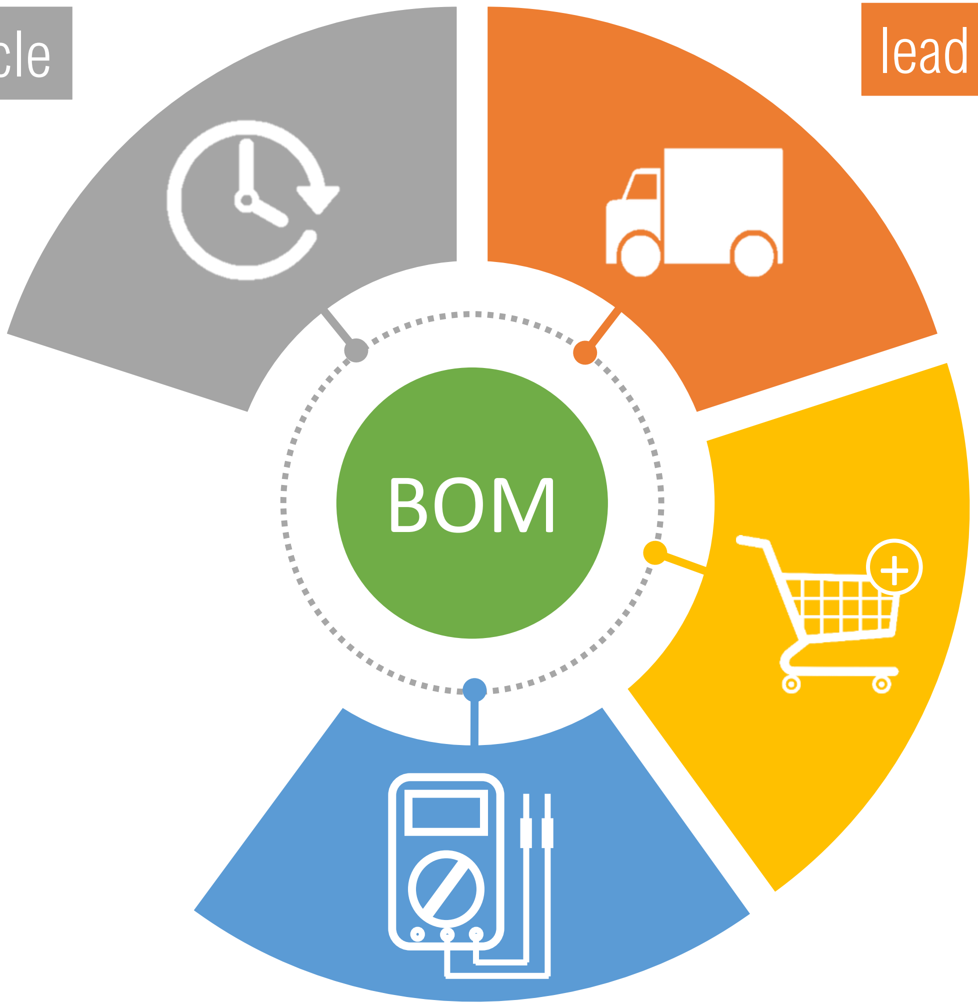
ELECTRONICS' APPLICATIONS 23

03 STEP

BOM KEY COMPONENTS

availability



lifecycle

lead time

availability

testability

BOM

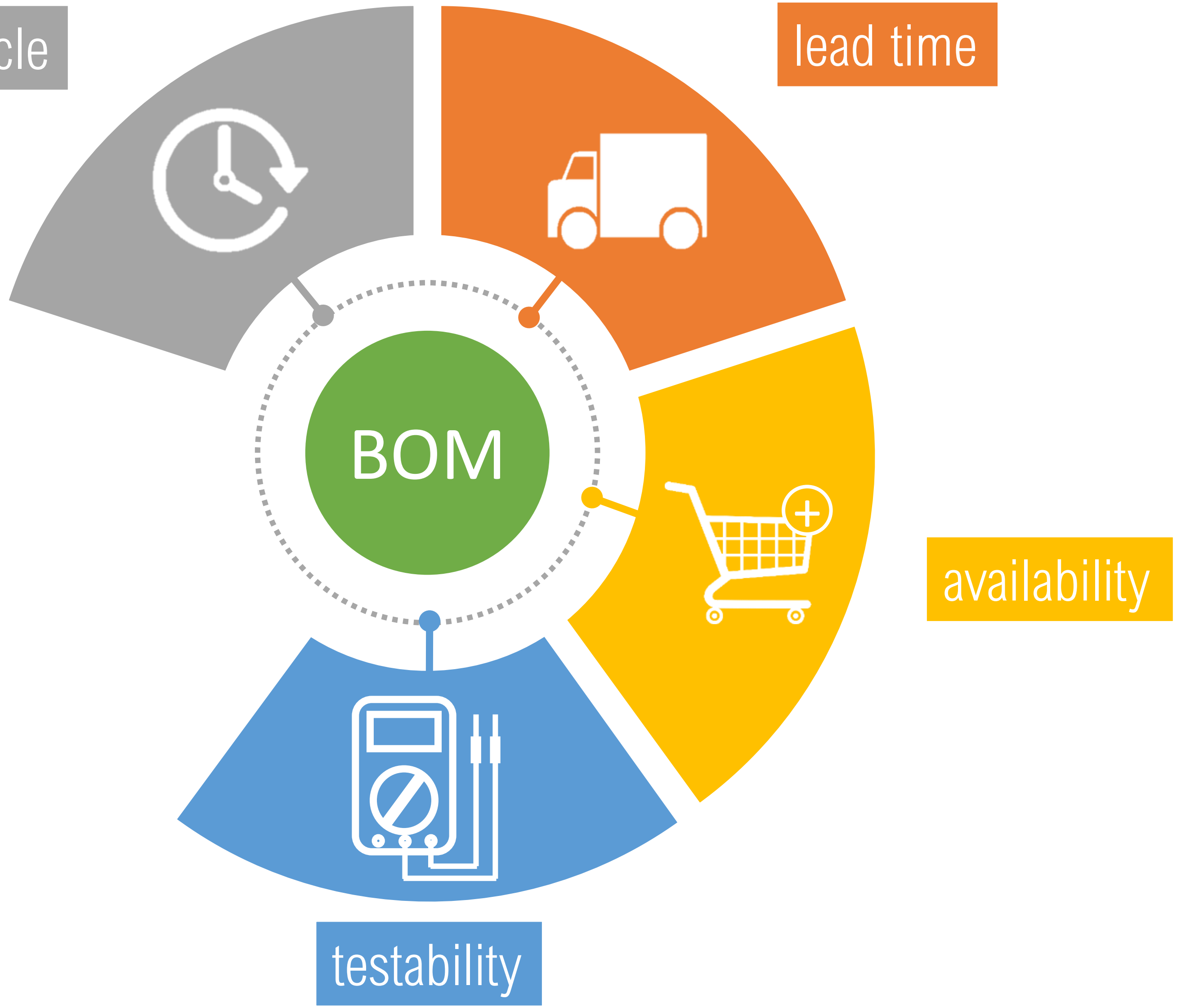
VDL TBP Electronics

ELECTRONICS & APPLICATIONS '23

03 STEP

BOM KEY COMPONENTS

testability



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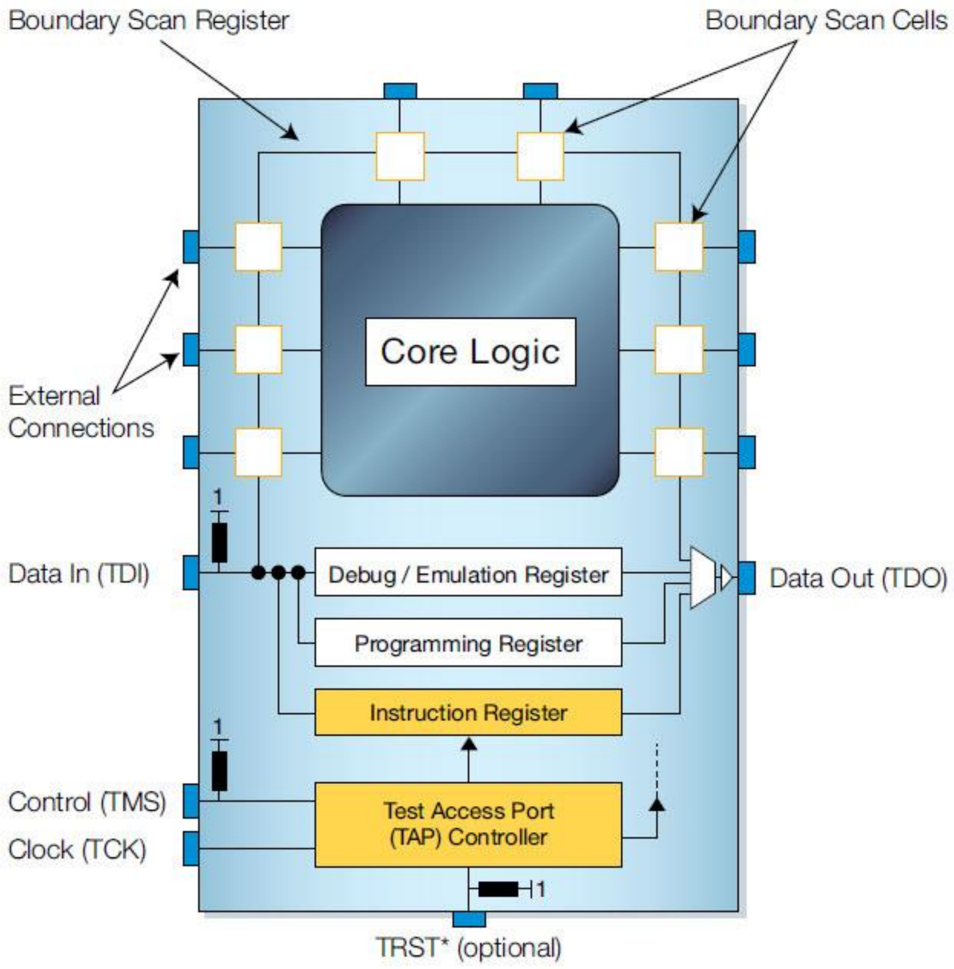
ELECTRONICS & APPLICATIONS '23

03 STEP

BOM KEY COMPONENTS

testability

Choose key components which are IEEE1149.1 compatible (boundary scan)



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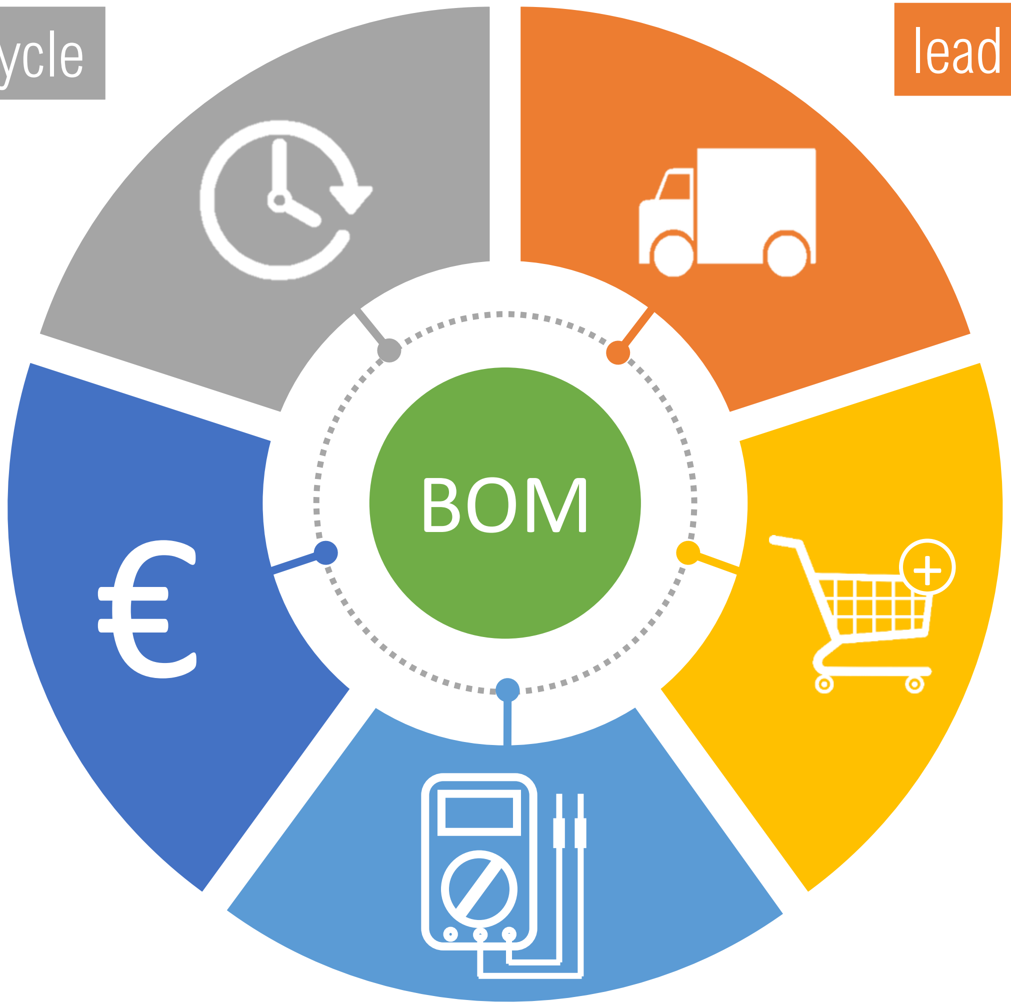
ELECTRONICS & APPLICATIONS '23

03 STEP

BOM KEY COMPONENTS

testability



lifecycle

lead time

availability

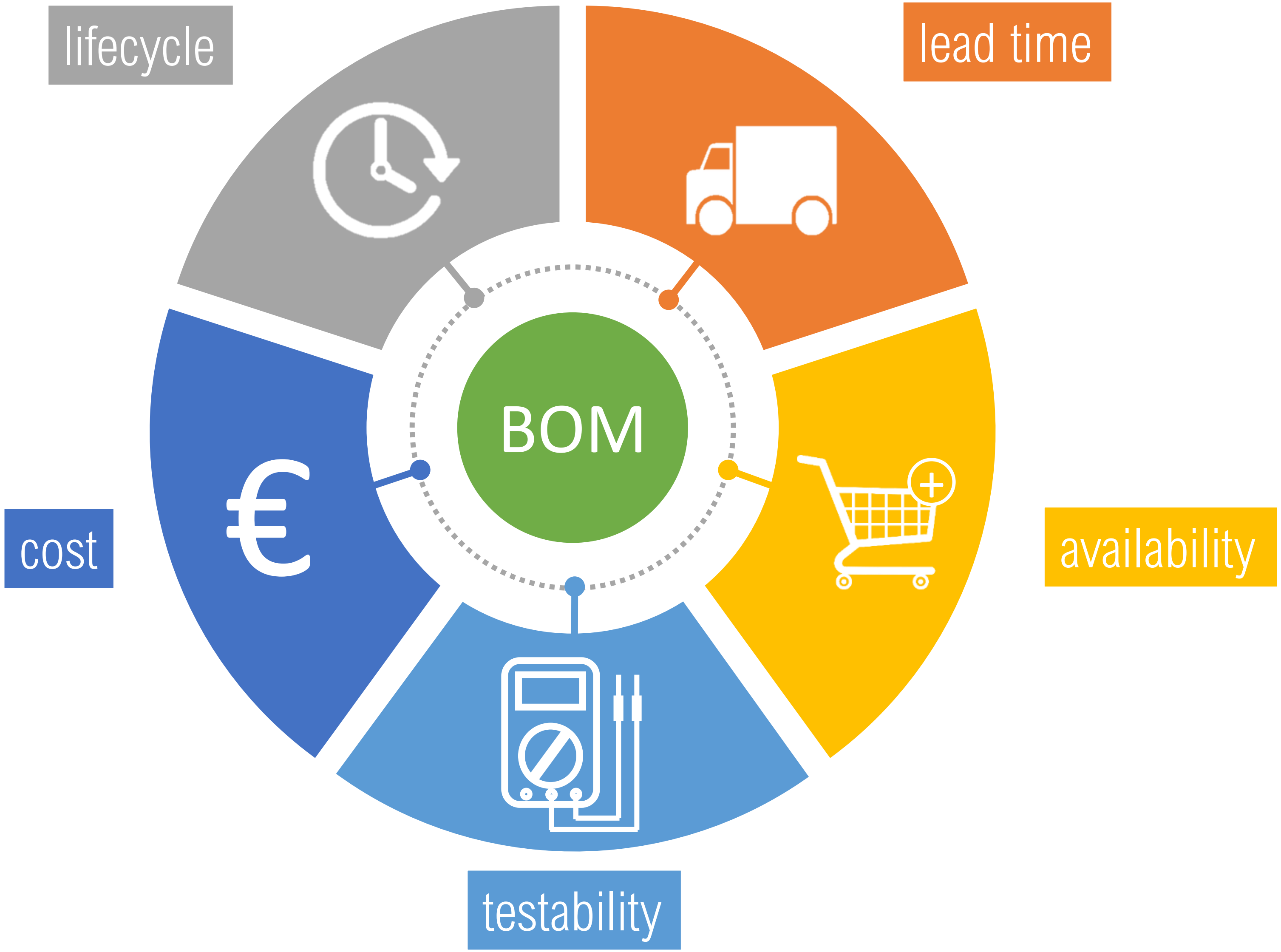
testability

cost

03 STEP

BOM KEY COMPONENTS

cost €



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03 STEP

BOM KEY COMPONENTS

cost €

Cost depends on:

- Lifecycle
- Availability and lead time
- Testability
- Package choice

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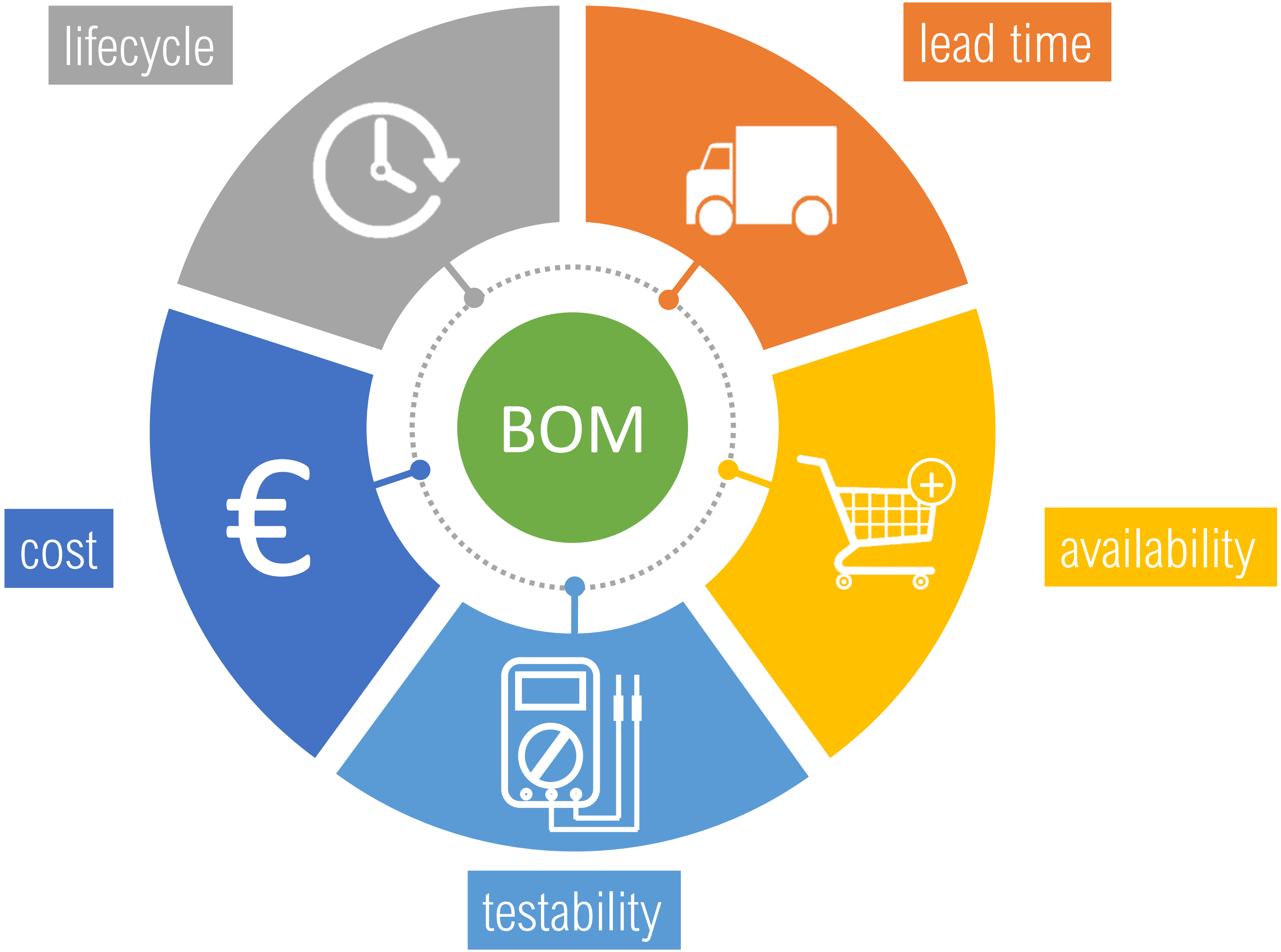
03 STEP

BOM KEY COMPONENTS

cost €



BOM

lifecycle

lead time

availability

testability

cost

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E&A ELECTRONICS & APPLICATIONS '23

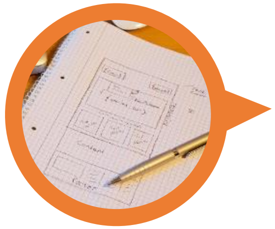
The way to a high quality product

03 STEP

BOM KEY COMPONENTS

01 STEP

IDEA



02 STEP

BLOCK DIAGRAM

03 STEP

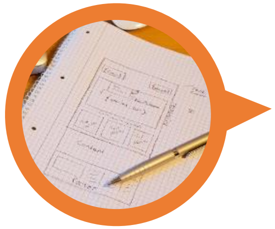
BOM KEY COMPONENTS

VDL TBP Electronics

The way to a high quality product

01 STEP

IDEA



02 STEP

BLOCK DIAGRAM

03 STEP

BOM KEY COMPONENTS

04 STEP

SCHEMATICS + BOM

VDL TBP Electronics

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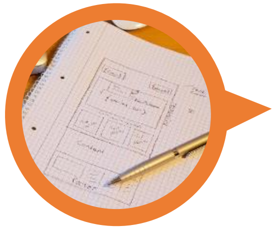
he way to a high

04 STEP

SCHEMATICS + BOM

01 STEP

IDEA



02 STEP

BLOCK DIAGRAM

03 STEP

BOM KEY COMPONENTS

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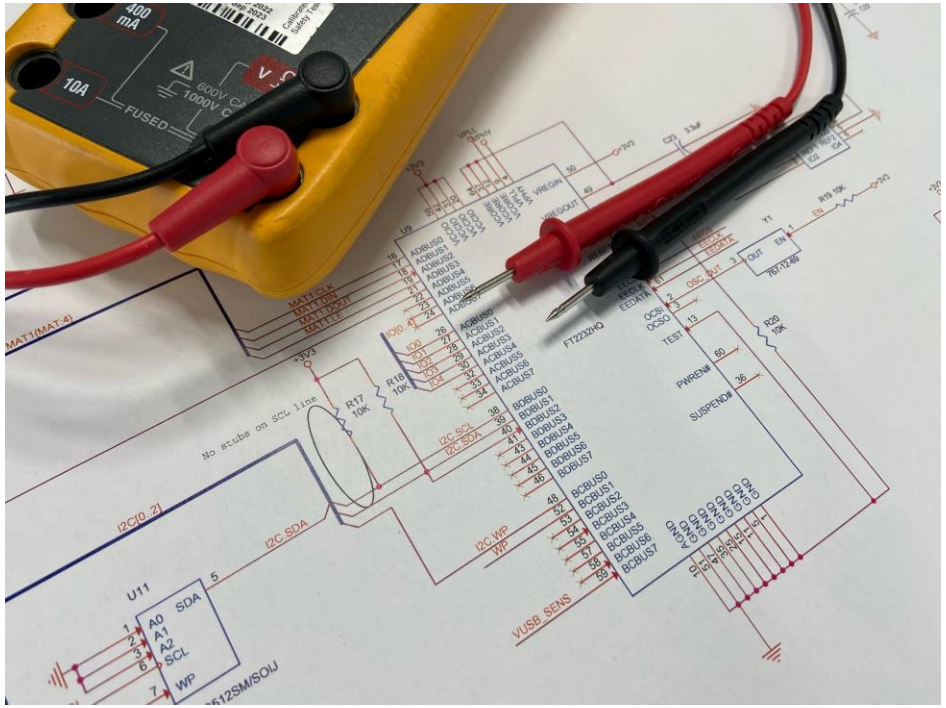
SCHEMATICS + BOM

VDL TBP Electronics

ELECTRONICS & APPLICATIONS '23

04 STEP

SCHEMATICS + BOM



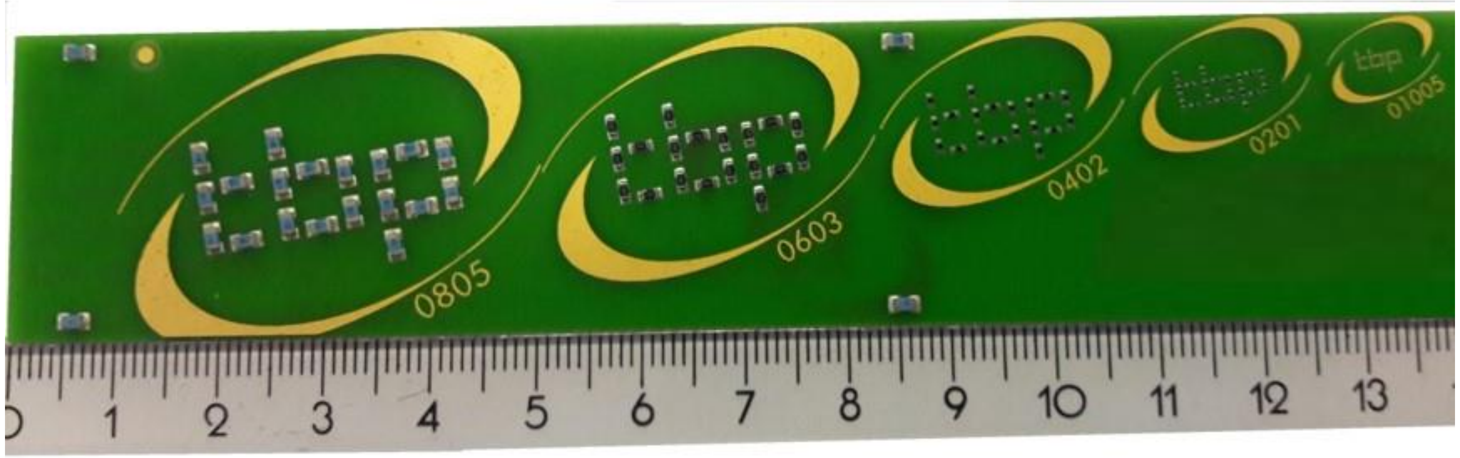
Design for Testing (DfT):

- List with required test points
- Test access recommendations
- Preliminary testcoverage
- Preliminary teststrategy
- Preliminary delivery quality

04 STEP

SCHEMATICS + BOM

Choose package of components wisely



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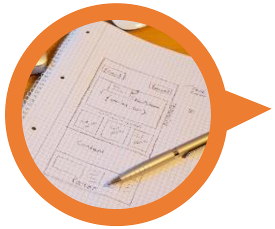
The way to a high quality product

04 STEP

SCHEMATICS + BOM

01 STEP

IDEA



02 STEP

BLOCK DIAGRAM

03 STEP

BOM KEY COMPONENTS

04 STEP

SCHEMATICS + BOM

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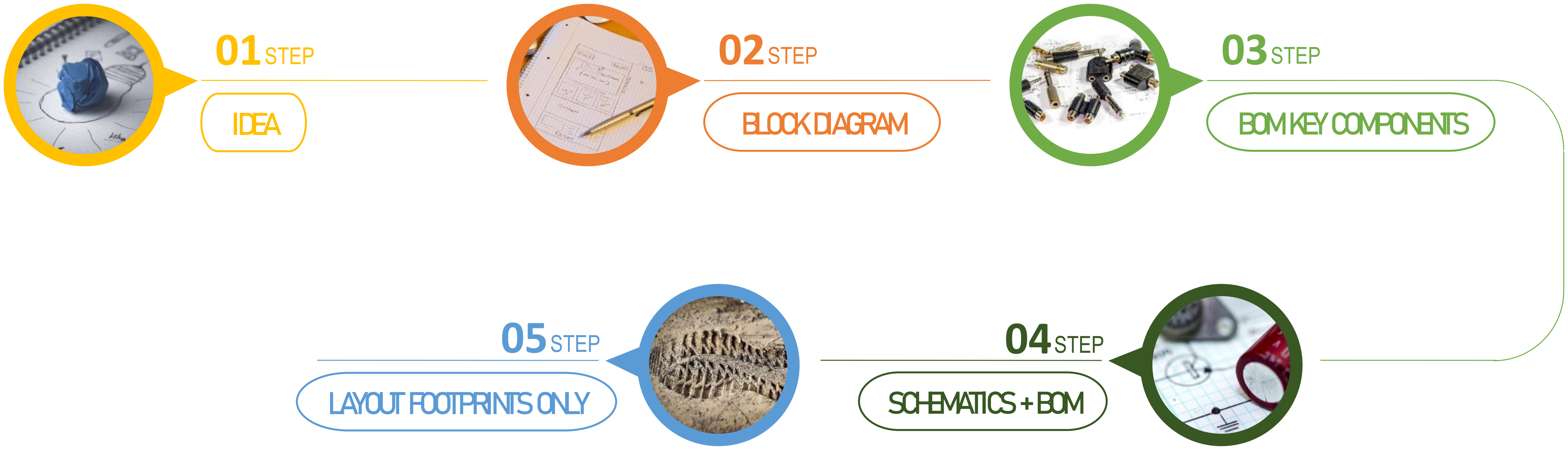
ELECTRONICS & APPLICATIONS '23

The way to a high quality product



01 STEP

IDEA

02 STEP

BLOCK DIAGRAM

03 STEP

BOM KEY COMPONENTS

04 STEP

SCHEMATICS + BOM

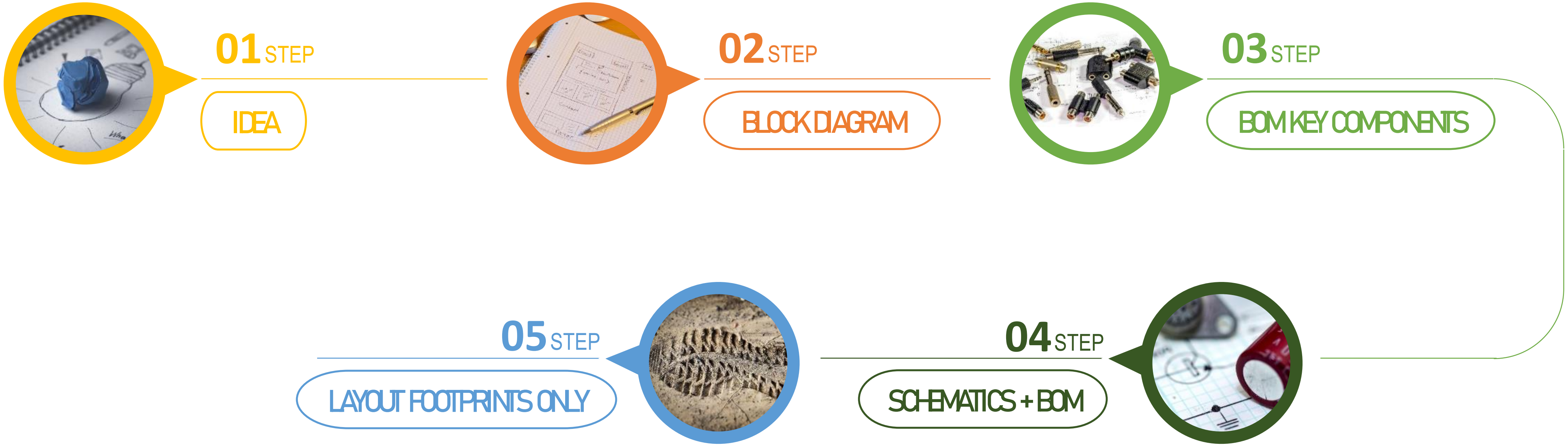
05 STEP

LAYOUT FOOTPRINTS ONLY

he way to a high

05 STEP

LAYOUT FOOTPRINTS ONLY



01 STEP

IDEA

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BLOCK DIAGRAM

03 STEP

BOM KEY COMPONENTS

04 STEP

SCHEMATICS + BOM

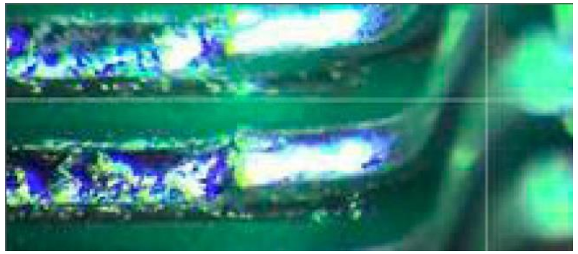
05 STEP

LAYOUT FOOTPRINTS ONLY

05 STEP

LAYOUT FOOTPRINTS ONLY

Wrong footprints lead to bad soldering reliability



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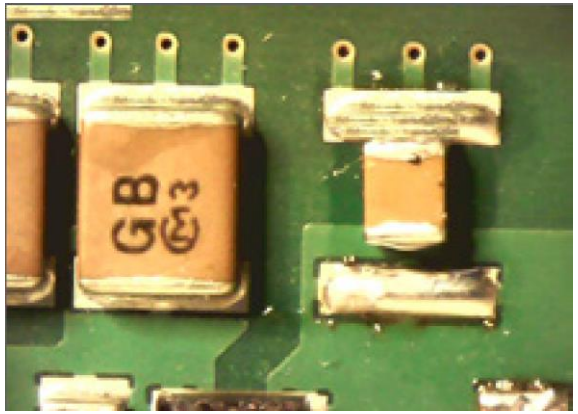

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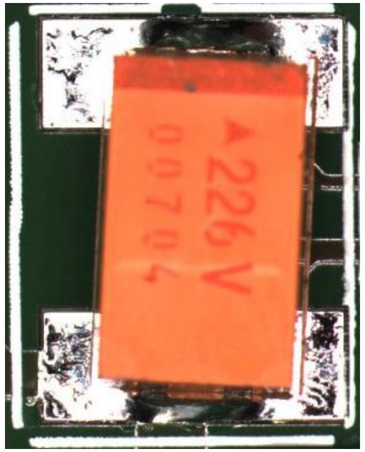

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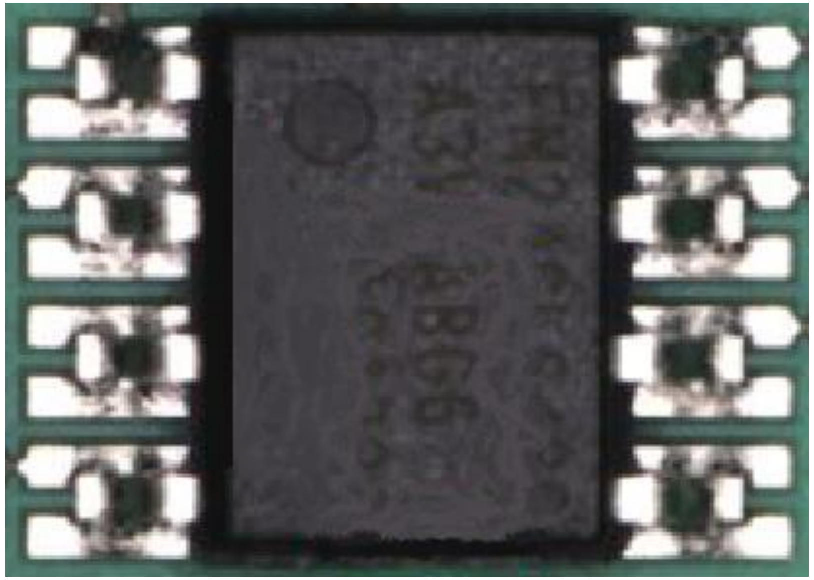
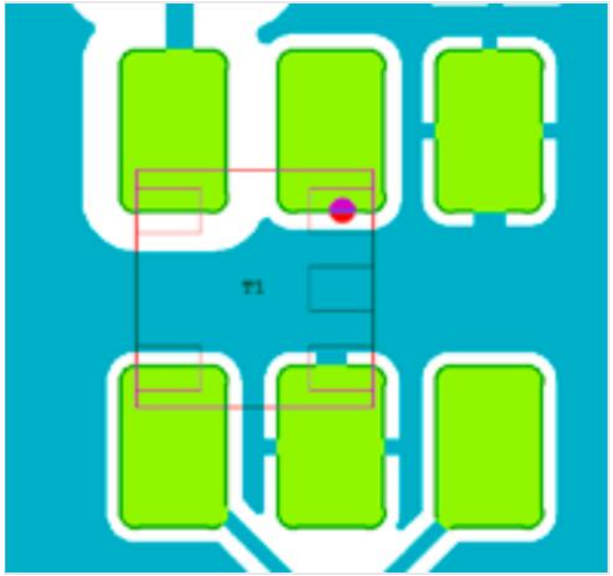
05 STEP

LAYOUT FOOTPRINTS ONLY

Wrong footprints lead to bad soldering reliability
and not placeable components → delivery delay





05 STEP

LAYOUT FOOTPRINTS ONLY

Small distance between high components lead to hardly repairable components

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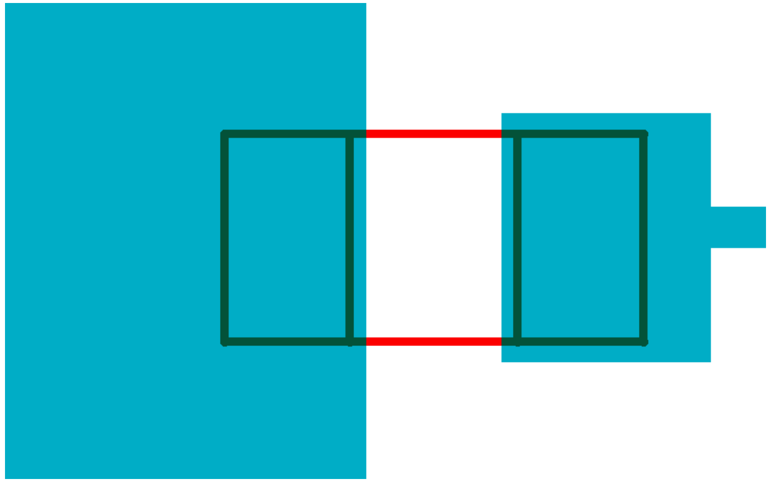
05 STEP

LAYOUT FOOTPRINTS ONLY

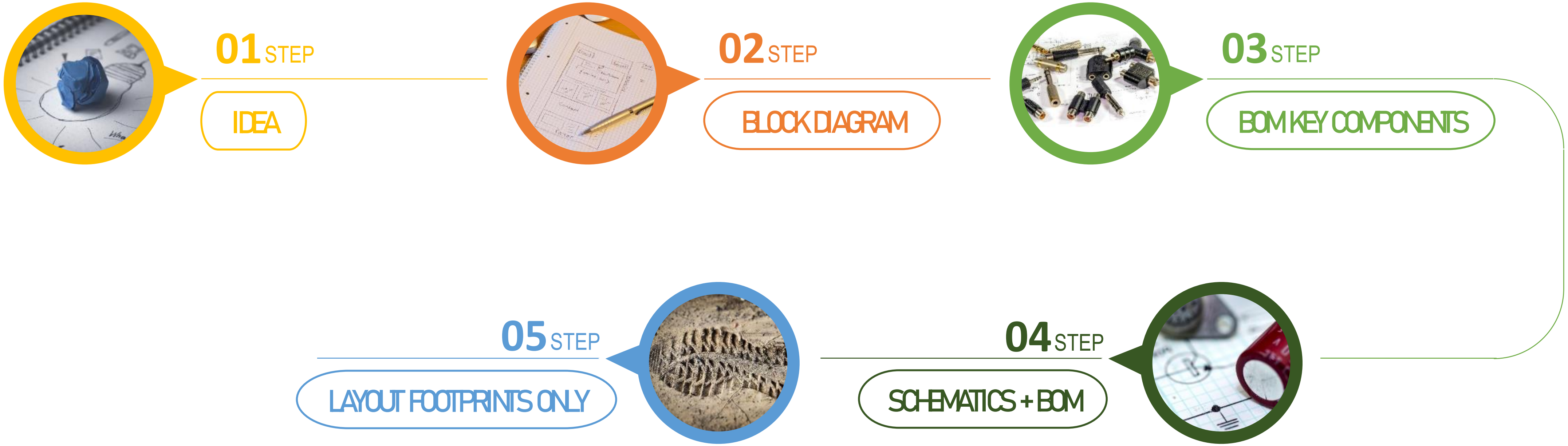
Bad thermal relief leads to tombstoning



05 STEP

he way to a high

LAYOUT FOOTPRINTS ONLY



01 STEP

IDEA

02 STEP

BLOCK DIAGRAM

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BOM KEY COMPONENTS

04 STEP

SCHEMATICS + BOM

05 STEP

LAYOUT FOOTPRINTS ONLY

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The way to a high quality product

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LAYOUT FOOTPRINTS ONLY

06 STEP

LAYOUT

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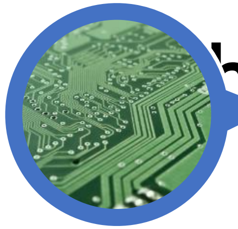
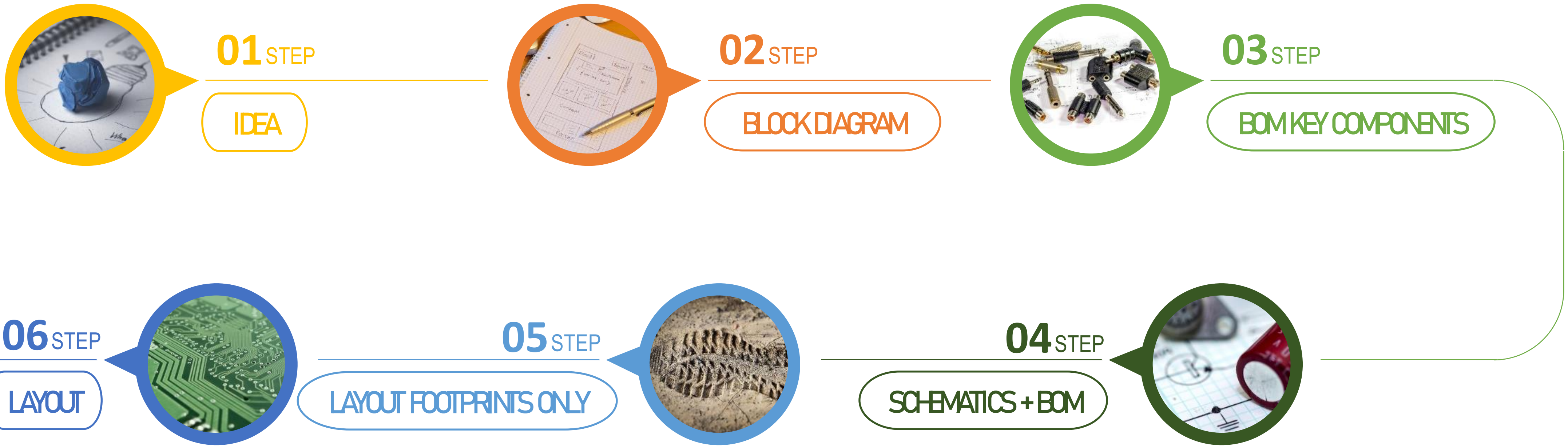


he way to a high

06 STEP

LAYOUT



01 STEP
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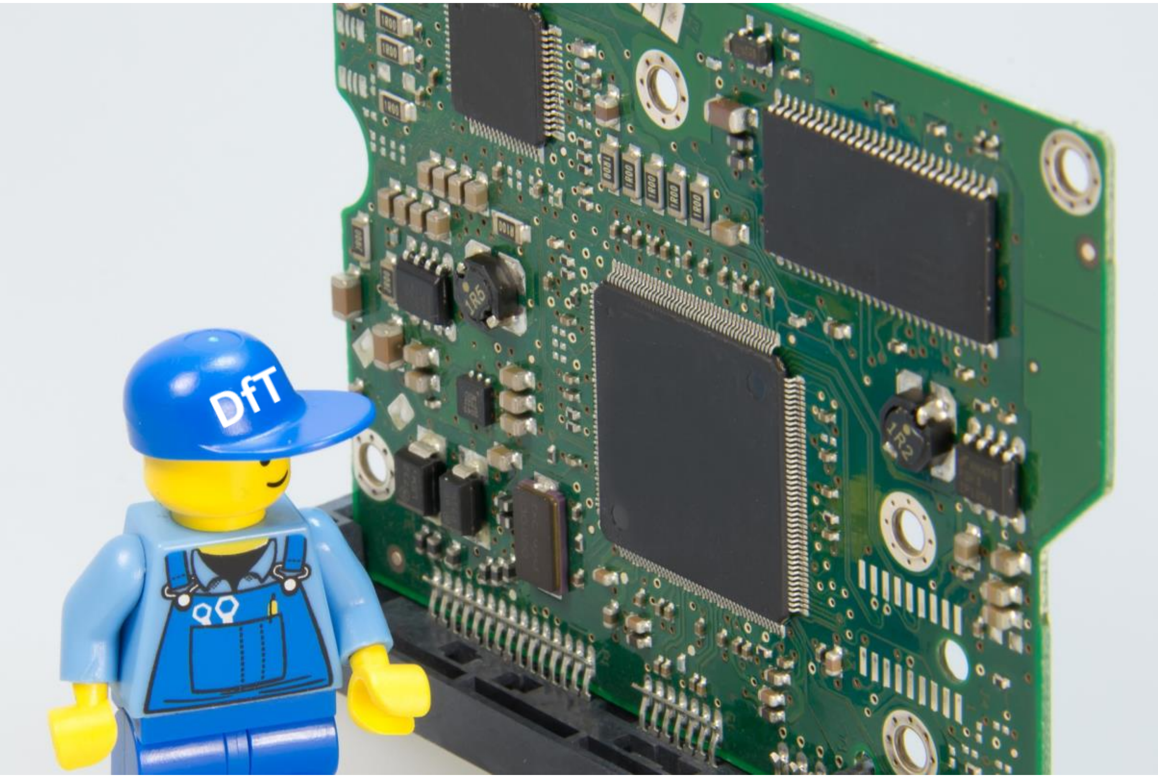
LAYOUT FOOTPRINTS ONLY

06 STEP
LAYOUT

VDL TBP Electronics

ELECTRONICS & APPLICATIONS '23

LAYOUT



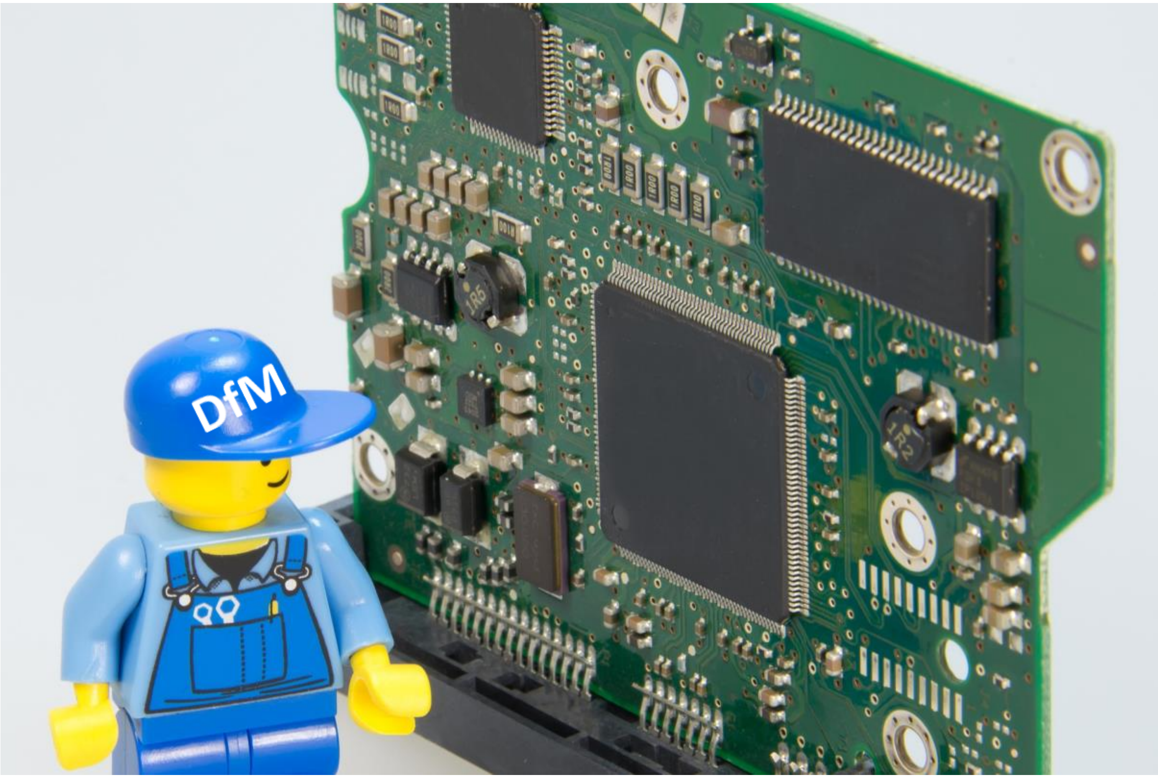
Design for Testing (DfT):

- Test access recommendations
- Final teststrategy
- Final testcoverage
- Final delivery quality

VDL TBP Electronics

06 STEP

LAYOUT



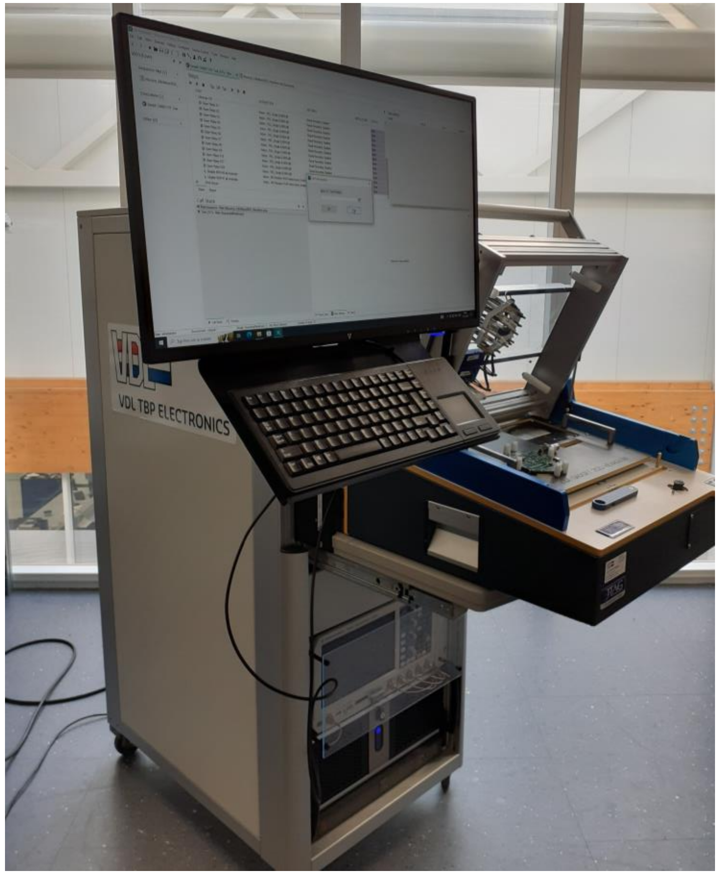
Design for Manufacturing (DfM):

- Manufacturability recommendations
- Footprint issues
- Component placement issues
- Netlist verification
- Final production yield

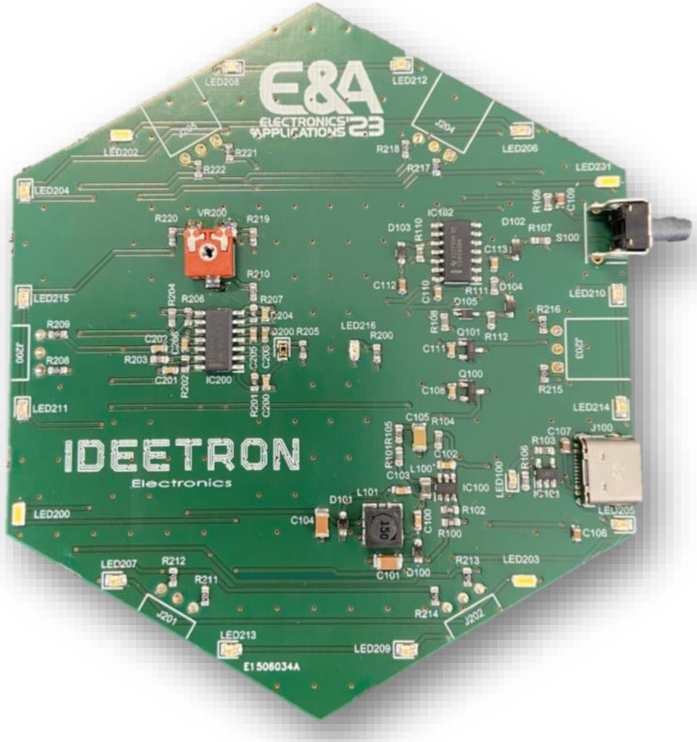
VDL TBP Electronics

06 STEP

LAYOUT



Extended Boundary Scan test (EBS)



E&A GADGET - HEXAGLOW

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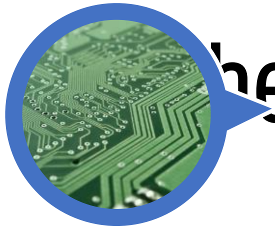
ELECTRONICS & APPLICATIONS '23



he way to a high

06 STEP

LAYOUT

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SCHEMATICS + BOM

05 STEP
LAYOUT FOOTPRINTS ONLY

06 STEP
LAYOUT

07 STEP
PROTOTYPE

VDL TBP Electronics

ELECTRONICS & APPLICATIONS '23

The way to a high quality product

01 STEP
IDEA

02 STEP
BLOCK DIAGRAM

03 STEP
BOM KEY COMPONENTS

04 STEP
SCHEMATICS + BOM

05 STEP
LAYOUT FOOTPRINTS ONLY

06 STEP
LAYOUT

07 STEP
PROTOTYPE

08 STEP
VOLUME PRODUCTION

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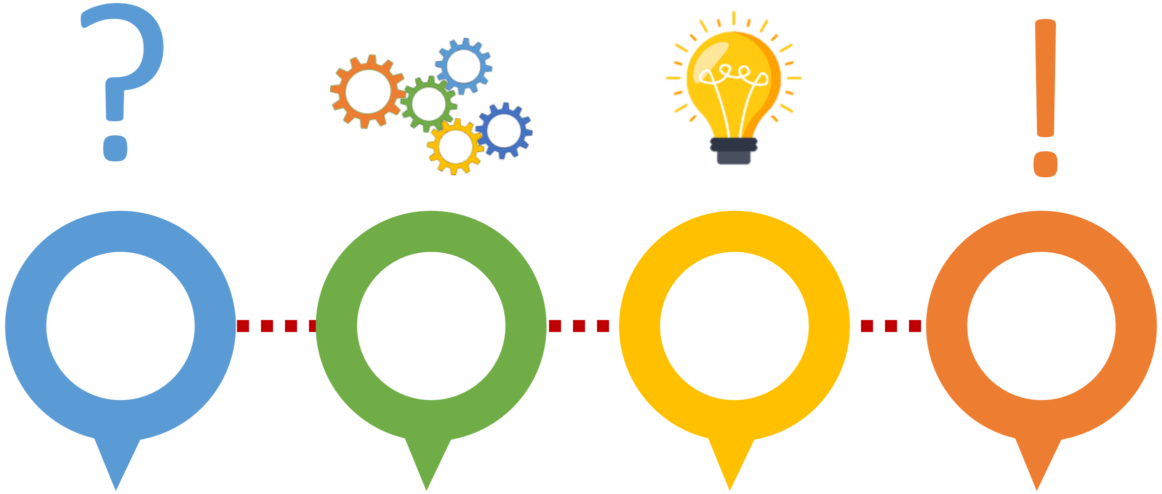
focus on cost
drives out quality

focus on quality
drives out cost

QUESTIONS?



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"GOOD HARDWARE IS ESSENTIAL,
EXPENSIVE AND COMPLEX TO BUILD…

BUT IT WILL MAKE SOFTWARE SHINE"

CONTACT INFORMATION

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Visit us @ booth 7E071

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