

Magnetics

Standard Power PBU

Focus Product Promotion

Standard Power PBU

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May 18, 2023

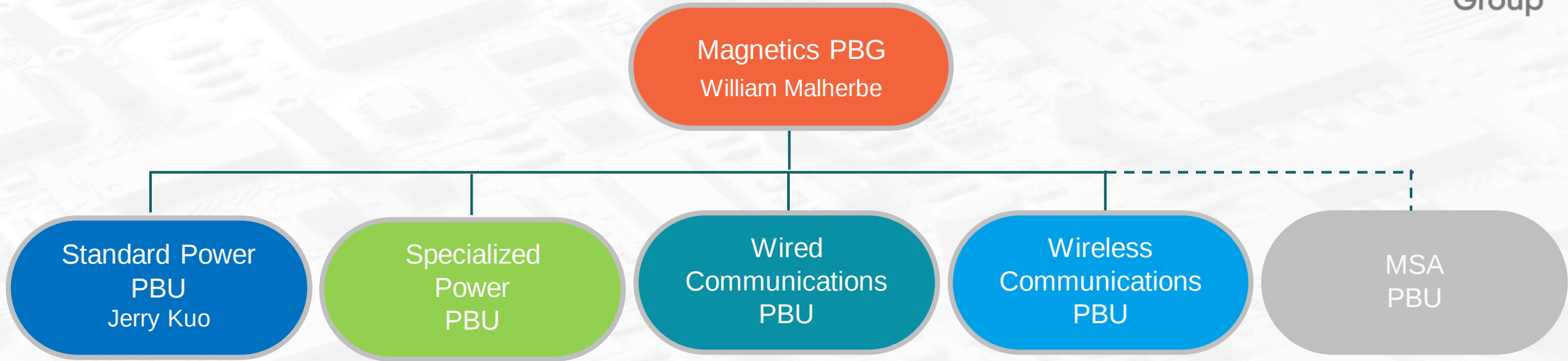
YAGEO Group Companies

YAGEO
Group



MAGIC  **MAG.LAYERS** Scientific Technics Co., Ltd.  **BOTH HAND**

Pulse – Magnetics Product Business Group



- Standard Inductors
 - Large Molded Inductors
 - Mini Molded Inductors
 - Wire-Wound Inductors
 - Multi-Layer Chip Inductors
- Magnetic Cores
 - Ferroxcube Division

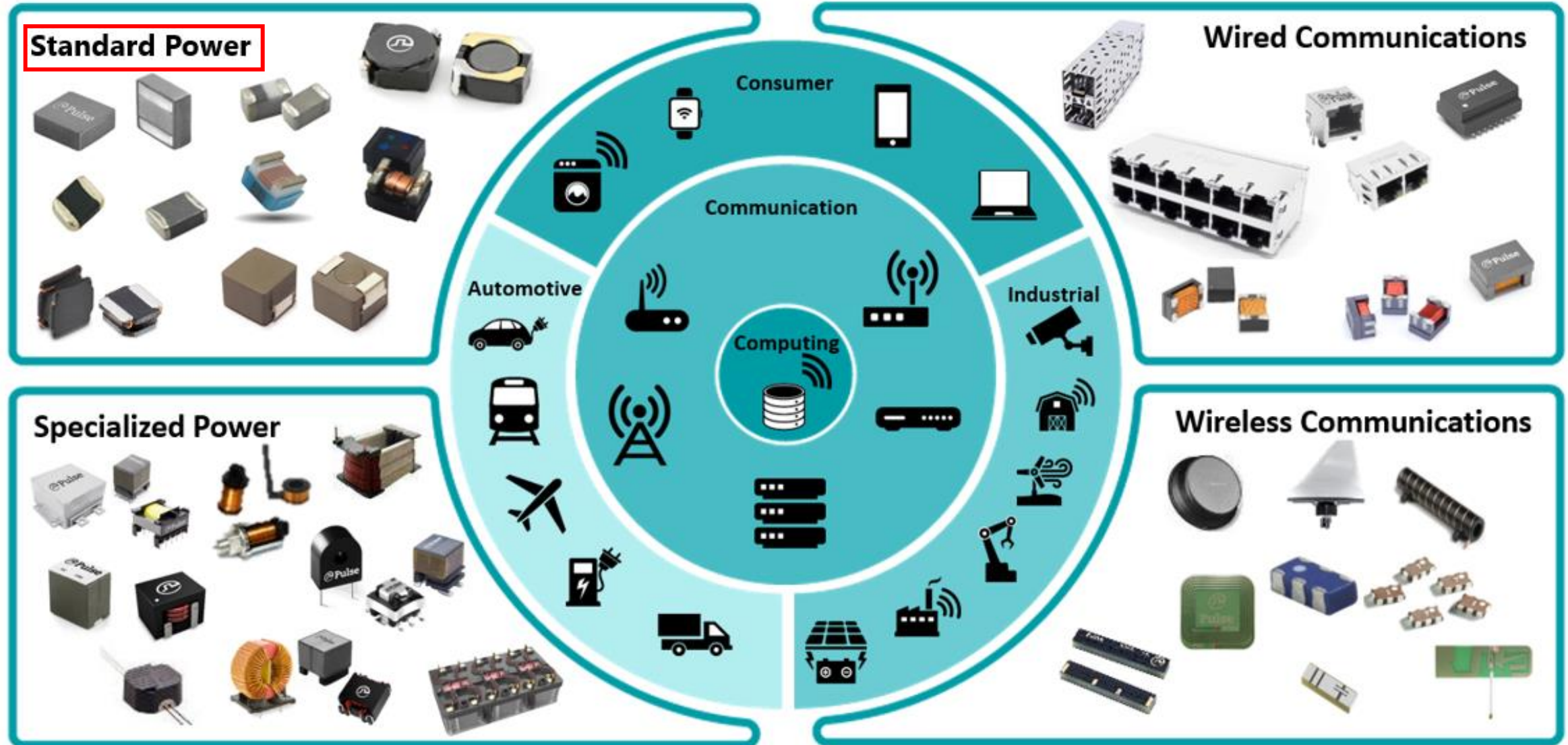
- Specialized and Custom Power Magnetics
 - Inductors
 - Transformers
 - CM Chokes
 - Current Sense Magnetics
- Motor Coils
- Cable Systems
- Solenoids
- Ignition Coils
- Power Supplies

- Ethernet Magnetics
 - Discrete LAN Transformers
 - Integrated Connectors (ICMs)
- Signal Level CM Chokes
- Telecom
- Connectors
 - RJ45 / RJ11
 - USB
 - Fiber Optic Cages
- BMS Magnetics

- Antennas
 - Embedded
 - Internal
 - External / Indoor
 - Outdoor
 - Vehicular
 - Cables / Mounts
- 3D Antennas
 - LDS / LAP / FluidANT
- IPD RF Components – LTCC
- Wireless Charging Coils

- New joined PBU (2023/5/15)
- Tokin corp.

Pulse – Our Products are Used Everywhere



Global Manufacturing Location

Factories



China



Kunshan

- Coil



Kunshan

- Assembly Type Power/EMI Inductor
- Molding Inductor (80M)



HuNan

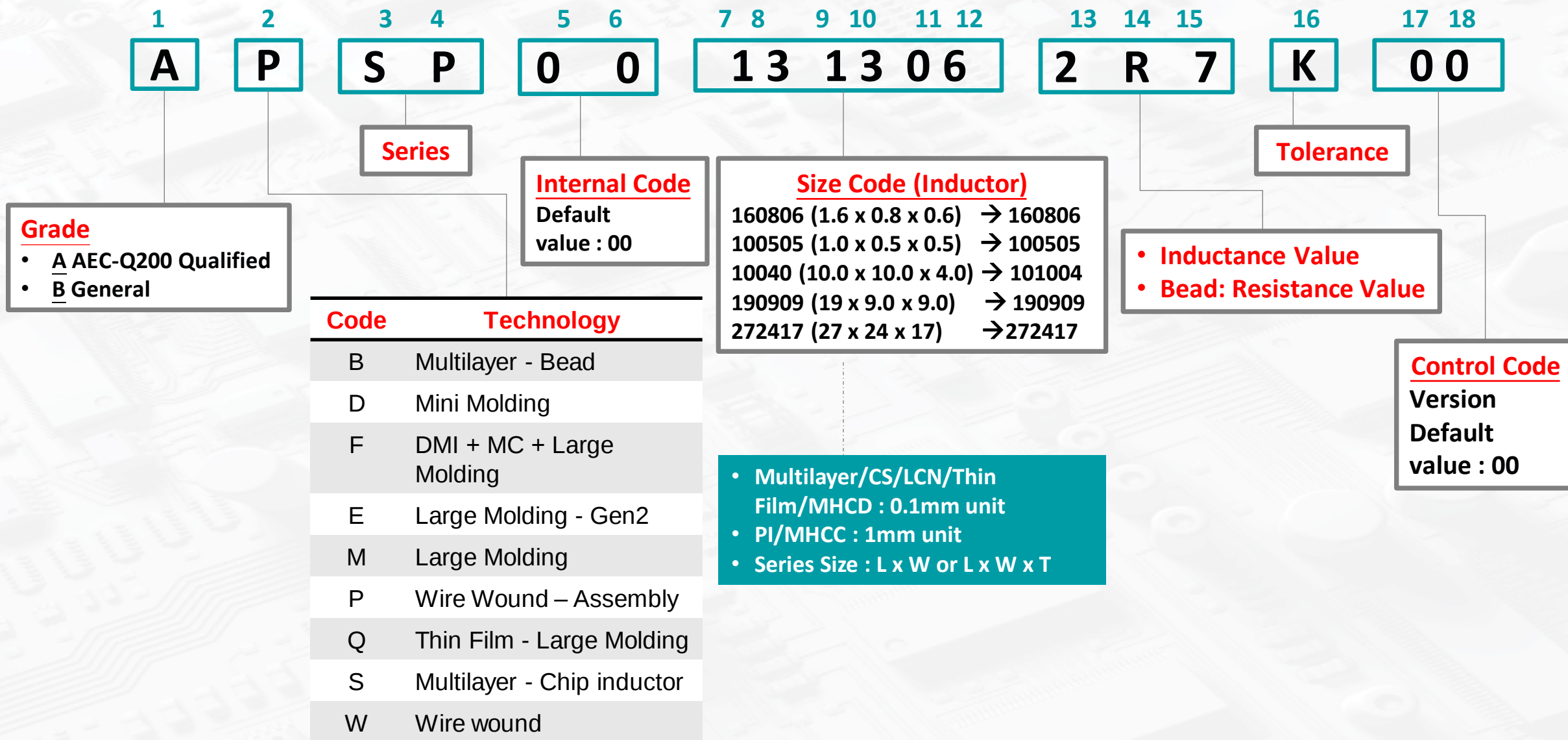
- Wire-wound inductor
- Molding inductor (160M)



Dongguan

- Molding inductor (Mini)
- Molding Inductor (20M)
- Ferrite Core

Part Numbering



Total Solution for Power / RF / EMI

Core Formation

In-house Powder
Core Technology

Powder Formula

Molded

(Soft Saturation, High Power Density)



Power Inductor

- 3.0x3.0 - 30x30 mm
T: 1.0 mm (min.)
- Up to 100A
- Fully Shielded
- For Automotive, Notebook



Power Inductor

- From 1.4 x 1.2 mm size
T: 0.65 mm (min.)
- New process for advanced performance
- For Mobile, wearable, IoT, DDR5
- Notebook, Tablet



Wire Wound

(High Inductance, Galvanic Isolation)



Power Inductor

- Variable structure with round/flat wire
- High saturation current
- For Automotive, Server, ECU
- Telecom, Industrial, network



RF Inductor

- 0.6 x 0.3 – 4.5 x 3.2
- High SRF & High-Q
- For Mobile, Network



EMI - Common Mode Choke

- 1.2x1.0 - 15x13 mm
- Power & Signal Lines Noise filter
- CAN FD IEC 62228-3 compatible
- 100BASE-T1 OPEN Alliance
- For Automotive CAN, USB, HDMI



Multi-Layer

(Small Size, Save Space)



Power Inductor

- 1.6x0.8 - 2.5x2.0 mm
T: 0.6 mm (min.)
- 0.24μH ~ 4.7H, up to 4A
- For Mobile, Ultrabook



RF Inductor

- 0.6x0.3 - 3.2x1.6 mm
- For Communications, Mobile
- Ultrabook, Network



EMI – Bead

- 0603 - 4532 mm
- Low RDC, High speed
- For Automotive ADAS, Infotainment
- Notebook, Mobile, communication



Thin Film

(Low Profile)

NEW

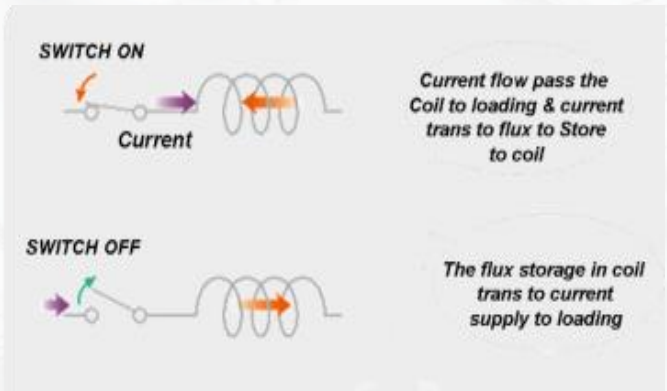
Power Inductor

- 1.0 x 05 – 2.0 x 1.2 mm
T: 0.5 mm (min.)
- 5nH - 470nH, up to 9A
- Photolithography Process
- Super low profile
- For PMIC Module, Mobile, Ultrabook

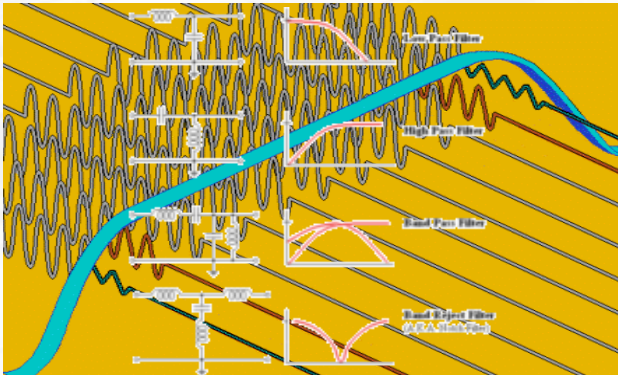


Comprehensive Product Portfolio

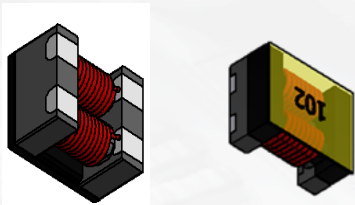
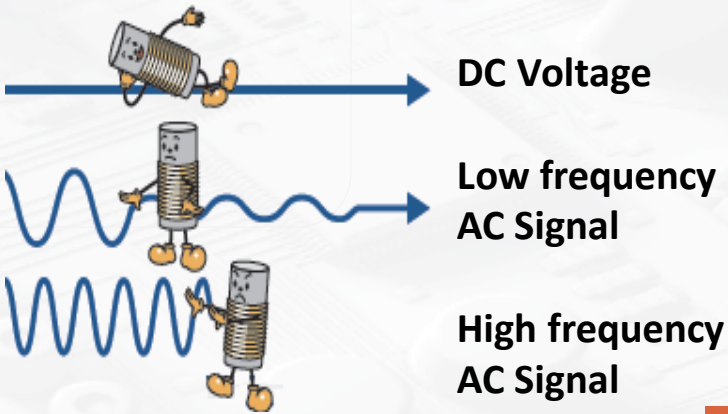
Power Inductor



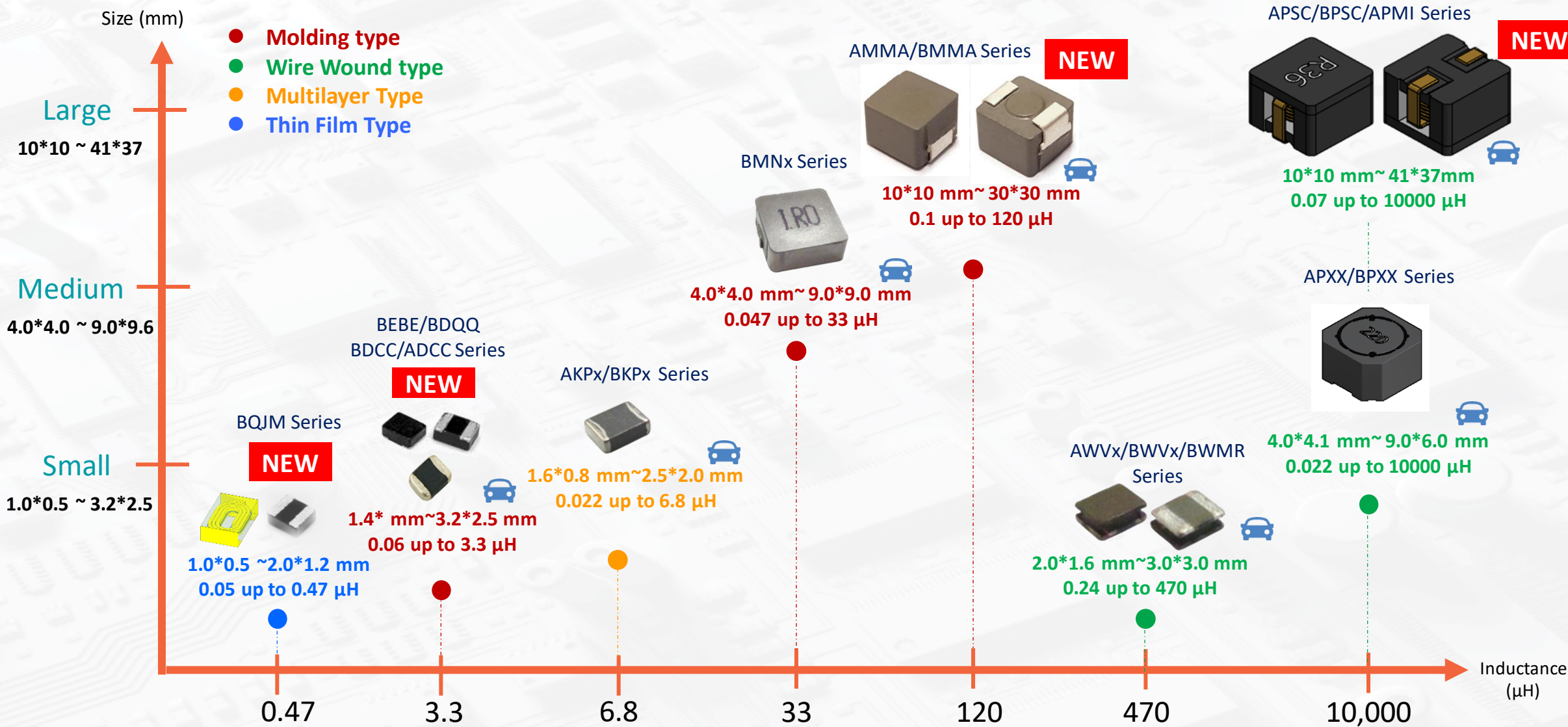
RF Inductor



EMI Filter

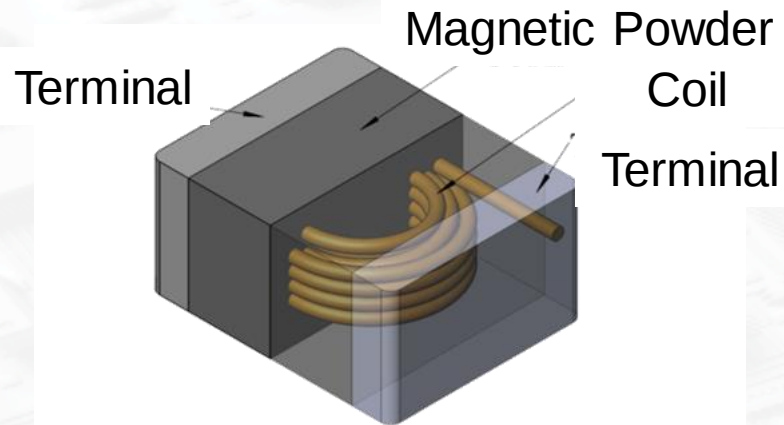


Power Inductor Line-up



Inductance Range : 0.022 up to 10,000 μH

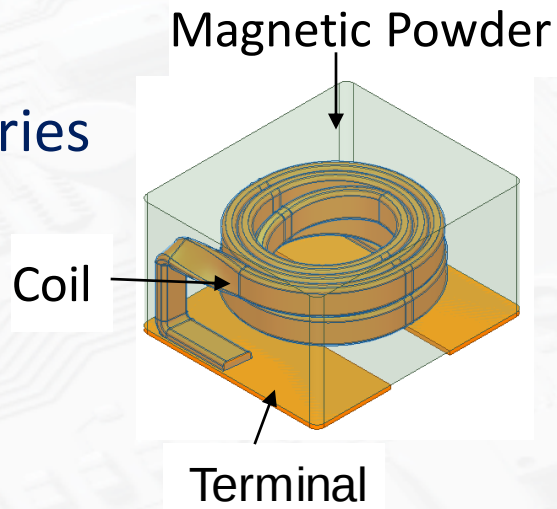
Mini Molded Inductors



Features:

Size : Standard 1.6 x 0.8 – 3.2 x 2.5 mm
Bottom Terminal 1.4x1.2- 3.2x2.5 mm
Height: 0.6 – 1.2mm
Inductance: 0.1 – 2.2 μ H
Max. rating current: 10A
Max. saturation current: 14A
~ 1,600 part numbers available

BEBE Series



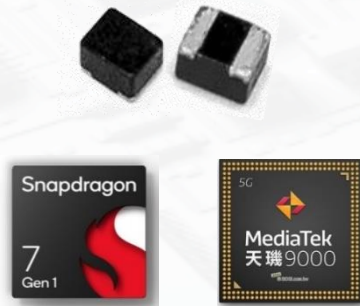
Features:

Size : Bottom Terminal 1.4x1.2- 3.2x2.5 mm
Height: 0.65 – 1.2mm
Inductance: 0.11 – 2.2 μ H
Max. rating current: 8A
Max. saturation current: 9A
Rdc 12 m Ω - 90 m Ω

Mini Molded Inductor Products snapshot

BEBE Series

- Size: 1.4x1.2 mm – 3.0x3.0 mm
- Height 0.65mm-1.2mm
- Inductance 0.11 μ H – 2.2 μ H
- RDC 12 m Ω - 90 m Ω
- Isat upto 9A, Irms upto 8A
- Patent Pending



BEBE1412 approved by Qualcomm (Y2020/2)
BEBE1412 design in MTK (Y2021)
BEBE2012 design in CPU chipset (Y2022/3)

Applications:

- Smartphone, Tablet , NB
- Wearable device,
- 5G/Wi-Fi Module

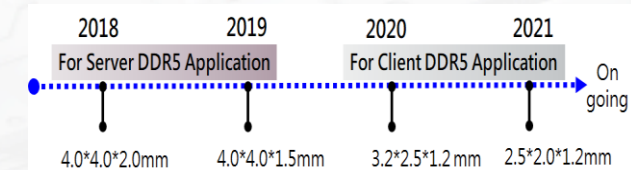
BESP- DDR5 Power Inductors

- Size 2.5x2.0 mm – 4.0x4.0mm
- Inductance 0.47 μ H-1.5 μ H
- Low RDC 4.5 m Ω - 32 m Ω
- Isat upto 9.2A, Irms upto 10.5A
- Low AC/DC losses
- Meet JEDEC specifications**



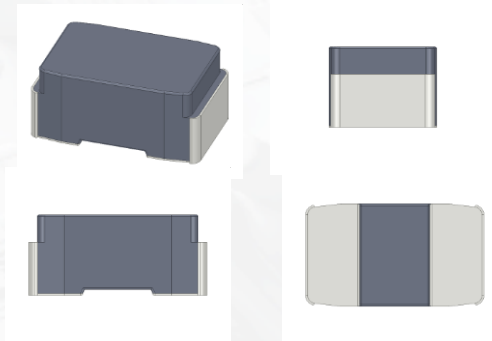
Applications:

- DDR5 power for Server/Client
- Desktop PC, NB, Tablet, Mobile



BDCC - Current Inductors

- Size 2.0x1.2mm
- Height from 0.8mm
- Inductance 0.24 μ H-0.47 μ H
- RDC 22m Ω - 29 m Ω
- Isat upto 5.5A, Irms upto 4.2A
- Half L-shape terminations**
- Automotive Grade ADCC series**

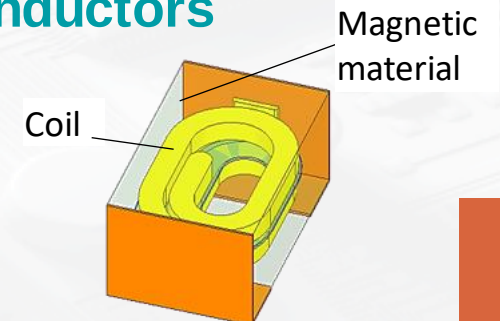


Applications:

- Smartphones, Tablet, Notebook
- Wearable devices
- DC-DC modules

BQJM – Thin Film Power Inductors

- Size: 1.0x0.5 mm – 2.0x1.2mm
- Height 0.55 mm - 1.0 mm**
- Inductance 0.005 μ H – 2.2 μ H
- RDC 1.5 m Ω - 310 m Ω
- Isat up to 12 A, Irms up to 7.4 A**
- Low Profile, Small size

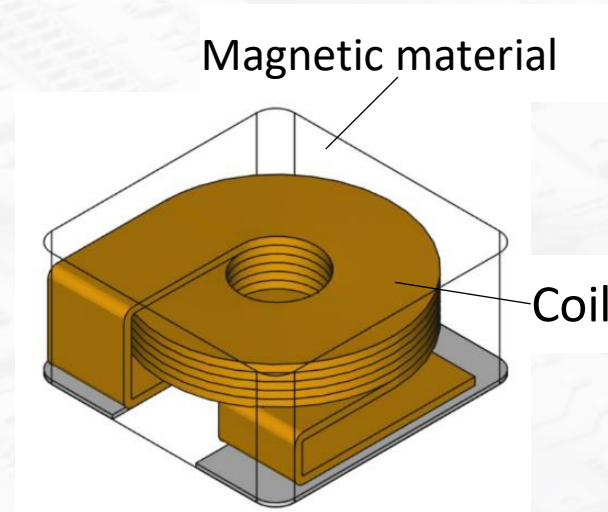
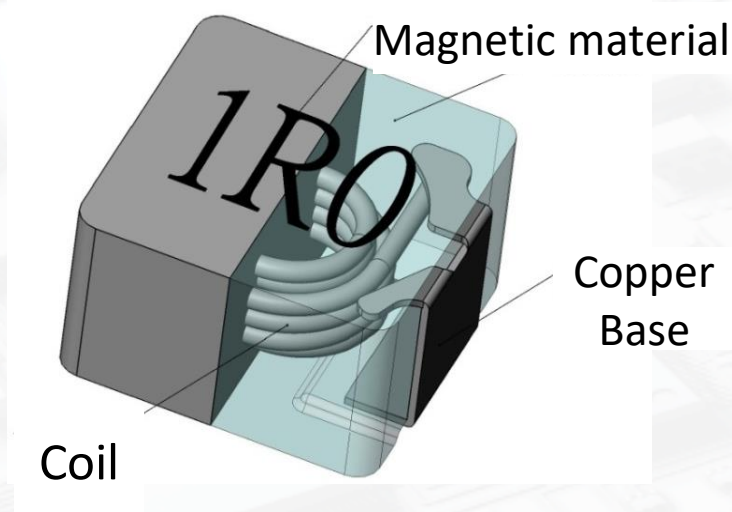


Applications:

- Wearable Device
- PMIC/ power module
- mmWave Antenna Modules



Large Molded Inductors ($\geq 4.0 \times 4.0 \text{mm}$)



Features:

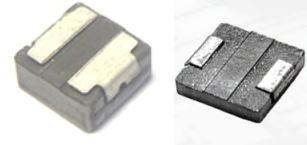
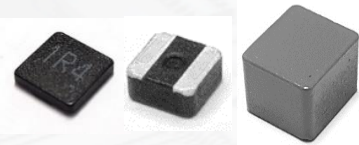
Size: 4x4mm - 30x30mm
Height: 1 - 10mm
Inductance: 0.047 μ H - 47 μ H
Traditional & Bottom terminal type
Rating current: up to 55A
Saturation current: up to 118A
>2,800 part numbers
>400 automotive parts

Special Designs:

Stilted package for space saving
- 4*4mm - 12*12mm
Sunk Package for Low profile
- 1mm-1.2mm
Coating for Corrosive/Flame Resistance
- UL94V0,
- 4*4mm - 17*17mm
Custom Designs



Large Molded Portfolio

Product Series	BMMx AMMx	BMNx AMNx	AMHT	AMHP	BMBx BESP	Customization
Features	Consumer/ automotive application	Lower DCR, higher Isat BMNI -Low profile with high L	Up to 180°C operating temp.	Up to 100V rating voltage	Lowest DCR Low profile Bottom terminal	Customized design
						

Raw materials

- In house powder mixing
- Exclusive magnetics powders
- >30 types of powder formula

Structure/Process

- Coil design
- I core structure
- I rod structure
- Hot pressing

Simulation

- Electrical
- Mechanical
- Thermal
- Flat wire
- Power losses

Large Molded Inductor Products snapshot

BMBx / BMEx Low RDC Inductors

- Size: 4x4 mm – 10x10mm
- Inductance 0.1 μ H – 8.2 μ H
- RDC 1 m Ω - 78 m Ω
- Flat wire winding
- Isat upto 37A, Irms upto 40A
- **Automotive version AFSI series**



BMBx Series

BMEx Series

Applications:

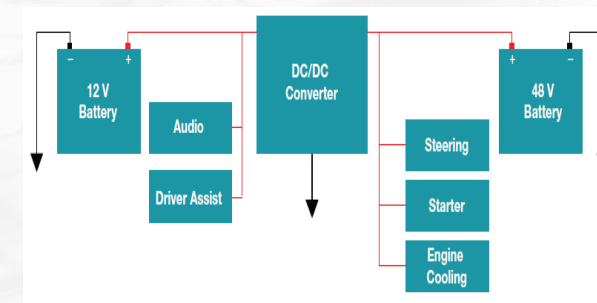
- High efficiency DCDC
- High Power density

AMHP - High Voltage Inductors

- Size 6x6mm
- Inductance 0.68 μ H – 4.7 μ H
- RDC 5.7 m Ω - 31.9 m Ω
- Isat up to 20A, Irms up to 13 A
- **High Temp to 155C**
- **Withstand Voltage 70V**

Applications:

- Mild Hybrid
- Automotive LED lighting
- High Vin DCDC



AP3Y - Ultra High Current Inductors

- Size 15x15 – 30x30mm
- Height 1.0-18mm
- Inductance 1uH-68uH
- RDC 1.8m Ω - 61 m Ω
- Isat upto 100A, Irms upto 40A
- Extremely Low RDC

Applications:

- High Power DCDC
- Automotive
- THT Toroidal Choke replacement



15.7*15.0mm

29.5*29.5mm

AMMx – Standard Type

- Size: 4 x 4 mm , 17 x 17 mm
- Height 1 - 10 mm
- Inductance 0.01 – 47 μ H
- Isat up to 118 A,
- Irms up to 55 A

Applications:

- Infotainment, Module
- ADAS
- Networking



BMMx/BMNx High Inductance Series

Description

Low profile & High inductance
molded power inductor

Features

Inductance up to 10 μ H
1.0/1.2mm height

Available part

4 x 4 x 1mm, 4 x 4 x 1.2mm,
4.7 μ H-10 μ H



Application

- DC/DC converter for CPU in Notebook PC
- Thin type on-board power supply module for exchanger
- Voltage Regulator Module (VRM)
- Boost converter of LED driver

Part number	L*W(mm*mm)	H(mm)	L0(μ H) $\pm 20\%$	DCR(m Ω)		I _{rms} (A)		I _{sat} (A)	
				Typ	Max	Typ	Max	Typ	Max
BMNI000404104R7MQX	4.1*4.1	1.0	4.7	135	160	2.6	2.3	2.5	2.1
BMNI000404106R8MQX	4.1*4.1	1.0	6.8	210	255	2	1.8	2.3	1.85
BMNI00040410100MQX	4.1*4.1	1.0	10	280	336	1.75	1.5	1.85	1.65
BMNI000404124R7MEX	4.1*4.1	1.2	4.7	94	113	2.9	2.6	2.5	2.2
BMNI00040412100MEX	4.1*4.1	1.2	10	200	240	1.8	1.6	1.6	1.4
BMME000404124R7MEX	4.4*4.2	1.2	4.7	124	145	2.4	2.1	3.2	2.8
BMME000404126R8MEX	4.4*4.2	1.2	6.8	300	355	1.7	1.5	2.7	2.3



VRM

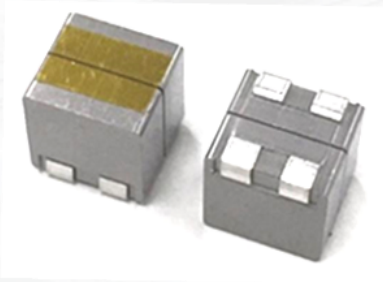


LED driver

AMDU series – Integrated Dual Inductors for Class D Audio Amp (Molded)

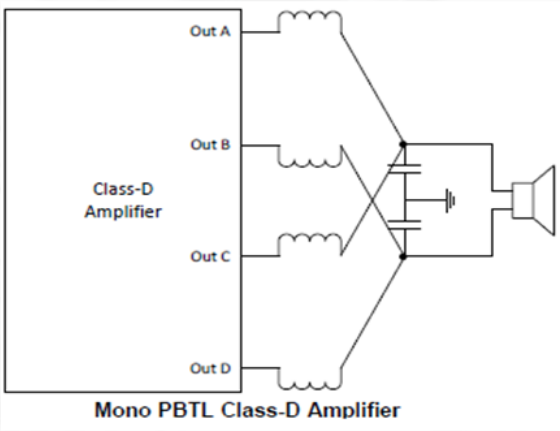
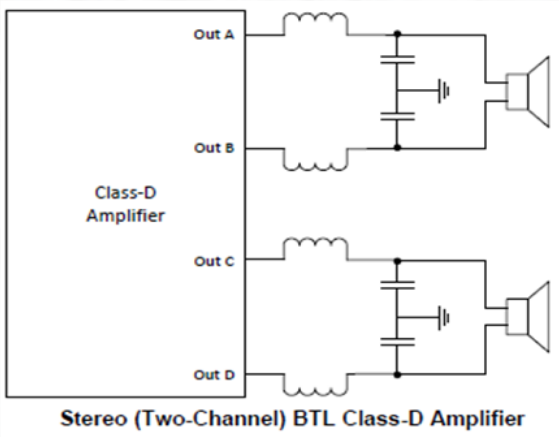
Features:

- Molding structure
- Magnetic shielded for low interferences
- Sizes : 6.9x7.7x7.3mm , 10.2x9.4x10.85mm
- **Integrated 2 inductors in Single package**
 - Space saving
 - High reliability
- Ultra-low Buss noise
- Meet AEC-Q200 standards



Applications:

- Class D Audio Amplifier
- High Power Density DCDC



Size L x W x H (mm)	Inductance (μ H)	I _{rms} (A) Max	I _{sat} (A) Max.	RDC(m Ω) Max.
6.9 x 7.7 x 7.3	10 – 22	2.2 - 3.5	4.3 - 6.8	43 - 134
10.2 x 9.4 x 10.85	10 - 22	3.0 - 4.8	4.5 - 7.5	24 - 53



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Thank you



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