

Electric Power Steering (EPS) Common Mode Choke



HA19 Series

Features:

- Operating temperature range -40°C to +125°C
- Rated current up to 28.5 amps
- Ambient temperature, maximum +85°C
- Temperature rise, maximum 40°C
- Reduces line conducted interference
- Low loss ferrite core
- Proven performance in maintaining transmission signal integrity
- Excellent performance in rugged environments
- RoHS compliant
- AEC-Q200 certified



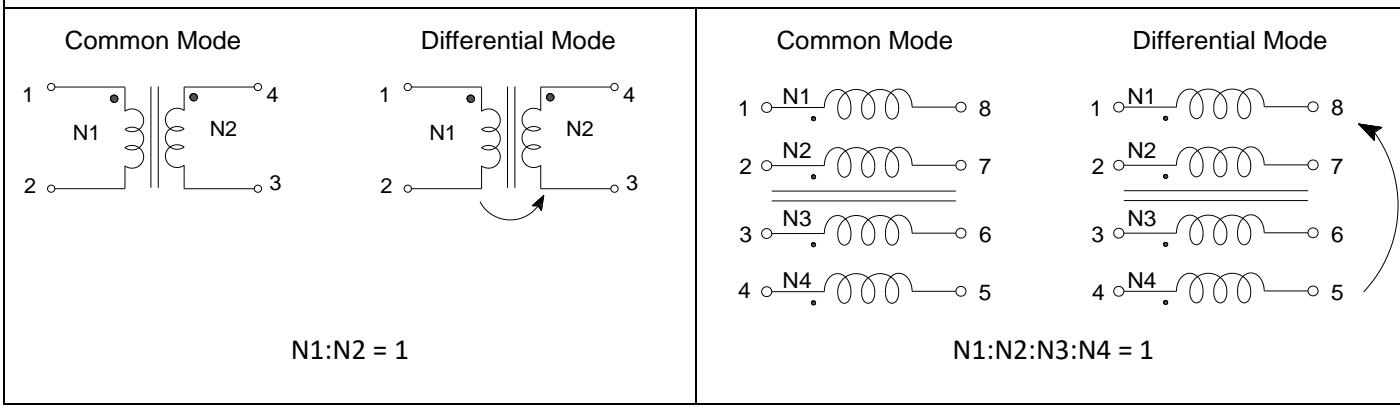
Description:

The HA19 common mode choke is designed specifically for noise suppression applications found in the growth and expansion of new generation vehicles such as electric vehicles (EVs) and plug-in hybrid vehicles (PHVs). The HA19 series offer high efficiency and excellent current handling in a rugged construction. It is mechanically robust and features low DC resistance and low temperature rise performance. HA19 is ideal for high efficiency electric power steering EMI applications where size and AEC-Q200 certification is critical.

Applications:

- Ideal for high frequency EPS noise suppression applications
- Transportation
 - Electric Power Steering
 - Electronic Control Units
 - Engine Control
 - Transmission Control
- Industrial
 - Switch Mode Power Supply
 - DC/DC Converters

Schematic



Schematic 1

Schematic 2

General Note

TT Electronics reserves the right to make changes in product specification without notice or liability. All information is subject to TT Electronics' own data and is considered accurate at time of going to print.

Electric Power Steering (EPS) Common Mode Choke



HA19 Series

Specifications @ 25°C

Part Number	Inductance μH Min.	Rated Current Amps Typ.	DC Resistance mΩ Max.	Leakage Inductance μH Min.	Schematic	Figure
HA19-10000LF	75.0	26.5	1.70	0.90	1	1
HA19-20000LF	75.0	28.0	1.30	0.90	1	1
HA19-40000LF	84.6	28.5	1.40	0.65	1	2
HA19-50000LF	20.8	25.0	1.20	-	1	3
HA19-60000LF	75.0	22.0	2.30	0.90	2	4

Notes:

1. Inductance and leakage inductance are measured at 10kHz, 0.1Vrms.
2. Rated current is the approximate DC current at which ΔT is 40°C. Part temperature should be verified in the end application. The part temperature (ambient plus temperature rise) should not exceed 125°C under worst case operating conditions.
3. **Schematic 1:**
 - Inductance and DCR are measured at N1 or N2
 - Leakage inductance is measured at N1 (pin 1-2) with N2 (pin 4-3) winding shorted
4. **Schematic 2:**
 - Inductance and DCR are measured at N1, N2, N3 or N4.
 - Leakage inductance is measured at pin (1-3) or (2-4) with other pins (5, 6, 7, 8) shorted

Ordering Information

HA19 – 10000 LF

Model Series | | Lead Free

 |
Sequence number

Packaging	
Part Number	One shipping carton
HA19-10000LF	400pcs
HA19-20000LF	400pcs
HA19-40000LF	400pcs
HA19-50000LF	396pcs
HA19-60000LF	400pcs

General Note
TT Electronics reserves the right to make changes in product specification without notice or liability. All information is subject to TT Electronics' own data and is considered accurate at time of going to print.

TT Electronics | BI Technologies
www.ttelectronics.com | magsales@ttelectronics.com

Electric Power Steering (EPS) Common Mode Choke



HA19 Series

Outline Dimensions (mm)

Figure 1	Recommended PCB Layout
<p>Figure 1 shows the physical dimensions of the HA19 Series Common Mode Choke. The top view illustrates the front and side profiles with dimensions AMax, BMax, and CMax. The bottom view shows the lead spacing as 3.5 ± 0.5 mm and the lead numbers 1, 2, 3, 4. The part number XXXXXLF BI YYWW is also indicated.</p>	<p>Figure 1 shows the recommended PCB layout for the HA19 Series Common Mode Choke. It includes two pads for the top lead (1, 2) and two pads for the bottom lead (3, 4). The distance between the top pads is $D \pm 0.3$ mm, and the distance between the bottom pads is $E \pm 0.3$ mm. A reference point F is also indicated.</p>
<p>Figure 2 shows the physical dimensions of the HA19 Series Common Mode Choke. The top view illustrates the front and side profiles with dimensions AMax, BMax, and CMax. The bottom view shows the lead spacing as 3.5 ± 0.5 mm and the lead numbers 1, 2, 3, 4. The part number XXXXXLF BI YYWW is also indicated.</p>	<p>Figure 2 shows the recommended PCB layout for the HA19 Series Common Mode Choke. It includes two pads for the top lead (1, 2) and two pads for the bottom lead (3, 4). The distance between the top pads is $D \pm 0.3$ mm, and the distance between the bottom pads is $E \pm 0.3$ mm. Reference points F and G are also indicated.</p>

General Note

TT Electronics reserves the right to make changes in product specification without notice or liability. All information is subject to TT Electronics' own data and is considered accurate at time of going to print.

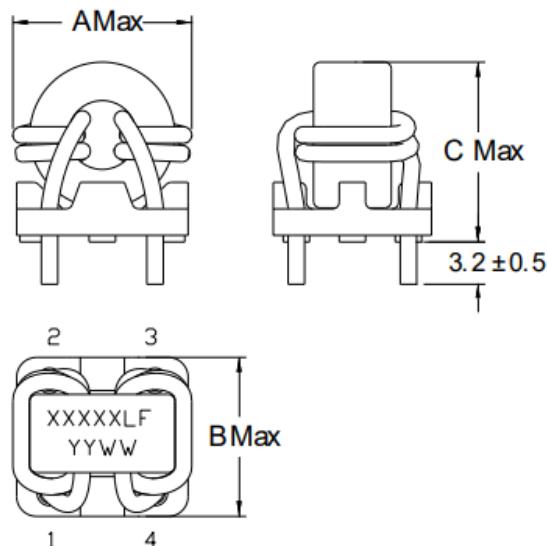
Electric Power Steering (EPS) Common Mode Choke



HA19 Series

Outline Dimensions (mm)

Figure 3



Recommended PCB Layout

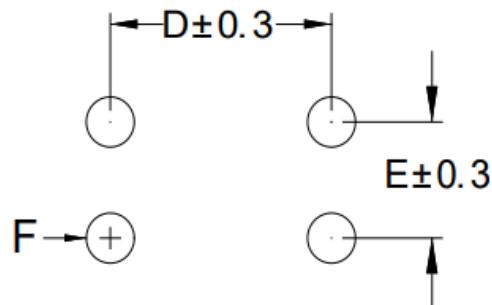
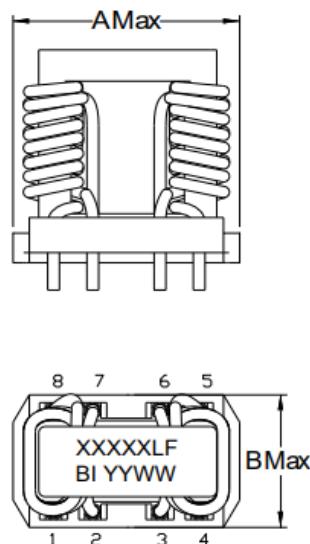
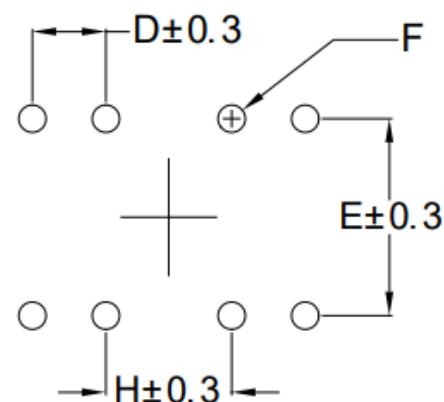


Figure 4



Recommended PCB Layout



General Note

TT Electronics reserves the right to make changes in product specification without notice or liability. All information is subject to TT Electronics' own data and is considered accurate at time of going to print.

Electric Power Steering (EPS) Common Mode Choke

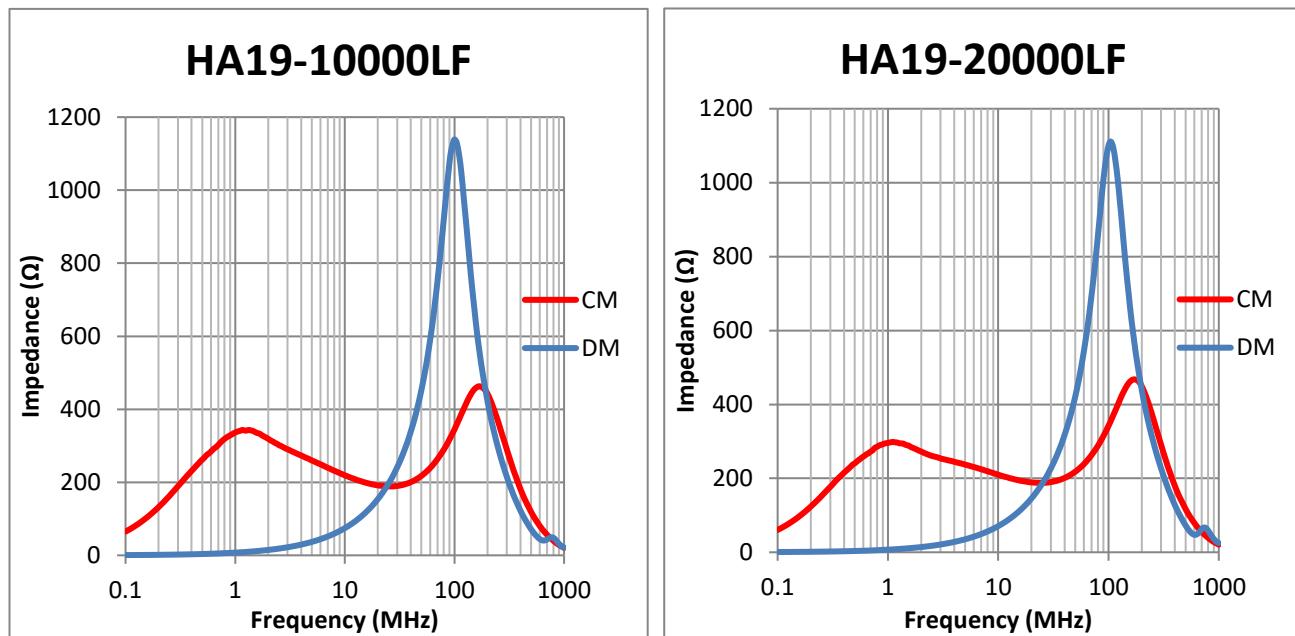


HA19 Series

Outline Dimensions (mm)

Part Number	Figure	A	B	C	D	E	F	G	H
HA19-10000LF	1	29.4	15.5	26.4	20.3	10.2	2.2	-	-
HA19-20000LF	1	29.4	15.5	26.4	20.3	10.2	2.4	-	-
HA19-40000LF	2	27.0	15.5	25.0	11.0	11.0	3.0	1.50	-
HA19-50000LF	3	16.0	12.5	15.0	8.0	8.5	1.9	-	-
HA19-60000LF	4	30.0	20.0	30.5	4.85	13	2.0	-	8.3

Impedance



General Note
TT Electronics reserves the right to make changes in product specification without notice or liability. All information is subject to TT Electronics' own data and is considered accurate at time of going to print.

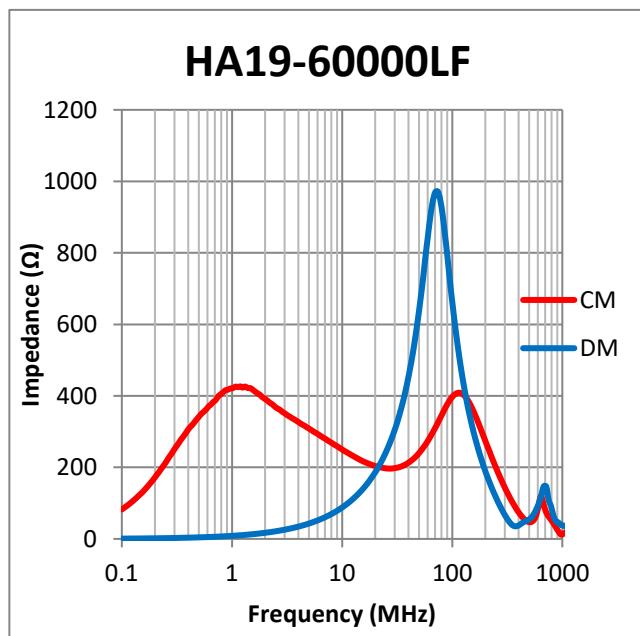
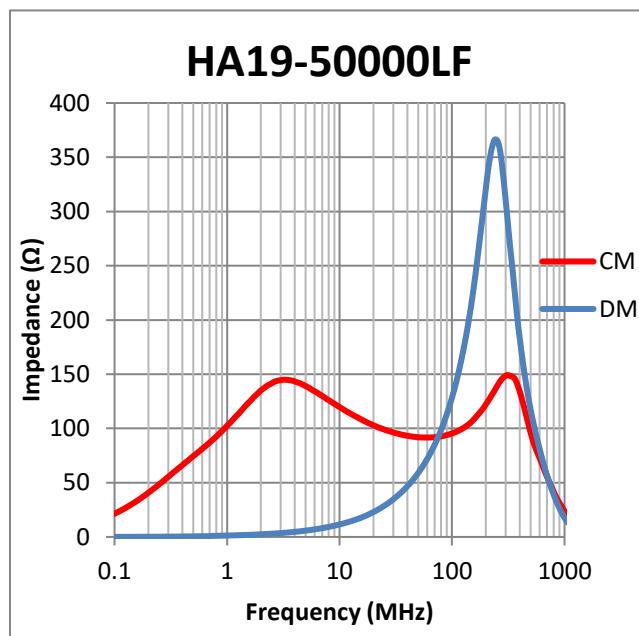
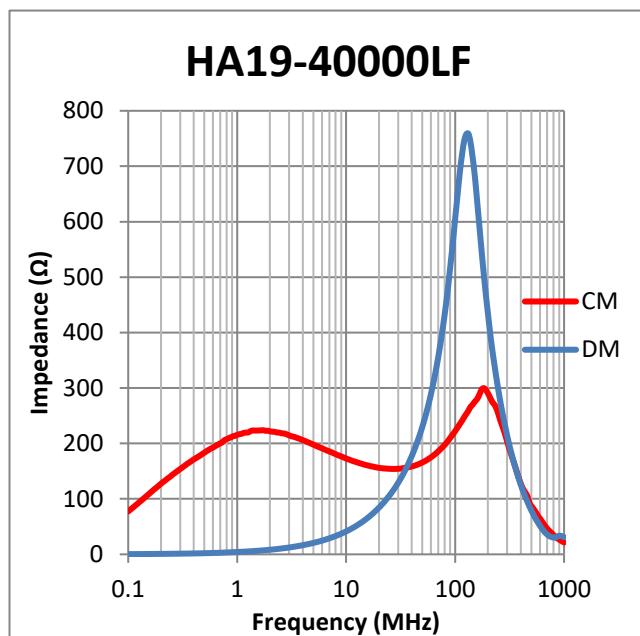
TT Electronics | BI Technologies
www.ttelectronics.com | magsales@ttelectronics.com

Electric Power Steering (EPS) Common Mode Choke



HA19 Series

Impedance



General Note
TT Electronics reserves the right to make changes in product specification without notice or liability. All information is subject to TT Electronics' own data and is considered accurate at time of going to print.

TT Electronics | BI Technologies
www.ttelectronics.com | magsales@ttelectronics.com

Cautions & Warnings

1. All components are manufactured, designed, and promoted for application in general electronic devices. For specific application uses such as in the automotive, medical, military, and aerospace industries other than general electronic devices, BI Technologies must be asked for written approval before incorporating the components into those areas. This clause can be omitted for any existing product or new product that had been designed and proven tested for critical application such as automotive, medical, military and aerospace industry.
2. Any components that will be used in high reliability / high-level safety applications should be pre-evaluated by the end customer, especially in customer applications in which the malfunction or failure of an electronic component could endanger human life or health.
3. The customer shall be responsible for evaluating and confirming that BI Technologies' products are suitable for use in customer applications. If the customer applications require a very high level of operational safety, especially if failure of an electronic component could endanger human life or health, it must be ensured by using a suitable design of the customer application or other action taken by the customer such that no injury or damage is sustained by third parties in the event of a malfunction or failure of an electronic component.
4. Customers must be cautioned to verify that the data sheets are updated before placing orders, especially for standard series.
5. The customer needs to use the part within the warranty period as stated in the quotation. Any trouble or failure of electronic components happening during their long-life span which cannot be eliminated even after following the instruction within existing technology, BI Technologies would not be liable for it.
6. Many coating/potting materials would shrink as they harden. They, therefore, apply pressure on the plastic housing or core. This pressure can affect electrical properties and, in extreme cases, can damage the core or plastic housing mechanically. It is necessary to check whether the coating or potting material used may attack or destroy the wire insulation, plastics, or glue. The effect of the coating or potting material can change the high-frequency behaviour of the components. Many coating and potting materials have a negative effect (chemically and mechanically) on the winding wires, insulation materials, and connecting points. Customers are always obligated to determine whether and to what extent their coating materials influence the component. Customers are responsible for and bear all risks associated with the use of the coating material. BI Technologies does not assume any liability for failures of our components that are caused by the coating material.
7. The washing/cleaning process may jeopardize the product and cause a defect. Washing agents may harm the long-term functionality of the product. The customer shall be responsible for evaluating and confirming the product is suitable for use in the customer's applications after the washing/cleaning process, as this is customer process related.
8. Products should not be kept in unsuitable storage conditions, such as areas susceptible to high humidity, high temperatures, dust, or corrosion, where, for example, atmospheres should be free of chlorine and sulfur-bearing compounds. Recommended storage condition in general is +10°C ... +40 °C, humidity ≤75% RH. Temperature fluctuations should be minimized to avoid condensation on the parts. Avoid storage near strong magnetic fields, as this might magnetize the product.
9. The storage period should not be longer than 12 months (in the specific storage environment). Oxidization may occur on the terminals; therefore, all products shall be consumed within 12 months after the shipping date. If the time is longer than 12 months, please check the solderability before using it.

General Note

TT Electronics reserves the right to make changes in product specification without notice or liability. All information is subject to TT Electronics' own data and is considered accurate at time of going to print.

© TT electronics plc

TT Electronics | BI Technologies
A-1445, Jalan Tanjung Api, 25050 Kuantan, Pahang Darul Makmur, Malaysia
<https://www.ttelelectronics.com/contact-us/>

Electric Power Steering (EPS) Common Mode Choke



Cautions & Warnings

10. Don't touch electrode terminals directly with bare hands, as oil stains may inhibit proper soldering. Always ensure optimum conditions for soldering.
11. Terminals should not be bent or subjected to excessive stress. If the terminals are cable harness types, do not use the cable harness to carry the unit or pull the cable harness with force, it may cause failure on the unit immediately or have a latent effect.
12. Avoid placing magnetic components near the edge of the PCB. It is at the customer's discretion to have the proper design and PCB layout so that components are not damaged in any way during handling or cause any EMI issues.
13. Don't touch any exposed winding part and avoid coming into contact with the guide of the electrode as due to the charge stored may cause an electric shock. It is the customer's discretion to inform all relevant personal handling the components accordingly.
14. The inductor/coil/common mode choke generates heat when current is applied. Please take into consideration this during the design or testing stage.
15. Ferrites are sensitive to direct impact. This can cause the core material to flake, or lead to breakage of the core. Always handle the product with care to prevent any damage.
16. Our specification specifies the quality of the component as a single unit. Please ensure the component is thoroughly evaluated in the customer application circuit, therefor even for customized products, conclusive validation of the component in the circuit can only be carried out by the customer.
17. The general testing condition is at the room temperature of 25°C +/- 5°C and humidity under 70% RH, which is applied to all products. It is the customer's responsibility to validate that a particular product with the properties described in the product specification is suitable for use in a particular application. Parameters provided in datasheets and/or specifications may vary in different applications and performance may vary over time. All operating parameters, including typical parameters, must be validated for each customer application by the customer.
18. If you have any queries, please feel free to contact our sales team.

General Note
TT Electronics reserves the right to make changes in product specification without notice or liability. All information is subject to TT Electronics' own data and is considered accurate at time of going to print.

© TT electronics plc

TT Electronics | BI Technologies
www.ttelectronics.com | magsales@ttelectronics.com