

## 1. POWER INDUCTOR SPECIFICATION

CIGB201610AG

Series

Automotive

AEC-Q200

150°C

40V

Metal Composite

Thin Film

### FEATURES

- Manufactured by state-of-the-art facilities which are entitled to the registration of ISO/IATF16949
- Meet AEC-Q200 requirements
- Part Type Metal Composite Power Inductor
- Package Type Thin Film Type
- Shielding Magnetically Shielded Type
- Operation Temp. Range -55 to +150°C (Including self generated temperature rise)
- Storage Temp. Range -55 to +150°C (After assembly)
- Termination General Type
- ROHS-Free, Halogen-Free, Beryllium-Free

### Application

Car Infotainment, ADAS ECU, in-Vehicle camera (view camera, sensing camera), radar, meter cluster  
xEV, automotive communication module Other power supply circuit uses

### PRODUCT IDENTIFICATION

**CIG** **B** **2016** **10** **AG** **R10** **M** **P** **E**

- ① Product : Power Inductor  
② Package Type  
③ Length & Width  
④ Thickness  
⑤ Series Code

- ⑥ Inductance  
⑦ Tolerance  
⑧ Internal Code  
⑨ Packaging Style

| ⑨             | Winding Direction |     |            |     |
|---------------|-------------------|-----|------------|-----|
|               | Marking           |     | No marking |     |
| Reel Diameter | 7"                | 13" | 7"         | 13" |
| Paper Tape    | P                 | R   | C          | D   |
| Plastic Tape  | M                 | N   | E          | F   |

### CHARACTERISTIC TABLE

| Part no.           | Size [mm] | Thickness [mm] (max) | Inductance [uH] | Inductance tolerance [%] | DC Resistance [mΩ] |      | Rated Current (Isat) [A] |      | Rated Current (Itemp) [A] |      | Rated Voltage [V] |
|--------------------|-----------|----------------------|-----------------|--------------------------|--------------------|------|--------------------------|------|---------------------------|------|-------------------|
|                    |           |                      |                 |                          | Max.               | Typ. | Max.                     | Typ. | Max.                      | Typ. |                   |
| CIGB201610AGR10MPE | 2016      | 1.0                  | 0.10            | ±20                      | 13                 | 7    | 9                        | 10.5 | 5.9                       | 7.7  | 40                |
| CIGB201610AGR15MPE | 2016      | 1.0                  | 0.15            | ±20                      | 15                 | 9    | 8                        | 8.9  | 5.5                       | 6.9  | 40                |
| CIGB201610AGR24MPE | 2016      | 1.0                  | 0.24            | ±20                      | 22                 | 14   | 6                        | 6.6  | 5                         | 6.2  | 40                |
| CIGB201610AGR33MPE | 2016      | 1.0                  | 0.33            | ±20                      | 27                 | 18   | 5.4                      | 6    | 4.3                       | 4.8  | 40                |
| CIGB201610AGR47MPE | 2016      | 1.0                  | 0.47            | ±20                      | 33                 | 24   | 4.8                      | 5.3  | 3.9                       | 4.5  | 40                |
| CIGB201610AGR68MPE | 2016      | 1.0                  | 0.68            | ±20                      | 42                 | 32   | 3.8                      | 4.3  | 3.3                       | 3.6  | 40                |
| CIGB201610AG1R0MPE | 2016      | 1.0                  | 1.0             | ±20                      | 60                 | 50   | 3.3                      | 3.7  | 3.1                       | 3.4  | 40                |
| CIGB201610AG1R5MPE | 2016      | 1.0                  | 1.5             | ±20                      | 100                | 80   | 2.8                      | 3.1  | 2.3                       | 2.6  | 40                |
| CIGB201610AG2R2MPE | 2016      | 1.0                  | 2.2             | ±20                      | 150                | 128  | 2                        | 2.2  | 1.9                       | 2.1  | 40                |

\* Inductance : Measured with a LCR meter 4991A(Keysight) or equivalent (Test Freq. 1MHz, Level 0.5V)

\* DC Resistance : Measured with a Resistance HI-TESTER RM3545(HIOKI) or equivalent

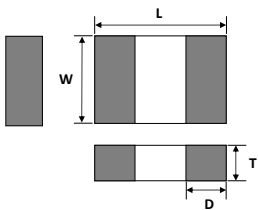
\* Isat : DC current value where the Inductance drops by 30%

\* Itemp : DC current value where the temperature of the inductor rises by 40°C

\* Applied current should be chosen at lower value between Isat Max and Itemp Max.

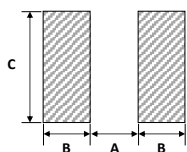
\* Measurement Temperature & Humidity : 20±15°C, 65±20%(RH), When accuracy of measurement results is required: 20±2°C, 65±5%(RH)

### DIMENSION



| TYPE | DIMENSION [mm] |          |       |          |
|------|----------------|----------|-------|----------|
|      | L              | W        | T max | D        |
| 2016 | 2.0 ±0.2       | 1.6 ±0.2 | 1.00  | 0.5 ±0.3 |

### RECOMMENDED LAND PATTERN



| DIMENSION [mm] |     |
|----------------|-----|
| A              | 0.8 |
| B              | 0.8 |
| C              | 1.8 |

### UNIT WEIGHT

| UNIT WEIGHT (g) |
|-----------------|
| 0.017           |

Please be advised that they are standard product specifications for reference only.



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## 2. POWER INDUCTOR CHARACTERISTICS

■ MODEL CIGB201610AGR10MPE

■ CHARACTERISTICS TABLE

| Part no.           | Size [mm] | Thickness [mm] (max) | Inductance [uH] | Inductance tolerance (%) | DC Resistance [mΩ] |      | Rated DC Current (Isat) [A] |      | Rated DC Current (Itemp) [A] |      | Rated Voltage [V] |
|--------------------|-----------|----------------------|-----------------|--------------------------|--------------------|------|-----------------------------|------|------------------------------|------|-------------------|
|                    |           |                      |                 |                          | Max.               | Typ. | Max.                        | Typ. | Max.                         | Typ. |                   |
| CIGB201610AGR10MPE | 2016      | 1.0                  | 0.10            | ±20                      | 13                 | 7    | 9                           | 10.5 | 5.9                          | 7.7  | 40                |
| CIGB201610AGR15MPE | 2016      | 1.0                  | 0.15            | ±20                      | 15                 | 9    | 8                           | 8.9  | 5.5                          | 6.9  | 40                |
| CIGB201610AGR24MPE | 2016      | 1.0                  | 0.24            | ±20                      | 22                 | 14   | 6                           | 6.6  | 5                            | 6.2  | 40                |
| CIGB201610AGR33MPE | 2016      | 1.0                  | 0.33            | ±20                      | 27                 | 18   | 5.4                         | 6    | 4.3                          | 4.8  | 40                |
| CIGB201610AGR47MPE | 2016      | 1.0                  | 0.47            | ±20                      | 33                 | 24   | 4.8                         | 5.3  | 3.9                          | 4.5  | 40                |
| CIGB201610AGR68MPE | 2016      | 1.0                  | 0.68            | ±20                      | 42                 | 32   | 3.8                         | 4.3  | 3.3                          | 3.6  | 40                |
| CIGB201610AG1R0MPE | 2016      | 1.0                  | 1.0             | ±20                      | 60                 | 50   | 3.3                         | 3.7  | 3.1                          | 3.4  | 40                |
| CIGB201610AG1R5MPE | 2016      | 1.0                  | 1.5             | ±20                      | 100                | 80   | 2.8                         | 3.1  | 2.3                          | 2.6  | 40                |
| CIGB201610AG2R2MPE | 2016      | 1.0                  | 2.2             | ±20                      | 150                | 128  | 2                           | 2.2  | 1.9                          | 2.1  | 40                |

\* Inductance : Measured with a LCR meter 4991A(Keysight) or equivalent (Test Freq. 1MHz, Level 0.5V)

\* DC Resistance : Measured with a Resistance HI-TESTER RM3545(HIOKI) or equivalent

\* Isat : DC current value where the Inductance drops by 30%

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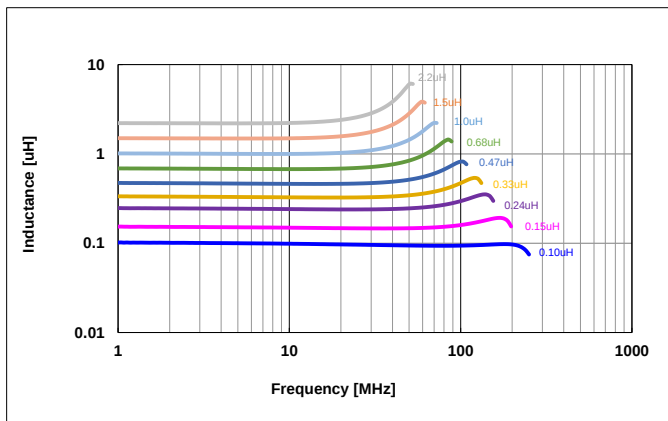
\* Applied current should be chosen at lower value between Isat Max and Itemp Max.

\* Measurement Temperature & Humidity : 20±15°C, 65±20%(RH), When accuracy of measurement results is required: 20±2°C, 65±5%(RH)

■ CHARACTERISTICS DATA (Reference Only)

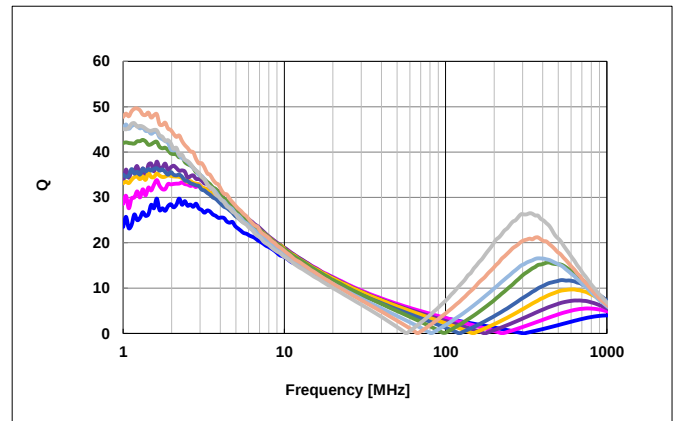
1) Frequency characteristics (Ls)

Keysight E4991A , 1MHz to 1,000MHz

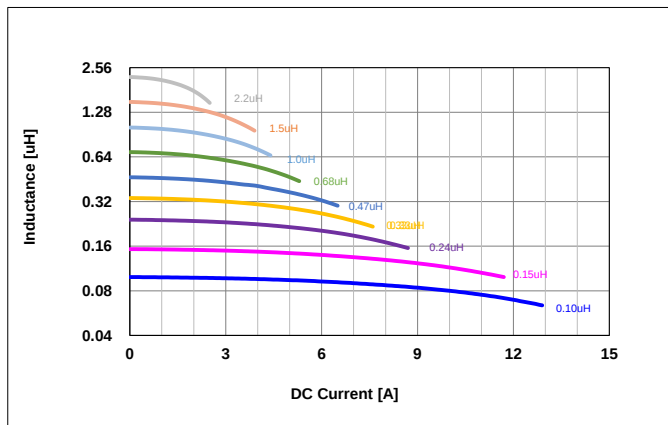


2) Frequency characteristics (Q)

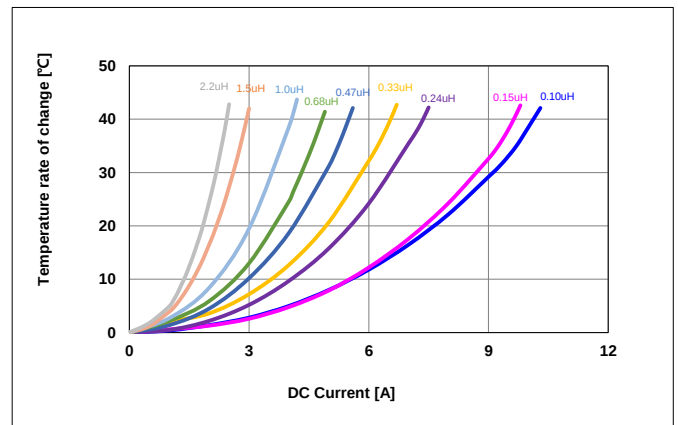
Keysight E4991A , 1MHz to 1,000MHz



3) DC Bias characteristics (Typ.)



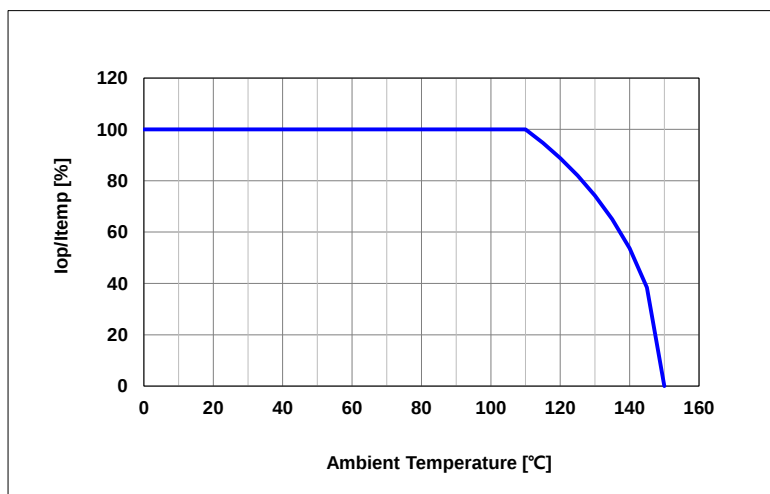
4) Temperature characteristics (Typ.)



## 5) Derating Characteristics

Regarding the rated current at ambient temperature of 110°C or higher, the rated current temperature characteristic derating is applied.  
Using above the derating temperature is available, but not guaranteed.

Derating Current Curve



$I_{op}$  : Derating current

$I_{temp}$  : Rated Current

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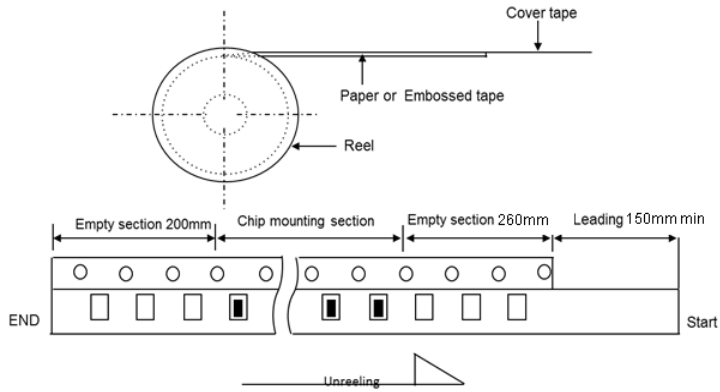


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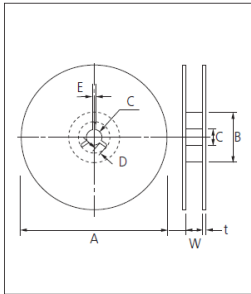
### 3. PACKAGING SPECIFICATIONS

#### FIGURE



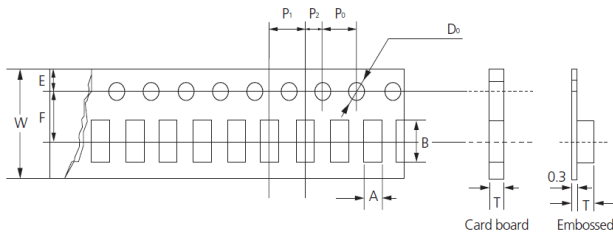
#### REEL SIZES

• Reel dimensions



| Unit: mm |            |                     |                    |                   |             |
|----------|------------|---------------------|--------------------|-------------------|-------------|
| Symbol   | Tape Width | A                   | B                  | C                 | D           |
| 7" Reel  | 8mm        | $\Phi 180 \pm 0/-3$ | $\Phi 60 \pm 1/-0$ | $\Phi 13 \pm 0.3$ | $4 \pm 0.2$ |
|          | 12mm       | $\Phi 180 \pm 0/-3$ | $\Phi 60 \pm 1/-0$ | $\Phi 13 \pm 0.3$ | $4 \pm 0.2$ |
| 10" Reel | 8mm        | $\Phi 258 \pm 0/-3$ | $\Phi 80 \pm 1/-0$ | $\Phi 13 \pm 0.3$ | $4 \pm 0.2$ |
|          | 8mm        | $\Phi 330 \pm 0/-3$ | $\Phi 80 \pm 1$    | $\Phi 13 \pm 0.3$ | $4 \pm 0.2$ |
| 13" Reel | 8mm        | $\Phi 330 \pm 0/-3$ | $\Phi 80 \pm 1$    | $\Phi 13 \pm 0.3$ | $4 \pm 0.2$ |
|          | 12mm       | $\Phi 330 \pm 0/-3$ | $\Phi 80 \pm 1$    | $\Phi 13 \pm 0.3$ | $4 \pm 0.2$ |
| Symbol   | Tape Width | E                   | W                  | t                 |             |
| 7" Reel  | 8mm        | $2.0 \pm 0.5$       | $9 \pm 0.5$        | $1.2 \pm 0.2$     |             |
|          | 12mm       | $2.0 \pm 0.5$       | $13 \pm 0.5$       | $1.2 \pm 0.2$     |             |
| 10" Reel | 8mm        | $2.0 \pm 0.5$       | $9 \pm 0.5$        | $1.8 \pm 0.2$     |             |
|          | 8mm        | $2.0 \pm 0.5$       | $9 \pm 0.5$        | $2.2 \pm 0.2$     |             |
| 13" Reel | 8mm        | $2.0 \pm 0.5$       | $9 \pm 0.5$        | $2.2 \pm 0.2$     |             |
|          | 12mm       | $2.0 \pm 0.5$       | $13 \pm 0.5$       | $2.2 \pm 0.2$     |             |

#### TAPE SIZE



| Type | Tape     | Chip Thickness | Chip Cavity     |                 | T               | W               | F               | E               | P <sub>1</sub> | P <sub>2</sub> | P <sub>0</sub> | D <sub>0</sub>          |
|------|----------|----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|----------------|-------------------------|
|      |          |                | A               | B               |                 |                 |                 |                 |                |                |                |                         |
| 2016 | Embossed | 1.0Max         | $1.90 \pm 0.05$ | $2.25 \pm 0.05$ | $1.05 \pm 0.05$ | $8.00 \pm 0.10$ | $3.50 \pm 0.05$ | $1.75 \pm 0.10$ | $4.0 \pm 0.10$ | $2.0 \pm 0.05$ | $4.0 \pm 0.10$ | $\Phi 1.5 \pm 0.1/-0.0$ |

#### UNIT WEIGHT & PACKAGING QUANTITY

| UNIT WEIGHT (g) | QUANTITY (pcs/ 7" Reel) |
|-----------------|-------------------------|
| 0.017           | 3000                    |

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## CAUTION OF APPLICATION

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If you have any questions regarding this 'Limitation of Use and Application', you should first contact our sales personnel or application engineers.

- ① Aerospace/Aviation equipment
- ② Medical equipment
- ③ Military equipment
- ④ Disaster prevention/crime prevention equipment
- ⑤ Power plant control equipment
- ⑥ Atomic energy-related equipment
- ⑦ Undersea equipment
- ⑧ Traffic signal equipment
- ⑨ Data-processing equipment
- ⑩ Traffic signal equipment
- ⑪ Electric heating apparatus, burning equipment
- ⑫ Any other applications with the same as or similar complexity or reliability to the applications

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