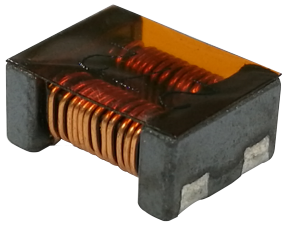
CMF2N Series

High Current Common Mode Choke



FEATURES

- Surface mountable (multiple case sizes), high current common mode choke for DC power line
- Base terminals are treated, allows for easy mounting on PCB
- Paired wire coil for high stability
- Optimized for transmission of high quality signals
- Operating temperature: -40 °C to +125 °C
- Rated Current: Based on temp. rise; ΔT: 40 °C, typical
- Material categorization: For definitions of compliance please see

APPLICATIONS

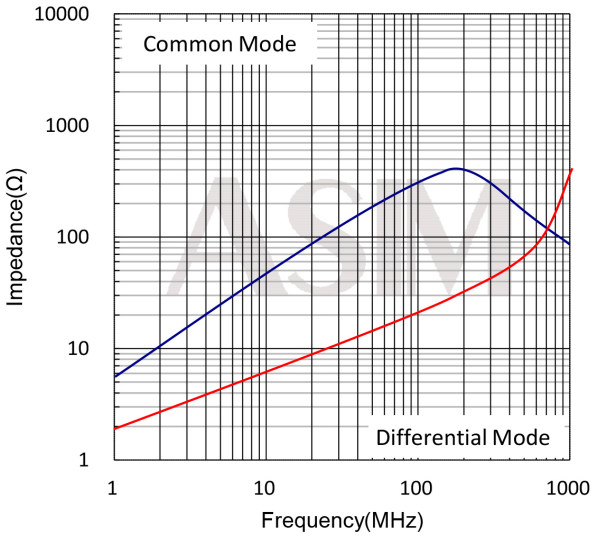
- LAN's, telephones, personal computers
- CD-ROM drives, electronic games
- Other electronic devices

STANDARD ELECTRICAL SPECIFICATIONS

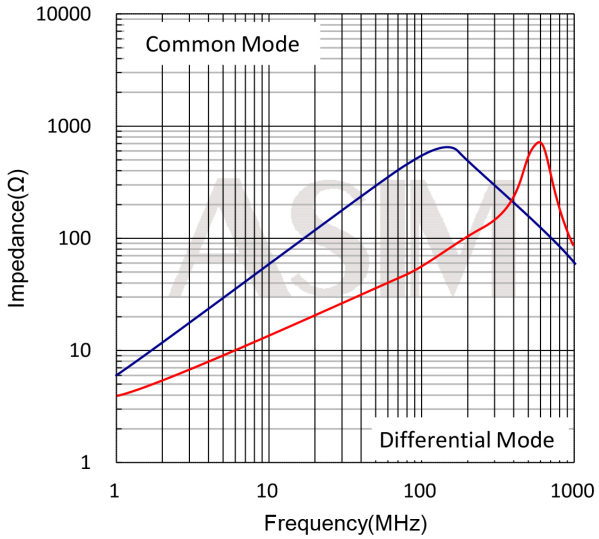
PART NUMBER	COMMON MODE IMPEDANCE AT 100 MHz (Ω)	RATED VOLTAGE MAX. (V_{DC})	RATED CURRENT MAX. (A)	DC RESISTANCE MAX. (Ω)	INSULATION RESISTANCE MIN. (MΩ)
CMF2N301WIT	300±25%	80	13	0.005	10
CMF2N551WIT	550±25%	80	9	0.006	10
CMF2N701WIT	700±25%	80	8	0.007	10
CMF2N102WIT	1000±25%	80	7	0.012	10

PERFORMANCE GRAPHS: INDUCTANCE AND Q VS. FREQUENCY

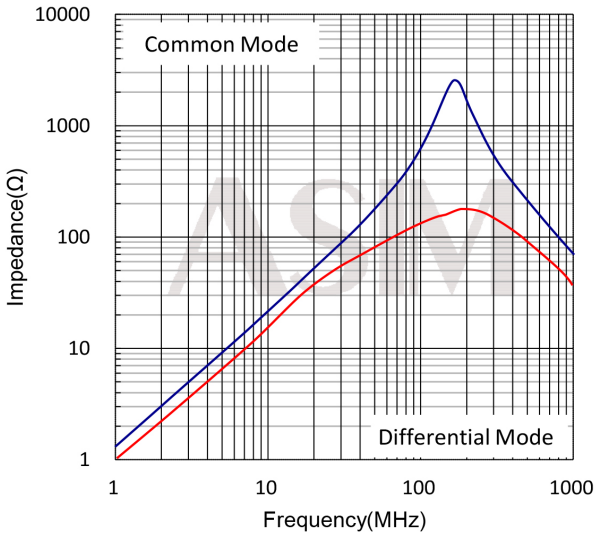
CMF2N301WIT



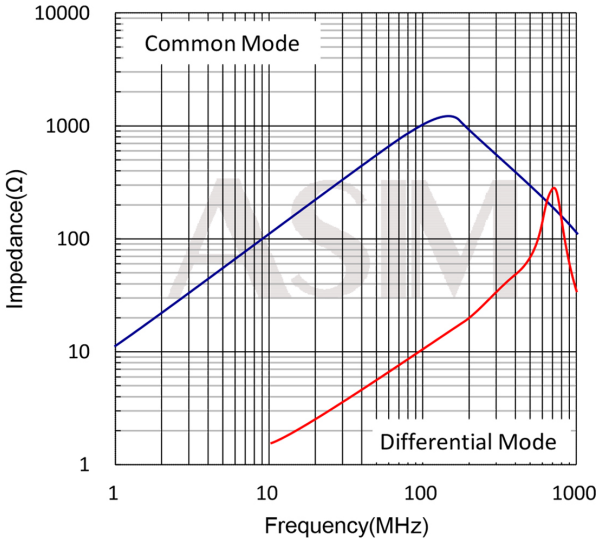
CMF2N551WIT



CMF2N701WIT

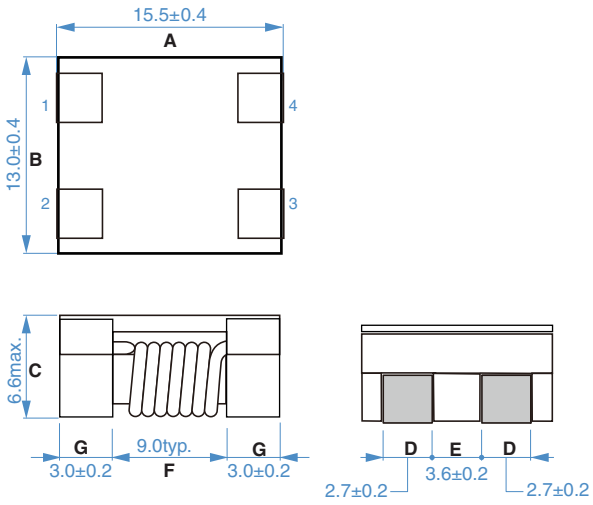


CMF2N102WIT

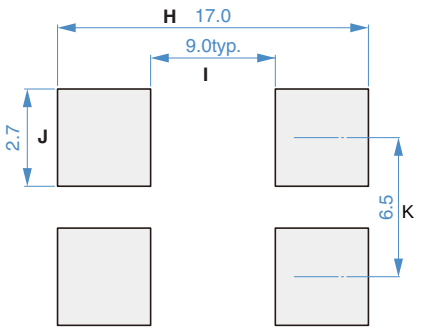


DIMENSIONS in inches [millimeters]

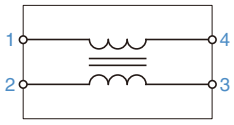
Dimensions in mm



PART NUMBER	A	B	C	D	E	F	G
CMF2N Series	0.610 ± 0.016 [15.5 ± 0.4]	0.512 ± 0.016 [13.0 ± 0.4]	0.236 [6.6] max.	0.106 ± 0.008 [2.7 ± 0.2]	0.142 ± 0.008 [3.6 ± 0.2]	0.354 [9.0] typ.	0.118 ± 0.008 [3.0 ± 0.2]



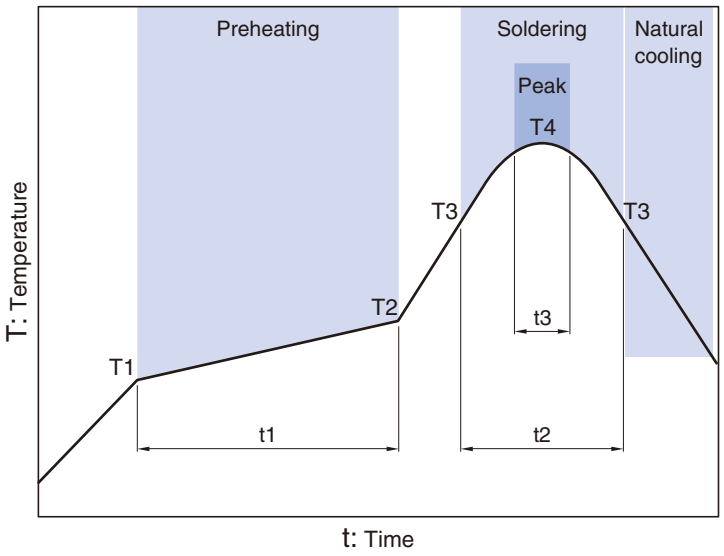
Dimensions in mm



• No polarity

PART NUMBER	H	I	J	K
CMF2I Series	0.669 [17.0]	0.354 [9.0typ.]	0.114 [2.9]	0.256 [6.5]

RECOMMENDED REFLOW PROFILE



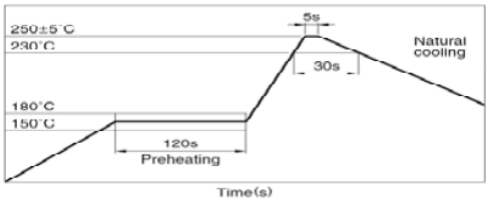
Preheating			Soldering		Peak	
Temp.		Time	Temp.	Time	Temp.	Time
T1	T2	t1	T3	t2	T4	t3
150°C	180°C	60 to 120s	230°C	25 to 35s	250°C	5s

RELIABLITY TEST METHOD

- **ELECTRIC**

NO.	Test items	Standard	Experiment Method
1	Temperature characteristics	ΔL/L 20°C ≤ ±10%	The test should be done after the sample has stabilized in the ring The temperature of the product is -40 to +125 °C, and the L (ΔL) value of the product is the same as the original L value. Suitable for normal temperature and humidity should be ΔL / L 20 ° C ≤ ± 10 %.
2	Load test	The product must not have any damage, such as smoke or sparks	1.2 times the rated current, the time is 5 minutes

ENVIRONMENTAL CHARACTERISTICS

NO.	Test items	Standard	Experiment Method
1	Reflow soldering	Do not have any damage or problems	Reflow of temperature distribution Before the heat: 150-180 °C, Times 60 to 120sec Peak temperature: 250 ± 5 °C, Times 5 sec Hold temperature: 230 ± 5 °C, Times 30 ± 5 sec 
2	Solderability	Welding area of more than 90%	The solder surface is immersed in flux and then immersed in a furnace at 235 ± 5 °C for 5 seconds
3	Low temperature storage	ΔL / L0 ≤ ± 10%, there should be no mechanical damage	The sample should be left for 96 ± 4 hours at a temperature of -40 ± 3 °C and returned to the normal temperature range of 1 hour after completion of the test.) 90-95%.
4	High temperature storage	ΔL / L0 ≤ ± 10%, there should be no mechanical damage	The sample should be left for 96 ± 4 hours at a temperature of 125 ± 3 °C. The test should be carried out after returning to normal temperature range for 1 hour.
5	Constant hot and humid	ΔL / L0 ≤ ± 10%, there should be no mechanical damage.	Samples should be left for 96 ± 4 hours at 60 ± 2 °C and 90 °C to 90% humidity (RH). The test is resumed after 1 hour in the normal temperature range.
6	Temperature cycle	1, no visible mechanical damage. 2, the value of change is less than 10%. 3, the resistance value of less than 5%	In the -25 °C to +85 °C between the respective keep 15min, transit time ≤1min, the number of cycles 5 times, recovery time: 24h test finished (recovery time at least 4h)
7	vibration	ΔL / L0 ≤ ± 10% There should be no mechanical damage	The sample should be soldered to the printed circuit board When the vibration has an amplitude and 1.5 mm Frequency from 10-55Hz / 1 minute, repeated should be applied to three directions (X, Y, Z) for 2 hours, a total of 6 hours
8	Impact resistance (MIL-STD-202G Method 213B)	Change in inductance: within ± 10% DC resistance change: ± 10% within the appearance of no obvious abnormalities, should not have mechanical damage.	The test sample shall be soldered to the test substrate by reflow soldering. Then, follow the following test conditions. **Pulse** / **Half sine shock** Acceleration / 980 m/s^2(100g) Nominal pulse duration / 6 ms Speed change / 3.75 m/s Recovery: 2 hours of recovery in standard condition and subsequent testing within 48 hours.

<table>
<tr>
<td>9</td>
<td>Thermal shock (MIL-STD-202G Method 107G)</td>
<td>Change in inductance: within ± 10%
DC resistance change: ± 10% within the appearance of no obvious abnormalities, should not have mechanical damage.</td>
<td>The test sample shall be soldered to the test substrate by reflow soldering. Test sample according to the specified time
Are placed at a specific temperature, as shown in the table below, from step 1 to step 4.
<table>
<tr><th colspan="3">1 cycle condition</th></tr>
<tr><th>Step</th><th>Temperature（°C）</th><th>Time（minute）</th></tr>
<tr><td>1</td><td>-55±3</td><td>30±3</td></tr>
<tr><td>2</td><td>Room temperature</td><td>3 or less</td></tr>
<tr><td>3</td><td>-125±3</td><td>30±3</td></tr>
<tr><td>4</td><td>Room temperature</td><td>3 or less</td></tr>
</table>
Recovery: 2 hours of recovery in standard condition and subsequent testing within 48 hours.</td>
</tr>
<tr>
<td>10</td>
<td>Wet heat resistance (MIL-STD-202G Method 106G)</td>
<td>Change in inductance: within ± 10%
DC resistance change: ± 10% within the appearance of no obvious abnormalities, should not have mechanical damage.</td>
<td>The test sample shall be soldered to the test substrate by reflow soldering.
Test samples must be placed in a constant temperature and humidity box, according to the table specified temperature and humidity, do not pass the current test.
<table>
<tr><td>Temperature</td><td>65±2°C</td></tr>
<tr><td>Humidity</td><td>90%±10%RH</td></tr>
<tr><td>Time</td><td>500±24 hours</td></tr>
</table>
Recovery: 2 hours of recovery in standard condition and subsequent testing within 48 hours.</td>
</tr>
<tr>
<td>11</td>
<td>Low temperature life (IEC68-2-1Ad)</td>
<td>Change in inductance: within ± 10%
DC resistance change: ± 10% within the appearance of no obvious abnormalities, should not have mechanical damage.</td>
<td>The test sample shall be soldered to the test substrate by reflow soldering.
The test sample should then be placed in the test conditions as shown in the table below.
<table>
<tr><td>Temperature</td><td>-40±3°C</td></tr>
<tr><td>Time</td><td>500±24 hours</td></tr>
</table>
Recovery: 2 hours of recovery in standard condition and subsequent testing within 48 hours.</td>
</tr>
<tr>
<td>12</td>
<td>Low temperature load life (IEC68-2-1Ad)</td>
<td>Change in inductance: within ± 10%
DC resistance change: ± 10% within the appearance of no obvious abnormalities, should not have mechanical damage.</td>
<td>The test sample shall be soldered to the test substrate by reflow soldering. The
<table>
<tr><td>Temperature</td><td>-55±2°C</td></tr>
<tr><td>Plus load current</td><td>Rated current</td></tr>
<tr><td>Time</td><td>500±24 hours</td></tr>
<tr><td>Hourly power time</td><td>3/4 power 1/4 power off</td></tr>
</table>
Recovery: 2 hours of recovery in standard condition and subsequent testing within 48 hours.</td>
</tr>
<tr>
<td>13</td>
<td>Damp heat load (MIL-STD-202G Method 108A)</td>
<td>Change in inductance: within ± 10%
DC resistance change: ± 10% within the appearance of no obvious abnormalities, should not have mechanical damage.</td>
<td>The test sample shall be soldered to the test substrate by reflow soldering.
Test samples shall be placed in a constant temperature and humidity box, according to the table specified in the temperature and humidity under the continuous access to the rated current for testing.
<table>
<tr><td>Temperature</td><td>60±2°C</td></tr>
<tr><td>Humidity</td><td>90~95%RH</td></tr>
<tr><td>Time</td><td>500±24 hours</td></tr>
</table>
Recovery: 2 hours of recovery in standard condition and subsequent testing within 48 hours.</td>
</tr>
</table>

<table>
<tr>
<td>14</td>
<td>High temperature life test (IEC68-2-2Ba)</td>
<td>Change in inductance: within ± 10%
DC resistance change: ± 10% within the appearance of no obvious abnormalities, should not have mechanical damage.</td>
<td>The test sample shall be soldered to the test substrate by reflow soldering.
The test sample shall be placed in a constant temperature and humidity tank and the current shall not be supplied at the temperature specified in the table.
<table>
<tr><td>Temperature</td><td>125±3°C</td></tr>
<tr><td>Time</td><td>500±24 hours</td></tr>
</table>
Recovery: 2 hours of recovery in standard condition and subsequent testing within 48 hours.</td>
</tr>
<tr>
<td>15</td>
<td>High temperature load life test (MIL-STD-202G Method 108A)</td>
<td>Change in inductance: within ± 10%
DC resistance change: ± 10% within the appearance of no obvious abnormalities, should not have mechanical damage.</td>
<td>The test sample shall be soldered to the test substrate by reflow soldering. The
<table>
<tr><td>Temperature</td><td>85±2°C</td></tr>
<tr><td>Plus load current</td><td>Rated current</td></tr>
<tr><td>Time</td><td>2000±24 hours</td></tr>
<tr><td>Hourly power time</td><td>3/4 power 1/4 power off</td></tr>
</table>
Recovery: 2 hours of recovery in standard condition and subsequent testing within 48 hours.</td>
</tr>
</table>