CMF2F 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

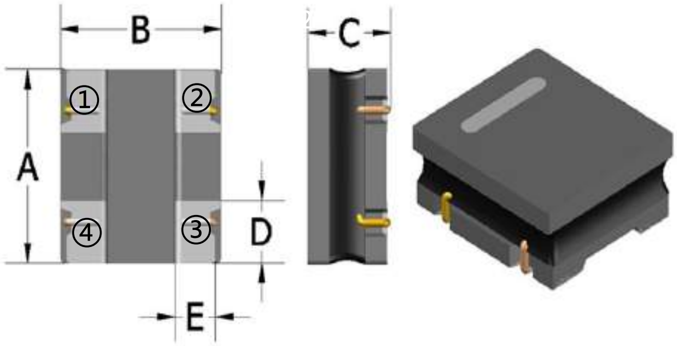
Application

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

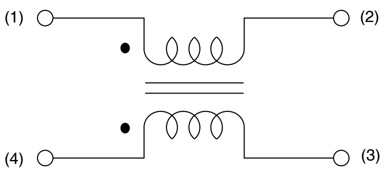
STANDARD ELECTRICAL SPECIFICATIONS

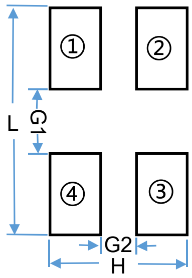
PART NUMBER	COMMON MODE IMPEDANCE AT 100 MHz (Ω)	RATED VOLTAGE MAX. (V_{DC})	RATED CURRENT MAX. (mA)	DC RESISTANCE MAX. (Ω)	INSULATION RESISTANCE MIN. (MΩ)
CMF2F101WIT	100±25%	115	6000	0.009	10
CMF2F251WIT	250±25%	115	5000	0.014	10
CMF2F501WIT	500±25%	115	4000	0.019	10
CMF2F102WIT	1000±25%	115	3000	0.024	10
CMF2F142WIT	1400±25%	115	1500	0.040	10

Dimension (mm)



5045	Dimensions
A	5.0 ± 0.3
B	4.5 ± 0.3
C	2.5 Max.
D	1.6± 0.3
E	1.4 ± 0.3





Recommended Footprint(mm)

5045	Dimensions
L	5.5 ref
H	4.6 ref
G1	1.5 ref
G2	1.2 ref

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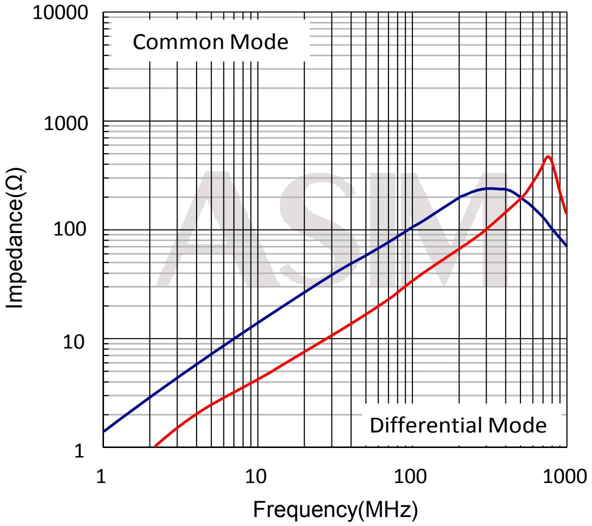
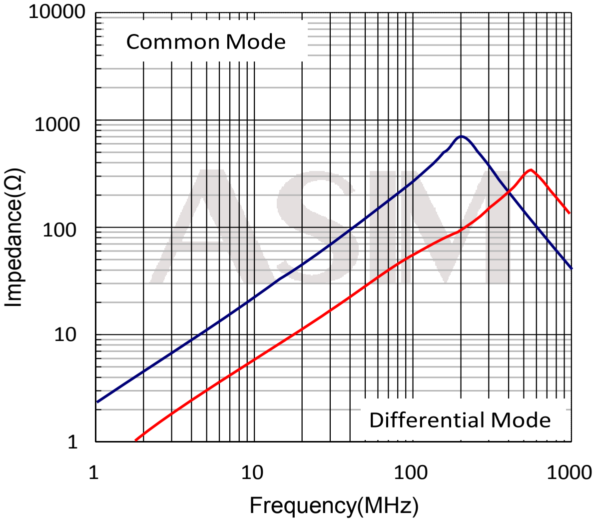
Performance Curves

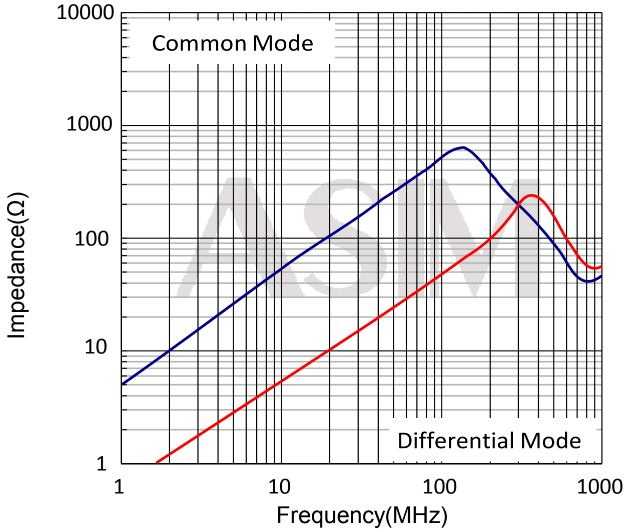
CMF2F101WIT



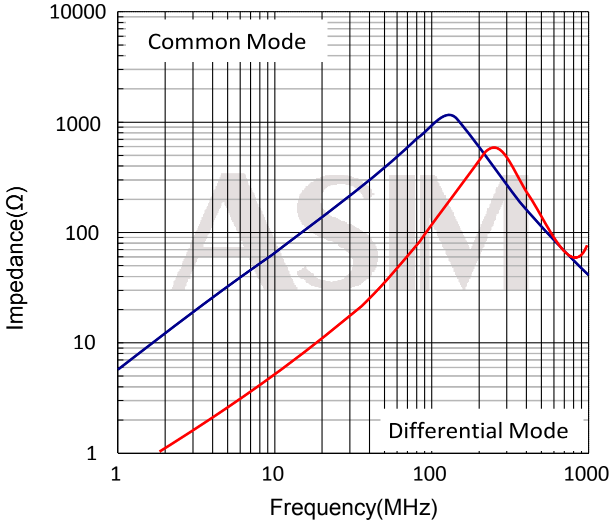
CMF2F251WIT



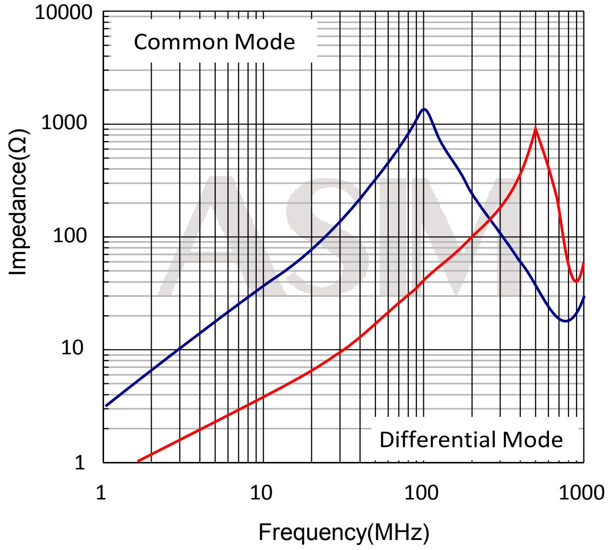
CMF2F501WIT



CMF2F102WIT

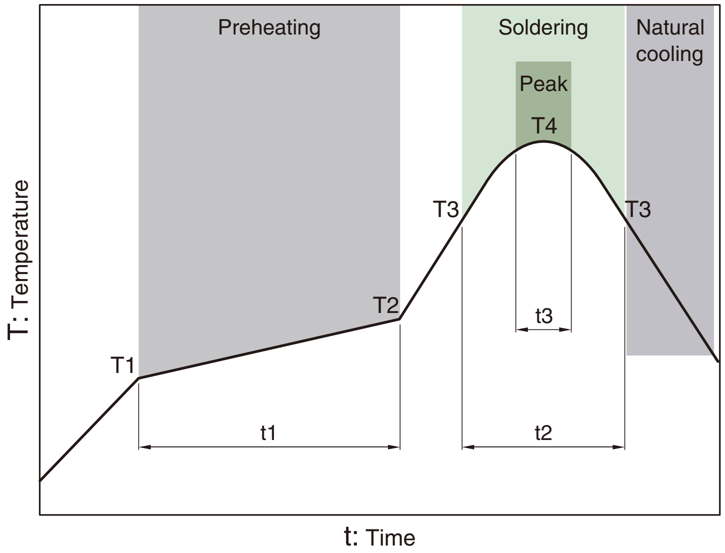


CMF2F142WIT



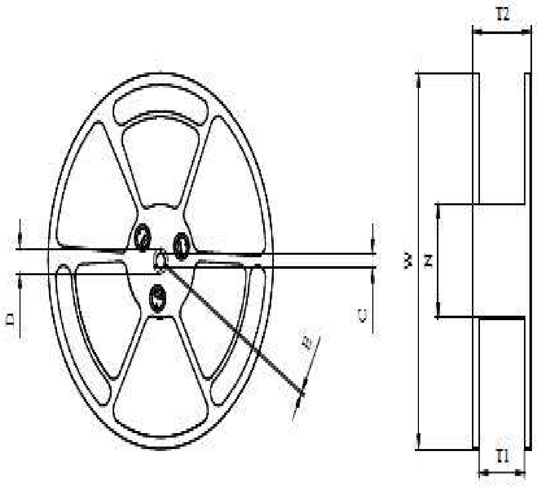
High Current Common Mode Choke

Recommended Reflow Profile



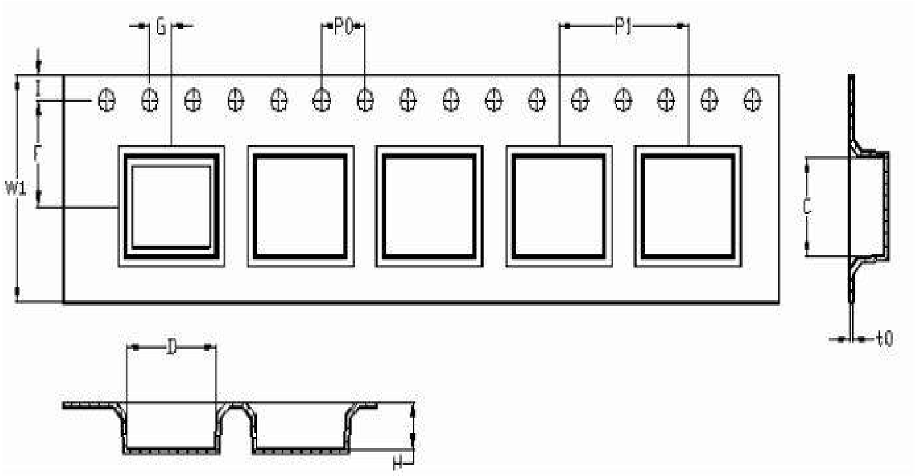
Preheating			Soldering		Peak	
Temp.		**Time**	**Temp.**	**Time**	**Temp.**	**Time**
T1	**T2**	**t1**	**T3**	**t2**	**T4**	**t3**
150°C	180°C	60 to 120s	230°C	25 to 35s	250°C	5s

Reel Dimmension&Tape Dimension



Series	size	W (mm)	D (mm)	C (mm)	T1 (mm)	N (mm)	T2 (mm)	E (mm)
CMF2F	5045	330 ±1.5	21.5 ±0.5	13 ±0.5	2.5 ±0.5	2.00 ±0.1	100 ±1.5	2.0 ±0.5

High Current Common Mode Choke



Series	size	W1 (mm)	I (mm)	F (mm)	P0 (mm)	G (mm)	P1 (mm)	C (mm)	t0 (mm)	D (mm)	H (mm)
CMF2F	5045	12.00 ±0.3	1.75 ±0.1	5.50 ±0.1	4.00 ±0.1	2.00 ±0.1	8.00 ±0.1	4.9 ±0.1	0.35 ±0.05	5.10 ±0.1	2.70 ±0.1

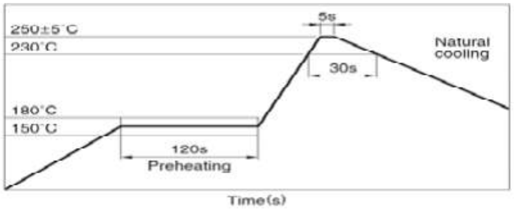
RELIABLITY TEST METHOD

- **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

High Current Common Mode Choke

• ENVIRONMENTAL CHARACTERISTICS

<table>
<tr><th>NO.</th><th>Test items</th><th>Standard</th><th>Experiment Method</th></tr>
<tr><td>1</td><td>Reflow soldering</td><td>Do not have any damage or problems</td><td>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

 </td></tr>
<tr><td>2</td><td>Solderability</td><td>Welding area of more than 90%</td><td>The solder surface is immersed in flux and then immersed in a furnace at 235 ± 5 °C for 5 seconds</td></tr>
<tr><td>3</td><td>Low temperature storage</td><td>ΔL / L0 ≤ ± 10%, there should be no mechanical damage</td><td>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%.</td></tr>
<tr><td>4</td><td>High temperature storage</td><td>ΔL / L0 ≤ ± 10%, there should be no mechanical damage</td><td>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.</td></tr>
<tr><td>5</td><td>Constant hot and humid</td><td>ΔL / L0 ≤ ± 10%, there should be no mechanical damage.</td><td>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.</td></tr>
<tr><td>6</td><td>Temperature cycle</td><td>1, no visible mechanical damage.
2, the value of change is less than 10%.
3, the resistance value of less than 5%</td><td>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)</td></tr>
<tr><td>7</td><td>vibration</td><td>ΔL / L0 ≤ ± 10%
There should be no mechanical damage</td><td>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</td></tr>
<tr><td>8</td><td>Impact resistance (MIL-STD-202G Method 213B)</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.
Then, follow the following test conditions.
<table>
<tr><th>Pulse</th><th>Half sine shock</th></tr>
<tr><td>Acceleration</td><td>980 m/s^2(100g)</td></tr>
<tr><td>Nominal pulse duration</td><td>6 ms</td></tr>
<tr><td>Speed change</td><td>3.75 m/s</td></tr>
</table>
Recovery: 2 hours of recovery in standard condition and subsequent testing within 48 hours.</td></tr>
</table>

<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>