High Current SMD Common Mode Filter \ PCM_AF Series (AEC-Q200)

.Feature

1. High impedance at high frequency effects excellent noise suppression performance.
2. High reliability -Reliability tests comply with AEC-Q200
3. Operating temperature-40~+125℃(Including self - temperature rise)

.Applications

1. The PCM_AF Series is SMD common mode filter specifically designed to eliminate common mode noise for electronic controller DC power lines and power supply lines for car multi-equipment and various electronic devices

.Product Identification

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1 2 3 4

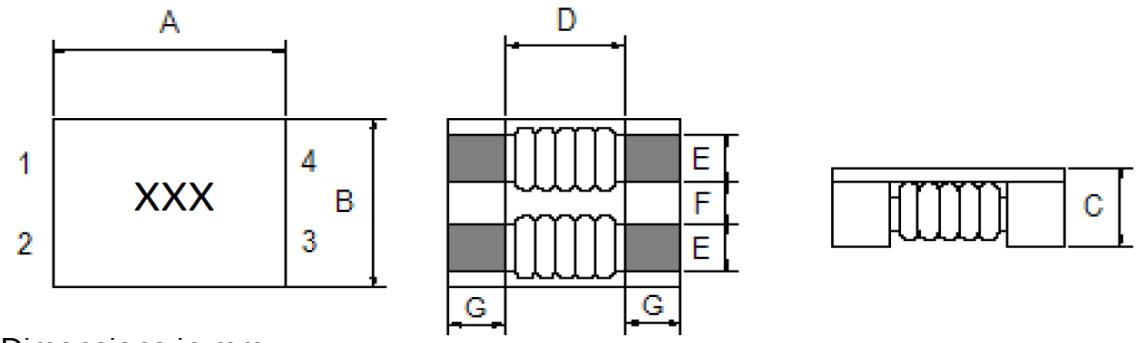
Series nAFe	Dimensions (WxLxH)		Internal code
PCM	474520	4.7*4.5*2.0 mm	AF=Automobile
	070603	7.0*6.0*3.8 mm	
	090704	9.0*7.0*4.8 mm	

Impedance	
701	700Ω
901	900Ω
142	1400Ω

.Rating

1. Operating temperature -40℃ ~ +125℃
2. Storage conditions -40℃ ~ +125℃

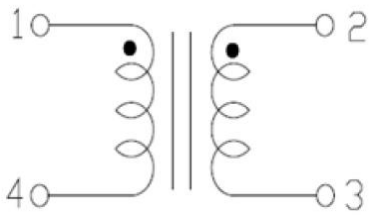
.Shape and Dimension



Dimensions in mm

TYPE	A(mm)	B(mm)	C(mm)	D(mm)	E(mm)	F(mm)	G(mm)
PCM474520AF	4.70 ± 0.50	4.5 ± 0.50	2.00 Max.	2.7 Typ.	0.75 ± 0.20	1.25 ± 0.20	1.00 ± 0.20
PCM070603AF	7.00 ± 0.50	6.00 ± 0.50	3.80 Max.	3.5 Typ.	1.50 ± 0.50	1.50 ± 0.50	1.75 ± 0.50
PCM090704AF	9.00 ± 0.50	7.00 ± 0.50	4.80 Max.	5.7 Typ.	1.50 ± 0.20	2.00 ± 0.20	1.70 ± 0.20
PCM121106AF	12.0 ± 0.50	10.8 ± 0.50	6.40 Max.	7.0 Typ.	2.70 ± 0.20	2.50 ± 0.20	2.50 ± 0.20

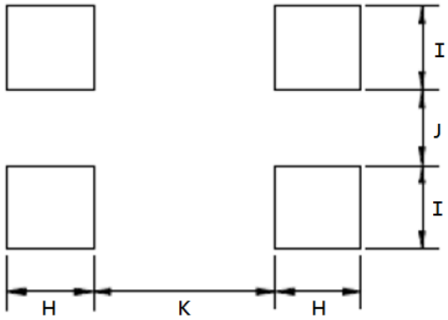
.Equivalent Circuit Schematic



No.	Location	Supplier	Material
1	Core	SINCORES	Ferrite Core
2	Wire	PACIFIC	2UWE,P180
3	Cover	AIMA	Bakelite
4	Solder	SHENYUAN	Sn99.3,Cu0.7

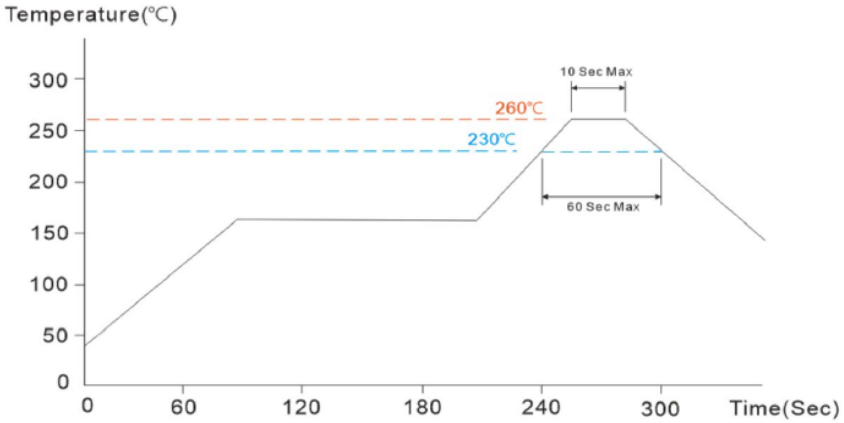
High Current SMD Common Mode Filter \ PCM_AF Series (AEC-Q200)

.Shape and Dimension



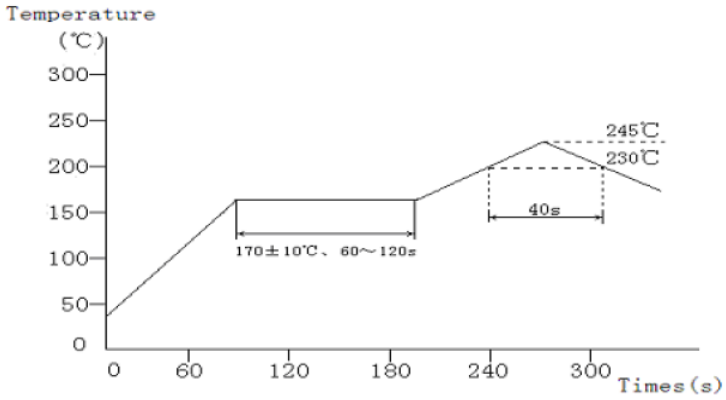
TYPE	H(mm)	I(mm)	J(mm)	K(mm)
PCM474520AF	1.30 Ref.	1.20 Ref.	0.90Ref.	2.40 Ref.
PCM070603AF	2.20 Ref.	1.50 Ref.	1.50 Ref.	2.50 Ref.
PCM090704AF	3.00 Ref.	1.75 Ref.	1.50 Ref.	5.00 Ref.
PCM121106AF	2.70 Ref.	2.90 Ref.	2.30 Ref.	6.80 Ref.

.Recommended Reflow Soldering Conditions.



No mechanical and electrical defects are found after testing based on the above profile and keeping under the conditions of room temperature and humidity for 2 hours.
Twice reflow test is acceptable with the test interval remaining 1 hour under the normal conditions.
The reflow test profile may vary with the testing instruments.

.Recommended Reflow Conditions.



The recommended reflow profile is based on the testing instruments used. Solder ability will reflow conditions, testing method, etc. So it is necessary to make a confirmation of them when the reflow conditions are set up.

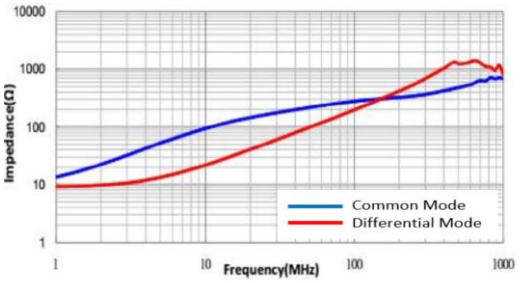
High Current SMD Common Mode Filter \ PCM_AF Series (AEC-Q200)

.Electrical Characteristics（PCM_AF Series）

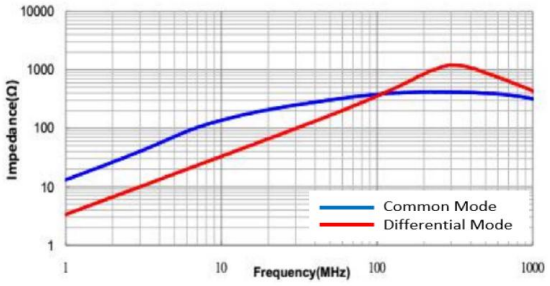
Part No.	Impedance (Ω) Min.	Impedance (Ω) Typ.	Rated Current (A) Max.	DCR (mΩ) Max.	Insulation Resistance (mΩ) Min.	Rated Volt. (V) Max.	Test Frequency (Hz)
PCM474520AF-231	180	230	1.8	45	10	80	100M
PCM474520AF-401	300	420	1.5	50	10	80	100M
PCM474520AF-701	500	700	1.4	59	10	80	100M
PCM474520AF-901	650	900	1.3	68	10	80	100M
PCM474520AF-102	800	1000	1.3	68	10	80	100M
PCM474520AF-122	1000	1200	1.2	74	10	80	100M
PCM474520AF-142	1200	1400	1.2	81	10	80	100M
PCM070603AF-701	500	700	4.0	15	10	125	100M
PCM070603AF-272	2000	2700	1.0	63	10	125	100M
PCM090704AF-701	500	700	5.0	10	10	50	100M
PCM090704AF-102	750	1000	4.0	13	10	50	100M
PCM121106AF-701	500	700	8.0	6	10	50	100M
PCM121106AF-222	2200	2500	8.0	6	10	50	100M

.Eletrical Curve (Impedance VS Frequency)

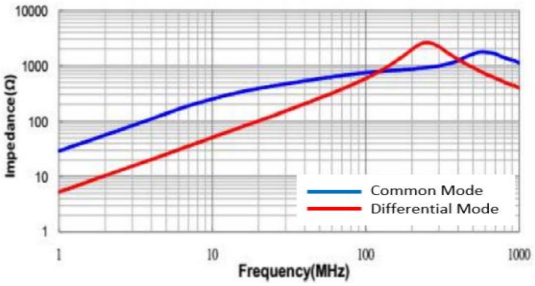
PCM474520AF-231



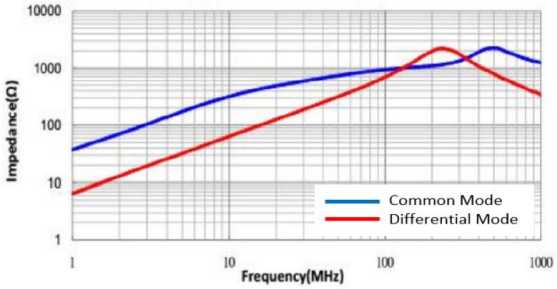
PCM474520AF-401



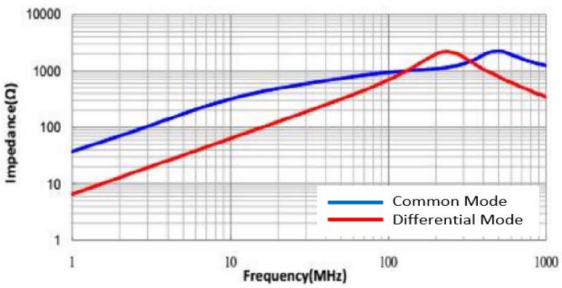
PCM474520AF-701



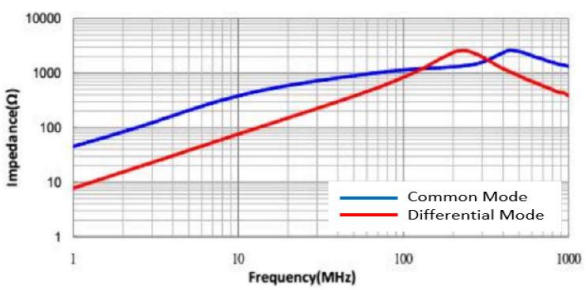
PCM474520AF-901



PCM474520AF-102

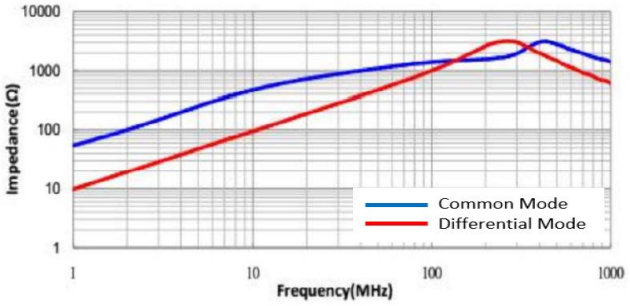


PCM474520AF-122

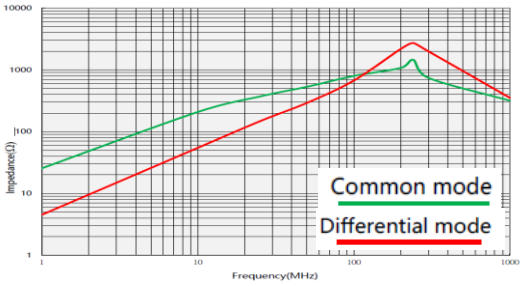


High Current SMD Common Mode Filter \ PCM_AF Series (AEC-Q200)

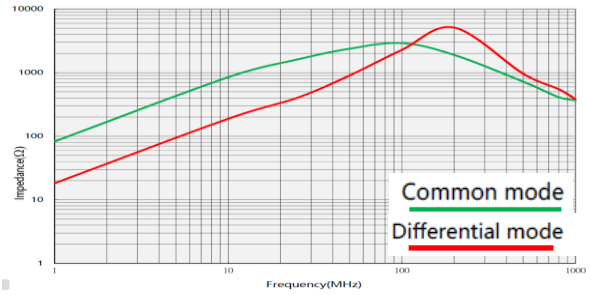
PCM474520AF-142



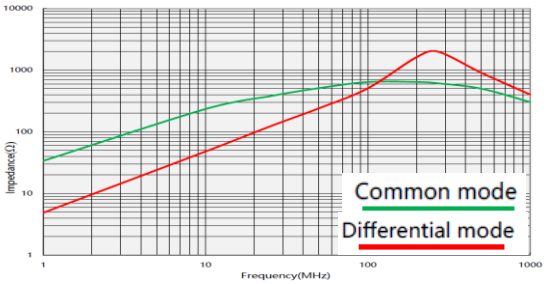
PCM070603AF-701



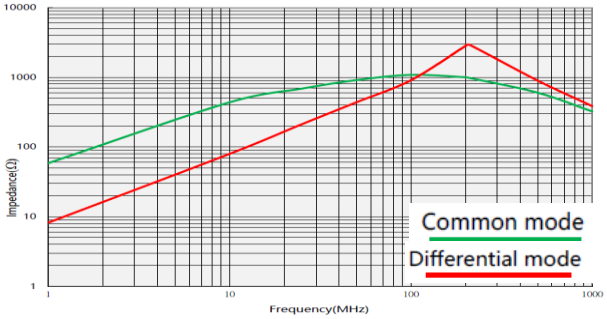
PCM070603AF-272



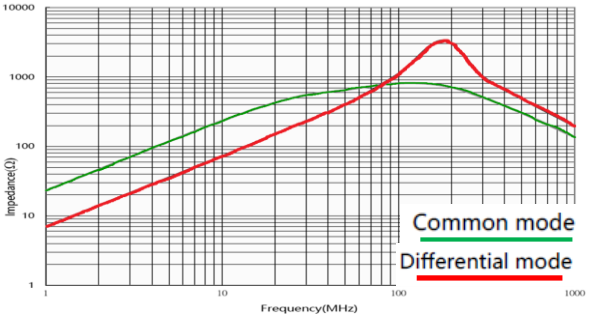
PCM090704AF-701



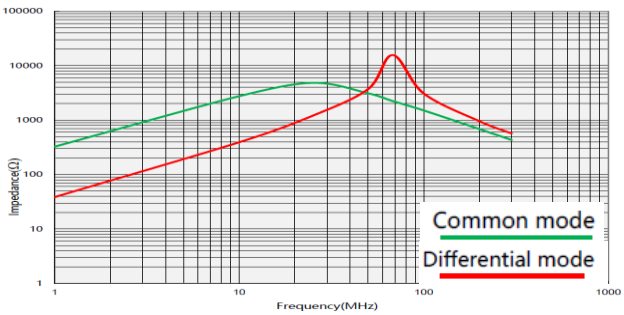
PCM090704AF-102



PCM121160AF-701



PCM121160AF-222



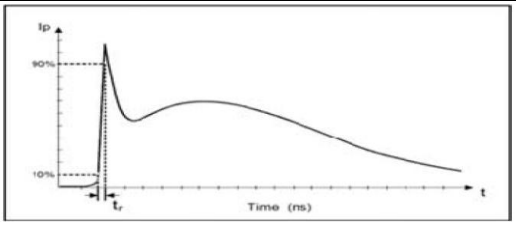
High Current SMD Common Mode Filter \ PCM_AF Series (AEC-Q200)

.Reliability and Test Conditions(可靠性測試條件)

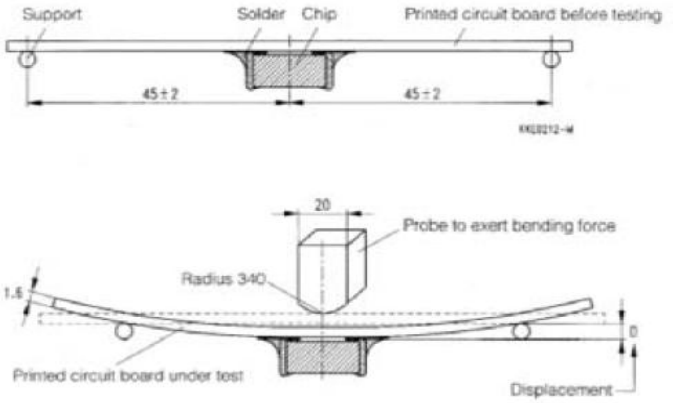
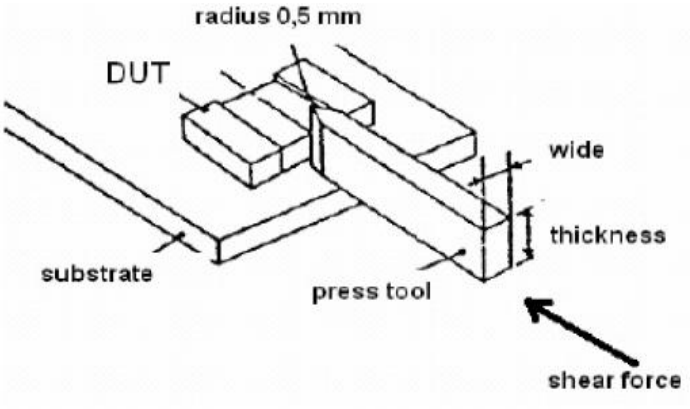
General Characteristics

Item	Specification	Conditions
Operating temperature		-55℃~ +125℃ (Including self-temperature rise).
Storage temperature		-55~+125℃ (on board)
Electrical Performance Test		
Z(Common Mode)	Refer to standard electrical characteristics list.	Agilent-4291A+ Agilent -16197A
DCR		Agilent-4338B
I.R		Agilent4339
Temperature Rise Test	Rated Current ≧ 1A ΔT 40℃Max	1.Applied the allowed DC current. 2.Temperature measured by digital surface thermometer
Reliability Test		
High Temperature Exposure(Storage) AEC-Q200	Appearance：No damage. Impedance：within±15% of initial value Q：Shall not exceed the specification value. RDC：within ±15% of initial value and shall not exceed the specification value	Preconditioning: Run through IR reflow for 2 times.(IPC/JEDEC J-STD-020DClassification Reflow Profiles Temperature：125±2℃ Duration ：1000hrs Min. Measured at room temperature after placing for 24±2 hrs
Temperature Cycling AEC-Q200		Preconditioning: Run through IR reflow for 2 times.(IPC/JEDEC J-STD-020DClassification Reflow Profiles Condition for 1 cycle Step1：-55±2℃ 30min Min. Step2：125±2℃ transition time 1min MAX. Step3：125±2℃ 30min Min. Step4：Low temp. transition time 1min MAX. Number of cycles： 1000 Measured at room temperature after placing for 24±2 hrs
Blased Humidity AEC-Q200		Preconditioning: Run through IR reflow for 2 times.(IPC/JEDEC J-STD-020DClassification Reflow Profiles Humidity ：85±3% R.H, Temperature：85℃±2℃ Duration : 1000hrs Min. Measured at room temperature after placing for24±2hrs
High Temperature Operational Life AEC-Q200		Preconditioning: Run through IR reflow for 2 times.(IPC/JEDEC J-STD-020DClassification Reflow Profiles Temperature：125±2℃ Duration ：1000hrs Min. with 100% rated current. Measured at room temperature after placing for24±2hrs
External Visual	Appearance：No damage.	Inspect device construction, marking and workmanship. Electrical Test not required.
Physical Dimension	According to the product specification size measurement	According to the product specification size measurement
Resistance to Solvents	Appearance：No damage.	Add aqueous wash chemical - OKEM clean or equivalent.

High Current SMD Common Mode Filter \ PCM_AF Series (AEC-Q200)

<table>
<tr><th>Item</th><th>Specification</th><th>Conditions</th></tr>
<tr><td>Mechanical Shock</td><td>Appearance：No damage.
Impedance：within±15% of initial value
Q：Shall not exceed the specification value.
RDC：within ±15% of initial value and shall not exceed the specification value</td><td>PCM474520AF
<table>
<tr><th>Type</th><th>Peak value (g's)</th><th>Normal duration (D) (ms)</th><th>Wave form</th><th>Velocity change (Vi)ft/sec</th></tr>
<tr><td>SMD</td><td>100</td><td>6</td><td>Half-sine</td><td>12.3</td></tr>
<tr><td>Lead</td><td>100</td><td>6</td><td>Half-sine</td><td>12.3</td></tr>
</table>
shocks in each direction along 3 perpendicular axes.
PCM070603AF+PCM090704AF+PCM121160AF
<table>
<tr><th>Type</th><th>Peak value (g's)</th><th>Normal duration (D) (ms)</th><th>Wave form</th><th>Velocity change (Vi)ft/sec</th></tr>
<tr><td>SMD</td><td>50</td><td>11</td><td>Half-sine</td><td>11.3</td></tr>
<tr><td>Lead</td><td>50</td><td>11</td><td>Half-sine</td><td>11.3</td></tr>
</table></td></tr>
<tr><td>Vibration</td><td rowspan="3"></td><td>IPC/JEDEC J-STD-020DClassification Reflow Profiles
Oscillation Frequency:10Hz～2KHz～10Hz for 20 minute
Equipment： Vibration checker
Total Amplitude:5g
Testing Time : 12 hours(20 minutes, 12 cycles each of 3 orientations)。</td></tr>
<tr><td>Resistance to Soldering</td><td>Test condition ：
<table>
<tr><th>Temperature(℃)</th><th>Time(s)</th><th>Temperature ramp/immersion and emersion rate</th><th>Number of heat cycles</th></tr>
<tr><td>250±5(soldertemp)</td><td>30±5</td><td>1℃/s-4℃/s; time above 183℃, 90s-120s</td><td>3</td></tr>
</table></td></tr>
<tr><td>Thermal shock
AEC-Q200</td><td>Preconditioning: Run through IR reflow for 2 times.(IPC/JEDEC J-STD-020DClassification Reflow Profiles
Condition for 1 cycle
Step1：-55±2℃ 15±1min
Step2：125±2℃ within 20Sec.
Step3：125±2℃ 15±1min
Number of cycles： 300
Measured at room fempraturc after placing fo24±2hrs</td></tr>
<tr><td>Solderability</td><td>More than 95% of the terminal electrode should be covered with solder。</td><td>a. Method B, 4 hrs @155°C dry heat @235°C±5°C Testing Time :5 +0/-0.5 seconds
b. Method D category 3. (8hours ± 15 min)@ 260°C±5°C Testing Time :30 +0/-0.5 seconds</td></tr>
<tr><td>ESD</td><td>Appearance：No damage.</td><td> 
</td></tr>
<tr><td>Electrical Characterization</td><td>Refer Specification for Approval</td><td>Summary to show Min, Max, Mean and Standard deviation</td></tr>
<tr><td>Flammability</td><td>Electrical Test not required.</td><td>V-0 or V-1 are acceptable.</td></tr>
</table>

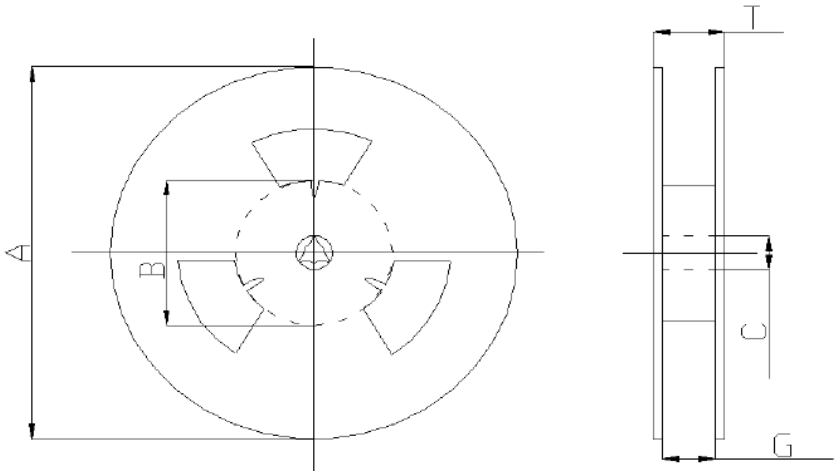
High Current SMD Common Mode Filter \ PCM_AF Series (AEC-Q200)

Item	Specification	Conditions
Board Flex	Appearance：No damage	Preconditioning: Run through IR reflow for 2 times.(IPC/JEDECJ-STD-020DClassification Reflow Profiles Place the 100mm X 40mm board into a fixture similar to the one shown in below Figure with the component facing down. The apparatus shall consist of mechanical means to apply a force which will bend the board (D) x = 2 mm minimum. The duration of the applied forces shall be 60 (+ 5) sec. The force is to be applied only once to the board. 
Terminal Strength(SMD)	Appearance：No damage	Preconditioning: Run through IR reflow for 2 times.(IPC/JEDEC J-STD-020D Classification Reflow Profiles With the component mounted on a PCB with the device to be tested, apply a 17.7 N (1.8 Kg) force to the side of a device being tested. This force shall be applied for 60 +1 seconds. Also the force shall be applied gradually as not to apply a shock to the component being tested. 

High Current SMD Common Mode Filter \ PCM_AF Series (AEC-Q200)

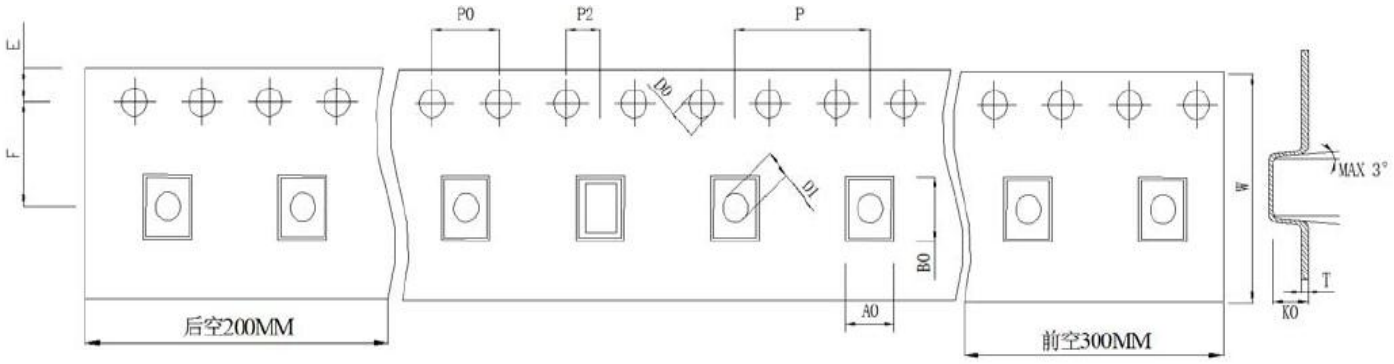
.Packing Specifications

1.Reel Dimension(m/m)



Part No.	PCS/REEL	A	B	C	G	T
PCM474520AF	1000	178 ± 2	60 ± 1	13.3 ± 1	10.0 ± 0.1	14.0 ± 2
PCM070603AF	1500	330 ± 1	100 ± 1	13.0 ± 1	16.5 ± 1	21.1 ± 2
PCM090704AF	700	330 ± 1	100 ± 1	13.0 ± 1	24.5 ± 1	28.5 ± 2
PCM121106AF	500	330 ± 1	100 ± 1	13.0 ± 1	24.5 ± 1	28.5 ± 2

2.Taping Dimension(m/m)



Part No.	W	A0	B0	K0	E	F	P	P0
PCM474520AF	12.0 ± 0.3	4.8 ± 0.1	5.1 ± 0.1	2.05 ± 0.1	1.75 ± 0.1	5.5 ± 0.1	8.0 ± 0.1	4.0 ± 0.1
PCM070603AF	16.0 ± 0.3	6.2 ± 0.1	7.3 ± 0.1	4.1 ± 0.1	1.75 ± 0.1	4.0 ± 0.1	2.0 ± 0.1	0.35 ± 0.05
PCM090704AF	24.0 ± 0.3	8.0 ± 0.1	10.0 ± 0.1	5.0 ± 0.1	16.0 ± 0.1	4.0 ± 0.1	2.0 ± 0.1	0.40 ± 0.05
PCM121160AF	24.0 ± 0.3	14.0 ± 0.1	14.0 ± 0.1	6.6 ± 0.1	16.0 ± 0.1	4.0 ± 0.1	2.0 ± 0.1	0.40 ± 0.05