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Power Inductor
Automotive Grade
AFSI Series

Overview

Power inductors are passive electronic components used in various circuits to store energy in a magnetic field when electrical current flows through them. They are critical in filtering, energy storage, and noise suppression in power electronic systems.
They are designed to handle higher currents and are optimized for minimal power loss and thermal efficiency.

Benefits

1. Automotive grade available
2. Large size bottom termination
3. Low DCR
4. Large current

Applications

1. Automotive Systems
2. VRM/VRD
3. Industrial Control

Product Information

Series	L (mm)	W(mm)	T (mm)	Inductance (μH)
AFSI	9.3	9.0	8.1	0.45 ~ 33
	9.3	9.0	8.1	
	12.0	11.0	8.8	
	11.8	10.5	10.0	
	16.3	15.3	8.0	
	16.3	15.3	10.0	



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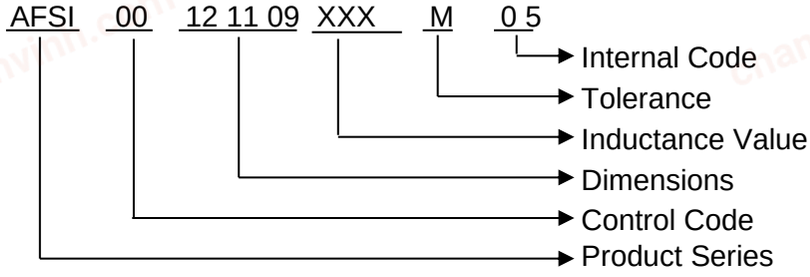
AFSI00121109XXXM05 Series Specification

AEC-Q200

1 Scope:

This specification applies to large current and low RDC SMD power inductor.

2 Part Numbering:



3 Rating:

Operating temperature range:－50°C～150°C (Including self - temperature rise)

Storage condition:-20℃~40℃；75%RH Max

4 Marking:



Marking color： Black

Marking： C → Chilisin

XXX → Inductance

5 Material List:

NO	Part	Material
1	Flat copper wire	AIW（220℃）
2	Core	Iron powder
3	coating	Paint Gray （127# matte）
4	Solder	Sn96.5-Ag3.0-Cu0.5
5	Ink	jet ink black (9210)
6	EPOXY	M02-039-AU(6461HF)

6 Standard Testing Condition

	Unless otherwise specified	In case of doubt
Temperature	Ordinary Temperature(15 to 35℃)	20 to 30℃
Humidity	Ordinary Humidity(25 to 85% RH)	50 to 80 %RH

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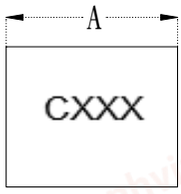
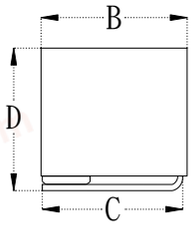
7 Configuration and Dimensions:

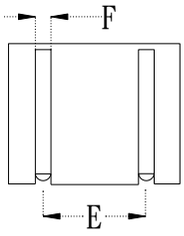
TOP VIEW



SIDE VIEW



BOTTOM VIEW

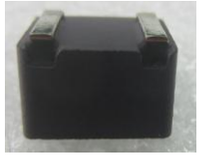


Part No.	A	B	C	D	E	F
AFSI00121109R47M05	12.0±0.5	11.0±0.5	8.4±0.3	8.8 max	8.0±0.4	1.6±0.1
AFSI001211091R0M05	12.0±0.5	11.0±0.5	8.4±0.3	8.8 max	8.0±0.4	1.6±0.1
AFSI001211091R5M05	12.0±0.5	11.0±0.5	8.4±0.3	8.8 max	8.0±0.4	1.6±0.1
AFSI001211092R2M05	12.0±0.5	11.0±0.5	8.4±0.3	8.8 max	8.0±0.4	1.6±0.1
AFSI001211093R3M05	12.0±0.5	11.0±0.5	8.4±0.3	8.8 max	8.0±0.4	1.6±0.1
AFSI001211094R7M05	12.0±0.5	11.0±0.5	8.4±0.3	8.8 max	8.0±0.4	1.6±0.1
AFSI001211095R6M05	12.0±0.5	11.0±0.5	8.4±0.3	8.8 max	8.0±0.4	1.6±0.1
AFSI001211096R8M05	12.0±0.5	11.0±0.5	8.4±0.3	8.8 max	8.0±0.4	1.6±0.1
AFSI001211098R2M05	12.0±0.5	11.0±0.5	8.4±0.3	8.8 max	8.0±0.4	1.6±0.1
AFSI00121109100M05	12.0±0.5	11.0±0.5	8.4±0.3	8.8 max	8.0±0.4	1.6±0.1
AFSI00121109150M05	12.0±0.5	11.0±0.5	8.4±0.3	8.8 max	8.0±0.4	1.6±0.1

8 Product appearance







9 Electrical Characteristics:

Part No.	Inductance (uH)	Test Freq.	Tolerance (±%)	Irms (A)Typ.	Isat (A)Typ.	RDC (mΩ)Max.	Marking
AFSI00121109R47M05	0.47	100kHz,1.0V	20	50.0	65.0	1.5 (1.1 typ)	CR47
AFSI001211091R0M05	1.0	100kHz,1.0V	20	40.0	45.0	2.0 (1.5 typ)	C1R0
AFSI001211091R5M05	1.5	100kHz,1.0V	20	33.0	36.0	2.5 (2.0 typ)	C1R5
AFSI001211092R2M05	2.2	100kHz,1.0V	20	30.0	30.0	2.8 (2.4 typ)	C2R2
AFSI001211093R3M05	3.3	100kHz,1.0V	20	26.0	26.0	3.8 (3.3 typ)	C3R3
AFSI001211094R7M05	4.7	100kHz,1.0V	20	20.0	23.0	6.2 (5.7 typ)	C4R7
AFSI001211095R6M05	5.6	100kHz,1.0V	20	18.0	21.0	7.0 (6.4 typ)	C5R6
AFSI001211096R8M05	6.8	100kHz,1.0V	20	17.0	19.0	7.8 (6.8 typ)	C6R8
AFSI001211098R2M05	8.2	100kHz,1.0V	20	16.0	18.0	9.0 (8.2 typ)	C8R2
AFSI00121109100M05	10.0	100kHz,1.0V	20	13.0	17.5	12.0 (11.3 typ)	C100
AFSI00121109150M05	15.0	100kHz,1.0V	20	11.0	13.5	15.0 (14.3 typ)	C150

Note:

1. Ambient + temperature rise:－50°C～150°C (Including self - temperature rise)
2. Isat for Inductance drop 30% from its value without current.
3. Irms for a 40℃ temprature rise from 25℃ ambient.
4. The part temperature (ambient + temp rise) should not exceed 150°C under worst case operating conditions. Circuit design150°C under worst case operating conditions. Component placement, PWB trace size and thickness, airflow and other cooling provisions all affect the part temperature. Part temperature should be verified in the end application.
5. Before loading the parts, glue in the middle of the corresponding PCB Layout size to consolidate the parts to prevent Reflow from causing displacement problems

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AEC-Q200

10 Reliability verification conditions

No.	Stress		Test Conditions	Sample Size	Specification	Result
1	High Temperature Exposure (Storage)	MIL-STD-202 Method 108	1000hrs. at rated operating temperature, part can be stored for 1000 hrs. @ 150°C. Unpowered. Measurement at 24±4 hours after test conclusion.	77	1. Electrical characterization-Inductance change range 2. Appearance-No damage (OM)	Pass
2	Temperature Cycling	JESD22 Method JA-104	1000 cycles (-50°C to +150°C). Measurement at 24±4 hours after test conclusion. 30min maximum dwell time at each temperature extreme. 1 min. maximum transition time.	77	1. Electrical characterization-Inductance change range 2. Appearance-No damage (OM)	Pass
3	Biased Humidity	MIL-STD-202 Method 103	1000 hours 85°C/85%RH. Unpowered. Measurement at 24±4 hours after test conclusion.	77	1. Electrical characterization-Inductance change range 2. Appearance-No damage (OM)	Pass
4	Operational Life	MIL-PRF-27	1000 hrs. @ 150 °C.@Applied Current: Rated Current .Measurement 24±4 hours after test conclusion.	77	1. Electrical characterization-Inductance change range 2. Appearance-No damage (OM)	Pass
5	Physical Dimension	JESD22 Method JB-100	Verify physical dimensions to the applicable device detail specification.	30	Product spec.	Pass
6	Resistance to Solvents	MIL-STD-202 Method 215	Immersion 3+0.5/-0 minutes in Terpene defluxer. Brush 10 strokes (wet bristle) 2 to 3 oz. Rinse in water. Air blow dry.	5	1. Marking resistance to solvent-No constitute failure (≤ 3X magnification) 2. Componet protective coating, encapsulation material and sleeve material resistance- No damage or degradation that has occurred due to solvent (10X magnification)	Pass
7	Vibration	MIL-STD-202 Method 204	5 g's for 20 minutes, 12 cycles each of 3 orientations. Note: Use 8"X5" PCB, .031" thick, 7 secure points on the long side and 2 secure points at corners of opposite sides. Parts mounted within 2" from any secure point. Test from 10-2000Hz.	30	1. Electrical characterization-Inductance change range 2. Appearance-No damage (OM)	Pass
8	Resistance to Soldering Heat	MIL-STD-202 Method 210	Test condition B: Solder dip-260±5°C (solder temp.), time 10±1 sec, immersion rate 25mm/s ±6 mm/s, 1 heat cycle.	30	1. Electrical characterization-Inductance change range 2. Appearance-No damage (OM)	Pass
9	Solderability	J-STD-002	Pre-condition: Steam 8hr±15min @93° C.For both Leaded & SMD. Electrical test not required. Magnification 50X. Test Method B @ 245±5°C, dwell for 5+0/-0.5 seconds	15	All terminations shall exhibit a continuous solder coating free from defects for a minimum of 95% of the critical area of any individual termination. (10X magnification)	Pass
10	Board Flex	AEC-Q200-005	Bend the board (D) X =2mm, 60sec minimum holding time.	30	No cracks	Pass
11	Terminal Strength (SMD)	AEC-Q200-006	Apply a 1.8Kg force to the side of a device bending tested. The force shall be applied for 60+1 seconds.	30	No cracking or no part being sheared off from its pad	Pass

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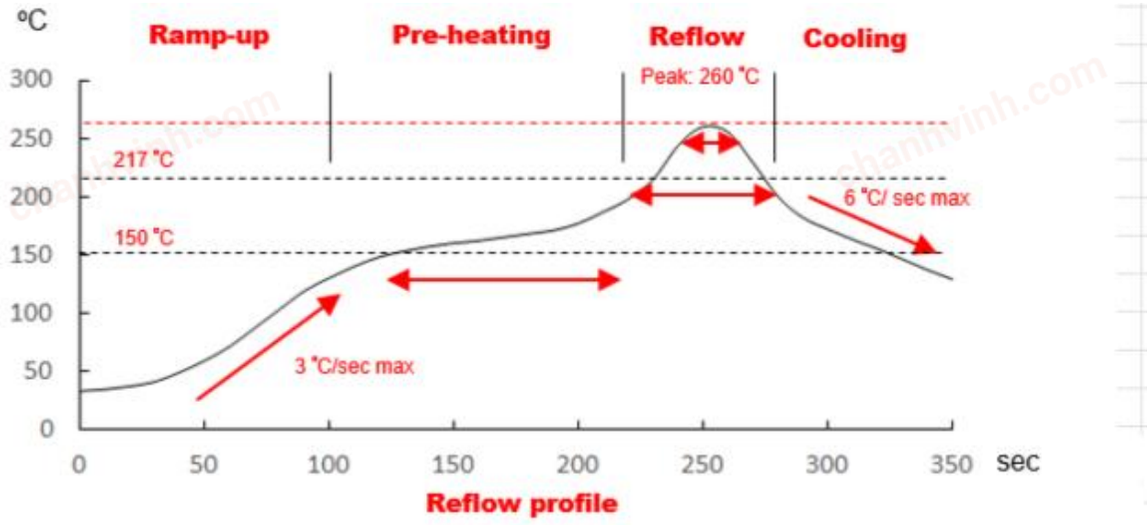
11 Reflow Profile:



Reflow profile

Lead-Free(LF) Refer to J-STD-020F

Item	Ramp-up	Pre-heating	Reflow	Peak Temp.	Cooling
Temp. scope	R.T. ~150 °C	150 °C~200 °C	217 °C	260±5 °C	Peak Temp. 150 °C
Time spec	-	60~120 sec	60~150 sec	20~40 sec	-

NOTE :

1. Re-flow possible times : within 2 times
2. Nitrogen adopted is recommended while in re-flow

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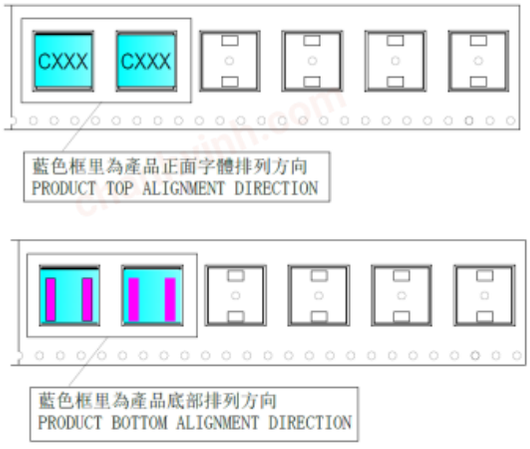
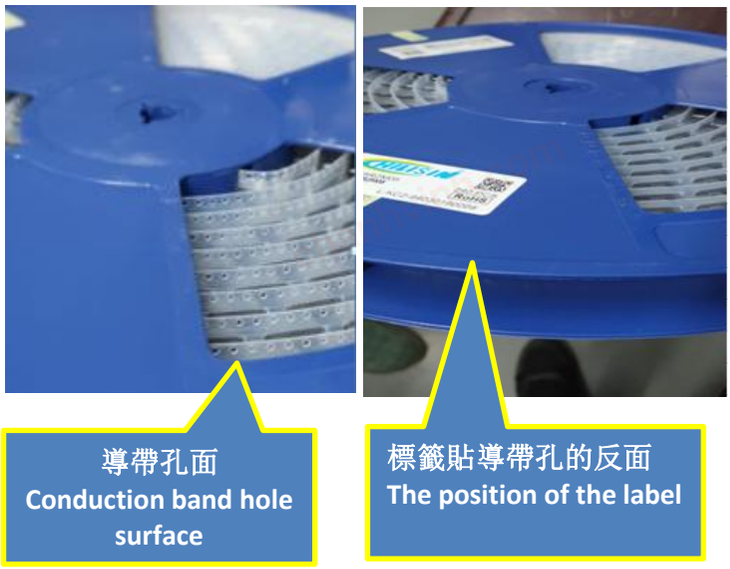
AFSI00121109XXXM05 Series Specification AEC-Q200

12 Packaging:

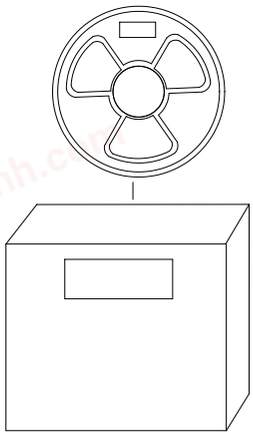
12.1 Small Pack:240pcs per reel





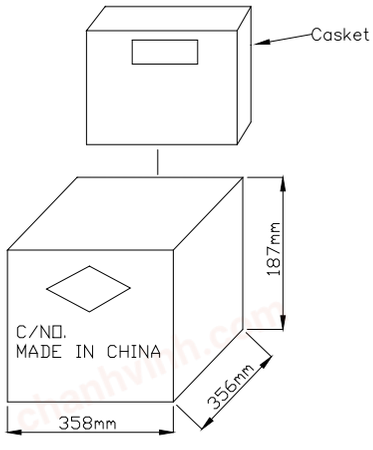
项　目	W	A_0	B_0	K_0	K_1	P	F	E	D_0	D_1	P_0	P_2	T
尺寸（mm）	$24.0^{\pm0.30}$	$12.2^{\pm0.10}$	$11.0^{\pm0.10}$	$9.0^{\pm0.10}$	$8.07^{\pm0.10}$	$20.0^{\pm0.10}$	$11.5^{\pm0.10}$	$1.75^{\pm0.10}$	$1.5\ ^{+0.10}_{-0.00}$		$4.0^{\pm0.10}$	$2.0^{\pm0.10}$	$0.5^{\pm0.05}$

12.2 Medium pack: 2 reel per casket (480pcs)



Inner carton number	8401-013-01
Carrier	M30-021-454-0
Cover	M30-010-05-1
Reel	M34-006-12
Desiccant	M66.002
pouch	M32-002-09
Label type	Self-adhesion

12.3 Large pack: 2 small carton per carton (960pcs)



Carton number	8402-049-01
Label location	Top left corner on side surface
Label size	
Label type	Self-adhesion

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AFSI00121109XXXM05 Series Specificat

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13 Graph :

