

# Automotive Chip Choke®

## EMI Suppression for CAN-Bus Networks

### 2-Line Common Mode Chokes

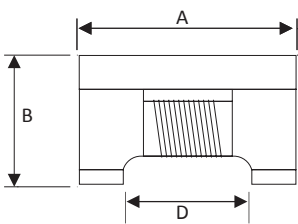


- Meets AEC-Q200 Requirements
- Suppression of common mode noise without attenuating the signal
- Magnetically shielded versions for lower Rdc and higher current
- Supports CAN-Bus, A2B and other IVN high speed differential signal lines (LVDS)

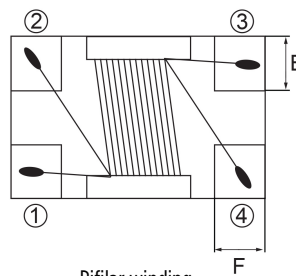
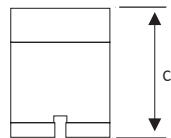
#### Electrical Specifications @ 25°C

Part Number	Common Mode Impedance (10MHZ)		Inductance (uH)	Standard Tolerance	RDC (Ω Max)	Leakage Inductance (nH) Max	IDC (A) Max	Isolation Resistance (MΩ) Min	Rated Voltage (V) Max
	Min	Typ							
<b>PE-1210ACCXXXSTS</b> Operating Temperature Range -55°C to +155°C									
PE-1210ACC110STS	300	550	11	+50/-30%	0.4	50	0.3	10	80
PE-1210ACC220STS	500	1100	22	+50/-30%	0.5	70	0.25	10	80
PE-1210ACC510STS	1000	2600	51	+50/-30%	0.7	130	0.2	10	80
PE-1210ACC101STS	2200	5100	100	+50/-30%	1.5	180	0.15	10	80
<b>PE-1812ACCXXXSTS</b> Operating Temperature Range -40°C to +125°C									
PE-1812ACC110STS	300	600	11	+50/-30%	0.5	45	0.36	10	50
PE-1812ACC220STS	600	1200	22	+50/-30%	0.6	50	0.31	10	50
PE-1812ACC510STS	1500	3500	51	+50/-30%	1	150	0.23	10	50
PE-1812ACC101STS	3000	7500	100	+50/-30%	2	200	0.2	10	50

#### Mechanical

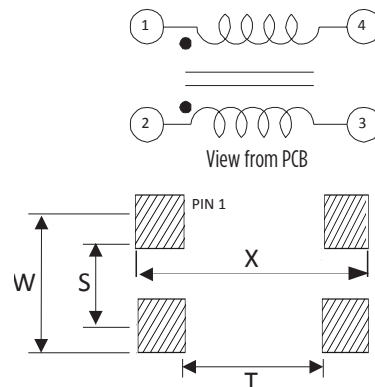


All Units in mm



Bifilar winding (representation only)

#### Schematic



#### Component Dimensions (mm)

#### SODLER PAD(mm)

Series	A	B	C	D	e	f	X	T	W	S
1210 ACC	32+/-0.20	25+/-0.20	25 MAX	3.2+/-0.20	3.2+/-0.20	3.2+/-0.20	4.40	2.40	3.00	1.20
1812 ACC	4.5+/-0.20	3.2+/-0.20	3.0 MAX	3.2+/-0.20	0.65+/-0.15	0.70+/-0.15	5.90	3.20	3.40	1.60

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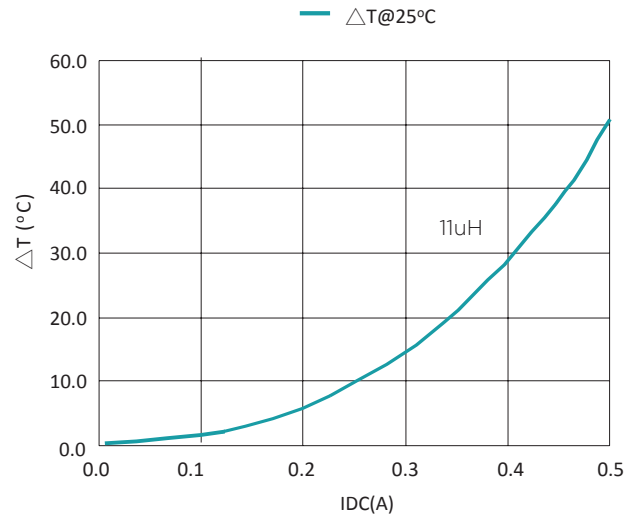
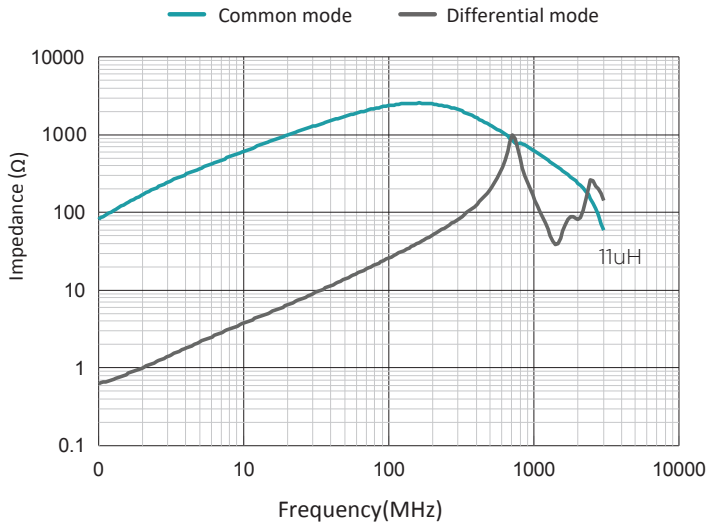
## EMI Suppression for CAN-Bus Networks

### 2-Line Common Mode Chokes

Impedance vs Frequency

Temp vs DC Current

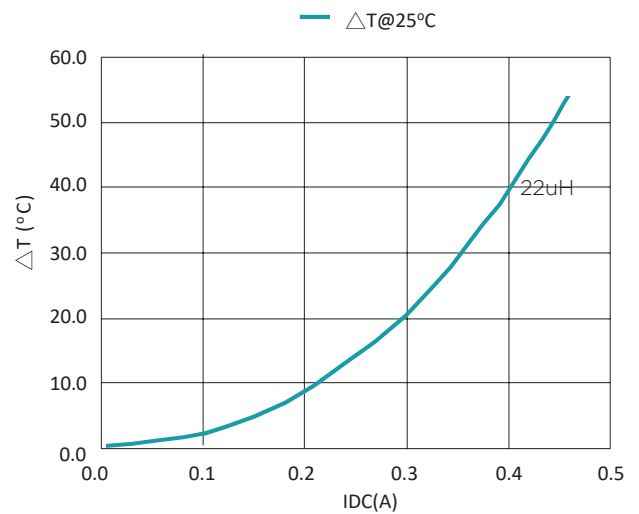
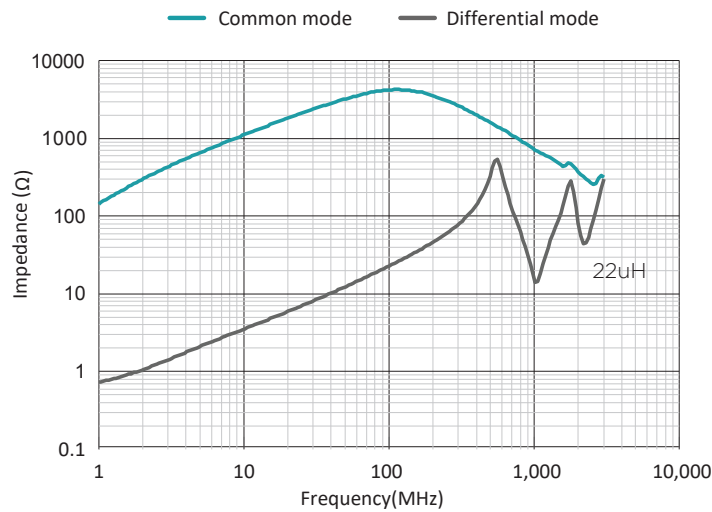
PE-1210ACC110STS



Impedance vs Frequency

Temp vs DC Current

PE-1210ACC220STS



# Automotive Chip Choke<sup>®</sup>

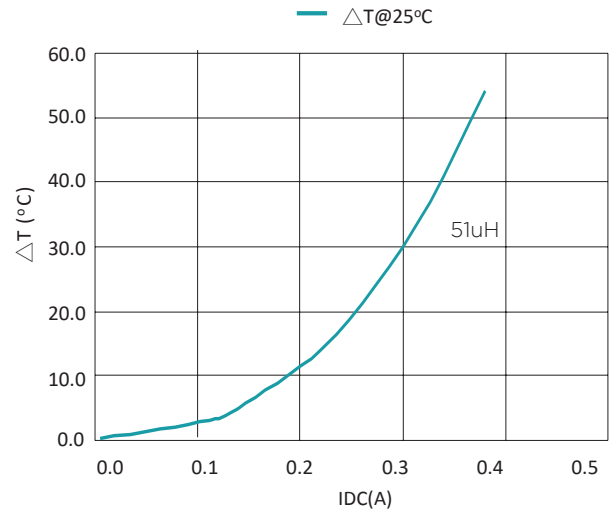
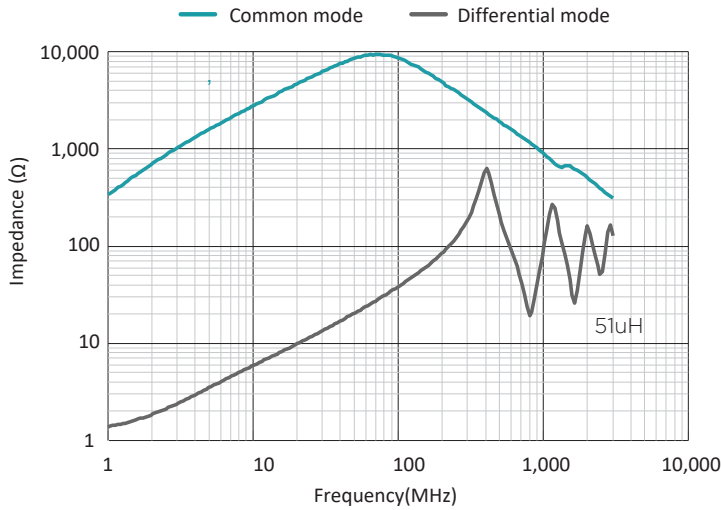
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### 2-Line Common Mode Chokes

Impedance vs Frequency

Temp vs DC Current

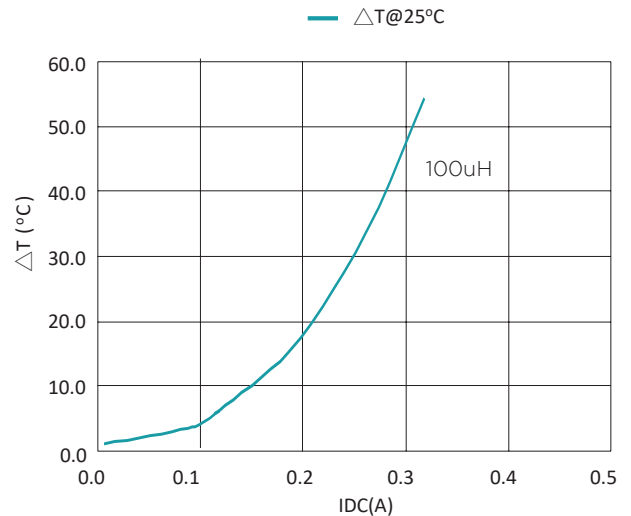
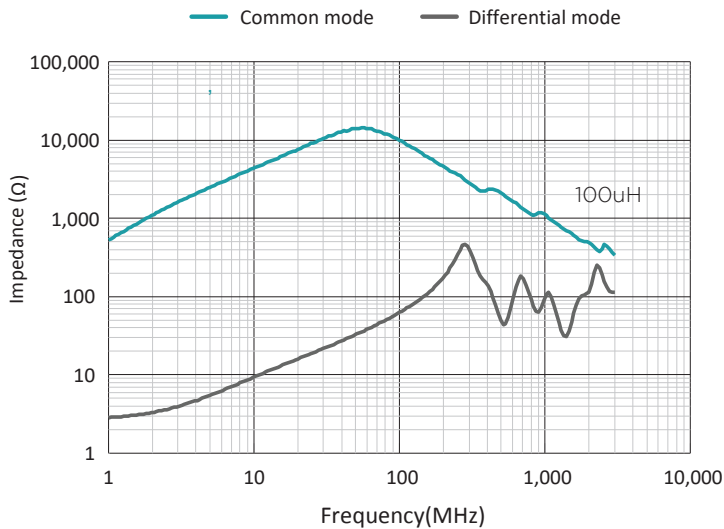
PE-1210ACC510STS



Impedance vs Frequency

Temp vs DC Current

PE-1210ACC101STS



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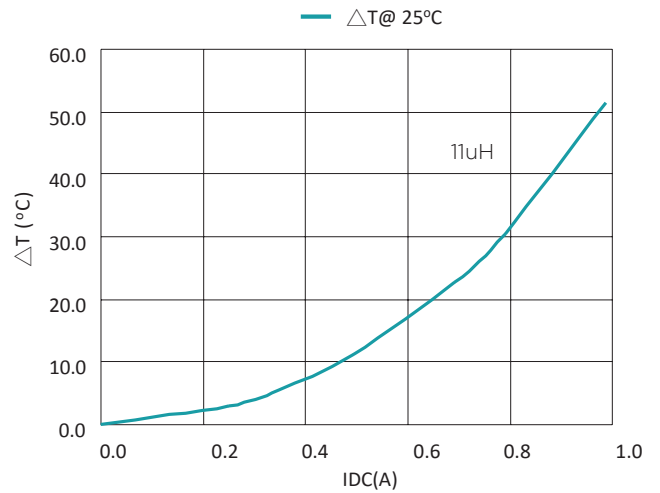
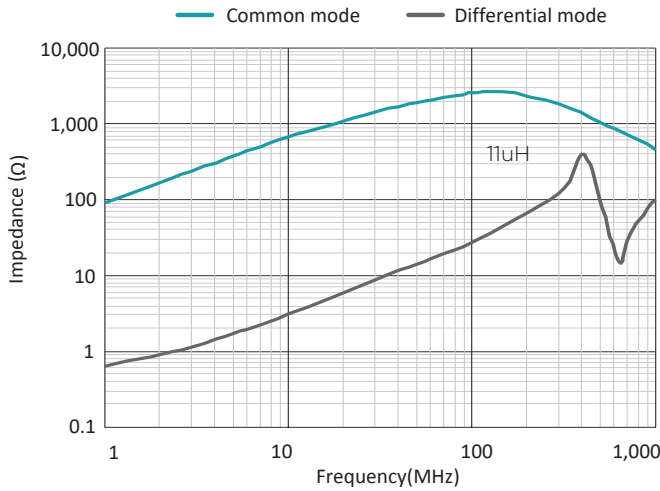
## EMI Suppression for CAN-Bus Networks

### 2-Line Common Mode Chokes

**Impedance vs Frequency**

**Temp vs DC Current**

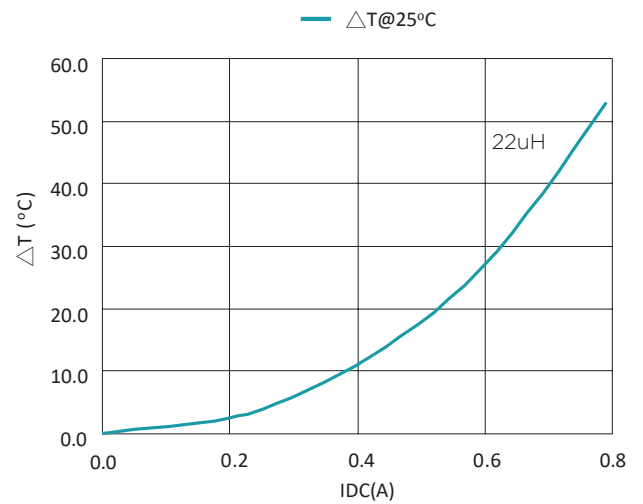
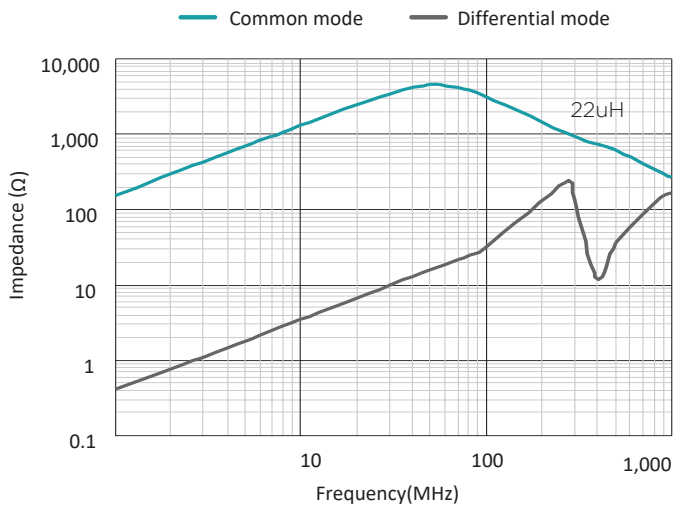
PE-1812ACC110STS



**Impedance vs Frequency**

**Temp vs DC Current**

PE-1812ACC220STS



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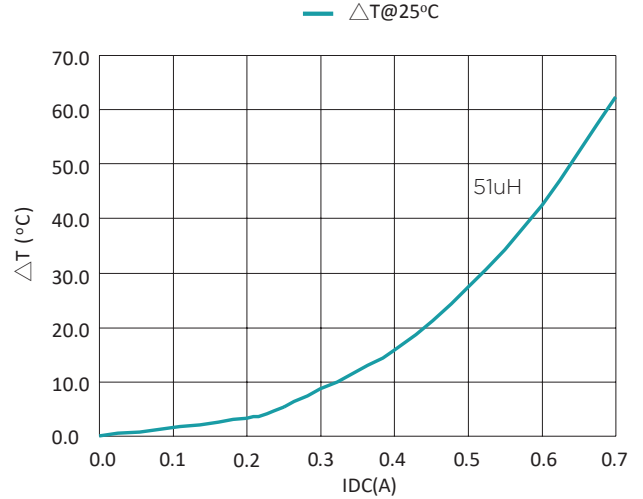
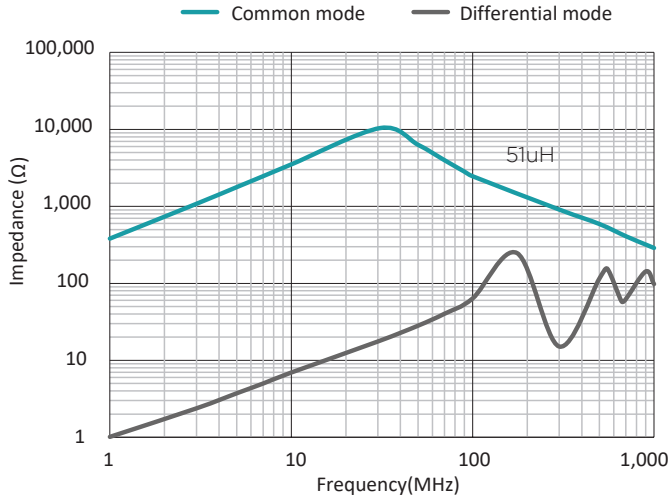
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### 2-Line Common Mode Chokes

Impedance vs Frequency

Temp vs DC Current

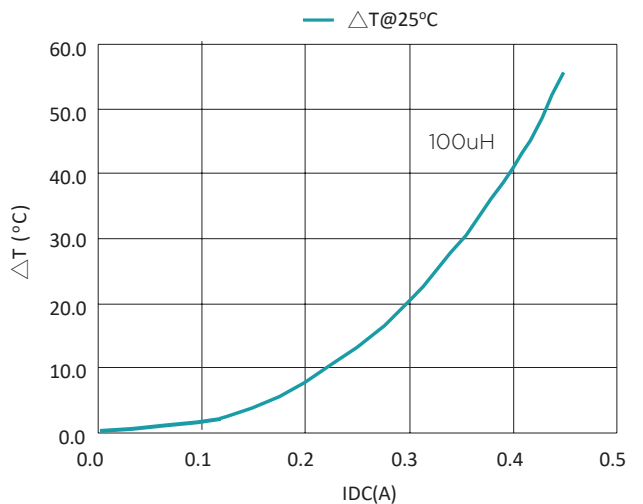
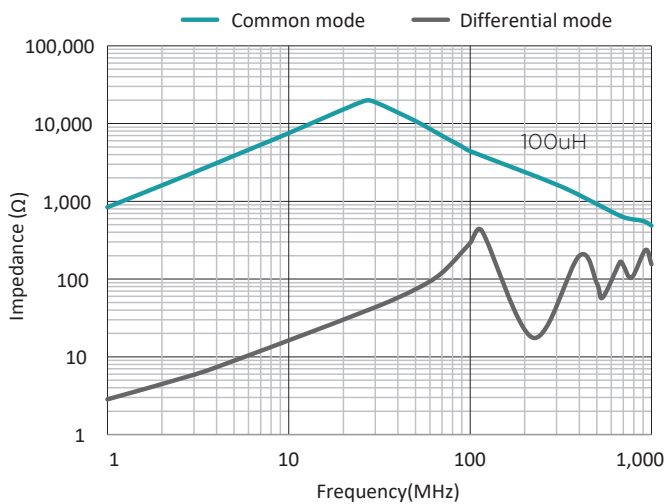
PE-1812ACC510STS



Impedance vs Frequency

Temp vs DC Current

PE-1812ACC101STS



# Automotive Chip Choke®

## EMI Suppression for CAN-Bus Networks

### 2-Line Common Mode Chokes

#### Reliability Test

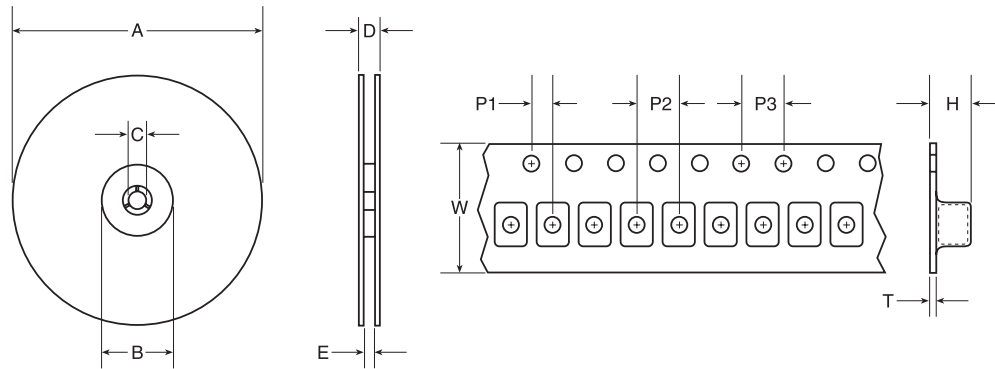
Item	Reference documents	Test Condition	Test Specification
1. High Temperature Exposure	MIL-STD-202 Method 108	1. Temperature: +125/155°C 2. Time: 1000 hours	1. No mechanical and electrical damage 2. Inductance shall not change more than $\pm 30\%$
2. Temperature Cycling	JESD22 Method JA-104	1. Temperature: -55/40°C~125/155°C 2. Number of cycles: 1000 cycle 3. Dwell time: 30 minutes	1. No mechanical and electrical damage 2. Inductance shall not change more than $\pm 30\%$
3. Biased Humidity Test	MIL-STD-202 Method 103	1. Temperature: 85 $\pm 5$ °C 2. Time: 1000hours 3. Humidity: 85 $\pm 5\%$ RH	1. No mechanical and electrical damage 2. Inductance shall not change more than $\pm 30\%$
4. Operational Life	MIL-PRF-27	1. Temperature: 125 / 155°C 2. Time: 1000 hours 3. Apply rated current	1. No mechanical and electrical damage 2. Inductance shall not change more than $\pm 30\%$
5. External Visual	MIL-STD-883 Method 2009	Inspect product construction, marking and workmanship	Per product specification standard
6. Physical Dimensions	JESD22 Method JB-100	Verify physical dimensions to the applicable product detail specification	Per product specification standard
7. Resistance to solvents	MIL-STD-202 Method 215	Immerse into solvent for 3 $\pm 0.5$ minutes & brush 10 times for their cycles.	1. No body change in appearance 2. No marking blurred. 3. Inductance shall not change more than $\pm 30\%$
8. Vibration Test	MIL-STD-202 Method 204	1. Frequency and Amplified: 10-2000-10 Hz, 1.5mm 2. Direction: X, Y, Z 3. Test duration: 2 hours for each direction, 6 hours in total	1. No mechanical and electrical damage 2. Inductance shall not change more than $\pm 30\%$
9. Resistance to Soldering Heat Test	MIL-STD-202 Method 210	1. Temperature: 250 $\pm 5$ °C 2. Time: (temp. $\geq 217$ °C) 92-109 Second 3. IR reflow times: 3 times	1. No mechanical and electrical damage 2. Inductance shall not change more than $\pm 30\%$
10. Rated Current	MIL-STD-202 Method 330	Apply rated current for 5 seconds.	1. No mechanical and electrical damage 2. Inductance shall not change more than $\pm 30\%$
11. Temperature Rise	MIL-PRF-27	Apply rated current for 10 minutes.	1. No mechanical and electrical damage 2. Inductance shall not change more than $\pm 30\%$
12. Over load	MIL-PRF-27	Apply twice as rated current for 5 minutes.	1. No mechanical and electrical damage 2. Inductance shall not change more than $\pm 30\%$
13. Solderability Test	J-STD-002	1. Baking in pre-testing: 155 $\pm 5$ °C / 16Hours $\pm 30$ min. 2. Peak temperature: 245°C 3. Time: (temp. $\geq 217$ °C) 112 Second 4. IR reflow times: 1 time	The terminal shall be at least 95% covered with fresh solder.
14. Electrical Characterization	User Spec.	1. Operating temperature: -55/40°C~125/155°C 2. Room Temperature: 25°C	1. No mechanical and electrical damage 2. Inductance shall not change more than $\pm 30\%$
15. Withstanding Voltage Test	MIL-STD-202 Method 201	1. DV: 500V 2. Time: 1 minute	1. During the test no breakdown. 2. The characteristic is normal after test.
16. Drop	JESD22-B111	Package & Drop down from 1m. In 1 angle 1 ridge & 2 surfaces orientation	1. No case deformation or change in appearance. 2. Inductance shall not change more than $\pm 30\%$
17. Terminal Strength Test	JIS-C-6429	1. Apply push force to samples mounted on PCB. 2. Force of 1.8 kg for 60 $\pm 1$ seconds.	After test, inductors shall be on mechanical damage.

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#### Tape and Reel Specifications



Series	Parts per Reel	Reel Dimensions (mm)					Tape Dimensions (mm)					
		A	B	C	D	E	W	P1	P2	P3	H	T
1210 ACC	2000	178	60	13.5	12	9	8	2	4	4	2.5	0.26
1812 ACC	500	178	60	13	17	14	12	2	8	4	4	0.35

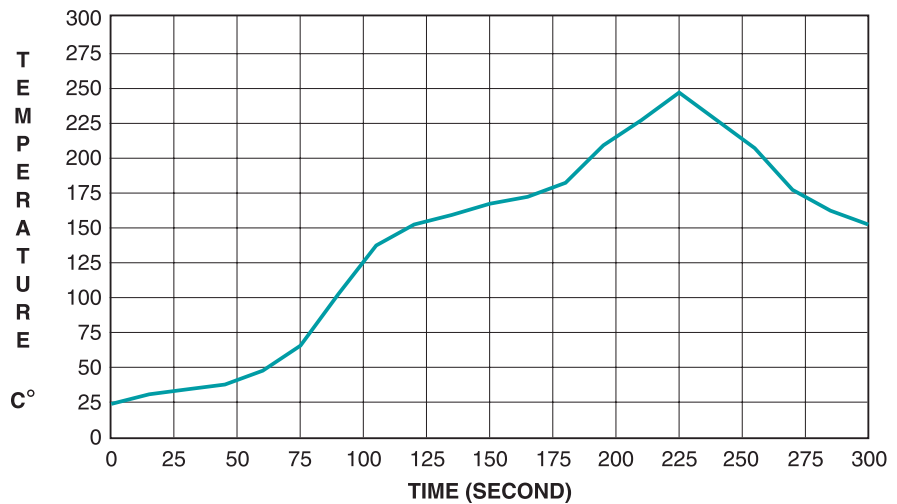
#### III. Description:

- Ferrite drum core construction
- Magnetically shielded
- Enameled copper wire: H class
- Product weight: 0.15g (ref.)
- Moisture sensitivity Level 1
- Products comply with RoHS' requirements
- Halogen Free available

#### IV. General specification:

- Storage temp: -40°C to +125°C
- Operating temp: -40°C to +125°C  
(Temp. rise included)
- Resistance to solder heat: 250°C 10 secs.

Recommended Solder Heat Resistance Profile



#### For More Information:

Americas - [prodinfonetworkamericas@pulseelectronics.com](mailto:prodinfonetworkamericas@pulseelectronics.com) | Europe - [comms-Apps-Europe@pulseelectronics.com](mailto:comms-Apps-Europe@pulseelectronics.com) | Asia - [prodinfonetworkapac@pulseelectronics.com](mailto:prodinfonetworkapac@pulseelectronics.com)

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