

# Surface Mount Common Mode Choke

NCCR Series

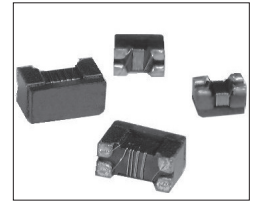
## FEATURES

- HIGH TEMPERATURE 150°C
- LOW PROFILE SURFACE MOUNT PACKAGE
- AUTOMOTIVE COMMON MODE CHOKE FOR CAN-FLEX RAY
- AEC-Q200 COMPLIANT GRADE 0 (-50°C ~ +150°C)
- Pb-FREE CONSTRUCTION
- BOTH FLOW AND REFLOW SOLDERING APPLICABLE

**RoHS  
Compliant**

includes all homogeneous materials

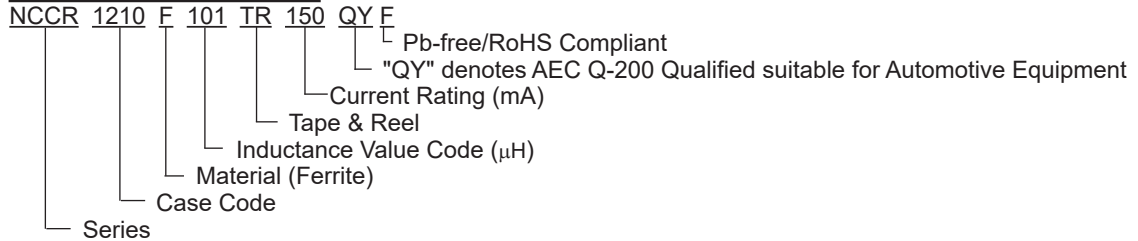
\*See Part Number System for Details



## CHARACTERISTICS

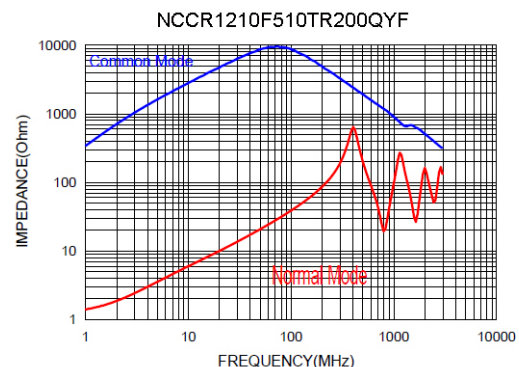
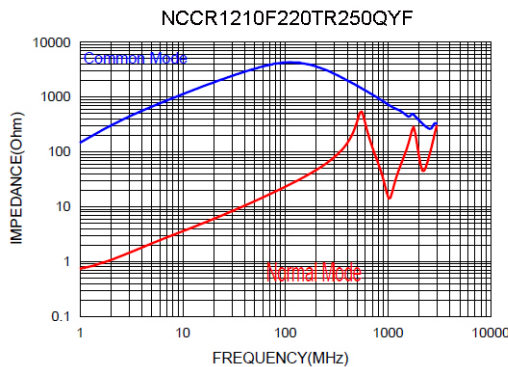
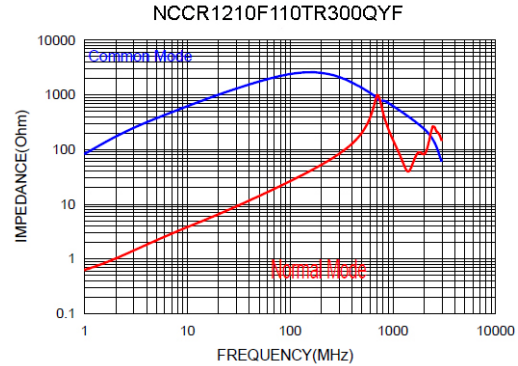
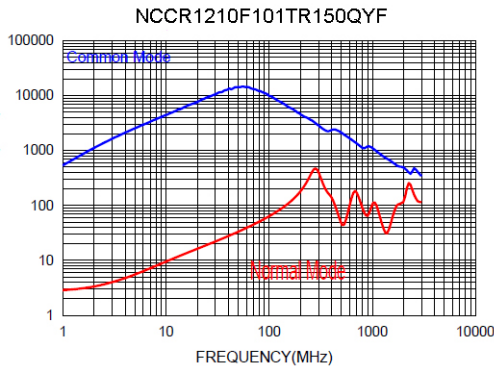
Case Size	1210	1812
Inductance Values	11μH ~ 100μH	11μH ~ 100μH
Temperature Range	-55°C ~ +150°C (including self-heating)	

## PART NUMBER SYSTEM



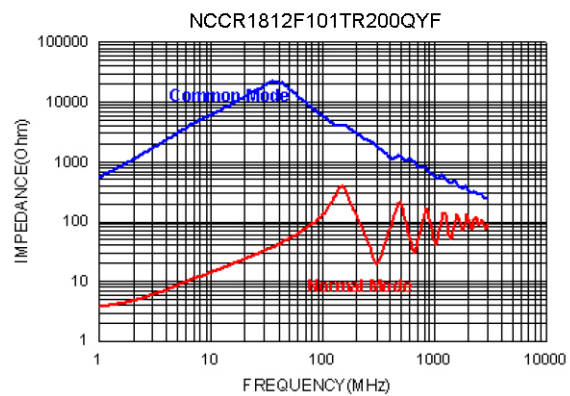
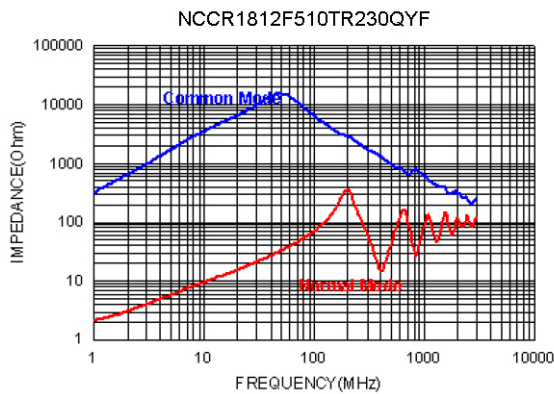
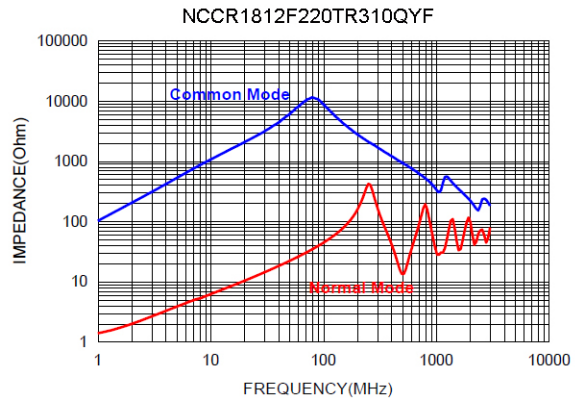
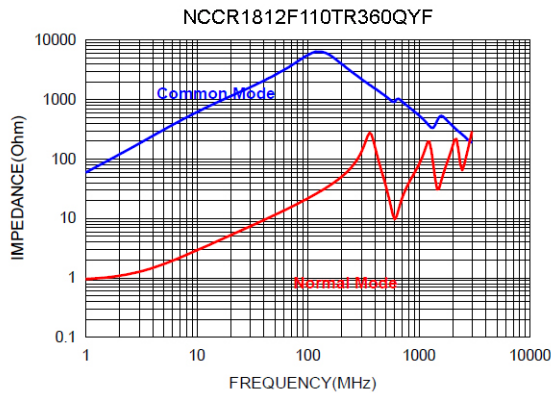
## 1210 CASE SIZE SPECIFICATIONS

NIC Part Number	Inductance (μH) +50/-30%	Test Frequency (KHz)	Common Mode Impedance (Ω) 10MHz		DCR (Ω max.)	DC Current (mA max.) Δ max. +40°C	Voltage Rating (Vdc)	Withstanding Voltage (Vdc)	Insulation Resistance (Ω)
			min.	typ.					
NCCR1210F110TR300QYF	11	100	300	550	0.4	300	80	200	10Meg
NCCR1210F220TR250QYF	22		500	1100	0.5	250			
NCCR1210F510TR200QYF	51		1000	1600	0.7	200			
NCCR1210F101TR150QYF	100		2200	5100	1.5	150			

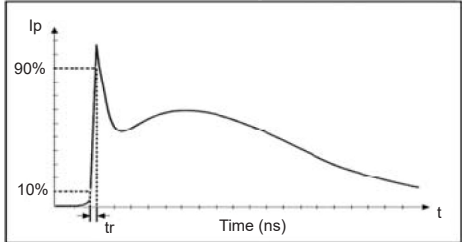


## 1812 CASE SIZE SPECIFICATIONS

NIC Part Number	Inductance (μH) +50/-30%	Test Frequency (KHz)	Common Mode Impedance (Ω) 10MHz		DCR (Ω max.)	DC Current (mA max.) Δ max. +40°C	Voltage Rating (Vdc)	Withstanding Voltage (Vdc)	Insulation Resistance (Ω)
			min.	typ.					
NCCR1812F110TR360QYF	11	100	300	600	0.6	360	50	125	10Meg
NCCR1812F220TR310QYF	22		500	1200	1.0	310			
NCCR1812F510TR230QYF	51		1000	2800	1.0	230			
NCCR1812F101TR200QYF	100		2000	5800	2.0	200			



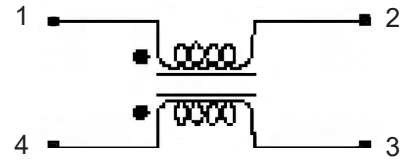
## RELIABILITY TEST

Item	Performance	Test Condition								
High Temperature Exposure (No Load)		Preconditioning: Run through IR reflow 2 times. (IPC/JEDEC J-STD-020D Classification Reflow Profiles). Measure at room temperature after placing for 24±2 hrs								
Temperature Cycling (AEC-Q200)	Appearance: No damage Impedance: Within±15% of initial value Inductance: Within±10% of initial value RDC: Within ±15% of initial value and shall not exceed the specification	Temperature: 150±2°C Duration: 1000 hours min.								
Biased Humidity (AEC-Q200)		Condition for 1 cycle: Step1: -55°C±2°C 30 minutes min. Step2: 150°C±2°C transition time 1 minutes max.. Step3: 150°C±2°C 30 minutes min. Step4: Low temp. transition time 1 minutes. max. Number of cycles: 1000								
High Temperature Operational Life (AEC-Q200)		Humidity: 85±3%R.H, Temperature: 85°C±2°C Duration : 1000hrs min.								
Resistance to Solvents		Temperature: 150°C±2°C Duration: 1000 hours min. with 100% rated current.								
Mechanical Shock	Appearance: No damage. Inductance: Within±10% of initial value RDC: Within ±15% of initial value and shall not exceed the specification value	Add aqueous wash chemical - OKEM clean or equivalent. Peak value: 100 grams Duration: 6mS Waveform: Half-wave Velocity: 12.3 ft/sec Direction: Shocks in 3 perpendicular axes								
Flammability	Electrical Test Not Required	UL94V-0 and 1 acceptable								
ESD	Appearance: No damage	Direct Contact and Air Discharge PASSIVE COMPONENT HBM ESD Discharge Waveform to a Coaxial Target Test method: AEC-Q200-002 Test mode: Contact Discharge Discharge level: 4 KV (Level: 2 ) 								
Vibration		IPC/JEDEC J-STD-020D Classification Reflow Profiles Oscillation Frequency: 10Hz~2KHz~10Hz for 20 minutes Equipment: Vibration checker Total Amplitude: 5g Testing Time: 12 hours(20 minutes, 12 cycles each of 3 orientations)								
Resistance to Soldering Heat	Appearance: No damage. Inductance: Within±10% of initial value. RDC: Within ±15% of initial value and shall not exceed the specification value	<table border="1"> <thead> <tr> <th>Temperature (°C)</th> <th>Time (sec.)</th> <th>Temperature ramp/immersion and immersion rate</th> <th>Number of heat cycles</th> </tr> </thead> <tbody> <tr> <td>250+/-5°C (solder temp)</td> <td>30+/-5°C</td> <td>1°C/s~4°C/s time above 183°C 90s ~ 120s</td> <td>3</td> </tr> </tbody> </table>	Temperature (°C)	Time (sec.)	Temperature ramp/immersion and immersion rate	Number of heat cycles	250+/-5°C (solder temp)	30+/-5°C	1°C/s~4°C/s time above 183°C 90s ~ 120s	3
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250+/-5°C (solder temp)	30+/-5°C	1°C/s~4°C/s time above 183°C 90s ~ 120s	3							
Thermal Shock (AEC-Q200)		Step1: -55°C±2°C 15±1min Step2: +150°C±2°C within 20 Sec. Step3: +150°C±2°C 15±1min Number of cycles: 300 Measured at room temperature after for 24±2hrs								

### COMPONENT DIMENSIONS (mm)

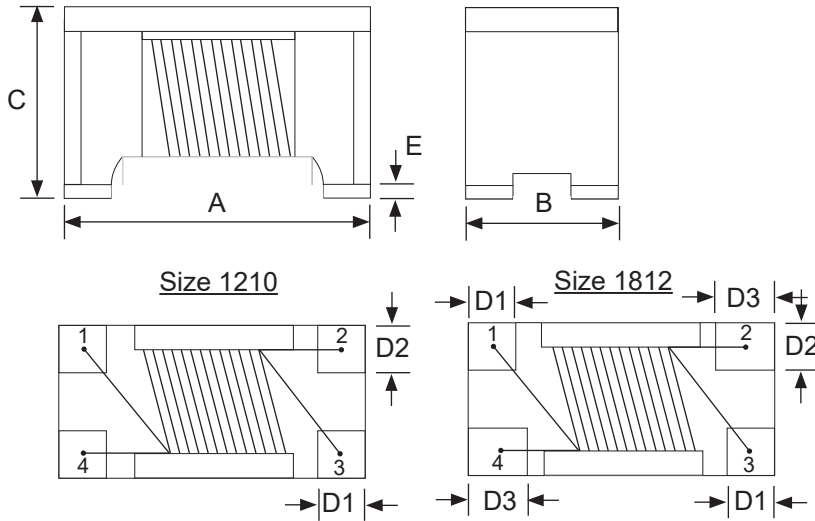
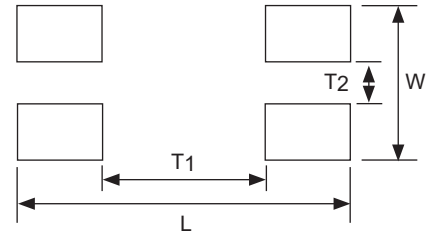
Type	A ±0.2	B ±0.2	C ±0.2	D1 ±0.1	D2 ±0.1	D3 ±0.2	E ±0.1
NCCR1210	3.2	2.5	2.2	0.80	0.90	N/A	0.15
NCCR1812	4.5	3.2	2.8	0.90 ± 0.15	1.05 ± 0.15	0.60	0.15

### CIRCUIT SCHEMATIC

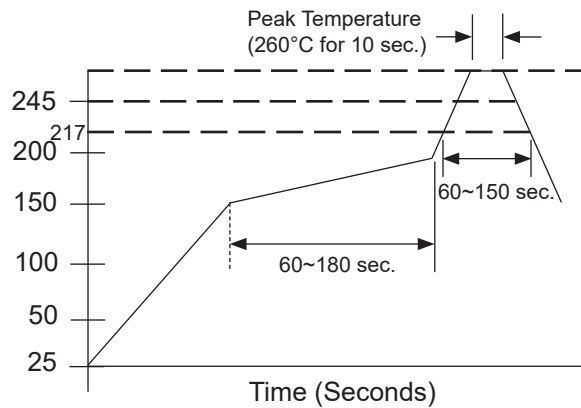


### LAND PATTERN DIMENSIONS (mm)

Case Size	L	W	T1	T2
1210	4.40	3.50	1.60	0.60
1812	5.00	3.60	3.00	1.20



### RECOMMENDED REFLOW SOLDERING PROFILE



### TAPING DIMENSIONS (mm) AND REEL QUANTITY

Series	A ± 0.1	B ± 0.1	E ± 0.1	F ± 0.05	P <sub>0</sub> ± 0.1	P <sub>1</sub> ± 0.1	Dφ ± 0.1	W ± 0.1	t <sub>1</sub> ± 0.05	t <sub>2</sub> ± 0.1	Reel Quantity
NCCR1210	2.88	3.7	1.75	3.5	4.0	4.0	1.5	8.0	0.26	2.5	2,000
NCCR1812	3.6	4.9		5.5	8.0	8.0		12.0		3.0	500

