

Common Mode Filter 4.5x3.2mm

SIC12-41 series

MERITEK

FEATURE

- Common Mode Filter For Large Current Applications
- Excellent Impedance Characteristics for Noise Suppression
- Low Profile Construction Design
- Application: High-Density Portable Devices, Personal Computers, Display Panels, DC Power Lines and Automotive Power Trains



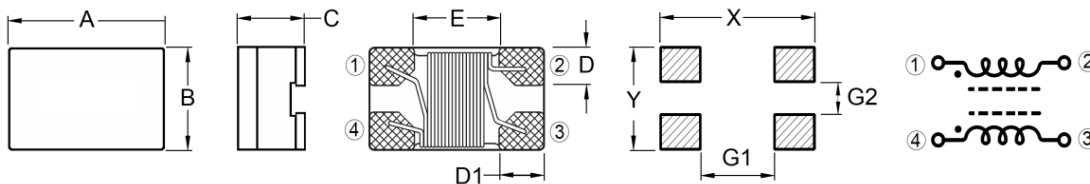
ELECTRICAL CHARACTERISTICS

Part Number	Common Mode Impedance (Ω)		Test Frequency (MHz)	DCR Max (mΩ)	Rated Current (A)	Rated Voltage (Vdc)	IR Min (MΩ)	Withstand Voltage (Vdc)
SIC128003A041	80 ±25%		100	50	3.0	50	10	125
SIC129003A041	90 ±25%		100	50	3.0	50	10	125
SIC121213A041	120 ±25%		100	50	3.0	50	10	125
SIC122011A541	200 ±25%		100	100	1.5	50	10	125
SIC126011A541	600 ±25%		100	240	1.5	50	10	125
SIC128011A041	800 ±25%		100	240	1.0	50	10	125
SIC129004A041	68 min	90 typ	100	50	4.0	50	10	125
SIC122313A541	173 min	230 typ	100	50	3.5	50	10	125
SIC124213A241	300 min	420 typ	100	55	3.2	50	10	125
SIC126012A541	450 min	600 typ	100	60	2.5	50	10	125
SIC129012A341	650 min	900 typ	100	70	2.3	50	10	125
SIC121422A041	1000min	1400 typ	100	100	2.0	50	10	125
SIC12282A9041	2100min	2800 typ	100	350	0.9	50	10	125

Notes:

1. All test data referenced to 25°C ambient.
2. Operating Temperature: -40°C ~ +105°C (Including Self-temperature rise)

DIMENSIONS



Unit: mm

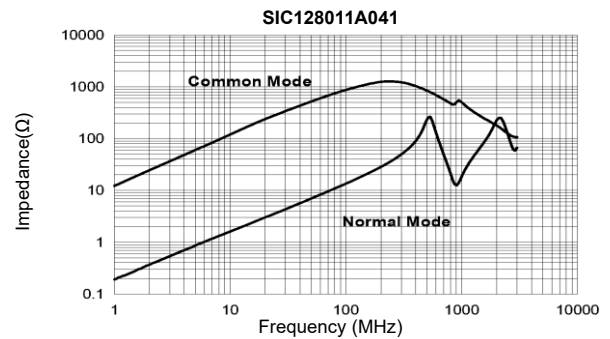
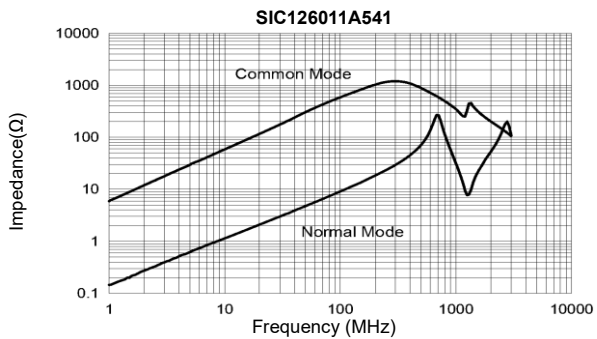
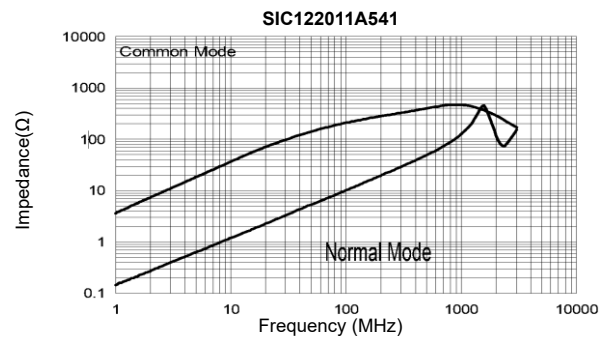
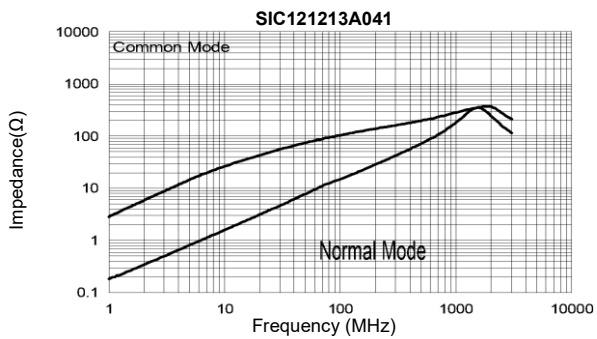
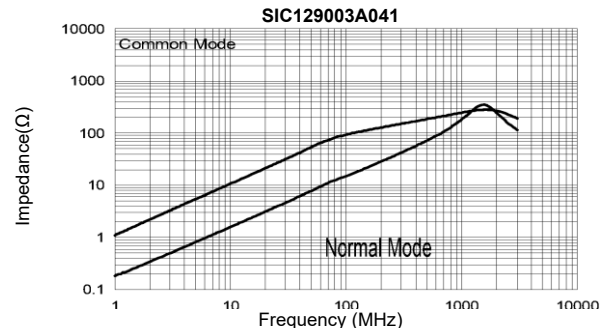
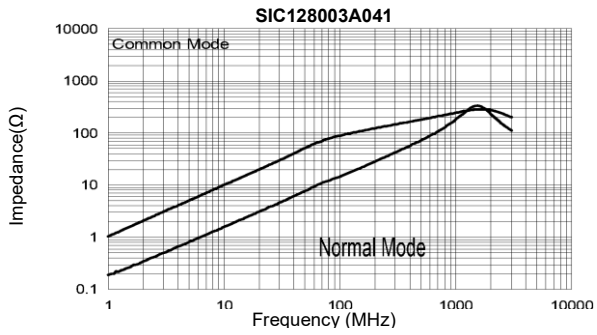
Size Code	A ±0.2	B ±0.2	C ±0.2	D ±0.1	D1 ±0.1	E Typ	X	Y	G1	G2
12 (1812)	4.5	3.20	2.8	1.00	1.20	2.1	4.8	3.8	2.5	0.7

PART NUMBERING SYSTEM

SIC 12 282 A90 41
(1) (2) (3) (4) (5)

No	Item	Code	Description
(1)	Product Code	SIC	Surface Mount Inductor, Common Mode Choke type
(2)	Dimension Code	12	12: 1812 4.5 X 3.2mm, L x W (mm)
(3)	Impedance	282	2800Ω First two digits: significant, Third: Multiplier
(4)	Rated Current	A90	0.9A A: Decimal
(5)	Series Code	41	Common Mode Filter, for Power Line

CHARACTERISTIC CURVE

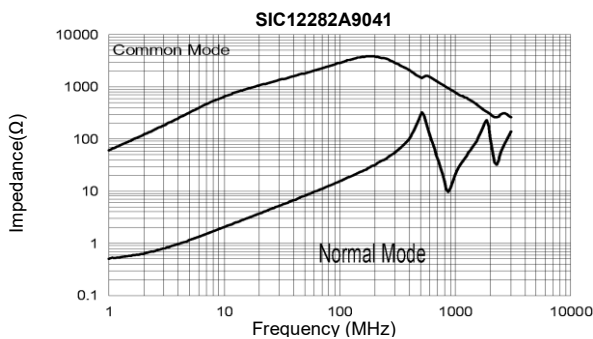
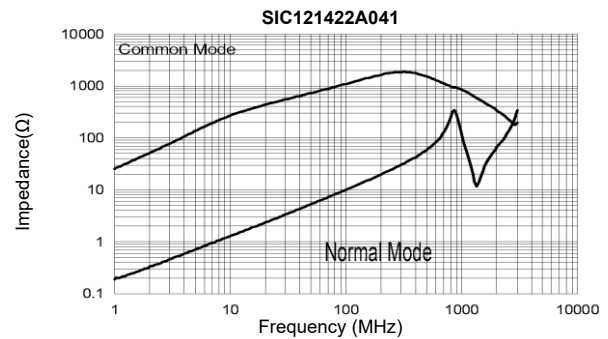
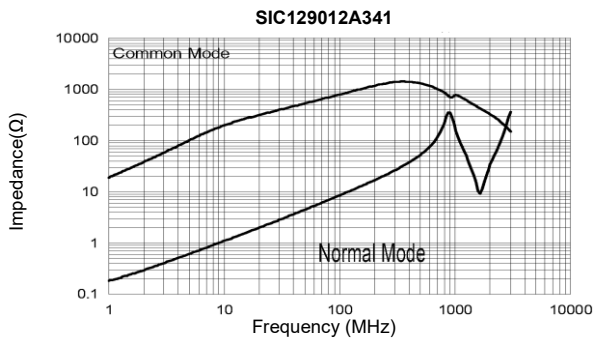
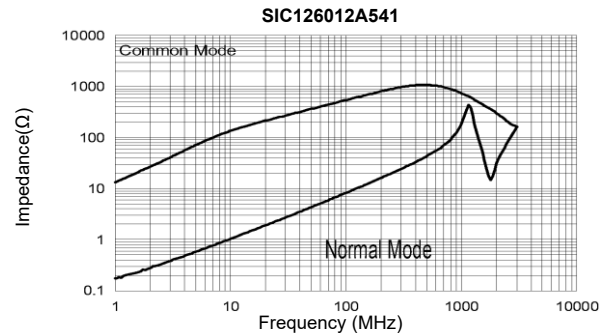
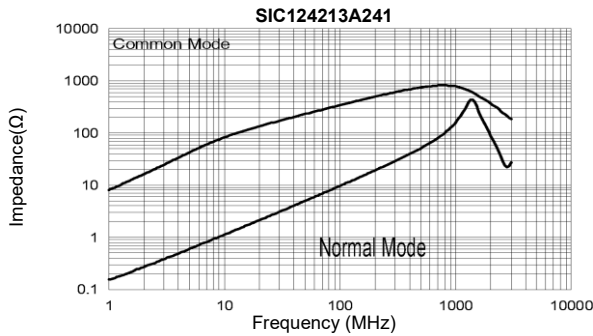
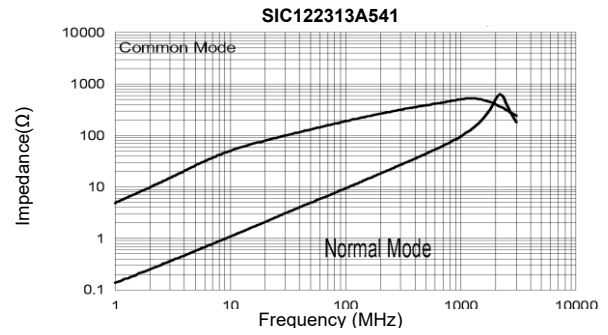
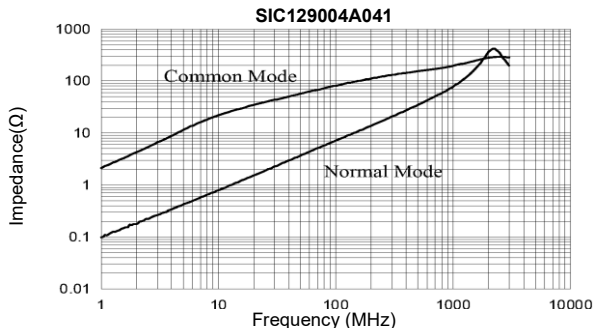


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CHARACTERISTIC CURVE

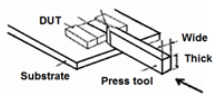
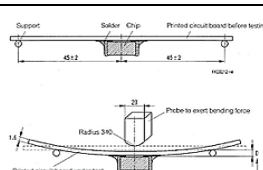


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RELIABILITY TEST CONDITON AND REQUIREMENT

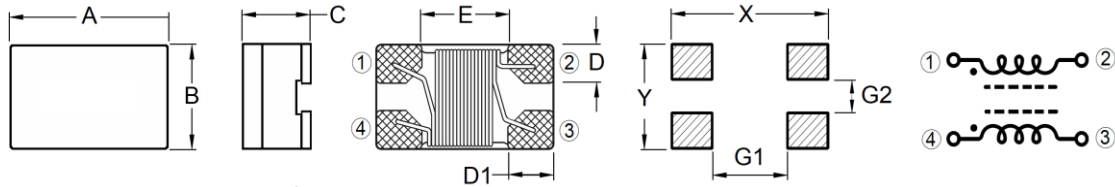
Item	Test Standards / Conditions / Equipment	Requirement															
Impedance	Agilent-4291A, Agilent-16197A	Refer to specification															
DC Resistance	Agilent-4338B	Refer to specification															
I.R	Agilent-4339	Refer to specification															
Temperature Rise Test	1. Applied the allowed DC current 2. Temperature measured by digital surface thermometer	Rated Current < 1A : $\Delta T = 20^{\circ}\text{C}$ Max Rated Current $\geq 1\text{A}$: $\Delta T = 40^{\circ}\text{C}$ Max															
Mechanical Shock	<table border="1"> <thead> <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> </thead> <tbody> <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> </tbody> </table>	Type	Peak value (g's)	Normal duration (D) (ms)	Wave form	Velocity change (Vi) ft/sec	SMD	50	11	Half-sine	11.3	Lead	50	11	Half-sine	11.3	Appearance: No damage Impedance: within $\pm 15\%$ of initial value Inductance: within $\pm 10\%$ of initial value Q: Shall not exceed the specification value RDC: within $\pm 15\%$ of initial value and shall not exceed the specification value
	Type	Peak value (g's)	Normal duration (D) (ms)	Wave form	Velocity change (Vi) ft/sec												
SMD	50	11	Half-sine	11.3													
Lead	50	11	Half-sine	11.3													
3 shocks in each direction along 3 perpendicular axes (18 shocks).																	
Solderability	Method B1, 4 Hrs at 155°C dry heat at $255^{\circ}\text{C} \pm 5^{\circ}\text{C}$ Test Time: 5 +0/-0.5 seconds. Method D category 3. (steam aging 8 hours $\pm 15\text{min}$) at $260^{\circ}\text{C} \pm 5^{\circ}\text{C}$ Test Time: 30+0/-0.5 seconds.	More than 95% of the terminal electrode should be covered with solder.															
Resistance to Soldering Heat	Solder temperature: $260 \pm 5^{\circ}\text{C}$ for 10 seconds Temperature ramp/immersion and emersion rate $25\text{mm/s} \pm 6\text{ mm/s}$. Completely cover the termination. Number of cycles: 1 heat cycle	Appearance: No damage Impedance: within $\pm 15\%$ of initial value Inductance: within $\pm 10\%$ of initial value Q: Shall not exceed the specification value RDC: within $\pm 15\%$ of initial value and shall not exceed the specification value															
Vibration	Oscillation Frequency: $10 \sim 2\text{K} \sim 10\text{ Hz}$ for 20 minutes Total Amplitude: $1.52\text{mm} \pm 10\%$ Testing Time: 12 hours (20 minutes, 12 cycles each of 3 orientations)																
Load Humidity	Humidity: $85 \pm 2\%$ R.H. Temperature: $85^{\circ}\text{C} \pm 2^{\circ}\text{C}$ Duration: 1000Hrs Min at 100% rated current Measured at Room Temperature after $24 \pm 2\text{hrs}$	Appearance: No damage Impedance: within $\pm 15\%$ of initial value Inductance: within $\pm 10\%$ of initial value Q: Shall not exceed the specification value RDC: within $\pm 15\%$ of initial value and shall not exceed the specification value															
Life Test	Temperature: $125 \pm 2^{\circ}\text{C}$ Duration: 1000Hrs Min. with 100% rated current Measured at Room Temperature after $24 \pm 2\text{Hrs}$																
Thermal Shock	Temperature: $-40 \sim 125^{\circ}\text{C}$ Dwell Time: 15minutes, Transfer Time: 20seconds Max Number of Cycles: 300cycles Measured at room temperature after placing for $24 \pm 2\text{hrs}$																
Terminal Strength	Component mounted on a PCB apply a force to the side of a device being tested. $> 0.805\text{inch}(2012\text{mm})$: 1Kg, $\leq 0.805\text{inch}(2012\text{mm})$: 0.5Kg Duration 60 +1 seconds. The force shall be applied gradually as not to shock the component being tested.	 Appearance : No damage															
Board Flex	Place the $100 \times 40\text{mm}$ FR4 board into a fixture with the component facing down. Apply a force which will bend the board: $\geq 0.805\text{in}(2012\text{mm})$: 1.2mm $< 0.805\text{in}(2012\text{mm})$: 0.8mm Duration: 10 seconds. The Force is to be applied only once to the board	 Appearance : No damage															
Moisture Resistance	1. Baked at 50°C for 25hrs, measure at room temp after 4hrs. 2. Raise temperature to $65 \pm 2^{\circ}\text{C}$ 90-100%RH in 2.5hrs, 3. Keep at 65°C for 3 hours, cool down to 25°C in 2.5hrs. 4. Raise temperature to $65 \pm 2^{\circ}\text{C}$ 90-100%RH in 2.5hrs 5. Keep at 65°C for 3hrs, cool down to 25°C in 2.5hrs 6. Keep at 25°C for 2hrs then keep at -10°C for 3hrs 7. Keep at 25°C 80-100%RH for 15min, Vibrate at the frequency of 10 to 55 Hz to 10 Hz, Measure at room temperature after 1~2 hrs.	Appearance: No damage Impedance: within $\pm 15\%$ of initial value Inductance: within $\pm 10\%$ of initial value Q: Shall not exceed the specification value RDC: within $\pm 15\%$ of initial value and shall not exceed the specification value															

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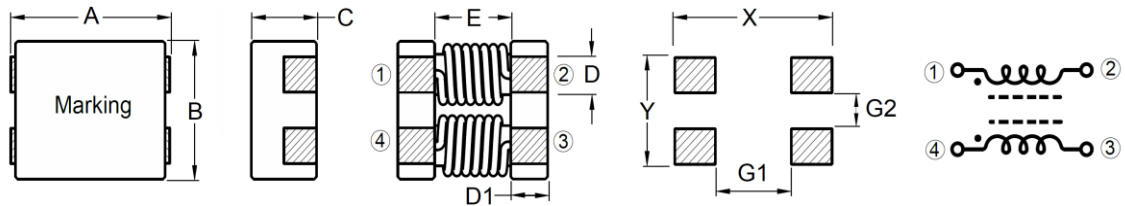
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DIMENSIONS – SIC-41 Series



Unit: mm

Size Code	A ±0.2	B ±0.2	C ±0.2	D ±0.1	D1 ±0.1	E Typ	X	Y	G1	G2
04 (0504)	1.2	1.00	0.9	0.35	0.35	0.5	1.5	1.2	0.6	0.3
03 (0603)	1.6	0.85	1.1	0.30	0.30	1.0	2.3	0.75	0.6	0.25
05 (0805)	2.0	1.20	1.2	0.50	0.50	1.0	2.6	1.25	1.1	0.45
06 (1206)	3.2	1.60	2.0	0.50	0.50	2.2	3.7	1.6	1.9	0.4
10 (1210)	3.2	2.50	2.2	0.80	0.90	1.4	4.4	3.5	1.6	0.6
12 (1812)	4.5	3.20	2.8	1.00	1.20	2.1	4.8	3.8	2.5	0.7



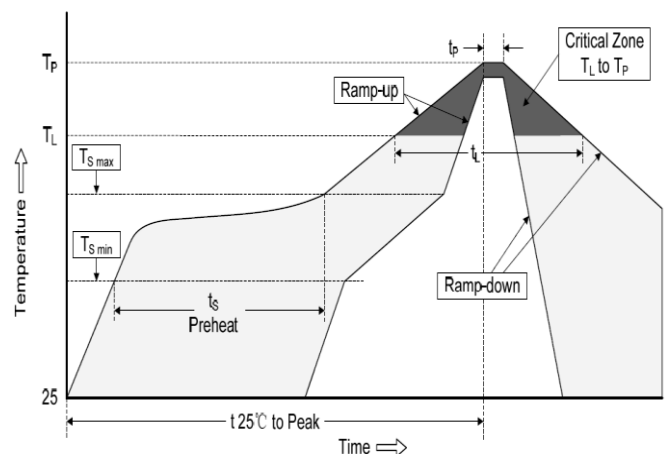
Unit: mm

Size Code	A ±0.5	B ±0.5	C Max	D	D1	E Typ	X	Y	G1	G2
121	12	10.8	6.4	2.7 ±0.2	2.5 ±0.2	7.0	12.2	8.1	6.8	2.3
70F	7.0	6.00	3.8	1.5 ±0.5	1.7 ±0.5	3.5	9.0	4.5	4.0	1.5
70C	7.0	6.00	3.8	1.5 Typ	1.7 Typ	3.5	9.0	4.5	4.0	1.5
907	9.0	7.00	4.8	1.5 ±0.2	1.7 ±0.2	5.7	11	5.0	5.0	1.5

RECOMMENDED SOLDERING PROFILES

Reflow Condition		
Pre Heat	Temp. Min $T_{s(min)}$	150°C
	Temp. Max $T_{s(max)}$	200°C
	Time (min. to max.) (t_s)	60 ~120 seconds
Average ramp up rate (Liquidus Temperature) (T_L) to peak		3°C/second max
$T_{s(max)}$ to T_L (Ramp-up rate)		3°C/second max
Reflow	Temp. (T_L)	217°C
	Time (min. to max.) (t_L)	60 ~150 seconds
Peak Temperature (T_P)		See table below
Time within 5°C of actual peak Temperature (t_p)		10 seconds max
Ramp-down Rate		6°C/second max
Reflow Times		3 times max

Peak Temperature (T_P)			
Volume	< 350mm ³	350-2000mm ³	> 2000mm ³
Thickness < 1.6mm	260°C	260°C	260°C
Thickness 1.6-2.5mm	260°C	250°C	245°C
Thickness ≥ 2.5mm	250°C	245°C	245°C



*Specifications subject to change without notice