Common Mode Filter
1.6x0.8mm

SIC03-41 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**

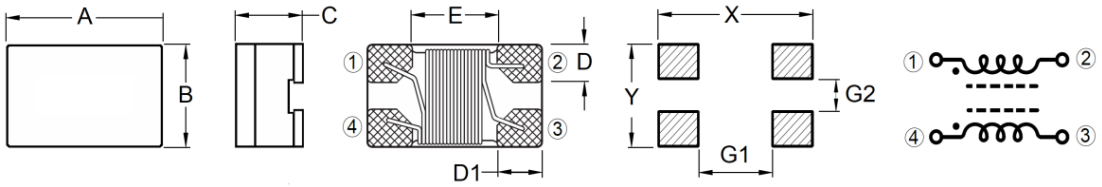
RoHS

ELECTRICAL CHARACTERISTICS

Part Number	Common Mode Impedance (Ω)	Test Frequency (MHz)	DCR Max (mΩ)	Rated Current (mA)	Rated Voltage (Vdc)	IR Min (MΩ)	Withstand Voltage (Vdc)
SIC03220A5041	22 ±25%	100	80	500	50	10	125
SIC03450A5041	45 ±25%	100	110	500	50	10	125
SIC03900A5541	90 ±25%	100	145	550	50	10	125
SIC03121A4541	120 ±25%	100	175	450	50	10	125
SIC03181A5041	180 ±25%	100	210	500	50	10	125
SIC03251A0441	250 ±25%	100	280	400	50	10	125

Notes:
1. All test data referenced to 25ºC ambient.
2. Operating Temperature: -40ºC ~ +105ºC (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
03 (0603)	1.6	0.85	1.1	0.30	0.30	1.0	2.3	0.75	0.6	0.25

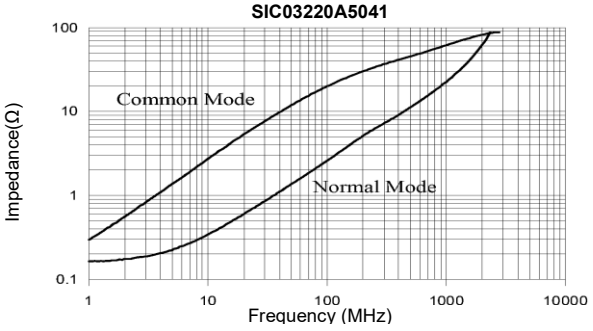
PART NUMBERING SYSTEM

SIC	**03**	**251**	**A40**	**41**
(1)	**(2)**	**(3)**	**(4)**	**(5)**

No	Item	Code	Description	
(1)	**Product Code**	SIC	Surface Mount Inductor, Common Mode Choke type	
(2)	**Dimension Code**	03	03: 0603	1.6 X 0.8mm, L x W (mm)
(3)	**Impedance**	251	250Ω	First two digits: significant, Third: Multiplier
(4)	**Rated Current**	A40	0.4A	A: Decimal
(5)	**Series Code**	41	Common Mode Filter, for Power Line	

CHARACTERISTIC CURVE

SIC03220A5041



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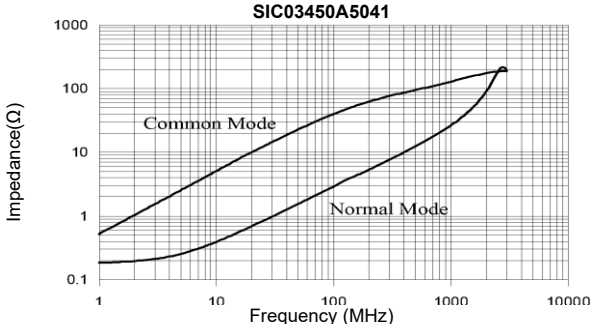

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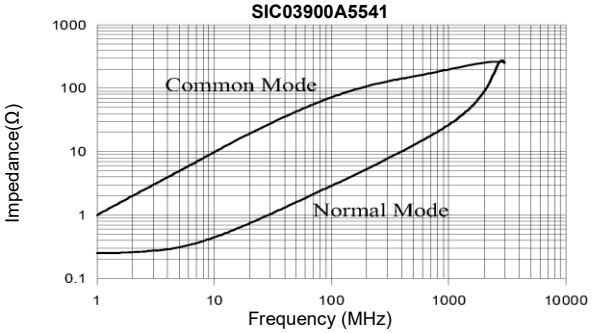
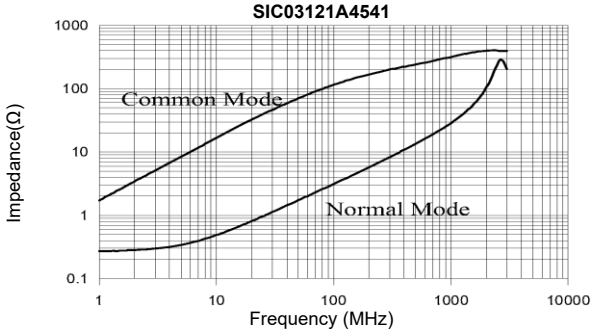
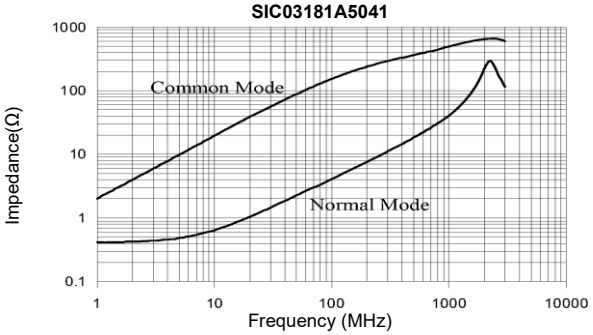


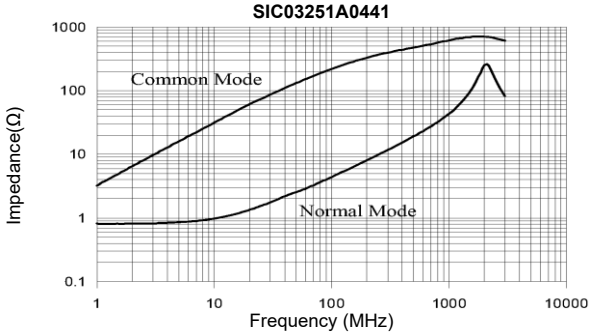
SIC03121A4541



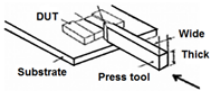
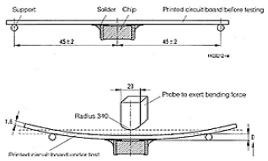
SIC03181A5041



SIC03251A0441



RELIABILITY TEST CONDITON AND REQUIREMENT

<table>
<tr><th>Item</th><th>Test Standards / Conditions / Equipment</th><th>Requirement</th></tr>
<tr><td>Impedance</td><td>Agilent-4291A, Agilent-16197A</td><td>Refer to specification</td></tr>
<tr><td>DC Resistance</td><td>Agilent-4338B</td><td>Refer to specification</td></tr>
<tr><td>I.R</td><td>Agilent-4339</td><td>Refer to specification</td></tr>
<tr><td>Temperature Rise Test</td><td>1. Applied the allowed DC current
2. Temperature measured by digital surface thermometer</td><td>Rated Current < 1A : ΔT = 20°C Max
Rated Current ≥ 1A : ΔT = 40°C Max</td></tr>
<tr><td>Mechanical Shock</td><td><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>3 shocks in each direction along 3 perpendicular axes (18 shocks).</td><td>Appearance: No damage
Impedance: within ±15% of initial
Inductance: within ±10% of initial value
Q: Shall not exceed the specification value
RDC: within ±15% of initial value and shall not exceed the specification value</td></tr>
<tr><td>Solderability</td><td>Method B1, 4 Hrs at 155°C dry heat at 255°C±5°C
Test Time: 5 +0/-0.5 seconds.
Method D category 3. (steam aging 8 hours±15min) at 260°C±5°C
Test Time: 30+0/-0.5 seconds.</td><td>More than 95% of the terminal electrode should be covered with solder.</td></tr>
<tr><td>Resistance to Soldering Heat</td><td>Solder temperature: 260±5°C for 10 seconds
Temperature ramp/immersion and emersion rate 25mm/s ±6 mm/s.
Completely cover the termination.
Number of cycles: 1 heat cycle</td><td rowspan="2">Appearance: No damage
Impedance: within ±15% of initial value
Inductance: within ±10% of initial value
Q: Shall not exceed the specification value
RDC: within ±15% of initial value and shall not exceed the specification value</td></tr>
<tr><td>Vibration</td><td>Oscillation Frequency: 10～2K～10 Hz for 20 minutes
Total Amplitude:1.52mm±10%
Testing Time: 12 hours (20 minutes, 12 cycles each of 3 orientations)</td></tr>
<tr><td>Load Humidity</td><td>Humidity: 85±2% R.H. Temperature: 85°C±2°C
Duration: 1000Hrs Min at 100% rated current
Measured at Room Temperature after 24±2hrs</td><td rowspan="3">Appearance: No damage
Impedance: within ±15% of initial value
Inductance: within ±10% of initial value
Q: Shall not exceed the specification value
RDC: within ±15% of initial value and shall not exceed the specification value</td></tr>
<tr><td>Life Test</td><td>Temperature: 125±2°C
Duration: 1000Hrs Min. with 100% rated current
Measured at Room Temperature after 24±2Hrs</td></tr>
<tr><td>Thermal Shock</td><td>Temperature: -40~125°C
Dwell Time: 15minutes, Transfer Time: 20seconds Max
Number of Cycles: 300cycles
Measured at room temperature after placing for 24±2hrs</td></tr>
<tr><td>Terminal Strength</td><td>Component mounted on a PCB apply a force to the side of a device being tested.
>0805inch(2012mm): 1Kg,
<=0805inch(2012mm): 0.5Kg
Duration 60 +1 seconds. The force shall be applied gradually as not to shock the component being tested.
  </td><td>Appearance：No damage</td></tr>
<tr><td>Board Flex</td><td>Place the 100x40mm FR4 board into a fixture with the component facing down.
Apply a force which will bend the board:
>=0805in(2012mm): 1.2mm
<0805in(2012mm): 0.8mm
Duration: 10 seconds. The Force is to be applied only once to the board
  </td><td>Appearance：No damage</td></tr>
<tr><td>Moisture Resistance</td><td>1. Baked at 50°C for 25hrs, measure at room temp after 4hrs.
2. Raise temperature to 65±2°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±2°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.</td><td>Appearance: No damage
Impedance: within ±15% of initial value
Inductance: within ±10% of initial value
Q: Shall not exceed the specification value
RDC: within ±15% of initial value and shall not exceed the specification value</td></tr>
</table>

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1.6x0.8mm

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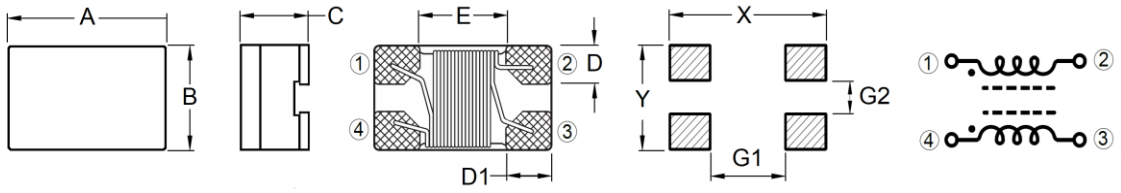
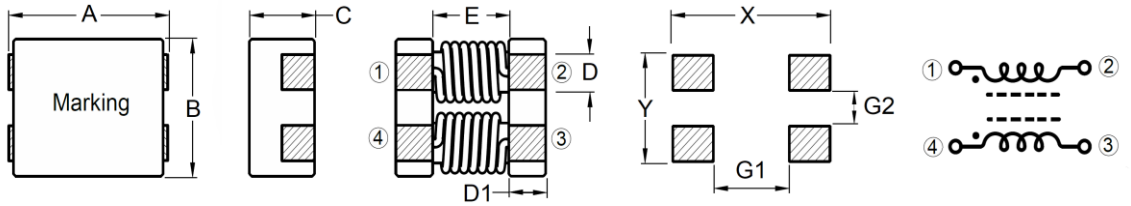
DIMENSIONS – SIC-41 Series



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

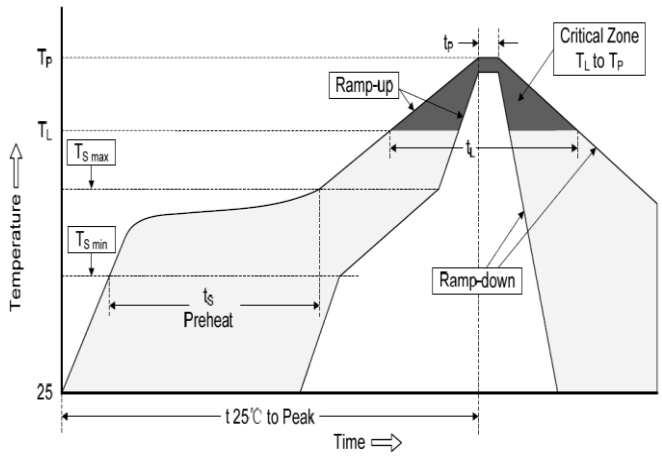


Unit: mm

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	< 350mm³	350-2000mm³	> 2000mm³
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