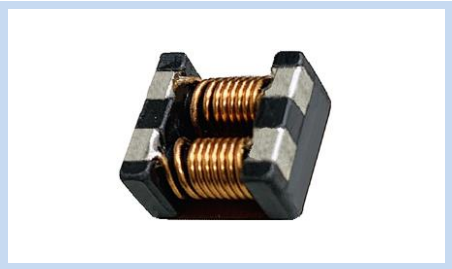
Common Mode Filter
12.0x11.0mm AEC-Q200

SIC-121M41

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**
- **AEC-Q200 Compliant**

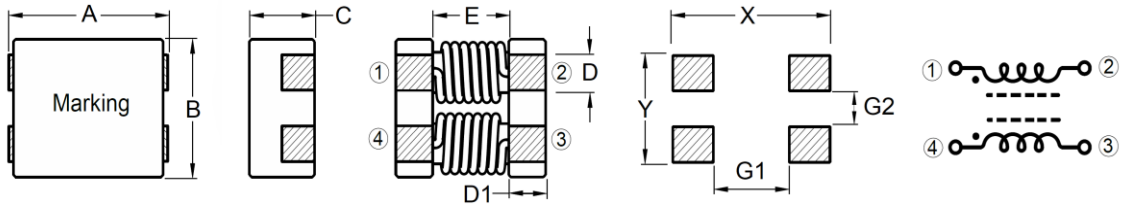
RoHS

ELECTRICAL CHARACTERISTICS

Part Number	Impedance (Ω)		Test Frequency (MHz)	DCR Max (mΩ)	Rated Current (A)	Rated Voltage (Vdc)	IR Min (MΩ)
	Min	Typ					
SIC7019A0121M41	500	700	100	5	9	80	10
SIC1027A0121M41	750	1000	100	8	7	80	10

Notes:
1. All test data referenced to 25ºC ambient.
2. Operating Temperature: -55ºC ~ +125ºC (Including Self-temperature rise)

DIMENSIONS



Unit: mm

Size Code	A	B	C max	D ±0.5	D1 ±0.5	E typ	X	Y	G1	G2
121	12.0±0.3	11.0±0.3	6.4	2.7 ±0.2	2.5 ±0.2	7.0	12.2	8.1	6.8	2.3

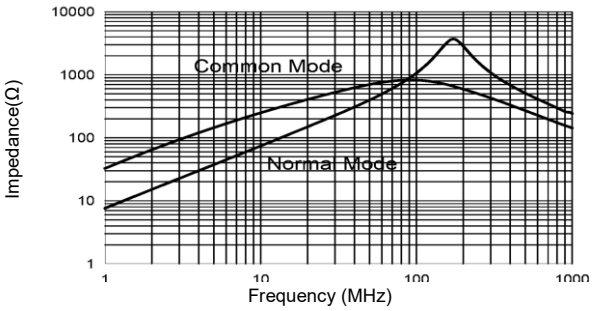
PART NUMBERING SYSTEM

SIC	**102**	**7A0**	**121**	**M41**
(1)	**(2)**	**(3)**	**(4)**	**(5)**

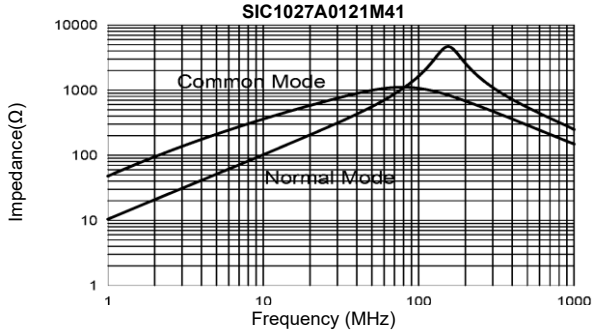
No	Item	Code	Description	
(1)	**Product Code**	SIC	Surface Mount Inductor, Common Mode Choke type	
(2)	**Impedance**	102	1000Ω	First two digits: significant, Third: Multiplier
(3)	**Rated Current**	7A0	7.0A	A: Decimal
(4)	**Size Code**	121	1211	1.2 X 1.1mm
(5)	**Series Code**	M41	Common Mode Filter, for Power Line, AEC-Q200 Compliant	

CHARACTERISTIC CURVE

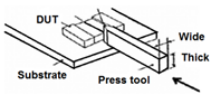
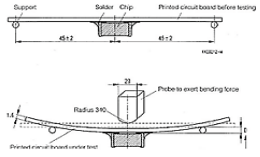
SIC7019A0121M41



SIC1027A0121M41



RELIABILITY TEST CONDITON AND REQUIREMENT

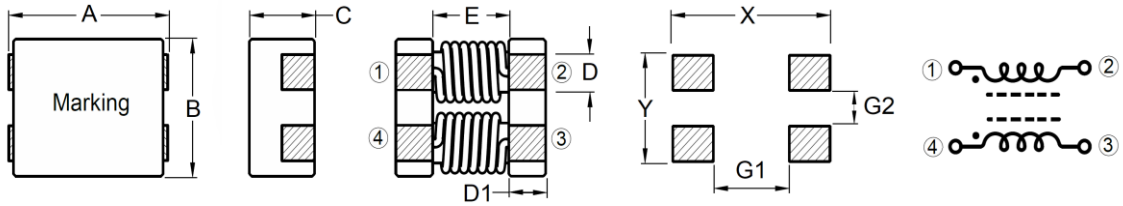
<table>
<tr><th>Item</th><th>Test Standards / Conditions / Equipment</th><th>Requirement</th></tr>
<tr><td>Impedance</td><td>Agilent-4291A, Agilent-16197A</td><td>Refer to specification</td></tr>
<tr><td>DC Resistance</td><td>Agilent-4338B</td><td>Refer to specification</td></tr>
<tr><td>I.R</td><td>Agilent-4339</td><td>Refer to specification</td></tr>
<tr><td>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>100</td><td>6</td><td>Half-sine</td><td>12.3</td></tr>
<tr><td>Lead</td><td>100</td><td>6</td><td>Half-sine</td><td>12.3</td></tr>
</table>
3 shocks in each direction along 3 perpendicular axes (18 shocks).</td><td>Appearance: No damage
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
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:5g
Duration: 12 hours (20 minutes, 12 cycles each of 3 orientations)</td></tr>
<tr><td>High Temperature Exposure</td><td>Temperature: 125±2°C
Duration 1000Hrs Min
Measured at room temperature after placing for 24±2hrs</td><td rowspan="3">Appearance: No damage
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>Biased Humidity</td><td>Humidity: 85±3% R.H. Temperature: 85°C±2°C
Duration: 1000Hrs Min
Measured at Room Temperature after placing for 24±2hrs</td></tr>
<tr><td>High Temperature Operational Life</td><td>Temperature: 125±2°C
Duration: 1000Hrs Min. with 100% rated current
Measured at Room Temperature after placing for 24±2Hrs</td></tr>
<tr><td>Temperature Cycling</td><td>Temperature: -40~125°C
Dwell Time: 30minutes, Transfer Time: 1minutes Max
Number of Cycles: 1000cycles
Measured at room temperature after placing for 24±2hrs</td><td rowspan="2">Appearance: No damage
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>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>ESD</td><td>AEC-Q200-002 HBM ESD, Contact Discharge Level: 4KV (Level 2)</td><td>Appearance: No damage</td></tr>
<tr><td>Resistance to Solvents</td><td>Add aqueous wash chemical - OKEM clean or equivalent.</td><td>Appearance：No damage</td></tr>
<tr><td>Terminal Strength</td><td>Component mounted on a PCB apply a force 1.8kg to the side of a device being tested. This force shall be applied for 60 +1 seconds. Also 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 (D) x = 2mm minimum. Duration: 60 (+5) seconds. The Force is to be applied only once to the board
  </td><td>Appearance：No damage</td></tr>
<tr><td>Flammability</td><td>Electrical Test not Required</td><td>V-0 or V-1 are acceptable.</td></tr>
</table>

Common Mode Filter
12.0x11.0mm AEC-Q200

SIC-121M41

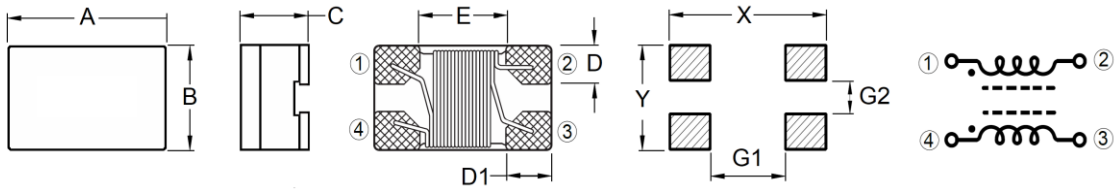
MERITEK

DIMENSIONS – SIC-M41 Series



Unit: mm

Size Code	A	B	C max	D ±0.5	D1 ±0.5	E typ	X	Y	G1	G2
121	12.0±0.3	11.0±0.3	6.4	2.7 ±0.2	2.5 ±0.2	7.0	12.2	8.1	6.8	2.3
151	15.0 ±0.4	13.0±0.4	6.0	2.7	2.8	9.3	15.0	10.0	7.0	3.0
555	5.5 ±0.5	5.5 ±0.5	3.5	1.2	1.1	3.3	7.0	7.0	4.0	1.3
706	7.0 ±0.5	6.0 ±0.5	3.8	1.5	1.7	3.5	9.0	4.5	4.0	1.5
907	9.0±0.2	7.0±0.2	4.5	1.5 ±0.2	1.7 ±0.2	5.7	11	5.0	5.0	1.5

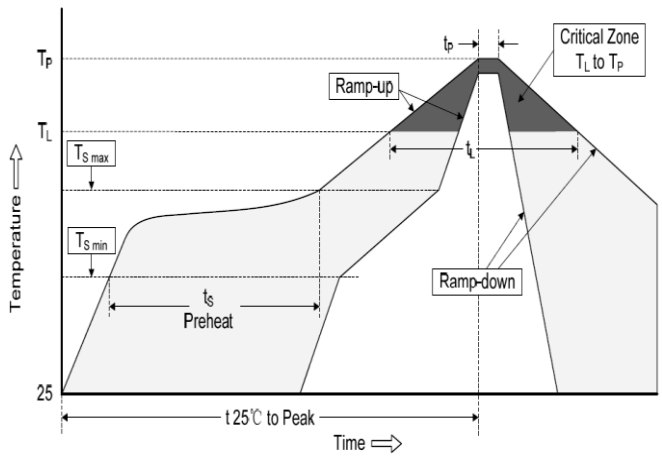


Unit: mm

Size Code	A ±0.2	B ±0.2	C ±0.2	D ±0.1	D1 ±0.1	E	X	Y	G1	G2
05 (0805)	2.0	1.2	1.2	0.5	0.51	1.0	2.6	1.25	1.1	0.45
06 (1206)	3.2	1.6	2.0	0.5	0.50	2.2	3.7	1.6	1.9	0.4
10 (1210)	3.2	2.5	2.2	0.8	0.90	1.4	4.4	3.5	1.6	0.6
12 (1812)	4.5	3.2	2.8	1.0	1.20	2.1	4.8	3.8	2.5	0.7

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