

Common Mode Filter 3.2x2.5mm AEC-Q200

SIC10-M41 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
- AEC-Q200 Compliant



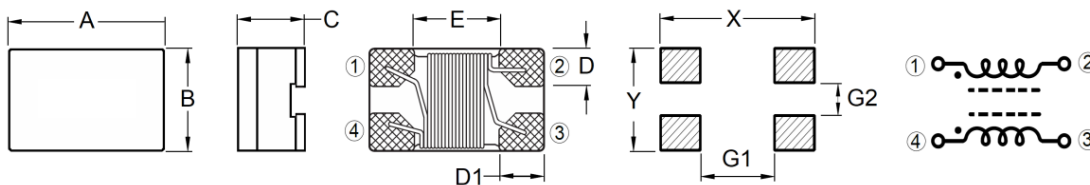
ELECTRICAL CHARACTERISTICS

Part Number	Common Mode Impedance (Ω)	Test Frequency (MHz)	DCR Max (m Ω)	Rated Current (mA)	Rated Voltage (Vdc)	IR Min (M Ω)	Withstand Voltage (Vdc)
SIC109001A0M41	90 \pm 25%	100	50	1000	50	10	125
SIC106011A0M41	600 \pm 25%	100	200	1000	50	10	125
SIC10102A40M41	1000 \pm 25%	100	300	400	50	10	125

Notes:

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

DIMENSIONS



Unit: mm

Size Code	A \pm 0.2	B \pm 0.2	C \pm 0.2	D \pm 0.1	D1 \pm 0.1	E	X	Y	G1	G2
10 (1210)	3.2	2.5	2.2	0.8	0.90	1.4	4.4	3.5	1.6	0.6

PART NUMBERING SYSTEM

SIC 10 102 A40 M41
(1) (2) (3) (4) (5)

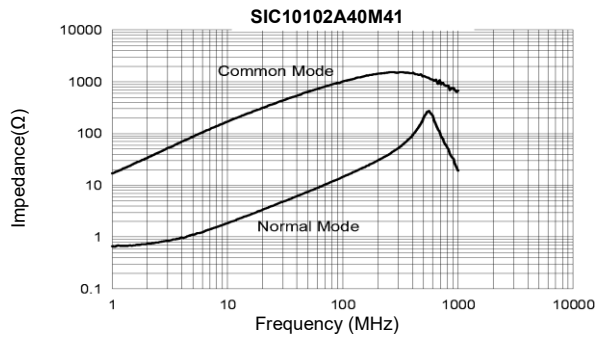
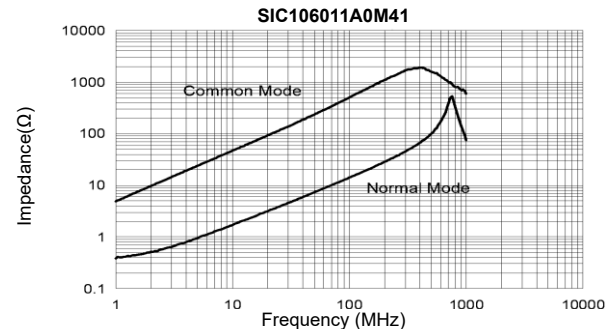
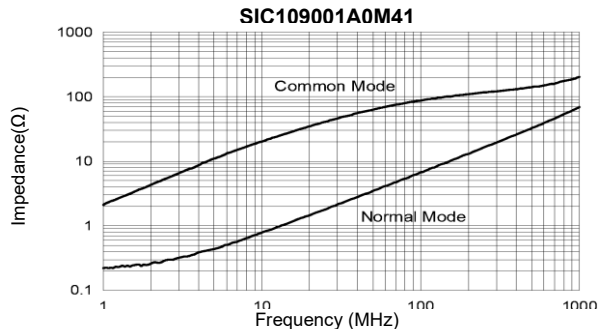
No	Item	Code	Description
(1)	Product Code	SIC	Surface Mount Inductor, Common Mode Choke type
(2)	Dimension Code	10	10: 1210 3.2 X 2.5mm, L x W (mm)
(3)	Impedance	102	1000 Ω First two digits: significant, Third: Multiplier
(4)	Rated Current	A40	0.4A A: Decimal
(5)	Series Code	M41	Common Mode Filter, for Power Line. AEC-Q200 Compliant

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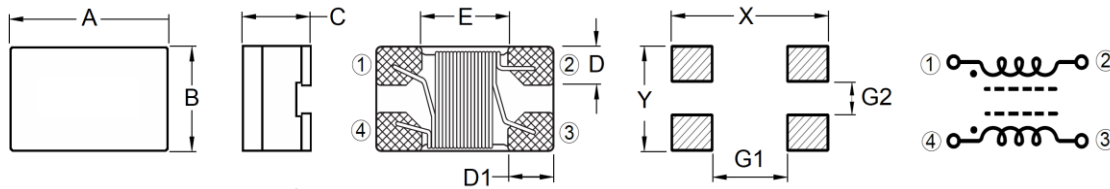
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CHARACTERISTIC CURVE

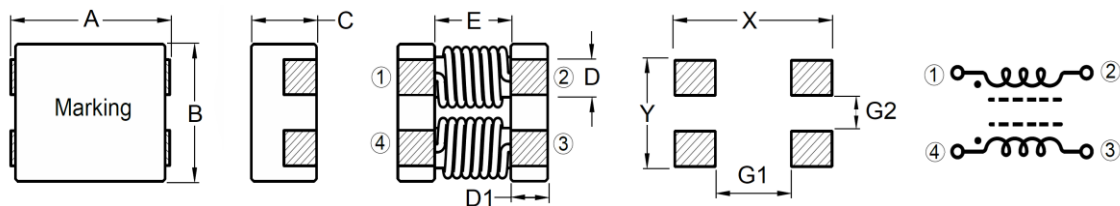


DIMENSIONS – SIC-M41 Series



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



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

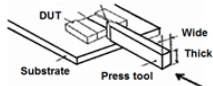
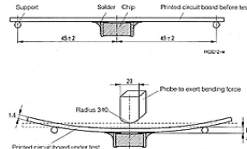
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RELIABILITY TEST CONDITON AND REQUIREMENT

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															
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>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> </tbody> </table>	Type	Peak value (g's)	Normal duration (D) (ms)	Wave form	Velocity change (Vi) ft/sec	SMD	100	6	Half-sine	12.3	Lead	100	6	Half-sine	12.3	Appearance: No damage 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	100	6	Half-sine	12.3													
Lead	100	6	Half-sine	12.3													
3 shocks in each direction along 3 perpendicular axes (18 shocks).																	
Solderability	Method B1, 4 Hrs at 155°C dry heat at 255°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°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 25mm/s ± 6 mm/s. Completely cover the termination. Number of cycles: 1 heat cycle	Appearance: No damage 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: 10~2K~10 Hz for 20 minutes Total Amplitude: 5g Duration: 12 hours (20 minutes, 12 cycles each of 3 orientations)																
High Temperature Exposure	Temperature: 125 $\pm 2^\circ\text{C}$ Duration 1000Hrs Min Measured at room temperature after placing for 24 ± 2 hrs	Appearance: No damage 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															
Biased Humidity	Humidity: 85 $\pm 3\%$ R.H. Temperature: 85°C $\pm 2^\circ\text{C}$ Duration: 1000Hrs Min Measured at Room Temperature after placing for 24 ± 2 hrs																
High Temperature Operational Life	Temperature: 125 $\pm 2^\circ\text{C}$ Duration: 1000Hrs Min. with 100% rated current Measured at Room Temperature after placing for 24 ± 2 Hrs																
Temperature Cycling	Temperature: -40~125°C Dwell Time: 30minutes, Transfer Time: 1minutes Max Number of Cycles: 1000cycles Measured at room temperature after placing for 24 ± 2 hrs	Appearance: No damage 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															
Thermal Shock	Temperature: -40~125°C Dwell Time: 15minutes, Transfer Time: 20seconds Max Number of Cycles: 300cycles Measured at room temperature after placing for 24 ± 2 hrs																
ESD	AEC-Q200-002 HBM ESD, Contact Discharge Level: 4KV (Level 2)	Appearance: No damage															
Resistance to Solvents	Add aqueous wash chemical - OKEM clean or equivalent.	Appearance : No damage															
Terminal Strength	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.	 Appearance : No damage															
Board Flex	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		 Appearance : No damage														
Flammability	Electrical Test not Required	V-0 or V-1 are acceptable.															

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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

