

Common Mode Filter 4.5x3.2mm AEC-Q200

SIC12-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



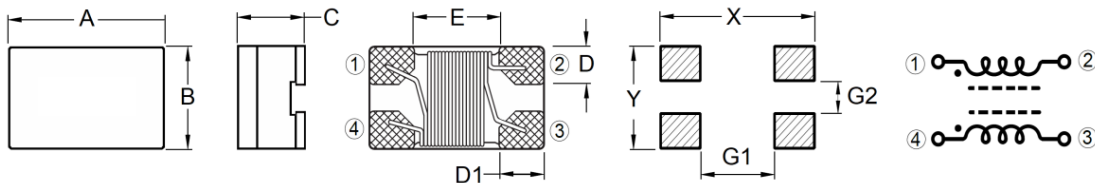
ELECTRICAL CHARACTERISTICS

Part Number	Common Mode Impedance (Ω)		Test Frequency (MHz)	DCR Max (m Ω)	Rated Current (A)	Rated Voltage (Vdc)	IR Min (M Ω)	Withstand Voltage (Vdc)
SIC128003A0M41	80 \pm 25%		100	50	3.0	50	10	125
SIC129003A0M41	90 \pm 25%		100	50	3.0	50	10	125
SIC121213A0M41	120 \pm 25%		100	50	3.0	50	10	125
SIC122011A5M41	200 \pm 25%		100	100	1.5	50	10	125
SIC126011A5M41	600 \pm 25%		100	240	1.5	50	10	125
SIC128011A0M41	800 \pm 25%		100	240	1.0	50	10	125
SIC129004A0M41	68 Min	90 Typ	100	50	4.0	50	10	125
SIC122313A5M41	173 Min	230 Typ	100	50	3.5	50	10	125
SIC124213A2M41	300 Min	420 Typ	100	55	3.2	50	10	125
SIC126012A5M41	450 Min	600 Typ	100	60	2.5	50	10	125
SIC129012A3M41	650 Min	900 Typ	100	70	2.3	50	10	125
SIC121422A0M41	1000Min	1400Typ	100	100	2.0	50	10	125
SIC12282A90M41	2100 in	2800Typ	100	350	0.9	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
12 (1812)	4.5	3.2	2.8	1.0	1.20	2.1	4.8	3.8	2.5	0.7

PART NUMBERING SYSTEM

SIC **12** **282** **A90** **M41**
(1) (2) (3) (4) (5)

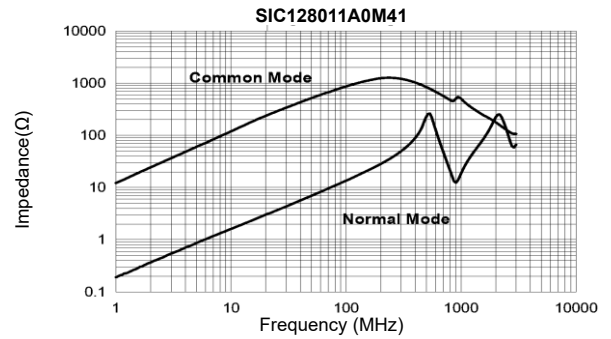
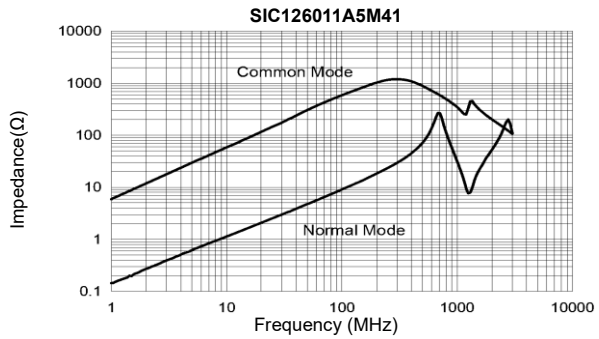
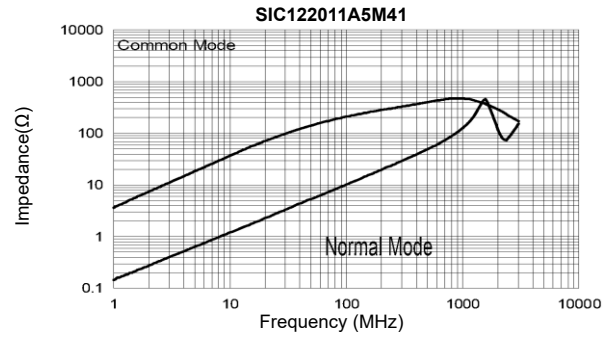
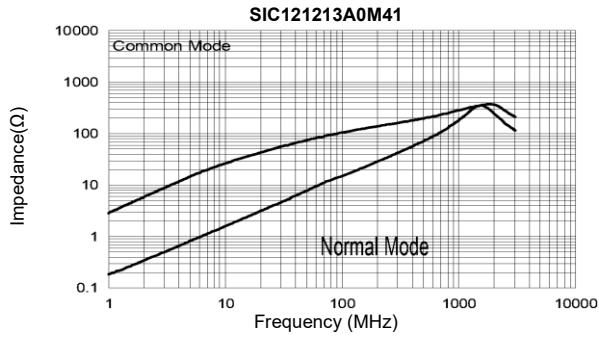
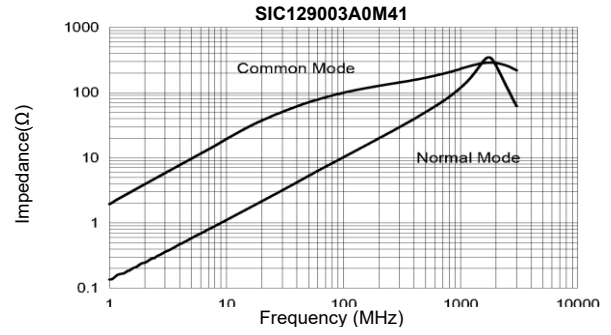
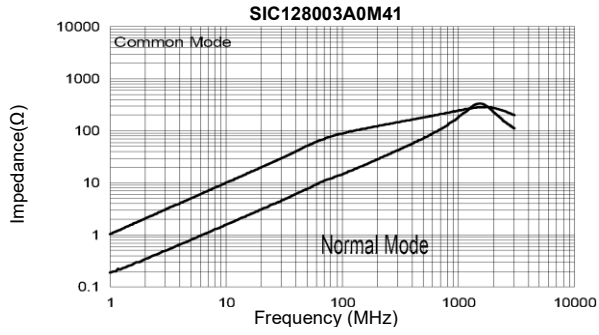
No	Item	Code	Description
(1)	Product Code	SIC	Surface Mount Inductor, Common Mode Choke type
(2)	Dimension Code	12	12: 1812 4.5 X 3.2mm, L x W (mm)
(3)	Impedance	282	2800 Ω First two digits: significant, Third: Multiplier
(4)	Rated Current	A90	0.9A A: Decimal
(5)	Series Code	M41	Common Mode Filter, for Power Line. AEC-Q200 Compliant

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CHARACTERISTIC CURVE

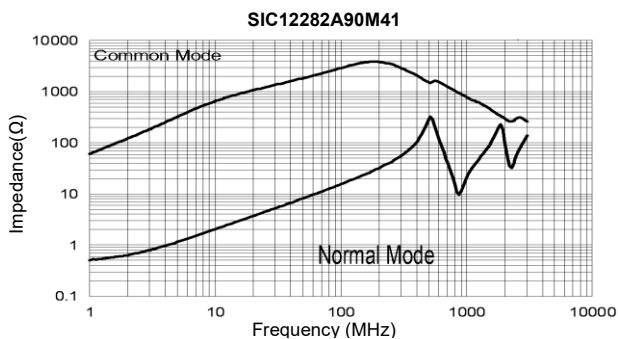
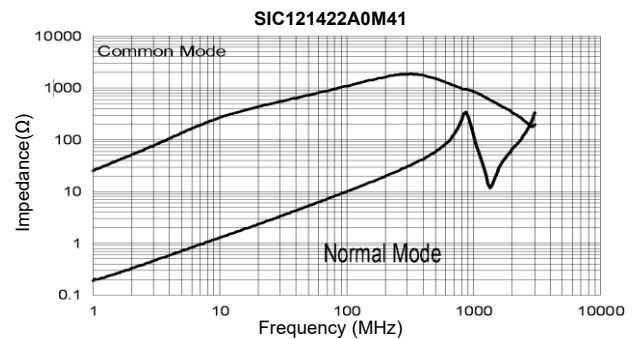
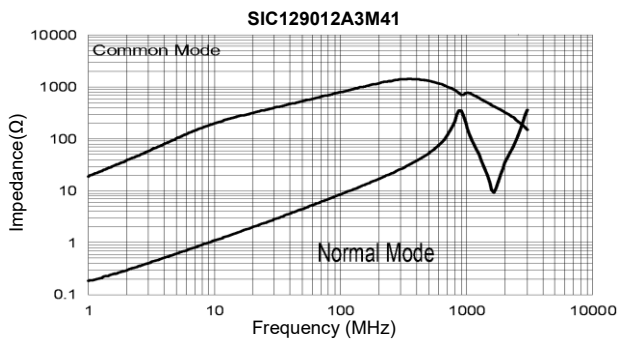
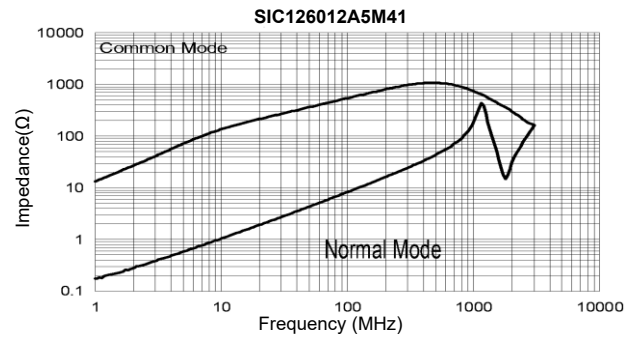
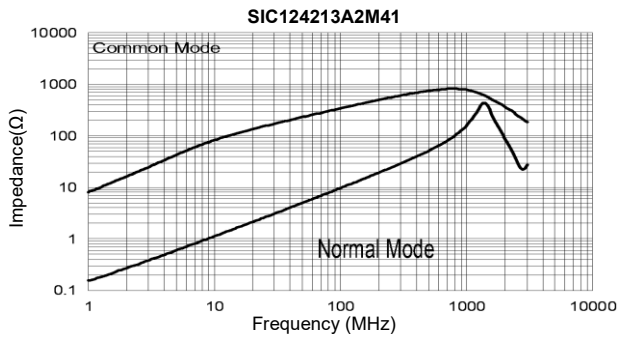
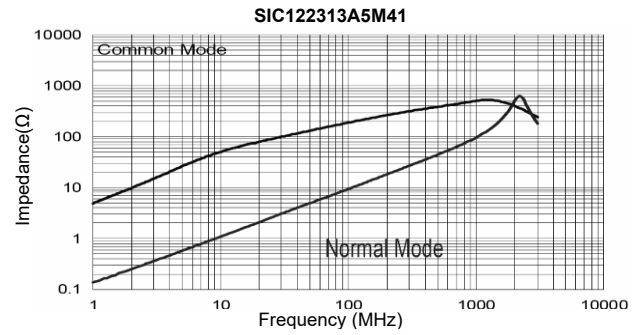
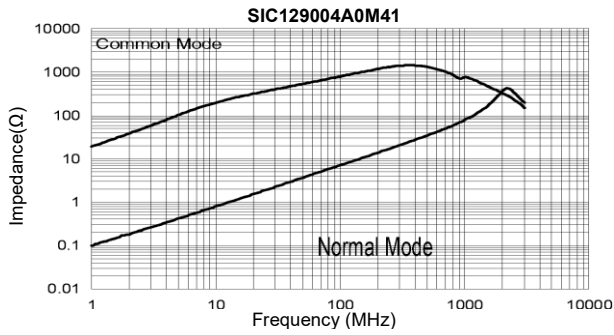


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CHARACTERISTIC CURVE

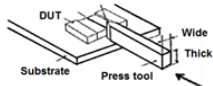
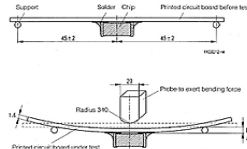


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RELIABILITY TEST CONDITON AND REQUIREMENT

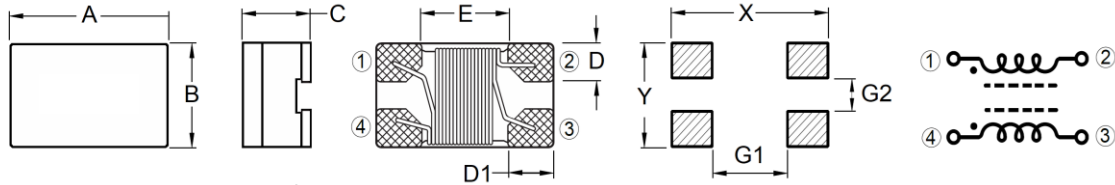
Item	Test Standards / Conditions / Equipment	Requirement															
Impedance	Agilent-4291A, Agilent-16197A	Refer to specification															
DC Resistance	Agilent-4338B	Refer to specification															
I.R	Agilent-4339	Refer to specification															
Mechanical Shock	<table border="1"> <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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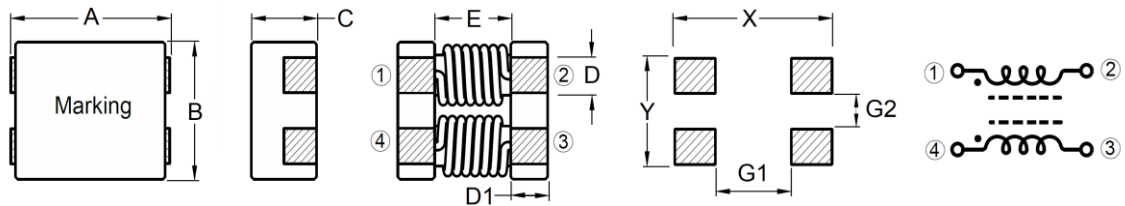
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DIMENSIONS – SIC-M41 Series



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

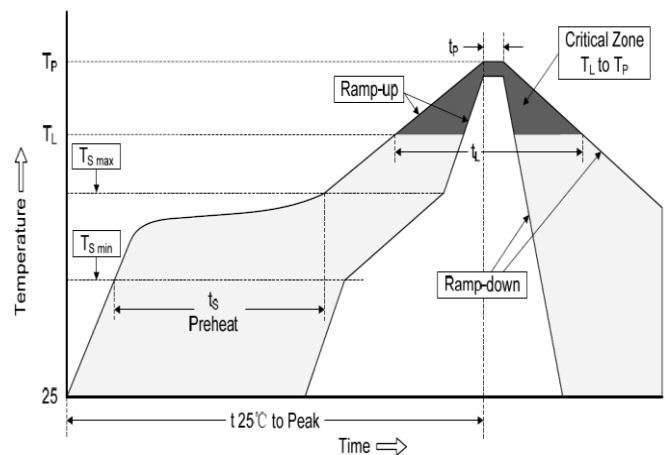


Unit: mm

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

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