Space Grade Surface-Mount Common Mode Choke



FEATURES

- Nanocrystaline based design
- Self-shielded
- Molded construction for ruggedized applications
- MIL-PRF-27 grade 5, product level T, temperature class S
- MIL-STD-981 family 04 power inductor, class S compliant (1)(2)
- ASTM-E595 outgassing compliant (3)
- Tin-lead terminations
- Broadband frequency attenuation
- Customization available (e.g., turns count, wire gauge, temperature class, screening, etc.)

Notes

(1) Screening codes S and B only
(2) Clarifications to MIL-STD-981 (1):
  a. MIL-STD-981 figures 3b, c, and d do not apply to this assembly's build construction
  b. Corona discharge is not applicable
(3) Applies to all external materials

APPLICATIONS

- GaN and SiC switching devices
- Low profile, high current power supplies
- DC/DC converters in distributed power systems
- Power converter for solar panels
- Noise suppression

ABSOLUTE MAXIMUM RATINGS

PARAMETER	CONDITIONS	LIMITS	UNITS
Dielectric withstand voltage (DWV) (1)	Windings to windings, windings to core	1000	V_{RMS}
Insulation resistance (IR) (2)	Windings to windings and core, 10 GΩ min.	500	V_{DC}
Operating temperature	Continuous	-55 to +130	°C
Storage temperature	Continuous	-65 to +155	°C
Maximum weight		5.5	g

Notes

(1) Test conditions adjusted per MIL-STD-981 and MIL-PRF-27 4.7.9.1 during group A and B testing, applies to all external materials
(2) Test conditions adjusted per MIL-STD-981 and MIL-PRF-27 4.7.11 during group A and B testing, applies to all external materials

STANDARD ELECTRICAL SPECIFICATIONS

PART NUMBER	L_0 INDUCTANCE PER WINDING ± 40 % AT 10 kHz, 0.10 V, 0 A (µH)	COMMON MODE IMPEDANCE, AT 10 MHz, TYP. (Ω)	DC RESISTANCE MAX. PER WINDING (Ω)	HEAT RATING CURRENT DC TYP. (A) (1)	PEAK IMPEDANCE FREQUENCY (MHz)	LEAKAGE MAX. (µH)
SGCM05339T321_	320	540	0.0029	14.43	31.74	0.35
SGCM05339T581_	580	930	0.0049	10.69	19.87	0.45
SGCM05339T901_	900	1440	0.0077	8.71	14.06	0.65
SGCM05339T132_	1300	2080	0.0118	7.14	10.78	0.95
SGCM05339T182_	1800	2960	0.0172	5.89	8.82	1.35
SGCM05339T232_	2300	3310	0.0197	5.53	6.76	1.75
SGCM05339T292_	2900	3740	0.0278	4.71	5.93	2.75
SGCM05339T362_	3600	4000	0.0309	4.20	5.02	3.25
SGCM05339T442_	4400	4040	0.0430	3.86	4.14	4.00
SGCM05339T522_	5200	3950	0.0589	3.32	3.73	4.25
SGCM05339T612_	6100	3980	0.0638	3.19	3.49	4.50
SGCM05339T712_	7100	3920	0.0873	2.73	2.89	5.00
SGCM05339T812_	8100	3880	0.0935	2.63	2.72	5.50
SGCM05339T922_	9200	3820	0.1240	2.02	2.25	6.50
SGCM05339T103_	10 400	3600	0.1318	2.02	2.06	7.75

Notes

- All test data is referenced to 25 °C ambient
- The part temperature (ambient + temp. rise) should not exceed 130 °C under worst case operating conditions. Circuit design, component placement, PWB trace size and thickness, airflow and other cooling provisions all affect the part temperature. Part temperature should be verified in the end application
- Specify desired screening code in " " placeholder at end of part number: P = production screened, L = low earth orbit (LEO) screened, B = MIL-STD-981 class B screened, S = MIL-STD-981 class S screened

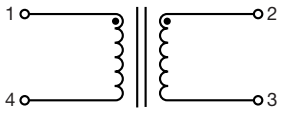
(1) DC current (A) through the windings in series that will cause an approximate ΔT of 30 °C

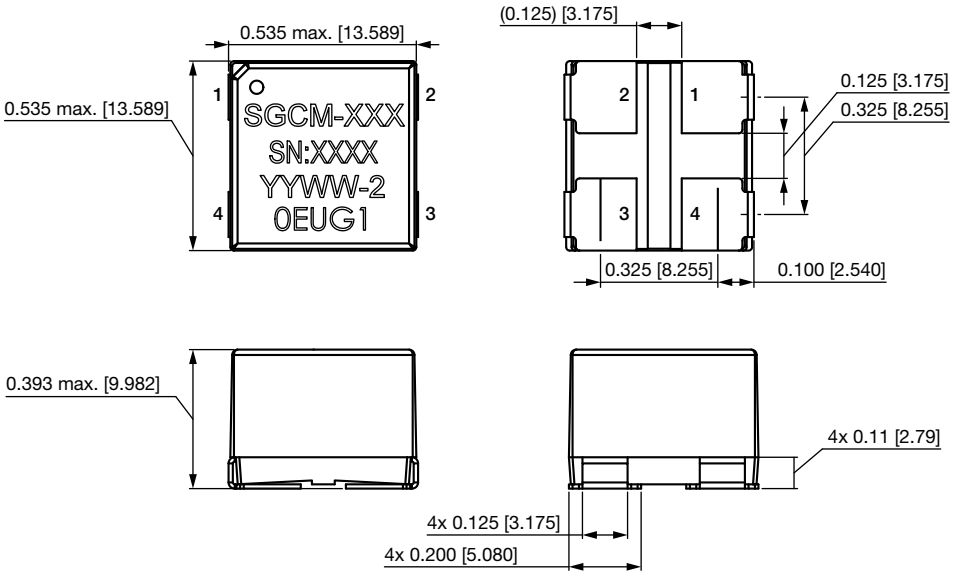
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DIMENSIONS in inches [millimeters]

Schematic 1





Terminal coplanarity 0.004"

DESCRIPTION

SGCM05539	T = TAPE	320 µH	S [1]
MODEL	PACKAGE CODE	INDUCTANCE VALUE	SCREENING CODE

Note

[1] Reference “Screening Breakdown” table

GLOBAL PART NUMBER

S G C M	0 5 3 3 9	T	3 2 1	S
PRODUCT FAMILY	SIZE	PACKAGE CODE	INDUCTANCE VALUE **321** = 320 µH	SCREENING

Note

- For additional packaging details see “Packaging Methods”

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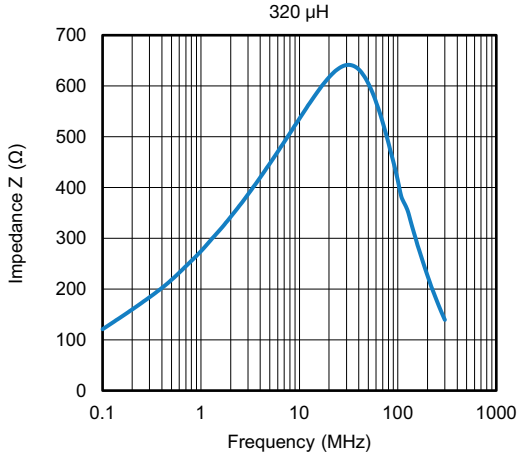
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SCREENING BREAKDOWN						
	P = PRODUCTION SCREENED	L = LOW EARTH ORBIT (LEO) SCREENED	E3 = EEE-INST-002 LEVEL 3 SCREENED	E2 = EEE-INST-002 LEVEL 2 SCREENED	B = MIL-STD-981 TABLE VI CLASS B SCREENED	S = MIL-STD-981 TABLE VI AND XII CLASS S SCREENED
PRODUCTION SCREENING (sample size = 100 %)						
Electrical characteristics (continuity, inductance (L_S), turns ratio (TR), phase, leakage inductance, DWV, insulation resistance, DCR)	✓	✓	✓	✓	✓	✓
Mechanical inspection	✓	✓	✓	✓	✓	✓
Visual inspection	✓	✓	✓	✓	✓	✓
QUALITY CONFORMANCE SCREENING (group A) (sample size = 100 %)						
5 cycle thermal shock (-55 °C to +130 °C)	n/a	n/a	✓	n/a	n/a	n/a
10 cycle thermal shock (-55 °C to +130 °C)	n/a	✓	n/a	✓	n/a	n/a
96 hour burn-in at 130 °C (unpowered)	n/a	✓	n/a	✓	✓	✓
25 cycle thermal shock (-55 °C to +130 °C)	n/a	n/a	n/a	n/a	✓	✓
Dielectric withstanding voltage (DWV)	n/a	✓	✓	✓	✓	✓
Dielectric withstanding voltage (DWV) at altitude	n/a	n/a	✓	✓	n/a	n/a
Insulation resistance (IR)	n/a	✓	✓	✓	✓	✓
Electrical characteristics (continuity, L_S, TR, phase, leakage inductance, DCR)	n/a	✓	✓	✓	✓	✓
Radiographic inspection	n/a	n/a	n/a	n/a	n/a	✓
Mechanical inspection (sampled per table V; MIL-STD-981)	n/a	✓	n/a	n/a	✓	✓
Visual inspection (100 %)	n/a	✓	✓	✓	✓	✓
QUALIFICATION INSPECTION (group B) (lot sampling)						
MIL-STD-981 table XII	n/a	n/a	n/a	n/a	n/a	✓
EEE-INST-002 Table 3	n/a	n/a	n/a	Optional	n/a	n/a

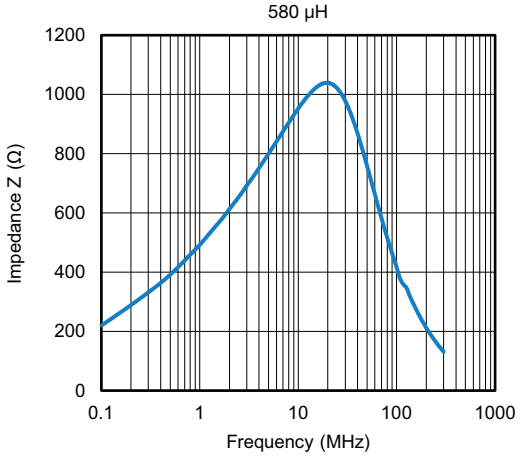
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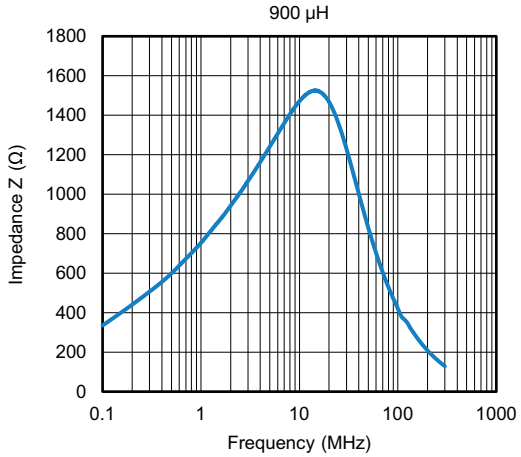
320 µH



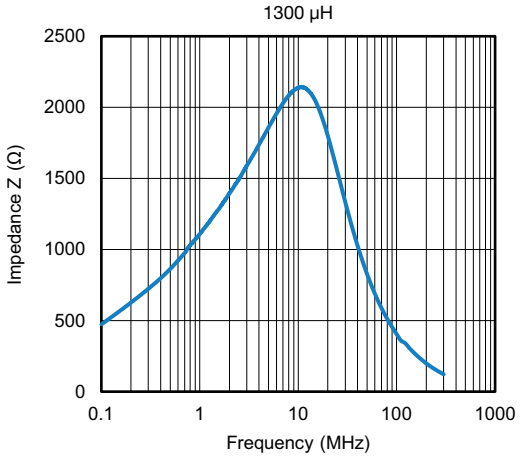
580 µH



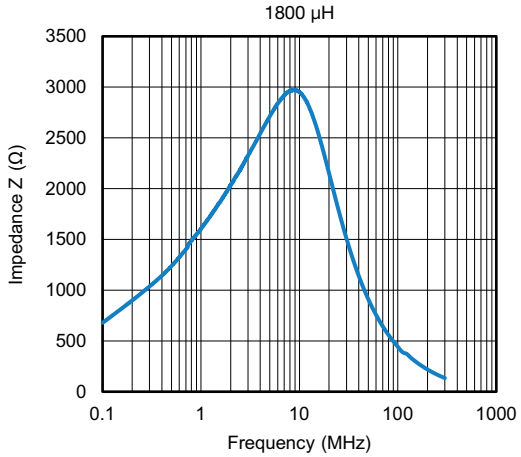
900 µH



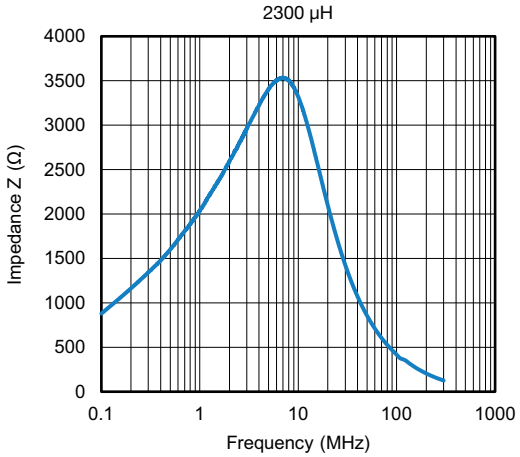
1300 µH



1800 µH



2300 µH

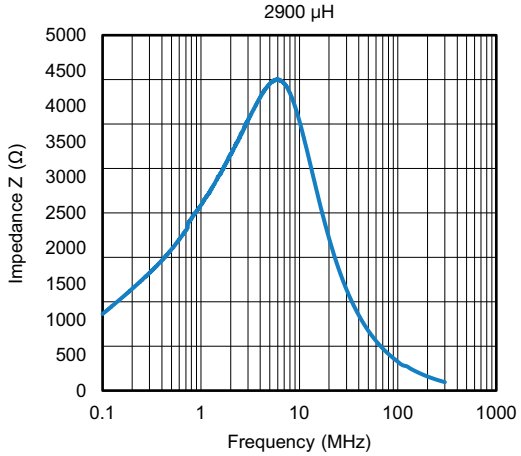


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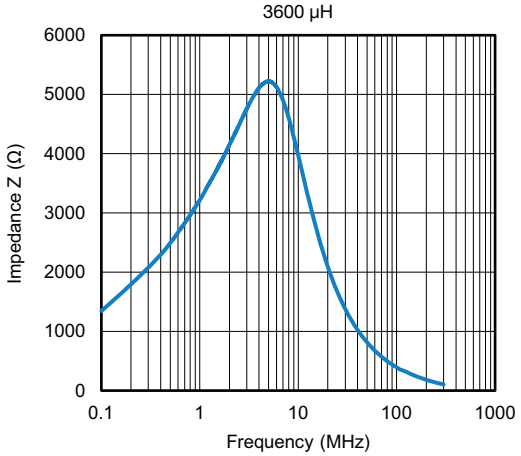
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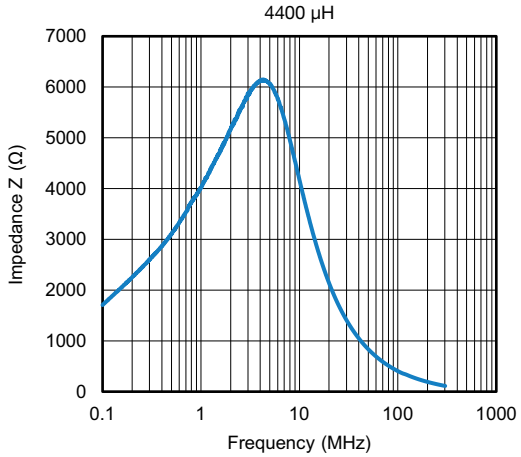
2900 µH



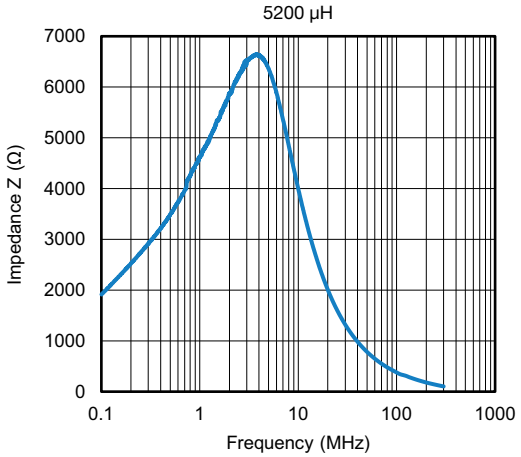
3600 µH



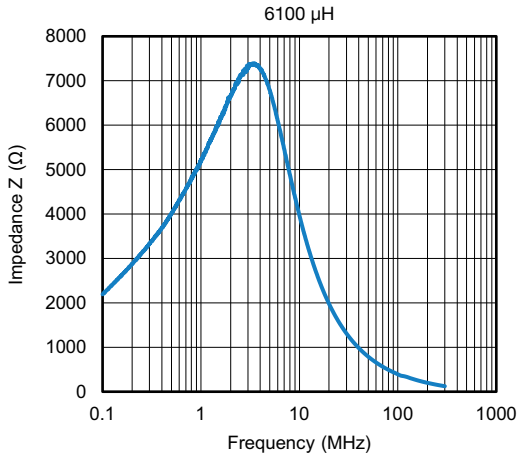
4400 µH



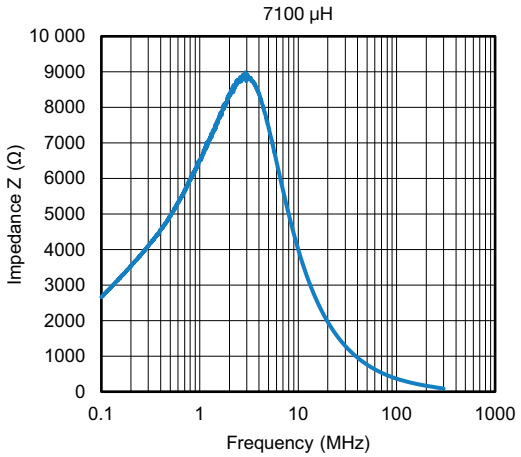
5200 µH



6100 µH



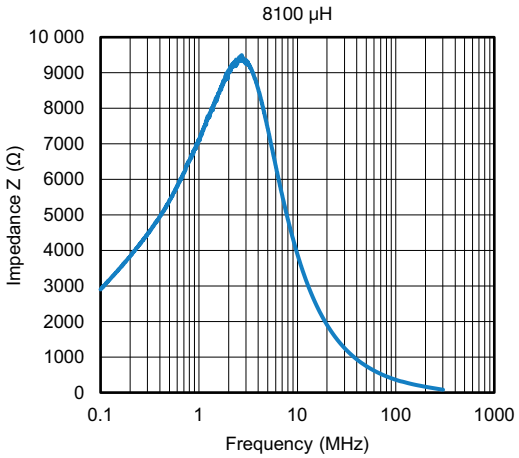
7100 µH

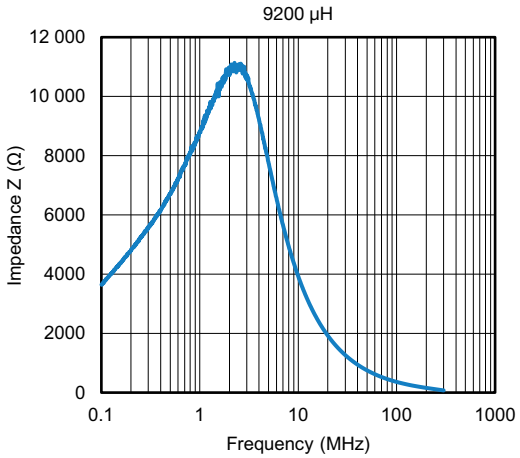


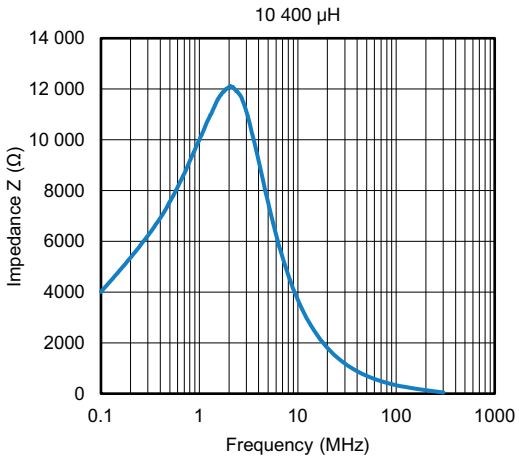
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