DOCUMENT CHANGE REQUEST

DCR number 681	Changes required for: General	Originator: Steve Thacker
Date: 2012/01/23	Date sent: 2011/09/12	Organisation: ESCC Executive Secretariat
Status: IMPLEMENTED		

Title:	Power Inductors,Moulded, SMD, based on Series SESI		
Number:	3201/009	Issue:	7

Other documents affected:

Page:

6 7 8 12 13 15 17 18

Paragraph:

Table 1(a), 4.2.5, 4.5.1, Table 2, Table 3, Table 6 (see attached mark-up)

Original wording:

Table 1(a) :
SESI 14: 82uH, correct:
LR to be 57.4uH (was 5.4uH)

SESI 14: 150uH, correct:
IR to be 0.9A (was 1.0A)
LR to be 105uH (was 84uH)
IP to be 1.1A (was 1.3A)

Para 4.2.5, amend (a) for Moisture Resistance to be "shall not be performed" (was "There shall be no polarisation voltage during test.")

Para 4.5.1, correct spelling of "too" (was "to")

Table 3, add "(Note1)" to 'Test Condition' column header

In Table 6,
For Resistance to Soldering Heat, correct the limits for DWV leakage current to be IL = - min / 0.1 mA max (was "Table 2")

For Operating Life:
Against Dielectric Withstanding Voltage, delete the limits (was "IL" = "Table 2")
Against DC Resistance, correct conditions and limits to be "Table 2 item 3" (was "Table 2 item 2")

Proposed wording:

See above & attached Mark-up (includes additional minor editorial amendments)

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Justification:

Corrections of errors introduced during the previous update to issue 7.

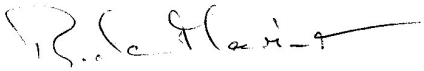
Attachments:

dcr_attachment_for_3201009(2).pdf, null

Modifications:

N/A

Approval signature:



Date signed:

2012-01-23

MARKUP 1 S.T
12/9/14

POWER INDUCTORS, MOULDED, SMD,

BASED ON SERIES SESI

ESCC Detail Specification No. 3201/009

Issue 8	September 2014
~~Issue 1~~	~~June 2011~~

Document Custodian: European Space Agency - see https://escies.org

DOCUMENTATION CHANGE NOTICE

(Refer to https://escies.org for ESCC DCR content)

DCR No.	CHANGE DESCRIPTION
~~631, 632~~ DCR TBD	Specification up issued to incorporate editorial and technical changes per DCRs. ~~(Issue 6 has been withdrawn shortly after publishing)~~

RANGE OF COMPONENTS - SESI 14 SERIES (Variant 01)

(1) Inductance (Note 1) L (µH)	(2) Tolerance ±%	(3) Rated DC Current I_R (A)	(4) Inductance at I_R (Note 2) L_R (µH)	(5) Peak Current (Note 3) I_P (A)	(6) Max. DC Resistance R_{dc} (mΩ)
3.3	20	5.8	2.3	8.0	15
4.7	20	5.4	3.3	6.9	17.5
6.0	20	4.3	4.2	5.7	26.5
8.2	20	3.7	5.7	5.2	42
10	20	3.3	7.0	4.6	47
15	20	2.7	10.5	3.8	90
22	20	2.2	15.4	3.0	110
33	20	1.8	23.1	2.5	170
47	10	1.6	32.9	2.1	200
56	10	1.5	39.2	1.9	240
68	10	1.3	47.6	1.7	290
82	10	1.2	~~54~~ 57.4	1.5	315
100	10	1.1	70	1.4	440
120	10	1.0	84	1.3	500
150	10	~~1.0~~ 0.9	~~84~~ 105	~~1.8~~ 1.1	645
180	10	0.83	126	1.0	740
220	10	0.72	154	1.0	980
330	10	0.57	231	0.8	1575

RANGE OF COMPONENTS - SESI 15 SERIES (Variants 02 and 03)

(1) Inductance (Note 1) L (µH)	(2) Tolerance ±%	(3) Rated DC Current I_R (A)	(4) Inductance at I_R (Note 2) L_R (µH)	(5) Peak Current (Note 3) I_P (A)	(6) Max. DC Resistance R_{dc} (mΩ)
1.5	30	14	0.9	19	5.0
1.8	30	10	1.05	14	5.0
2.7	20	8.2	1.9	11.5	6.5
4.9	20	6.0	3.4	8.5	11
6.4	20	5.3	4.5	7.5	12
8.0	20	4.8	5.6	6.5	16
12	20	4.0	8.4	5.5	23
16	20	3.4	11.2	4.5	27
18	20	3.1	12.6	4.2	29
21	20	2.9	14.7	4.0	36
27	20	2.6	18.9	3.5	44

(1) Inductance (Note 1) L (µH)	(2) Tolerance ±%	(3) Rated DC Current I_R (A)	(4) Inductance at IR (Note 2) LR (µH)	(5) Peak current (Note 3) I_P (A)	(6) Max. DC Resistance Rdc (mΩ)
33	20	2.3	23	3.2	59
48	10	1.9	33	2.7	72
56	10	1.8	39	2.5	82
68	10	1.6	47	2.2	110
82	10	1.5	57	2.1	120
100	10	1.35	70	1.9	155
120	10	1.2	84	1.7	180
150	10	1.1	105	1.5	230
220	10	0.9	154	1.3	355
330	10	0.74	231	1.0	630

RANGE OF COMPONENTS - SESI 18 SERIES (Variant 04)

(1) Inductance (Note 1) L (µH)	(2) Tolerance ±%	(3) Rated DC Current I_R (A)	(4) Inductance at IR (Note 2) LR (µH)	(5) Peak current (Note 3) I_P (A)	(6) Max. DC Resistance Rdc (mΩ)
6.8	20	9.8	4.2	13.6	7.5
8.2	20	8.3	5.7	11.5	9.0
11	20	7.2	7.7	10	12
15	20	6.35	10.5	8.9	15
18	20	5.7	12.6	7.9	17
22	20	5.1	15.4	7.2	20
27	20	4.7	18.9	6.5	25
37	10	4.0	25.9	5.6	29
49	10	3.5	34.3	4.8	45
56	10	3.3	39	4.6	48
70	10	2.9	49	4.1	65
86	10	2.6	60	3.7	72
100	10	2.4	70	3.3	75
120	10	2.2	84	3.1	115
150	10	1.95	105	2.7	125
180	10	1.8	126	2.6	175
220	10	1.6	154	2.3	210
330	10	1.34	231	1.9	250

RANGE OF COMPONENTS - SESI 9.1 SERIES (Variant 05)

(1) Inductance (Note 1) L (µH)	(2) Tolerance ±%	(3) Rated DC Current I_R (A)	(4) Inductance at IR (Note 2) LR (µH)	(5) Peak Current (Note 3) I_P (A)	(6) Max. DC Resistance Rdc (mΩ)
1.0	30	6.0	0.6	11.0	8.5
1.5	30	5.4	0.9	9.5	11.5
2.0	30	4.3	1.4	8.2	17
2.6	20	3.6	1.8	7.0	23
3.4	20	3.0	2.4	6.2	35
4.3	20	2.8	3.0	5.5	40
6.2	20	2.3	4.3	4.3	59
8.5	20	1.9	6.0	3.7	87
10	20	1.85	7.0	3.4	93
15	20	1.5	10.5	2.8	140
18	20	1.27	12.6	2.5	192
22	20	1.21	15.4	2.3	215
26	20	1.03	18.2	2.14	290
33	10	0.92	23.1	1.9	350
47	10	0.8	32.9	1.6	470
66	10	0.73	46.2	1.3	565
81	10	0.63	56.7	1.21	745
100	10	0.6	70	1.1	795
150	10	0.53	105	0.8	750
220	10	0.43	154	0.7	1165
330	10	0.36	231	0.6	1475
470	10	0.3	329	0.5	2220
680	10	0.25	477	0.4	3255
1000	10	0.2	700	0.34	5865

RANGE OF COMPONENTS - SESI 22 SERIES (Variant 06)

(1) Inductance (Note 1) L (µH)	(2) Tolerance ±%	(3) Rated DC Current I_R (A)	(4) Inductance at IR (Note 2) LR (µH)	(5) Peak Current (Note 3) I_P (A)	(6) Max. DC Resistance Rdc (mΩ)
7	20	18.9	3.8	24	5
7.7	20	16	5.4	20	4.5
10	20	13.8	7	17.7	5.5
13	20	12	9.1	15.6	7
19.2	20	10.9	11.5	14	11

4.2 DEVIATIONS FROM GENERIC SPECIFICATION

4.2.1 Deviations from Special In-Process Controls

None

4.2.2 Deviations from Final Production Tests (Chart II)

None.

4.2.3 Deviations from Burn-in and Electrical Measurements (Chart III)

(a) Para. 9.4, Radiographic Inspection: Shall not be performed.

4.2.4 Deviations from Qualification Tests (Chart IV)

(a) Para. 9.17, Immersion: Shall not be performed.
(b) Para. 9.18, Moisture Resistance: There shall be no polarisation voltage during test.

4.2.5 Deviations from Lot Acceptance Tests (Chart V)

(a) Para. 9.18, Moisture Resistance: ~~There shall be no polarisation voltage during test.~~ Shall not be performed.

4.3 MECHANICAL REQUIREMENTS

4.3.1 Dimension Check

The dimensions of the inductors specified herein shall be verified in accordance with the requirements set out in Para. 9.6 of ESCC Generic Specification No. 3201 and they shall conform to those shown in Figure 2 of this specification.

4.3.2 Weight

The maximum weight of the inductors specified herein shall be as given in Table 1(a) - Component Type Variants.

4.3.3 Terminal Strength

The requirements for terminal strength testing are specified in Para. 9.12 of ESCC Generic Specification No. 3201.

4.4 MATERIALS AND FINISHES

The materials and finishes shall be as specified herein. Where a definite material is not specified, a material which will enable the inductors specified herein to meet the performance requirements of this specification shall be used. Acceptance or approval of any constituent material does not guarantee acceptance of the finished product.

4.4.1 Case

As a minimum, a resin moulding shall ensure the inductor's protection.

4.4.2 Terminal Material and Finish

The terminal material shall be brass, plated with 2 to 4μm of Nickel. The final finish shall be Sn60Pb40.

4.5 MARKING

too

4.5.1 General

The marking of all components delivered to this specification shall be in accordance with the requirements of ESCC Basic Specification No. 21700 and the following paragraphs. When the component is too small to accommodate all of the marking specified, as much as space permits shall be marked and the marking information, in full, shall accompany the component in its primary package.

The information to be marked and the order of precedence, shall be as follows:

(a) The ESCC Component Number.
(b) Electrical Characteristics and Ratings.
(c) Traceability Information.

4.5.2 The ESCC Component Number

The ESCC Component Number shall be constituted and marked as follows:

320100901B

- Detail Specification Number: 3201009
- Type Variant Number (see Table 1(a)): 01
- Testing Level (B or C, as applicable): B

4.5.3 Electrical Characteristics and Ratings

The electrical characteristics and ratings to be marked in the following order of precedence are:-

(a) Numerical Value
(b) Tolerance

The information shall be constituted and marked as follows:-

4L7M

- Numerical value: 4.7µH
- Tolerance: (±20%): M

4.5.3.1 Numerical Values

The numerical values for inductance shall be expressed by means of the following codes. The unit quantity for marking shall be in microhenries.

Numerical Value	Code
X.X	XLX
XX	XX0
$XX10^{1}$	XX1
$XX10^{2}$	XX2

TABLE 2 - ELECTRICAL MEASUREMENTS AT ROOM TEMPERATURE

No.	Characteristics	Symbol	ESCC 3201 Test Method	Test Condition	Limits		Unit
					Min	Max	
01	Inductance (Note 2)	L	Para. 9.3.1.1	Para. 9.3.1.1	(1)	(1)	µH
02	Load Inductance (Note 3)	L_R	Para. 9.3.1.1	Para. 9.3.1.1	(3)	-	µH
03	DC Resistance	R_{DC}	Para. 9.3.1.4	Para. 9.3.1.4	-	(4)	Ω
04	Insulation Resistance	R_i	Para. 9.3.1.6	Para. 9.3.1.6	1.0	-	GΩ

NOTES:
1. For actual values see Column 1 and 2 of Table 1(a).
2. To be measured at 0.25V 100kHz.
3. To be measured at 0.25V 100kHz with Rated Current as defined in Column 4 of Table 1(a).
4. For actual values see Column 6 of Table 1(a).

TABLE 3 - ELECTRICAL MEASUREMENTS AT HIGH AND LOW TEMPERATURES

No.	Characteristics	Symbol	ESCC 3201 Test Method	Test Condition (Note 1)	Limits		Unit
					Min	Max	
01	Load Inductance (Note 2)	L_R	Para. 9.3.1.1	Para. 9.3.1.1	(2)	-	µH

NOTES:
1. To be performed on 5 components.
2. To be measured at 0.25V 100kHz with Rated Current as defined in Column 4 of Table 1(a).

FIGURE 4 - CIRCUITS FOR ELECTRICAL MEASUREMENTS

Not applicable.

TABLE 4 - PARAMETER DRIFT VALUES

No.	Characteristics	Symbol	Spec and/or Test Method	Test Condition	Change Limits (Δ)	Unit
01	Inductance	L	As per Table 2	As per Table 2	±10	%

TABLE 5(a) - CONDITIONS FOR BURN-IN

No.	Characteristics	Symbol	Conditions	Unit
01	Ambient Temperature	T_{amb}	+125(+0 -3)	°C

No.	ESCC Generic Spec. No. 3201		Measurements and Inspections		Symbol	Limits		Unit
	Environmental and Endurance Tests (Note 1)	Test Method and Conditions	Identification	Conditions		Min	Max	
			Final Measurements	Within 30 mins of removal from 1.5 to 3.5 hr. Conditioning	-	-	-	-
			Dielectric Withstanding Voltage	Gen. 3201 Para. 9.3.1.5				
			DWV Leakage Current	500 Vrms	I_L	-	0.1	mA
			Insulation Resistance	Table 2 Item 4	R_i	100	-	MΩ
			Inductance	Table 2 Item 1	L	Table 2 Item 1		µH
			DC Resistance	Table 2 Item 3	R_{DC}	Table 2 Item 3		Ω
			After Test					
			Visual Examination	No evidence of corrosion	-	-	-	-
13	Operating Life	Para. 9.19	**Initial Measurements**					
			Inductance	Table 2 Item 1	L	Table 2 Item 1		µH
			Intermediate Measurements	At 1000 hours After a recovery period of 30 mins	-	-	-	-
			Dielectric Withstanding Voltage	Gen. 3201 Para 9.3.1.5				
			DWV Leakage Current	500 Vrms	I_L	-	0.1	mA
			Inductance Change	Table 2 Item 1	ΔL/L	-10	+10	%
			Final Measurements	At 1000 hours and 2000 hours after a recovery period of 30 mins				
			Dielectric Withstanding Voltage	Gen. 3201 Para 9.3.1.5	~~I_L~~	~~Table 2 Item 3~~		~~mA~~
			DWV Leakage Current	500 Vrms	I_L	-	0.1	mA
			Inductance Change	Table 2 Item 1	ΔL/L	-10	+10	%
			DC Resistance	Table 2 Item 3	R_{DC}	Table 2 Item 3		Ω
			Insulation Resistance	Table 2 Item 4	R_i	100	-	MΩ

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NOTES:

1. The tests in this table refer to either Chart IV or V and shall be used as applicable.