

ECN/PCN No.: 1155

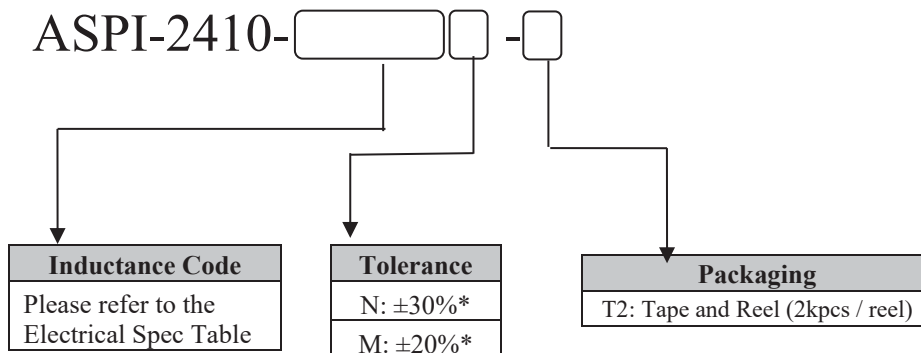
For Manufacturer			
Product Description: Power Inductor	Abracon Part Number / Part Series: ASPI-2410	<input checked="" type="checkbox"/> Series	<input type="checkbox"/> Part Number
Affected Revision: A	New Revision: B	<input type="checkbox"/> Safety	<input checked="" type="checkbox"/> Non-Safety

Prior to Change:

1.0 Key Electrical specs

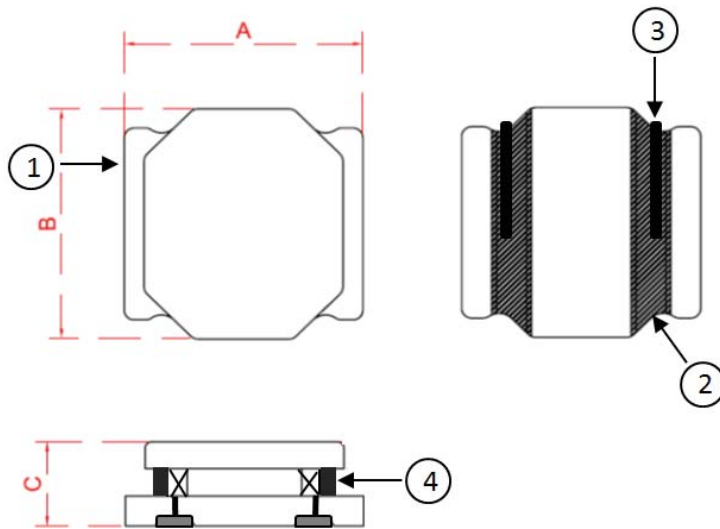
Part Number ASPI-2410- Inductance Code	Inductance	Inductance Tolerance	DCR	DCR Tolerance	Saturation Current	Temperature Rise Current
Units	μH	%	$\text{m}\Omega$	%	A	A
Symbol	L	M, N	DCR		Isat*	Irms*
ASPI-2410-R68	0.68	N	60	±30%	2.60	2.50
ASPI-2410-1R0	1.0	N	70		2.00	1.90
ASPI-2410-1R5	1.5	M	110	±20%	1.75	1.70
ASPI-2410-2R2	2.2	M	140		1.30	1.20
ASPI-2410-3R3	3.3	M	220		1.05	1.00
ASPI-2410-4R7	4.7	M	290		0.92	0.90
ASPI-2410-6R8	6.8	M	410		0.75	0.65
ASPI-2410-100	10.0	M	690		0.60	0.55
ASPI-2410-150	15.0	M	1020		0.50	0.45
ASPI-2410-220	22.0	M	1470	0.40	0.40	

4.0 Part Number Identification



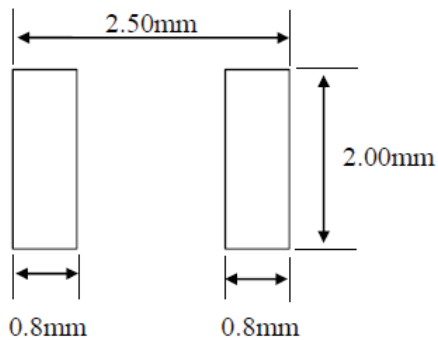
*N for L = 0.68 and 1 μH , M for L = 1.5 ~ 22 μH

5.0 Mechanical Dimensions



A	B	C Max.
2.4±0.1	2.4±0.1	1.0

5.2 Recommended Land Pattern



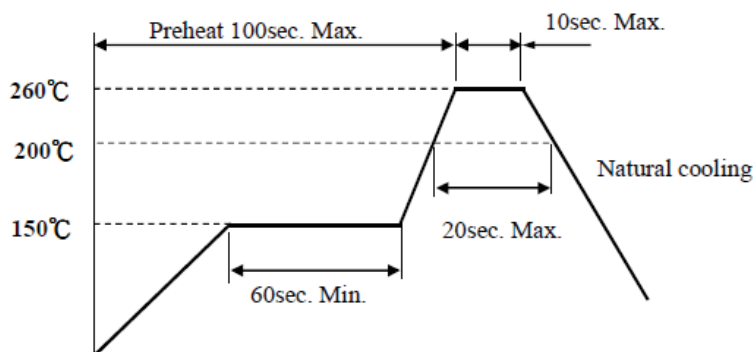
5.3 Materials

No	Part Name	Material
1	Ferrite core	Ni-Zn Ferrite
2	Terminals	Ag/Ni/Sn
3	Coil	Cu/P180 Grd 1
4	Adhesive	Silicon Base Resin
	Magnetic Powder	Ni-Zn Ferrite

6.0 Reliability Test Conditions

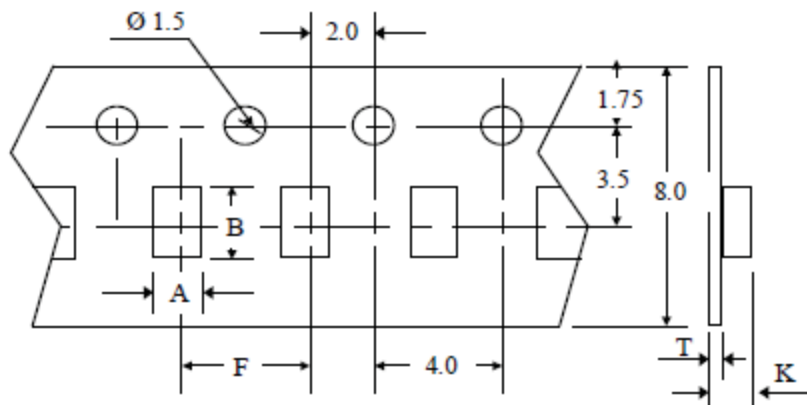
EMS	TEST METHOD	STANDARD
Solderability	Dip pads in flux and dip in solder pot (NP303) at 240°C ±5°C.	Fresh solder shall cover more than 90% of pad area.
Substrate bending	<p>The sample shall be soldered onto the PCB. The PCB shall be pushed down as shown in the figure until it is bent approximately 3mm (keep time: 5±1 seconds)</p> <p style="text-align: center;">F(Pressurization)</p> <p style="text-align: center;">PRESSURE ROD</p>	<p>$\Delta L/L_o : \leq \pm 10\%$ There shall be no mechanical damage or electrical damage.</p>
Vibration	<p>Solder specimen inductor on the test printed circuit board. Apply vibrations in each of the x, y and z directions for 2 house for a total of 6 hours. Frequency: 10~50 Hz Amplitude: 1.5mm</p>	<p>$\Delta L/L_o : \leq \pm 10\%$ There shall be no mechanical damage.</p>
High Temperature Resistance	<p>The sample shall be left for 96 hours in an atmosphere with a temperature of 85±2°C and a normal humidity. Upon completion of the test, the measurement shall be made after the sample has been left in a normal temperature and humidity for 1 hour.</p>	<p>$\Delta L/L_o : \leq \pm 10\%$ There shall be no mechanical damage or electrical damage.</p>
Low Temperature Resistance	<p>The sample shall be left for 96 hours in an atmosphere with a temperature of -30±2°C. Upon completion of the test, the measurement shall be made after the sample has been left in a normal temperature and normal humidity for 1 hour.</p>	<p>$\Delta L/L_o : \leq \pm 10\%$ There shall be no mechanical damage or electrical damage.</p>

6.1 Solder Reflow Profile

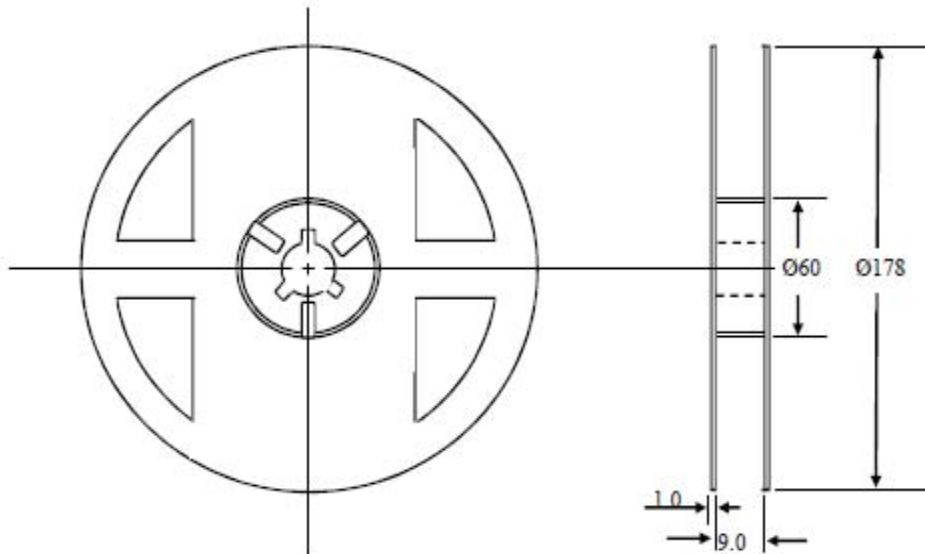


8.0 Packing

T2: 2,000pcs / reel



A	2.65
B	2.65
K	1.25
F	4
T	0.25



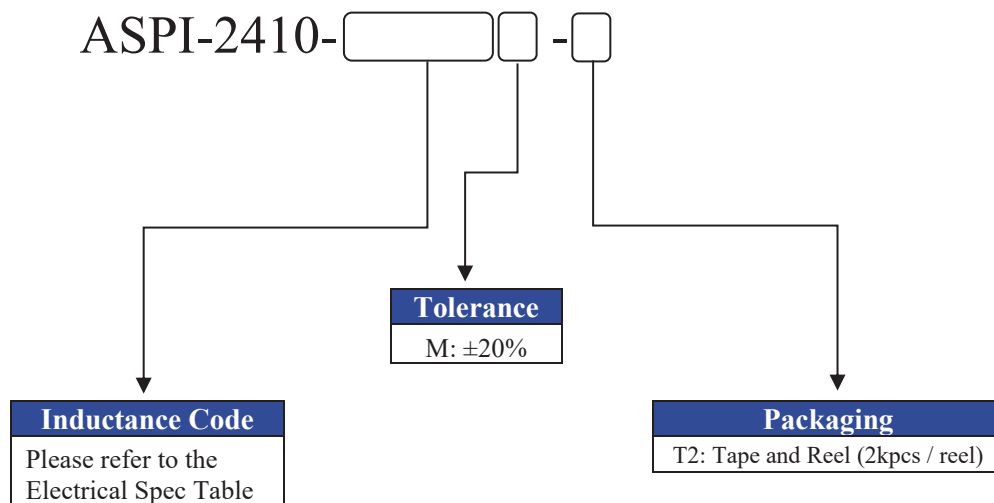
Dimension: mm

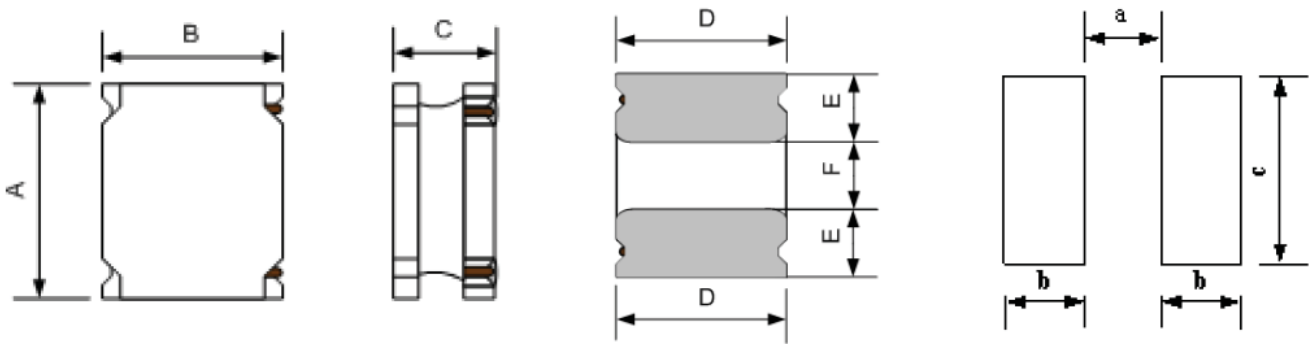
After Change:

1.0 Key Electrical specs

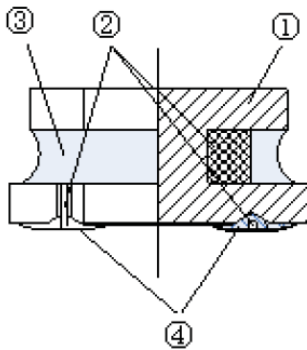
Part Number ASPI-2410- Inductance Code	Inductance	Inductance Tolerance	DC Resistance		Self-Resonant Frequency	Saturation Current	Temperature Rise Current
			Max	Typ			
Units	μH	%	$\text{m}\Omega$	$\text{m}\Omega$	MHz	A	A
Symbol	L	M, N	DCR		SRF	Isat*	Irms*
ASPI-2410-R24	0.24	M	34	28	360	3.60	2.75
ASPI-2410-R33	0.33	M	43	36	270	3.80	2.40
ASPI-2410-R47	0.47	M	44	37	170	2.40	2.40
ASPI-2410-R68	0.68	M	61	51	110	2.75	2.10
ASPI-2410-1R0	1.0	M	80	67	84	2.05	1.80
ASPI-2410-1R5	1.5	M	108	90	60	1.70	1.55
ASPI-2410-2R2	2.2	M	137	114	56	1.55	1.40
ASPI-2410-3R3	3.3	M	228	170	39	1.10	1.10
ASPI-2410-4R7	4.7	M	323	269	28	1.00	0.91
ASPI-2410-6R8	6.8	M	451	376	25	0.82	0.76
ASPI-2410-100	10.0	M	584	487	20	0.65	0.67
ASPI-2410-150	15.0	M	954	795	19	0.55	0.50
ASPI-2410-220	22.0	M	1548	1290	15	0.45	0.40
ASPI-2410-330	33.0	M	1548	1290	10	0.25	0.40

4.0 Part Number Identification



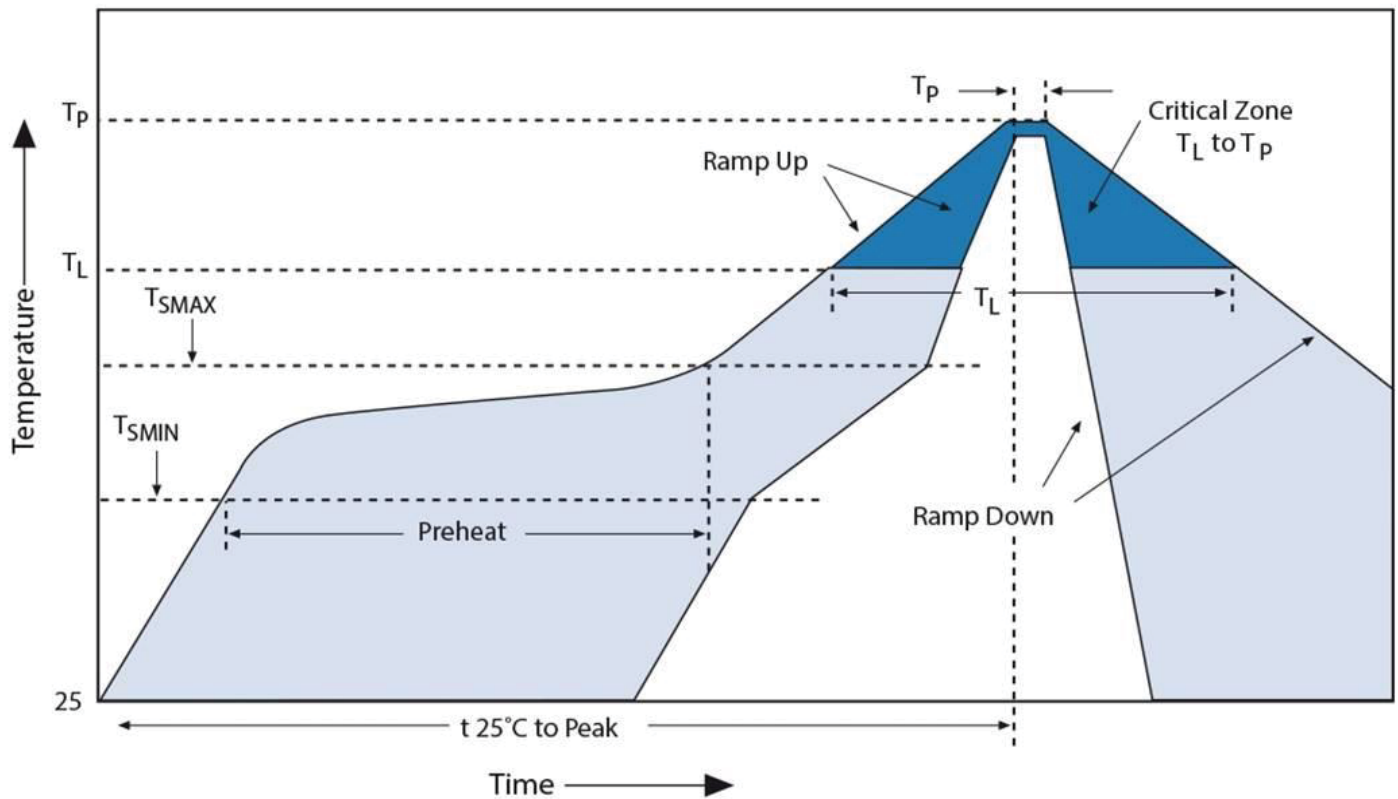
5.0 Mechanical and Material Information


A	B	C Max	D	E	F	a Typ.	b Typ.	c Typ.
2.5±0.2	2.0±0.2	1.0	2.0±0.2	0.8±0.2	0.8±0.2	0.80	0.85	2.0

5.2 Materials


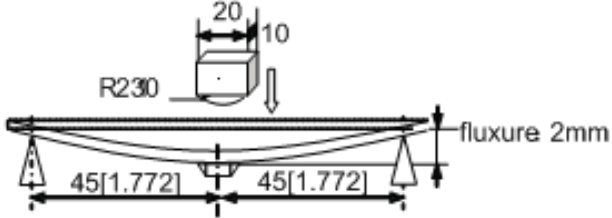
No	Part Name	Material
1	Ferrite Core	Ni-Zn Ferrite
2	Wire	Polyurethane system enameled copper wire
3	Magnetic Glue	Epoxy resin and magnetic powder
4	Electrodes	AgNiSn or FeNiCu + Sn Alloy

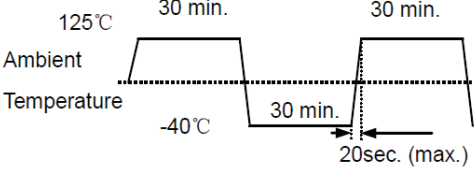
6.0 Soldering Profile



Zone	Description	Temperature	Times
1	Preheat	$T_{SMIN} \sim T_{SMAX}$ 150°C~200°C	60 ~ 120 sec.
2	Reflow	T_L 217°C	60 ~ 90 sec.
3	Peak heat	T_p 260°C±5°C	5 sec. MAX

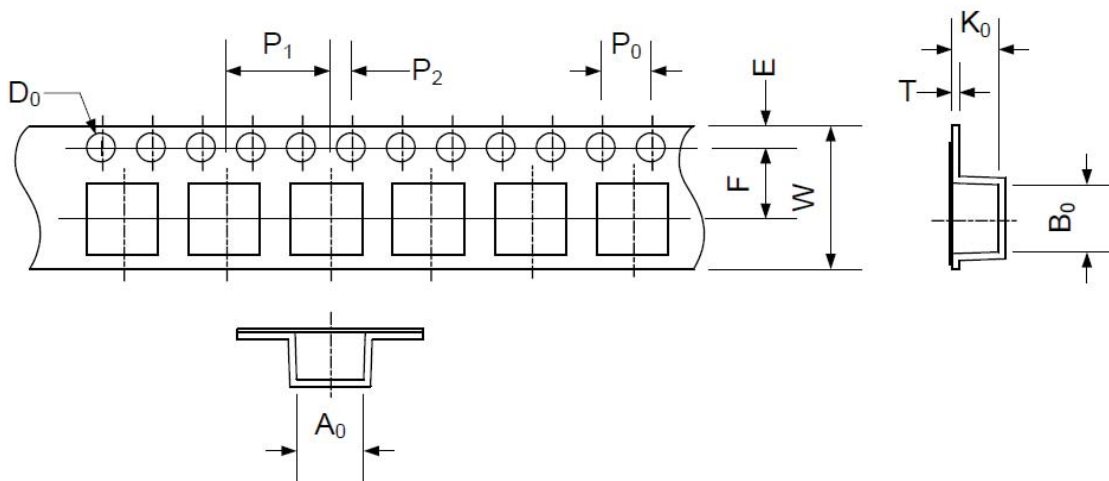
7.0 Reliability Test Conditions

ITEMS	TEST METHOD	STANDARD
Solderability	<ol style="list-style-type: none"> The test samples shall be dipped in flux, and then immersed in molten solder. Solder temperature: 245±5°C Duration: 5±1 sec. Solder: Sn/3.0Ag/0.5Cu Flux: 25% resin and 75% ethanol in weight Immersion dep 	90% or more of electrode area shall be coated by new solder.
Substrate bending	<ol style="list-style-type: none"> Solder the chip to the test jig (glass epoxy board) using eutectic solder. Then apply a force in the direction. Flexure: 2mm Pressurizing Speed: 0.5mm/sec Keep time: 30±1s Test board size: 100X40X1.0 	<p>The sample shall be soldered onto the PCB. The PCB shall be pushed down as shown in the figure until it is bent approximately 3mm (keep time: 5±1 seconds)</p> 
Vibration	<ol style="list-style-type: none"> Solder the chip to the testing jig (glass epoxy board shown as the following figure) using eutectic solder. The chip shall be subjected to a simple harmonic motion having total amplitude of 1.5mm, the frequency being varied uniformly between the approximate limits of 10 and 55 Hz. The frequency range from 10 to 55 Hz and return to 10 Hz shall be traversed in approximately 1 minute. This motion shall be applied for a period of 2 hours in each 3 mutually perpendicular directions (total of 6 hours). 	<ol style="list-style-type: none"> No visible mechanical damage $\Delta L/L_o : \leq \pm 10\%$
High Temperature Resistance	<ol style="list-style-type: none"> Temperature: 125±2°C Duration: 1000±24 hours The chip shall be stabilized at normal condition for 1~2 hours before measuring. 	$\Delta L/L_o : \leq \pm 10\%$ There shall be no mechanical damage or electrical damage.

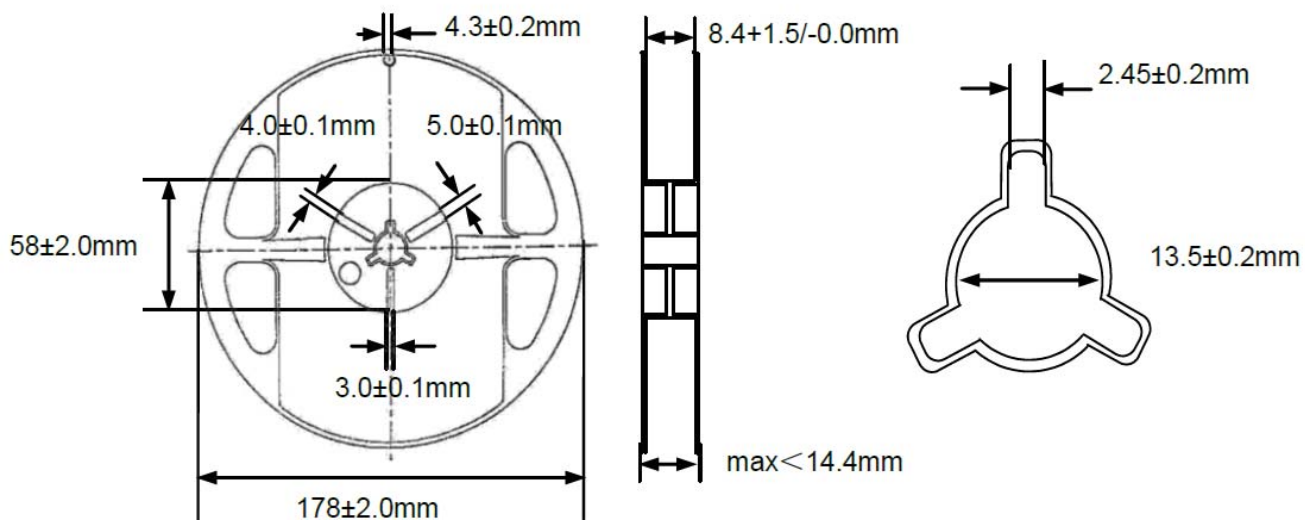
<p>Low Temperature Resistance</p>	<ol style="list-style-type: none"> 1. Temperature: $-40\pm 3^{\circ}\text{C}$ 2. Duration: 1000 ± 24 hours 3. The chip shall be stabilized at normal condition for 1~2 hours before measuring 	<p>$\Delta L/L_0 : \leq \pm 10\%$ There shall be no mechanical damage or electrical damage.</p>
<p>Thermal Shock</p>	<ol style="list-style-type: none"> 1. Temperature and time: $-40\pm 3^{\circ}\text{C}$ for 30 ± 3 min \rightarrow 125°C for 30 ± 3 min 2. Transforming interval: Max. 20 sec 3. Tested cycle: 100 cycles 4. The chip shall be stabilized at normal condition for 1~2 hours before measuring  <p>The graph shows a temperature profile with three cycles. Each cycle consists of a 30-minute dwell at 125°C, a transition to -40°C (labeled as 20sec. (max.)), a 30-minute dwell at -40°C, and a transition back to Ambient (labeled as 20sec. (max.)).</p>	<p>$\Delta L/L_0 : \leq \pm 10\%$ There shall be no damage of problems.</p>
<p>Moisture Storage</p>	<ol style="list-style-type: none"> 1. Temperature: $60\pm 2^{\circ}\text{C}$ 2. Humidity: 90% to 95%RH 3. Duration: 1000 ± 24 hours 4. The chip shall be stabilized at normal condition for 1~2 hours before measuring 	<p>$\Delta L/L_0 : \leq \pm 10\%$ There shall be no mechanical damage.</p>
<p>COMPONENT ADHESION (PUSH TEST)</p>	<p>The device should be reflow soldered ($245\pm 5^{\circ}\text{C}$ for 10 seconds) to a copper substrate. A dynamometer force gauge should be applied to the side of the component.</p>	<p>The device must withstand a minimum force of 10N without failure of the termination attached to component.</p>

8.0 Packaging

T2: 2,000pcs / reel



A0	B0	W	E	F	P0	P1	P2	D0	T	K0
2.45 ±0.05	2.75 ±0.05	8.0 ±0.1	1.75 ±0.1	3.5 ±0.05	4.0 ±0.1	4.0 ±0.1	2.0 ±0.05	1.5 +0.1/-0.0	0.25 ±0.0 3	1.20 ±0.05



Dimension: mm

Cause/Reason for Change:

This is a general SCD update and does not affect the products form, fit or function. Landing pattern differences are minimal and will not affect products solderability. Updates to electrical parameters, mechanical graphics, solder profile graphics, etc. Added Typical DCR and SRF columns. Added the following inductance values to the series:

R24, R33, R47, 330

Change Plan

Effective Date: <div style="text-align: center;">4/7/2020</div>	Additional Remarks:
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Change Declaration:
 This is a general SCD update and does not affect the products form, fit or function.

Issued Date: <div style="text-align: center;">4/7/2020</div>	Issued By:	Issued Department:
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Approval:	Approval:	Approval:
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For Abracon EOL only

Last Time Buy (if applicable):	Alternate Part Number / Part Series:
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Additional Approval:	Additional Approval:	Additional Approval:
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Customer Approval (If Applicable)

Qualification Status:

Approved Not accepted

Note: It is considered approved if there is no feedback from the customer 1 month after ECN/PCN is released.

Customer Part Number:	Customer Project:
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Company Name:	Company Representative:	Representative Signature:
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Customer Remarks: