

FrelTec GmbH

Mathildenstr. 10A
82319 Starnberg
Germany

Shielded SMD Power Inductors

SMD

SPECIFICATION

Part Number

116	0420*	3U3*	M	L0Z**	1**
Type	Size	Value	Tolerance	Packing	Optional
116 : Shielded SMD Power Inductor	0421: 4,1×2,1	The value is given in μH and "u" indicates the decimal point. When higher than 100 μH then l the last digit is the multiplier	M: $\pm 20\%$	L0Z : Embossed tape and reel for 3,5k pcs (13"reel) for 0421	1 for optional
	0520: 5,0×2,0			L03 : Embossed tape and reel for 3k pcs (13"reel) for 0520	
	0530: 5,0×3,0			L0Y : Embossed tape and reel for 2,5k pcs (13"reel) for 0530	
	0620: 6,8×2,0			L02 : Embossed tape and reel for 2k pcs (13"reel) for 0620, 0625	
	0625: 6,8×2,5	which denotes the number of zero following		L0X : Embossed tape and reel for 1,5k pcs (13"reel) for 0631	
	0631: 6,8×3,0	Example:		L0Q : Embossed tape and reel for 800pcs (13"reel) for 0650 and 1040	
	0650: 6,8×5,0	3U3 : 3,3 μH		L0A : Embossed tape and reel for 500pcs (13"reel) for 1340, 1350, 1365	
	1040: 10,4×4,0	220 : 22 μH		* not all combination is possible	
	1340: 13,0×4,0	101 : 100 μH			
	1350: 13,0×5,0				
	1365: 13,0×6,5				

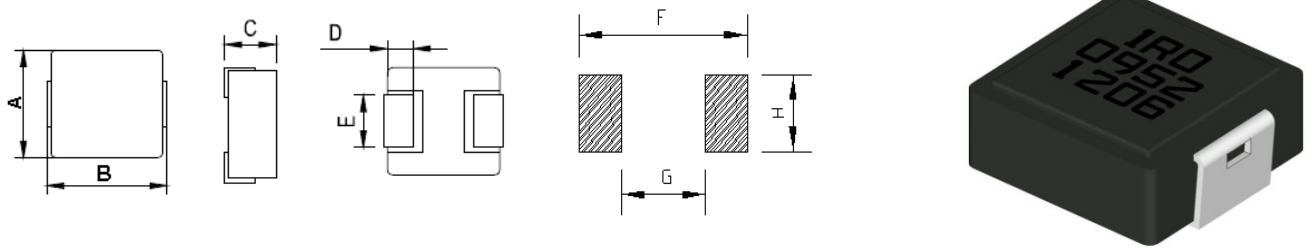
All products according to RoHS (2015/863/EU)

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Dimensions and recommended PCB pattern for reflow soldering:



Type	A	B	C max.	D	E	F	G	H
0421	4,1±0,5	4,5±0,5	2,1	0,8±0,5	2,0±0,5	1,5	2,5	2,2
0520	5,0±0,5	5,5±0,5	2,0	1,2±0,5	2,0±0,5	2,0	3,0	2,5
0530	5,0±0,5	5,5±0,5	3,0	1,2±0,5	2,0±0,5	2,0	3,0	2,5
0620	6,8 max	7,6 max	2,0	1,6±0,5	2,9±0,5	2,5	3,7	3,5
0625	6,8 max	7,6 max	2,5	1,6±0,5	2,9±0,5	2,5	3,7	3,5
0631	6,8 max	7,6 max	3,0	1,6±0,5	2,9±0,5	2,5	3,7	3,5
0650	6,8 max	7,6 max	5,0	1,6±0,5	2,9±0,5	2,5	3,7	3,5
1040	10,4 max	11,5 max	4,0	2,2±0,5	2,9±0,5	3,5	6,0	4,0
1340	13,0 max	14,2 max	4,0	2,3±0,5	3,6±0,5	2,9	7,9	5,0
1350	13,0 max	14,2 max	5,0	2,3±0,5	3,6±0,5	2,9	7,9	5,0
1365	13,0 max	14,2 max	6,5	2,3±0,5	3,6±0,5	2,9	7,9	5,0

unit: mm

Inductance and rated current ranges

0421	0,10µH~3,3µH	@Saturation Current: 22~4A
0520	0,10µH~4,7µH	@Saturation Current: 45~5A
0530	0,10µH~4,7µH	@Saturation Current: 27~8,2A
0620	0,10µH~4,7µH	@Saturation Current: 40~8A
0625	0,10µH~10µH	@Saturation Current: 50~7A
0631	0,10µH~22µH	@Saturation Current: 60~7A
0650	0,56µH~15µH	@Saturation Current: 12~4,5A
1040	0,19µH~10µH	@Saturation Current: 90~8A
1340	0,10µH~10µH	@Saturation Current: 84~14A
1350	0,10µH~10µH	@Saturation Current: 118~16A
1365	0,10µH~22µH	@Saturation Current: 120~10A

Test equipment:

L: HP4284A LCR meter

DCR: Milli-ohm meter

Electrical specifications at 25°C

Operating temperature range: -40°C~+125°C

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Electrical Characteristics

Codes	Inductance (uH)	Tolerance	Test Condition	DCR (mΩ) Max.	Saturation Current (A) Max.	Temperature Rise Current (A) Max.
1160421U10	0,10	M	100KHz, 0,25V	4,0	22,0	12,0
1160421U22	0,22			6,6	12,5	9,0
1160421U47	0,47			14	9,5	7,0
1160421U56	0,56			16	8,5	6,5
1160421U68	0,68			18	9,0	6,0
11604211U0	1,0			27	7,0	4,5
11604211U5	1,5			46	6,0	4,0
11604212U2	2,2			58	5,0	3,0
11604213U3	3,3			87	4,0	2,5
1160520U10	0,10			3,9	45,0	17,0
1160520U22	0,22			5,2	22,0	15,0
1160520U33	0,33			8,2	25,0	12,0
1160520U47	0,47			9,4	21,0	11,5
1160520U68	0,68			12,4	15,0	10,0
11605201U0	1,0			20,0	16,0	7,0
11605202U2	2,2			50,1	9,5	4,2
11605203U3	3,3			85,5	8,5	3,3
11605204U7	4,7			116,6	5,0	2,8
1160530U10	0,10			3,16	27,0	23,0
1160530U22	0,22			4,52	21,0	15,5
1160530U33	0,33			5,56	19,0	13,7
1160530U47	0,47			7,04	16,0	12,2
1160530U68	0,68			8,96	13,5	10,2
1160530U82	0,82			11,9	13,0	9,3
11605301U0	1,0			13,7	12,0	9,2
11605301U5	1,5			20,7	11,0	7,2
11605302U2	2,2			29,2	10,0	5,8
11605303U3	3,3			54,7	8,5	5,0
11605304U7	4,7			77,5	8,2	3,5
1160620U10	0,10			3,5	40,00	18,00
1160620U15	0,15			5,2	38,00	15,00
1160620U22	0,22			5,7	26,00	14,00
1160620U33	0,33			7,0	18,00	12,00
1160620U47	0,47	9,3	18,00	11,00		
1160620U68	0,68	13,9	17,00	9,00		
1160620U82	0,82	15,9	17,00	8,00		
11606201U0	1,0	18,3	14,00	7,00		

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11606201U5	1,5			34,0	13,00	4,00
11606202U2	2,2			46,0	11,50	3,75
11606203U3	3,3			60,1	10,00	3,25
11606204U7	4,7			78,0	8,00	3,00
1160625U10	0,10			1,7	50,0	30,0
1160625U22	0,22			3,2	34,0	21,0
1160625U33	0,33			4,1	22,0	18,0
1160625U47	0,47			6,5	21,0	13,5
1160625U68	0,68			9,4	18,0	11,0
1160625U82	0,82			11,8	17,0	10,0
11606251U0	1,0			14,2	16,0	9,0
11606251U5	1,5			21,2	15,0	7,5
11606252U2	2,2			34,0	14,0	6,5
11606253U3	3,3			51,6	13,0	5,0
11606254U7	4,7			63,0	10,0	4,5
11606256U8	6,8			95,0	9,0	3,5
11606258U2	8,2			106,0	8,0	3,0
1160625100	10			129,0	7,0	2,5
1160631U10	0,10		100KHz, 0,25V	1,7	60,0	32,5
1160631U22	0,22			2,8	40,0	23,0
1160631U33	0,33			3,9	30,0	20,0
1160631U47	0,47			4,2	26,0	17,5
1160631U56	0,56			4,5	24,5	16,5
1160631U68	0,68			5,5	25,0	15,5
1160631U82	0,82			8,0	24,0	13,0
11606311U0	1,0			10,0	22,0	11,0
11606311U5	1,5			15,0	18,0	9,0
11606312U2	2,2			20,0	14,0	8,0
11606313U3	3,3			30,0	13,5	6,0
11606314U7	4,7			40,0	10,0	5,5
11606316U8	6,8			60,0	8,0	4,5
11606318U2	8,2			68,0	7,5	4,0
1160631100	10			105,0	7,0	3,0
1160631220	22			160,0	4,5	2,0
11606312201	22		100KHz, 1V	190,0	3,5Typ.	2,Typ0
1160650U56	0,56		100KHz, 0,25V	3,6	12,0	20,0
1160650U68	0,68		100KHz, 0,25V	4,5	11,5	18,0
1160650U82	0,82		100KHz, 0,25V	4,9	13,0	16,5
11606501U0	1,0		100KHz, 0,25V	6,5	15,0	13,0
11606501U5	1,5		100KHz, 0,25V	9,0	12,0	12,0
11606502U2	2,2		100KHz, 0,25V	13,6	10,0	10,0
11606503U3	3,3		100KHz, 0,25V	20,9	8,0	8,0

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11606504U7	4,7			30,3	7,0	6,5
11606505U6	5,6			34,4	7,0	6,0
11606506U8	6,8			44,6	5,5	5,5
11606508U2	8,2			50,7	5,0	5,0
1160650100	10			71,3	4,5	4,5
1161040U19	0,19			0,95	90,0	40,0
1161040U22	0,22			0,95	90,0	40,0
1161040U36	0,36			1,40	60,0	31,5
1161040U47	0,47			1,60	38,0	26,0
1161040U56	0,56			1,80	49,0	27,5
1161040U68	0,68			2,40	42,0	23,0
11610401U0	1,0			4,10	36,0	17,5
11610401U5	1,5			5,80	27,5	15,0
11610402U2	2,2			9,00	25,6	12,0
11610403U3	3,3			11,80	18,6	10,0
11610404U7	4,7			16,50	17,0	9,5
11610405U6	5,6			19,30	16,0	8,5
11610406U8	6,8			23,30	13,5	8,0
1161040100	10			36,50	12,0	6,8
1161040150	15			60,00	8,0	5,0
1161340U10	0,10	M	100KHz, 0,25V	0,96	84,0	43,0
1161340U15	0,15			1,20	75,0	41,0
1161340U22	0,22			1,30	65,0	38,5
1161340U33	0,33			1,50	62,0	36,5
1161340U47	0,47			2,00	55,0	32,0
1161340U60	0,60			2,20	51,0	29,0
1161340U68	0,68			2,50	49,0	28,0
1161340U82	0,82			3,00	44,0	25,0
11613401U0	1,0			3,50	40,0	24,0
11613401U5	1,5			5,50	35,0	19,0
11613401U8	1,8			7,00	30,0	16,5
11613402U2	2,2			8,00	29,0	16,0
11613403U3	3,3			12,00	27,0	12,0
11613404U7	4,7			15,00	24,0	10,0
11613405U6	5,6			19,00	19,0	9,5
11613406U8	6,8			22,00	18,0	9,0
11613408U2	8,2			28,00	16,0	8,5
1161340100	10			34,00	14,0	7,0
1161350U10	0,10			0,6	118,0	55,0
1161350U22	0,22			0,8	110,0	51,0
1161350U33	0,33			1,1	80,0	42,0
1161350U47	0,47			1,3	65,0	38,0

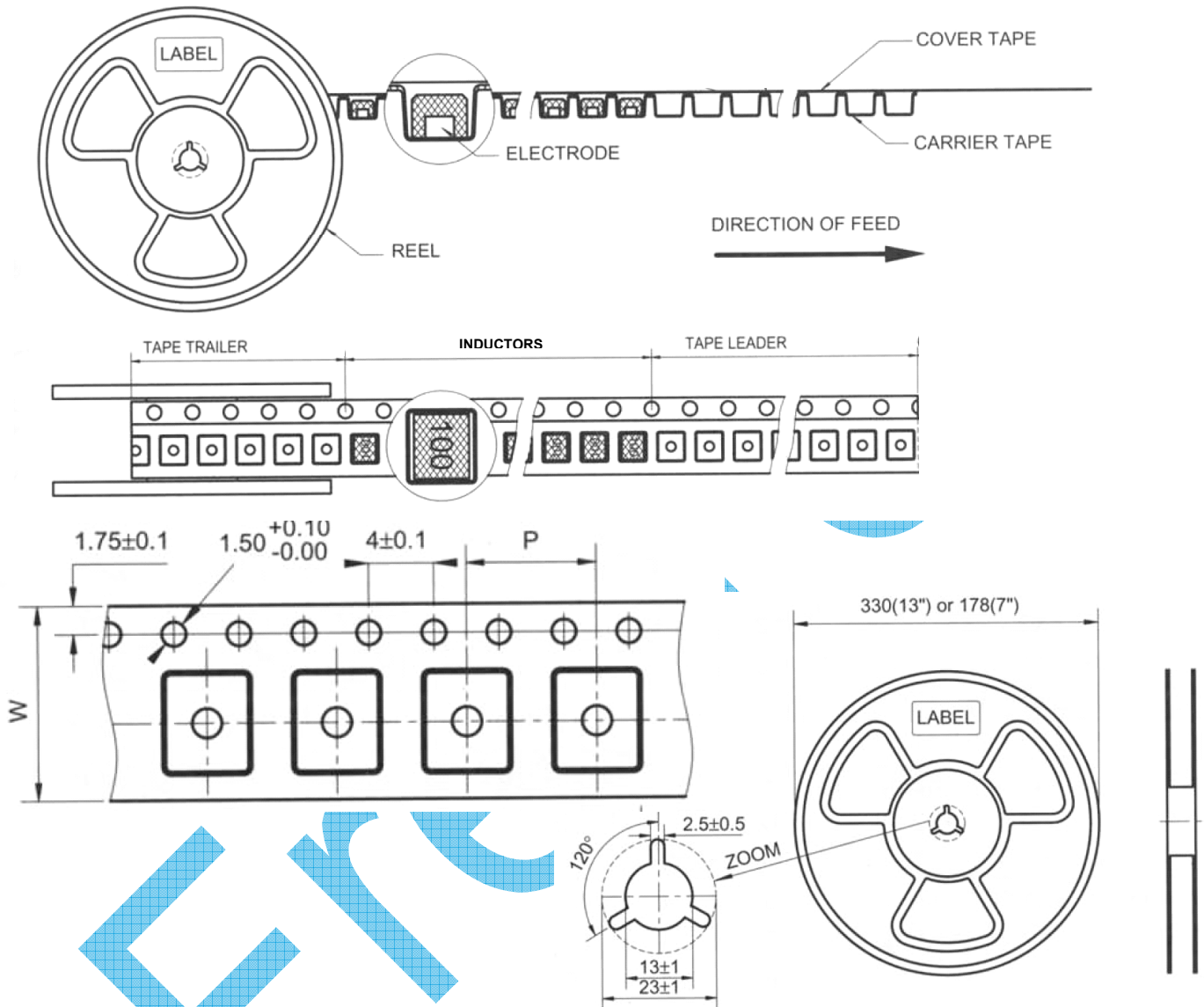
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1161350U56	0,56	M	100KHz, 0,25V	1,5	55,0	36,0
1161350U68	0,68			1,7	54,0	34,0
1161350U82	0,82			2,3	53,0	31,0
11613501U0	1,0			2,5	50,0	29,0
11613501U5	1,5			4,1	48,0	23,0
11613501U8	1,8			4,9	40,0	19,0
11613502U2	2,2			5,5	32,0	20,0
11613503U3	3,3			9,2	32,0	15,0
11613504U7	4,7			15,0	27,0	12,0
11613505U6	5,6			16,5	22,0	11,5
11613506U8	6,8			18,5	21,0	11,0
11613507U8	7,8			20,5	18,0	10,0
11613508U2	8,2			22,5	18,0	9,5
1161350100	10			25,5	16,0	9,0
1161365U10	0,10			0,5	120,0	60,0
1161365U15	0,15			0,6	118,0	55,0
1161365U22	0,22			0,7	112,0	53,0
1161365U30	0,30			0,8	72,0	48,0
1161365U33	0,33			0,9	65,0	46,0
1161365U40	0,40			1,0	64,0	44,0
1161365U47	0,47			1,2	63,0	41,0
1161365U56	0,56			1,4	62,0	37,0
1161365U68	0,68			1,6	60,0	35,0
1161365U82	0,82			1,9	50,0	33,0
11613651U0	1,0			2,0	49,0	32,0
11613651U01	1,0			2,0	49,0	32,0
11613651U2	1,2			2,5	48,0	30,0
11613651U5	1,5			3,0	45,0	27,0
11613651U8	1,8			3,2	41,0	24,0
11613652U2	2,2			4,2	40,0	22,0
11613653U3	3,3			6,8	35,0	18,0
11613654U7	4,7			8,7	32,0	13,5
11613655U6	5,6			10,0	32,0	13,5
11613656U8	6,8			14,0	16,5	11,5
11613658U2	8,2			15,5	16,0	10,5
1161365100	10			17,2	15,5	10,0
11613651001	10	17,2	15,5	10,0		
1161365220	22	40,0	10,0	10,0		

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Tape and Reel Dimensions



Type	Tape size	
	W	P
0421	12	8
0520		
0530		
0620	16	12
0625		
0631		
0650		
1040	24	16
1340		
1350		
1365		

unit: mm

10/12/2022

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Please read cautions and warnings and important notes at the end of this document.

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Characteristics

Operating temperature range: -40°C to +125°C

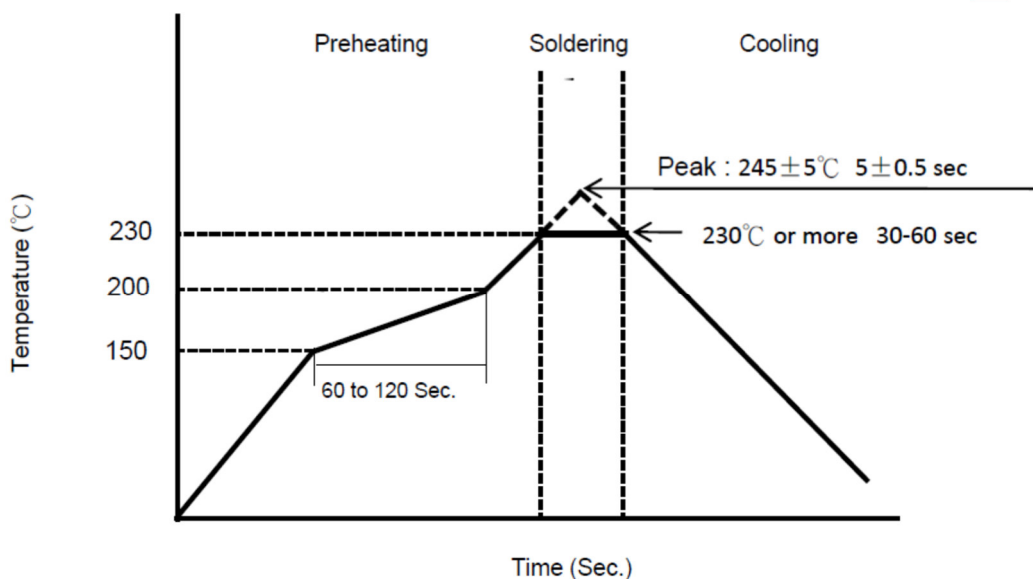
The part temperature (ambient +temp rise) should not exceed 125°C under worse case operating conditions. Circuit design, component placement, PWB trace size and thickness, airflow and other cooling provision all affect the part temperature. Part temperature should be verified in the end application.

The rated current as listed is either the saturation current or the heating current depending on with value is lower.

Typical Saturation DC Current would cause Lo to drop approximately 30% (Typical).

Typical Heat Rating DC Current would cause an approximately ΔT of 40°C

Lead Free Reflow Soldering Profile



Stock period

The performance of these products, including the solderability, is guaranteed for 6 month after production date code, provided that they remain packed as they were when delivered and stored at a temperature of 25°C ± 3°C and a relative humidity less than 80%RH

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General Characteristics

Item	Requirement	Test Method															
Solderability	More than 90% of the terminal electrode should be covered with solder	230±5°C for 4±1 seconds															
Solder Heat Resistance	Inductance within ±20% of initial value No disconnection or short circuit The appearance shall not break	260±5°C for 10±1 seconds															
Heat Resistance		Temperature: 125±5°C Time: 500 hours Tested after 2 hours at room temperature															
Cold Resistance		Temperature: -40±5°C Time: 500 hours Tested after 2 hours at room temperature															
Thermal Shock		One cycle: <table border="1"> <thead> <tr> <th>Step</th> <th>Temperature (°C)</th> <th>Time (min.)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>-40±5°C</td> <td>30</td> </tr> <tr> <td>2</td> <td>Room temperature</td> <td>3</td> </tr> <tr> <td>3</td> <td>125±5°C</td> <td>30</td> </tr> <tr> <td>4</td> <td>Room temperature</td> <td>3</td> </tr> </tbody> </table>	Step	Temperature (°C)	Time (min.)	1	-40±5°C	30	2	Room temperature	3	3	125±5°C	30	4	Room temperature	3
Step		Temperature (°C)	Time (min.)														
1	-40±5°C	30															
2	Room temperature	3															
3	125±5°C	30															
4	Room temperature	3															
Humidity Resistance	Temperature: 40±2°C, 90~95% relative humidity Time: 500 hours Tested after 2 hours at room temperature																
Vibration Test	Inductance within ±5% of initial value The appearance shall not break	After vibration for 1hour, in each of three orientations at sweep vibration (10~55~10Hz) with 1,52 mm P-P amplitudes															

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