WCL2520

Wire wound chip inductor

Product features

- 1008 (2520 metric) package
- High Q value
- Tight inductance tolerance
- Inductance range from 0.12 uH to 220 uH
- Moisture sensitivity level (MSL): 1

Applications

- Industrial connectivity (IoT)
- Computing/gaming consoles
- Smart meters
- Industrial equipment
- Machine-to-machine (M2M)
- Mobile phones
- Wearable devices
- Wireless LAN
- Wireless communiations
  - Bluetooth
  - WiFi
  - Antenna
- RF transciever modules

Environmental data

- Operating temperature range: -40 °C to +85 °C
- Solder reflow temperature:
  J-STD-020 (latest revision) compliant

Pb HALOGEN HF FREE RoHS

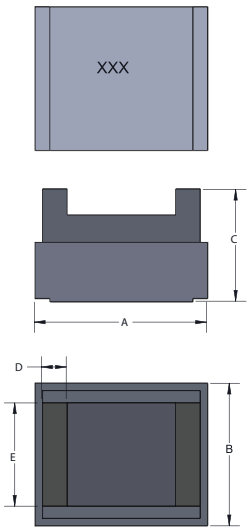
Powering Business Worldwide

Product specifications

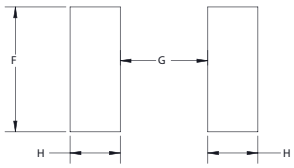
Part number	OCL (uH) ±5%	I Rated (mA) maximum	OCL Test frequency (MHz)	Test voltage (mV)	DCR (Ω) maximum @ +25°C	SRF (MHz) minimum	Q minimum	Q Test frequency (MHz)
WCL2520-R120-R	0.12	800	25.2	500	0.15	850	12	25.2
WCL2520-R390-R	0.39	600	25.2	500	0.29	480	12	25.2
WCL2520-R560-R	0.56	600	25.2	500	0.42	330	12	25.2
WCL2520-R680-R	0.68	600	25.2	500	0.45	330	12	25.2
WCL2520-R820-R	0.82	600	25.2	500	0.62	300	12	25.2
WCL2520-1R0-R	1.0	580	25.2	500	0.55	300	12	25.2
WCL2520-1R2-R	1.2	550	7.96	500	0.75	250	12	7.96
WCL2520-1R5-R	1.5	400	7.96	500	0.85	230	12	7.96
WCL2520-1R8-R	1.8	320	7.96	500	0.95	168	12	7.96
WCL2520-2R2-R	2.2	315	7.96	500	1.3	150	12	7.96
WCL2520-2R7-R	2.7	300	7.96	500	1.4	100	12	7.96
WCL2520-3R3-R	3.3	280	7.96	500	1.5	80	12	7.96
WCL2520-3R9-R	3.9	250	7.96	500	1.55	60	12	7.96
WCL2520-4R7-R	4.7	210	7.96	500	1.72	50	12	7.96
WCL2520-5R6-R	5.6	190	7.96	500	1.9	40	12	7.96
WCL2520-6R8-R	6.8	175	7.96	500	2.0	35	12	7.96
WCL2520-8R2-R	8.2	160	7.96	500	2.2	25	12	7.96
WCL2520-100-R	10	155	2.52	500	2.5	25	10	2.52
WCL2520-120-R	12	145	2.52	500	2.6	20	10	2.52
WCL2520-150-R	15	130	2.52	500	3.0	20	10	2.52
WCL2520-180-R	18	130	2.52	500	3.0	20	10	2.52
WCL2520-220-R	22	105	2.52	500	3.9	18	10	2.52
WCL2520-270-R	27	100	2.52	500	4.0	10	10	2.52
WCL2520-330-R	33	85	2.52	500	4.8	8	10	2.52
WCL2520-390-R	39	80	2.52	500	5.0	7	10	2.52
WCL2520-470-R	47	60	2.52	500	5.7	7	10	2.52
WCL2520-560-R	56	55	2.52	500	6.0	6.5	10	2.52
WCL2520-680-R	68	50	2.52	500	6.7	6.5	10	2.52
WCL2520-820-R	82	45	2.52	500	7.5	6.5	10	2.52
WCL2520-101-R	100	40	0.796	500	11	4.5	8	0.796
WCL2520-121-R	120	30	0.796	500	13	3	8	0.796
WCL2520-151-R	150	25	0.796	500	15	3	8	0.796
WCL2520-221-R	220	20	0.796	500	18	2.5	8	0.796

1. Test frequency and voltage at +25 °C. Test voltage is for both OCL and Q.
2. Resistance to soldering heat: +260 ±5 °C for 10 ± 1 second
3. At low temperature resistance (-40 ±2°C) the inductance change is within ±5% and the Q within ±10%
4. At high temperature resistance (+85 ±5°C) the inductance change is within ±5% and the Q within ±10%
5. At high temperature load (+85 ±2°C) the inductance change is within ±5% and the Q within ±10%
6. Insulation Resistance: ≥ 500 MΩ with an input voltage of 100 V ±15 Vdc
7. Temperature Characteristics: From -40 °C to +85 °C the inductance is within ±5%
8. Rated I: When rated I is applied to the product, self-temperature rise will be 20 °C or less.
9. Part Number Definition: WCL2520-xxx-R
   WCL2520 = Product code and size
   xxx= inductance value in uH, R= decimal point,
   If no R is present then last character equals number of zeros
   -R suffix = RoHS compliant

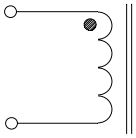
Dimensions (mm)



Recommended pad layout



Schematic



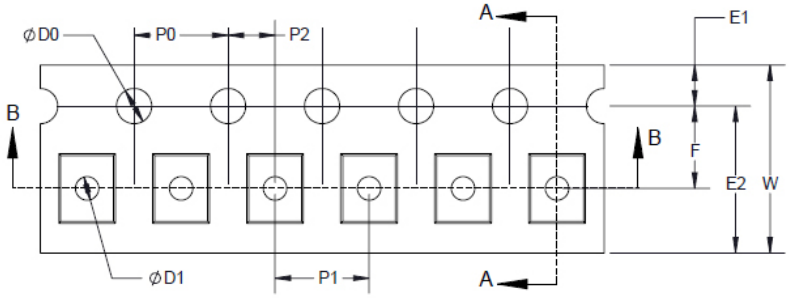
Part Number	A	B	C	D	E	F	G	H
WCL2520-xxx-R	2.92 max	2.79 max	2.10 max	0.50 ref	2.0 ref	2.54	1.27	1.02

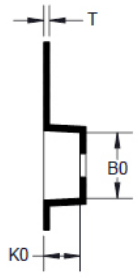
Part marking: xxx= =Inductance value in uH, R=decimal point. If no R is present then last character equals number of zeros
All soldering surfaces to be coplanar within 0.1 millimeters
Tolerances are ±0.2 millimeters unless stated otherwise
Pad layout tolerances are ±0.1 millimeters unless stated otherwise
Do not route traces or vias underneath the inductor

Packaging information (mm)

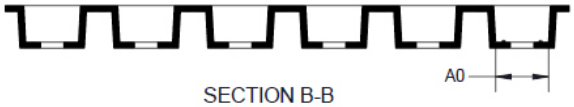
Drawing not to scale

Supplied in tape and reel packaging, 2000 parts per 7" diameter reel





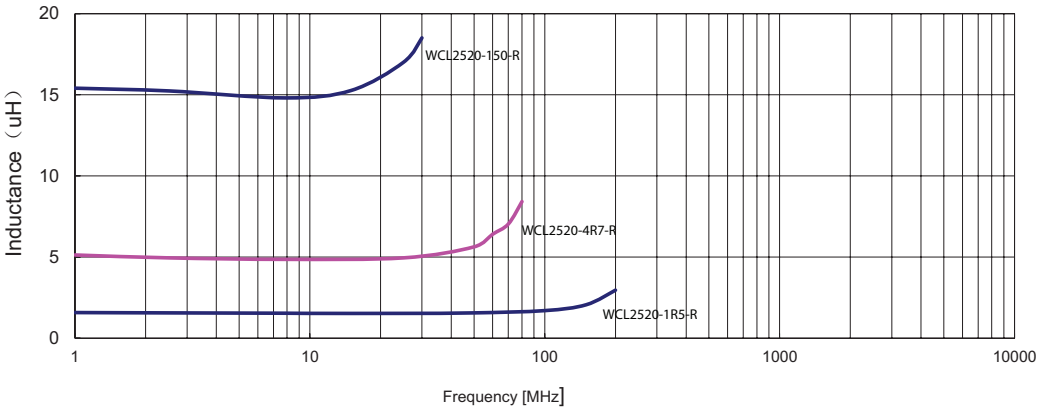
SECTION A-A



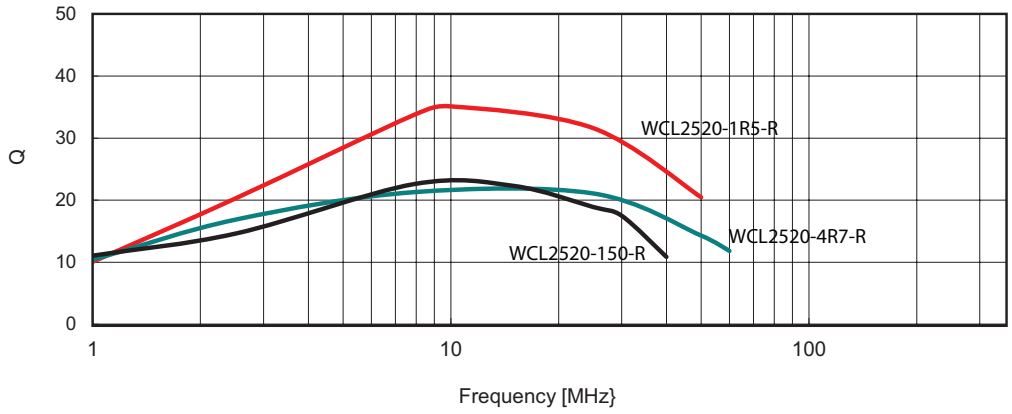
SECTION B-B

W ±0.30	8.00
F±0.05	3.50
E1±0.10	1.75
E2 Min	6.25
P0±0.10	4.00
P1±0.10	4.00
P2±0.05	2.00
D0+0.10/-0	1.50
D1+0.10/-0	0.65
A0	2.73±0.05
B0	2.9±0.10
K0	2.34 ±0.10
T Max	0.25

Inductance vs frequency



Q vs frequency



Solder reflow profile

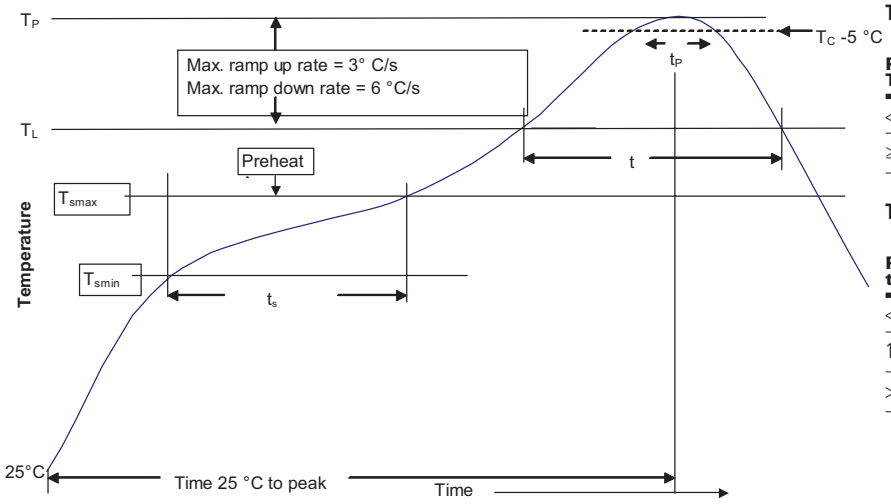


Table 1 - Standard SnPb solder (T_C)

Package Thickness	Volume mm3 <350	Volume mm3 ≥350
<2.5 mm)	235 °C	220 °C
≥2.5 mm	220 °C	220 °C

Table 2 - Lead (Pb) free solder (T_C)

Package thickness	Volume mm³ <350	Volume mm³ 350 - 2000	Volume mm³ >2000
<1.6 mm	260 °C	260 °C	260 °C
1.6 – 2.5 mm	260 °C	250 °C	245 °C
>2.5 mm	250 °C	245 °C	245 °C

Reference J-STD-020

Profile feature	Standard SnPb solder	Lead (Pb) free solder
Preheat and soak • Temperature min. (T_{smin})	100 °C	150 °C
• Temperature max. (T_{smax})	150 °C	200 °C
• Time (T_{smin} to T_{smax}) (t_s)	60-120 seconds	60-120 seconds
Average ramp up rate T_{smax} to T_p	3 °C/ second max.	3 °C/ second max.
Liquidous temperature (T_L) Time at liquidous (t_L)	183 °C 60-150 seconds	217 °C 60-150 seconds
Peak package body temperature (T_P)*	Table 1	Table 2
Time (t_p)** within 5 °C of the specified classification temperature (T_C)	10 seconds**	10 seconds**
Average ramp-down rate (T_p to T_{smax})	6 °C/ second max.	6 °C/ second max.
Time 25 °C to peak temperature	6 minutes max.	8 minutes max.

* Tolerance for peak profile temperature (T_p) is defined as a supplier minimum and a user maximum.
** Tolerance for time at peak profile temperature (t_p) is defined as a supplier minimum and a user maximum.

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