FANGCHENG ELECTRON
FANGCHENG ELECTRONICS (DONGGUAN) CO., LTD.

Fang cheng Electronics(Dong guan) Co,LTD

SPECIFICATION FOR APPROVAL

CUSTOMER:

Part Number : High Efficiency,Shielded Inductors

CUSTOMER Number: 闭磁路高效贴片电感

CUSTOMER Part :

Fangcheng part : FC-DR1207-101MT

DATE: 2021-7-8

REV: 01

RoHS COMPLIANT

Confidential

made in fangcheng:

CUSTOMER APPROD:

prepad	checd	Approd
技术部 2021.7.08 黄敏	技术部 2021.7.08 刘凡	技术部 2021.7.08 袁宏乐

prepad	checd	Approd

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Description of Revision

REV	Description of Revision	DATE	Prepad	Notes
01	Initial Release	2021.7.8	zhangli	

Prepad	Checd	Approd
zhangli	Liu-fang	David-yuan

Notice of Use

For the parameters not prescribed in the *Specification for Approval*, please refer to the following standards or the relative industry standards.

1. Product in packing storage condition : temperature 540, RH70%.

2.A storage of - *F C*-Electronic productsfor longer than 12 months is not recommended,Within other effects, the terminals may suffer degradation, resulting in bad solderability.Therefore, all products shall be used within the period of 12 months based on the day of shipment.

3. Do not keep products in unsuitable storage conditions, such as areas susceptible to high temperatures, high humidity, dust or corrosion.

4 Always handle products with care.

5 Don't touch electrodes directly with bare hands as oil secretions may inhibit soldering.
Always ensure optimum conditions for soldering.

6 When this product will be used on a similar or new project to the original one,
sometimes it might be unable to satisfy the specifications due to different condition of usage.

7 This inductor itself does not have any protective function in abnormal condition, such as overload, short-circuit, open-circuit conditions, etc. Therefore, it shall be confirmed that there is no risk of smoke, fire, dielectric withstand voltage, insulation resistance, etc., or use in abnormal conditions protective devicesor protection circuit in the end product.

8 Hi-Pot test with higher voltage than spec value will damage insulating material and shorten its life.

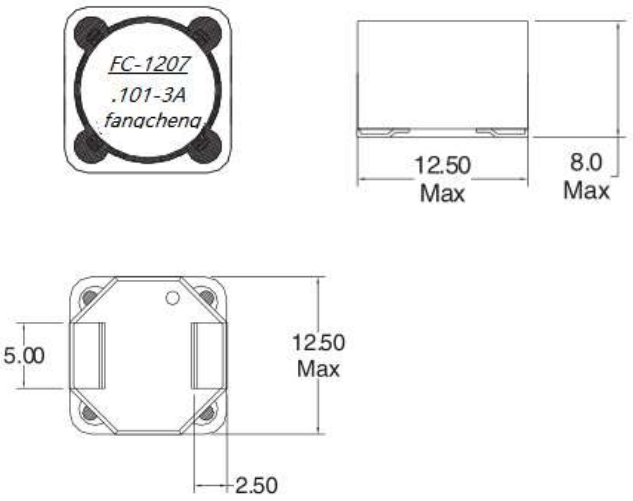
IPC 020D Joint Industry standard

IEC1007 《Transformer and inductors for use in electronic and telecommunication equipment—Measuring methods and test procedures》

(ROHS or other environmental request)

Prepad	Checd	Approd
zhangli	Liu-fang	David-yuan

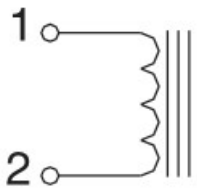
1. Appearance and Dimensions(mm)

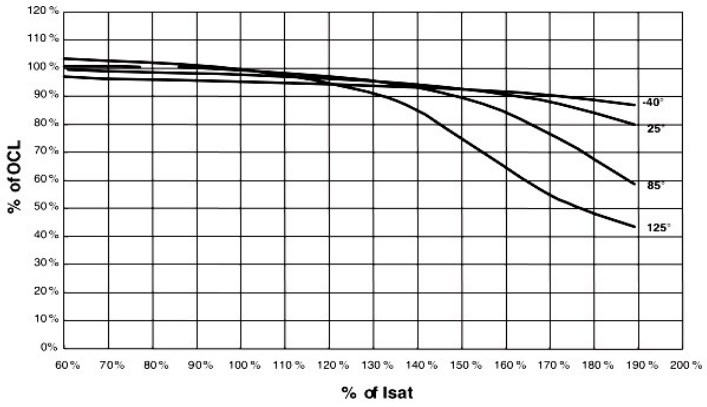


Applications

- AutomotiveElectronics(underthe hood, interior/exterior)
- Telematics
- DC-DC converters
- Buck, boost, forward, and resonant converters
- Noise filtering and filter chokesEnvironmental Data
- Storage temperature range:-40°C to +165°C
- Operating temperature range:-40°C to +165°C

2. Schematic:3. Inductance Characteristics





4. RECOMMENDED PCB LAYOUT

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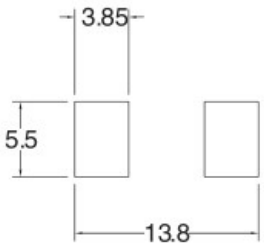

Description

- 165°C maximum total temperature operation
- Five sizes of Automotive grade shielded drum coreinductors
- Inductance range from 0.28uH to 1000uH Current range up to 56 Amps
- Mechanical secure mounting for high shock and vibrationenvironments
- Good thermal dispersion with thermal conductive epoxy
- Customized dual winding versions available upon request for SEPIC or Flyback configurations

Prepad	Checd	Approd
zhangli	Liu-fang	David-yuan

4. Electrical Characteristics：

Part Number	Inductance	OCL μH+/-20%	Irms 2	Isat 3	Isat 4	DCR (Ω)	K-factor (6)
FC-DR1207--R47-MT	0.47	0.413	22.50	56.0	44.8	0.0012	14.3
FC-DR1207-1R0-MT	1.00	0.772	19.22	40.0	32.0	0.0017	10.2
FC-DR1207-1R5-MT	1.50	1.27	15.32	31.1	24.9	0.0027	7.9
FC-DR1207-2R2-MT	2.20	1.92	12.52	25.5	20.4	0.0040	6.5
FC-DR1207-3R3-MT	3.30	3.51	9.59	18.7	14.93	0.0068	4.8
FC-DR1207-4R7-MT	4.70	4.58	8.14	16.5	13.18	0.0094	4.2
FC-DR1207-6R8-MT	6.80	6.72	7.32	13.3	10.67	0.012	3.4
FC-DR1207-8R2-MT	8.20	8.33	6.33	12.2	9.74	0.016	3.1
FC-DR1207-100-MT	10.0	9.63	6.02	11.2	8.96	0.017	2.9
FC-DR1207-150-MT	15.0	14.90	4.83	9.03	7.23	0.027	2.3
FC-DR1207-220-MT	22.0	21.47	3.98	7.57	6.05	0.040	1.9
FC-DR1207-330-MT	33.0	32.01	3.22	6.22	4.98	0.060	1.6
FC-DR1207-470-MT	47.0	47.91	2.62	5.09	4.07	0.091	1.3
FC-DR1207-680-MT	68.0	68.22	2.333	4.18	3.34	0.115	1.1
FC-DR1207-820-MT	82.0	83.91	2.2	3.84	3.07	0.155	1.0
FC-DR1207-101-MT	100	100.8	3.0	3.46	2.77	0.175	0.9
FC-DR1207-151-MT	150	151.2	1.524	2.83	2.26	0.269	0.7
FC-DR1207-221-MT	220	219.8	1.253	2.35	1.88	0.398	0.6
FC-DR1207-331-MT	330	328.3	1.011	1.93	1.54	0.612	0.5
FC-DR1207-471-MT	470	474.5	0.827	1.62	1.29	0.91	0.4
FC-DR1207-681-MT	680	676.6	0.736	1.33	1.06	1.15	0.3
FC-DR1207-821-MT	820	824.6	0.637	1.22	0.978	1.54	0.3
FC-DR1207-102-MT	1000	998.7	0.598	1.10	0.878	1.75	0.3

(1) Open Circuit Inductance test parameters: 100kHz, 0.25V, 0.0Adc,tolerance is ±20%

(2) Irms: DC current for an approximate ΔT of 40°C without core loss.Derating is necessary for AC currents.PCB layout, trace thickness and width, air-flow, and proximity of other heat generating components will affect the temperature rise.It is recommended that the temperature of the part not exceed 165°C under worst case operating conditions verified in the end application.

(3) Isat Amperes peak for approximately 30% rolloff (@25°C)

(4) Isat Amperes peak for approximately 40% rolloff (@125°C)

(5) DCR limits @ 25°C

(6) K-factor: Used to determine B p-p for core loss (see graph).

B p-p = K*L*ΔI, B p-p(mT), K: (K factor from table), L: (Inductance in μH), ΔI (Peak to peak ripple current in Amps).

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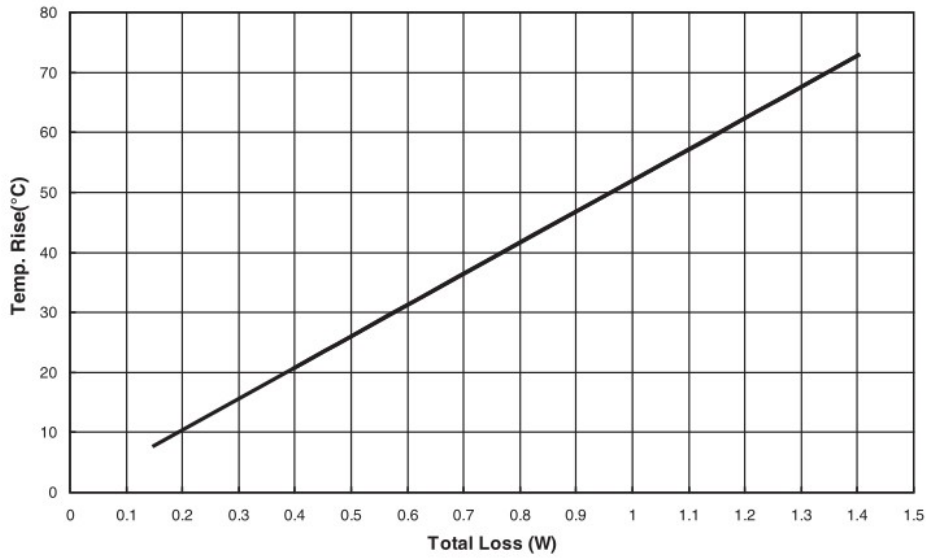
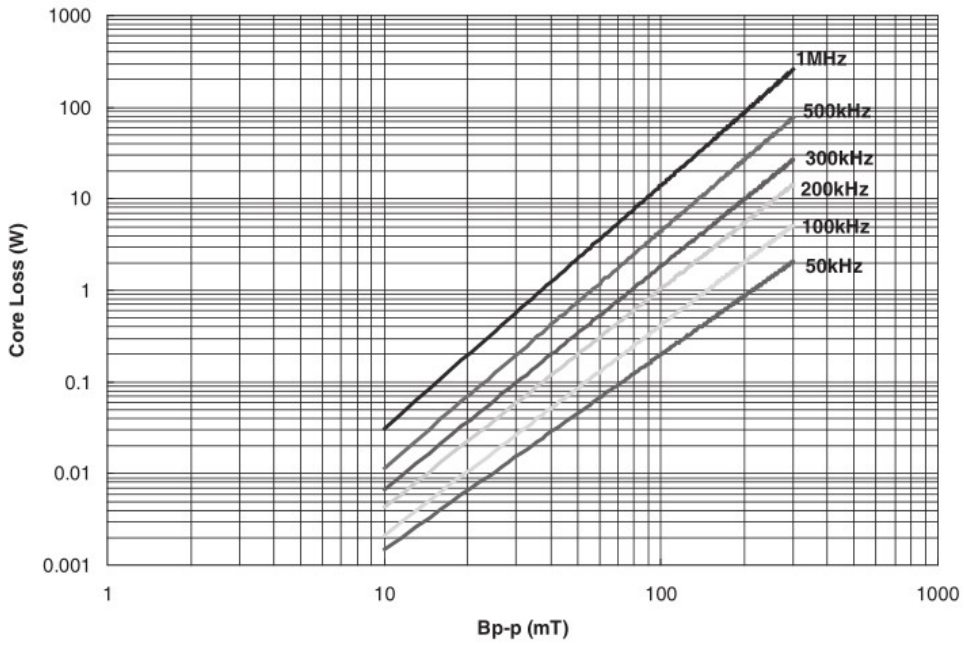
5.Temperature Rise vs.Watt Loss



6.Inductance Characteristics



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7.Reliability and test condition：

Test item	test condition	Remark
Cold Operating Test	GB2423.1 Ad	
Heat Operating Test	GB2423.2 Bd	
Cold Storage Test	GB2423.1 Ab	
Heat Storage Test	GB2423.2 Bb	
Steady Damp Heat Test	GB2423.3 Cb	
Circular Damp Heat Test	GB2423.4 Db	
Temperature Cycling Test	GB2423.22 Nb	
Temperature Shock Test	GB2423.22 Na	
Vibration Test	GB2423.10~15 Fc,Fdb	
Mechanical Shock Test(Bump)	GB2423.5 Eb	
Free Fall Test	GB2423.8 Ed	
Solderability	GJB360A-96	
High Temperature Step Stress Test	Enhancement Test Specifications	
Low Temperature Step Stress Test		
High-speed Thermal Cycling		
Limit Vibration		
Composite Stress		
Highly-Accelerated Temperature and Humidity Stress Test(HAST)(		

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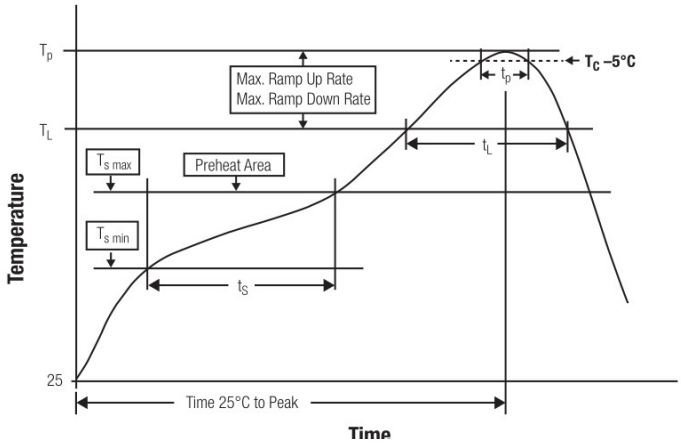
8. **Soldering Specification**：元器件的推荐焊接方式是回流焊



Classification Reflow Soldering Profile:

Profile Feature		Value
Preheat Temperature Min	$T_{s\ min}$	150 °C
Preheat Temperature Max	$T_{s\ max}$	200 °C
Preheat Time t_s from $T_{s\ min}$ to $T_{s\ max}$	t_s	60 - 120 seconds
Ramp-up Rate (T_L to T_P)		3 °C/ second max.
Liquidous Temperature	T_L	217 °C
Time t_L maintained above T_L	t_L	60 - 150 seconds
Peak package body temperature	T_p	see table below
Time within 5°C of actual peak temperaure	t_p	20 - 30 seconds
Ramp-down Rate (T_L to T_P)		6 °C/ second max.
Time 25°C to peak temperature		8 minutes max.

refer to IPC/ JEDEC J-STD-020E

Package Classification Reflow Temperature:

Properties	Volume mm^3 <350	Volume mm^3 350-2000	Volume mm^3 >2000
PB-Free Assembly I Package Thickness < 1.6 mm	260 °C	260 °C	260 °C
PB-Free Assembly I Package Thickness 1.6 mm - 2.5 mm	260 °C	250 °C	245 °C
PB-Free Assembly I Package Thickness ≥ 2.5 mm	250 °C	245 °C	245 °C

refer to IPC/ JEDEC J-STD-020E

8.1高温耐热性：在260℃的熔融钎料中，停留时间不少于10 秒，无质量问题。
8.2返修温度和时间温度：350 度；时间：不少于5 秒。
8.3焊接次数：元器件能承受的焊接次数不少于5 次

9.1 包装:

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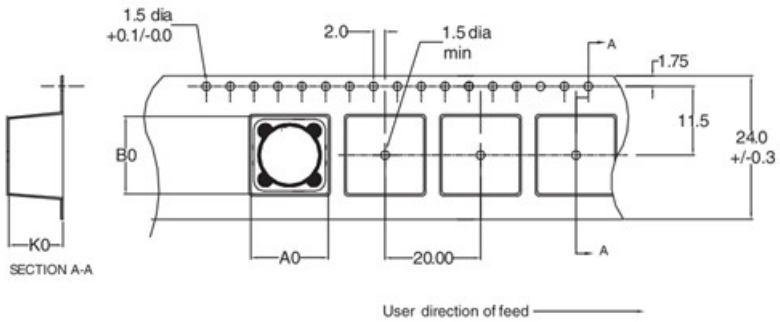
zhangli	*Liu-fang*	*David-yuan*

1)包装箱上应标明产品型号、名称、数量、出厂日期、承制方名称及出厂检验章；
2)货物运达客户方后，包装箱封条应完好，箱体无破损、开裂等现象；
3)电感用木箱或其他材料包装，方便拆卸，四周用软性材料填充；
数量：500PCS/R ，产品 1 脚朝向带孔方向。



8.2 外观:
1)产品应有合格证和耐擦防水洗标签，应注明型号、规格；
2)产品外观整洁，应无破损、划伤；

8.3 检验:
1)产品生产中必须全数进行电气性能，抗电强度检测；箱内应有 100%电气性能合格保证书或检测报告；
2)产品出货前按批次，必须根据承认书按国家行业标准进行抽样检验，合格后出具出厂检验报告，记录抽样测试数据，在每批次包装尾箱中放置一份；检验报告须注明 100％耐压测试合格。注：批次按定单号发货为准

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