TLVR Inductor

Part NO. 产品型号: HATLVR-090613-RxxL-01

Features 特性

1. High performance (Isat) realized by MnZn ferrite core 使用MnZn铁氧体材料，具有优良饱和性能；
2. High Current 大电流；
3. Low power consumption and low DCR 低功耗，低DCR；
4. Capable of corresponding server industry environment (500kHz-2MHz) 可工作于（500KHz-2MHz）服务器等行业环境下；
6. 100% lead(pb) Free ,meet ROHS standard 遵守欧盟ROHS标准 100%无铅（pb）；

Application 应用范围

VRM for data ceters &server (the voltage regulation module for CPU/GPU) 数据中心、服务器的VRM(CPUs、GPUs的电压调节组件);

Electrical Specifications 电性规格

Part Number 机种	Lo(±15%) @0A	FLL@Isat, 25℃	Isat[1]（A）		Irms[2]（A）		DCR[3]±10% (mΩ)		LL (nH) Max (short 2-3)	Kps (Min) Coupling factor	Hi-pot(Vdc) (1S, 3mA)
	nH	nH	25℃	100℃	Sec	Pri	Sec	Pri			
R10L	105	75	108	95	72	40	0.14	0.42	10	0.95	200
R12L	120	86	94	83	72	40	0.14	0.42			
R15L	150	108	75	66	72	40	0.14	0.42			
R17L	170	122	66	58	72	40	0.14	0.42			

注: 电感、漏感测试条件为：100KHz,0.1
remark: Inductance、leakage inductance test conditons: 100KHz, 0.1V

Note 注释:

1. Isat: DC current(A)that will cause L0 to drop approximately 20% Typ
使产品感值降低约20%时所加载的直流电流.

2. Irms: DC current(A)that will cause an approximate △T40℃
使产品温升△T约40℃时所加载的直流电流.

3. DCR should be measured on 20℃ ambient.
DCR应在20℃环境下测试.

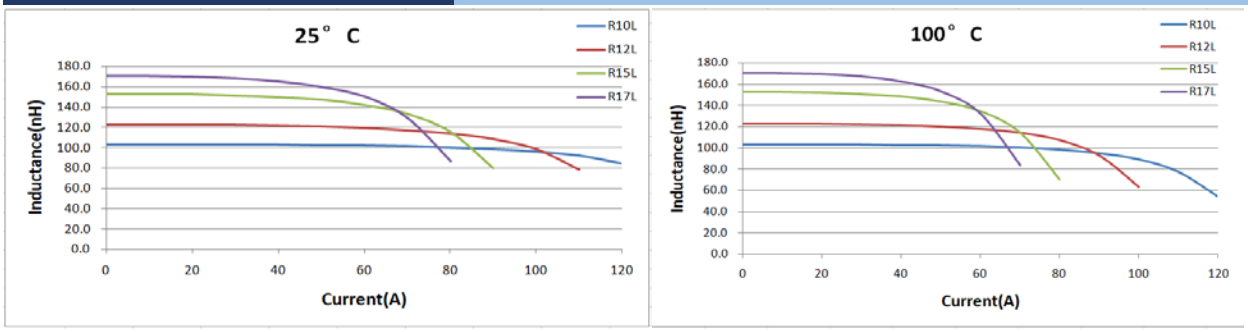
4. K factor: used to determine Bp-p for core loss. Bp-p=K*L*ΔI*10-3. B(gauss),K(=334),L(nH),ΔI(peak to peak ripple current, in Amps).

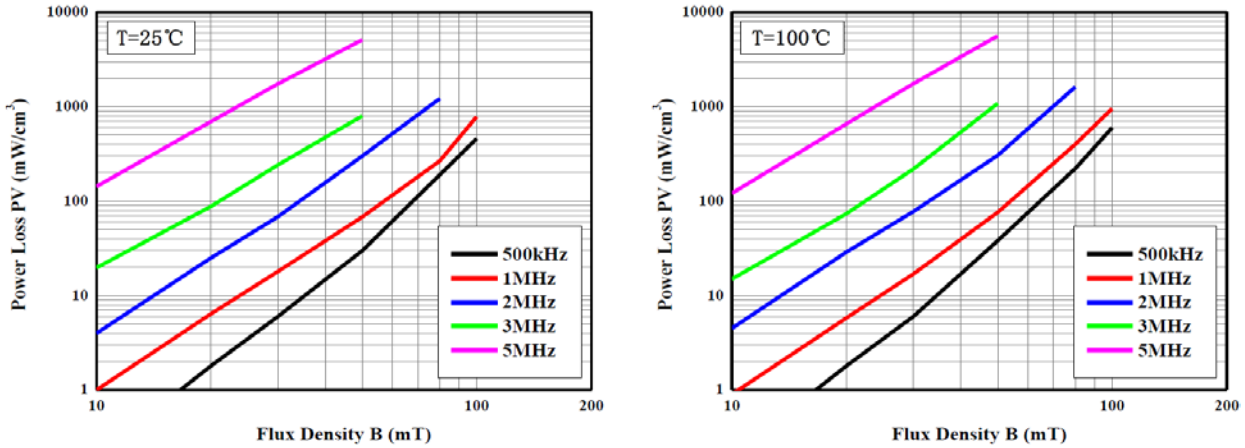
5. Operating temperature range: -55℃~+125℃
工作温度范围：-55℃到+125℃.

6. The part temperature (ambient + temp rise)should not exceed 125℃ under worst case operating conditions. circuit design, component.PWB trace size and thickness,airflow and other cooling provision all affect the part temperature. Part temperature should be verified in the den application.
在恶性劣的工作环境下，产品局部温度（环境温度+工作温升）不可超过125℃.线路设计组件布局印刷线路板（PWB）尺寸及厚度，气流及冷却供应均影响产品局部温度。产品局部温度应当在最终应用时再进行验证。

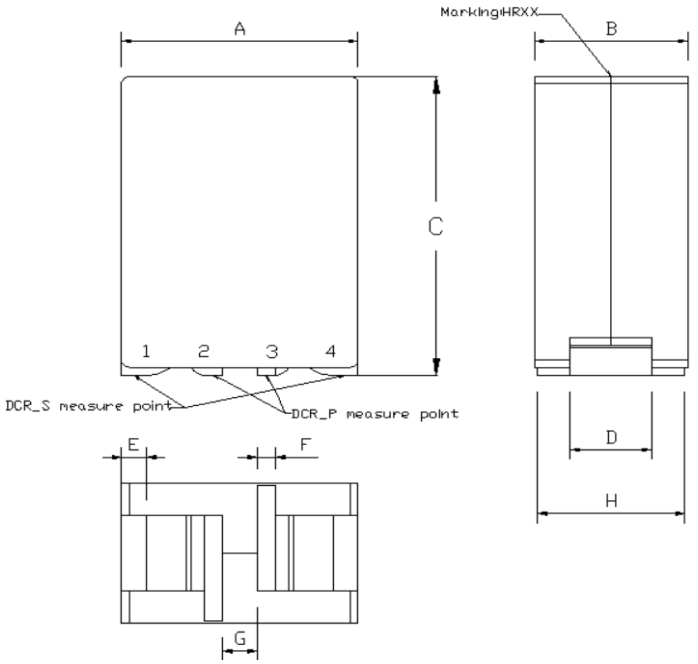
7. Core loss data approximation is based on published core loss data:
$Pcv=3.72263870012934*10^{-10}*f^{1.66293610959819}*B^{3.74653422906853}*(1.6890205936-(0.0296383185*T)+(0.0002808341*T^2)-(0.0000005314*T^3))$
Where:
Pcv:mW/cm3
f: KHz
B:mT
T:℃
Note: The core loss data is culculated from the relationship of f/B/T. The actual core loss maybe has deviation.

Current Characteristics 电气特性



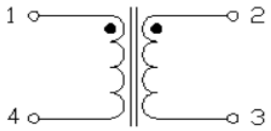


Outline Dimensions and Diagram 外型尺寸与简图



Code 代号	Dimensions 尺寸
A	9.3±0.3
B	6.1±0.3
C	13.0 Max
D	3.20±0.30
E	1.15±0.30
F	0.90±0.30
G	1.35±0.30
H	5.8 typ

Schematic



Marking and Code 标示与代码

Marking 标示:

① Hotland Marking 合泰盟方标示

② The induct or is marked with a 3-digit code 电感（感值）由3位编码标示:

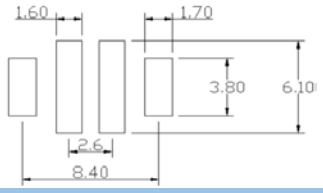
H RXX

(1) (2)

Recommend Dimensions of Tin Coat 推荐刷锡面尺寸

The customer shall make sure the tin coat dimensions should be greater than the dimensions shown below to ensure safety
客户应确保刷锡面尺寸大于以下指数以保证上锡牢固。

Recommended pad layout



Reliability 可靠性

1. Mechanical 机械性

Item 项目	Specification and Requirement 规格与需求	Test Method 测试方法
Solderability 可焊性	The tin-coated area shall not be less than 95% of the tin coverage surface 沾锡面积不得小于95%上锡面	Elevated temperature curve during tin coating 上锡升温曲线: (1) Preheating: 160±10°C for 90 seconds 预热: 160±10°C持续90s (2) Retention time: 245±5°C for 2±0.5 seconds 恒温时段: 245±5°C持续2±0.5s
Vibration test 振动测试	Inductance change: Within±5% and without mechanical damage such as break 感值变化：不超过±5%且无破裂等机械损伤产生	(1) Vibration frequency: (10Hz to 55Hz to 10Hz) in 60 seconds as a period 振动频率(10Hz 55Hz 10Hz)60s为一个周期 (2) Period cycled for 2 hours in each of 3 mutual perpendicular directions 振动时间 Vibration time: 三维正交坐标系每个方向振动（周期）循环2小时 (3) Amplitude 振幅: 1.5 mm Max
Shock test 冲击测试	Inductance change: Within±5% and without mechanical damage such as break 感值变化：不超过±5% 且无破裂等机械损伤产生	(1) Maximum amplitude 最大振幅: 100G (2) Duration of pulse 脉冲波长: 11ms (3) Impact each positive and negative direction 3 times in 3 dimensional orthogonal coordinate system 三维正交坐标系每个方向正负方向冲击3次

2. Endurance 耐久性

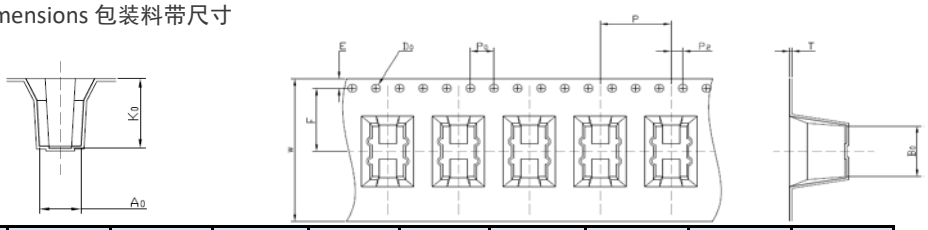
Item 项目	Specification and Requirement 规格与需求	Test Method 测试方法
Thermal shock 冷热冲击	Inductance change: Within±5% and without mechanical damage such as break 感值变化：不超过±5%且无破裂等机械损伤产生	(1) Repeat 1000 cycle as follow 重复以上100个循环 (-55±2°C,30±3 minutes) 5 minutes in room temperature (-55±2°C,30±3分钟) 室温5分钟 (+125±2°C,30±3 minutes) 5 minutes in room temperature (+125±2°C,30±3分钟) 室温5分钟 (2) Recovery: 48+4/-0 hours of recovery under the standard condition after the test. (see Note1) 恢复：测试于标准条件下恢复48+4/-0小时（参考注释1）
High temperature life test 耐高温测试	Inductance change: Within±5% and without mechanical damage such as break 感值变化：不超过±5%且无破裂等机械损伤产生	(1) Environment condition: 85±2°C 环境条件：85±2°C Applied current: rated current 应用电流：额定电流 (2) Duration: 1000+4/-0 hours (see Note1) 持续时间：1000+4/-0 小时（参考注释1）
Humidity Resistance 耐湿测试	Inductance change: Within±5% and without mechanical damage such as break 感值变化：不超过±5%且无破裂等机械损伤产生	(1) Environment condition: 60±2°C 环境条件: 60±2°C Humidity: 90~95% 湿度：90~95% Applied current: Rated current 应用电流：额定电流 (2) Duration: 1000+4/-0 hours (see Note1) 持续时间：1000+4/-0 小时（参考注释1）

Low temperature life test 低温存放测试	Inductance change: Within±5% and without mechanical damage such as break 感值变化：不超过±5%且无破裂等机械损伤产生	(1) Storage temperature 存储温度： store in -55±2°C environment for total 1000+4/-0 hours -55±2°C下存放 1000+4/−0 小时
High temperature life test 高温存放测试	Inductance change: Within±5% and without mechanical damage such as break 感值变化：不超过±5%且无破裂等机械损伤产生	(1) Storage temperature 存储温度： store in +125±2°C environment for total 1000+4/-0 hours +125±2°C下存放 1000+4/-0 小时

Packaging 包装

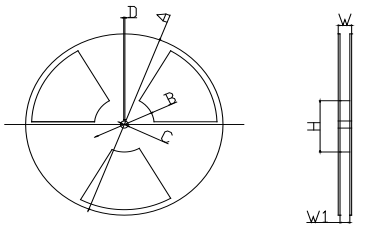
Dimensions 尺寸

1. Tape packaging dimensions 包装料带尺寸



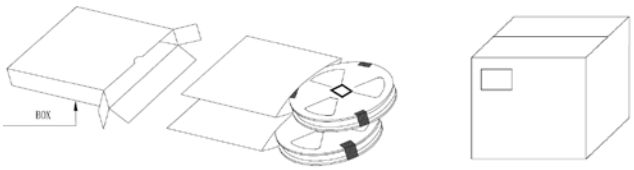
W	E	F	D0	P	P0	P2	T	A0	B0	K0
24.0±0.3	1.75±0.1	11.5±0.1	$1.5^{+0.1}_{-0.0}$	16.0±0.1	4.0±0.1	2.0±0.1	0.6±0.05	6.7±0.1	10.0±0.1	13.1±0.1

2. Reel dimensions 卷轴尺寸



Code 代号	Dimension(mm) 尺寸
A	330.0±2.0
B	100.0±1.0
C	13.0±1.0
D	1.9±0.4
W	30.4 Max
W1	24.4±1.0

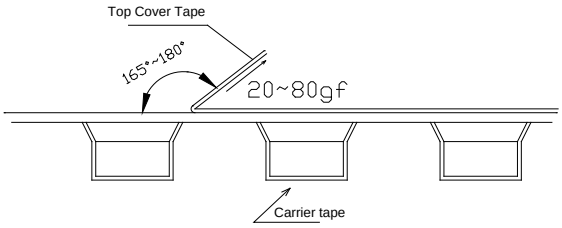
3. Carton dimensions 外箱尺寸



Quantity per rell (pcs) 每个料带轮包含的数量	Quantity per bundle (pcs) 每捆包含的数量
300	1800

Peel force of top cover tape 上带剥离拉力:

The peeling speed shall be about 300mm/minute,The peeling strength of top cover tape shall be Between 0.2 to 0.8N
剥离速度应控制于300㎜/分，上盖剥离拉力介于0. 2~0. 8N



Label marking 标签标示

The following items shall be marked on the reel of production and shipping label.
以下项目需明确标示于料盘之产品卷标与运输卷标上

1. Production label 产品卷标:

(1) Part NO. 产品机种
(2) Quantity 数量
(3) Production date 生产日期
(4) Lot No. 包装流水号

2. shipping label 运输卷标

(1) Part No. 产品型号
(2) Quantity 数量
(3) Production date 生产日期

Inspection Rules 验收规则

1. The inspection must be performed under the regulation GB/T2828.1-2003; Examination level: Appearance and dimensions, Ⅱ, AQL=0.4; L0A and L30DC, S-4, AQL: 0.15; Insulation resistance spot test 10 pieces every batch.
产品的验收按GB/T2828.1-2003规定进行,其检查水平: 外观、尺寸，Ⅱ，AQL=0.4；L0A，L30DC，S-4, AQL=0.15; 绝缘电阻每批抽10只。

2. Inspection will be completed and inspection result will be feedback to Hotland in written within one month after magnetic core products are received from Hotland or it will be considered approved by customer.
客户在接收到磁芯产品后一个月内须验收完毕, 并请将验收结果书面通知供货方, 否则视为已验收合格。

3. The best effective life of the product is 6 months.
产品最佳有效使用期限6个月。

Care Notes 注意事项:

Care Notes for use 使用注意事项

(1)Storage Condition 存储条件

Temperature: 25 to 35℃, Humidity: 45% to 85% RH　温度：25~35℃，湿度：45~85%RH

(2)Working Temperature 使用温度

a. Minimum Temperature: -55℃ ambient temperature of power choke coil
最低温度：-55℃ 产品环境温度

b. Maximum Temperature: +125 ℃ The value of temperature in duding ambient of the transformer and temperature rise of power choke coil
最高温度：+125度含环境温度及产品温升。

(3) Model 模式:

When this power choke coil was used in a similar or new product to the on ginal one. Sometimes it might be unable to satisfy the specifications due to different condition of usage.
当本产品用于相似或新的产品上时，电性可能因使用条件的不同而与规格产生一定出入

(4) Drop 跌落:

The dropping or mechanical stress of power choke coil may decrease the charactenstics for the coil bobbin may be damaged Such damaged coils are not suggested to use.
本产品受到跌落等机械外力损伤时，产品特性可能会变差（由于线圈受到损伤等），禁止使用以上外力损伤电感。

Safety Caution 安全注意事项

(1)Provision to Abnormal Condition 预防不正常条件:

This power choke coil itself does not have any protective function in abnormal condition such as overload short circuit open circuit conditions etc.
在过载、短路、开路等不正常条件下，本电感产品无任何自我保护功能。

(2) Temperature Rise 温升:

Temperature rise of power choke coil depends on the installation condition on end products.It shall be confirmed on the actual end product that temperature rise of power choke coil is in the lime of specified temperature class.
电感的温升受成品结构影响，因此，强烈建议您于成品后再次确认电感温升是否符合规定温度等级要求。

(3) Dielectric Strength 绝缘能力:

Dielectric withstanding test with higher voltage than specific value will damage in sutating Material and shorten its life.
高电压绝缘测试会对本产品绝缘金属粉体造成损害，并缩短产品寿命。

(4) Waterproof 防水:

This power choke coil must not be sued in wet condition by water ,coffee or any liquid because insulation strength becomes very low in the very condition.
本电感产品绝缘性会因工作环境潮湿而下降，因此本产品禁止应用在有水，咖啡及其它液体存在的潮湿环境中。

Note: All Chinese and English references are subject to Chinese, English is for reference only.
备注：所有中英文对照以中文为准，英文仅供参考。