

CTX01-18738-R

High current, high frequency power inductors



Description

- High current carrying capacity, low core losses
- Tight tolerance DCR for sensing circuits
- 11 x 8.0mm footprint surface mount package in a 7.5mm height
- Frequency range up to 2MHz
- Halogen free, lead free, RoHS compliant

Applications

- Voltage Regulator Module (VRM)
- Multi-phase and Vcore regulators
- Point-of-load modules
- Desktop and server VRMs and EVRDs
- Base station equipment
- Battery power systems
- Graphics cards
- Data networking and storage systems

Environmental Data

- Storage temperature range: -40°C to +125°C
- Operating temperature range: -40°C to +125°C (ambient plus self-temperature rise)
- Solder reflow temperature: J-STD-020D compliant



Product Specifications

Part Number ⁶	OCL ¹ (nH) ±10%	FLL ² (nH) minimum	I _{rms} ³ (amps)	I _{sat} ^{1,4} (amps)	I _{sat} ^{2,5} (amps)	DCR (mΩ) @20°C
CTX01-18738-R	210	151	50	55	45	0.29 ± 5%

1. Open Circuit Inductance (OCL) Test Parameters: 300kHz, 0.10V_{rms}, 0.0Adc @ 25°C.

2. Full Load Inductance (FLL) Test Parameters: 300kHz, 0.10V_{rms}, I_{sat} 1 @ 25°C.

3. I_{rms}: DC current for an approximate temperature rise of 20°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 125°C under worst case operating conditions verified in the end application.

4. I_{sat} 1: Peak current for approximately 20% rolloff at +25°C.

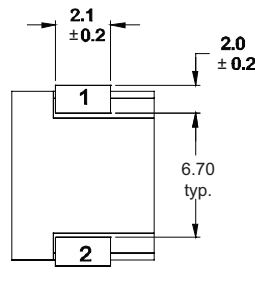
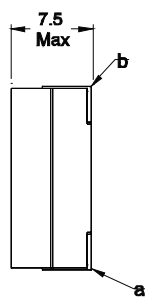
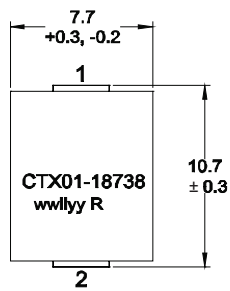
5. I_{sat} 2: Peak current for approximately 20% rolloff at +125°C.

6. Part Number Definition: CTX01-18738-R

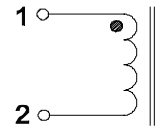
- CTX01-18738 = Product code and size

- "R" suffix = RoHS compliant

Dimensions (mm)

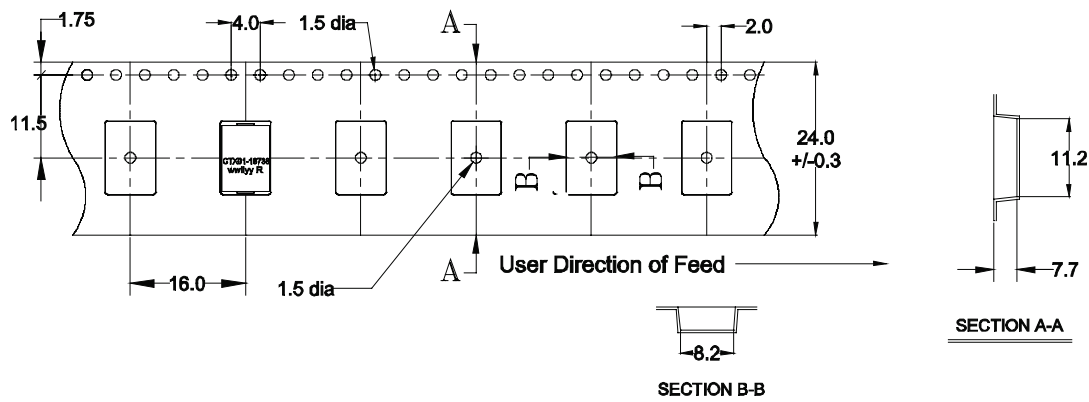


Schematic

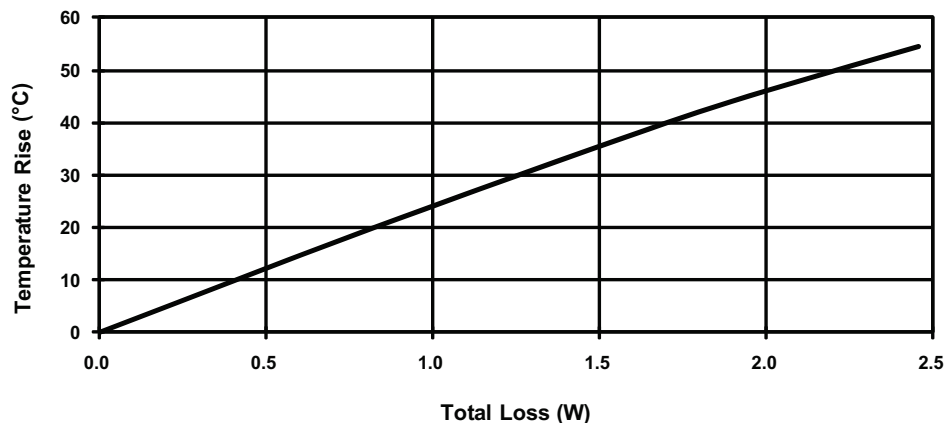


Part marking: CTX01-18738, wwlly = Date Code, R = Revision Level
All soldering surfaces must be coplanar within 0.102 millimeters.
Tolerances are ±0.1 millimeters unless stated otherwise.
The DCR is measured from point "a" to point "b"

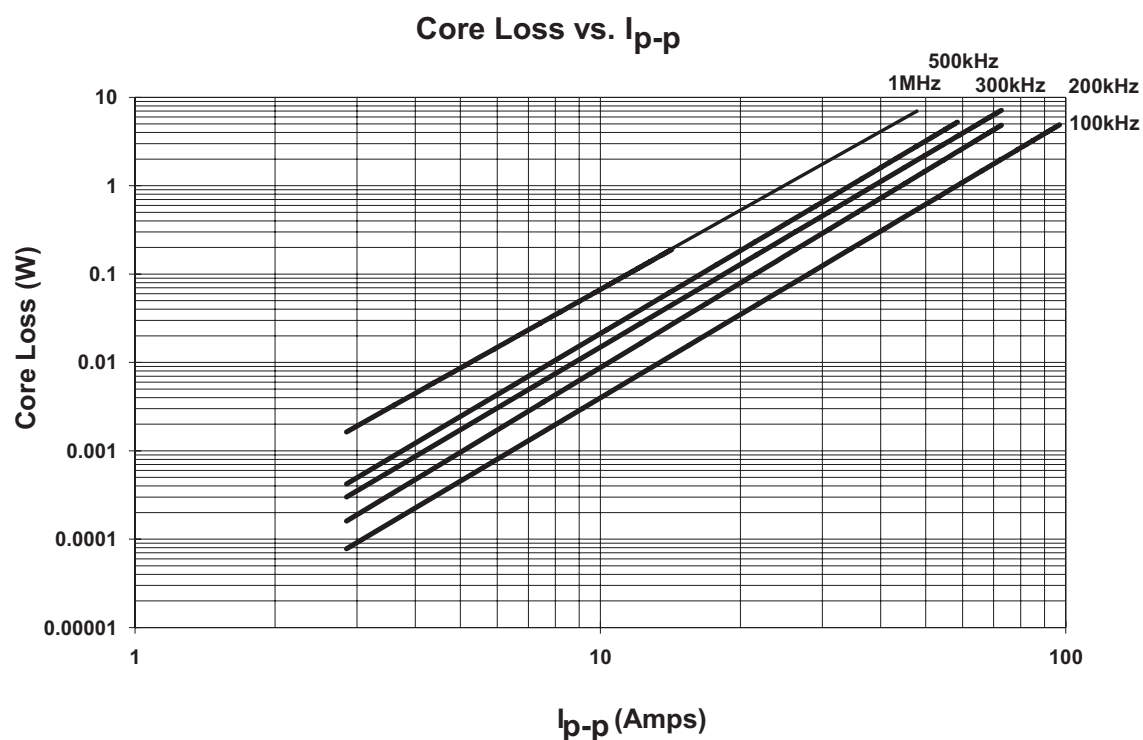
Packaging information (mm)



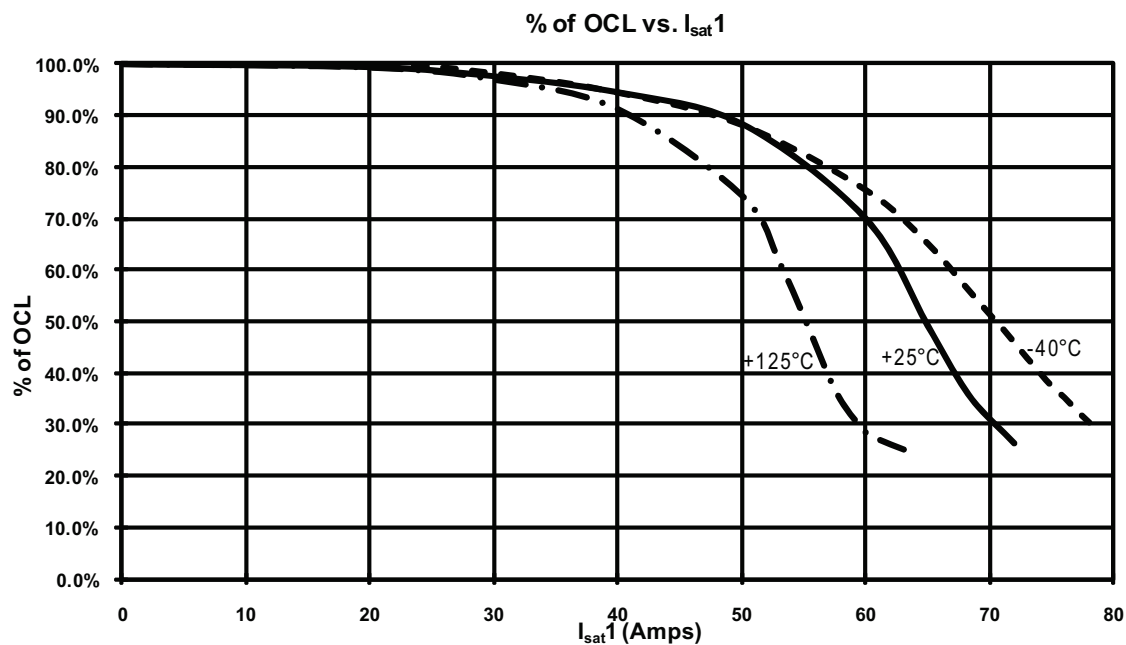
Temperature rise vs. total loss



Core loss



Inductance characteristics



Solder reflow profile

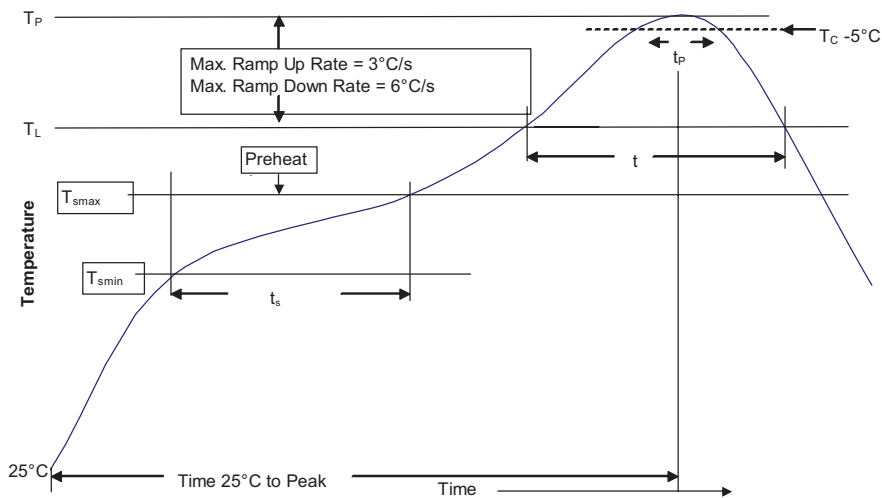


Table 1 - Standard SnPb Solder (T_C)

Package Thickness	Volume mm ³ <350	Volume mm ³ ≥350
<2.5mm)	235°C	220°C
≥2.5mm	220°C	220°C

Table 2 - Lead (Pb) Free Solder (T_C)

Package Thickness	Volume mm ³ <350	Volume mm ³ 350 - 2000	Volume mm ³ >2000
<1.6mm	260°C	260°C	260°C
1.6 – 2.5mm	260°C	250°C	245°C
>2.5mm	250°C	245°C	245°C

Reference JEDEC J-STD-020D

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)	183°C	217°C
Time at liquidous (t_L)	60-150 Seconds	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)	20 Seconds**	30 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.

Life Support Policy: Eaton does not authorize the use of any of its products for use in life support devices or systems without the express written approval of an officer of the Company. Life support systems are devices which support or sustain life, and whose failure to perform, when properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in significant injury to the user.

Eaton reserves the right, without notice, to change design or construction of any products and to discontinue or limit distribution of any products. Eaton also reserves the right to change or update, without notice, any technical information contained in this bulletin.

Eaton
Electronics Division
1000 Eaton Boulevard
Cleveland, OH 44122
United States
www.eaton.com/elx

© 2015 Eaton
All Rights Reserved
Printed in USA
Publication No. 4410 BU-SB11507
November 2015