

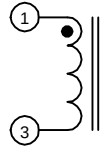
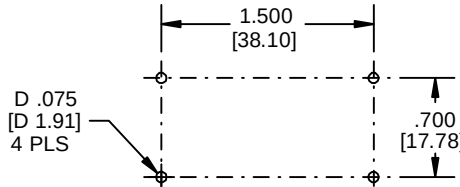
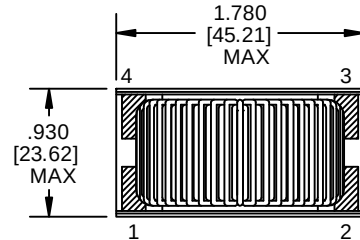
PFC Inductors

53P105-XXX

FEATURES

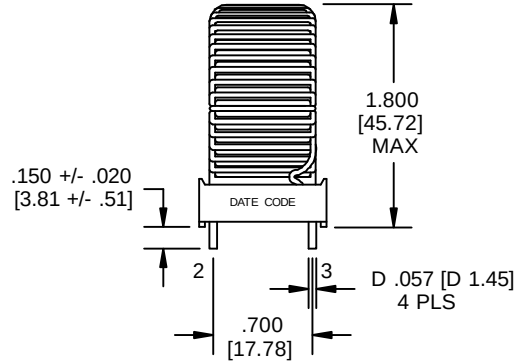
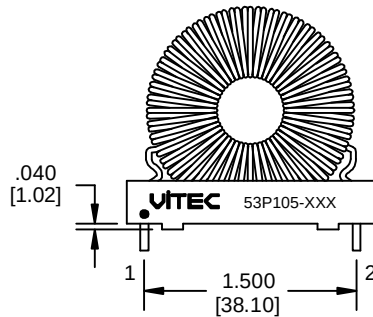
- Designed for use in PFC Boost Converters.
- Operating Frequency: up to 300 KHz.
- Operating Temperature Range of -40°C to 125°C.
- RoHS Compliant Versions Available.
- High Energy Storage Capacity.
- Manufactured with High Temperature Material cores.

MECHANICAL



SUGGESTED PCB LAYOUT

SCHEMATIC



ALL DIMENSIONS GIVEN IN INCHES [MM].
TOLERANCES UNLESS OTHERWISE SPECIFIED.
.XX +/- .01 [X +/- .25] .XXX +/- .005 [XX +/- .13] ANGULAR: +/- 1°

ELECTRICAL SPECIFICATIONS @ 25°C

Part Number		Inductance ³ @ 0 Amps	Inductance ³ @ Ipk	DCR	Ipk ¹	Temp. Rise Current ²	Temp. Rise Factor A (TRFA) ⁵	Temp. Rise Factor B (TRFB) ⁴	Temp. Rise Factor C (TRFC) ⁴	Temp. Rise Factor D (TRFD) ⁴	Temp. Rise Factor E (TRFE) ⁴
Classic	RoHS	uH +/-10%	uH MIN	Ohms +/-10%	Amps -	Arms MAX					
53P105-722	53PR105-722	7200	5184	0.930	1.70	1.85	29.06	9.971276	193.119639	59.710923	1.545957E-04
53P105-162	53PR105-162	1680	1210	0.186	3.50	4.20	29.95	9.971276	399.958159	28.831395	3.604301E-05
53P105-421	53PR105-421	420	302	0.048	7.00	9.00	35.49	9.971276	804.311462	14.336923	8.912544E-06

Notes:

- The Peak Current (Ipk) is the current at which the Inductance drops by a maximum of 20% below the lower limit of its value specified at 0 Amps Bias. Inductance at Ipk is measured by applying DC Bias by a short period of time to minimize the self-heating effect of the component.
- The Temperature Rise Current is the current at which the temperature of the part increases by 50°C. This test is performed with the part mounted on a PCB with traces having 1.75 times the cross sectional area of the wire used to build the part. The temperature of the part is measured after applying the DC current for a minimum of 10 minutes.
- Inductance is measured at 10 KHz and 1.0 Vrms.
- Temperature Rise can be estimated using the following formulas:

$$Trise (^{\circ}C) = \left(\frac{\text{Core Loss} + \text{DCR Loss}}{\text{TRFA}} \right)^{0.833}$$

$$\text{DCR Loss (mW)} = \left[I_{rms}^2 + \left(\frac{\Delta I}{2} \right)^2 \right] \times \text{TYP DCR (mOhms)}$$

$$\text{Core Loss (mW)} = \text{TRFB} \times (F)^{1.48} \times (\text{TRFC} \times \text{Lav} \times \Delta I)^{2.13}$$

$$\text{Lav (H)} = \text{TRFE} \sqrt{\frac{2158.252025 - 6.316751 (\text{TRFD} \times \text{lav}) + 4.979457E-03 (\text{TRFD} \times \text{lav})^2}{1 - 9.451675E-04 (\text{TRFD} \times \text{lav}) + 2.853209E-05 (\text{TRFD} \times \text{lav})^2}}$$

Irms = Current (rms).

ΔI = Ripple Current (Apk-pk).

F = Switching Frequency (KHz)

Lav = Inductance at lavg (DC Bias equivalent).

lavg = AC Line Average Peak Current (rectified).

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REF: AF4831A, AF4832B, AF4833C

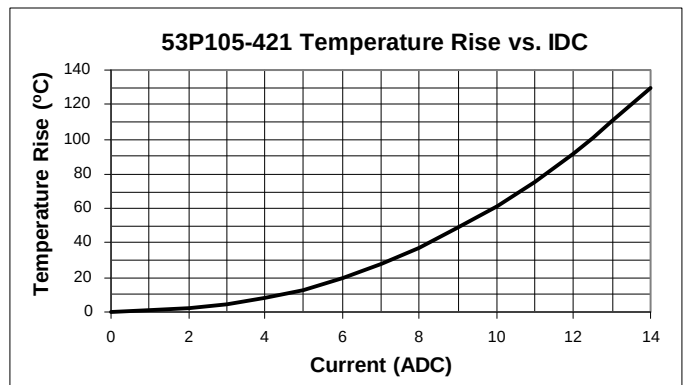
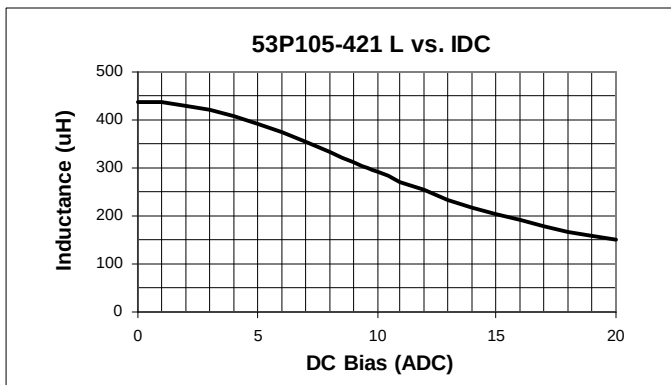
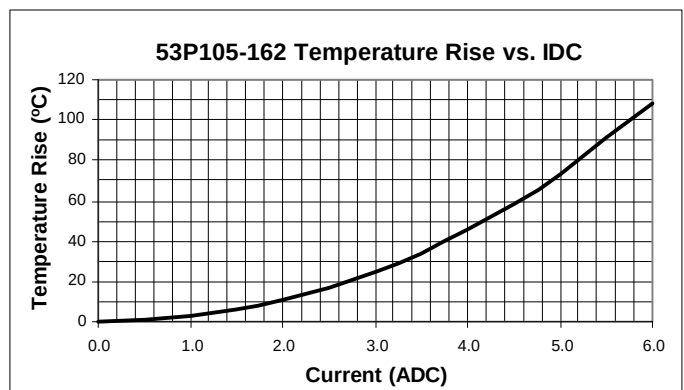
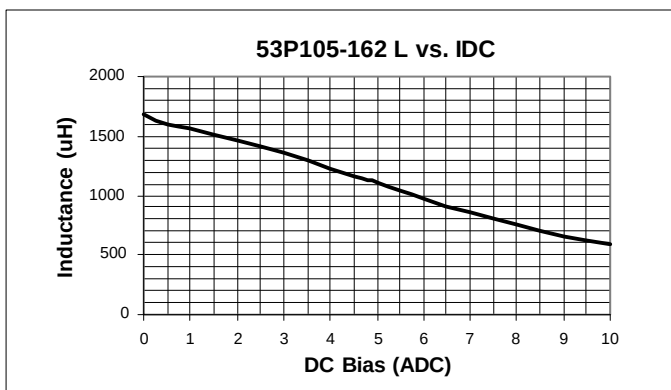
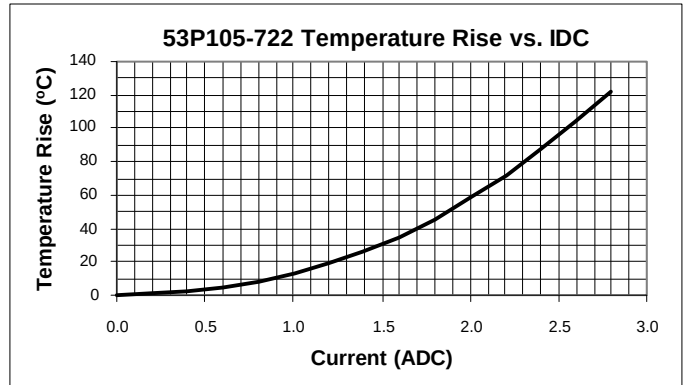
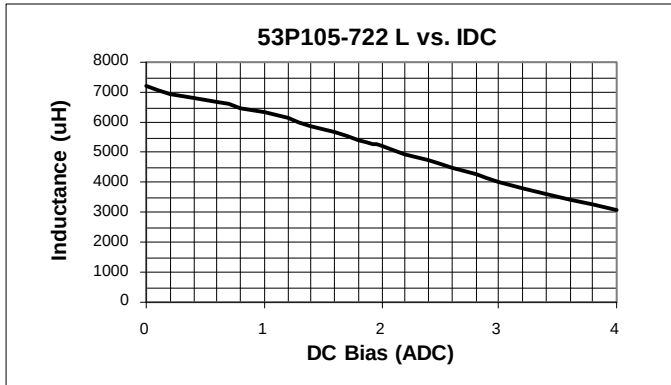
FILE NAME: 53P105-XXX_110212



PFC Inductors

53P105-XXX

PERFORMANCE GRAPHS



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