High Frequency Power Inductor

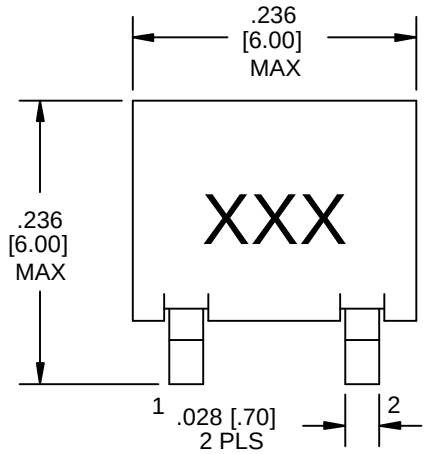
59P34-XXX

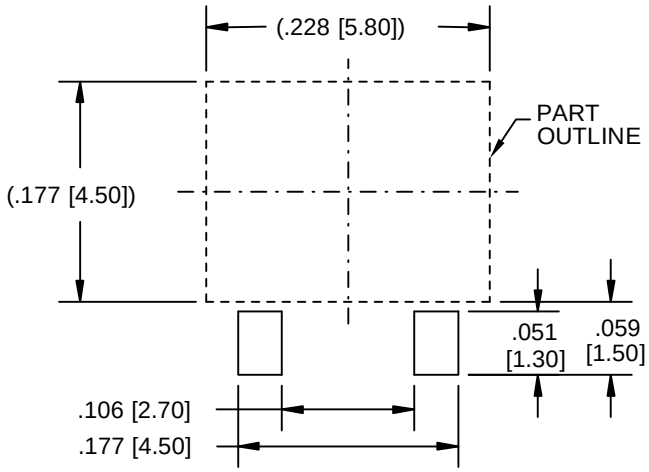
FEATURES

- Designed for use in VRM Applications.
- Operating Frequency 0.100 - 2.0 MHz.
- Operating Temperature Range of -40°C to 125°C.
- RoHS Compliant Version Available.
- Surface Mount Package for pick and place assembly.

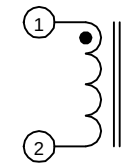
MECHANICAL

PRELIMINARY

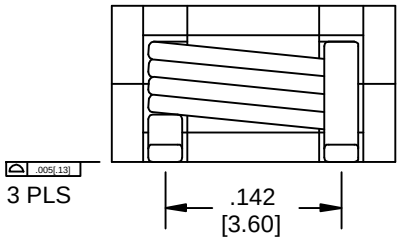


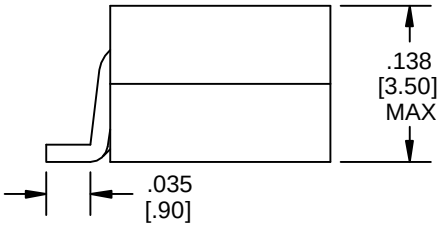


SUGGESTED PCB LAYOUT



SCHEMATIC





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

6213 El Camino Real, Carlsbad, CA 92009
TEL: (760) 918-8831 FAX: (760) 918-8840
http://www.VitecCorp.com

High Frequency Power Inductor

59P34-XXX

ELECTRICAL SPECIFICATIONS @ 25ºC

Part Number		Inductance [4] @ 0 Adc	Inductance [4] @ Isat [2]	DCR [6]	Isat [2] Max Saturation Current			Temp. Rise Current [3]	Temp. Rise Factor A (TRF A) [5]	Temp. Rise Factor B (TRF B) [5]	Temp. Rise Factor C (TRF C) [5]
Classic	RoHS	nH	nH	mOhms	ADC	ADC	ADC	ADC			
		±10%	MIN	±10%	25ºC	100ºC	125ºC	MAX			
59P34-221	**59PR34-221**	220	158	1.1	17	14	13	14.6	2.13	0.000655	0.09838
59P34-331	**59PR34-331**	330	238	2.2	17	14	13	10.3	2.13	0.000662	0.09823
59P34-401	**59PR34-401**	400	288	2.2	14	12	11	10.3	2.13	0.000658	0.11922
59P34-471	**59PR34-471**	470	338	2.2	12	10	9	10.3	2.13	0.000655	0.14012
59P34-561	**59PR34-561**	560	403	3.3	13.2	11.2	10.4	8.4	2.13	0.000663	0.12497
59P34-681	**59PR34-681**	680	490	3.3	10.9	9.2	8.5	8.4	2.13	0.000658	0.15200
59P34-821	**59PR34-821**	820	590	5.5	11.3	9.6	8.9	6.5	2.13	0.000666	0.14623
59P34-102	**59PR34-102**	1000	720	5.5	9.2	7.8	7.3	6.5	2.13	0.000659	0.17875

PRELIMINARY

Notes:

1 - The Rated Current (Irated) is either the Saturation Current at 25ºC or the Temperature Rise Current ; the lowest number of the two specified currents.

2 - The Saturation Current (Isat) is the current at which the Inductance drops by a maximum of 20% below the lower limit of its value specified at 0 ADC Bias. Inductance at Isat is measured at the specified Ambient Temperature by applying DC Bias by a short period of time to minimize the self-heating effect of the component.

3 - The Temperature Rise Current is the current at which the temperature of the part increases by 50ºC. This test is performed with the part mounted on a PCB with traces having 1.75 times the cross sectional area of the copper leads of the part. The temperature of the part is measured after applying the DC current for a minimum of 10 minutes.

4 - Inductance is measured at 100 KHz and 1.0 Vrms.

5 - Temperature Rise can be estimated using the provided formulas:

6 - DCR is measured from lead to lead at test point TP1.

$$\text{Trise (°C)} = \left(\frac{\text{Core Loss + DCR Loss}}{\text{TRF A}} \right)^{0.833}$$

$$\text{DCR Loss (mW)} = \left(\text{IDC2} + \left(\frac{\triangle I}{2} \right)^2 \right) \text{ X TYP DCR (mOhms)}$$

$$\text{Core Loss (mW)} = \text{TRF B X } (F)^{1.84} \text{ X (TRF C X } \triangle)^{2.28}$$

IDC = DC Output Current (ADC)

△I = Delta I across the inductor (Amps)

F = Switching Frequency (kHz)

VITEC

6213 El Camino Real, Carlsbad, CA 92009
TEL: (760) 918-8831 FAX: (760) 918-8840
http://www.VitecCorp.com