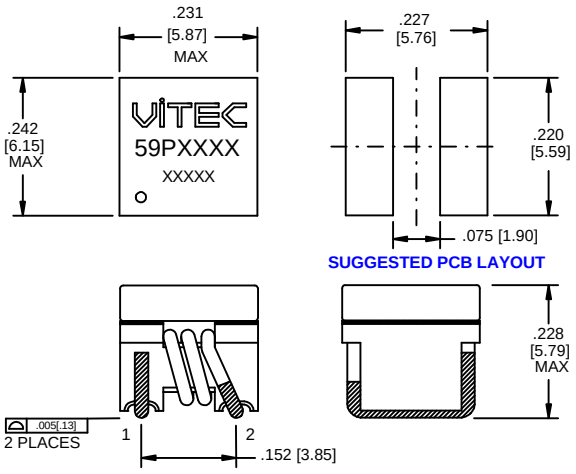
High Frequency SMD Power Inductors

Designed for VRD & VRM Applications

FEATURES

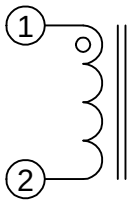
- High Current Handling Capability in the Smallest Footprint & Profile.
- Operating Frequency:0.2 - 1.8 MHz.
- Operating Temperature Range of -40ºC to 125ºC.

MECHANICAL



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

SCHEMATIC



ELECTRICAL CHARACTERISTICS @ 25ºC

Part Number		Inductance @ 0Adc[4]	Inductance @ Irated[4]	Irated[1]	DCR		Saturation Current[2]			Temp. Rise Current[3]	Temp.[5] Rise Factor	
Classic	RoHS	nH	nH	ADC	mOhm		ADC	ADC	ADC	ADC		
		± 15%	MIN	MAX	TYP	MAX	-40ºC	25ºC	125ºC	MAX	A	B
59P8970	**59PR8970**	1200	816	10	6.0	7.0	10.5	10	8	9	0.17343	4.44
59P9091	**59PR9091**	500	340	17	3.5	4.0	18.5	18	14	13	0.09635	5.40
59P8972	**59PR8972**	400	272	20	3.0	3.5	23.5	23	18	15	0.07663	6.16
59P9090	**59PR9090**	215	146	27	1.4	1.8	29	28	23	21	0.06187	5.64

Add an "R" to the part number after "P" for the RoHS compliant version (i.e. 59PR8970 is the RoHS compliant version of 59P8970).

Notes:

1 - The rated current is the saturation current @ 25ºC.

2 - The I(Saturation) is the current at which the inductance drops by 20% maximum of its value at 0ADC. This current is measured at the stated ambient environment and by applying a short duration pulse current to the component, minimizing the self-heating effects.

3 - The I(Temp. Rise) is the current at which the temperature of the part increases by a maximum of 50ºC. This test is performed with the part mounted on a PCB with 0.250" wide, 0.004" thick copper traces and applying the DC current for a minimum of 30 minutes.

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

5 - The additional Temperature Rise due to High ET (Voltage x Time) can be estimated using the following formula:

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

$$\text{DCR Loss} = \left(Idc^2 + \left(\frac{\triangle I}{2} \right)^2 \right) (\text{TYP DCR})$$

$$\text{Core Loss} = 0.00125 \times (F)^{1.84} \times (\text{Temp. Rise Factor A} \times \triangle I)^{2.2}$$

$\triangle I$ = Delta I across the inductor

F = Switching Frequency (kHz)

VITEC
6213 El Camino Real, Carlsbad, CA 92009
TEL: (760) 918-8831 FAX: (760) 918-8840