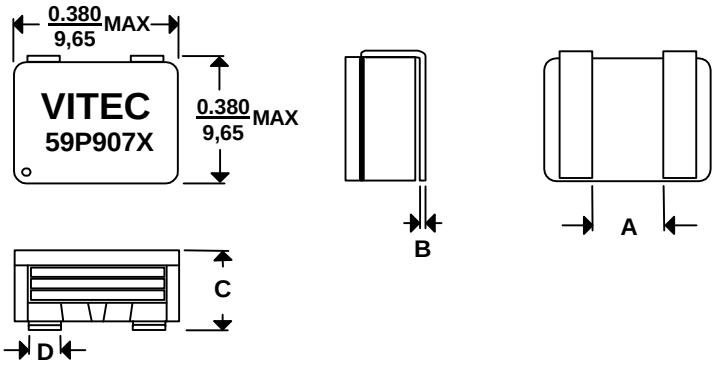
Hi-Frequency, Hi-Density SMD Power Inductor

59P907X

FEATURES

- Designed for use with Buck Regulators
- Operating Frequency of 0.250 - 2.0 MHz.
- Low DC Resistance.
- Operating Temperature Range of -40°C to 125°C.
- Surface Mount Package for pick and place assembly.
- Suitable for vapor phase and IR reflow soldering.

DRAWING

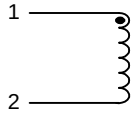


59P9071		
	Inch	mm
A	.120	3,05
B	.016	0,41
C	.100	2,54
D	.090	2,29

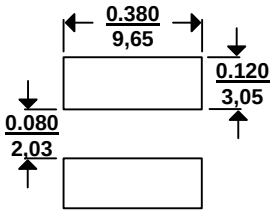
59P9073 AF4363		
	Inch	mm
A	.150	3,81
B	.020	0,51
C	.150	3,81
D	.070	1,78

Drawing NOT to scale.
Dimensions Inches/mm ± 0.010"/0,25mm unless noted.

SCHEMATIC



SUGGESTED PCB LAYOT



Drawing NOT to scale

ELECTRICAL CHARACTERISTICS @ 25ºC

Part Number		Inductance @ 0Adc[4]	Inductance @ Irated[4]	Irated[1]	DCR		Saturation Current[2]			Temp. Rise Current[3]	Temp. Rise Factor[5]	
Classic	RoHS	nH ± 10%	nH MIN	ADC MAX	mOhms TYP	mOhms MAX	ADC -40°C	ADC 25°C	ADC 125°C	ADC MAX	A	B
59P9071	**59PR9071**	100	72	35	.49	.53	37	35	26	29	0.04724	3.76
59P9073	**59PR9073**	100	72	50	.26	.32	46	44	35	38	0.03796	3.43

Add an "R" to the part number after "P" for the RoHS compliant version (i.e. 59PR9071 is the RoHS compliant version of 59P9071).

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:

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

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

$$\text{Core Loss} = 0.00224 \times (F)^{1.84} \times (\text{Temp. Rise Factor A} \times \triangle I)^{2.28}$$

$\triangle I$ = Delta I across the inductor

F = Switching Frequency (kHz)

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