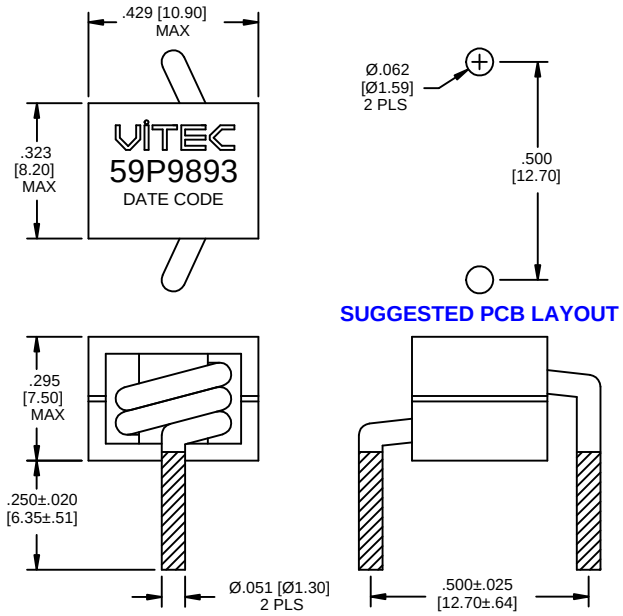
High Freq., High Power Inductor

59P9893

FEATURES

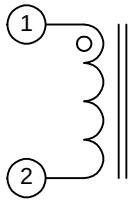
- Designed for use in Buck Regulators.
- Operating Frequency 0.350 - 2.0 MHz.
- Operating Temperature Range of -40°C to 125°C.
- RoHS Compliant Version Available.
- Low DC Resistance for higher efficiency.

DRAWING



ALL DIMENSIONS GIVEN IN INCHES [MM].
TOLERANCES UNLESS OTHERWISE SPECIFIED.
.XX±.01 [.X±.25] .XX±.004 [.XX±.10] ANGULAR: ±1°

SCHEMATIC



ELECTRICAL CHARACTERISTICS @ 25ºC

Part Number		Application Inductance	Inductance @ 0Adc[4]	Inductance @ Irated[4]	Irated[1]	DCR	MAX Saturation Current[2]			Temp. Rise Current[3]	Temp. Rise Factor[5]
Classic	RoHS	nH	nH ± 10%	nH MIN	ADC MAX	mOhms ±10%	ADC -40°C	ADC 25°C	ADC 125°C	ADC MAX	
59P9893	**59PR9893**	300	300	216	42	0.87	43	42	33	26	0.04247

Add an "R" to the part number after "P" for the RoHS compliant version (i.e. 59PR9893 is the RoHS compliant version of 59P9893).

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:

$$\text{Trise } (^{O}C) = \left(\frac{\text{Core Loss} + \text{DCR Loss}}{5.37} \right)^{0.833}$$

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

$$\text{Core Loss} = 0.003484 \times (F)^{1.84} \times (\text{Temp. Rise Factor} \times \triangle I)^{2.28}$$

$\triangle I$ = Delta I across the inductor

F = Switching Frequency (kHz)

AF3933_091306

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