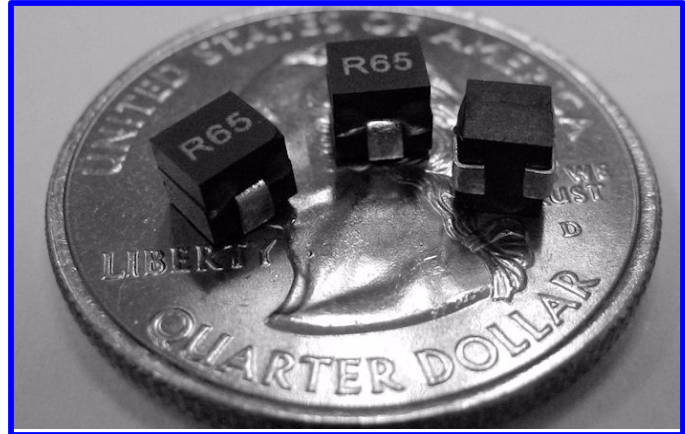


SMD High Frequency Power Inductor

Designed for VRD & VRM 10.x & 11.x Applications

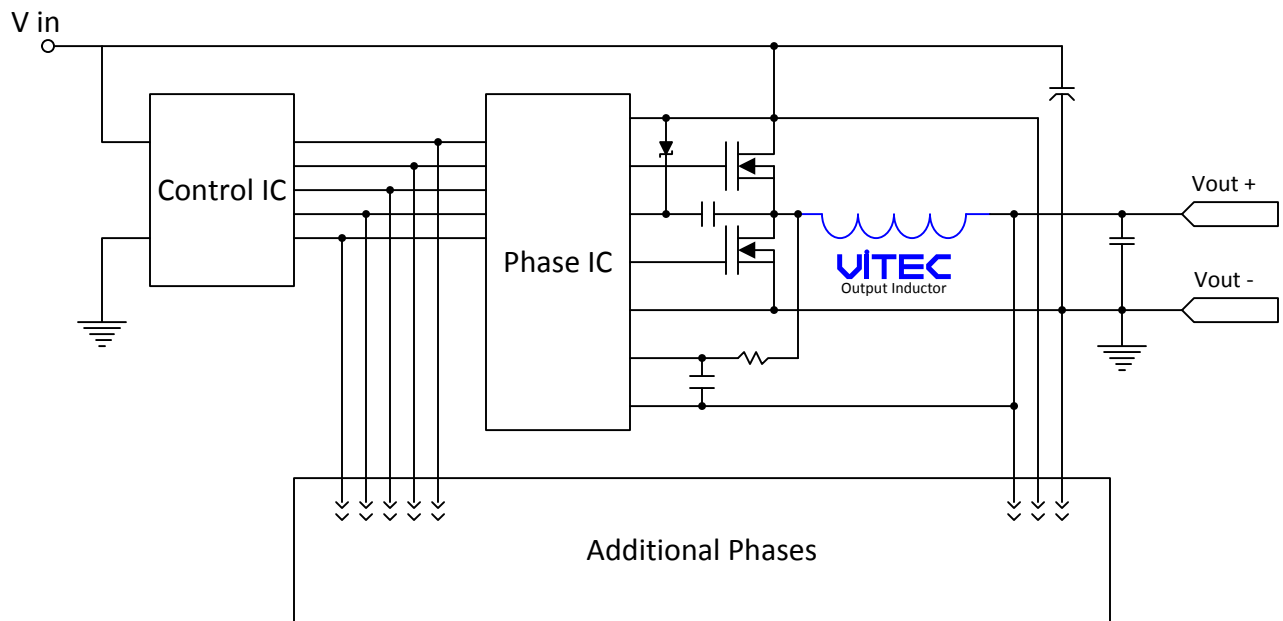
FEATURES

- Recommended for use with all major Voltage Regulator ICs.
- Low DCR for best efficiency.
- Operating frequency of 0.100 - 2.0 MHz.
- Extended operating temperature range: -40°C to 125°C.
- High current handling capability.
- Robust SMD package capable of handling the most aggressive SMT assembly process.
- RoHS compliant version available.



APPLICATIONS

- VRM 9.x, 10.x, and 11.x based designs
- Multi-Phase Voltage regulator designs
- Server, Desktop, PDA, Graphics cards, Notebook computers, DDR, telecom switches and routers
- DC-DC converters, Battery powered devices, high current power supplies
- High Current NPUs in networking equipment
- Point-of-load Modules
- DCR sensing

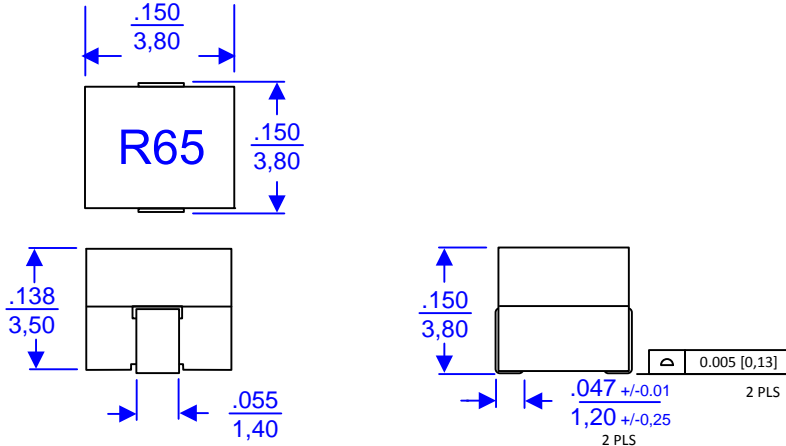


Typical Multi-Phase Application Circuit for a Buck Converter

SMD High Frequency Power Inductor

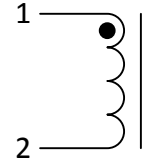
Designed for VRD & VRM 10.x & 11.x Applications

PACKAGE

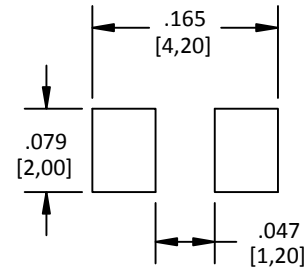


Dimensions: Inches [mm]. Tolerances: +/- 0.008" [0,20mm] unless otherwise noted

SCHEMATIC



SUGGESTED PCB LAYOUT



Drawing NOT to scale

ELECTRICAL CHARACTERISTICS @ 25°C (unless otherwise noted)

Part Number		Inductance @ 0 ADC (4)	Inductance @ Irated (4)	Irated (1)	DCR		Isat Max Saturation Current (2)			Temp. Rise Current (3)	Temp. Rise Factor C (5)
Classic (discontinued)	RoHS	nH	nH	ADC	mOhm		ADC	ADC	ADC	ADC	
		± 15%	MIN	MAX	TYP	MAX	-40°C	25°C	125°C	MAX	
59P65-650	59PR65-650	65	44	25	0.32	0.40	26	25	21	20	0.073

Add an "R" to the part number after "P" for the RoHS compliant version (i.e. 59PR65-650 is the RoHS compliant version of 59P65-650).

- The Rated Current (Irated) is the Saturation Current @ 25°C.
- The Saturation Current (Isat) is the current at which the Inductance drops by 20% maximum of its value specified at 0 ADC Bias. 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.
- The Temperature Rise Current is the current at which the temperature of the part increases by a maximum of 50°C. This test is performed with the part mounted on a PCB with traces having 1.7 times the cross sectional area of the copper leads and applying the DC current for a minimum of 30 minutes.
- Inductance is measured at 100 KHz and 1.0 Vrms.
- Temperature Rise can be estimated using the following formulas:

$$\text{Trise (}^{\circ}\text{C)} = \left(\frac{\text{Core Loss} + \text{DCR Loss}}{1.168} \right)^{0.833}$$

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

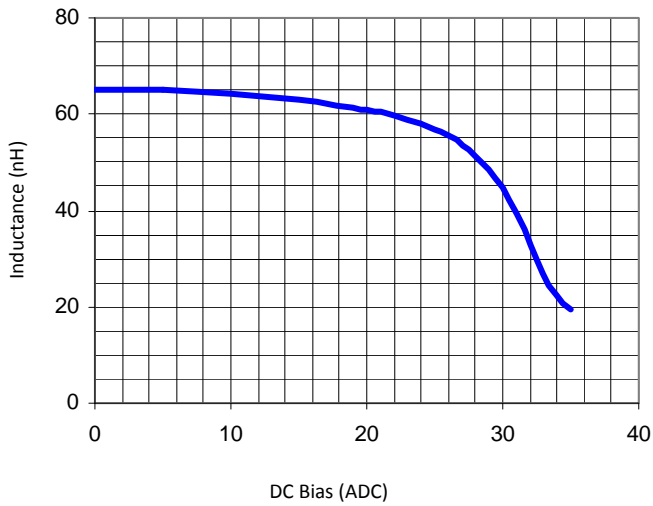
$$\text{Core Loss (mW)} = 0.00134 \times (F)^{1.62} \times (\text{TRF C} \times \Delta I)^{2.95}$$

IDC = DC output current (ADC)
 ΔI = Delta I across the inductor (Amps)
 F = Switching frequency (kHz)

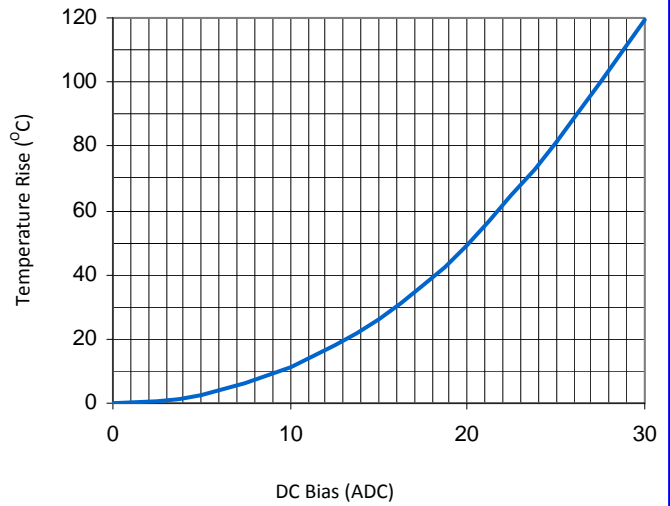
SMD High Frequency Power Inductor

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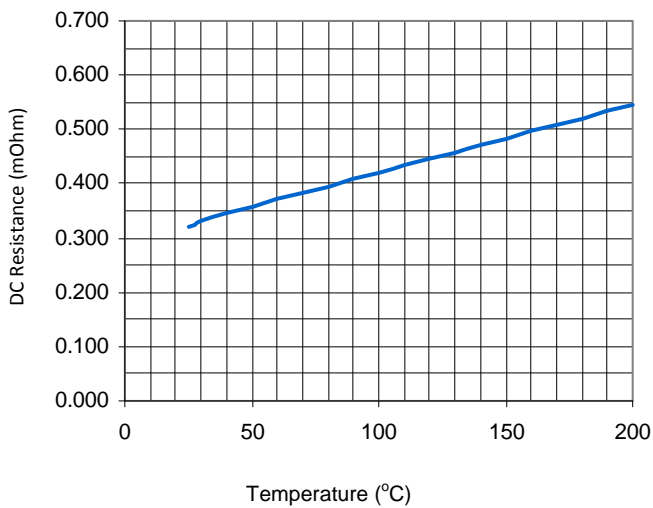
Inductance vs. DC Bias @ 25°C



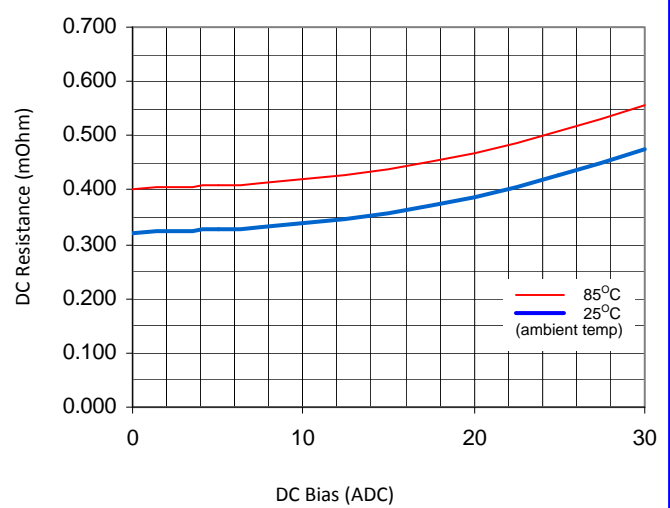
Temperature Rise vs. DC Bias



Resistance vs. Temperature



Resistance vs. DC Bias

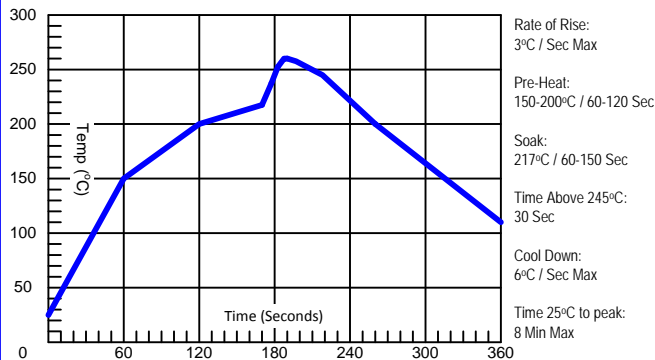


Notes

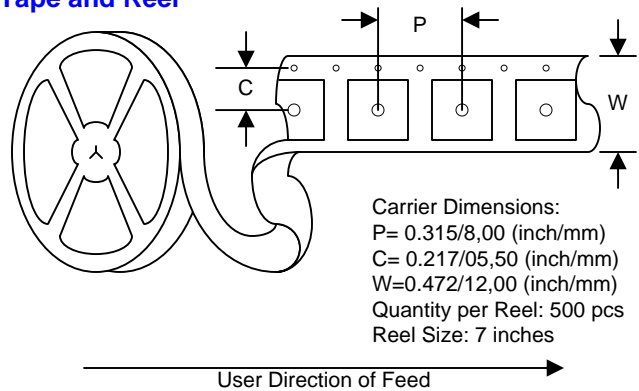
SMD High Frequency Power Inductor

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IR Profile



Tape and Reel



ENVIRONMENTAL & RELIABILITY DATA

Storage Temperature: -40°C to +125°C
Operating Temperature: -40°C to +125°C
Resistance to Solder Reflow: 3 passes thru. +245°C for 30 seconds minimum

Marking permanency: Tested per JESD22-B107-A
Solderability: Tested per MIL-STD-750D
Life Test: Tested per MIL-STD-202F, Method 108A
Thermal Cycle: Tested per JESD22-B104-B, Test Condition G

ABOUT US

Vitec Electronics Corporation, founded in 1986, is a worldwide leader in the design, manufacture and sale of magnetic solutions. Vitec's market focus includes the power, power conditioning, telecom, networking, communications and computing. Vitec has also established strong alliances with chip manufacturers whereby magnetic solutions are designed in conjunction with unique silicon requirements and are offered as reference designs by the chip companies.

With its Corporate Headquarters and Research & Development center located in Carlsbad, California, and its state of the art manufacturing facility and material sourcing in China, Vitec is uniquely positioned to supply the latest technology at the lowest cost. Vitec offers both standard and custom product design capabilities with all of its facilities being ISO certified.

QUALITY POLICY

Vitec will provide products and services that meet or exceed our Customer's requirements, conform to company policies and standards, and exhibit continuously improving levels of Quality.

COMMITMENT

VITEC Electronics empowers each of its employees by providing a business environment that encourages a commitment to excellence, a sense of ownership and personal accountability to all Vitec Customers.

Competitive Pricing, Quality Products, and On Time Deliveries are expected from today's World Class Magnetics Suppliers. The high standards of today's customer are strengthening the dedication and commitment of VITEC Electronics to provide Total Customer Service.

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