SMT POWER INDUCTORS

Power Beads - PA051XNL, PA121XNL, PA151XNL Series

Pulse
A TECHNITROL COMPANY

RoHS COMPLIANT

- **Current Rating:** Over 70Apk
- **Inductance Range:** 72nH to 470nH
- **Four Package Sizes:**

PA0512/PA1212: 7.0 x 7.0 x 4.96mm Max
PA0511/PA1211: 10.2 x 7.0 x 4.96mm Max
PA0515: 11.2 x 11.2 x 9.0mm Max
PA0513/PA1513: 13.5 x 13.0 x 8.0mm Max

Electrical Specifications @ 25°C — Operating Temperature -40°C to +130°C [7]

Part Number	Inductance @0ADC (nH ±20%)	Inductance @Irated (nH TYP)	Irated [1] (ADC)	DCR [2] (mΩ)	Saturation Current [3] (TYP)		Heating [4] Current (A TYP)
					25°C	100°C	
PA0512NL and PA1212NL - 7.0mm x 7.0mm x 4.96mm Max							
PA0512.700NLT	72	72	31		58	45	
PA0512.101NLT	105	102	31	0.32 ±9.4%	46	38	31
PA0512.151NLT	150	134	24		30	24	
PA1212.700NLT	72	72	31		58	45	
PA1212.101NLT	105	102	31	0.46 ±6.5%	46	38	31
PA1212.151NLT	150	134	24		30	24	
PA0511NL and PA1211NL - 10.2mm x 7.0mm x 4.96mm Max							
PA0511.850NLT	85	85	31		70+	70	
PA0511.900NLT	100	100	31		70	65	
PA0511.101NLT	120	120	31	0.39 ±7.7%	52	42	31
PA0511.151NLT	155	150	31		40	36	
PA0511.221NLT	220	176	25		33	25	
PA1211.850NLT	85	85	31		70+	70	
PA1211.900NLT	100	100	31		70	65	
PA1211.101NLT	120	120	31	0.55 ±7.3%	52	42	31
PA1211.151NLT	155	150	31		40	36	
PA1211.221NLT	220	176	25		33	25	
PA0515NL - 11.2mm x 11.2mm x 9.0mm Max							
PA0515.221NLT	225	225	35		68	59	
PA0515.271NLT	270	280	35	0.63 ±9.5%	50	44	35
PA0515.321NLT	325	325	35		43	36	
PA0515.471NLT	470	380	23		30	23	
PA0513NL and PA1513NL - 13.5mm x 13.0mm x 8.0mm Max							
PA0513.211NLT	210	210	45		71	64	
PA0513.261NLT	260	260	45	0.32 ±9.4%	60	55	45
PA0513.321NLT	320	285	41		50	45	
PA0513.441NLT	440	363	30		35	30	
PA1513.211NLT	210	210	45		71	64	
PA1513.261NLT	260	260	45	0.53 ±11.3%	60	55	45
PA1513.321NLT	320	285	41		50	45	
PA1513.441NLT	440	363	30		35	30	

NOTES:

1. The rated current as listed is either the saturation current or the heating current depending on which value is lower.
2. The nominal DCR tolerance is by design. The nominal DCR is measured from point ⓐ to point ⓑ, as shown below on the mechanical drawing.
3. The saturation current is the typical current which causes the inductance to drop by 20% at the stated ambient temperatures (25°C and 100°C). This current is determined by placing the component in the specified ambient environment and applying a short duration pulse current (to eliminate self-heating effects) to the component.
4. The heating current is the DC current which causes the part temperature to increase by approximately 40°C. This current is determined by soldering the component on a typical application PCB, and then applying the current to the device for 30 minutes without any forced air cooling.

(continued)

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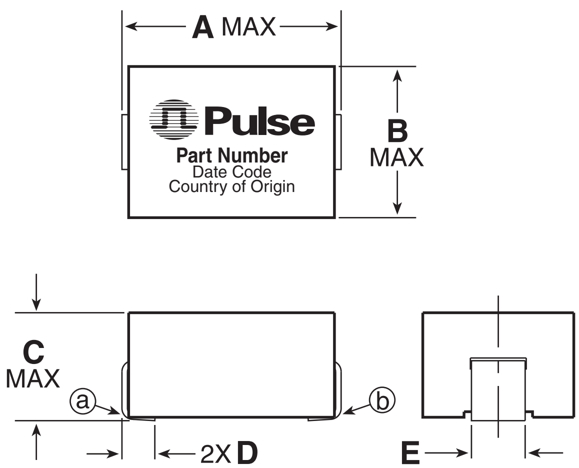
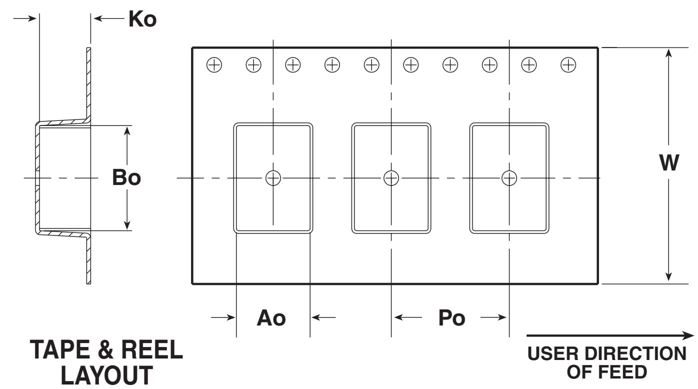
NOTES *(continued)*:

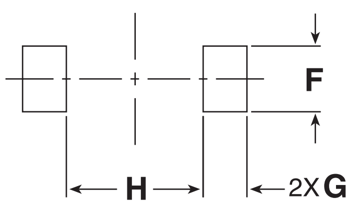
5. In high volt*time applications, additional heating in the component can occur due to core losses in the inductor which may neccessitate derating the current in order to limit the temperature rise of the component. To determine the approximate total losses (or temperature rise) for a given application, the coreloss and temperature rise curves can be used.
6. Pulse complies to industry standard tape and reel specification EIA481.
7. The temperature of the component (ambient plus temperature rise) must be within the stated operating temperature range.

Mechanical





TAPE & REEL LAYOUT

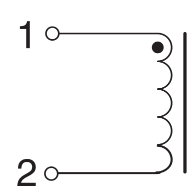


SUGGESTED PAD LAYOUT

Dimensions: $\frac{\text{Inches}}{\text{mm}}$

Unless otherwise specified, all tolerances are ± $\frac{.010}{0,25}$

Schematic



Dimensions (inches/mm)

	Mechanical Dimensions								T&R Dimensions						
Part Number	A (MAX)	B (MAX)	C (MAX)	D (NOM)	E (NOM)	F (NOM)	G (NOM)	H (NOM)	Ao	Bo	Ko	Po	W	Parts/Reel	Weight (grams)
PA0512/PA1212	.276 / 7,00	.276 / 7,00	.195 / 4,96	.060 / 1,52	.098 / 2,49	.120 / 3,05	.080 / 2,03	.130 / 3,30	.295 / 7,49	.300 / 7,62	.205 / 5,21	.472 / 12,00	.630 / 16,00	1000	0.94
PA0511/PA1211	.400 / 10,20	.276 / 7,00	.195 / 4,96	.060 / 1,52	.098 / 2,49	.120 / 3,05	.080 / 2,03	.250 / 6,35	.295 / 7,49	.420 / 10,67	.205 / 5,21	.472 / 12,00	.945 / 24,00	1000	1.35
PA0515	.440 / 11,18	.440 / 11,18	.354 / 9,00	.100 / 2,54	.080 / 2,03	.100 / 2,54	.120 / 3,05	.210 / 5,33	.453 / 11,50	.453 / 11,50	.378 / 9,60	.945 / 24,00	.945 / 24,00	250	4.5
PA0513/PA1513	.530 / 13,46	.510 / 12,95	.315 / 8,00	.100 / 2,54	.200 / 5,08	.300 / 7,62	.125 / 3,18	.280 / 7,11	.525 / 13,34	.525 / 13,34	.320 / 8,13	.630 / 16,00	.945 / 24,00	400	5.7

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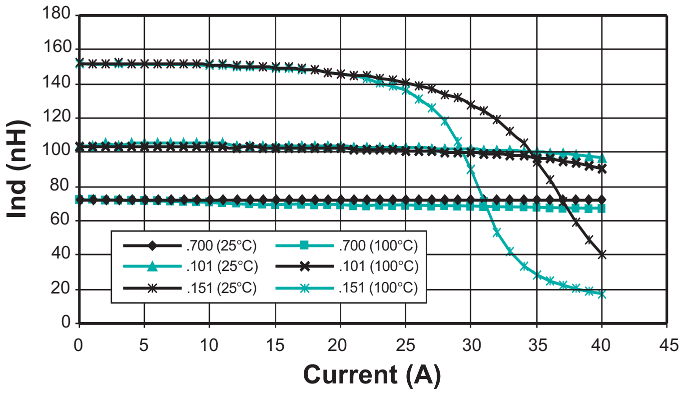
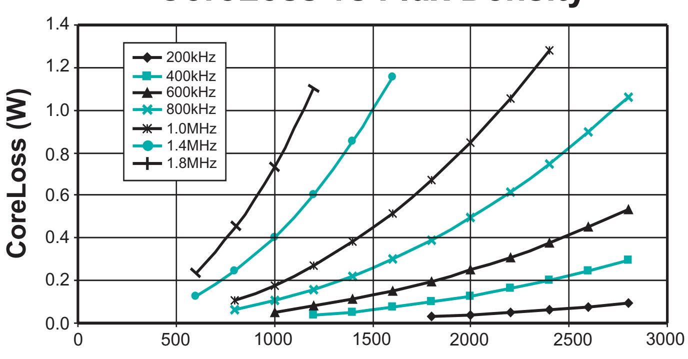
PA0512NL & PA1212NL

Inductance vs Current

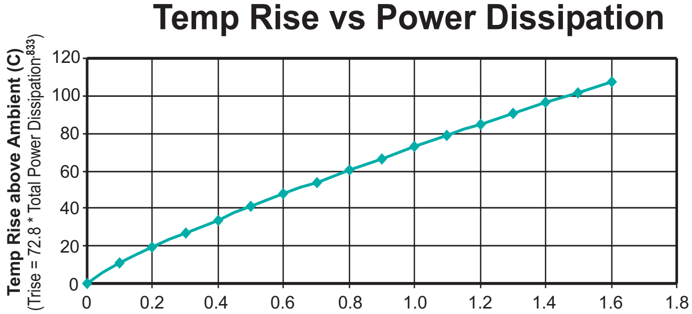


CoreLoss vs Flux Density



ΔB (gauss)
where ΔB = .86 * L(nH) * ΔI

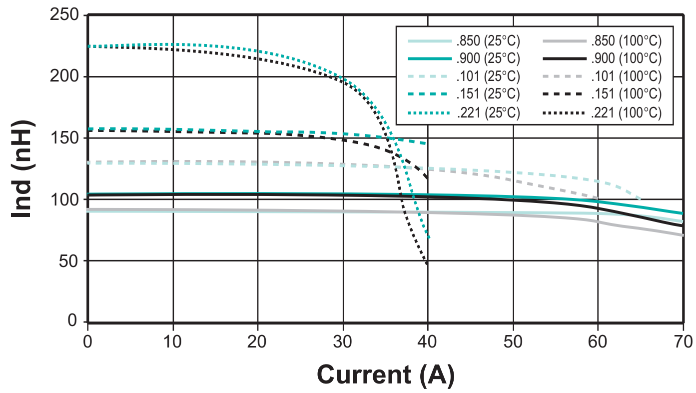
Temp Rise vs Power Dissipation



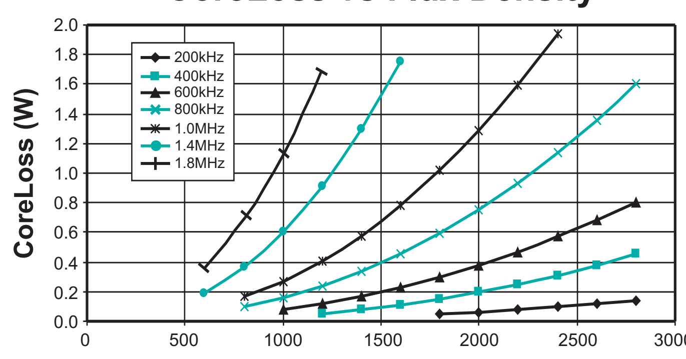
Total Power Dissipation (W) = CopperLoss + CoreLoss
CopperLoss = $I_{RMS}^2 * R_{DC}$ (mΩ) / 1000
CoreLoss = (from graph)

PA0511NL & PA1211NL

Inductance vs Current

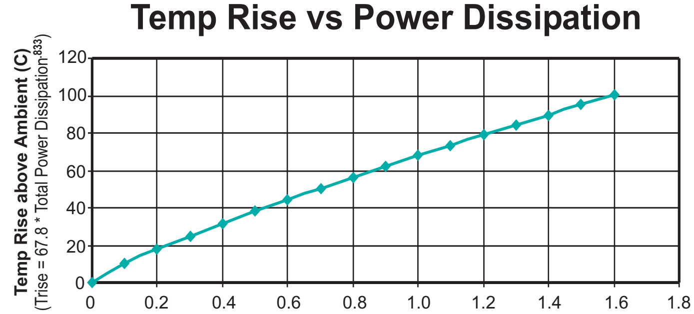


CoreLoss vs Flux Density



ΔB (gauss)
where ΔB = .57 * L(nH) * ΔI

Temp Rise vs Power Dissipation



Total Power Dissipation (W) = CopperLoss + CoreLoss
CopperLoss = $I_{RMS}^2 * R_{DC}$ (mΩ) / 1000
CoreLoss = (from table)

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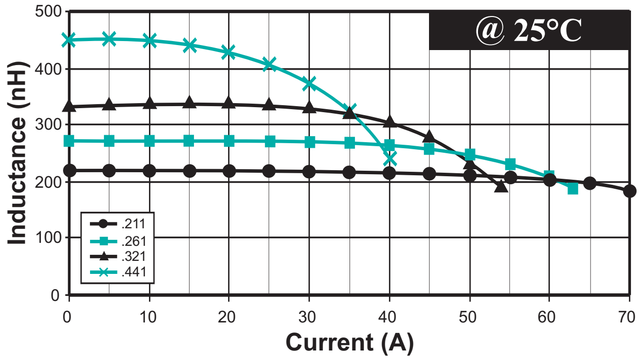
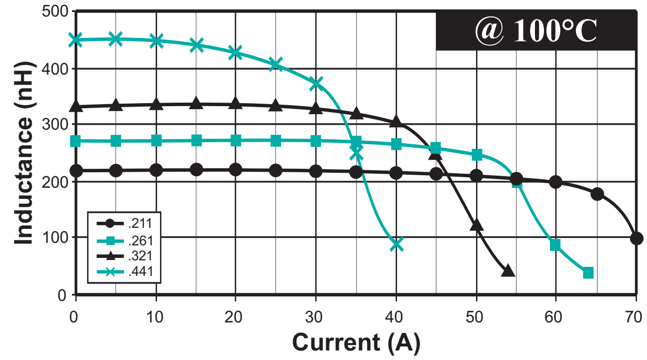
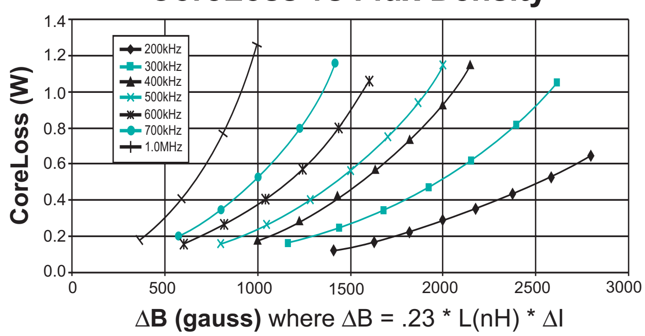
PA0513NL & PA1513NL

Typical Inductance vs Current

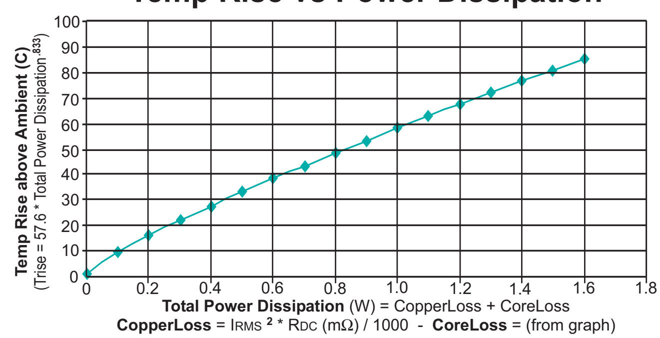




CoreLoss vs Flux Density

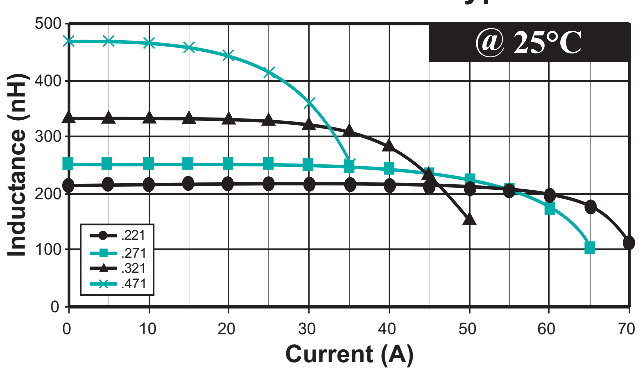


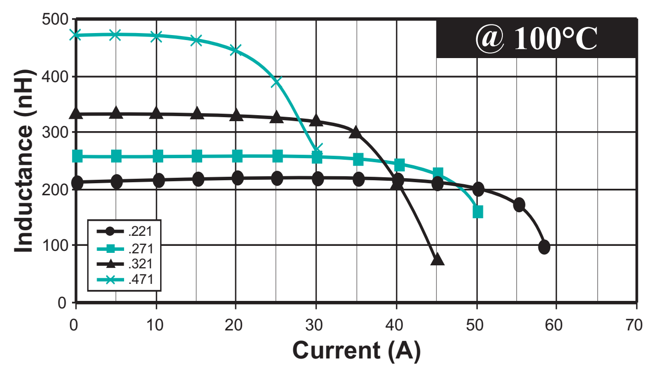
Temp Rise vs Power Dissipation



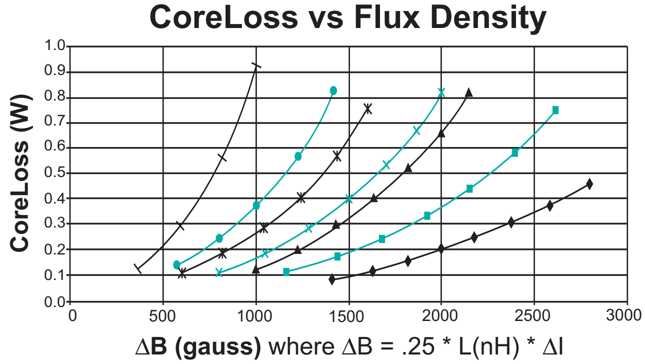
PA0515NL

Typical Inductance vs Current





CoreLoss vs Flux Density



Temp Rise vs Power Dissipation