

SMT POWER INDUCTORS

Power Beads - PA0135 Series



-  **Height:** 7.1mm Max
-  **Footprint:** 13.0mm x 13.0mm Max
-  **Current Rating:** up to 40A
-  **Inductance Range:** .074μH to 0.9μH

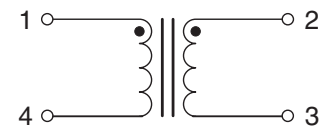
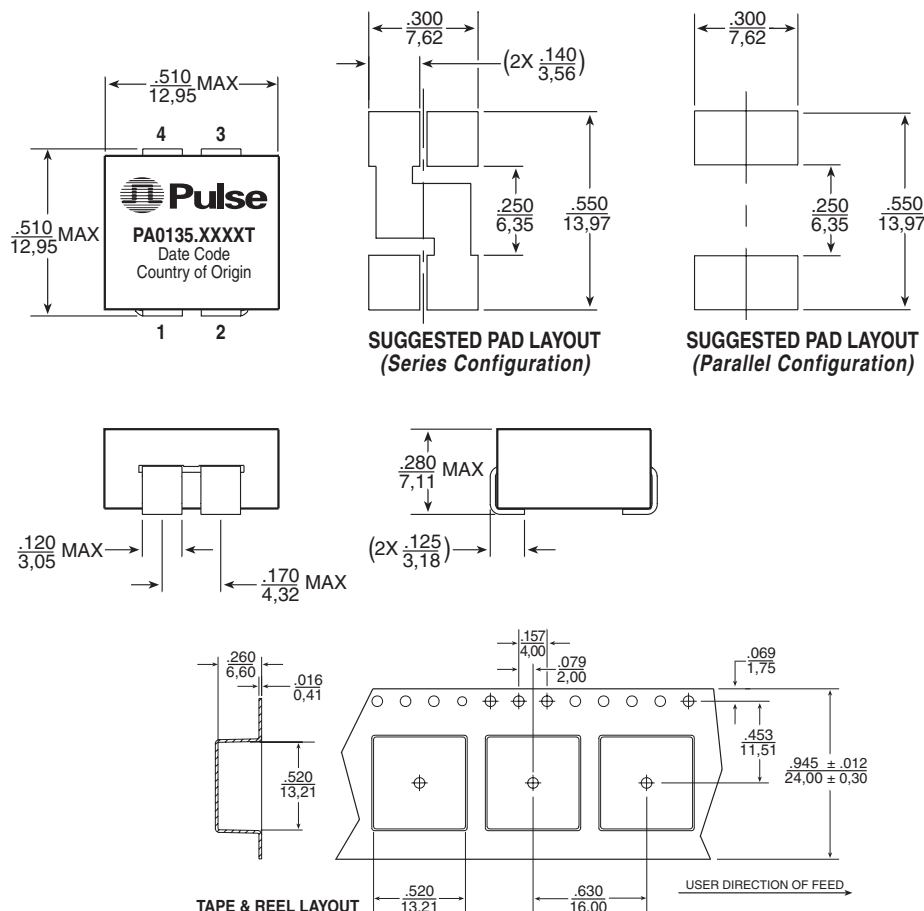
Electrical Specifications @ 25°C — Operating Temperature -40°C to +130°C

Part Number ^{5,6}	Inductance @I _{rated} (nH ± 20%)	I _{rated} ³ (A _{DC})	DCR (mΩ)		Inductance @0A _{DC} (nH ± 20%)	Saturation Current ² (A _{DC})		Heating Current ³ (A)	Trise ⁴ Factor K0	Core Loss Factor ⁴		Connection
			TYP	MAX		25°C	125°C			K1	K2	
VOLTA 5												
PA0135.331	74	40	0.18	0.225	82.5	40+	40+	40	6.38037	0.02566	0.01547	Parallel
PA0135.471	105	40	0.18	0.225	118	40+	40+	40	6.38037	0.02566	0.02204	Parallel
PA0135.681	153	34	0.18	0.225	170	40+	34	40	6.38037	0.02566	0.03188	Parallel
PA0135.102	225	24	0.18	0.225	250	35	24	40	6.38037	0.02566	0.04689	Parallel
PA0135.331	297	20	0.74	0.9*	330	40+	32	20	6.38037	0.02566	0.03094	Series
PA0135.471	423	20	0.74	0.9*	470	37	26	20	6.38037	0.02566	0.04407	Series
PA0135.681	612	19	0.74	0.9*	680	25	19	20	6.38037	0.02566	0.06377	Series
PA0135.102	900	14	0.74	0.9*	1000	18	14	20	6.38037	0.02566	0.09377	Series

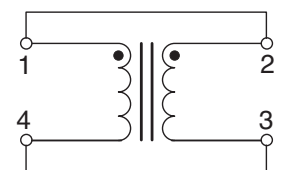
* DCR rating for indicated parts is for both windings tied in series.

Mechanical

Schematic



Series Hookup



Parallel Hookup

Weight 4.15 grams
Tape & Reel 500/reel

Dimensions: Inches
 mm

Unless otherwise specified,
 all tolerances are ± .010
 0.25

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Notes from Tables

1. The rated current as listed is either the saturation current or the heating current depending on which value is lower.
2. The saturation current is the current which causes the inductance to drop by 10% at the stated ambient temperatures (-40°C, 25°C, 125°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.
3. The heating current is the DC current which causes the temperature of the part to increase by approximately 40°C. This current is determined by mounting the component on a PCB with .25" wide, 2 oz. equivalent copper traces, and applying the current to the device for 30 minutes. In the series hookup mode, the resistance of the interconnection needs to be taken into account when calculating temperature rise.
4. In high volt*time applications additional heating in the component can occur due to core losses in the inductor which may necessitate derating the current in order to limit the temperature rise of the component. In order to determine the approximate total losses (or temperature rise) for a given application, both copper losses and core losses should be taken into account.
5. Optional Tape & Reel packaging can be ordered by adding a "T" suffix to the part number, (i.e. PA0135.102T).

6. To order RoHS compliant part, add the suffix "NL" to the part number (i.e. PA0135.102 becomes PA0135.102NL and PA0135.102T becomes PA0135.102NLT).

Estimated Temperature Rise:

$$Trise = \left[\frac{Coreloss (mW) + DCRloss (mW)}{K0} \right]^{.833} (°C)$$

$$Coreloss = K1 * (Fsw(kHz))^{1.6688} * (K2 * dI)^{2.17} (mW)$$

$$DCRloss = Irms^2 * DCR(m\Omega) (mW)$$

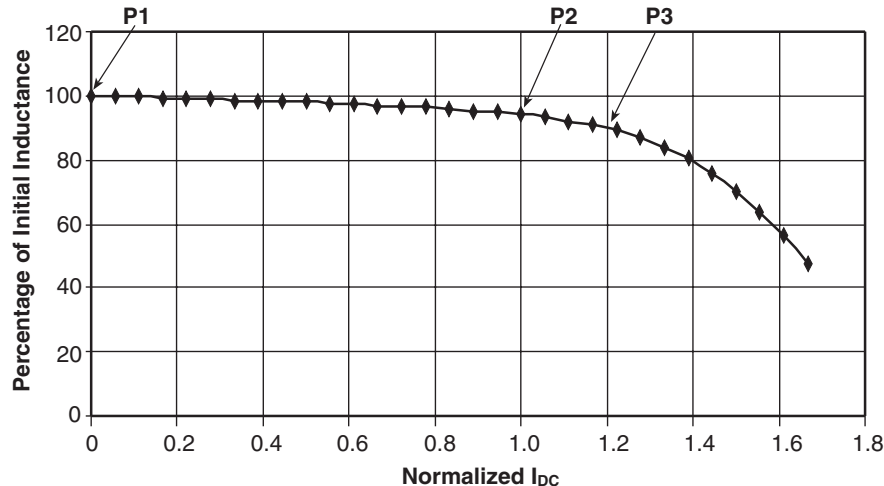
$$Irms = \left[IDC^2 + \left[\frac{dI}{12} \right]^2 \right]^{1/2} (Arms)$$

$$Fsw(kHz) = \text{switching frequency (kHz)}$$

$$dI = \text{delta I across the component (A)}$$

The temperature of the component (ambient temperature + temperature rise) should be within the listed operating temperature range.

Inductance vs Current Characteristics



P1 - Initial Inductance, L_0 (.1VRMS, 300kHz, 0A_{DC}, 25°C)

P2 - Inductance (typically 95% L_0) at Rated I_{DC} .

P3 - Inductance (typically 90% L_0) at I_{PK} .

—●— Normalized Inductance

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12220 World Trade Drive San Diego, CA 92128 U.S.A. http://www.pulseeng.com TEL: 858 674 8100 FAX: 858 674 8262	3 Huxley Road Surrey Research Park Guildford, Surrey GU2 5RE United Kingdom TEL: 44 1483 401700 FAX: 44 1483 401701	Zone Industrielle F-39270 Orgelet France TEL: 33 3 84 35 04 04 FAX: 33 3 84 25 46 41	150 Kampong Ampat #07-01/02 KA Centre Singapore 368324 TEL: 65 6287 8998 FAX: 65 6280 0080	3F-4, No. 81, Sec. 1 HsinTai Wu Road Hsi-Chih, Taipei Hsien Taiwan, R.O.C. Tel: 886 2 2698 0228 FAX: 886 2 2698 0948	Unit 11, 11/F Wah Lai Industrial Centre 10-14 Kwei Tei Street, Fotan, Shatin, Hong Kong TEL: 852 2788 6588 FAX: 852 2776 1055	

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AMEYA360

Components Supply Platform

Authorized Distribution Brand :



Website :

Welcome to visit www.ameya360.com

Contact Us :

➤ Address :

401 Building No.5, JiuGe Business Center, Lane 2301, Yishan Rd
Minhang District, Shanghai , China

➤ Sales :

Direct +86 (21) 6401-6692

Email amall@ameya360.com

QQ 800077892

Skype ameyasales1 ameyasales2

➤ Customer Service :

Email service@ameya360.com

➤ Partnership :

Tel +86 (21) 64016692-8333

Email mkt@ameya360.com