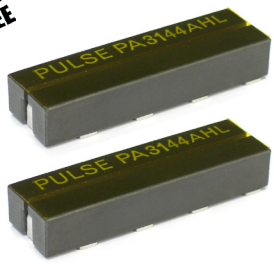
SMT POWER INDUCTORS

Power Beads - PA314xAHL Series Coupled Inductor



- *8mm Coupled Inductors for Volterra Gen2.5 Applications*
- *For use only with Volterra chipsets*
- *Coupled Inductors enable:*
  - *Phase ripple current reduction due to AC magnetic field cancellation within the inductor core.*
  - *Improved efficiency due to lower peak currents*
  - *Reduction in required output capacitance*

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

Part Number	Number of Coupled Phases	Series Inductance (nH +/- 15%)	Equivalent Transient (nH)	I_{rms_TDC} (Adc)	Imax Peak[3] per Phase (Adc)	Open Circuit Inductance[4,5] per Phase (nH)					DCR per Phase[6] (mΩ)
						Phase 1 (2-1)	Phase 2 (4-3)	Phase 3 (6-5)	Phase 4 (8-7)	Phase 5 (10-9)	
PA3142AHL	2	100	50	40	110	200nH Min at 0Adc (25C) 150nH Min at 25Adc (25C) 100nH Min at 23Adc (105C)		na	na	na	0.25 Typical 0.30 Max
PA3143AHL	3	150				200nH Min at 0Adc (25C) 150nH Min at 25Adc (25C) 100nH Min at 23Adc (105C)			na	na	
PA3144AHL	4	200				200nH Min at 0Adc (25C) 150nH Min at 25Adc (25C) 100nH Min at 23Adc (105C)				na	
PA3145AHL	5	250				200nH Min at 0Adc (25C) 150nH Min at 25Adc (25C) 100nH Min at 23Adc (105C)					

Notes:

1. The series inductance is the inductance when all phases are tied in series and is measured and verified in production at 100khz, 100mVrms:
   (ie: for PA3144AHL: Inductance (2-7) with (1-4 and 3-6 and 5-8 shorted))

2. In a non-coupled multi-phase topology, the power supply sees the same inductance during transient and steady-state conditions. As a result, any attempt to lower the inductance to improve transient response has the negative result of increasing ripple and peak currents throughout the system during steady-state operation. However, in a coupled inductor multi-phase topology, the interaction of magnetic fields from each phase enables an overall reduction in ripple current during steady-state operation and a lower equivalent inductance during transient operation. The equivalent transient inductance per phase, as listed, represents the actual value of inductance (Lk) that would be required in an non-coupled topology to realize the same transient performance. The equivalent inductance per phase can be calculated as series inductance divided by the number of phases. For more information on the operation of the coupled inductor topology, please contact Volterra.

3. The rated current (I_{rms_TDC}) is the continuous current which results in a 55° C rise of the component temperature above the ambient temperature (Conditions: Ta=55° C; 200LFM airflow; Tested on a Volterra evaluation board). The peak current (Imax) is the current which causes a 20% reduction of the leakage inductance compared to no load conditions at 105° C.

4. The open-circuit inductance per phase is the measured inductance across each phase when all other phases are open circuit. Open circuit inductance is measured at 100kHz, 100mVrms. The open circuit inductance is equal to the magnetizing inductance per phase (Lm) plus the equivalent transient inductance (Lk). The open circuit inductance values at 25C (0Adc and 26 Adc) are measured and verified during production.

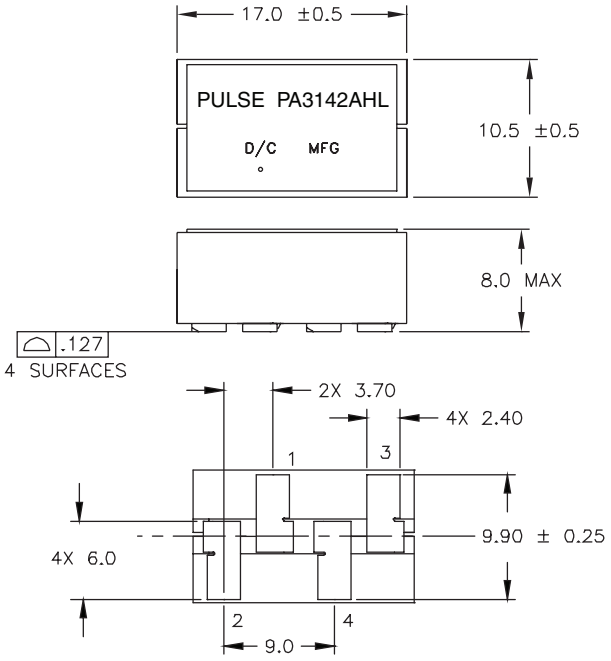
5. All elevated temperature measurements were verified during design but are not measured during production and therefore are for reference only.

6. DCR is measured between points ⓐ and ⓑ as shown on the mechanical drawing.

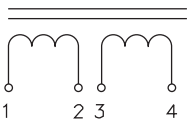
7. Optional tape and reel packaging can be ordered by adding a T suffix to the part number (ie: PA3144AHL becomes PA3144AHLT). Pulse complies to the industry standard tape and reel specification EIA481. The tape and reel for this product has the following dimensions:
   PA3142AHL: W=32.0, Po =16.0, Ko = 8.0
   PA3143AHL: W=44.0, Po = 16.0, Ko =7.6
   PA3144AHL: W=56.0, Po=16.0, Ko=7.6
   PA3145AHL: W=72, Po=16.0, Ko=8.0

Mechanicals

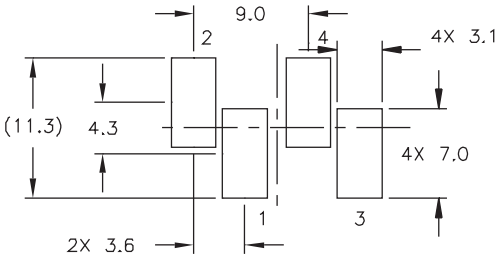
PA3142AHL



* All Dimensions in mm.
Unless stated otherwise the tolerance on the listed dimensions are:
.X ±0.2
.XX ±0.10



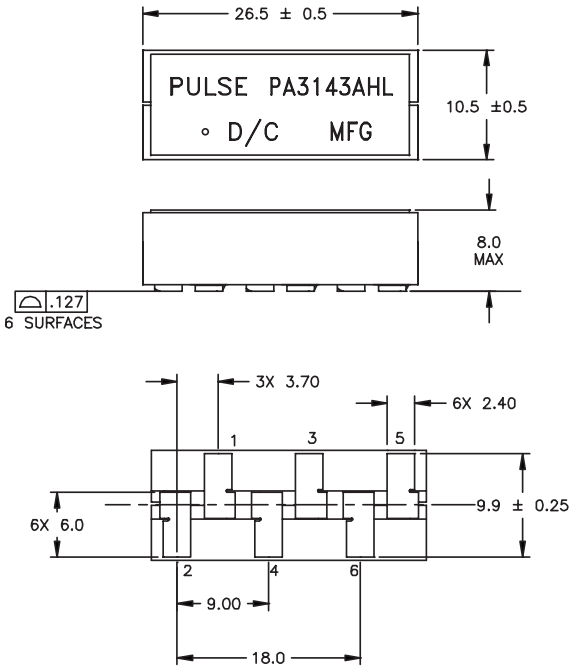
Schematic



PRIMARY SUGGESTED LAND PATTERN

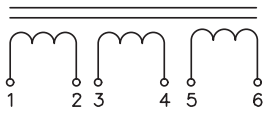
Mechanicals

PA3143AHL

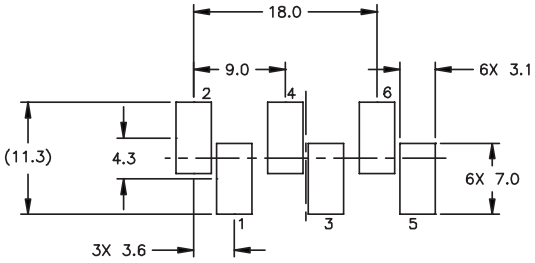


FINAL OUTLINE

* All Dimensions in mm.
Unless stated otherwise the tolerance on the listed dimensions are:
.X ±0.2
.XX ±0.10



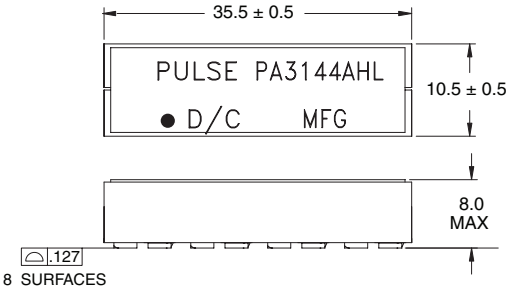
Schematic



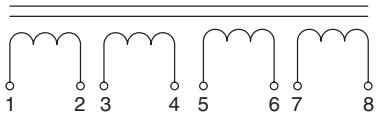
PRIMARY SUGGESTED LAND PATTERN

Mechanicals

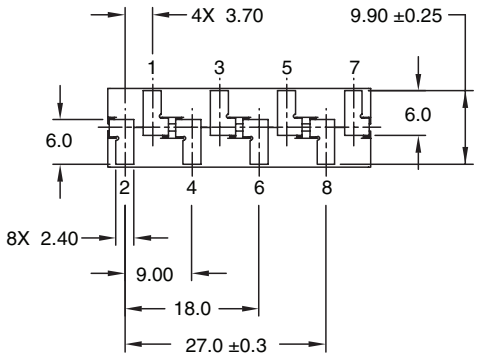
PA3144AHL



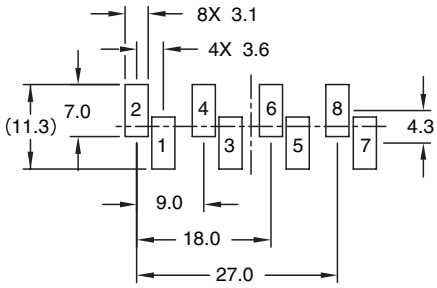
* All Dimensions in mm.
Unless stated otherwise the tolerance on the listed dimensions are:
.X ±0.2
.XX ±0.10



Schematic



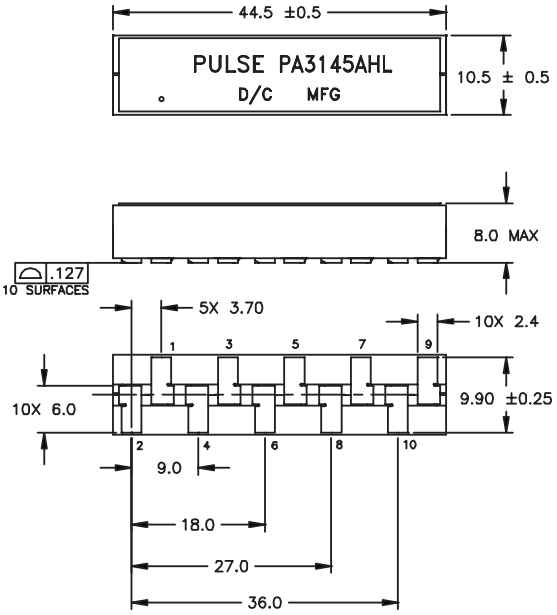
FINAL OUTLINE



SUGGESTED LAND PATTERN
TOLERANCE ON PADS = ± 0.05

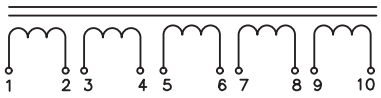
Mechanicals

PA3145AHL

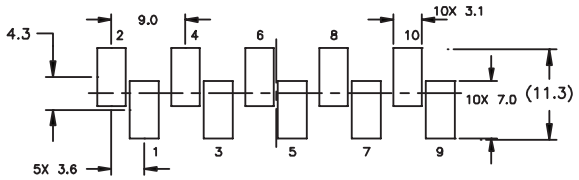


FINAL OUTLINE

* All Dimensions in mm.
Unless stated otherwise the tolerance on the listed dimensions are:
.X ±0.2
.XX ±0.10



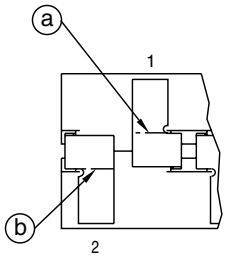
Schematic



PRIMARY SUGGESTED LAND PATTERN

DCR Measurement Location

PA314XHL



For More Information

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