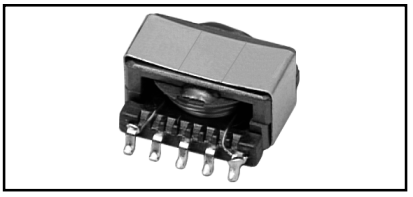
# Model LPE-5047

Vishay Dale

## Transformers/Inductors

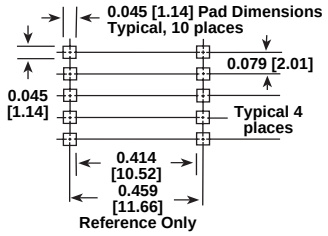
*Surface Mount, Gapped and Ungapped*
*Custom Configurations Available*



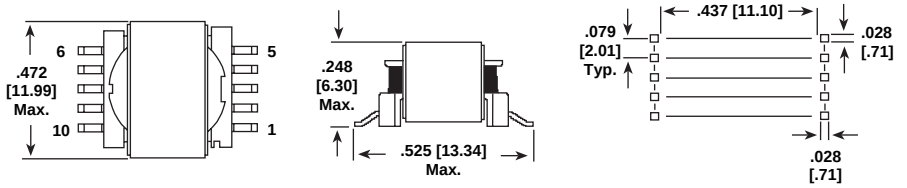
**ELECTRICAL SPECIFICATIONS (Multiple winds are connected in parallel)**
**Inductance Range:** 10µH to 68000µH, measured at 0.10V RMS @ 10kHz without DC current, using an HP 4263A or HP 4284A impedance analyzer.
**DC Resistance Range:** 0.03 ohm to 24.1 ohm, measured at + 25°C ± 5°C.
**Operating Temperature:** - 20°C to + 80°C.
**Rated Current Range:** 2.29 amps to .07 amps.
**Dielectric Withstanding Voltage:** 500V RMS, 60Hz, 5 seconds.

**DIMENSIONAL CONFIGURATIONS [Numbers in brackets indicate millimeters]**

**Pad Layout**




**Dimensional Outline**




Foot print Diagram

**NOTE:** Pad layout guidelines per MIL-STD-275E (printed wiring for electronic equipment). Tolerances: xx ± .01" [± 0.25mm]. xxx ± .005" [± 0.12mm].

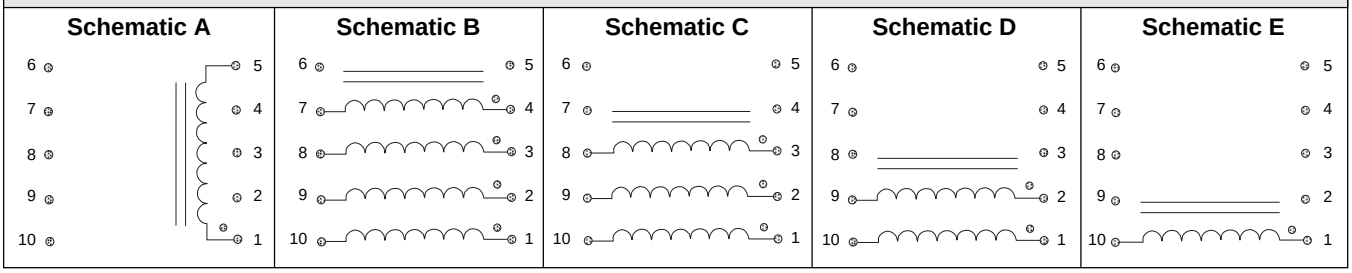
**STANDARD ELECTRICAL SPECIFICATIONS**

| MODEL | INDUCTANCE (µH) | INDUCTANCE TOLERANCE | SCHEMATIC LETTER | DCR MAX. (Ohms) | MAX. RATED* DC CURRENT (Amps) | SATURATING** CURRENT (Amps) |
|---|---|---|---|---|---|---|
| **Ungapped Models** | | | | | | |
| LPE-5047-151NA | 150 | ± 30% | A | 0.20 | .79 | N/A |
| LPE-5047-221NA | 220 | ± 30% | A | 0.24 | .72 | N/A |
| LPE-5047-331NA | 330 | ± 30% | A | 0.29 | .65 | N/A |
| LPE-5047-471NA | 470 | ± 30% | A | 0.35 | .59 | N/A |
| LPE-5047-681NA | 680 | ± 30% | A | 0.42 | .54 | N/A |
| LPE-5047-102NA | 1000 | ± 30% | A | 0.51 | .49 | N/A |
| LPE-5047-152NA | 1500 | ± 30% | A | 0.63 | .44 | N/A |
| LPE-5047-222NA | 2200 | ± 30% | A | 0.76 | .40 | N/A |
| LPE-5047-332NA | 3300 | ± 30% | A | 1.00 | .35 | N/A |
| LPE-5047-472NA | 4700 | ± 30% | A | 2.24 | .24 | N/A |
| LPE-5047-682NA | 6800 | ± 30% | A | 2.70 | .21 | N/A |
| LPE-5047-103NA | 10000 | ± 30% | A | 3.27 | .19 | N/A |
| LPE-5047-153NA | 15000 | ± 30% | A | 6.26 | .14 | N/A |
| LPE-5047-223NA | 22000 | ± 30% | A | 7.58 | .13 | N/A |
| LPE-5047-333NA | 33000 | ± 30% | A | 9.50 | .11 | N/A |
| LPE-5047-473NA | 47000 | ± 30% | A | 18.5 | .08 | N/A |
| LPE-5047-683NA | 68000 | ± 30% | A | 24.1 | .07 | N/A |
| **Gapped Models** | | | | | | |
| LPE-5047-100MB | 10 | ± 20% | B | 0.03 | 2.29 | 2.690 |
| LPE-5047-150MB | 15 | ± 20% | B | 0.04 | 2.07 | 2.230 |
| LPE-5047-220MB | 22 | ± 20% | B | 0.05 | 1.68 | 1.860 |
| LPE-5047-330MB | 33 | ± 20% | C | 0.09 | 1.35 | 1.540 |
| LPE-5047-470MB | 47 | ± 20% | D | 0.13 | 1.11 | 1.300 |
| LPE-5047-680MB | 68 | ± 20% | D | 0.15 | 1.01 | 1.085 |
| LPE-5047-101MB | 100 | ± 20% | D | 0.24 | .81 | .900 |
| LPE-5047-151MB | 150 | ± 20% | D | 0.37 | .65 | .740 |
| LPE-5047-221MB | 220 | ± 20% | E | 0.55 | .53 | .610 |
| LPE-5047-331MB | 330 | ± 20% | E | 0.85 | .43 | .500 |
| LPE-5047-471MB | 470 | ± 20% | E | 1.29 | .35 | .420 |
| LPE-5047-681MB | 680 | ± 20% | E | 1.96 | .28 | .350 |
| LPE-5047-102MB | 1000 | ± 20% | E | 2.38 | .26 | .290 |
| LPE-5047-152MB | 1500 | ± 20% | E | 3.66 | .21 | .240 |
| LPE-5047-222MB | 2200 | ± 20% | E | 5.47 | .17 | .195 |
| LPE-5047-332MB | 3300 | ± 20% | E | 8.48 | .14 | .160 |
| LPE-5047-472MB | 4700 | ± 20% | E | 13.2 | .11 | .135 |

*DC current that will create a maximum temperature rise of 30°C when applied at + 25°C ambient. **DC current that will typically reduce the initial inductance by 20%.

**UNGAPPED MODELS:** Highest possible inductance with the lowest DCR and highest Q capability. Beneficial in filter, impedance matching and line coupling devices.
**GAPPED MODELS:** Capable of handling large amounts of DC current, tighter inductance tolerance with better temperature stability than ungapped models. Beneficial in DC to DC converters or other circuits carrying DC currents or requiring inductance stability over a temperature range.

## SCHEMATICS (Top View)




**NOTE:** Schematic A is for Ungapped LPE Series.

## ENVIRONMENTAL PERFORMANCE

| TEST | CONDITIONS |
|---|---|
| **Thermal Cycling** | Withstands - 55°C to +125°C |
| **High Temperature** | + 85°C |
| **High Humidity** | 85% |
| **Soldering Heat** | Tested to + 230°C |
| **Mechanical Shock** | Per MIL-STD-202, Method 214 (100G) |
| **Vibration** | Per MIL-STD-202, Method 204 (20G) |
| **Solderability** | Per industry standards |

## PART MARKING

— Vishay Dale

— Date code

— Marking code (Suffix of model #)

— Pin 1 indicator

## HOW TO ORDER - LPE-5047-102NA

| LPE | 5047 | 1000µH | ± 30% | A |
|---|---|---|---|---|
| MODEL | SIZE | INDUCTANCE VALUE | INDUCTANCE TOLERANCE | CORE |

## PACKAGING

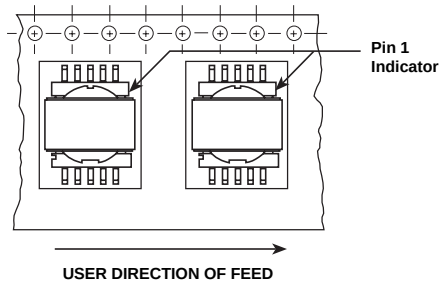
**TAPE SPECIFICATIONS:**
Carrier Tape Type: Conductive.
Cover Tape Type: Anti-static.
Cover Tape Adhesion to Carrier: 40 ± 30 grams.

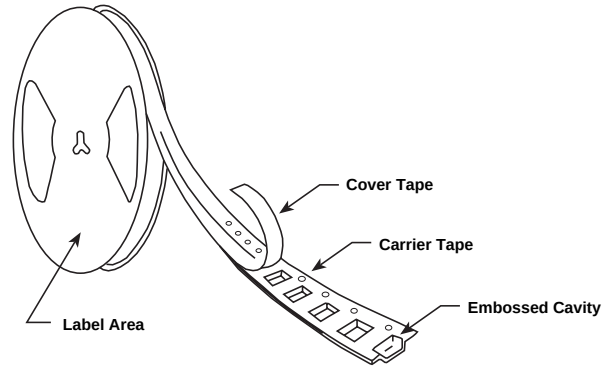
**REEL SPECIFICATIONS:**
Diameter (flange): 13" [330.2mm].
Maximum Width (over flanges): 1.197" [30.4mm].

**STANDARDS:** All embossed carrier tape packaging will be accomplished in compliance with latest revision of EIA-481 "Taping of Surface Mount Components for Automatic Placement".

| MODEL | TAPE WIDTH | COMPONENT PITCH | UNITS PER 13 INCH REEL |
|---|---|---|---|
| LPE-5047 | 24mm | 16mm | 600 |

### Tape and Reel Orientation




**NOTE:** Top view shown with cover tape removed.

# Surface Mount Transformers and Inductors

*Custom Designs and Configurations Available*
*(PCB Mount available for many Geometries)*

## FEATURES

- Totally integrated manufacturing.
- Pick and place compatible.
- Statistical process controlled.
- Tape packaging per EIA-481.
- Low cost.
- Qualification data available.
- Short lead times.
- Wide inductance ranges available.
- High DC current handling capabilities.
- Low DCR vs inductance.
- Hot tin dipped terminations.
- Compatible with reflow solder processes.
- Industry standard footprints.
- UL Class B materials (+ 130°C).
- Ferrite cores in a power material.
- Resistant to solvents.
- Custom designs available (transformers or inductors). Tighter tolerances may also be available.

## APPLICATIONS

**Circuit:** Signal conditioning, filtering, DC/DC converters, audio circuits and line matching circuits.

**Equipment:** Notebook computers, pagers, global positioning equipment, communications and audio.

**PARTIAL LISTING OF AVAILABLE GEOMETRIES**

| OUTPUT POWER* | CORE GEOMETRY | VISHAY DALE PART NUMBER | OUTSIDE DIMENSIONS (inches) | | |
|---|---|---|---|---|---|
| | | | LENGTH | WIDTH | HEIGHT |
| 2.5 | EE5 | 3325** | 0.323 | 0.256 | 0.205 |
| 6.2 | ER9.5 | 4841** | 0.492 | 0.421 | 0.248 |
| 9.4 | ER11/5 | 5047** | 0.525 | 0.472 | 0.248 |
| 11.2 | EFD10 | 4658 | 0.737 | 0.47 | 0.212 |
| 12.5 | EP7 | 5036 | 0.530 | 0.4 | 0.34 |
| 20.5 | EFD12 | 6454 | 0.796 | 0.549 | 0.256 |
| 24.1 | EPC13 | 8070 | 0.843 | 0.6 | 0.330 |
| 27.7 | EEM12.7 | 6855** | 0.69 | 0.555 | 0.22 |
| 28.7 | EP10 | 5740 | 0.585 | 0.55 | 0.43 |
| 35.6 | ER14.5 | 6562** | 0.695 | 0.606 | 0.335 |
| 38.4 | EFD15 | 7466 | 0.894 | 0.663 | 0.295 |
| 47.1 | EP13 | 6750 | 0.685 | 0.625 | 0.5 |
| 55.5 | EPC17 | 9080 | 0.941 | 0.76 | 0.394 |
| 70 | EPC19 | 9887 | 1.02 | 0.866 | 0.382 |
| 94 | EFD20 | 9385 | 1.102 | 0.9 | 0.4 |
| 175 | EPC25B | 9999 | 1.142 | 1.06 | 0.4 |
| 204 | EFD25 | 9890 | 1.24 | 1.1 | 0.5 |
| 297 | EFD30 | 9990 | 1.65 | 1.3 | 0.6 |

*2300 Perm, 100kHz, 20°C, 50°C temperature rise.
**Standard products available (see following pages for details).