

Medium Power Planar Transformer 1 kW to 3 kW



In addition to this standard design of PLA51 many custom designs can be offered upon request

LINKS TO ADDITIONAL RESOURCES



FEATURES

RoHS
COMPLIANT

- For high power density DC/DC converter application
- Very low profile and weight
- High efficiency: > 99 %
- Recommended frequency range (50 kHz; 400 kHz)
- Operating temperature range: -55 °C; 125 °C with heat sink dissipation
- Easy-assembly system for cold plates
- Tapped output terminals
- Material temperature grade: 180 °C
- Excellent repeatability
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

QUICK REFERENCE DATA

| | |
|------------------|-------------------------|
| Type | Transformer |
| Size (L x W x H) | 70 mm x 53 mm x 22 mm |
| Terminals | Tapped outputs or wires |
| Power | 1000 W to 3000 W |
| Frequency range | 50 kHz to 400 kHz |
| Inductance range | 96 µH to 160 µH |

EXAMPLE OF TRANSFORMER APPLICATION: 2 kW DC/DC CONVERTER, PLA51LA32

POWER SUPPLY

| TOPOLOGY | FREQUENCY | POWER | INPUT VOLTAGE | OUTPUT VOLTAGE | OUTPUT CURRENT | DUTY CYCLE MAX. |
|----------------------------------|-----------|-------|---|----------------|----------------|-----------------|
| Full bridge with current doubler | 100 kHz | 2 kW | 50 V _{DC} to 110 V _{DC} | 30 V | 67 A | 0.98 |

STANDARD ELECTRICAL CHARACTERISTICS

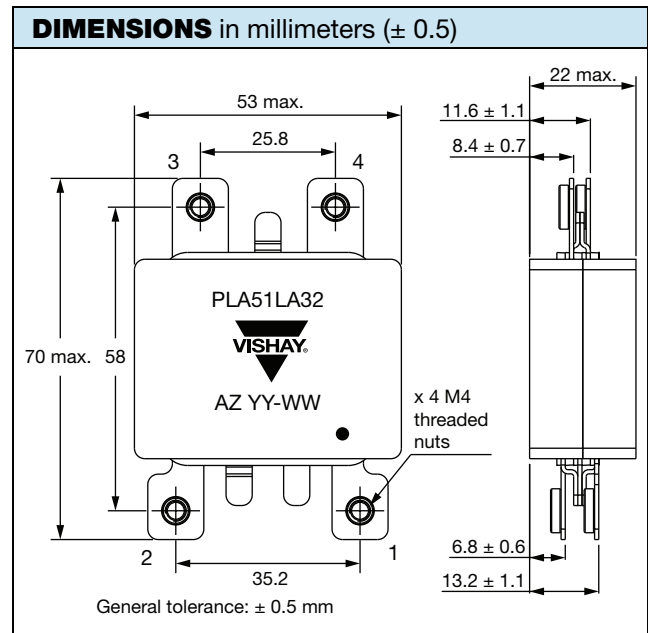
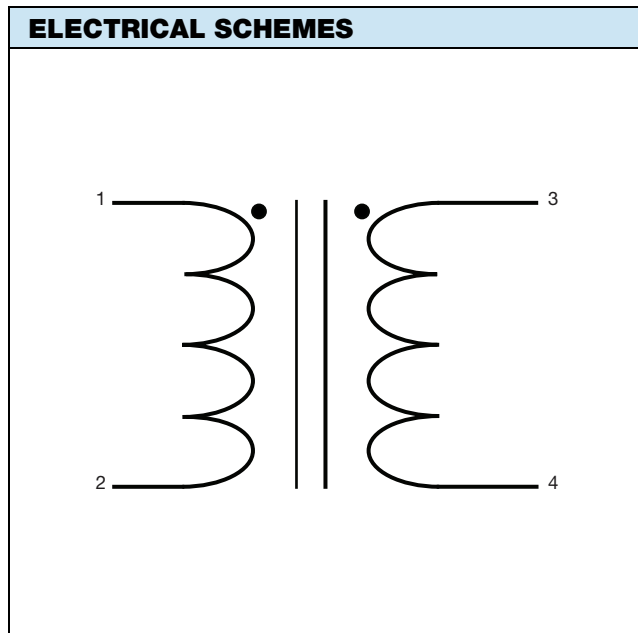
| INDUCTANCE (10 kHz; 0.1 V) | LEAKAGE INDUCTANCE (10 kHz; 0.1 V) | TURN RATIO | POWER LOSSES | EFFICIENCY | HIPOT: PRIMARY / SECONDARY + CORE 1500 V _{AC} | HIPOT: SECONDARY / CORE |
|-------------------------------|--|---------------|-----------------|------------|---|----------------------------|
| 128 µH ± 25 % | < 150 nH (typical) | 3:2 | < 17 W | > 99 % | < 150 µA | < 150 µA |

RECOMMENDATIONS FOR MOUNTING

Announced performances are achieved using a liquid cooling system. The internal temperature must be maintained below 160 °C. The user shall correctly size its own heatsink according to real working conditions of his device.

PACKAGING

Individual box.


Notes

- Weight ≈ 170 g
- Take care of ferrite core while handling (no shock admitted)
- Terminal fixing: with M4 screw, max. tightening: 1.2 Nm

| SAP PART NUMBERING | | | | | | |
|--------------------|------|--------------------------------------|---|--|---------------------------------------|--|
| MODEL | SIZE | STYLE | FOOTPRINT | RATIO | SPECIAL | |
| PLA | 51 | L = leadframe with nuts W = wires | A = as shown in above drawings (other upon request) | 21 = 2 : 1 (on request) 31 = 3 : 1 (on request) 32 = 3 : 2 SR = special ratio | XXXXX = special code (6 digits) | |

| RELATED DOCUMENTS | |
|---|--|
| APPLICATION NOTES | |
| Designing With the PLA51 Planar Transformer for Enhanced Power Density and Efficiency | www.vishay.com/doc?59063 |



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