

## 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

### 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; 120 °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](http://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       |

### 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 <sub>DC</sub> to 110 V <sub>DC</sub> | 30 V           | 67 A           | 0.98            |

#### STANDARD ELECTRICAL CHARACTERISTICS

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

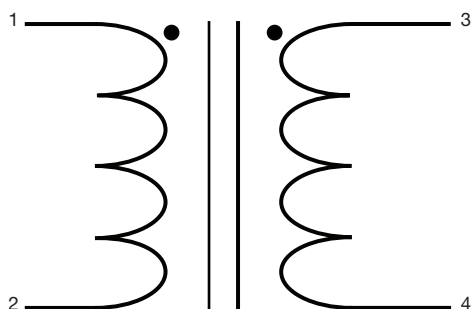
## RECOMMENDATIONS FOR MOUNTING

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.

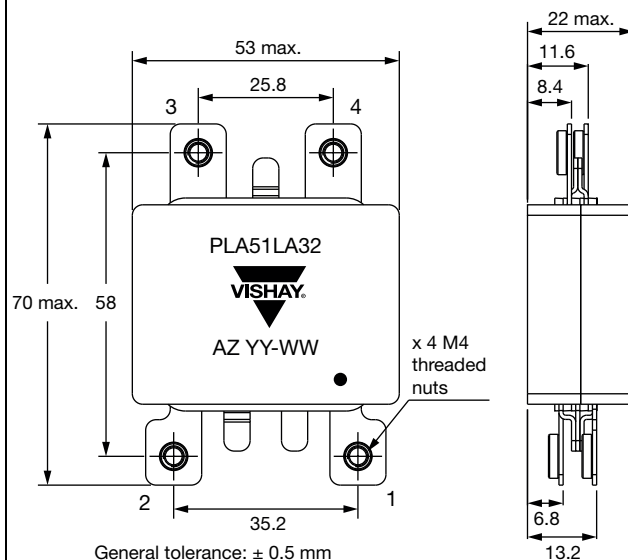
## PACKAGING

Individual box.

### ELECTRICAL SCHEMES



### DIMENSIONS in millimeters (± 0.5)



#### 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<br>W = wires | A = as shown<br>in above<br>drawings<br>(other upon request) | 21 = 2 : 1<br>31 = 3 : 1<br>32 = 3 : 2<br>SR = special ratio | XXXXX =<br>special code<br>(6 digits) |



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