

SIZE 5000 Power Capacity 5 to 20kW

Description

The Payton **SIZE 5000** provides a planar solution for high power applications (such as traction, induction heating etc.) providing high efficiency, low EMI, excellent repeatability, low profile and weight with an operating temperature range of -40°C to +130°C.



1. Transformer Application

| POWER CAPACITY | DIMENSIONS (mm) | TYPICAL WEIGHT | DIELECTRIC ISOLATION | OPERATING VOLTAGE | OPERATING CURRENT (RMS) |
|---|---|----------------|--|--------------------------------|-------------------------|
| 5kW, forward at 50 kHz 20kW, full bridge at 100kHz | L = 180-230 W = 104-145 H = 20-60 | 2-3 kg. | 500 V _{DC} - 4k V _{rms} | 1000 V _{peak} max. | 1000 A max. |

Typical efficiency: 97-99%

Recommended frequency range: 20 kHz – 300 kHz.

Topologies:

Full bridge; Half bridge; Push-Pull; Forward;

Resonant topologies (in order of preference).

Mounting Options: a. Horizontal b. Vertical

2. Inductor Application

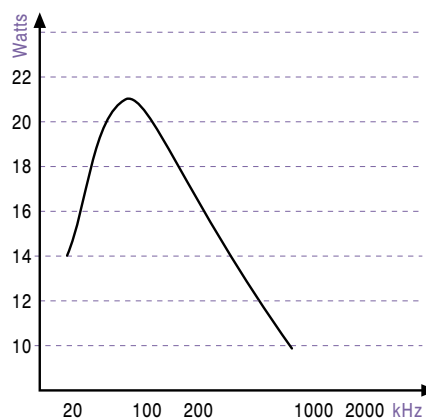
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|-------------------------------------|------|------|-----|-----|-----|------|------|
| STANDARD A_L (nH/t ²) | 1600 | 1000 | 630 | 400 | 315 | 250 | 160 |
| TYPICAL VALUE OF MAX. Amper Turns | 190 | 310 | 490 | 790 | 950 | 1202 | 1500 |

A_L values not listed are available upon request.

3. Typical Thermal Impedance For Different Cooling Conditions

| NATURAL COOLING (Hot Spot - Air) | BLOWING AIR 3m/sec (Hot Spot - Air) | ONE SIDE HEATSINK (Hot Spot - Heatsink) | TWO SIDE HEATSINK (Hot Spot - Heatsink) |
|-------------------------------------|--|--|--|
| 1.7°/W | 1.3°/W | 1.6°/W | 0.8°/W |

Power Capacity vs. Frequency*



*For single output AC to DC full bridge power supply transformer with turns ratio of 6.

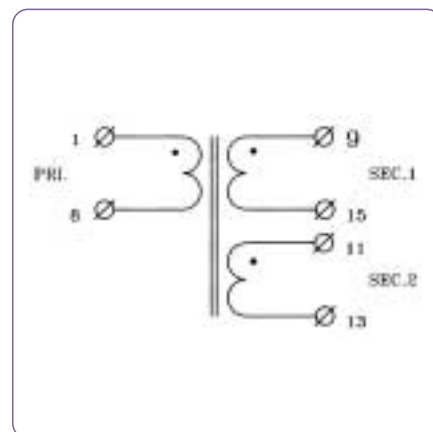
EXAMPLE

Transformer Type T5000 AC P.N. 11864

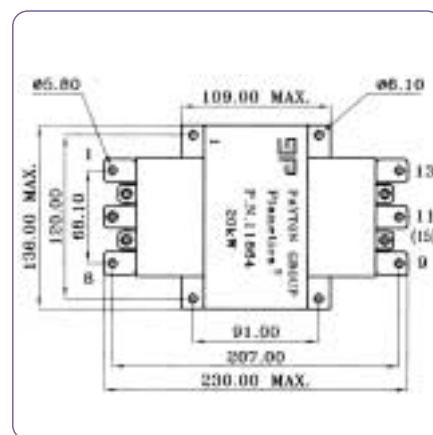
This T5000-16-6-6, super high power, high input voltage, high frequency, small dimensional planar transformer is developed for a high power density AC-DC converter and may be used in high power applications, providing the following specifications:

Transformer Specifications

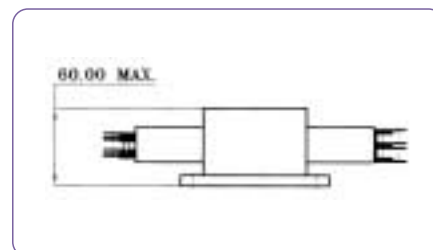
| | |
|---|-----------------------|
| Total output power | 20kW (590 Vdc@34 Adc) |
| Operating frequency | 100 kHz |
| Input voltage range | 815 - 900 Vdc |
| Topology | Full bridge, resonant |
| Max. Volt-Sec. product | 8.15 V-msec |
| Duty cycle | 2 x 0.5 max. |
| Primary current | 27 Arms max. |
| Secondary 1,2 output current | 30 Arms max. |
| Primary to Sec. 1,2 ratio | 16 : 6 |
| Dielectric strength pri. to sec.1+sec.2+core | 3750 Vrms |
| sec.1, sec.2 to core | 1500 Vrms |
| Ambient temperature | -20°C to +50°C |
| Total losses (With 45°C heat sink) | 95W |
| Hotspot temperature (With 45 °C heatsink) | 120°C max. |
| Weight | 3000 gr. |



ELECTRICAL DIAGRAM



TOP VIEW



SIDE VIEW

(All dimensions are given in mm.)