

SIZE 270 Power Capacity 1kW to 10kW

Description

The Payton **SIZE 270** provides a patented planar isolation solution for high power applications (such as welding, induction heating etc.) providing high efficiency, low EMI, excellent repeatability, low profile and weight with an operating temperature range of -40°C to $+130^{\circ}\text{C}$.



Power Factor Correction

1. Transformer Application

POWER CAPACITY	DIMENSIONS (mm)	TYPICAL WEIGHT	DIELECTRIC ISOLATION	OPERATING VOLTAGE	OPERATING CURRENT (RMS)
1kW, forward at 50 kHz 10kW, full bridge at 250kHz	L = 110 W = 47 H = 22	300 gr.	500 V _{dc} - 4k V _{rms}	1000 V _{peak} max.	700 A max.

Typical efficiency: 97-99%

Recommended frequency range: 50 kHz – 1.0 MHz.

Topologies:

Full bridge; Half bridge; Push-Pull; Forward; Flyback; Boost; Buck; Resonant topologies (in order of preference).

Mounting Options: a. Horizontal b. Vertical

2. Inductor Application

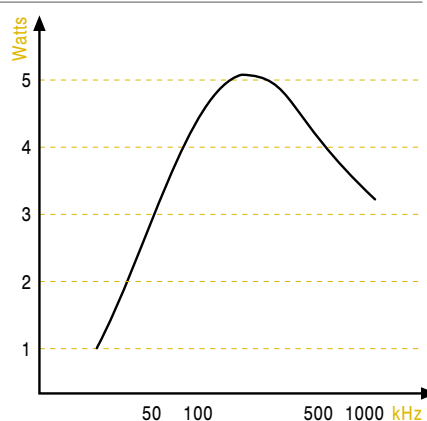
STANDARD A_L (nH/t ²)	1600	1000	630	400	315	250	160
TYPICAL VALUE OF MAX. Amper Turns	86	140	235	345	415	520	645

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)
$5.0^{\circ}/\text{W}$	$2.8^{\circ}/\text{W}$	$2.0^{\circ}/\text{W}$	$1.0^{\circ}/\text{W}$

Power Capacity vs. Frequency*



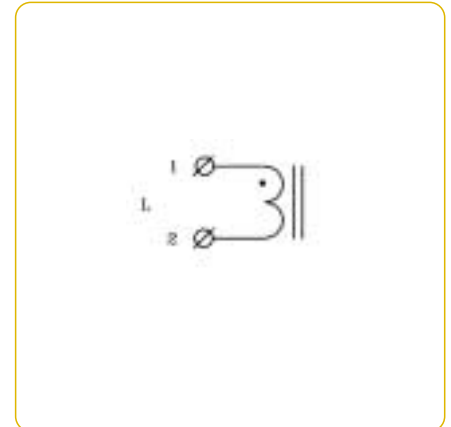
*For single output AC to AC full bridge power supply transformer with turns ratio of 3.

EXAMPLE

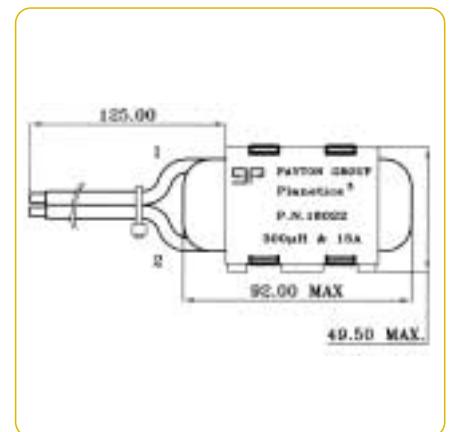
Inductor Type I270 P.N. 16022

This I270-300 μ H/15A, high frequency, Power Factor Correction (PFC) planar inductor is developed for a high power density DC-DC converter, providing the following specifications:

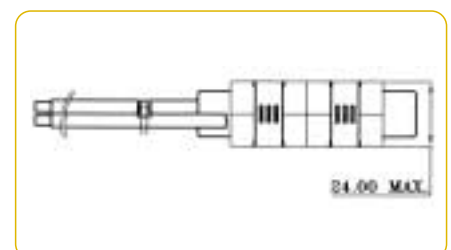
Inductor Specifications	
Inductance L	300 μ H + 10% \ -20%
Operating frequency	100 kHz
RMS current, max	9 Arms, at 100-120 Hz
Peak of ripple current	2 Apeak, at 100 kHz.
Peak of total current	15 Apeak max.
Dielectric strength	1800 Vrms
Ambient temperature	-40°C to +85°C
Total losses (With 95°C heat sink)	7W
Hotspot temperature (With 95 °C heatsink)	100°C max.
Temperature class of insulation system	“F” (150°C)
Weight	320 gr.



ELECTRICAL DIAGRAM



TOP VIEW



SIDE VIEW

(All dimensions are given in mm.)