

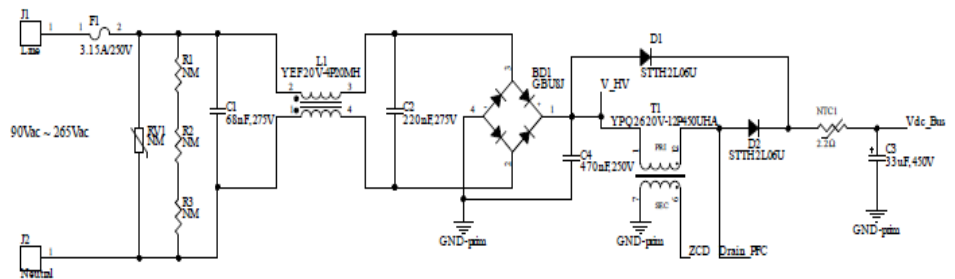
VIPERGAN100 Series

Flyback Transformer Design with CMC and PFC

TRIGON
COMPONENTS

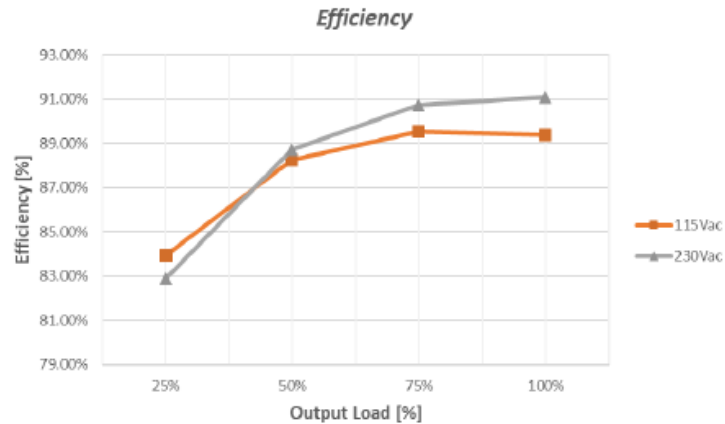


Typical Application (12.7V/100W)



FEATURES

- Isolated Quasi-Resonant with dynamic blanking
- Excellent overall efficiency with reduced switching loss
- Maximum safety with protection against output voltage, overtemperature, overload and brown-in/out
- Reduced AC input distortion with low THD
- Design for all AC-DC converter applications



ORDERING CODE

YPQ2620V-12P450UHA
T1: PFC Inductor

YPQ3220V-12P600UHB
T2: Flyback Transformer

YEF20V-4P20MH
L1: CMC Inductor

Electrical Specifications

Parameter	Min.	Typ.	Max.	Unit
AC Main Input Voltage	90		265	Vac
Main Frequency	47			Hz
Ambient Operating Temperature				°C
Output Voltage	12.1	12.7	13.3	Vdc
Output Current		7.9		A

List of Key Magnetics

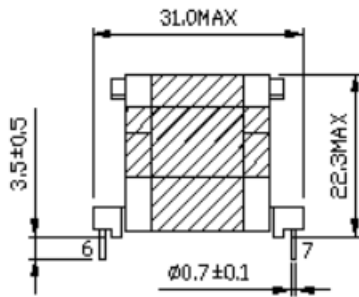
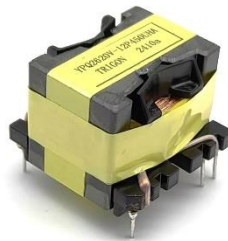
Trigon Part Number	Reference	Value
YPQ2620V-12P450UHA	T1	PFC Inductor
YPQ3220V-12P600UHB	T2	Flyback Transformer
YEF20V-4P20MH	L1	CMC Inductor

VIPERGAN100 Series

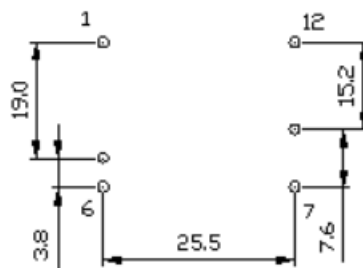
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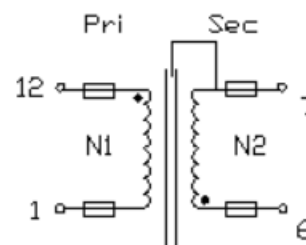
T1: PFC Inductor



Dimensions [mm]



Pin Layout



Schematic

Electrical Specifications: YPQ2620V-12P450UHA

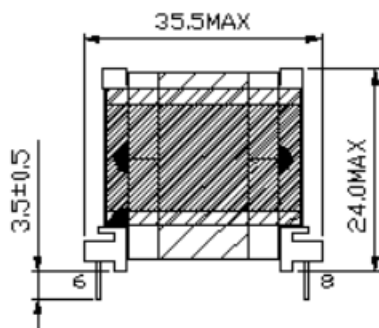
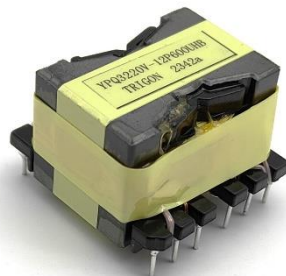
Parameter	Unit	Unit
Inductance, at 100KHz/1.0V	450 +/-10%	uH
DCR, R(12-1)	110 Max	mΩ
DCR, R(6-7)	125 Max	mΩ
Primary Rated Current	3.8 Max	A
Hipot, Pri to Sec, 1mA/2s	500	Vac
Turn Ratio, at 20KHz/1V	10:1	Ref

VIPERGAN100 Series

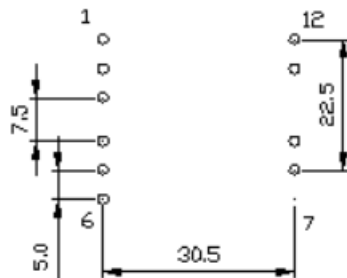
Flyback Transformer Design with CMC and PFC

TRIGON
COMPONENTS

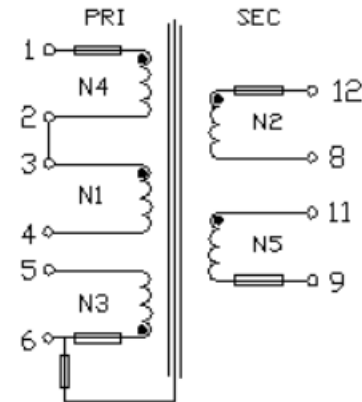
T2: Flyback Transformer



Dimensions [mm]



Pin Layout



Schematic

Electrical Specifications: YPQ3220V-12P600UHB

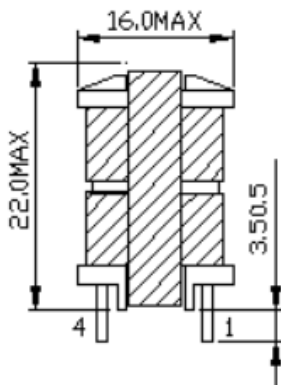
Parameter	Unit	Unit
Inductance, at 100KHz/1.0V	600 +/-10%	uH
Leakage Inductance, L(1-4) Shorted	10.0 Max	uH
DCR, R(1-2)	296 Max	mΩ
DCR, R(3-4)	238 Max	mΩ
DCR, R(5-6)	220 Max	mΩ
DCR, R(12-8)	13.5 Max	mΩ
DCR, R(11-9)	15 Max	mΩ
Primary Rated Current	Max	A
Hipot, Pri to Sec, 1mA/2s	1500	Vac
Turn Ratio, at 20KHz/1V	24:5:7:24:5	Ref

VIPERGAN100 Series

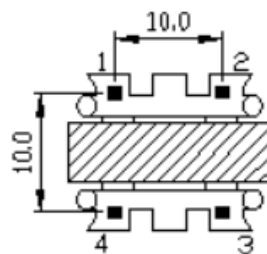
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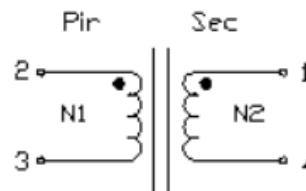
L1: CMC Inductor



Dimensions [mm]



Pin Layout



Schematic

Electrical Specifications: YEF20V-4P20MH

Parameter	Unit	Unit
Inductance, at 10KHz/1.0V	10 Min	mH
DCR, R(2-3)	220 Max	mΩ
DCR, R(1-4)	220 Max	mΩ
Primary Rated Current	Max	A
Hipot, Pri to Sec, 5mA/3s	1500	Vac
Hipot, Coil to Core, 5mA/3s	500	Vac
Turn Ratio, at 20KHz/1V	1:1	Ref

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Efficiency Measurements

At 115 Vac:

Output Load	I _{out}	V _{out}	P _{out}	P _{in}	Efficiency
25%	1.975	12.755	25.191	30.01	83.94%
50%	3.950	12.755	50.382	57.09	88.25%
75%	5.925	12.754	75.567	84.40	89.53%
100%	7.900	12.754	100.757	112.74	89.37%
Average Efficiency					87.77%

At 230 Vac:

Output Load	I _{out}	V _{out}	P _{out}	P _{in}	Efficiency
25%	1.975	12.756	25.193	30.40	82.88%
50%	3.950	12.755	50.382	56.79	88.72%
75%	5.925	12.754	75.567	83.28	90.74%
100%	7.900	12.754	100.757	110.60	91.10%
Average Efficiency					88.36%

Important Notes:

- Based on VIPERGAN100, L6562A and SRK1000B by STMicroelectronics.
- L6562A is the current-mode PFC controller operating in transition mode (TM) and SRK1000B is the controller intended for secondary side synchronous rectification (SR), that allowed very high efficiency at heavy load and a very good power density per watt. The secondary side also uses an LM2904D operational amplifier to regulate the output voltage and to limit the maximum output current.
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