WEBENCH® Transformer Report

Design : 26 UCC28701DBVR
UCC28701DBVR 85V-265V to 23.98V @ 0.5A

#	Name	Value
1.	Core Part Number	B66311G0000X187
2.	Core Manufacturer	TDK
3.	Coil Former Part Number	B66206C1012T001
4.	Coil Former Manufacturer	TDK

Transformer Electrical Diagram

Primary

Turns	55.0
AWG	28.0
Layers	2.0
Strands	1.0
Insulation Type	Heavy Insulated Magnet Wire

Secondary

Turns	16.0
AWG	27.0
Layers	1.0
Strands	1.0
Insulation Type	Triple Insulated

Auxiliary

Turns	13.0
AWG	28.0
Layers	1.0
Strands	2.0
Insulation Type	Heavy Insulated Magnet Wire

Transformer Construction Diagram

Winding Instruction

Winding	AWG	Turns	Winding Orientation
Primary First 1/2.0	28.0	28	Clockwise
Triple Insulated Secondary	27.0	16.0	Counter Clockwise
Auxiliary	28.0	13.0	Counter Clockwise
Primary Second 1/2.0	28.0	27	Clockwise

Transformer Parameters

#	Name	Value
1.	Lpri	4.49E-4H
2.	Inductance Factor(Al)	149.0nH
3.	Npri	55.0
4.	Nsec	16.0
5.	Naux	13.0

#	Name	Value
6.	Core Type	E20/10/6
7.	Core Material	N87
8.	Bmax	0.20T
9.	Switching Frequency	115.00kHz
10.	DMax	0.46
11.	Ipk(Primary)	0.78A
12.	Irms(Primary)	0.3A
13.	Ipk(Secondary)	2.66A
14.	Irms(Secondary)	1.0A

Design Assistance

1. Application Hints Rbld Rdd is set to 22 Ohms by default. it can be varied between 1 Ohm to 47 Ohms depending on transformer selected and Vdd expected Rg1 is set to 10 Ohms by default, it can be adjusted according to mosfet selected Rbld is used to to set a minimum load for the circuit, so that in standby the output voltage does not float up. The value chosen by WEBENCH should be a good starting point but may need to be adjusted to achieve minimum power dissipation at standby as well. Rlc Rlc provides the function of feed-forward line compensation to eliminate change in IPP due to change in di/dt and the propagation delay of the internal comparator and MOSFET turn-off time. For best results the chosen value may need to be adjusted based on board, FET and transformer parasitics. Rfbt & Rfbb The feedback resistors will set the output voltage of the circuit. The values chosen may need to be fined tuned based on the final Transformer turns ratios and the voltage across the output diode at close to zero current. Cdd Cdd supplies the device operating current until the output of the converter reaches the target minimum operating voltage. The value calculated by WEBENCH for Cdd is a good starting point since it assumes that the output current of the Flyback is available to charge the output capacitance until the minimum output voltage is acheived, but may need to be adjusted. Part Description The UCC28700 family of flyback power supply controllers provides Constant-Voltage (CV) and Constant-Current (CC) output regulation. Primary-Side Regulation (PSR) eliminates the use of an Opto-Coupler. Please see the datasheet for further design guidance(For non Q1 parts). http://www.ti.com/lit/ds/symlink/ucc28700.pdfFor non Q1 partshttp://www.ti.com/lit/ds/symlink/ucc28700-q1.pdf

2. **UCC28701** Product Folder : http://www.ti.com/product/UCC28701 : contains the data sheet and other resources.