COMPONENT SELECTION

1.Diode

In this circuit, to keep efficiency at maximum, a diode which has low forward voltage drop and has ability to carry 12 Amperes at peak should be used. Also, to be selected diode should be able to withstand positive and negative 10 Volts. Diode will be conducting only during duty cycle, it will have a long time period for recovering. For these purposes diode which has manufacturer part number SM74611KTTR has been chosen. Some of the important specialties of the selected component is given in the Table XX below.

Table 1. Specialties of selected diode

|  |  |
| --- | --- |
| Digi-Key Part Number | 296-35688-2-ND |
| Manufacturer Part Number | SM74611KTTR |
| Forward Voltage Drop | 26mV @ 8A |
| Current | 15A |
| Voltage DC Reverse | 30V |

2. Capacitor

Having less voltage ripple at the output mainly depends on the selected capacitor value. In calculations to have 1% voltage ripple required capacitor value has been calculated around 1.2mF. But we could not find any capacitor having such a high ripple current at desired values. So one which has high current ripple characteristics has been chosen . One important parameter for capacitor is having current ripple more than 6 Amperes. Selected components and related specialties are given in the following table, Table XX.

Table 2. Specialties of selected capacitor

|  |  |
| --- | --- |
| Digi-Key Part Number | 338-4411-ND |
| Manufacturer Part Number | SLPX333M016E7P3 |
| Capacitance | 33000 uF |
| Rated Voltage | 16 V |
| Ripple Current | 7A @ 20kHz |

3.Transistor

Transistor in this circuit will be used as switching component. Having high switching frequency requires low gate charge for transistor. Also, voltage stress across the transistor will be extremely high due to again high switching frequency and reluctances of the transformer. Without snubber voltage stress across transistor reaches to 800kV. Snubber decreases this value to around 250 V. So Mosfet which has manufacturer code number as CDM7-650 TR13 has been selected. Some important parameters of the component are given in Table XX.

Table 3 Specialties of selected transistor

|  |  |
| --- | --- |
| Digi-Key Part Number | CDM7-650TR13CT-ND |
| Manufacturer Part Number | CDM7-650 TR13 |
| Drain to Source Voltage | 650 V |
| Continuous Drain Current | 7 A |
| Gate Charge | 16.8 nC |
| Operating Temperature | -55 – 150 C |

SNUBBER

In flyback convertor topology, to deal with high voltage stress across transistor an RCD snubber is used. Required component values and digi-key numbers are given in flowing table. Some components could not find and component which has adjacent value has been selected.

|  |  |  |
| --- | --- | --- |
| Resistor | 5 kΩ , 3W | RSB-5.0KRTR-ND |
| Capacitor | 100 nF | ECA-1HHG0R1I-ND |
| Diode |  | 1N4007-TPMSTR-ND |