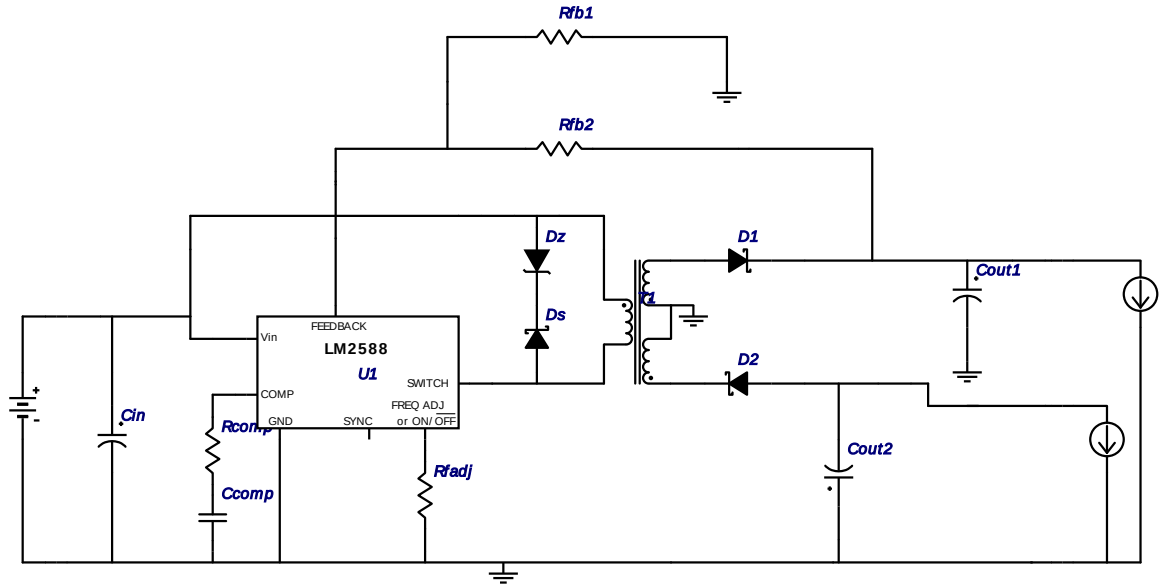
WEBENCH® Design Report

VinMin = 9.0V
VinMax = 36.0V
Vout = 30.0V
Iout = 0.1A

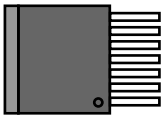
Device = LM2588T-ADJ
Topology = Flyback
Created = 4/25/12 7:07:51 AM
BOM Cost = $11.69
Total Pd = 0.89 W
Footprint = 754.0 mm2
BOM Count = 14

Design : 1147518/29 LM2588T-ADJ
LM2588T-ADJ 9.0V-36.0V to 30.0V @ 0.1A



Electrical BOM

#	Name	Manufacturer	Part Number	Quantity	Price	Properties	Footprint
1.	Ccomp	MuRata	GRM21BR71E104KA01L Series= X7R	1	$0.01	Cap= 100.0 nF VDC= 25.0 V IRMS= 0.0 A	0805 13mm2
2.	Cin	Panasonic	EEUED2D680 Series= 286	1	$0.37	Cap= 68.0 µF ESR= 263.307 mOhm VDC= 200.0 V IRMS= 950.0 mA	CAPPR5-12.5X25 210mm2
3.	Cout1	Panasonic	EEE-FK1H220P Series= FK	1	$0.12	Cap= 22.0 µF ESR= 880.0 mOhm VDC= 50.0 V IRMS= 165.0 mA	SM_RADIAL_D 84mm2
4.	Cout2	Panasonic	EEE-FK1H220P Series= FK	1	$0.12	Cap= 22.0 µF ESR= 880.0 mOhm VDC= 50.0 V IRMS= 165.0 mA	SM_RADIAL_D 84mm2
5.	D1	Diodes Inc.	B1100-13-F	1	$0.10	VF@Io= 790.0 mV VRRM= 100.0 V	SMA 37mm2
6.	D2	Diodes Inc.	B1100-13-F	1	$0.10	VF@Io= 790.0 mV VRRM= 100.0 V	SMA 37mm2
7.	Ds	Diodes Inc.	DFLS1200-7	1	$0.21	VF@Io= 850.0 mV VRRM= 200.0 V	PowerDI123 22mm2
8.	Dz	Micro Commercial Components	3SMAJ5933B-TP	1	$0.12	Zener	SMA 37mm2
9.	Rcomp	Vishay-Dale	CRCW04022K94FKED Series= CRCW..e3	1	$0.01	Res= 2.94 kOhm Power= 63.0 mW Tolerance= 1.0%	0402 8mm2

#	Name	Manufacturer	Part Number	Quantity	Price	Properties	Footprint
10.	Rfadj	Vishay-Dale	CRCW040246K4FKED Series= CRCW..e3	1	$0.01	Res= 46.4 kOhm Power= 63.0 mW Tolerance= 1.0%	0402 8mm2
11.	Rfb1	Vishay-Dale	CRCW040210K0FKED Series= CRCW..e3	1	$0.01	Res= 10.0 kOhm Power= 63.0 mW Tolerance= 1.0%	0402 8mm2
12.	Rfb2	Vishay-Dale	CRCW0402232KFKED Series= CRCW..e3	1	$0.01	Res= 232.0 kOhm Power= 63.0 mW Tolerance= 1.0%	0402 8mm2
13.	T1	Coiltronics	VP1-1400-R	1	$6.00	Lp= 89.0 µH Rp= 72.0 mOhm Leakage_L= 96.0 nH Ns1toNp= 2.0 Rs1= 280.0 mOhms Ns2toNp= 2.0 Rs2= 280.0 mOhms	CUSTOM 1mm2
14.	U1	Texas Instruments	LM2588T-ADJ	1	$4.50	Switcher	 TS7B 199mm2

Operating Values

#	Name	Value	Category	Description
1.	BOM Count	14.0		Total Design BOM count
2.	Total BOM	$11.69		Total BOM Cost
3.	Cin IRMS	550.285 m A	Current	Input capacitor RMS ripple current
4.	Cout1 IRMS	139.87 m A	Current	Output capacitor1 RMS ripple current
5.	Cout2 IRMS	139.87 m A	Current	Output capacitor2 RMS ripple current
6.	IC Ipk	1.358 A	Current	Peak switch current
7.	Iin Avg	760.7 m A	Current	Average input current
8.	L Ipp	392.547 m A	Current	Peak-to-peak inductor ripple current
9.	FootPrint	754.0 mm2	General	Total Foot Print Area of BOM components
10.	Frequency	150.0 k Hz	General	Switching frequency
11.	IC Tolerance	22.0 m V	General	IC Feedback Tolerance
12.	Mode	CCM	General	Conduction Mode
13.	Pout	5.953 W	General	Total output power
14.	Vout1 OP	29.766 V	Op_Point	Operational Voltage 1
15.	Vout2 OP	-29.766 V	Op_Point	Operational Voltage 2
16.	Duty Cycle	65.555 %	Op_point	Duty cycle
17.	Efficiency	86.955 %	Op_point	Steady state efficiency
18.	IC Tj	49.517 degC	Op_point	IC junction temperature
19.	ICThetaJA	40.0 degC/W	Op_point	IC junction-to-ambient thermal resistance
20.	IOUT_OP	100.0 m A	Op_point	Iout operating point
21.	VIN_OP	9.0 V	Op_point	Vin operating point
22.	Vout1 p-p	338.259 m V	Op_point	Peak-to-peak output1 ripple voltage
23.	Vout2 p-p	338.259 m V	Op_point	Peak-to-peak output2 ripple voltage
24.	Cin Pd	79.733 m W	Power	Input capacitor power dissipation
25.	Cout1 Pd	17.216 m W	Power	Output capacitor1 power dissipation
26.	Cout1 Pd	17.216 m W	Power	Output capacitor1 power dissipation
27.	Cout2 Pd	17.216 m W	Power	Output capacitor2 power dissipation
28.	Cout3 Pd	0.0 W	Power	Output capacitor3 power dissipation
29.	Diode1 Pd	79.0 m W	Power	Diode1 power dissipation
30.	Diode2 Pd	79.0 m W	Power	Diode2 power dissipation
31.	IC Pd	487.925 m W	Power	IC power dissipation
32.	Total Pd	893.1 m W	Power	Total Power Dissipation
33.	Xformer Pd	86.792 m W	Power	Transformer power dissipation
34.	Zener Pd	42.511 m W	Power	Zener power dissipation

Design Inputs

#	Name	Value	Description
1.	Iout	100.0 mA	Maximum Output Current
2.	Iout1	100.0 mAmps	Output Current #1
3.	Iout2	100.0 mAmps	Output Current #2
4.	VinMax	36.0 V	Maximum input voltage
5.	VinMin	9.0 V	Minimum input voltage
6.	Vout	30.0 V	Output Voltage
7.	Vout1	30.0 Volt	Output Voltage #1
8.	Vout2	-30.0 Volt	Output Voltage #2

#	Name	Value	Description
9.	base_pn	LM2588	Texas Instruments base part number
10.	Ta	30.0 degC	Ambient temperature

Design Assistance

1. **LM2588** Product Folder : http://www.ti.com/product/LM2588 : contains the data sheet and other resources.