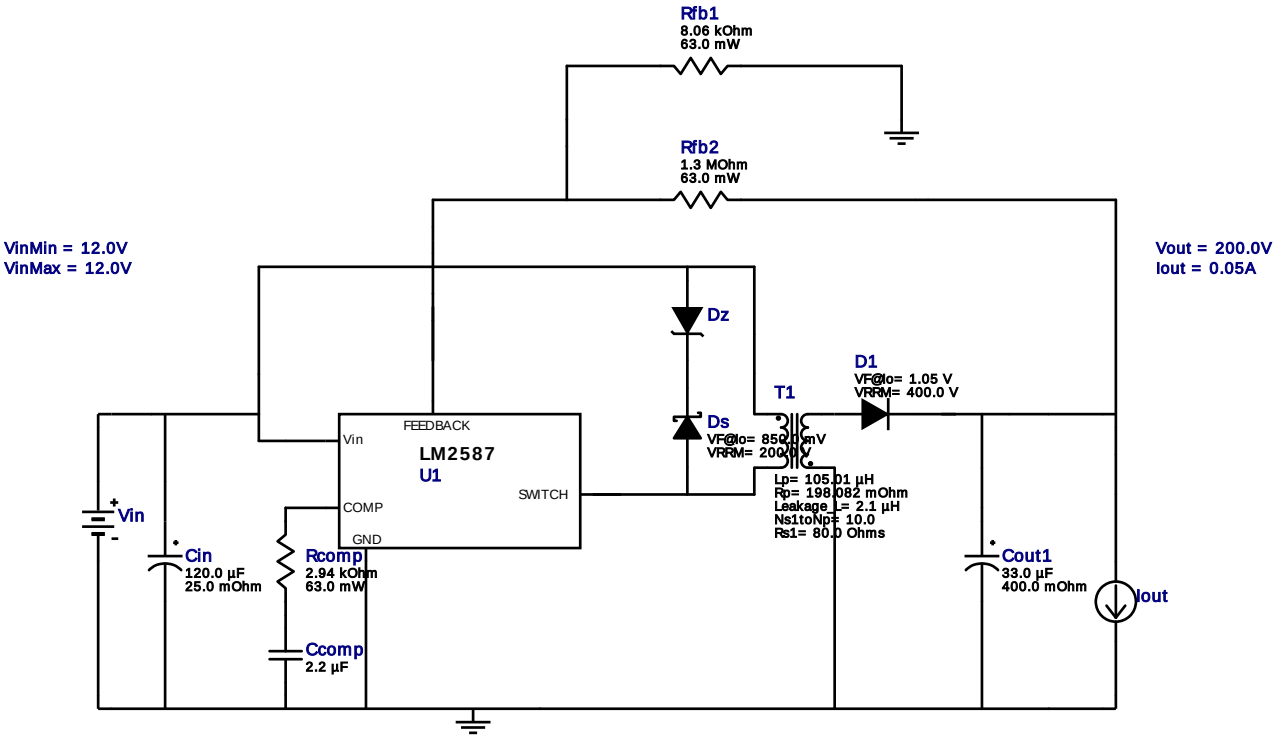
WEBENCH® Design Report

VinMin = 12.0V
VinMax = 12.0V
Vout = 200.0V
Iout = 0.05A

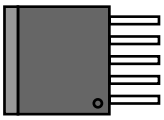
Device = LM2587SX-ADJ/NOPB
Topology = Flyback
Created = 2/4/15 4:22:23 PM
BOM Cost = $0.00
Footprint = 840.0 mm²
BOM Count = 11
Total Pd = 4.99W

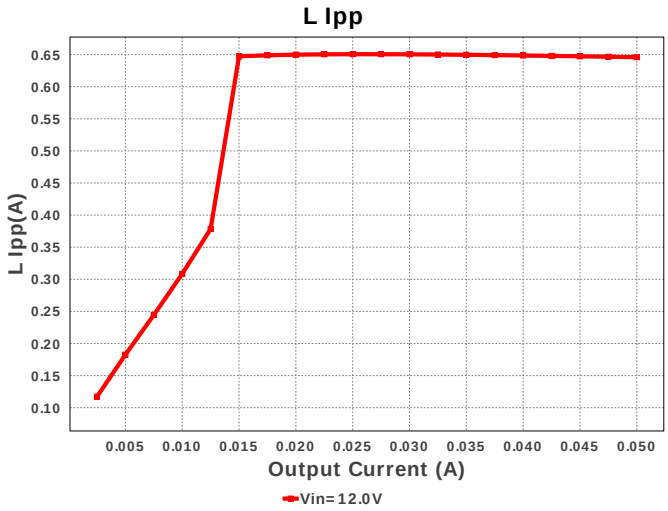
Design : 1982346/59 LM2587SX-ADJ/NOPB
LM2587SX-ADJ/NOPB 12.0V-12.0V to 200.00V @ 0.05A

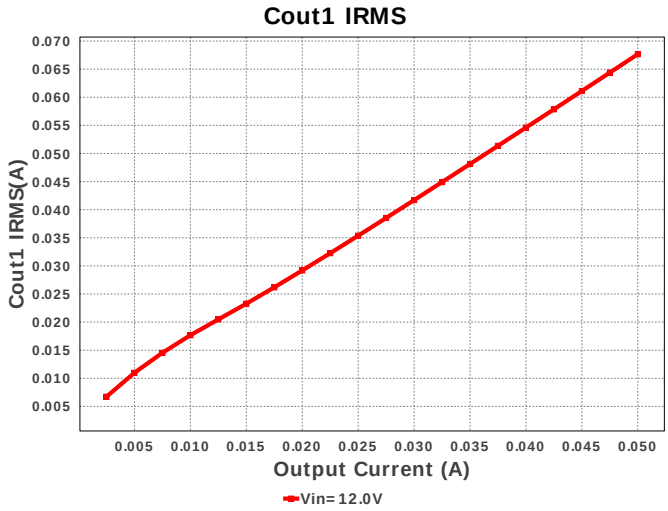


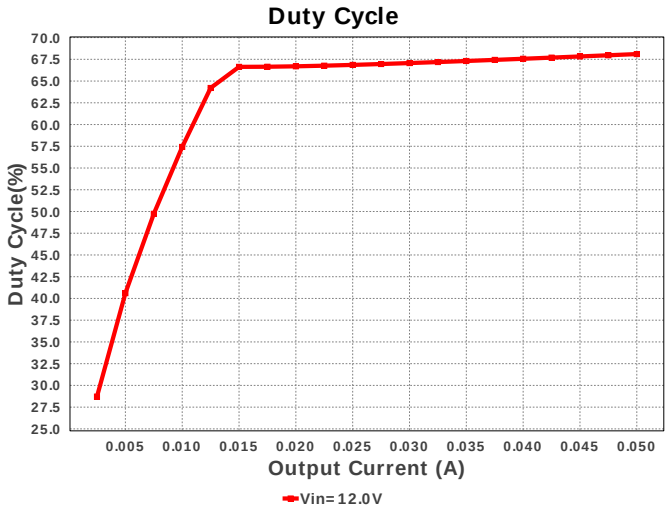
Electrical BOM

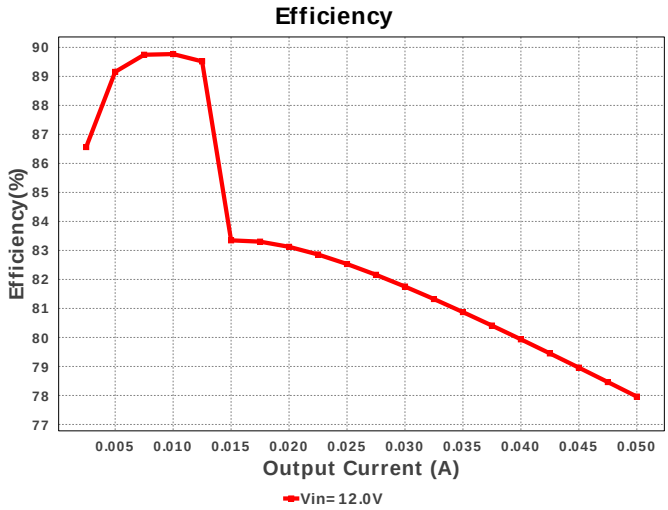
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Ccomp	Taiyo Yuden	EMK212B7225KG-T Series= X7R	Cap= 2.2 uF VDC= 16.0 V IRMS= 0.0 A	1	$0.03	0805 7 mm²
2.	Cin	Panasonic	20SVPF120M Series= 1273	Cap= 120.0 uF ESR= 25.0 mOhm VDC= 20.0 V IRMS= 3.2 A	1	$0.43	CAPSMT_62_F61 74 mm²
3.	Cout1	Panasonic	EEV-EB2E330SM Series= ?	Cap= 33.0 uF ESR= 400.0 mOhm VDC= 250.0 V IRMS= 560.0 mA	1	$0.87	EB_K16 483 mm²
4.	D1	Bourns	CD1408-FU1400	VF@Io= 1.05 V VRRM= 400.0 V	1	$0.13	Diode_1408 13 mm²
5.	Ds	Diodes Inc.	DFLS1200-7	VF@Io= 850.0 mV VRRM= 200.0 V	1	$0.21	PowerDI123 13 mm²
6.	Dz	Micro Commercial Components	3SMAJ5939B-TP	Zener	1	$0.12	SMA 37 mm²
7.	Rcomp	Vishay-Dale	CRCW04022K94FKED Series= CRCW..e3	Res= 2.94 kOhm Power= 63.0 mW Tolerance= 1.0%	1	$0.01	0402 3 mm²
8.	Rfb1	Vishay-Dale	CRCW04028K06FKED Series= CRCW..e3	Res= 8.06 kOhm Power= 63.0 mW Tolerance= 1.0%	1	$0.01	0402 3 mm²

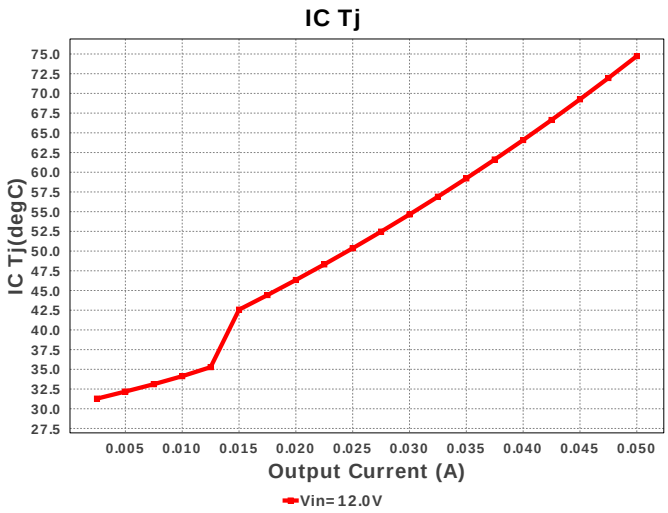
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
9.	Rfb2	Vishay-Dale	CRCW04021M30FKED Series= CRCW..e3	Res= 1.3 MOhm Power= 63.0 mW Tolerance= 1.0%	1	$0.01	0402 3 mm^2
10.	T1	CUSTOM	CUSTOM	Lp= 105.01 µH Rp= 198.082 mOhm Leakage_L= 2.1 µH Ns1toNp= 10.0 Rs1= 80.0 Ohms	1	NA	CUSTOM 0 mm^2
11.	U1	Texas Instruments	LM2587SX-ADJ/NOPB	Switcher	1	$3.95	 TS5B 199 mm^2

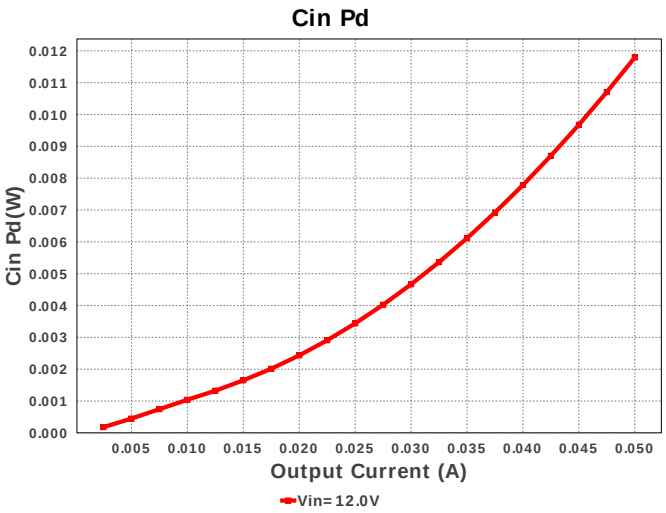


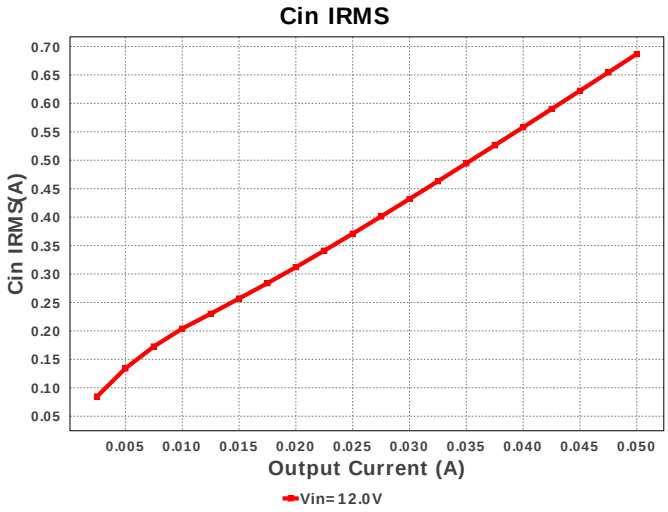


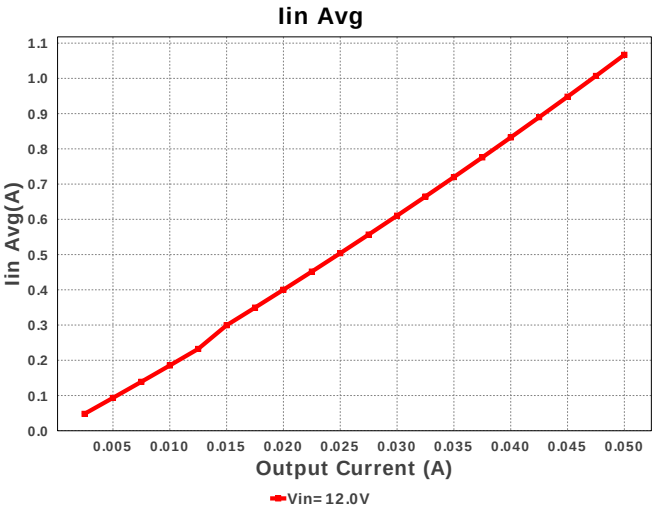


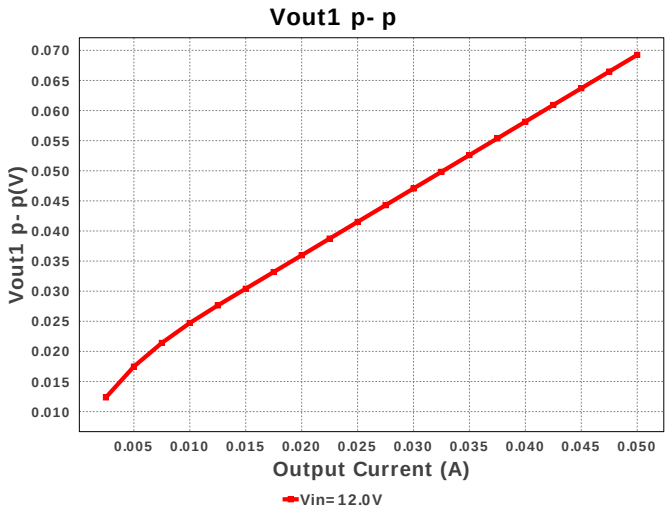


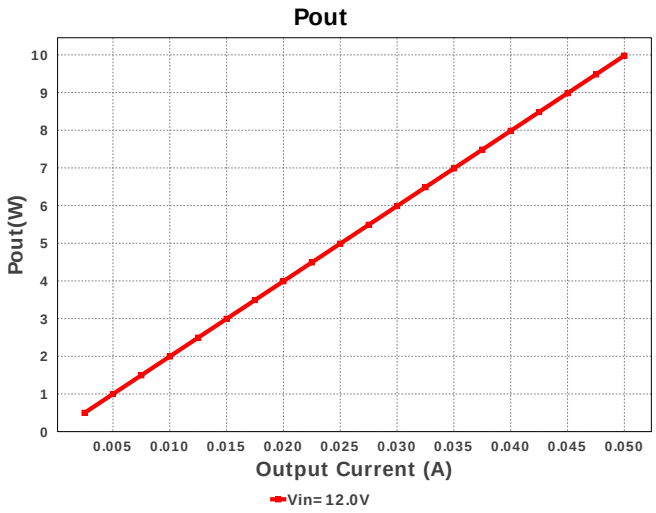


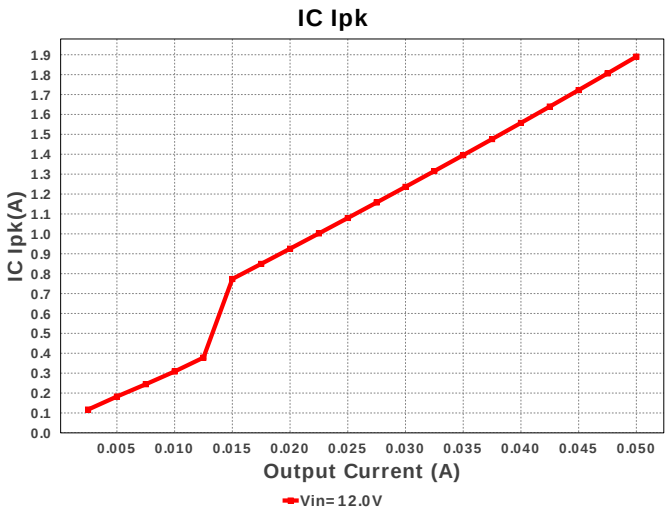


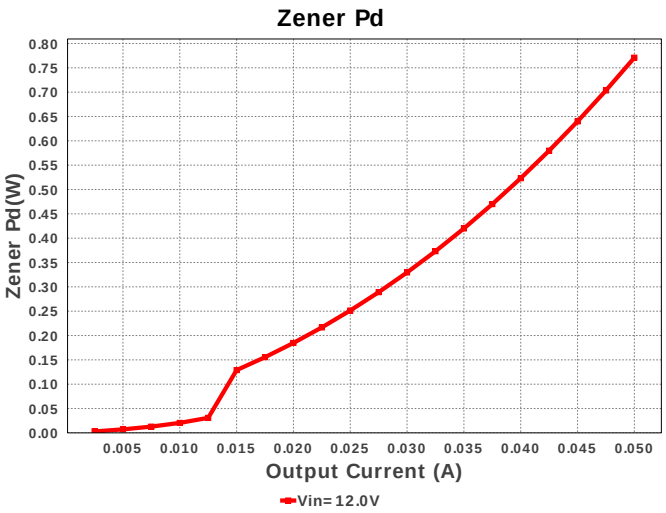


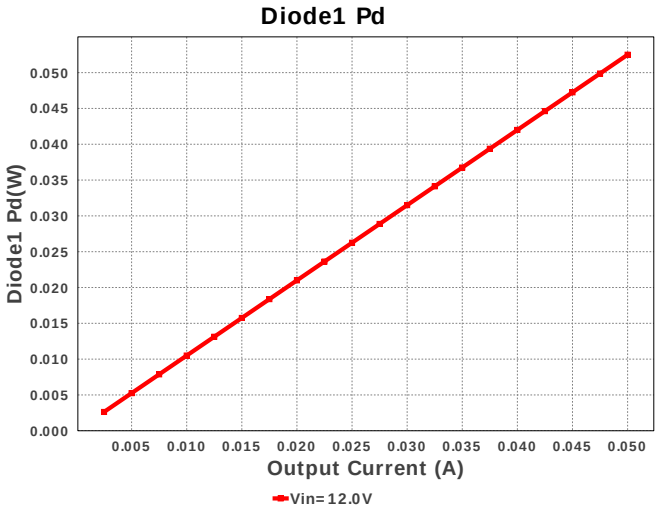


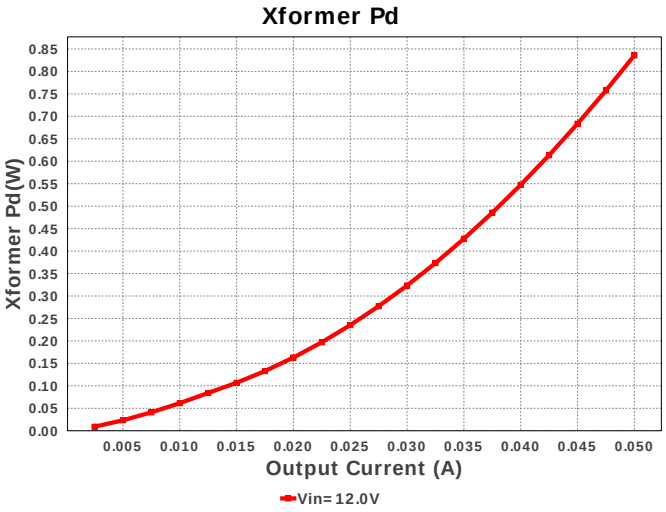


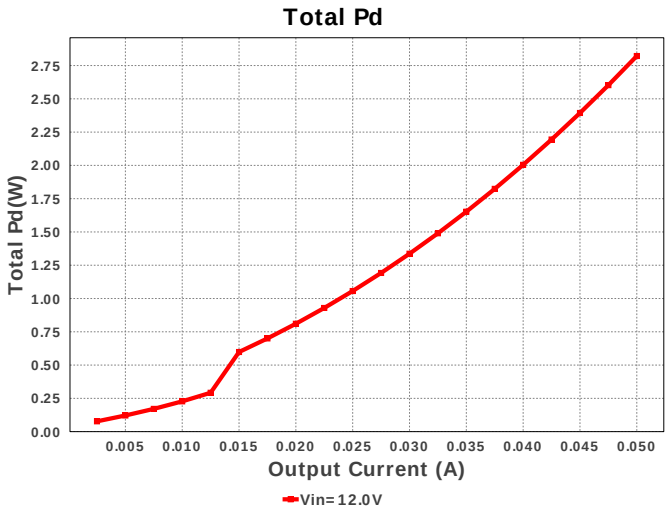


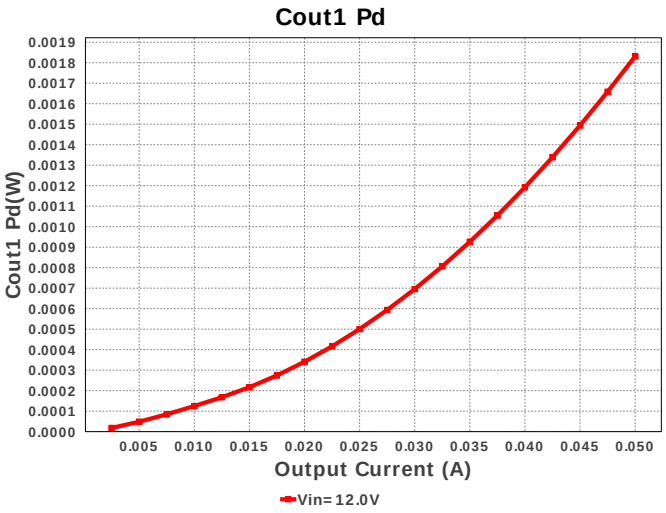


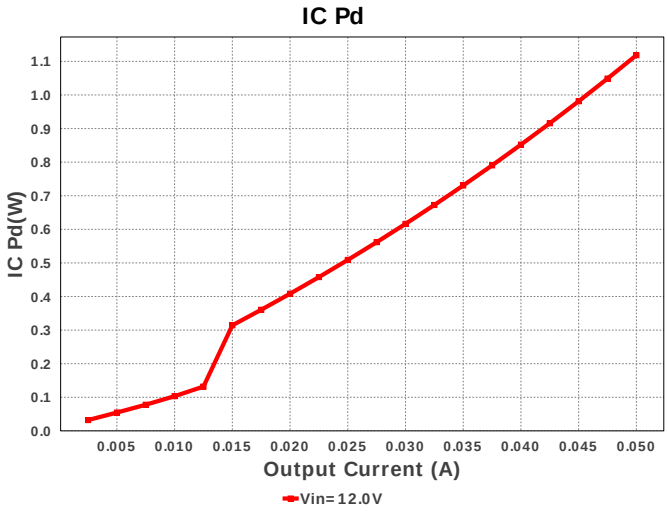












Operating Values

#	Name	Value	Category	Description
1.	Cin IRMS	687.661 mA	Current	Input capacitor RMS ripple current
2.	Cout1 IRMS	67.744 mA	Current	Output capacitor1 RMS ripple current
3.	IC Ipk	2.037 A	Current	Peak switch current
4.	Iin Avg	1.248 A	Current	Average input current
5.	L Ipp	585.9 mA	Current	Peak-to-peak inductor ripple current
6.	BOM Count	11	General	Total Design BOM count
7.	FootPrint	840.0 mm^2	General	Total Foot Print Area of BOM components
8.	Frequency	100.0 kHz	General	Switching frequency
9.	IC Tolerance	22.0 mV	General	IC Feedback Tolerance
10.	Pout	9.981 W	General	Total output power
11.	Total BOM	$0.0	General	Total BOM Cost
12.	Vout1 OP	199.617 V	Op_Point	Operational Voltage 1
13.	Duty Cycle	71.326 %	Op_point	Duty cycle
14.	Efficiency	66.666 %	Op_point	Steady state efficiency
15.	IC Tj	79.886 degC	Op_point	IC junction temperature
16.	ICThetaJA	40.0 degC/W	Op_point	IC junction-to-ambient thermal resistance
17.	IOUT_OP	50.0 mA	Op_point	Iout operating point
18.	VIN_OP	12.0 V	Op_point	Vin operating point
19.	Vout1 p-p	69.352 mV	Op_point	Peak-to-peak output1 ripple voltage
20.	Cin Pd	11.822 mW	Power	Input capacitor power dissipation
21.	Cout1 Pd	1.836 mW	Power	Output capacitor1 power dissipation
22.	Cout1 Pd	1.836 mW	Power	Output capacitor1 power dissipation
23.	Diode1 Pd	1.965 W	Power	Diode1 power dissipation
24.	IC Pd	1.247 W	Power	IC power dissipation
25.	Total Pd	4.99 W	Power	Total Power Dissipation
26.	Xformer Pd	837.503 mW	Power	Transformer power dissipation
27.	Zener Pd	897.019 mW	Power	Zener power dissipation

Design Inputs

#	Name	Value	Description
1.	Iout	50.0 m	Maximum Output Current
2.	Iout1	50.0 m	Output Current #1
3.	VinMax	12.0	Maximum input voltage
4.	VinMin	12.0	Minimum input voltage
5.	Vout	200.0	Output Voltage
6.	Vout1	200.0	Output Voltage #1
7.	base_pn	LM2587	Base Product Number
8.	source	DC	Input Source Type
9.	Ta	30.0	Ambient temperature

Design Assistance

1. **LM2587** Product Folder : http://www.ti.com/product/lm2587 : contains the data sheet and other resources.