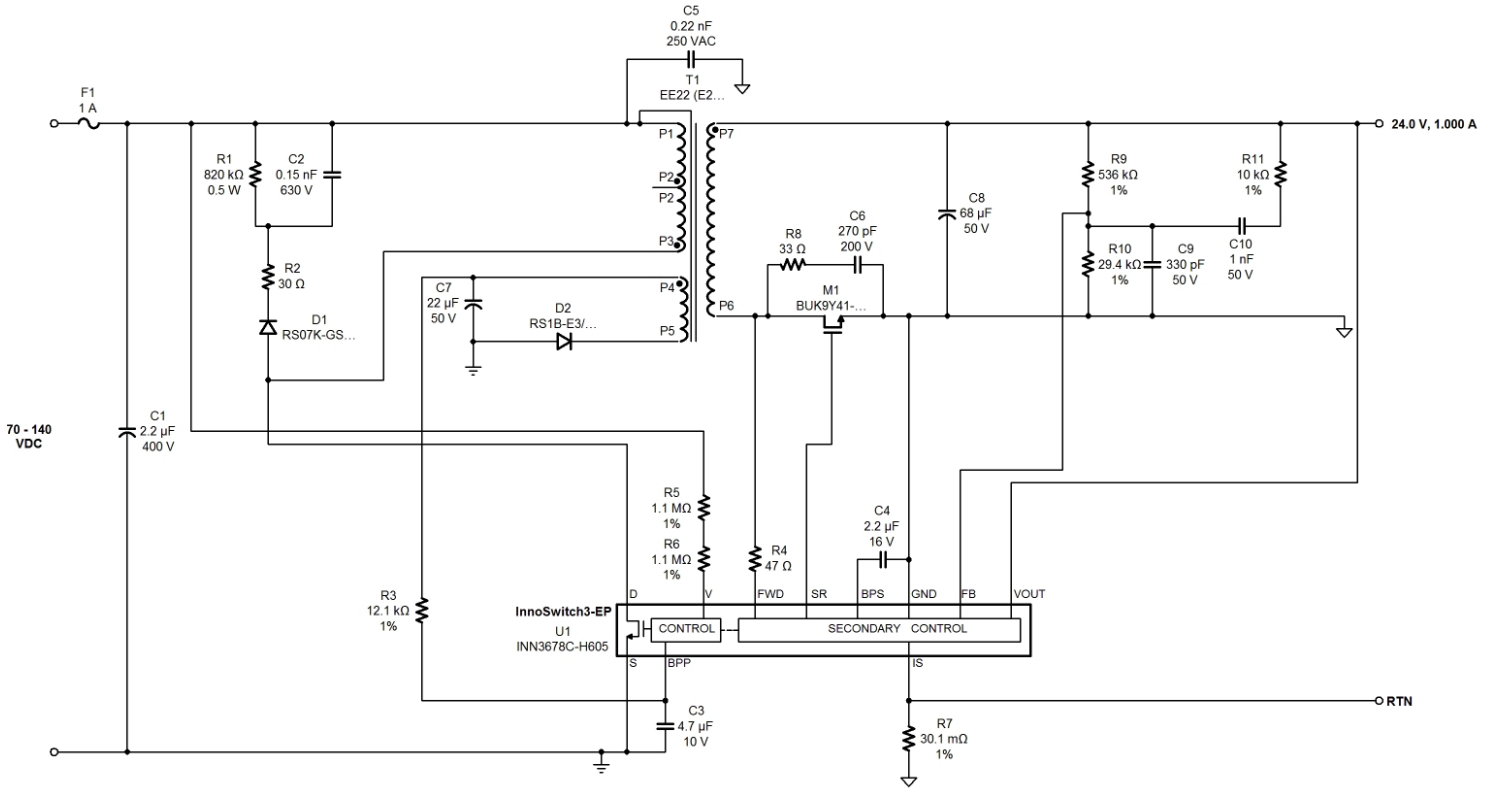


Schematic components that have been frozen by the user will appear with blue reference designators.

For any information regarding user added Shield or Screen and additional EMI features implemented in the Transformer, review Magnetics Designer.

Power Supply Input

Var	Value	Units	Description
VDCMIN	70	V	Minimum Input DC Voltage (Manual Overwrite)
VDCMAX	140	V	Maximum Input DC Voltage (Manual Overwrite)
η	90.0	%	Efficiency Estimate (Target)
TC	3.00	ms	Input Rectifier Conduction Time
Z	0.50		Loss Allocation Factor
ENCLOSURE	Adapter		Enclosure
TAMB	60	°C	Maximum Operating Ambient air Temperature

Input Section

Var	Value	Units	Description
Fuse	1.00	A	Input Fuse Rated Current
IAVG	0.36	A	Average Diode Bridge Current (DC Input Current)

Device Variables

Var	Value	Units	Description
Device	INN3678C-H605		PI Device Name
Current Limit Mode	Increased		Device Current Limit Mode
BVDSS	750	V	Drn-Src Bkdn Voltage
ILIMITMIN	1.767	A	Minimum Current Limit
ILIMITTYP	1.900	A	Typical Current Limit
ILIMITMAX	2.033	A	Maximum Current Limit
RDSON	0.78	Ω	PI Device RDSON (100°C)
RDSON_25C	0.52	Ω	PI Device RDSON (25°C)
PO	24.00	W	Total Output Power
VOR	133.58	V	Reflected Output Voltage
VDS	0.28	V	On state Drain to Source Voltage
FS	90000	Hz	Switching Frequency (at VMIN and Full Load)
KP	2.653		Continuous/Discontinuous Operating Ratio (at VMIN and Full Load)
DMAX	0.419		Maximum Duty Cycle (at VMIN and Full Load)
TIME_OFF	6.49	µs	Expected Device Off-time (at VMIN and Full Load)
TIME_ON	5.65	µs	Primary controller on-time
IP	1.957	A	Peak Primary Current (at VMIN and Full Load)
IR	1.957	A	Primary Ripple Current (at VMIN and Full Load)
IRMS	0.689	A	Primary RMS Current (at VMIN and Full Load)
UVOV_PRIORITY	Undervoltage		Input Undervoltage/Overvoltage Priority type
RTH_DEVICE	103.73	°C/W	PI Device Heatsink Maximum Thermal Resistance
DEV_HSINK_TYPE	2 Oz (70 µ) 2-Sided Copper PCB		PI Device Heatsink Type
DEV_HSINK_AREA	104	mm²	PI Device Heatsink Area

Clamp Circuit

Var	Value	Units	Description
Clamp Type	RCD Clamp		Clamp Circuit Type
VCLAMP_ESTIMATED	500.10	V	Estimated Clamping Voltage above VMAX
VDRAIN Estimated	640.10	V	Estimated Drain Voltage

Primary Bias Variables

Var	Value	Units	Description
VBMIN	13.9	V	Minimum Bias Voltage
VBMAX	33.6	V	Maximum Bias Voltage
Circuit Type	Simple Resistor		Bias Circuit Type
PIVB	50	V	Bias Rectifier Maximum Peak Inverse Voltage
NB	2		Primary Bias Winding Number of Turns

Transformer Construction Parameters

Var	Value	Units	Description
Core Type	EE22 (E22/6/16/R-3F3)		Core Type
Core Material	3F3		Core Material
LP_nom	194	µH	Nominal Primary Inductance
LP_Tol	5.0	%	Primary Inductance Tolerance
NP	17.0		Calculated Primary Winding Total Number of Turns
NSM	3		Secondary Main Number of Turns
BW	5.65	mm	Bobbin Winding Width
FF	72.02	%	Actual Transformer Fit Factor. 100% signifies fully utilized winding window
AE	78.50	mm²	Core Cross Sectional Area
ALG	670	nH/T²	Gapped Core Specific Inductance
BM	295	mT	Maximum Flux Density
BP	317	mT	Peak Flux Density
BAC	148	mT	AC Flux Density for Core Loss
LG	0.127	mm	Estimated Gap Length
L_LKG	5.09	µH	Estimated primary leakage inductance
LSEC	20	nH	Secondary Trace Inductance

Primary Winding Section 1

Var	Value	Units	Description
NP1	9		Number of Primary Winding Turns in the First Section of Primary
L	2.00		Primary Winding - Number of Layers

Primary Winding Section 2

Var	Value	Units	Description
NP2	8		Rounded (Integer) Number of Primary winding turns in the second section of primary
L2	2.00		Primary Number of Layers in 2nd split winding

Output 1

Var	Value	Units	Description
VO	**24.00**	V	Typical Output Voltage
IO	**1.000**	A	Output Current
VOUT_ACTUAL	**24.00**	V	Actual Output Voltage
Cable Drop Compensation	**0**	mV	Cable Drop Compensation
NS	**3**		Secondary Number of Turns
L_S_OUT	**2.00**		Secondary Output Winding Layers
PIVS	**48.71**	V	Output Rectifier Maximum Peak Inverse Voltage
ISP	**11.092**	A	Peak Secondary Current
ISRMS	**2.819**	A	Secondary RMS Current
ISRMS_WINDING	**2.819**	A	Secondary Winding RMS Current
RTH_RECTIFIER	**69.89**	°C/W	Output Rectifier Heatsink Maximum Thermal Resistance
OR_HSINK_TYPE	**2 Oz (70 µ) 2-Sided Copper PCB**		Output Rectifier Heatsink Type
OR_HSINK_AREA	**104**	mm²	Output Rectifier Heatsink Area
OSR_RDSON	**45.00**	mΩ	Synchronous Rectifier RDSON
CO	**68 x 1**	µF	Output Capacitor - Capacitance
IRIPPLE	**2.636**	A	Output Capacitor - RMS Ripple Current
Expected Lifetime	**45853**	hr	Output Capacitor - Expected Lifetime

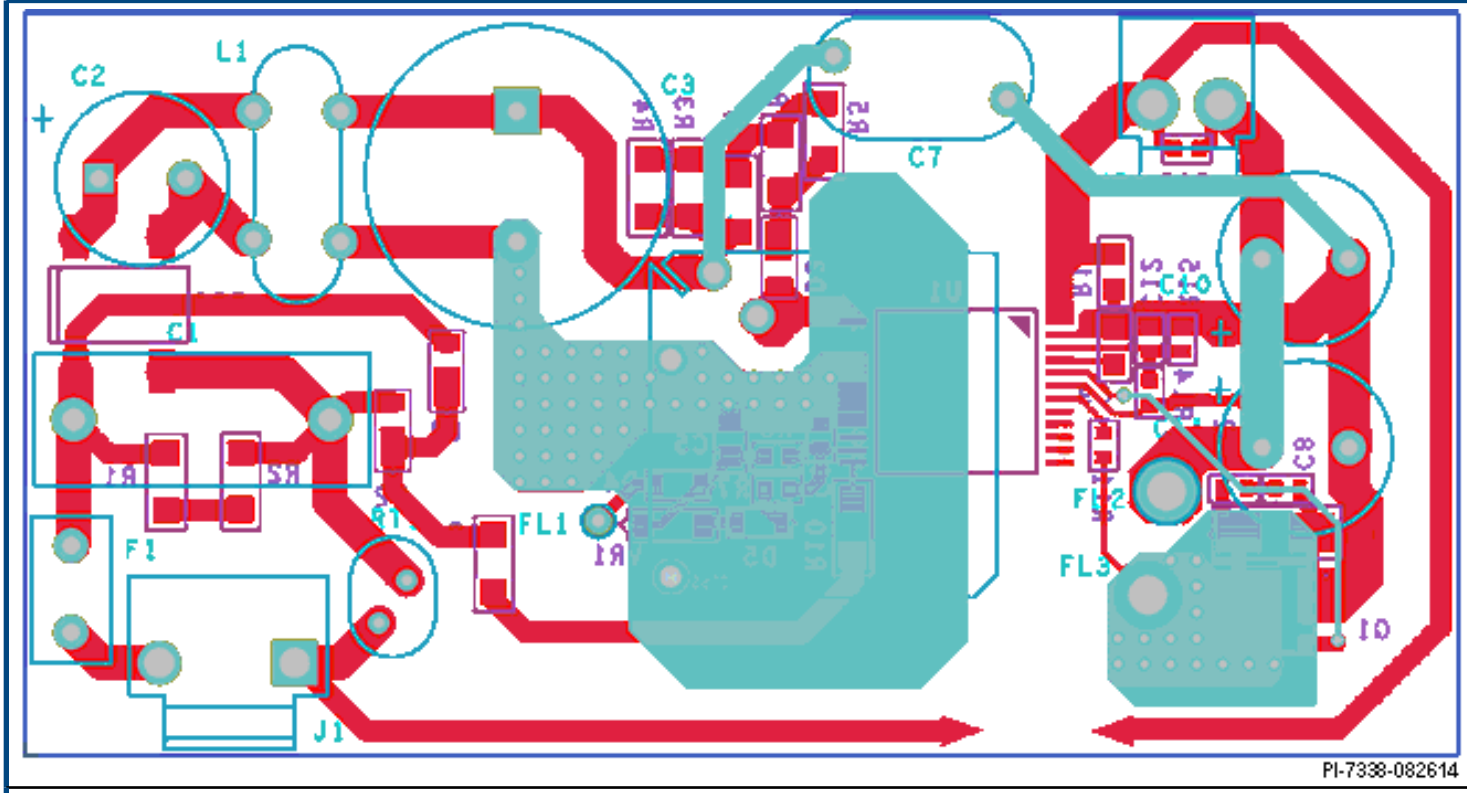
Feedback Circuit

Var	Value	Units	Description
DUAL_OUTPUT_FB_FLAG	**NO**		Get feedback from 2 outputs

The regulation and tolerances do not account for thermal drifting and component tolerance of the output diode forward voltage drop and voltage drops across the LC post filter. The actual voltage values are estimated at full load only.

Please verify cross regulation performance on the bench.

Board Layout Recommendations



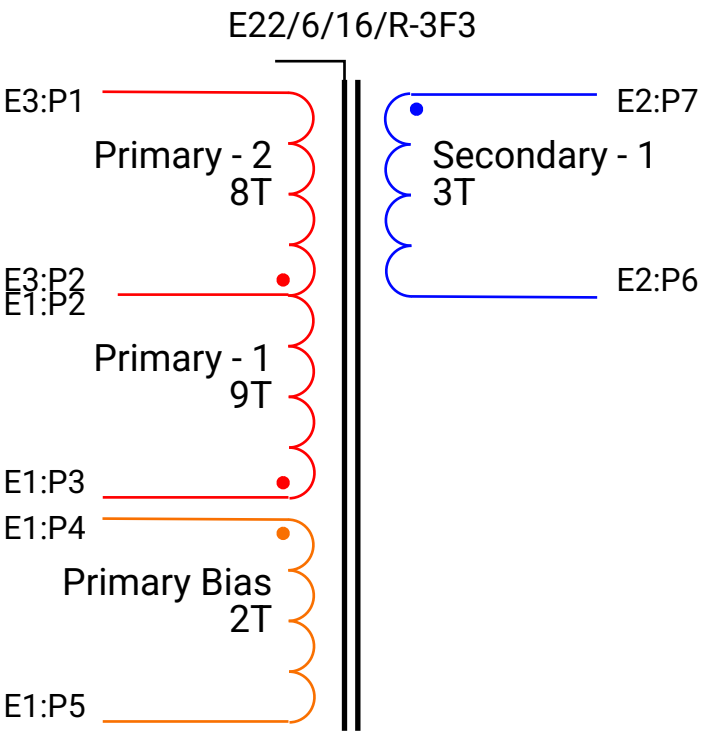
Click on the "Show me" icon to highlight relevant areas on the sample layout.

	Description	Show Me
1	*Minimize loop area formed by secondary winding, the output rectifier and the output filter capacitor*	
2	*Y-capacitor connected directly to the DC pin of the primary and secondary GND*	
3	*Minimize loop area formed by drain, clamp and transformer*	
4	*Maximize hatched area for heat-sinking*	
5	*Minimize loop area formed by drain, input capacitor and transformer*	
6	*Spark gaps with adequate creepage help in steering away the destructive energy created during an ESD event through the protection components such as the Y-cap.*	
7	*The BYPASS pin capacitor should be located as close as possible to the BYPASS and SOURCE pins*	

Bill Of Materials

Item #	Quantity	Part Ref	Value	Description	Mfg	Mfg Part Number
1	1	C1	2.2 µF	2.2 µF, 400 V, High Voltage Al Electrolytic, (11.5 mm x 8 mm)	Nichicon	ULD2G2R2MPD1TD
2	1	C2	0.15 nF	0.15 nF, 630 V, High Voltage Ceramic	TDK	C3216C0G2J151J060AA
3	1	C3	4.7 µF	4.7 µF, 10.0 V, Ceramic, X7R	TDK	C1608X7S1A475K080AC
4	1	C4	2.2 µF	2.2 µF, 16 V, Ceramic, X7R	TDK	CGA4J3X7R1C225K125AB
5	1	C5	0.22 nF	0.22 nF, 250 VAC, Ceramic, Y Class	Vishay	VJ2008A221JXUSTX1
6	1	C6	270 pF	270 pF, 200 V, High Voltage Ceramic	AVX Corp	08052C271KAT2A
7	1	C7	22 µF	22 µF, 50 V, Electrolytic, Gen Purpose, 80 mΩ, (6.3 mm x 5.8 mm)	Panasonic	EEHZC1H220P
8	1	C8	68 µF	68 µF, 50 V, Al Organic Polymer, 25 mΩ, (11.9 mm x 8 mm)	Panasonic	50SVPK68M
9	1	C9	330 pF	330 pF, 50 V, Ceramic, C0G	TDK	FK18C0G1H331J
10	1	C10	1 nF	1 nF, 50 V, Ceramic, C0G	Kemet	C410C102J5G5TA7200
11	1	D1	RS07K-GS08	800 V, 1.4 A, Fast Recovery, 300 ns, DO-219AB	Vishay	RS07K-GS08
12	1	D2	RS1B-E3/61T	100 V, 1 A, Standard Recovery, DO-214AC	Vishay	RS1B-E3/61T
13	1	F1	1 A	250 VAC, 1 A, Radial TR5, Time Lag Fuse	Littelfuse / Wickmann(R)	37411000410
14	1	M1	BUK9Y41-80E,115	MOSFET, N-Channel, 80 V, 17 A, SOT669	Nexperia	BUK9Y41-80E,115
15	1	R1	820 kΩ	820 kΩ, 5 %, 0.5 W, Thick Film	Generic	
16	1	R2	30 Ω	30 Ω, 5 %, 0.125 W, Thick Film	Generic	
17	1	R3	12.1 kΩ	12.1 kΩ, 1 %, 0.125 W, Thick Film	Generic	
18	1	R4	47 Ω	47 Ω, 5 %, 0.125 W, Thick Film	Generic	
19	2	R5, R6	1.1 MΩ	1.1 MΩ, 1 %, 0.25 W, Thick Film	Generic	
20	1	R7	30.1 mΩ	30.1 mΩ, 1 %, 0.125 W, Metal Film	Generic	
21	1	R8	33 Ω	33 Ω, 5 %, 0.25 W, Thick Film	Generic	
22	1	R9	536 kΩ	536 kΩ, 1 %, 0.125 W, Thick Film	Generic	
23	1	R10	29.4 kΩ	29.4 kΩ, 1 %, 0.125 W, Thick Film	Generic	
24	1	R11	10 kΩ	10 kΩ, 1 %, 0.125 W, Thick Film	Generic	
25	1	T1	EE22 (E22/6/16/R-3F3)	3F3 Core Material Refer to Manufacturer datasheet for a number of parts to purchase	ELNA/PHILIPS	E22/6/16/R-3F3
26	1	T1	E-PLT22	3F3 Core Material Refer to Manufacturer datasheet for a number of parts to purchase	ELNA/PHILIPS	PLT22/16/2.5/S-3F3
27	1	U1	INN3678C-H605	InnoSwitch3-EP, INN3678C-H605, inSOP-24D	Power Integrations	INN3678C-H605
28	1			104 mm² area on Copper PCB. 2 oz (70 µm) thickness. Heatsink for use with Device U1.	Custom	
29	1			104 mm² area on Copper PCB. 2 oz (70 µm) thickness. Heatsink for use with Rectifier M1.	Custom	

Electrical Diagram



Winding info

Stack Fill Factor: 72.02%;
Copper Loss: 0.272W; Total Transformer Loss: 0.575W

Primary - 1; IRMS = 0.69A;
2L; 9T;
RDC = 147.08 mΩ; Pw = 69.74 mW;

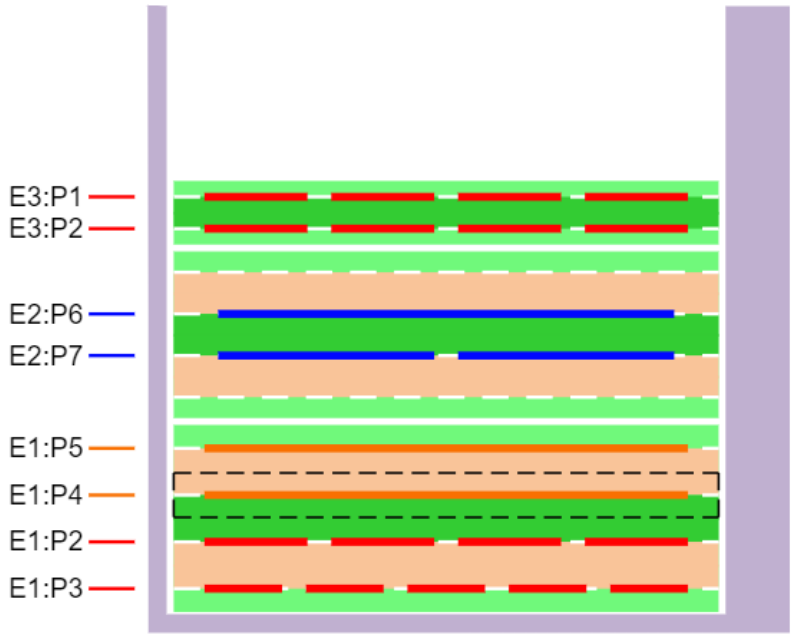
Primary Bias; 2L; 2T;

Secondary - 1; IRMS = 2.82A;
2L; 3T;
RDC = 19.53 mΩ; Pw = 155.22 mW;

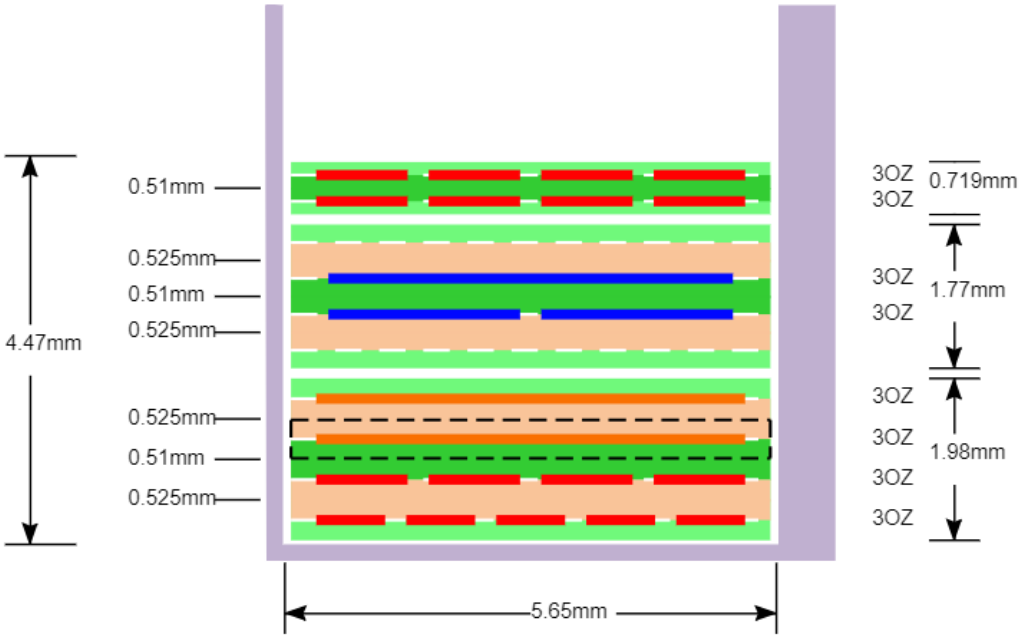
Primary - 2; IRMS = 0.69A;
2L; 8T;
RDC = 99.25 mΩ; Pw = 47.06 mW;

All losses shown correspond to the nominal current limit and primary winding inductance at the minimum AC voltage.

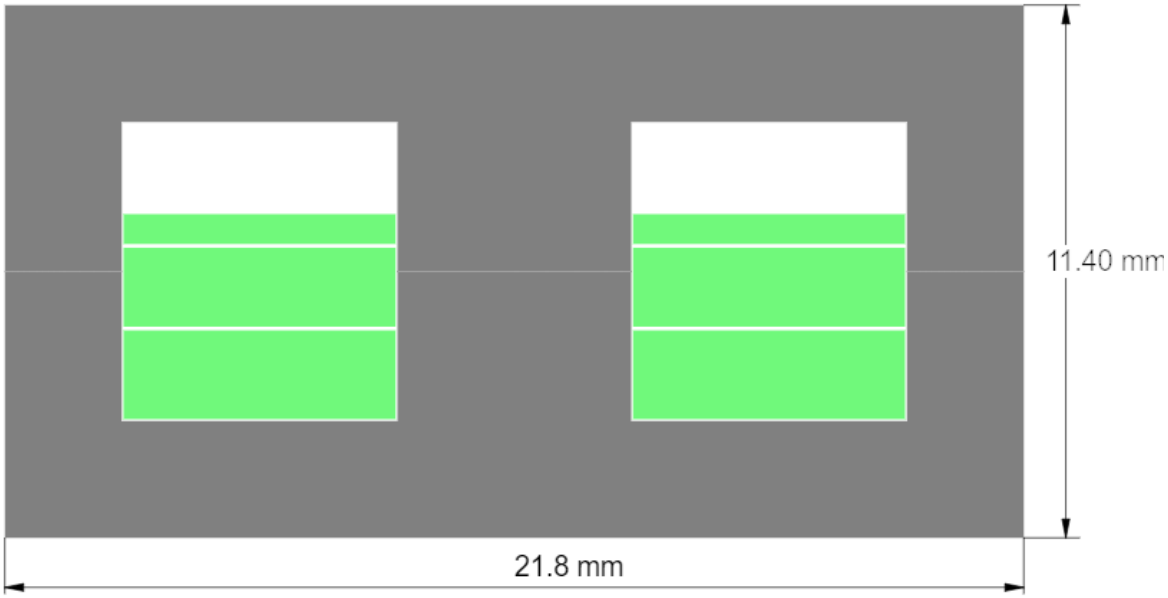
Constructional Diagram



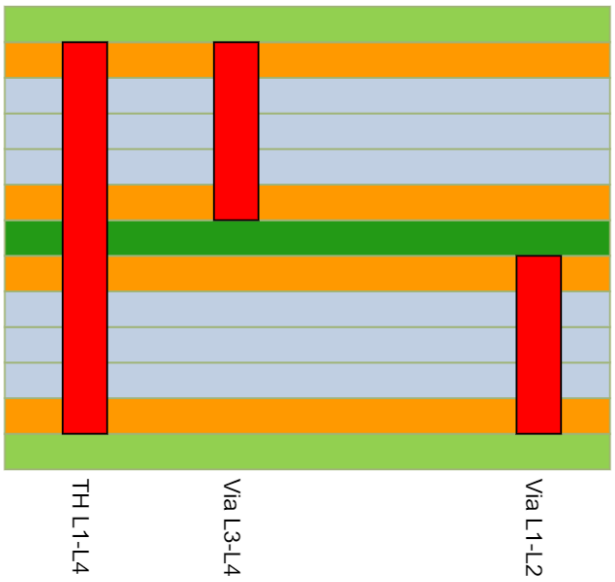
Dimensions view



Actual Size



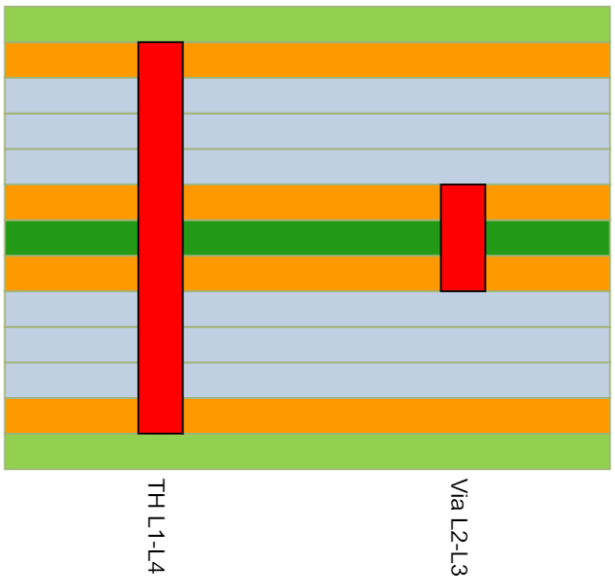
Foundry



Solder Mask 0.005 mm
L4 Copper 3 Ounces 0.1044 mm
L3 Prepreg Type 2116 0.105 mm
L3 Prepreg Type 7628p 0.21 mm
L3 Prepreg Type 7628p 0.21 mm
L3 Copper 3 Ounces 0.1044 mm
L2 Core FR4 0.51 mm
L2 Copper 3 Ounces 0.1044 mm
L1 Prepreg Type 2116 0.105 mm
L1 Prepreg Type 7628p 0.21 mm
L1 Prepreg Type 7628p 0.21 mm
L1 Copper 3 Ounces 0.1044 mm
Solder Mask 0.005 mm

Symbol	Count	Hole Size, mm	Plated	Hole Type	Drill Layer	Via/ PAD	Description	Hole Tolerance (+), mm	Hole Tolerance (-), mm	Gerber
•	1	0.3	PTH	Round	L1 - L2	Via		0.1		InnoSwitch3-EP_PIDesign1_PCB1_L1-2_VIA.drl
■	1	1.0	PTH	Round	L3 - L4	Via		0.1		InnoSwitch3-EP_PIDesign1_PCB1_L3-4_VIA.drl

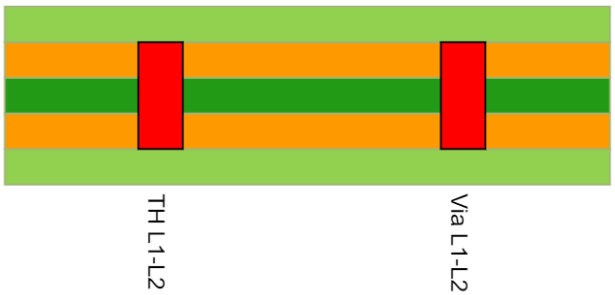
Symbol	Count	Hole Size, mm	Plated	Hole Type	Drill Layer	Via/ PAD	Description	Hole Tolerance (+), mm	Hole Tolerance (-), mm	Gerber
•	5	0.5	PTH	Round	L1 - L4	PAD			0.1	InnoSwitch3-EP_PIDesign1_PCB1_L1-4_DRILL.drl
■	2	0.9	PTH	Round	L1 - L4	PAD			0.1	InnoSwitch3-EP_PIDesign1_PCB1_L1-4_DRILL.drl



Solder Mask 0.005 mm
L4 Copper 3 Ounces 0.1044 mm
L3 Prepreg Type 2116 0.105 mm
L3 Prepreg Type 7628p 0.21 mm
L3 Prepreg Type 7628p 0.21 mm
L3 Copper 3 Ounces 0.1044 mm
L2 Core FR4 0.51 mm
L2 Copper 3 Ounces 0.1044 mm
L1 Prepreg Type 2116 0.105 mm
L1 Prepreg Type 7628p 0.21 mm
L1 Prepreg Type 7628p 0.21 mm
L1 Copper 3 Ounces 0.1044 mm
Solder Mask 0.005 mm

Symbol	Count	Hole Size, mm	Plated	Hole Type	Drill Layer	Via/ PAD	Description	Hole Tolerance (+), mm	Hole Tolerance (-), mm	Gerber
•	1	0.8	PTH	Round	L2 - L3	Via		0.1		InnoSwitch3-EP_PIDesign1_PCB2_L2-3_VIA.drl

Symbol	Count	Hole Size, mm	Plated	Hole Type	Drill Layer	Via/ PAD	Description	Hole Tolerance (+), mm	Hole Tolerance (-), mm	Gerber
•	5	0.5	PTH	Round	L1 - L4	PAD			0.1	InnoSwitch3-EP_PIDesign1_PCB2_L1-4_DRILL.drl
■	2	0.9	PTH	Round	L1 - L4	PAD			0.1	InnoSwitch3-EP_PIDesign1_PCB2_L1-4_DRILL.drl



Solder Mask 0.005 mm
L2 Copper 3 Ounces 0.1044 mm
L1 Core FR4 0.51 mm
L1 Copper 3 Ounces 0.1044 mm
Solder Mask 0.005 mm

Symbol	Count	Hole Size, mm	Plated	Hole Type	Drill Layer	Via/ PAD	Description	Hole Tolerance (+), mm	Hole Tolerance (-), mm	Gerber
•	1	0.4	PTH	Round	L1 - L2	Via		0.1		InnoSwitch3-EP_PIDesign1_PCB3_L1-2_VIA.drl

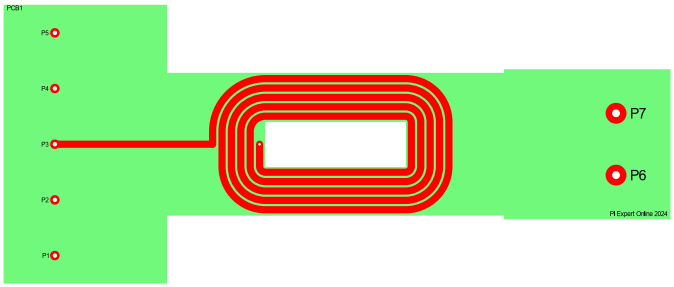
Symbol	Count	Hole Size, mm	Plated	Hole Type	Drill Layer	Via/ PAD	Description	Hole Tolerance (+), mm	Hole Tolerance (-), mm	Gerber
•	5	0.5	PTH	Round	L1 - L2	PAD			0.1	InnoSwitch3-EP_PIDesign1_PCB3_L1-2_DRILL.drl
■	2	0.9	PTH	Round	L1 - L2	PAD			0.1	InnoSwitch3-EP_PIDesign1_PCB3_L1-2_DRILL.drl

Winding Parameters

Type	Power	Bias	Power	Power
Name	Primary - 1	Primary Bias	Secondary - 1	Primary - 2
Turns	9	2	3	8
Layers	2	2	2	2
Color	Red	Orange	Blue	Red
Split	Series	False	False	Series
Direction	Clockwise	Clockwise	Clockwise	Clockwise
Start Pin	E1:P3	E1:P4	E2:P7	E3:P2
End Pin	E1:P2	E1:P5	E2:P6	E3:P1
Winding Current, A	0.69	0.1	2.82	0.69
Winding Temperature, °C	90	90	90	90
Technology Type	PCB	PCB	PCB	PCB
Use multiple vias	NO	NO	NO	NO
Vias hole diameter, mm	0.3	1.0	0.8	0.4
Vias number	1	1	1	1
Manual Track Width, mm	-	5.142	-	1.095

Winding Layer - 1 Parameters: Primary - 1

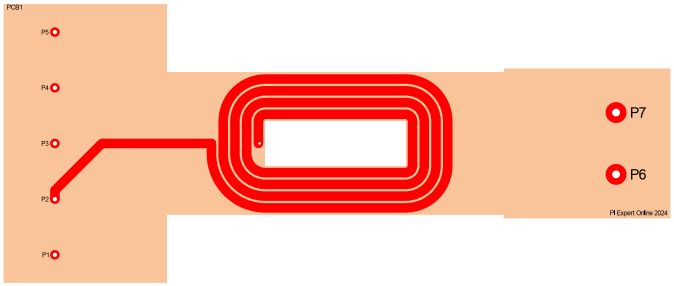
Track Width, mm	0.825
Turn-Turn Dist., mm	0.254
Actual Current Density, A/mm²	7.993
Copper Thickness, OZ	3
Layer Resistance, mΩ	81.227
Turns	5
Winding Layer	1
Position	Internal
Maximum number of turns in the layer	5
Track Start Position	Outside
Outer Connects To	P3
Inner Connects To	Internal
Winding layer connection type	Regular Layer
Winding Layer Uses Connection Layer	None
Turn-Turn Min Dist., mm	0.25
Turn-Core Internal Min Dist., mm	0.25
Turn-Core External Min Dist., mm	0.25
Turn-Core Internal Dist., mm	0.25
Turn-Core External Dist., mm	0.25



Winding Layer - 2 Parameters: Primary - 1

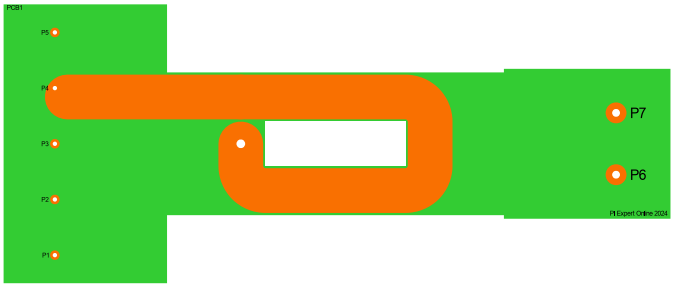
Track Width, mm	1.095
Turn-Turn Dist., mm	0.254
Actual Current Density, A/mm²	6.023

Copper Thickness, OZ	3
Layer Resistance, mΩ	65.853
Turns	4
Winding Layer	2
Position	External
Maximum number of turns in the layer	4
Track Start Position	Inside
Outer Connects To	P2
Inner Connects To	Internal
Winding layer connection type	Regular Layer
Winding Layer Uses Connection Layer	None
Turn-Turn Min Dist., mm	0.25
Turn-Core Internal Min Dist., mm	0.25
Turn-Core External Min Dist., mm	0.25
Turn-Core Internal Dist., mm	0.25
Turn-Core External Dist., mm	0.25



Winding Layer - 1 Parameters: Primary Bias

Track Width, mm	5.142
Turn-Turn Dist., mm	0.254
Copper Thickness, OZ	3
Turns	1
Winding Layer	3
Position	Internal
Maximum number of turns in the layer	1
Track Start Position	Outside
Outer Connects To	P4
Inner Connects To	Internal
Winding layer connection type	Regular Layer
Winding Layer Uses Connection Layer	None
Turn-Turn Min Dist., mm	0.25
Turn-Core Internal Min Dist., mm	0.25
Turn-Core External Min Dist., mm	0.25
Turn-Core Internal Dist., mm	0.25
Turn-Core External Dist., mm	0.25



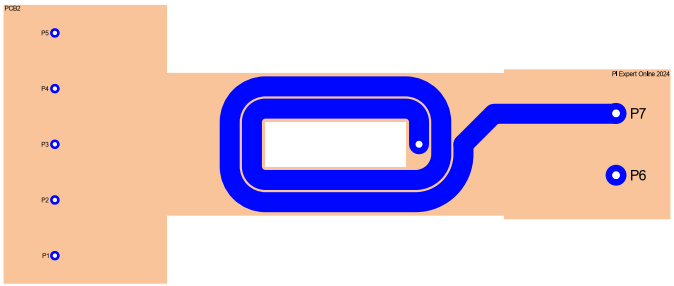
Winding Layer - 2 Parameters: Primary Bias

Track Width, mm	5.142
Turn-Turn Dist., mm	0.254
Copper Thickness, OZ	3
Turns	1
Winding Layer	4
Position	Internal
Maximum number of turns in the layer	1
Track Start Position	Inside
Outer Connects To	P5
Inner Connects To	Internal
Winding layer connection type	Regular Layer

Winding Layer Uses Connection Layer	None
Turn-Turn Min Dist., mm	0.25
Turn-Core Internal Min Dist., mm	0.25
Turn-Core External Min Dist., mm	0.25
Turn-Core Internal Dist., mm	0.25
Turn-Core External Dist., mm	0.25

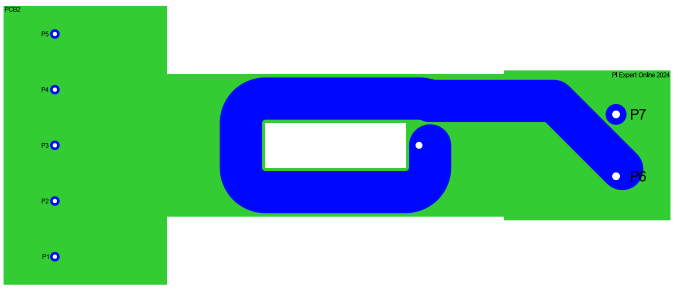
Winding Layer - 1 Parameters: Secondary - 1

Track Width, mm	2.298
Turn-Turn Dist., mm	0.254
Actual Current Density, A/mm²	11.75
Copper Thickness, OZ	3
Layer Resistance, mΩ	12.524
Turns	2
Winding Layer	5
Position	External
Maximum number of turns in the layer	2
Track Start Position	Outside
Outer Connects To	P7
Inner Connects To	Internal
Winding layer connection type	Regular Layer
Winding Layer Uses Connection Layer	None
Turn-Turn Min Dist., mm	0.25
Turn-Core Internal Min Dist., mm	0.4
Turn-Core External Min Dist., mm	0.4
Turn-Core Internal Dist., mm	0.4
Turn-Core External Dist., mm	0.4



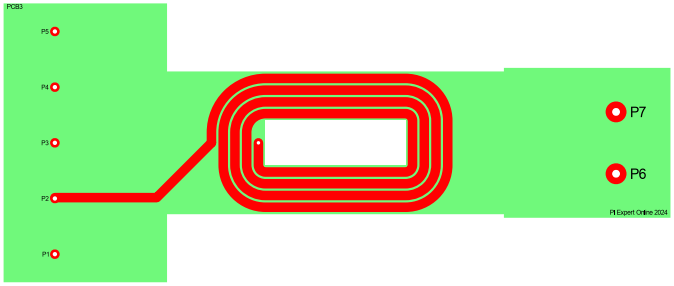
Winding Layer - 2 Parameters: Secondary - 1

Track Width, mm	4.85
Turn-Turn Dist., mm	0.254
Actual Current Density, A/mm²	5.567
Copper Thickness, OZ	3
Layer Resistance, mΩ	7.009
Turns	1
Winding Layer	6
Position	Internal
Maximum number of turns in the layer	1
Track Start Position	Inside
Outer Connects To	P6
Inner Connects To	Internal
Winding layer connection type	Regular Layer
Winding Layer Uses Connection Layer	None
Turn-Turn Min Dist., mm	0.25
Turn-Core Internal Min Dist., mm	0.4
Turn-Core External Min Dist., mm	0.4
Turn-Core Internal Dist., mm	0.4
Turn-Core External Dist., mm	0.4



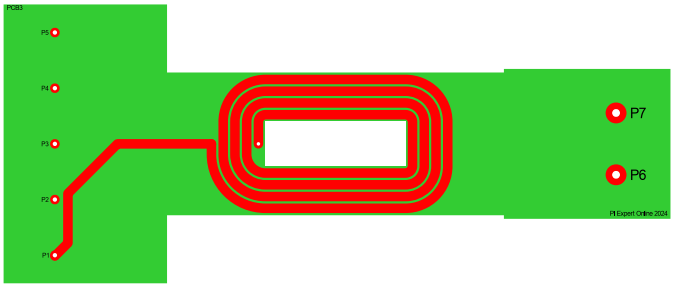
Winding Layer - 1 Parameters: Primary - 2

Track Width, mm	1.095
Turn-Turn Dist., mm	0.254
Actual Current Density, A/mm²	6.023
Copper Thickness, OZ	3
Layer Resistance, mΩ	49.627
Turns	4
Winding Layer	7
Position	Internal
Maximum number of turns in the layer	4
Track Start Position	Outside
Outer Connects To	P2
Inner Connects To	Internal
Winding layer connection type	Regular Layer
Winding Layer Uses Connection Layer	None
Turn-Turn Min Dist., mm	0.25
Turn-Core Internal Min Dist., mm	0.25
Turn-Core External Min Dist., mm	0.25
Turn-Core Internal Dist., mm	0.25
Turn-Core External Dist., mm	0.25



Winding Layer - 2 Parameters: Primary - 2

Track Width, mm	1.095
Turn-Turn Dist., mm	0.254
Actual Current Density, A/mm²	6.023
Copper Thickness, OZ	3
Layer Resistance, mΩ	49.627
Turns	4
Winding Layer	8
Position	External
Maximum number of turns in the layer	4
Track Start Position	Inside
Outer Connects To	P1
Inner Connects To	Internal
Winding layer connection type	Regular Layer
Winding Layer Uses Connection Layer	None
Turn-Turn Min Dist., mm	0.25
Turn-Core Internal Min Dist., mm	0.25
Turn-Core External Min Dist., mm	0.25
Turn-Core Internal Dist., mm	0.25
Turn-Core External Dist., mm	0.25



Enclosures

Enclosure Type	PCB	PCB	PCB
Layers	4	4	2
Selected Enclosure Position	-	-	-
Coil Formers	-	-	-
Spacer	-	-	-
Coil Former External Size, mm	-	-	-
Coil Former Internal Space, mm	-	-	-
Coil Former Wall Thickness, mm	-	-	-
Spacer External Diameter, mm	-	-	-
Spacer Internal Diameter, mm	-	-	-
Spacer Height, mm	-	-	-
Spacer Open Space, mm	-	-	-
Wire-Wound Encl. Height Multiplier	-	-	-
Total Enclosure Height, mm	1.978	1.769	0.719
Tot. Isolation Layer Thickness below, mm	0	0	0
Tot. Isolation Layer Thickness above, mm	0	0	0

Winding Layer Parameters: PCB 1

Selected PCB Layer Position	PCB Core Thickness, mm	Prepreg 1 Type	Prepreg 2 Type	Prepreg 3 Type
-	-	-	-	-
-	-	Type 7628p	Type 7628p	Type 2116
-	0.51	-	-	-
-	-	Type 7628p	Type 7628p	Type 2116

Winding Layer Parameters: PCB 2

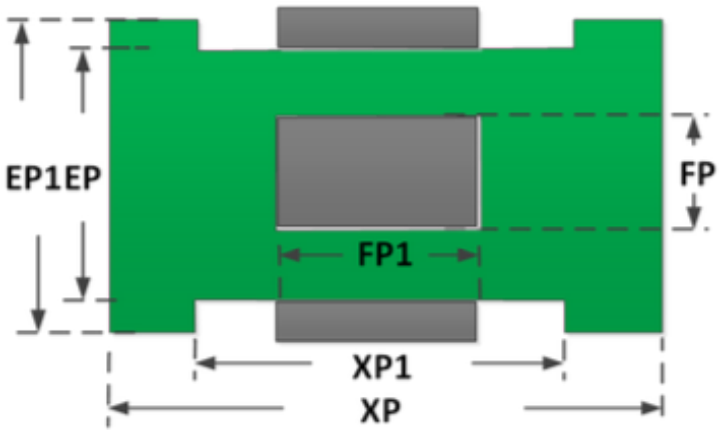
Selected PCB Layer Position	PCB Core Thickness, mm	Prepreg 1 Type	Prepreg 2 Type	Prepreg 3 Type
-	-	-	-	-
-	-	Type 7628p	Type 7628p	Type 2116
-	0.51	-	-	-
-	-	Type 7628p	Type 7628p	Type 2116

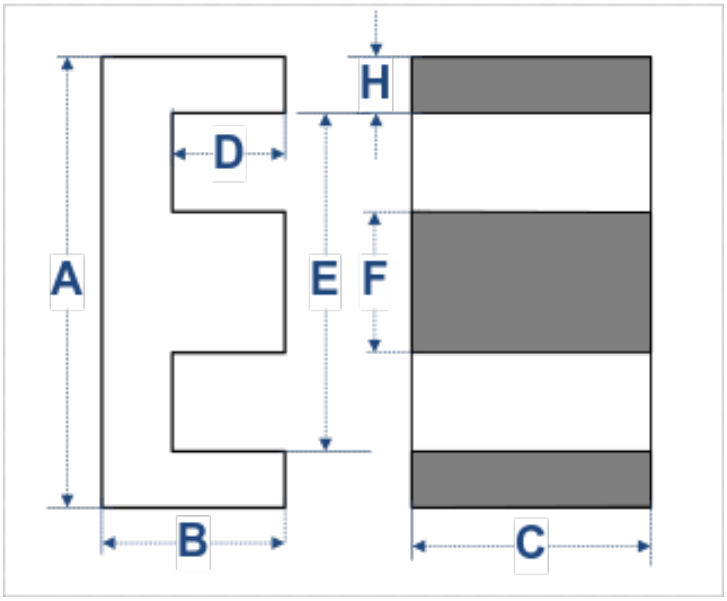
Winding Layer Parameters: PCB 3

Selected PCB Layer Position	PCB Core Thickness, mm	Prepreg 1 Type	Prepreg 2 Type	Prepreg 3 Type
-	-	-	-	-
-	0.51	-	-	-

Core/Coil Former Parameters

Core	EE22 (E22/6/16/R-3F3)
Part Number	E22/6/16/R-3F3
Core Material	3F3
EP	16.4
XP, mm	70.84
EP1, mm	16.4
XP1, mm	38.7
FP	5.1
FP1	16.1
GP	16.8
DP	6.2
PCB Shape	PCB SHAPE 1





Building Instructions

1. Take one gapped part of EE22 (E22/6/16/R-3F3) and the required counterpart E-PLT22.
2. Position PCB1 facing down and pins on the left.
3. Position PCB2 facing down and pins on the right.
4. Position PCB3 facing down and pins on the left.
5. Close the construction with the complementary magnetic part.
6. Apply the accessories or apply glue on the corner.

Design Specifications

Magnetizing Inductance Tolerance (LP_Tol), %	5.0
Frequency (FS), Hz	90000
Reflected Output Voltage (VOR), V	133.58
Main Turns (NSM)	3

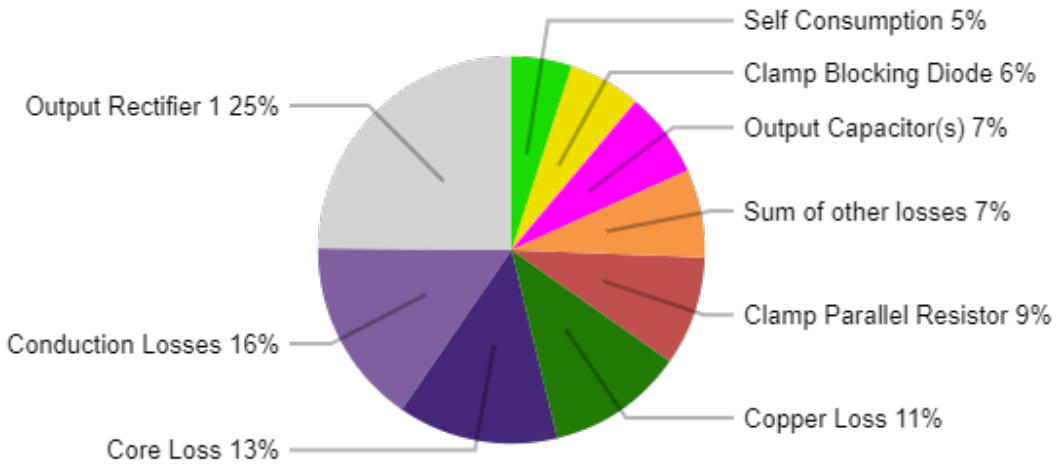
Set-Point	1
ILIMIT Tolerance	Min
LP Tolerance	Min
VDCMIN [V]	70
VMIN [V]	70.0
INDUCTANCE [uH]	184.07
ILIMIT [A]	1.77
PO [W]	24.00
VO [V]	24.00
IO [A]	1.000
FS [Hz]	90000
VOR [V]	133.58
DMAX	0.416
KP	2.695
TIME_ON [µs]	4.62
TIME_OFF [µs]	6.49
IAVG [A]	0.36
IP [A]	1.749
IRMS [A]	0.651
ISP [A]	9.910
IRIPPLE [A]	2.470
BM [Gauss]	2412
BP [Gauss]	2495
BAC [Gauss]	1206
ISRMS [A]	2.665
NP	17.0
N_ACTUAL [%]	91.86

Design Evaluation

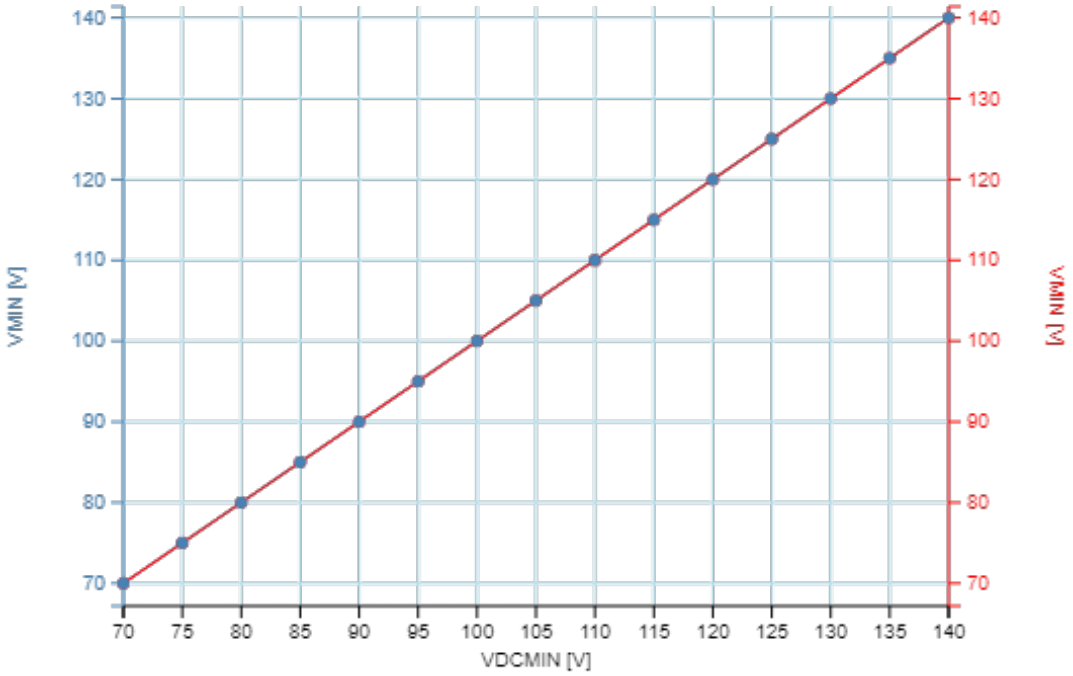
LOAD [%]	100
VDC [V]	70
Set-Point	1
ILIMIT Tolerance	MIN
LP Tolerance	MIN

Components	Loss (W)	Rth (C/W)	Temp. Rise (C)
Total Losses	2.127		
PI DEVICE	0.466		
Switching Losses	0.028		
Conduction Losses	0.330		
Self Consumption	0.107		
PRIMARY CLAMP CIRCUIT	0.343		
Clamp Parallel Resistor	0.194		
Clamp Series Resistor	0.019		
Clamp Blocking Diode	0.129		
PRIMARY BIAS	0.045		
Diode	0.002		
Resistor	0.042		
CONTROLLER CIRCUIT	0.033		
Line Sense Resistor 1	0.001		
Line Sense Resistor 2	0.001		
Current Sense Resistor	0.030		
Upper Feedback Resistor	0.001		
Lower Feedback Resistor	0.000		
TRANSFORMER	0.528		
Copper Loss	0.243		
Core Loss	0.285		
SECONDARY RECTIFIER	0.560		
Output Rectifier 1	0.528		
Snubber Resistor	0.032		
OUTPUT CAP	0.152		
Output Capacitor(s)	0.152		

Pie Chart



Line Chart



Note: Design parameters shown in the tool are based on calculations and approximations. Actual results will vary. Power supply designed using the tool should be tested to verify actual parameter values.