VinMin = 40.0V
VinMax = 60.0V
Vout = 54.0V
Iout = 1.5A

Device = LM5118MH/NOPB
Topology = Buck_Boost
Created = 2018-10-17 20:41:55.958
BOM Cost = $10.37
Total Pd = 2.97W
Footprint = 2,861.0 mm^2
BOM Count = 1
tSim Id = 2

WEBENCH® Thermal Simulation Report

Design : 185 LM5118MH/NOPB
LM5118MH/NOPB 40V-60V to 54.00V @ 1.5A

Operating Condition

Name	Value
VIN_OP	40.0V
IOUT_OP	1.5A

Ambient Temperature

Name	Temperature
Ambient_plus_Z	50.0
Ambient_minus_Z	50.0

Air Flow

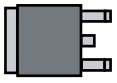
Name	Direction
Flow_Type	Convection
Flow_Rate	0.0LFM
Flow_Direction	Top to Bottom

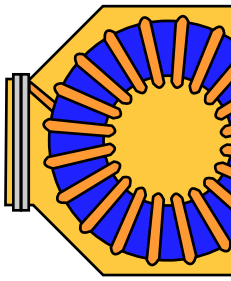
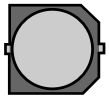
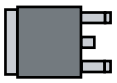
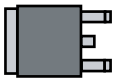
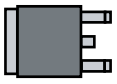
Edge Temperature

Name	Temperature	Thermal Type
Edge_plus_X (Right)		Insulated
Edge_minus_X (Left)		Insulated
Edge_plus_Y (Top)		Insulated
Edge_minus_Y (Bottom)		Insulated

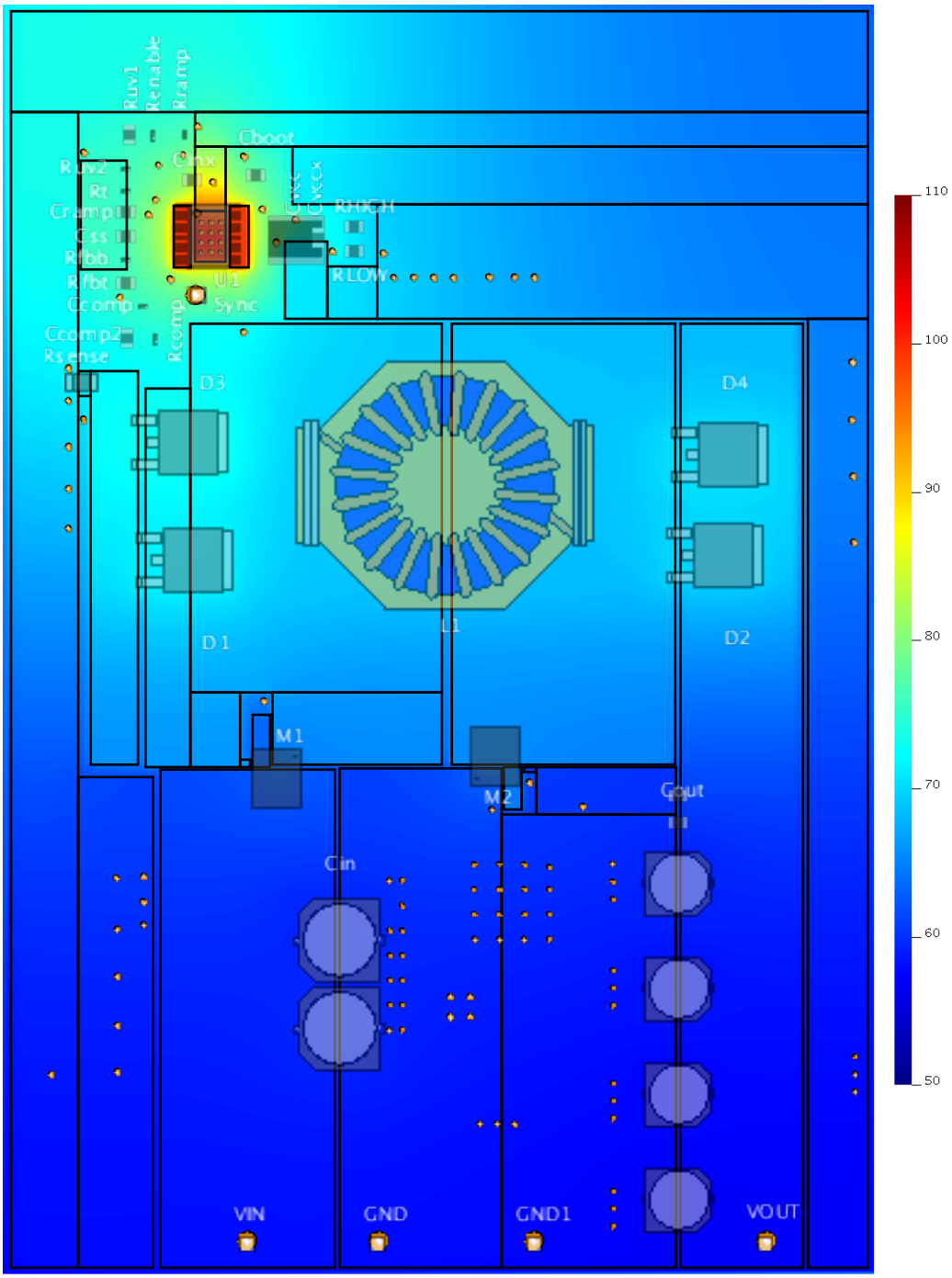
My Comments
No comments

BOM

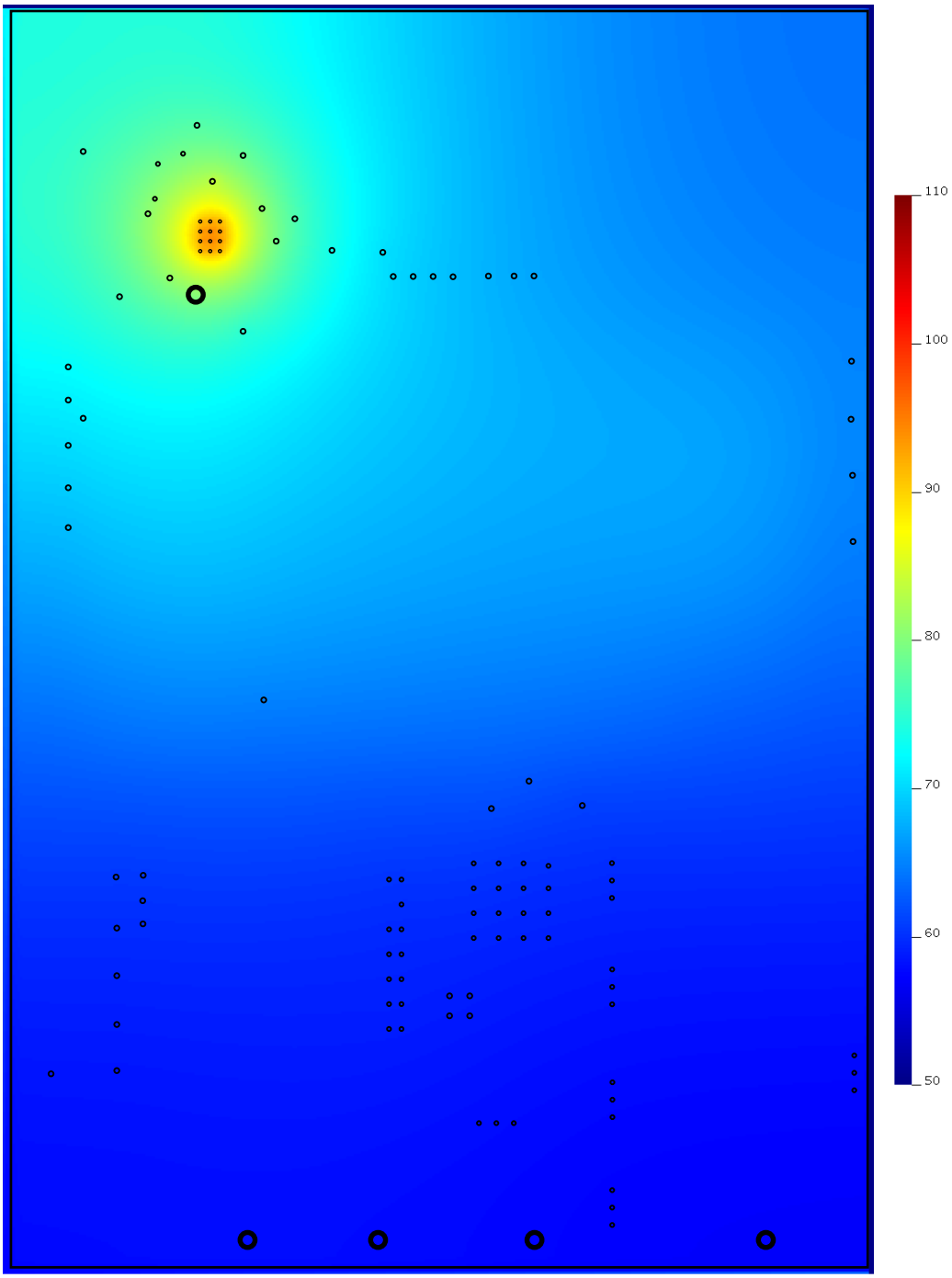
Component Name(s)	Part Number	Max Temp	Power Dissipation	Manufacture	Properties	Qty	Price	Footprint
D4	CUSTOM_DIODE_LG	0°C	0.42W	Others	VRRM=100.0V VFatIo=0.56V	1	$0.10	 DPAK 155.0 mm^2
pcb_bottom		94°C						
M1	FDMS86200	64°C	0.061W	Fairchild Semiconductor	VdsMax=150.0V IdsMax=35.0Amps	1	$0.99	 TRANS_Fairchild_PQFN 56.0 mm^2
M2	FDMS86200	66°C	0.101W	Fairchild Semiconductor	VdsMax=150.0V IdsMax=35.0Amps	1	$0.99	 TRANS_Fairchild_PQFN 56.0 mm^2

Component Name(s)	Part Number	Max Temp	Power Dissipation	Manufacture	Properties	Qty	Price	Footprint
L1	PM2120-221K-RC	69°C	0.718W	Bourns	L=2.2E-4H DCR=0.052Ohm	1	$1.38	 PM2120 890.5 mm^2
Cin	EEHZA1K220P	59°C	0.035W	Panasonic	VDC=80.0V ESR=0.045Ohm IRMS=1.55A Cap=2.2E-5F	2	$0.97	 SM_RADIAL_8MM 113.3 mm^2
Cout	CUSTOM_CAP_LG	59°C	0.006W	OSCON	VDC=100.0V ESR=0.03Ohm IRMS=2.3A Cap=1.5E-5F	4	$0.10	 CAPSMT_62_F61 100.0 mm^2
U1	LM5118MH/NOPB	106°C	1.78W	Texas Instruments		1	$2.86	 MXA20A 71.4 mm^2
D1	CUSTOM_DIODE_LG	0°C	0.42W	Others	VRRM=100.0V VFatIo=0.56V	1	$0.10	 DPAK 155.0 mm^2
D2	CUSTOM_DIODE_LG	0°C	0.42W	Others	VRRM=100.0V VFatIo=0.56V	1	$0.10	 DPAK 155.0 mm^2
pcb_top		102°C						
D3	CUSTOM_DIODE_LG	0°C	0.42W	Others	VRRM=100.0V VFatIo=0.56V	1	$0.10	 DPAK 155.0 mm^2

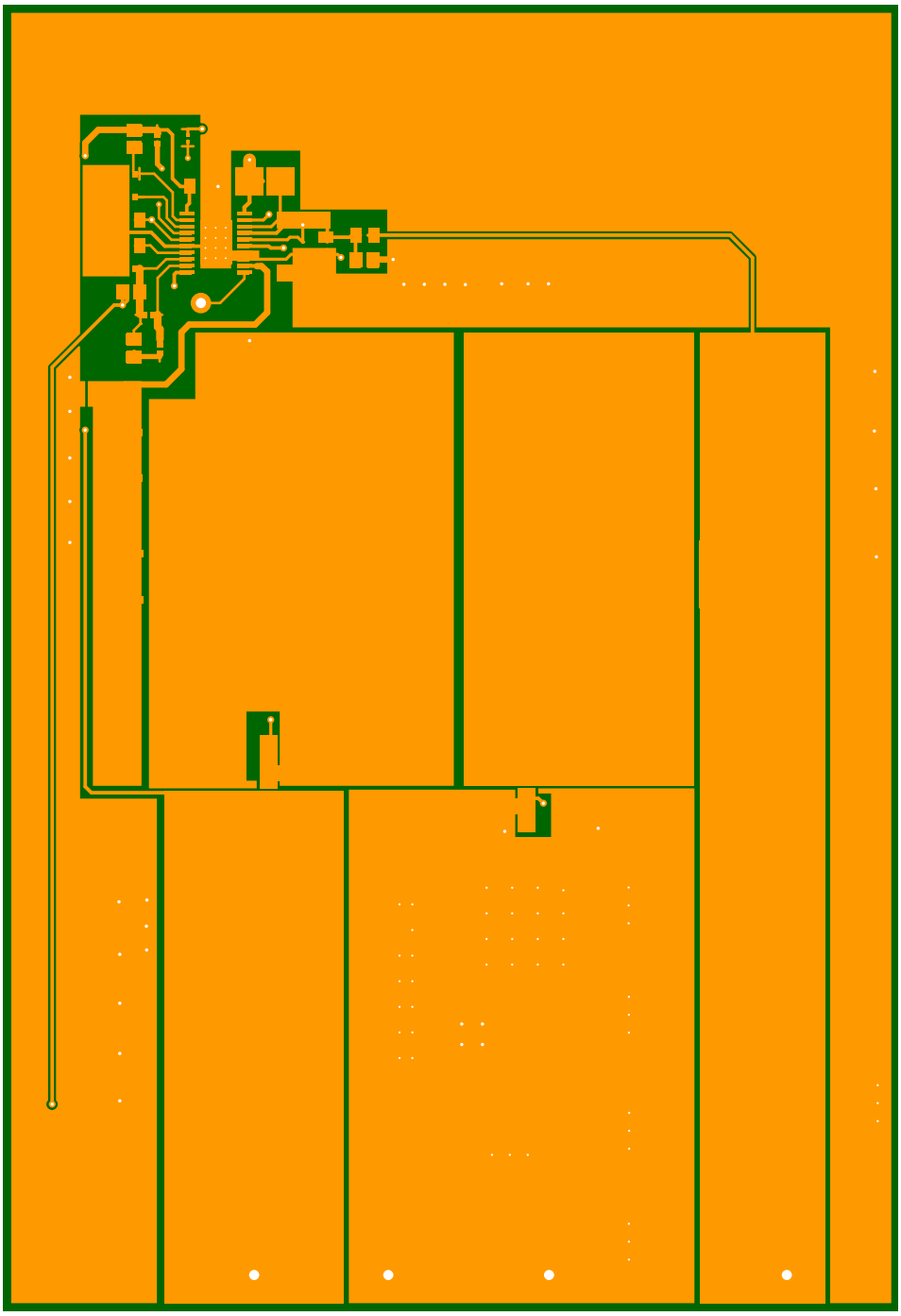
Thermal Images



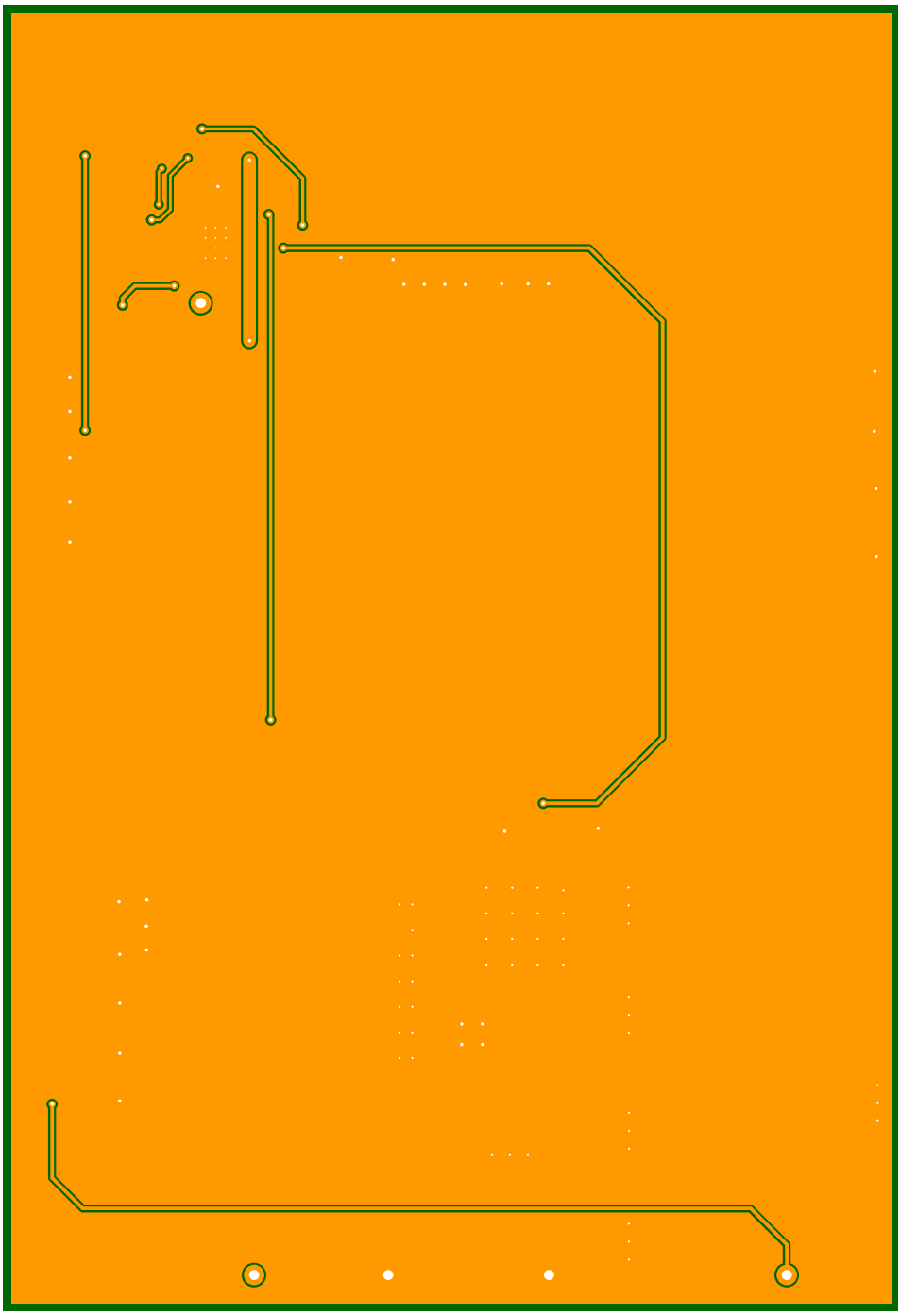
Thermal Top Image



Thermal Bottom Image

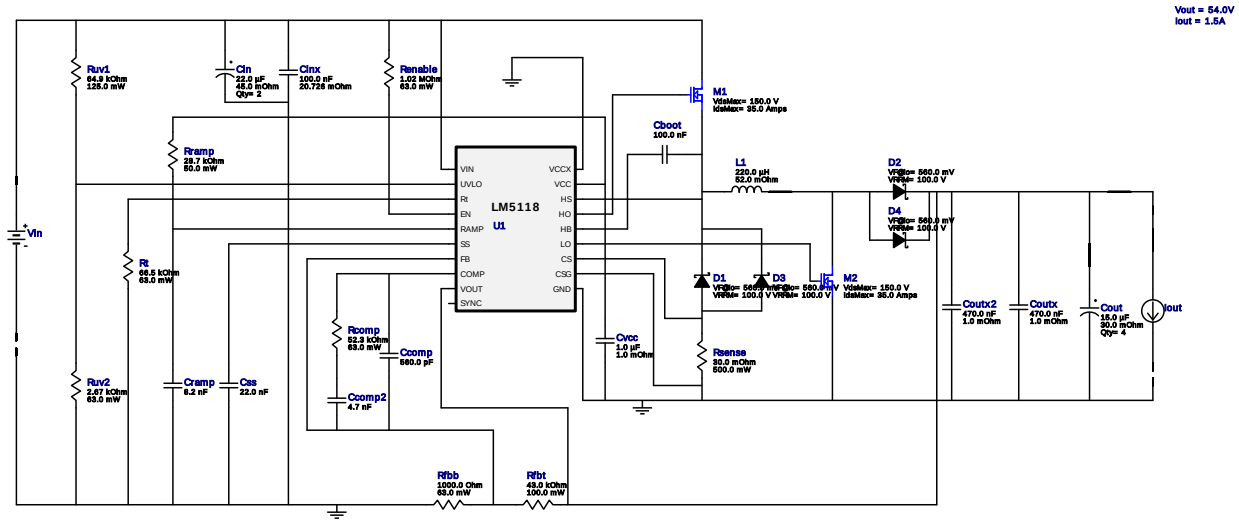


PCB Top Image



PCB Bottom Image

Schematic



Design Assistance

1. The LM5118 is a wide range buck-boost controller which is operable in an ultra wide input range of 3 to 75V. A buck-boost regulator can maintain regulation for input voltages either higher or lower than the output voltage. The challenge is that buck-boost power converters are not as efficient as buck regulators. The LM5118 has been designed as a dual mode controller whereby the power converter acts as a buck regulator while the input voltage is above the output. As the input voltage approaches the output voltage, a gradual transition to the buck-boost mode occurs. This gradual transition between modes eliminates disturbances at the output during transitions.

2. **LM5118** Product Folder : http://www.ti.com/product/lm5118 : contains the data sheet and other resources.