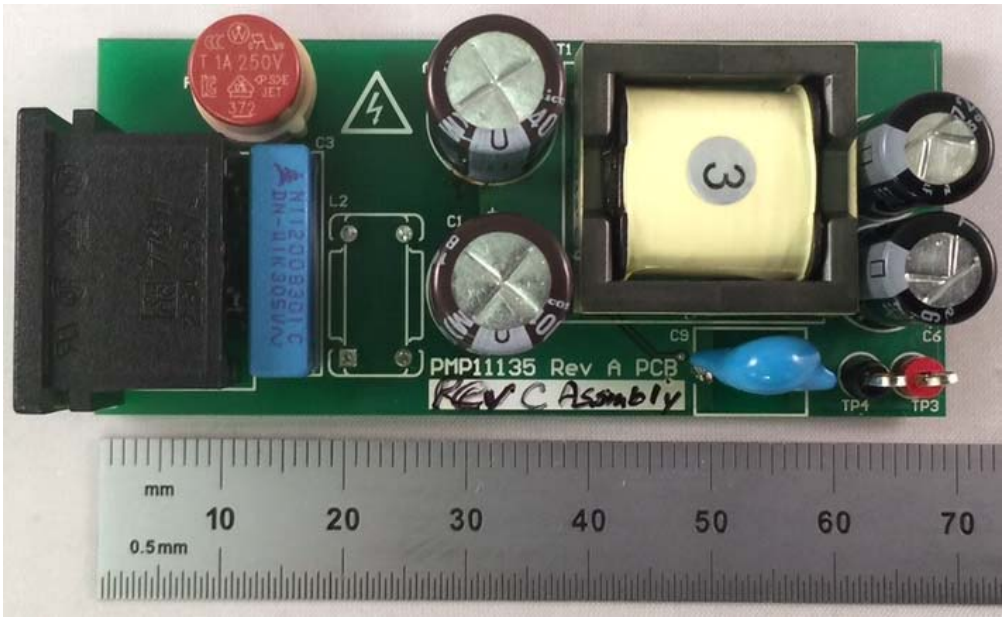
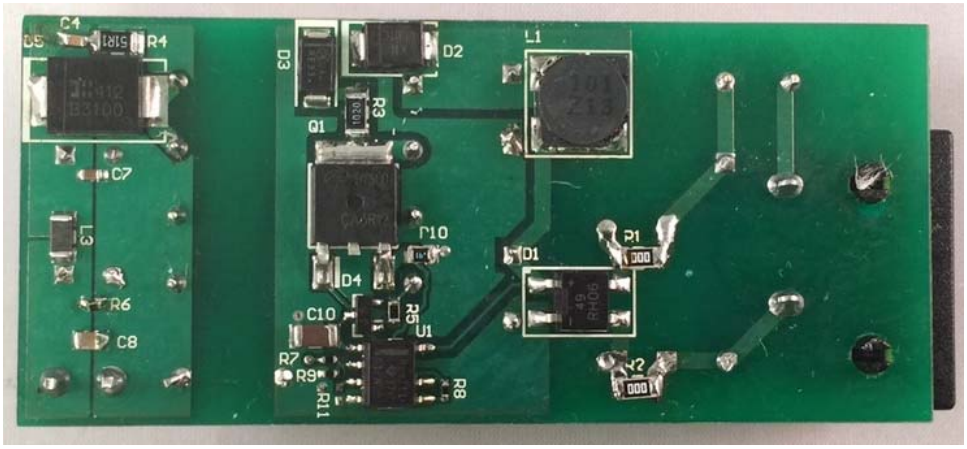
1 Photos

The photographs below show the PMP11135 Rev C prototype assembly. This circuit was built using a PMP11135 Rev A PCB.



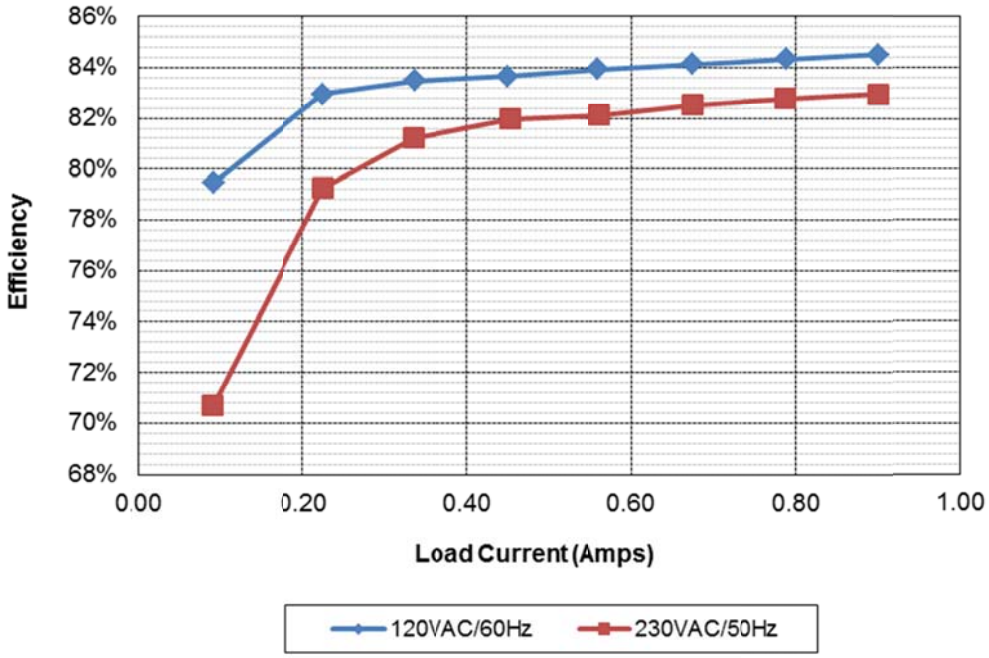


2 Standby Power

Measured with no load.

No Load	Pin AC (W)
115VAC/60Hz	0.028
230VAC/50Hz	0.038

3 Efficiency

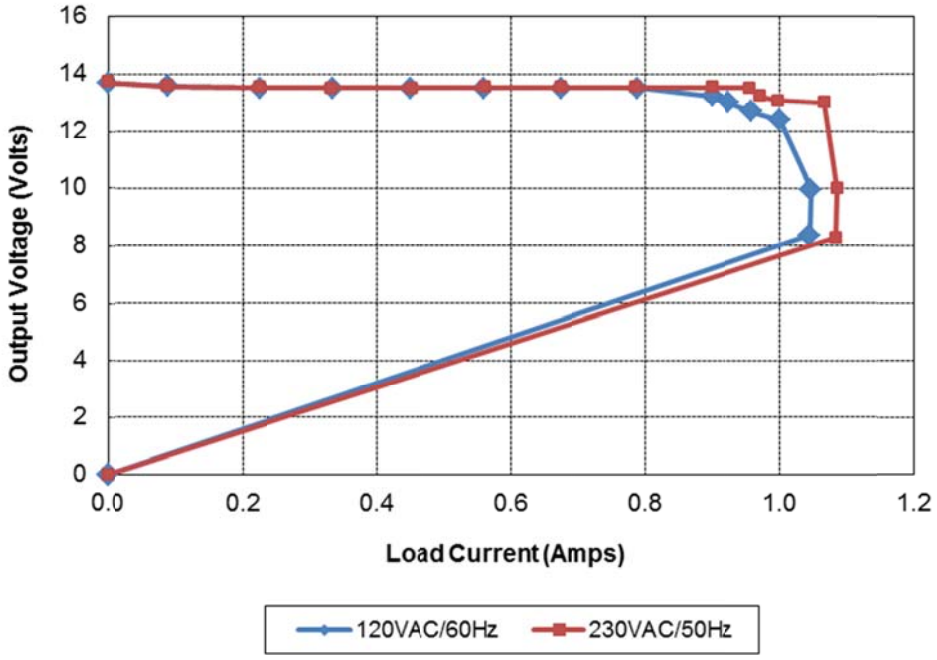


120VAC/60Hz								
Iout	Vout	Vin	Iin	Pin	PF	Pout	Losses	Efficiency
0.000	13.70	120.0	0.00482	0.0281		0.00	0.03	
0.091	13.57	120.0	0.0399	1.554	0.325	1.23	0.32	79.5%
0.225	13.51	120.0	0.0789	3.665	0.387	3.04	0.63	82.9%
0.335	13.50	119.9	0.1071	5.417	0.422	4.52	0.89	83.5%
0.450	13.51	119.9	0.1348	7.268	0.450	6.08	1.19	83.6%
0.560	13.52	119.9	0.1598	9.02	0.471	7.57	1.45	83.9%
0.674	13.52	119.9	0.1847	10.83	0.489	9.11	1.72	84.1%
0.789	13.52	119.9	0.2091	12.65	0.505	10.67	1.98	84.3%
0.900	13.22	119.9	0.2283	14.08	0.514	11.90	2.18	84.5%

230VAC/50Hz								
Iout	Vout	Vin	Iin	Pin	PF	Pout	Losses	Efficiency
0.000	13.71	229.9	0.00738	0.0375		0.00	0.04	
0.090	13.58	229.9	0.0296	1.729	0.255	1.22	0.51	70.7%
0.225	13.54	229.9	0.0567	3.844	0.294	3.05	0.80	79.3%
0.334	13.52	229.9	0.0751	5.560	0.322	4.52	1.04	81.2%
0.452	13.52	229.9	0.0945	7.455	0.343	6.11	1.34	82.0%
0.562	13.53	229.9	0.1116	9.26	0.361	7.60	1.66	82.1%
0.674	13.54	229.9	0.1281	11.06	0.376	9.13	1.93	82.5%
0.787	13.54	229.9	0.1440	12.87	0.389	10.66	2.22	82.8%
0.900	13.54	229.9	0.1594	14.69	0.401	12.19	2.50	83.0%

Vin	Pin	Vout	Iout	Load	Efficiency	Avg. Eff.
120VAC/60Hz	1.55	13.57	0.091	10%	79.46%	
	3.67	13.51	0.225	25%	82.94%	**83.80%**
	7.27	13.51	0.450	50%	83.65%	
	10.83	13.52	0.674	75%	84.13%	
	14.08	13.22	0.900	100%	84.50%	
230VAC/50Hz	1.73	13.58	0.090	10%	70.69%	
	3.84	13.54	0.225	25%	79.25%	**81.67%**
	7.46	13.52	0.452	50%	81.97%	
	11.06	13.54	0.674	75%	82.51%	
	14.69	13.54	0.900	100%	82.95%	

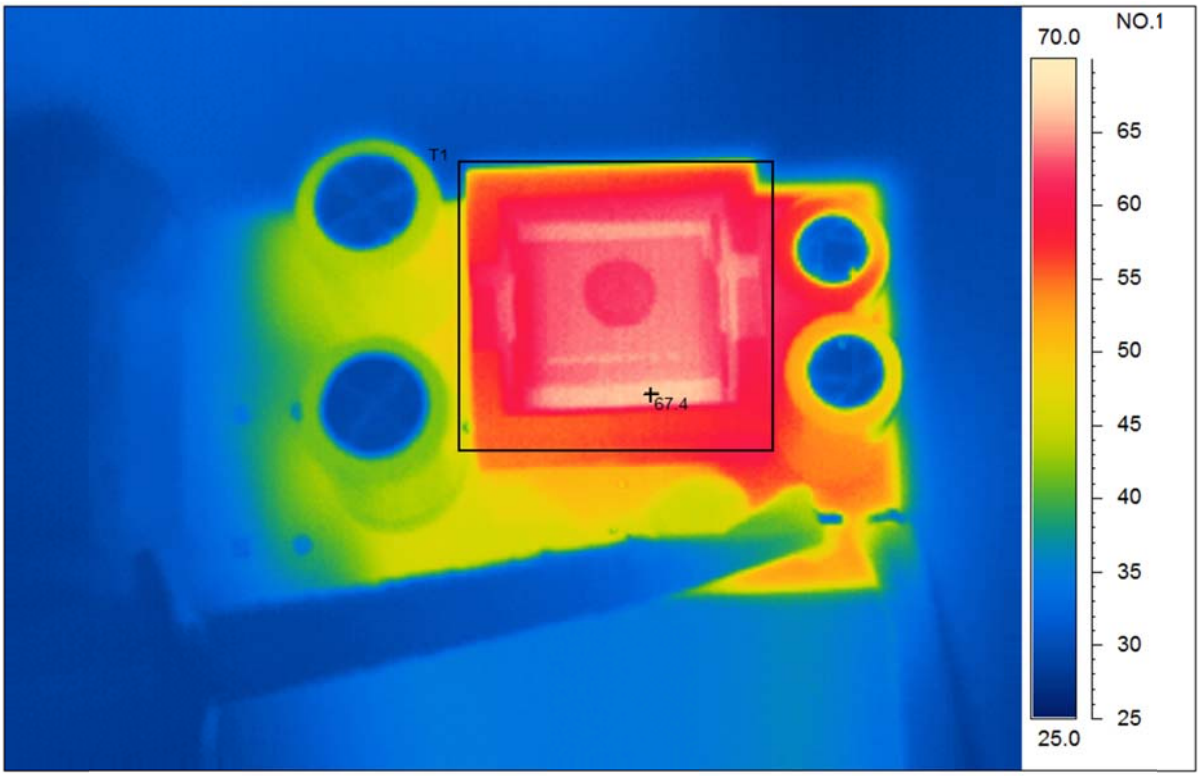
4 Current Limit

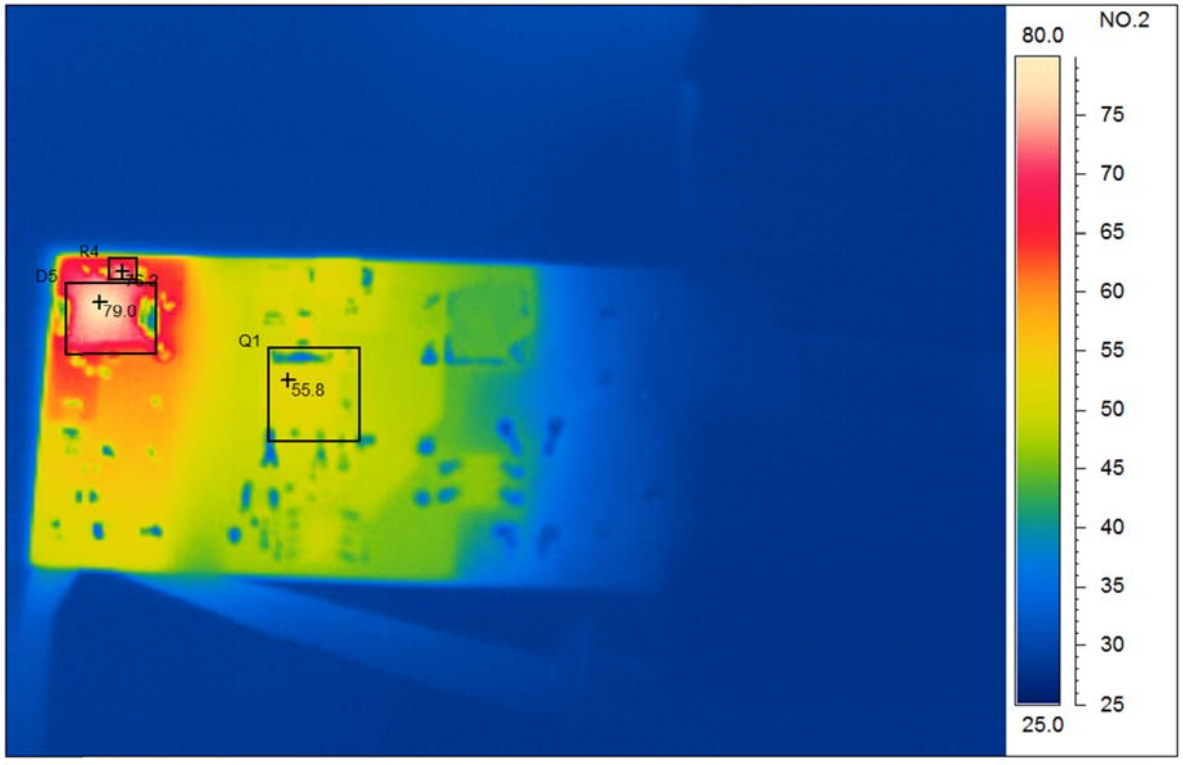


5 Thermal Images

The thermal images below show the assembly with loaded with 0.9A. The ambient temperature was 25ºC.

5.1 120VAC/60Hz





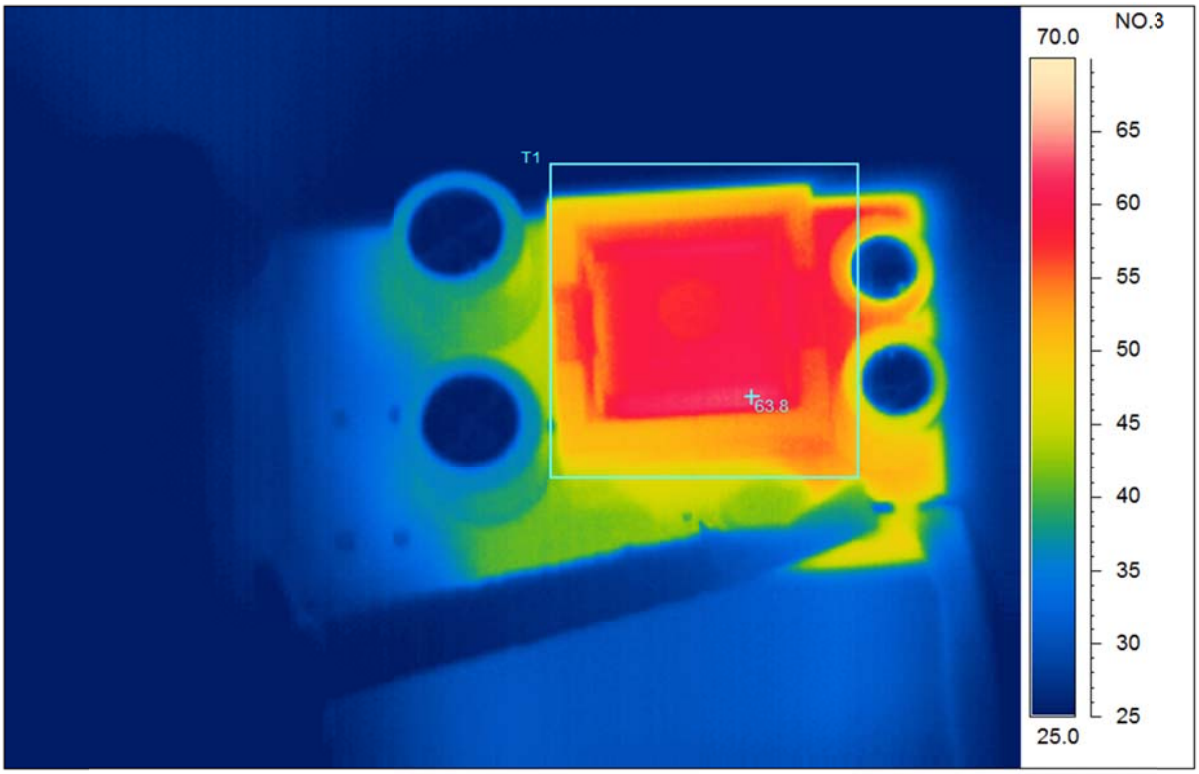
Area analysis	Value
T1 Max	67.4°C

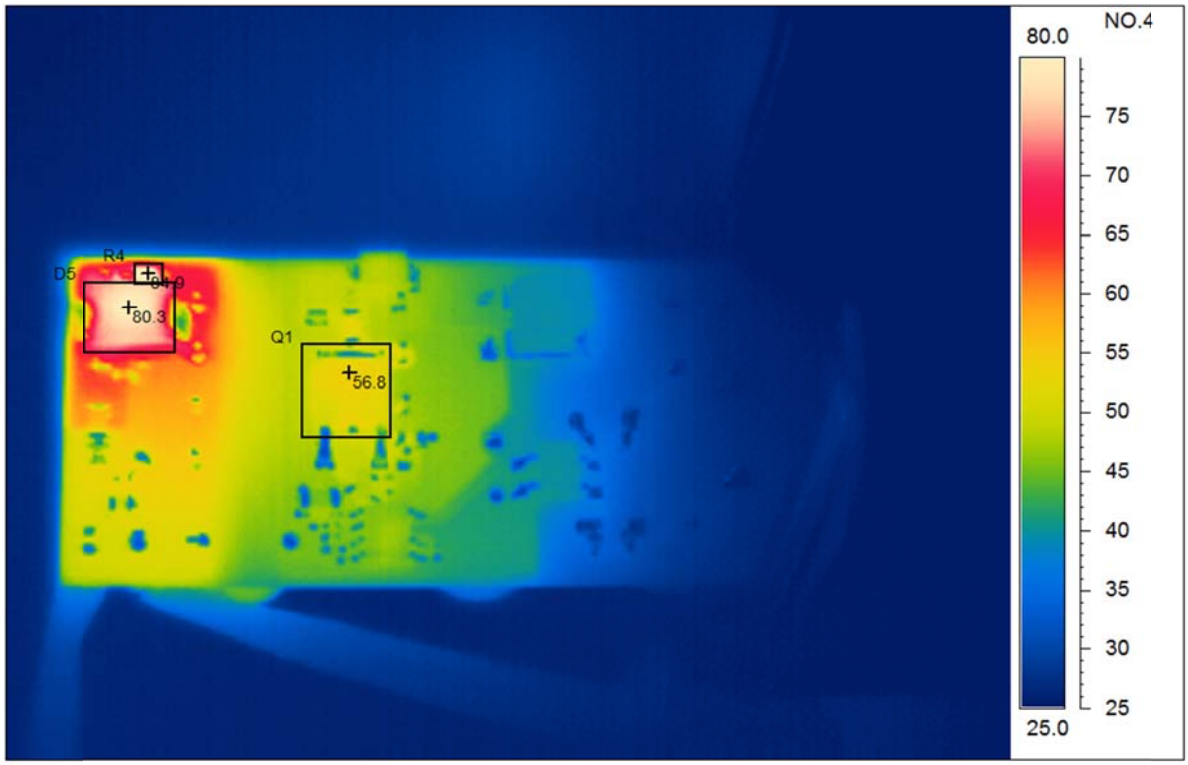
NO.1

Area analysis	Value
R4 Max	76.2°C
D5 Max	79.0°C
Q1 Max	55.8°C

NO.2

5.2 230VAC/50Hz





NO.3

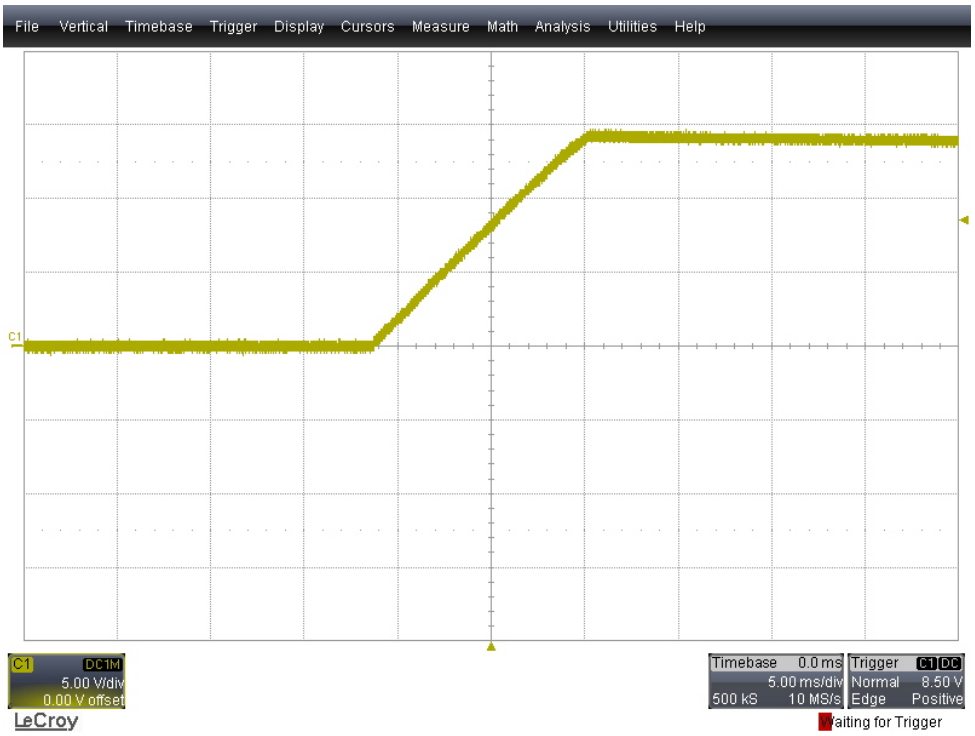
Area analysis	Value
T1 Max	63.8°C

NO.4

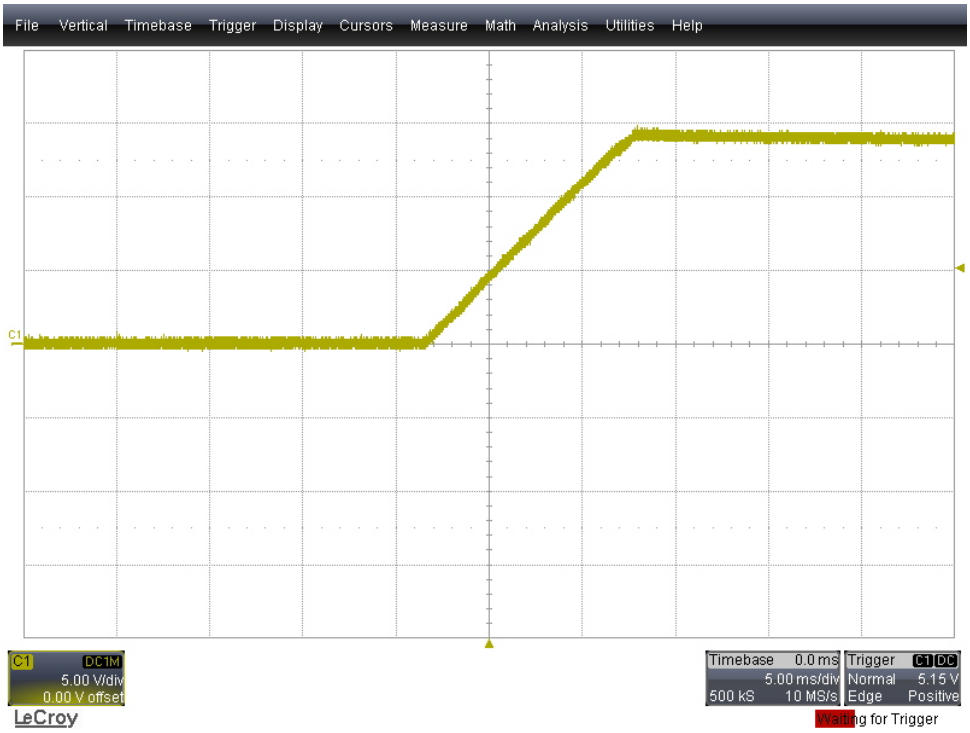
Area analysis	Value
R4 Max	84.9°C
D5 Max	80.3°C
Q1 Max	56.8°C

6 Startup

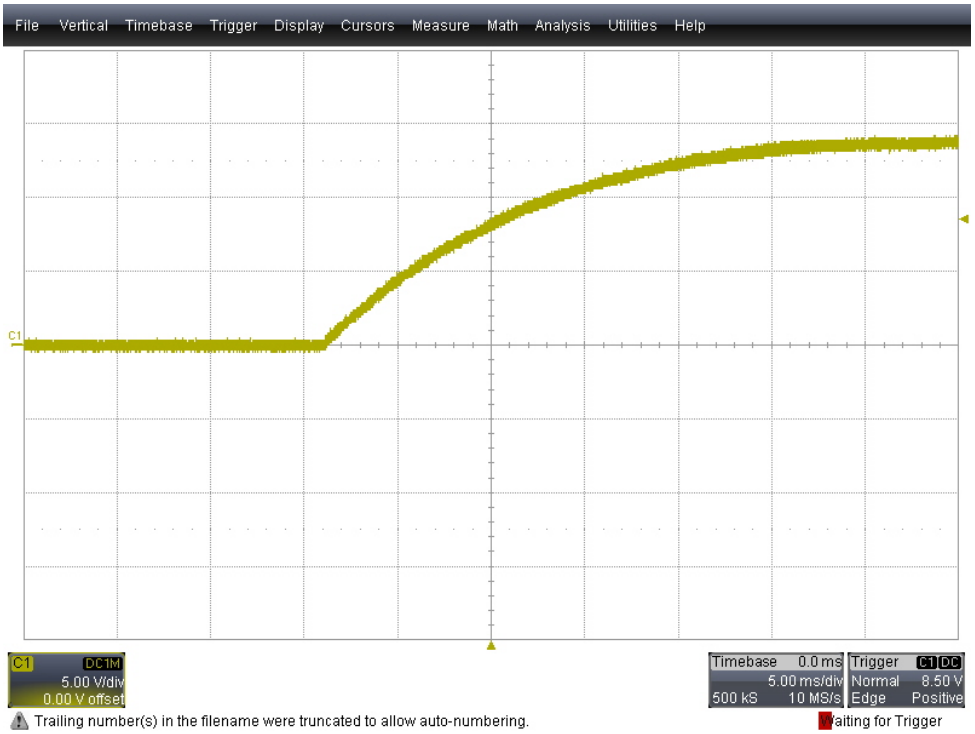
6.1 120VAC/60Hz – No Load



6.2 230VAC/50Hz – No Load



6.3 120VAC/60Hz – 15Ω Load

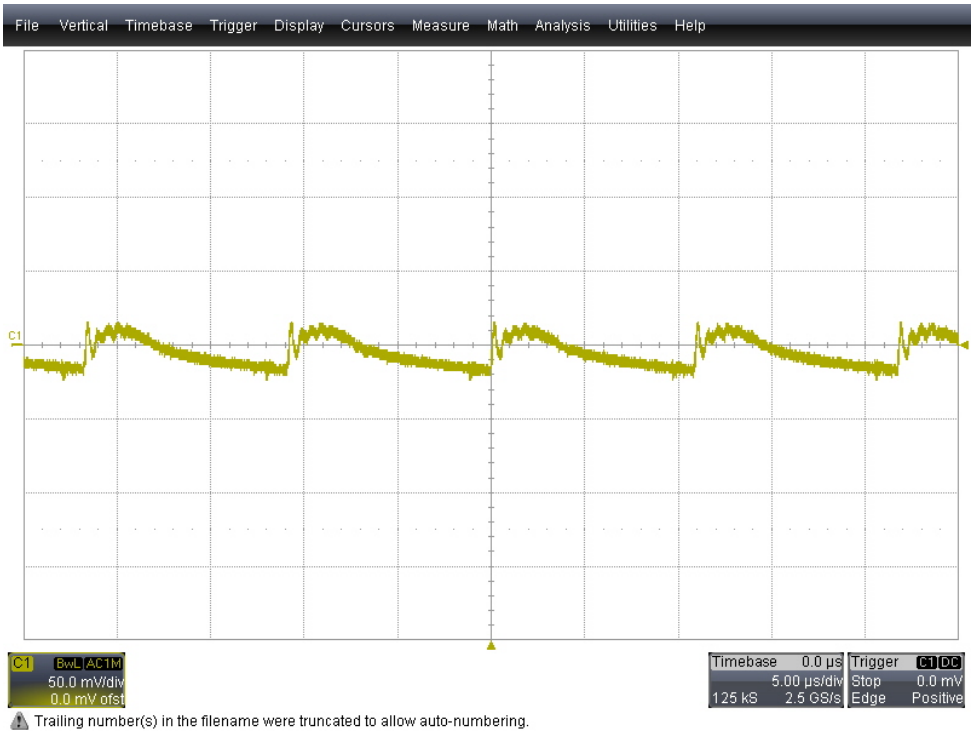


6.4 230VAC/50Hz –15Ω Load

7 Output Ripple Voltage

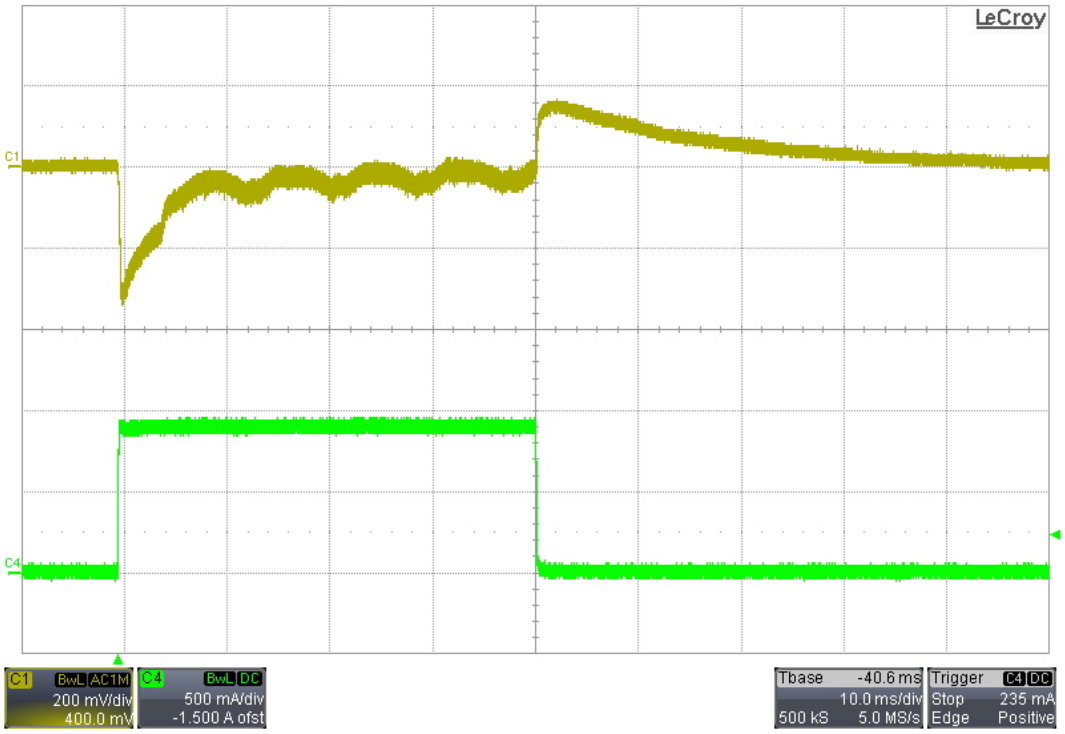
7.1 120VAC/60Hz –0.9A Load

7.2 230VAC/50Hz –0.9A Load

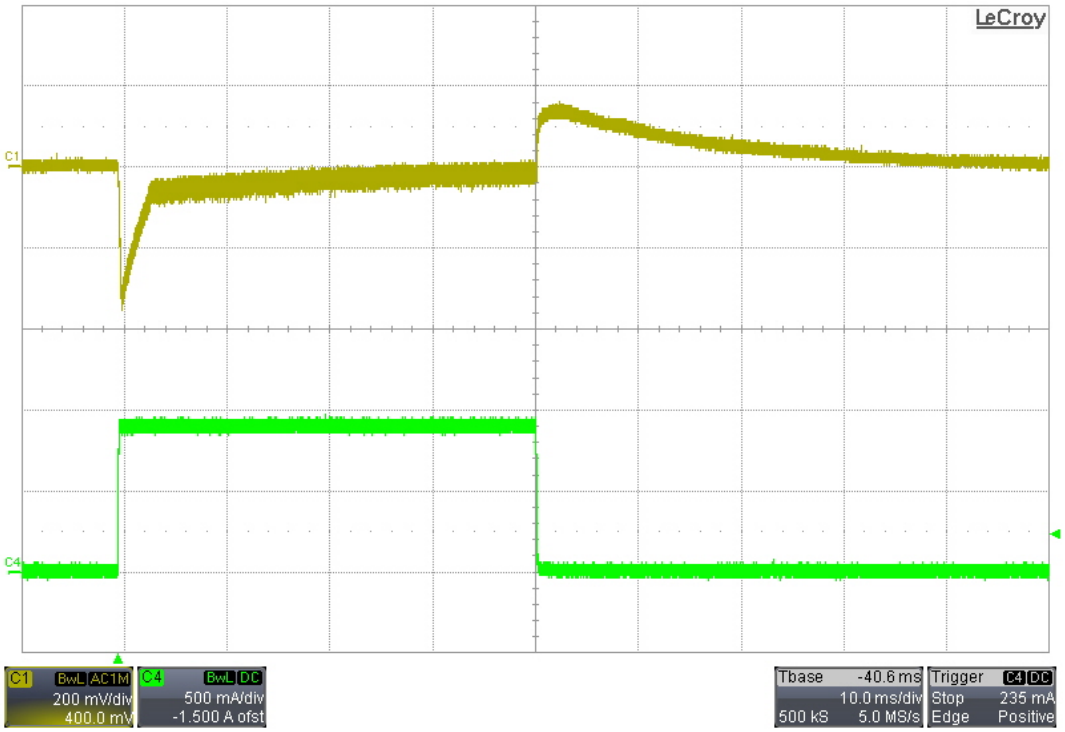


8 Load Transients

8.1 5mA to 0.9A Transient; 120VAC/60Hz Input



8.2 5mA to 0.9A Transient; 230VAC/50Hz Input

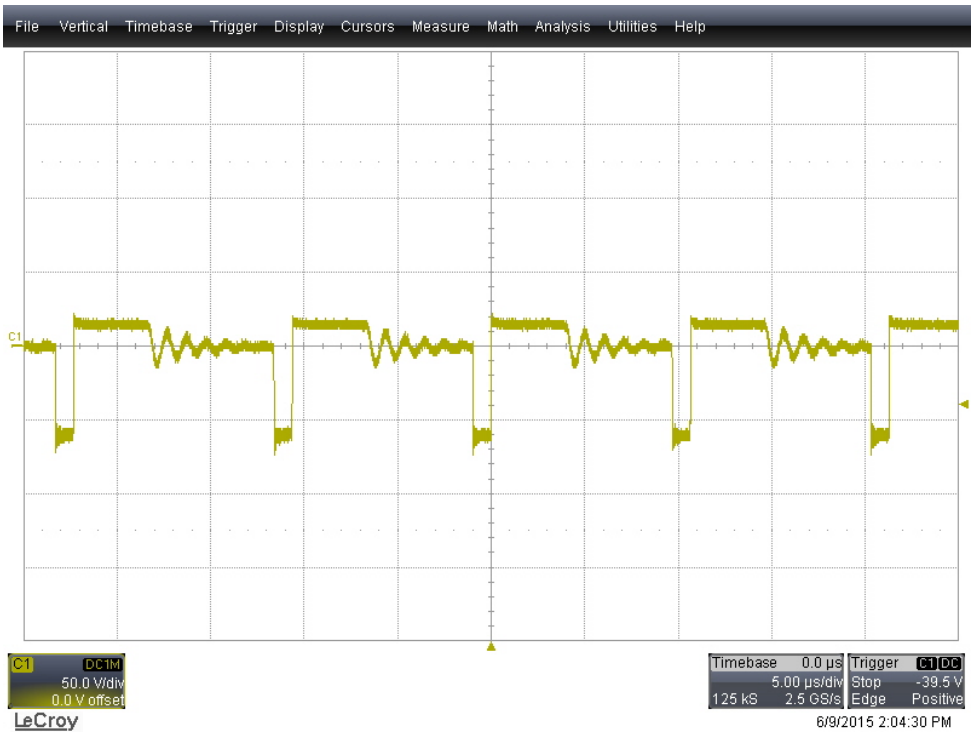


9 Switching Waveforms

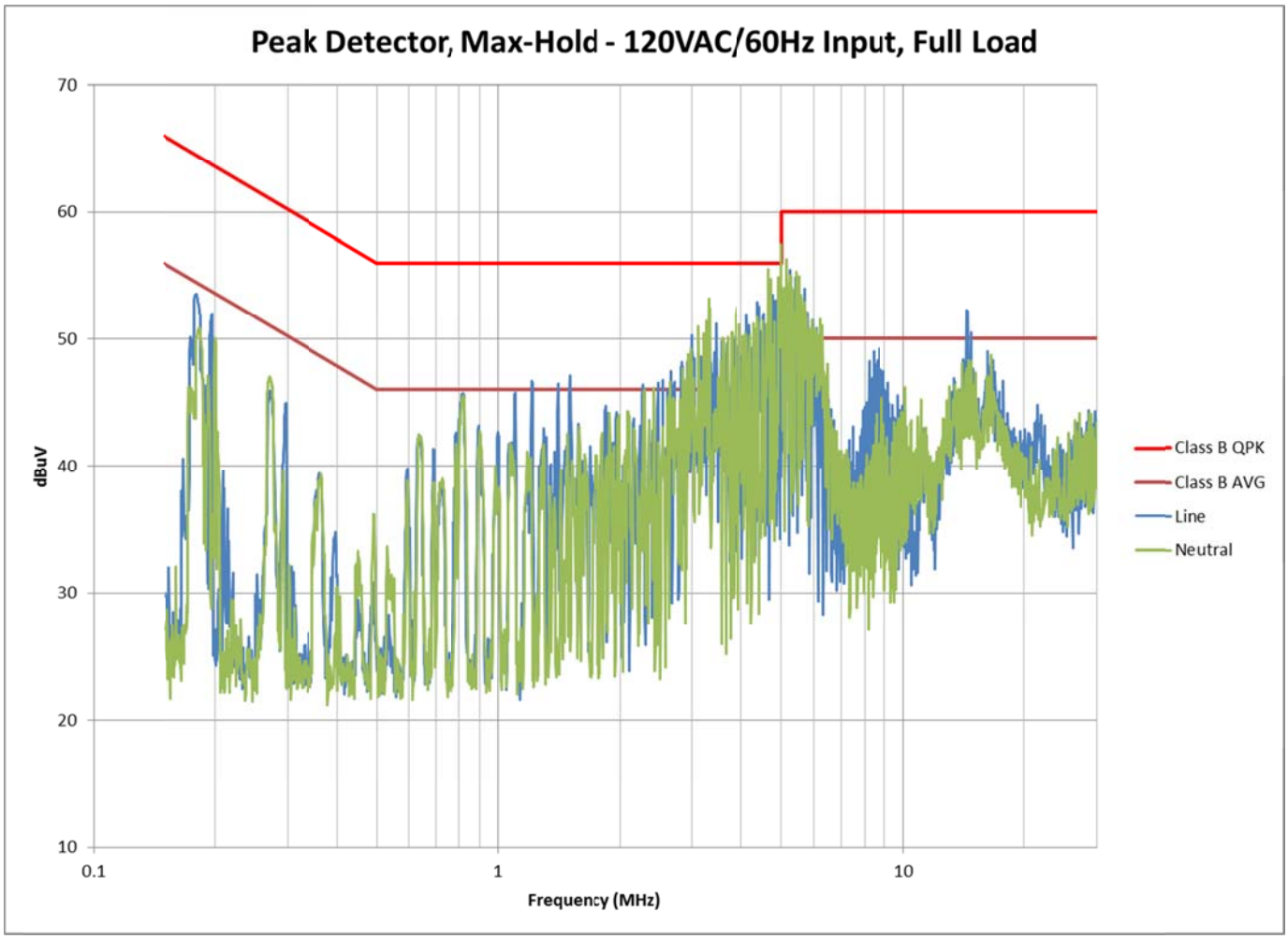
The input was 265VAC/50Hz, and the output was loaded with 0.9A.

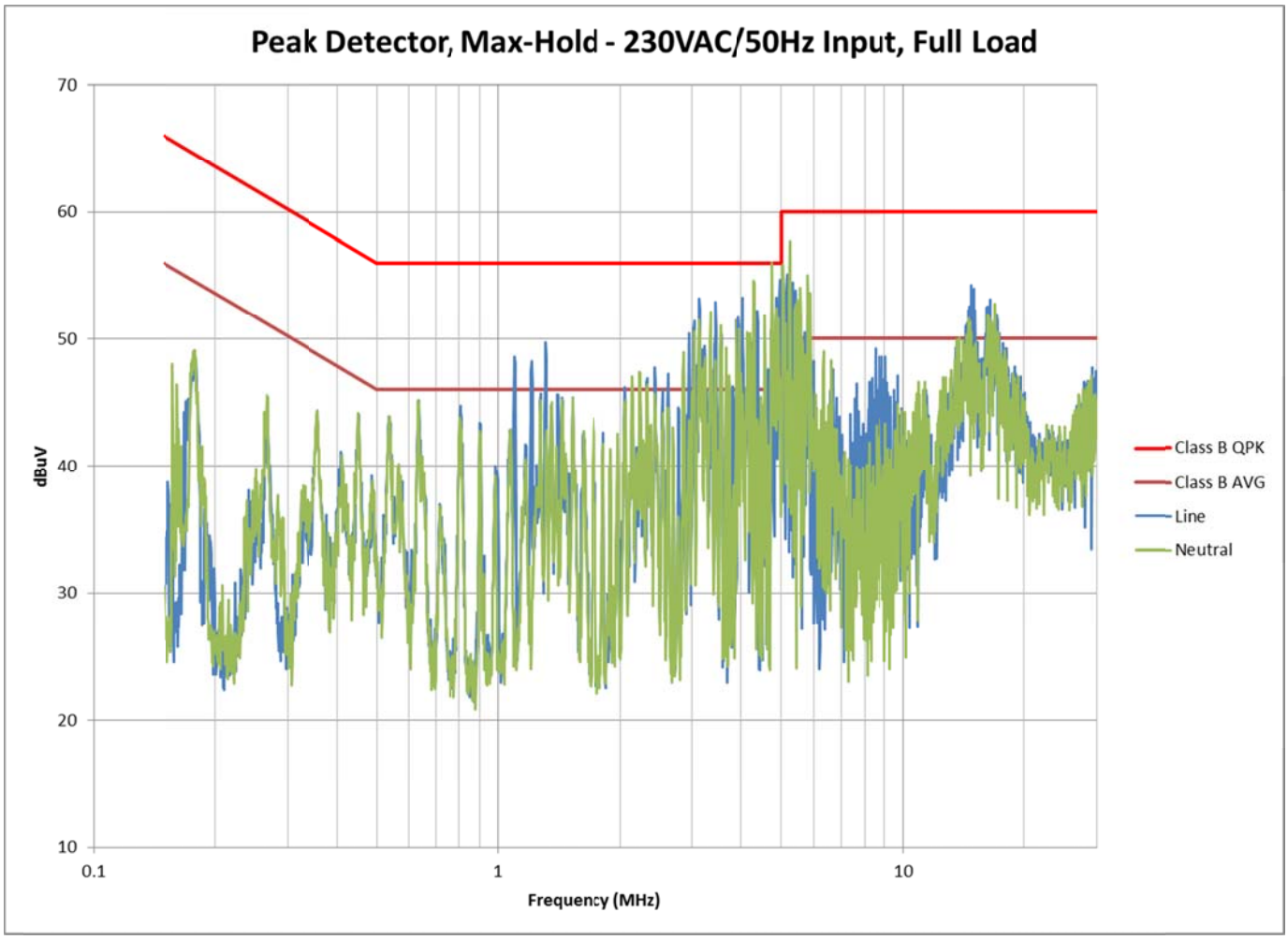
9.1 Drain of Primary FET – Q1

9.2 Anode of Output Diode – D5



10 Conducted Emissions




Peak Detector, Max-Hold - 230VAC/50Hz Input, Full Load
70
60
50
40
30
20
10
dBuV
0.1
1
10
Frequency (MHz)
Class B QPK
Class B AVG
Line
Neutral

IMPORTANT NOTICE AND DISCLAIMER

TI PROVIDES TECHNICAL AND RELIABILITY DATA (INCLUDING DATASHEETS), DESIGN RESOURCES (INCLUDING REFERENCE DESIGNS), APPLICATION OR OTHER DESIGN ADVICE, WEB TOOLS, SAFETY INFORMATION, AND OTHER RESOURCES “AS IS” AND WITH ALL FAULTS, AND DISCLAIMS ALL WARRANTIES, EXPRESS AND IMPLIED, INCLUDING WITHOUT LIMITATION ANY IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR NON-INFRINGEMENT OF THIRD PARTY INTELLECTUAL PROPERTY RIGHTS.

These resources are intended for skilled developers designing with TI products. You are solely responsible for (1) selecting the appropriate TI products for your application, (2) designing, validating and testing your application, and (3) ensuring your application meets applicable standards, and any other safety, security, or other requirements. These resources are subject to change without notice. TI grants you permission to use these resources only for development of an application that uses the TI products described in the resource. Other reproduction and display of these resources is prohibited. No license is granted to any other TI intellectual property right or to any third party intellectual property right. TI disclaims responsibility for, and you will fully indemnify TI and its representatives against, any claims, damages, costs, losses, and liabilities arising out of your use of these resources.

TI’s products are provided subject to TI’s Terms of Sale (https:www.ti.com/legal/termsofsale.html) or other applicable terms available either on ti.com or provided in conjunction with such TI products. TI’s provision of these resources does not expand or otherwise alter TI’s applicable warranties or warranty disclaimers for TI products.

Mailing Address: Texas Instruments, Post Office Box 655303, Dallas, Texas 75265