



工程样品测试报告 (Engineering Test Report)

使用LNK414 (LNK-PH) 芯片设计的 84V@180mA LED驱动电源

2011年07月19日, REV-A
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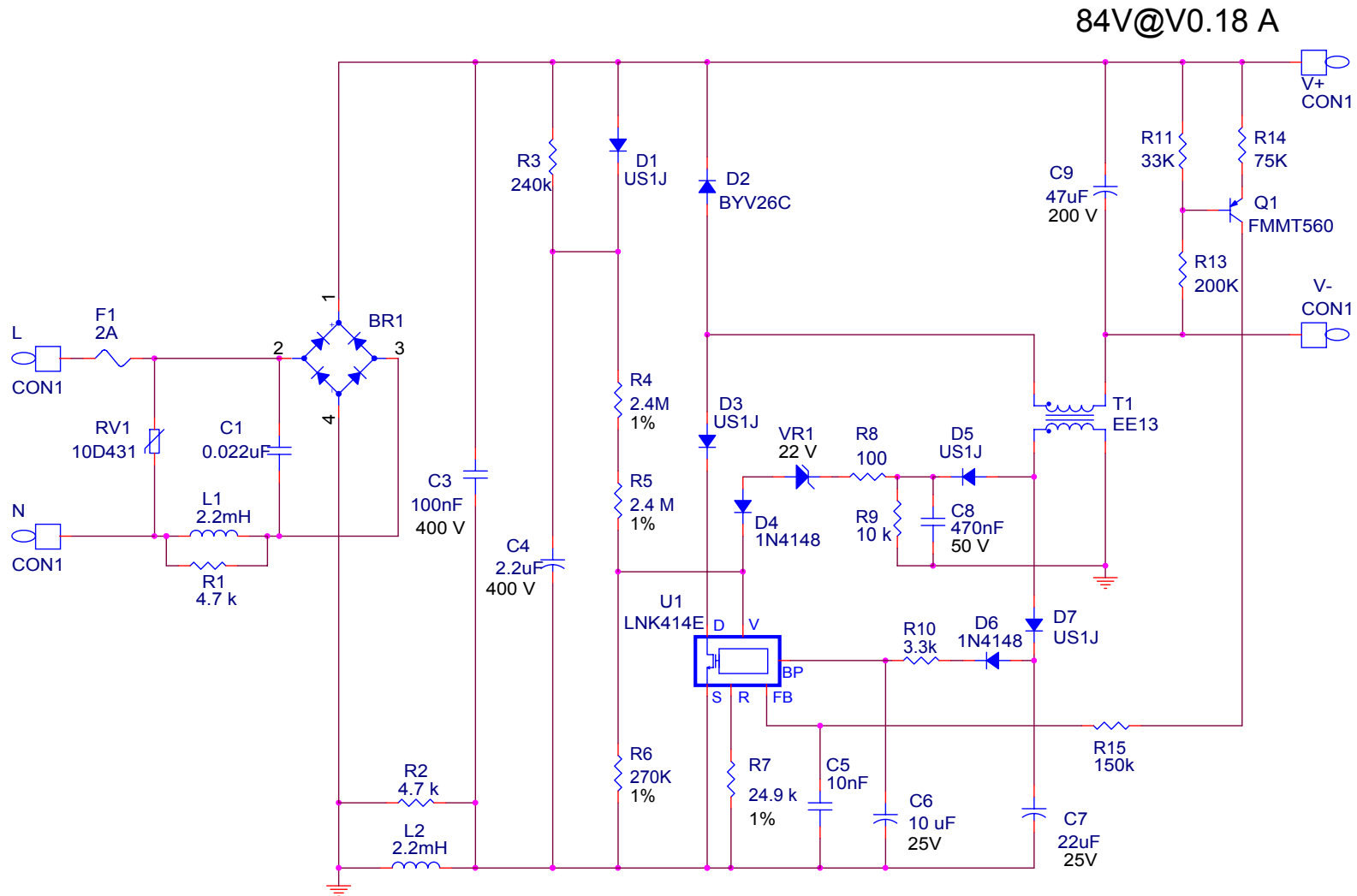
1. 主要功能及特点

- 1) 应用在T型LED灯管, 84V@180mA
- 2) 宽电压范围输入 (180-265Vac)
- 3) 精准的恒流控制
- 4) 180-265Vac输入时效率大于90%
- 5) 单级反激功率因数校正, 功率因数大于 0.95
- 6) 集成MOS管, 外围零件数目少

2. 电源产品规格

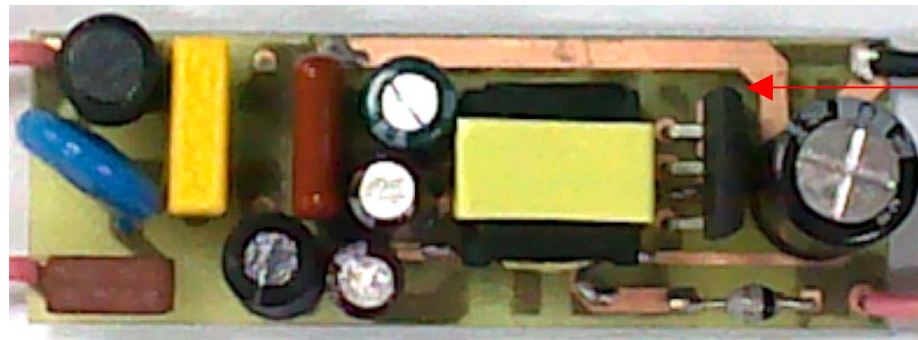
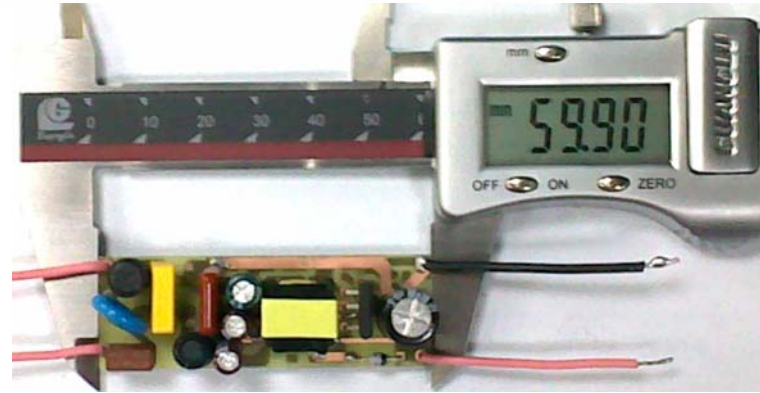
描述	符号	最小值	典型值	最大值	单位	附加信息/测试条件
输入						
电压	V_{IN}	180		265	Vac	零/火线, 无中线
功率因数	PF	0.95				
输出						
输出电压	V_{out}		84.0		V	14颗LED串联
输出电流	I_{out}		0.18		A	
效率	η	90%				115V或230V输入
总输出功率						
持续输出功率	P_{out}		15.12		W	总功率
峰值输出功率					W	
传导电磁干扰		6			dB	
环境温度	T_{amb}	0		40	C	空气自然对流

3. 线路图



4. 工程样品外观图

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AC交流输入

LNK414EG



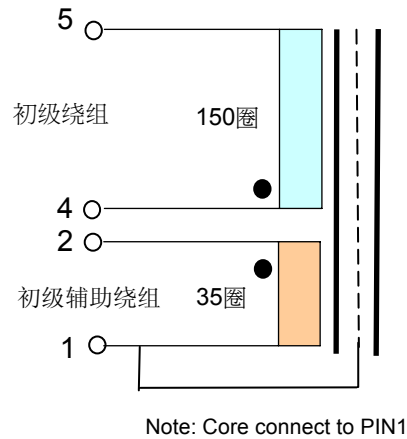
DC直流输出

5. 零件清单

编码	数量	零件位置	具体描述
1	1	BR1	SDB107
2	1	C1	22 nF, 275 VAC, X-CAP
3	1	C3	100 nF, 400 V,MP-CAP
4	1	C4	2.2uF, 400 V, Electrolytic, (6.3 x 11)
5	1	C5	10 nF, 50 V, Ceramic, X7R, 0805
6	1	C6	10 uF, 50 V, Electrolytic, Very Low ESR, (6.3 x 11)
7	1	C7	22uF, 50 V, Electrolytic, (6.3 x 11)
8	1	C8	470 nF, 50 V, Ceramic, X7R, 0805
9	1	C9	47uF, 200 V, Electrolytic, Low ESR,
10	4	D1,D3,D5,D7	1000 V, 1 A, Rectifier, SMD,US1J
11	1	D2	BYV26C
12	2	D4 ,D6	75 V, 0.15 A, MELF, 1N4148
13	1	F1	2A, 250V
14	2	L1,L2	2.2mH, 6 x 8 mm
15	2	R1, R2	4.7 k, 5%, 1/8 W, Carbon Film
16	1	R3	240 k, 5%, 1/4 W, Thick Film, 1206
17	2	R4,R5	2.4M, 1%, 1/4 W, Thick Film, 1206
18	1	R6	270K, 1%, 1/8 W, Thick Film, 0805
19	1	R7	24.9 k, 1%, 1/8 W, 0805
20	1	R8	100 R, 5%, 1/8 W, 0805
21	1	R9	10 k, 5%, 1/8 W, Thick Film, 0805
22	1	R10	3.3k, 5%, 1/8 W, Thick Film, 0805
23	1	R11	33k, 1%, 1/8 W, Thick Film, 0805
24	1	R13	200k, 1%, 1/8 W, Thick Film, 0805
25	1	R14	75k, 1%, 1/8 W, Thick Film, 0805
26	1	R15	150k, 5%, 1/8 W, Thick Film, 0805
27	1	RV1	275 V, 23 J, 7 mm, RADIAL ,10D431 (Metal Oxide Varistor)
28	1	T1	Bobbin, EE13, Vertical, 10 pins (5 +5)
29	1	U1	LinkSwitch, LNK414E, eSIP
30	1	VR1	22V.0.5W,Z-Diode
31	1	Q1	FMMT560,SOT-23

6. 变压器规格

示意图



电气规格:

1. 初级感量 (Lp) = 1.3mH± 7% @66KHz 0.4V
2. 初级漏感 <100uH @66KHz 0.4V
3. 抗电强度 = 3KV, 50/60Hz, 1Min

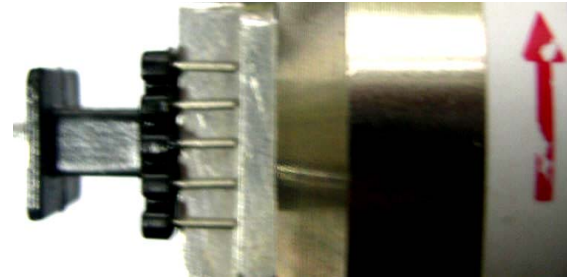
材料:

1. 磁芯: EE13(铁氧体 TDK PC40 或其他等效)
2. 骨架: EE13立式 (5+5 脚).
3. 绕线 (初级和辅助绕组): 类型 2-U EW
4. 绕线 (次级绕组): 三层绝缘线
5. 绕组间绝缘胶布 :3M1298 或其他等效

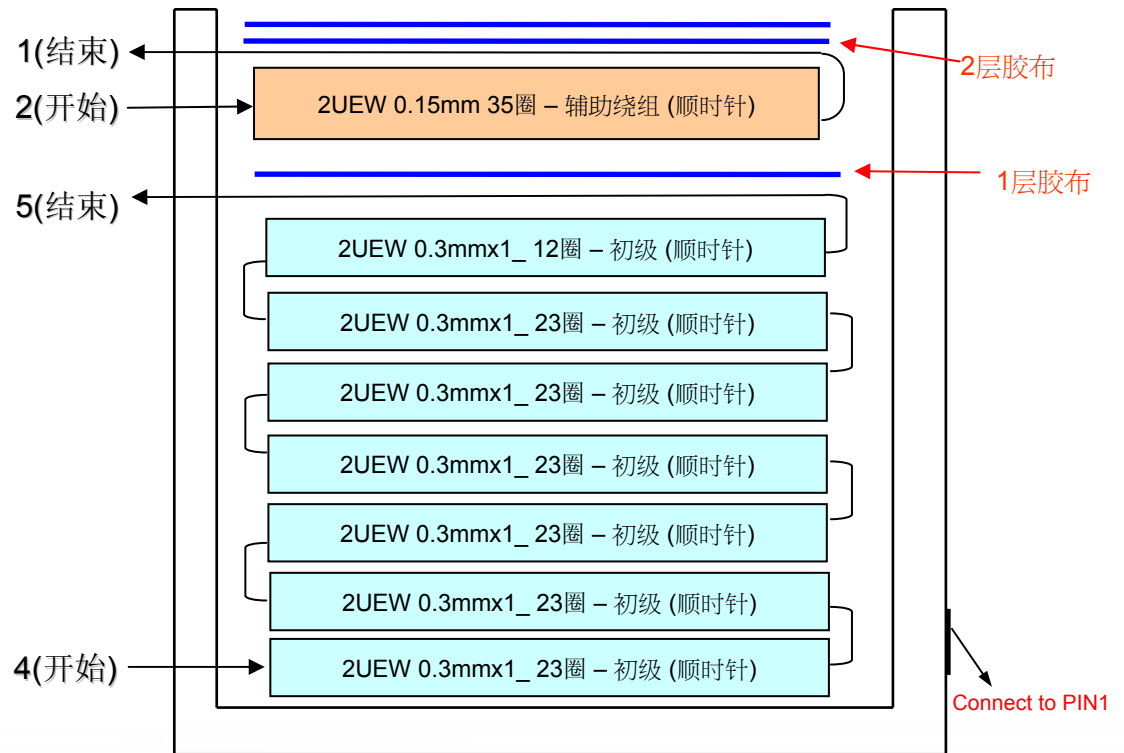
组装:

1. 组立后需要泡凡立水

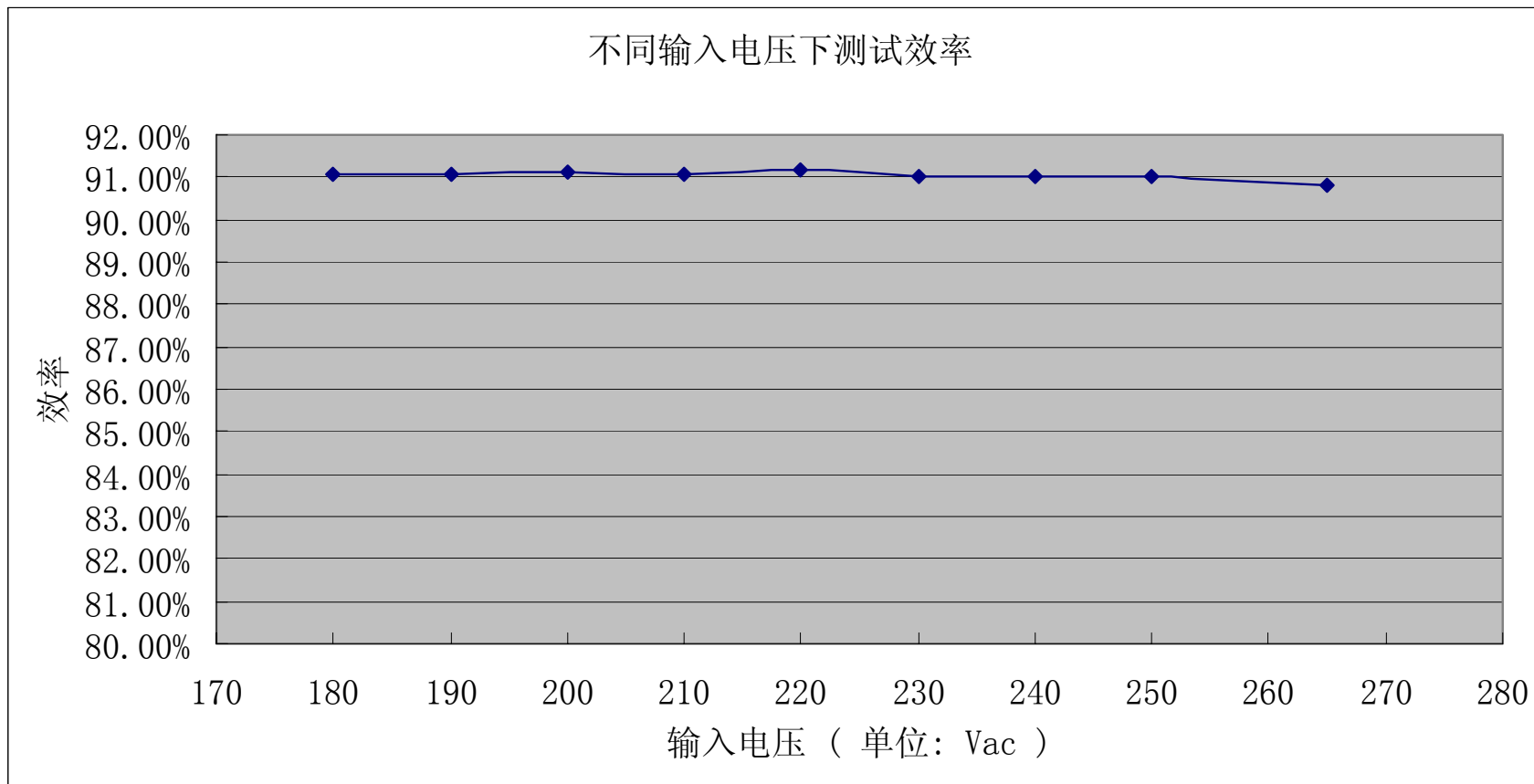
绕组结构图...



起始端为4脚 结束端为5脚, 从此箭头方向看过去定义为顺时针方向

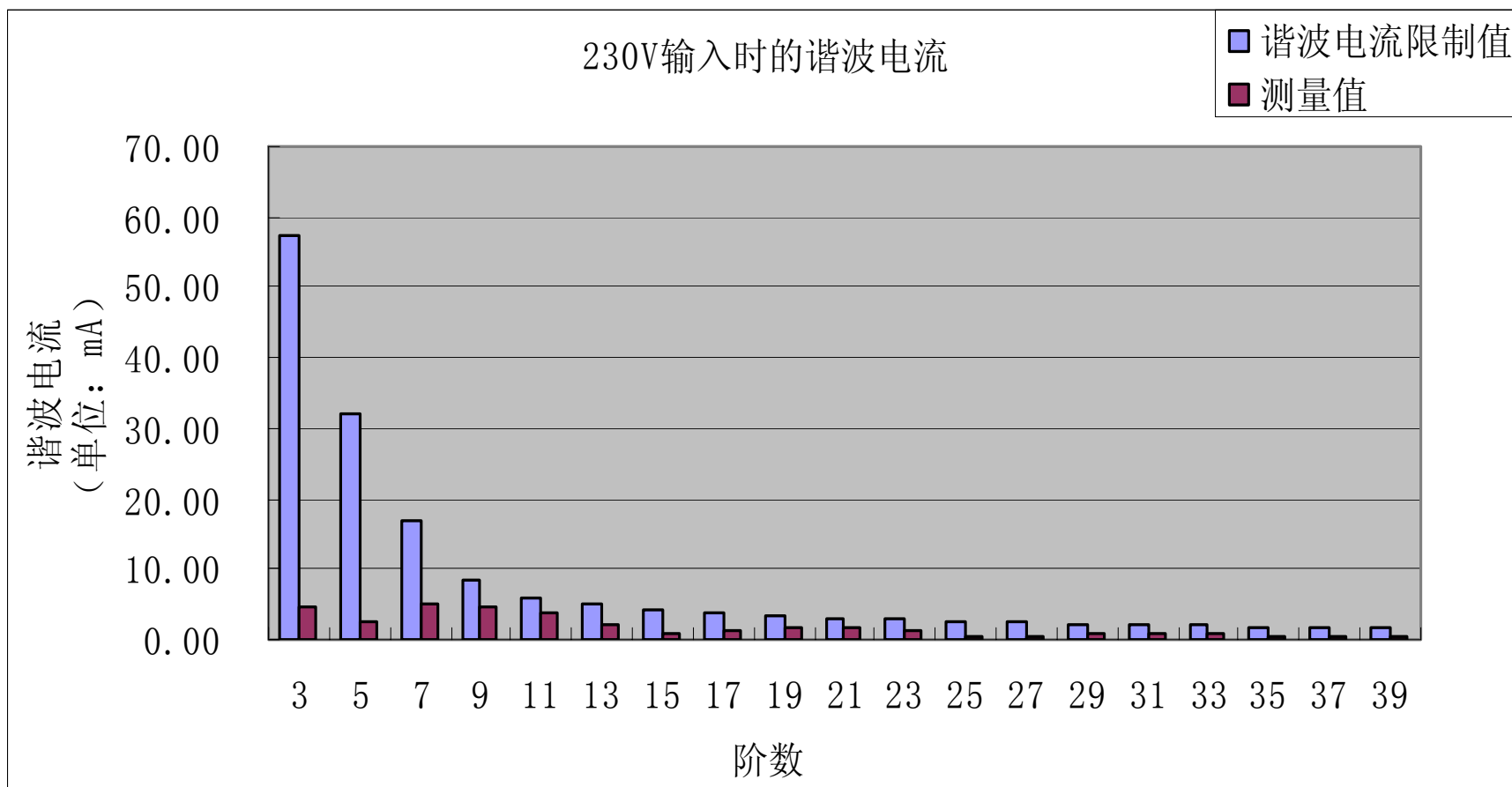


7. 测试效率

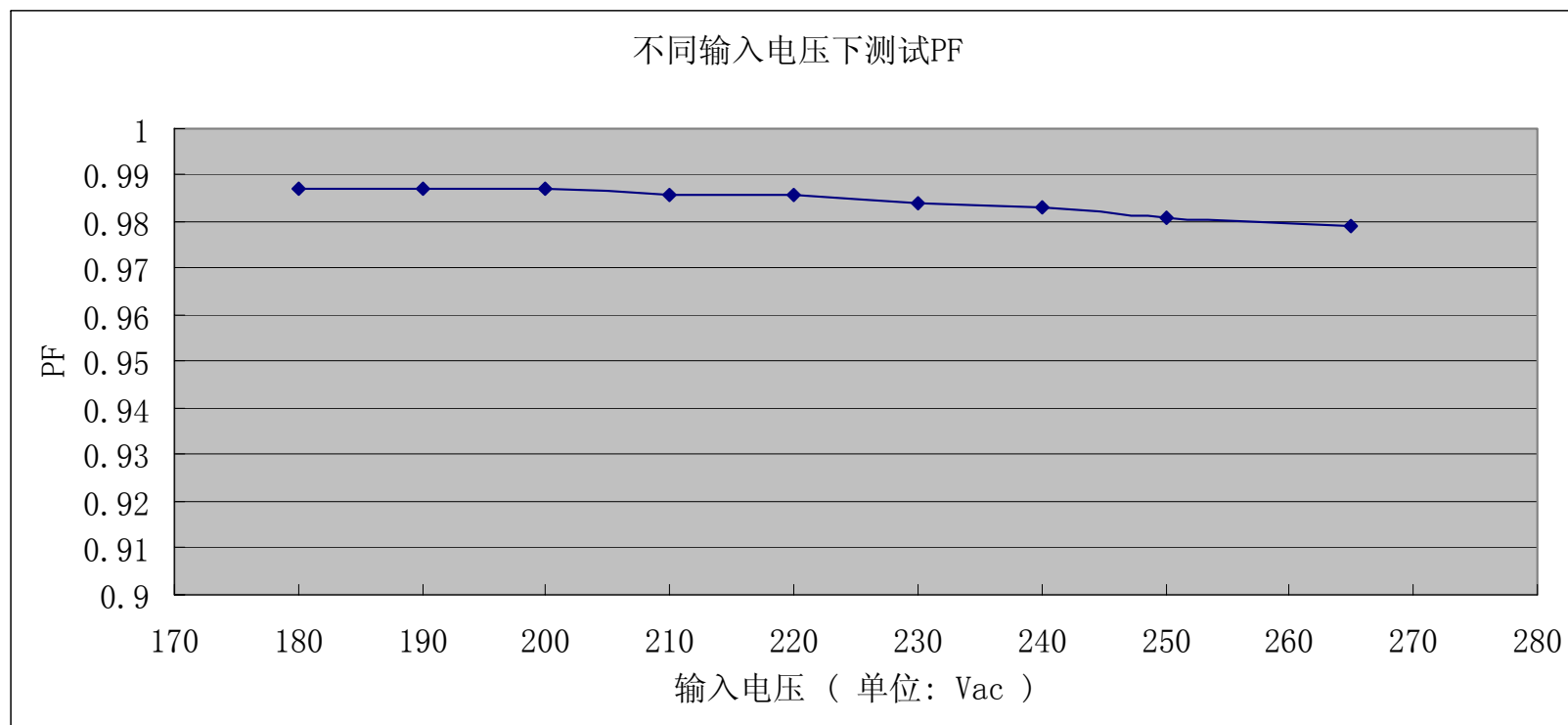


8. 谐波电流测量值和Class C限制值 (<25W)

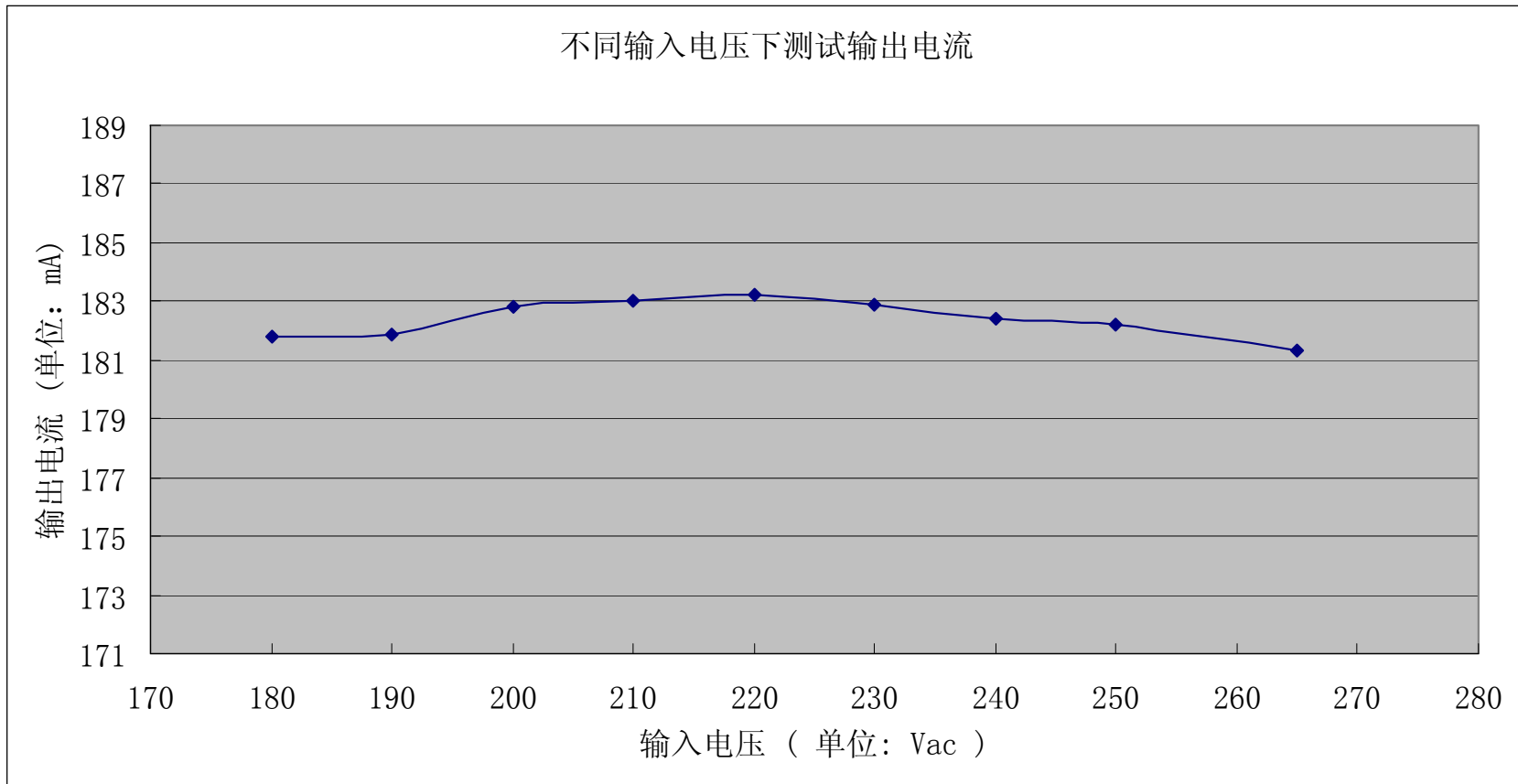
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9. 功率因数

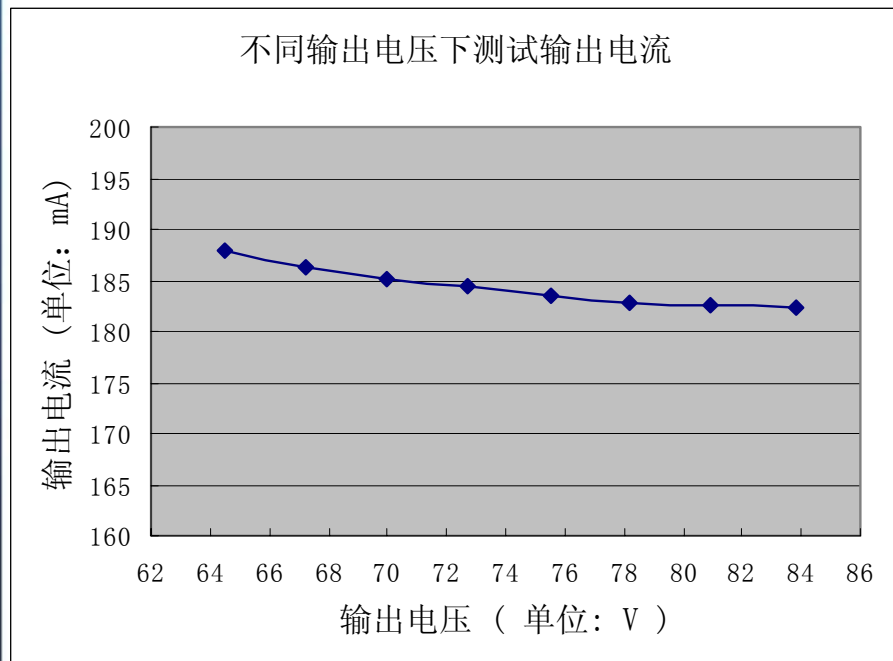


10. (1) 输出恒流特性(不同输入电压)

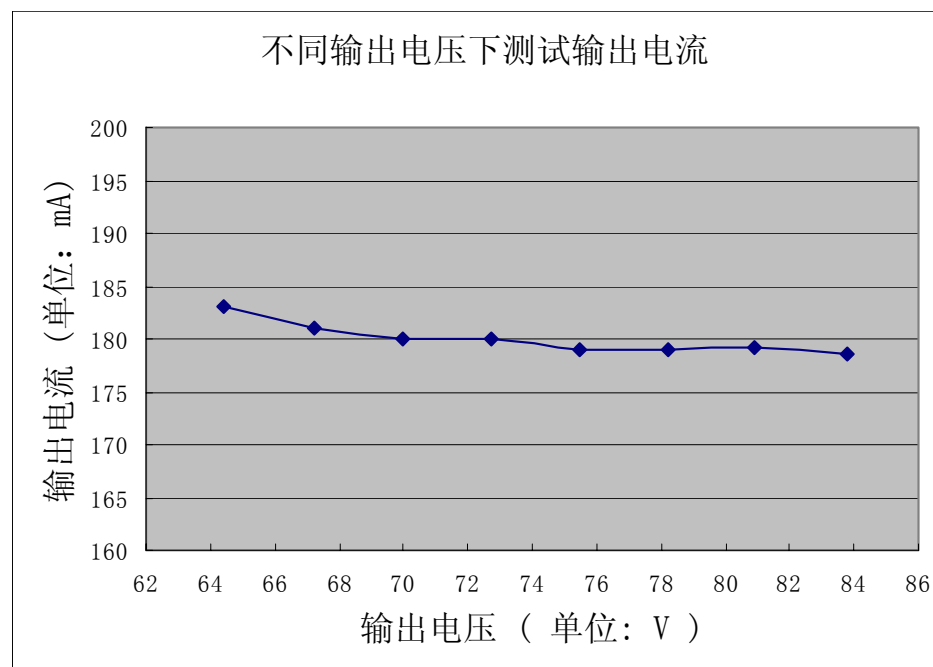


10. (2) 输出恒流特性 (不同输出电压)

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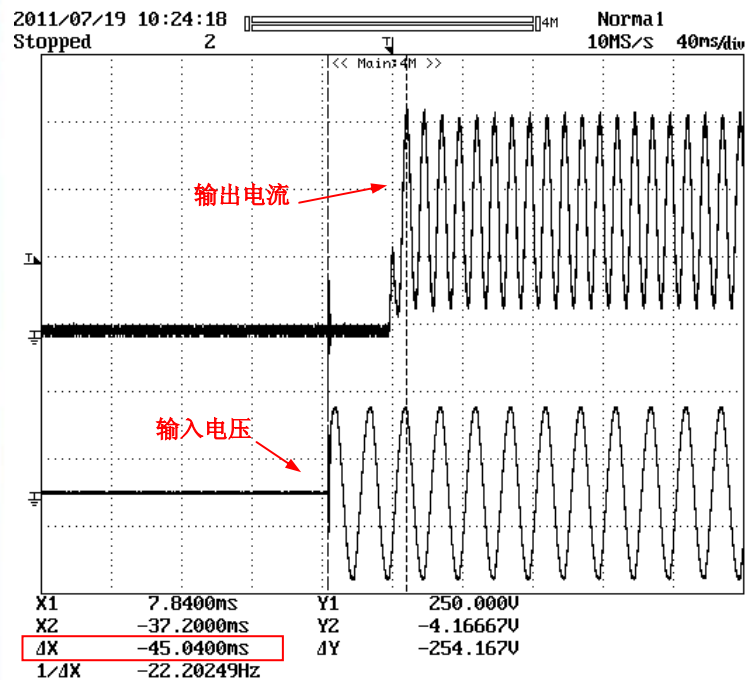


180Vac电压输入

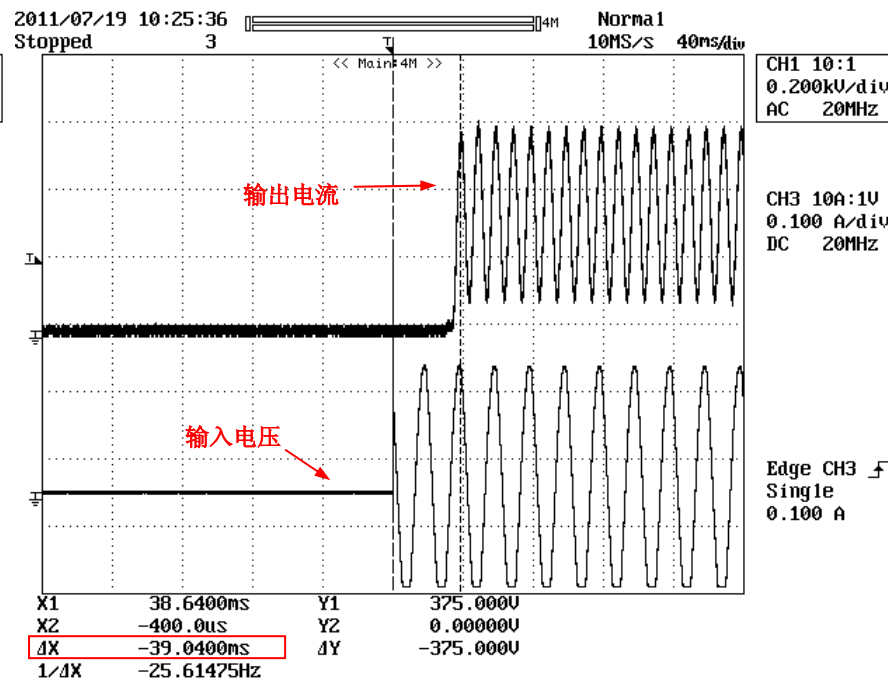


265Vac电压输入

11. 起机过程波形



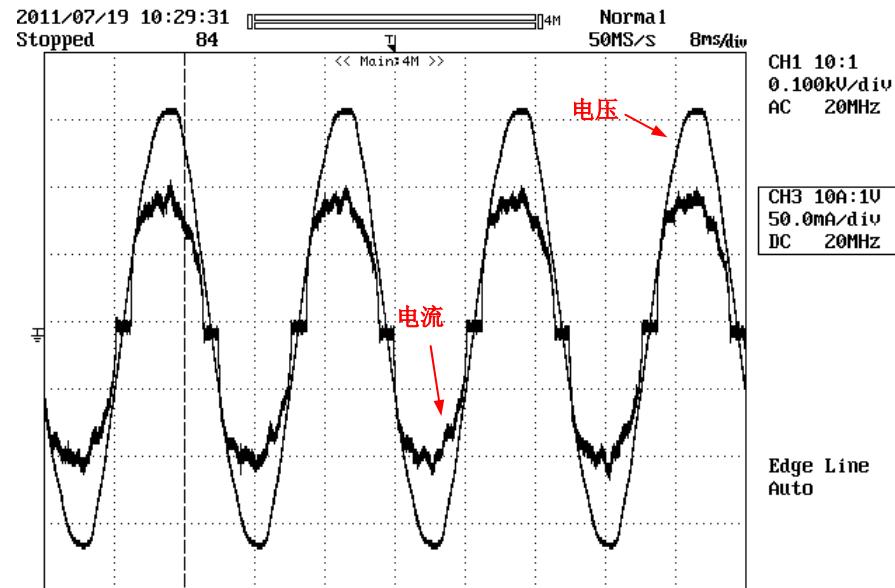
满载, 180Vac电压输入



满载, 265Vac电压输入

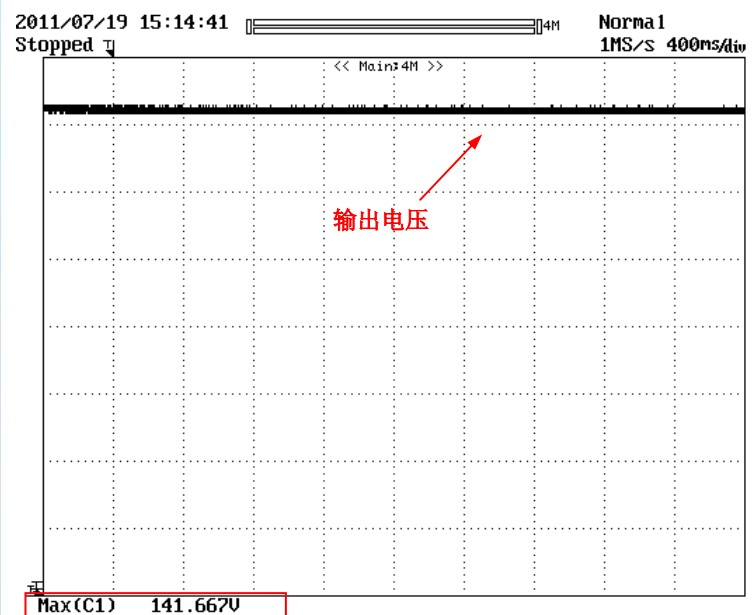
12. 交流输入电压和电流波形

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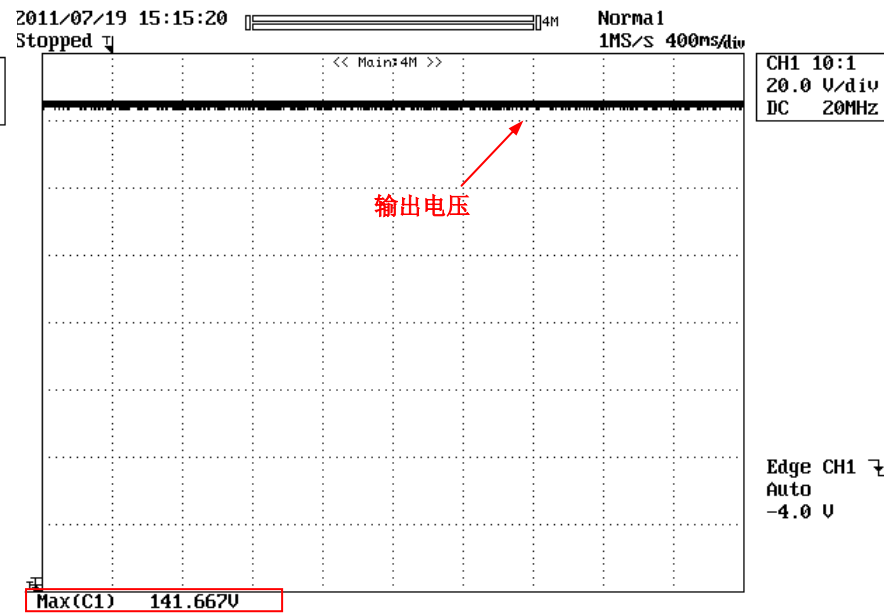


满载, 230Vac电压输入

13. 空载输出电压波形

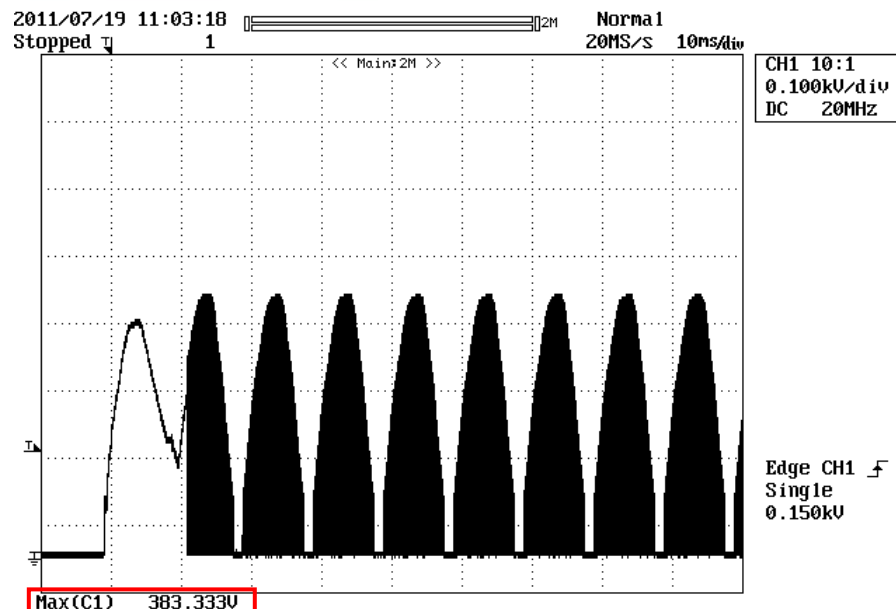


空载测试, 180Vac电压输入



空载测试, 265Vac电压输入

14. 漏极电压应力



测试条件:
265VAC电压输入
 输出电流**0.35A**, 输出电压**84V**

结果: 通过
 最大应力电压=**384V**

LinkSwitch – PH family规格

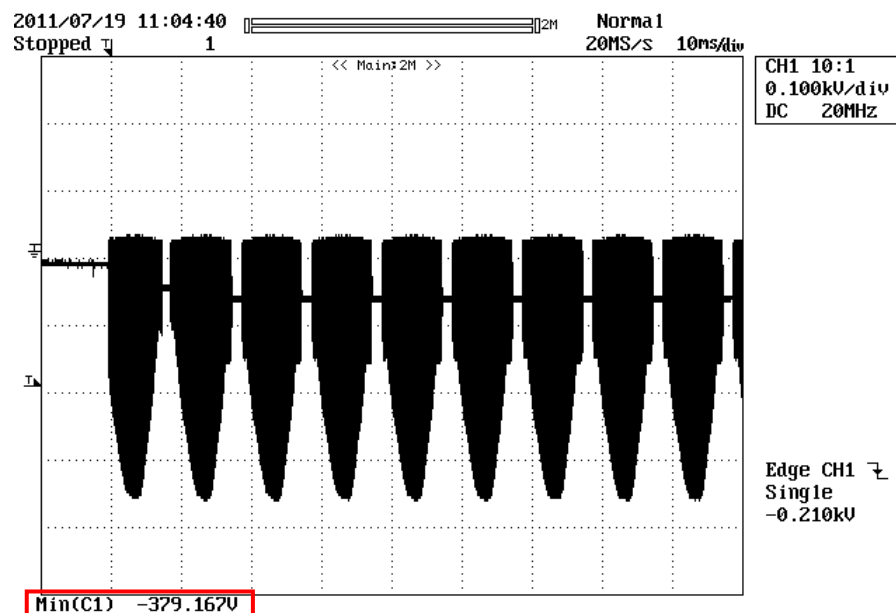
Absolute Maximum Ratings^(1,4)

DRAIN Pin Peak Current: LNK403	1.37 A
LNK406	2.55 A
LNK409	5.2 A
DRAIN Pin Voltage	-0.3 to 725 V
BYPASS Pin Voltage	-0.3 to 9 V
BYPASS Pin Current	100 mA
VOLTAGE MONITOR Pin Voltage	-0.3 to 9 V
FEEDBACK Pin Voltage	-0.3 to 9 V
REFERENCE Pin Voltage	-0.3 to 9 V
Lead Temperature ⁽³⁾	260 °C
Storage Temperature	-65 to 150 °C
Operating Junction Temperature Over-Score ⁽²⁾	-40 to 150 °C
Lead Temperature Over-Score ⁽³⁾	260 °C

Notes:

1. All voltages referenced to SOURCE, T_A = 25 °C.
2. Normally limited by internal circuitry.
3. 1/16 in. from case for 5 seconds.
4. Absolute Maximum Ratings specified may be applied, one at a time without causing permanent damage to the product. Exposure to Absolute Maximum Ratings for extended periods of time may affect product reliability.

15. 续流二极管电压应力



测试条件:
265VAC电压输入
 输出电流**0.35A**, 输出电压**84V**

结果: 通过
 最大应力电压=**380V**

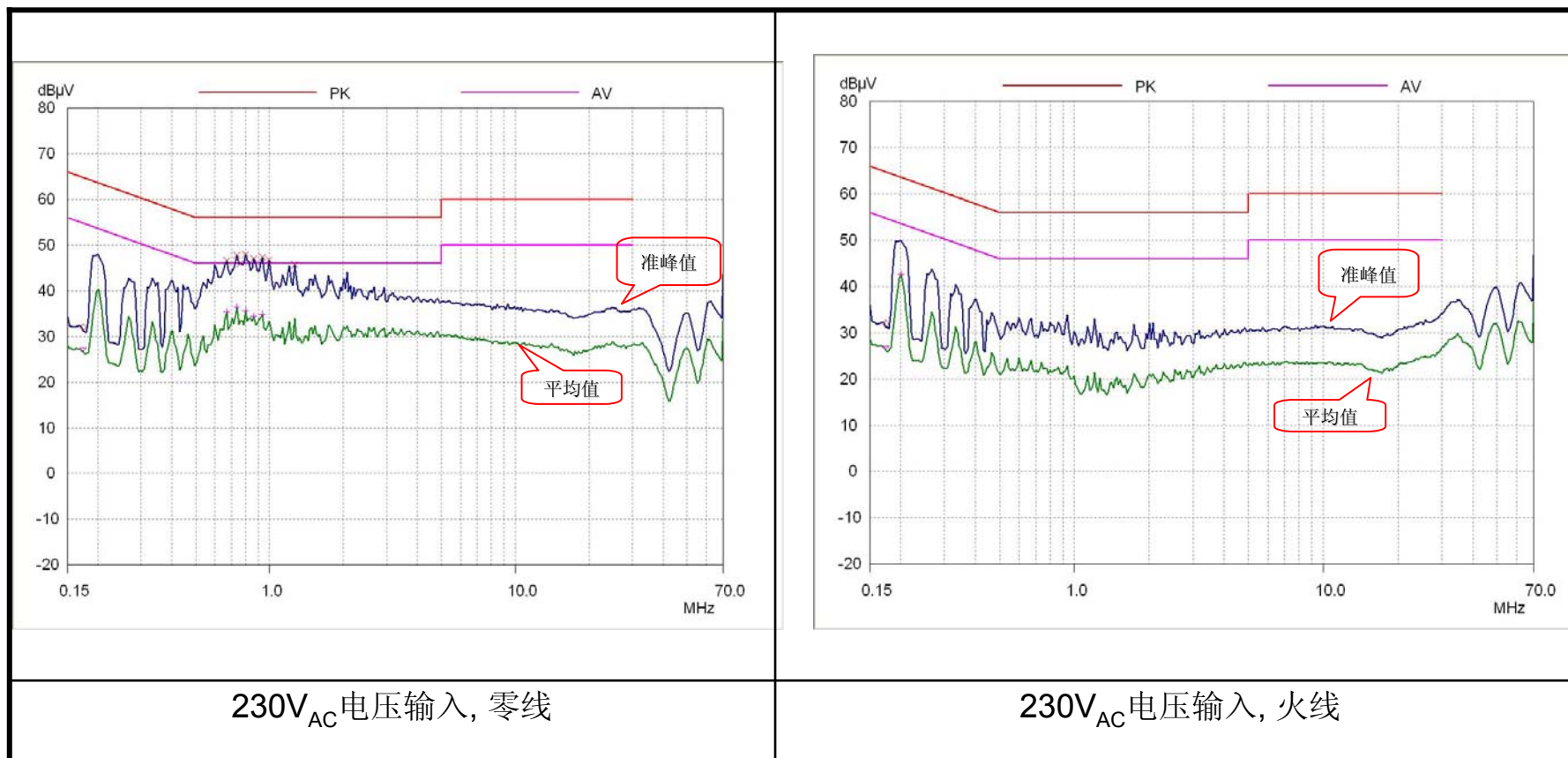
续流二极管 (BYV26C) 规格

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V _{RRM}	repetitive peak reverse voltage				
	BYV26A		-	200	V
	BYV26B		-	400	V
	BYV26C		-	600	V
	BYV26D		-	800	V
	BYV26E		-	1000	V
	BYV26F		-	1200	V
	BYV26G		-	1400	V

16. 传导电磁干扰测试 (230V_{AC}准峰值和平均值)

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满载输出



China Sale Contacts and Important Note

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Important note

Although this board is designed to satisfy safety isolation requirements, the engineering prototype has not been agency approved. Therefore, all testing should be performed using an isolation transformer to provide the AC input to the prototype board.

The products and applications illustrated herein (including circuits external to the products and transformer construction) may be covered by one or more U.S. and foreign patents or potentially by pending U.S. and foreign patent applications assigned to Power Integrations. A complete list of Power Integrations' patents may be found at www.powerint.com.