

SW3658 方案介绍



THE BEST CHOICE FOR **Green Power**

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- SW3658芯片介绍

SW3658应用于离线式开关电源集成电路，该电路集成了专门的电流模式PWM 控制器和高压功率MOSFET，适用于25W 以内的高性能、低待机功耗、低成本的离线式反激开关电源中。

SW3658针对各种故障设计了一系列完善的具有可恢复功能的保护措施，包括VDD 欠压锁定保护（UVLO）、过压保护（OVP）及箝位、逐周期电流限制（OCP）、过载保护（OLP）和图腾柱输出驱动高箝位等。

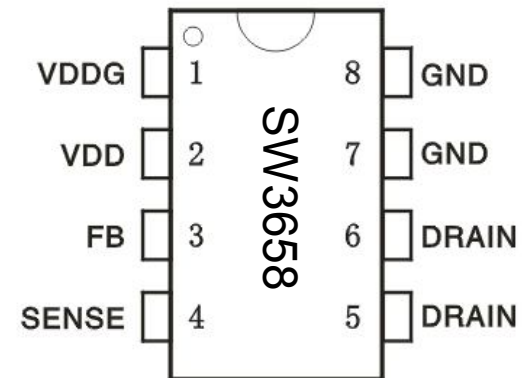
芯片内置的频率抖动和图腾柱栅极软驱动技术可容易地获得良好的EMI 性能。SW3658提供DIP8封装。

● 芯片特点:

- 符合6级能耗标准，在AC输入下待机小于100mW
- 内置软启动功能
- 低的启动电流和工作电流
- 优化的Hiccup Mode 设计，以提高效率和降低待机功耗
- 内置前沿消隐电路
- 欠压锁定保护, 过载保护 (OLP) , 过温保护 (OTP) 过压保护 (OVP)
- 正常工作时无音频噪声设计
- 固定工作频率：55KHz
- 保护解除后自动恢复功能
- 内置斜坡补偿电路

● 典型应用:

- 适配器
- 机顶盒电源
- 数码相机、摄像机适配器
- 个人电脑、服务器辅助电源
- VCR,SVR,DVD&DVCD 播放器电源
- 开放式开关电源

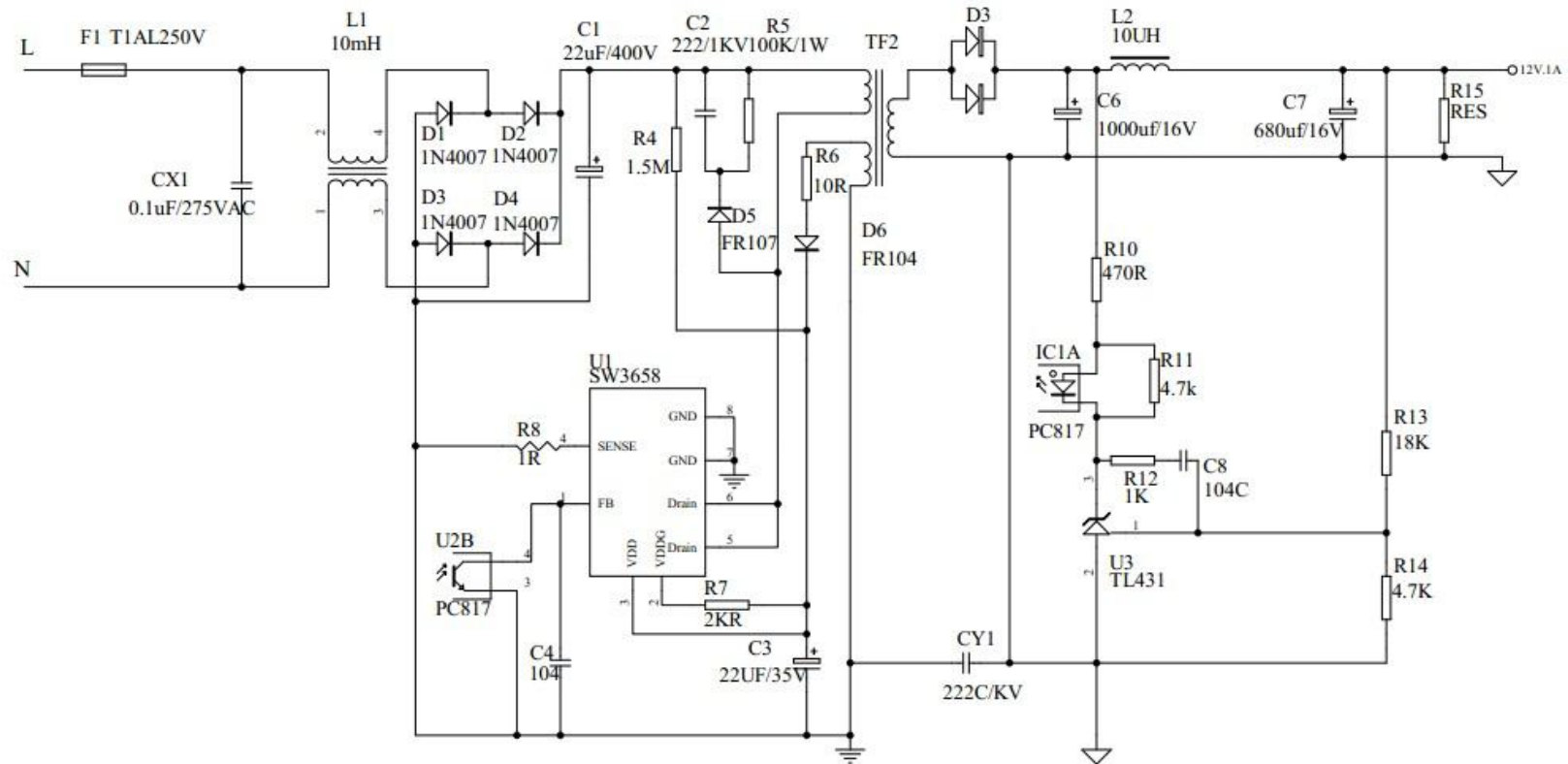


SW3658-12V/1A电源适配器

1.驱动评估板的指标参数

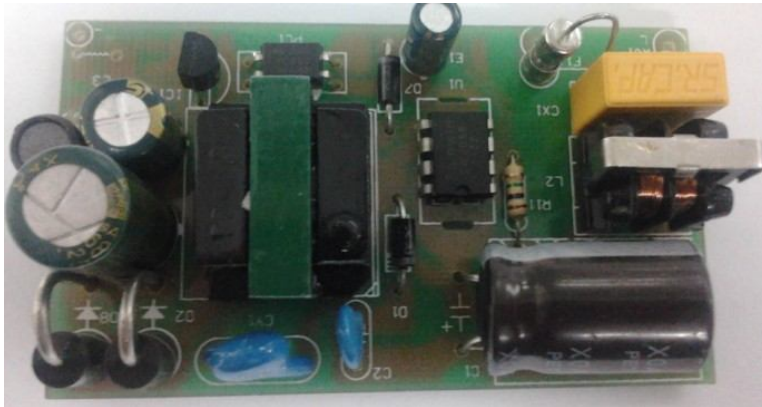
- ① 输入电压：90VAC ~ 264VAC
- ② 输入频率：47Hz ~ 63Hz
- ③ 输入电流：<0.3A(有效值)
- ④ 功率因数：>0.5
- ⑤ 输出电压：DC12.0V \pm 5%
- ⑥ 输出电流：1A
- ⑦ 输出功率：12W
- ⑧ 输出纹波：<100mV
- ⑨ 效 率：>83%
- ⑩ 输出短路：自动恢复模式，不断从新启动

2. 电路原理图

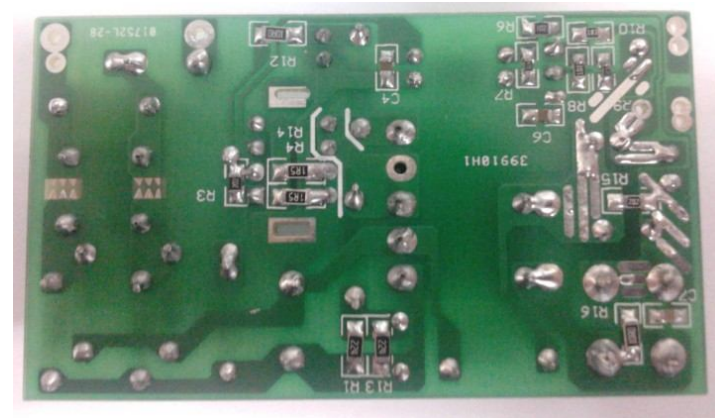


3.外观尺寸：70mm*40mm*22(长*宽*高)

插件面器件



贴片面器件



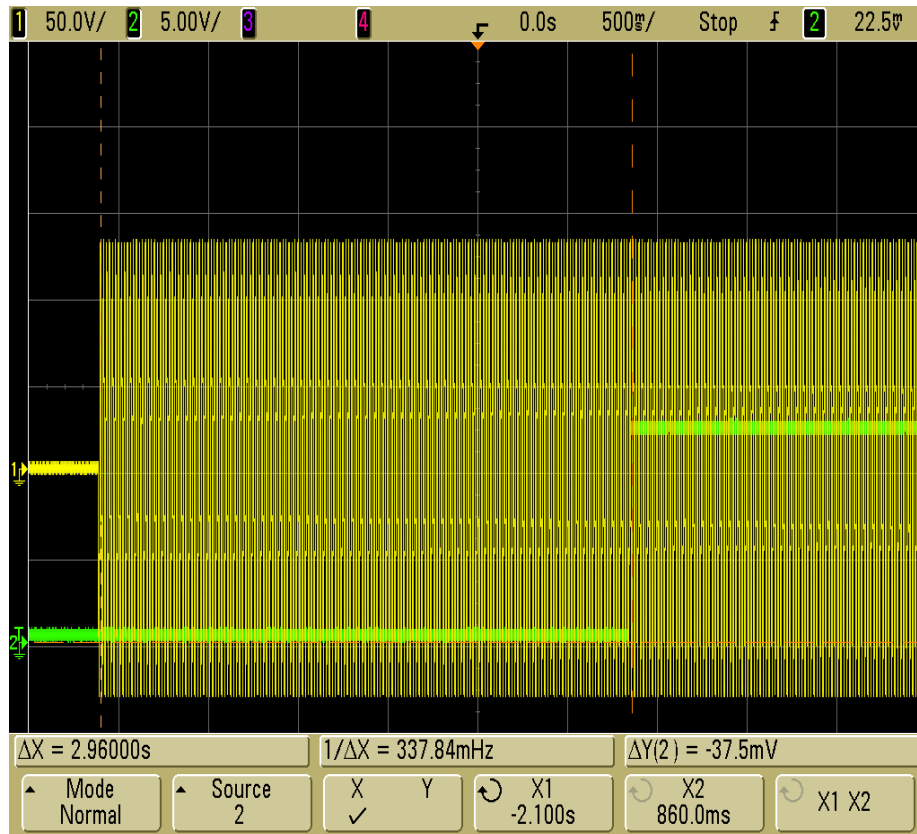
4. 物料清单

SW3658 12V1A				
序号	名称	位号	型号	数量
1	贴片电阻	R2	470K 0805 ±5%	1PCS
2	贴片电阻	R5*, R5	220K 1206 ±5%	2PCS
3	贴片电阻	R6	10R 0805 ±5%	1PCS
4	贴片电阻	R7	2K 0805 ±5%	1PCS
5	贴片电阻	R8	1R 0805 ±5%	1PCS
6	贴片电阻	R9	10R 1206 ±1%	1PCS
7	贴片电阻	R10	1K 0805 ±5%	1PCS
8	贴片电阻	R15, R11	4.7K 0805 ±5%	2PCS
9	贴片电阻	R12	10K 0805 ±5%	1PCS
10	贴片电阻	R13	18K 0805 ±5%	1PCS
11	插件电阻	R3, R4	2.4M 1/4W ±5%	2PCS
12	插件二极管	D1, D2, D3, D4	1N4007 DO-41 1A/1000V	4PCS
13	插件二极管	D5, D6	FR107 DO-41 1A/1000V	2PCS
14	插件二极管	D7, D8	SB3100	2PCS
15	电源IC	U1	SW3658 DIP	1PCS
16	光藕	U2	PC817	1PCS
17	稳压IC	U3	TL431	1PCS
18	电解电容	C1	22UF/400V 13×26MM	1PCS
19	瓷片电容	C2	102/1KV	1PCS
20	电解电容	C3	10UF/50V 5×11MM	1PCS
21	贴片电阻	C4, C8	100NF 0805 ±80%	2PCS
22	电解电容	C6	680UF/25V 10×21MM	1PCS
23	电解电容	C7	220UF/25V 5×11MM	1PCS
24	瓷片电容	C5	331/1KV	1PCS
25	Y电容	CY1	222M/400V	1PCS
26	安规电容	CX1	0.1UF/270V 6×13×12	1PCS
27	工字电感	L1	10UH	1PCS
28	滤波器	L2	UU9.8 12mH	1PCS
29	变压器	T1	EE19	1PCS
30	保险管	F1	T0.5A/250V	1PCS

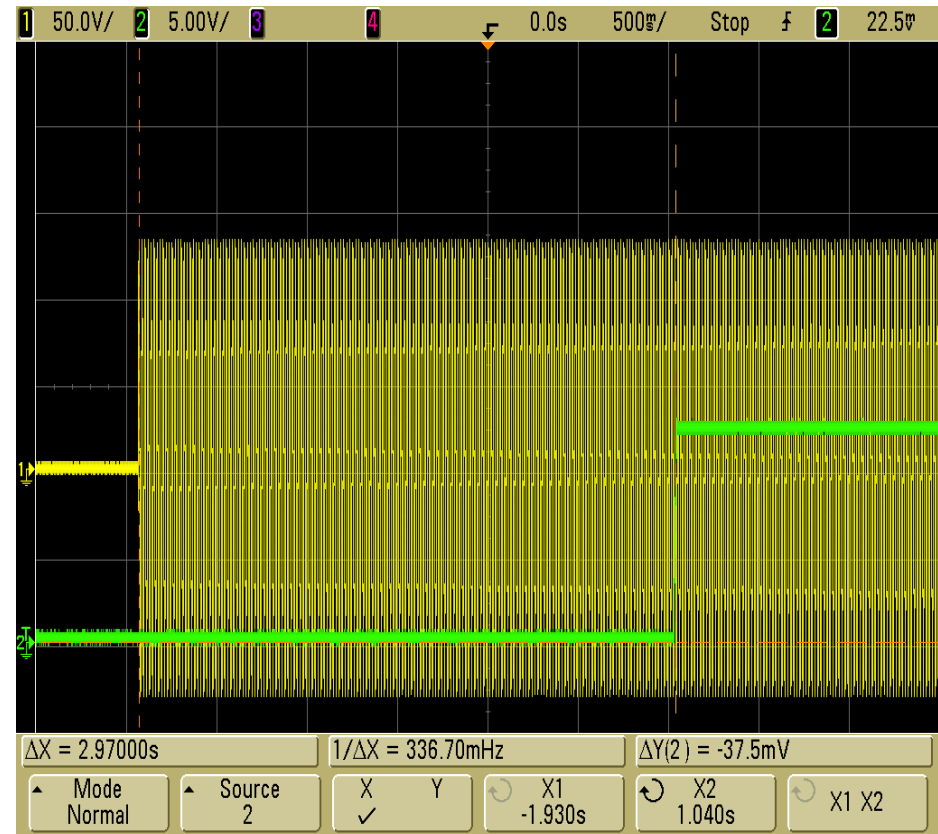
5. 12V1A测试数据

输入电压	输出电流	SW3658测试数据报告								
		输入功率(W)	输出电压(V)	限流保护(A)	启动时间满载(S)	输出纹波(mV)	短路保护	转换效率	平均效率	CEC5.0
90V AC	0	0.03	12.15	1.50	3.36S	79.2mV	OK	\	82.28	\
	0.25A	3.64	12.13					83.31		
	0.50A	7.30	12.12					83.01		
	0.75A	11.08	12.11					81.97		
	1.00A	14.96	12.09					80.81		
115V AC	0	0.04	12.15	1.55	2.56S	75.2mV	OK	\	83.72	82.9
	0.25A	3.61	12.13					84.00		
	0.50A	7.20	12.12					84.16		
	0.75A	10.85	12.11					83.70		
	1.00A	14.56	12.09					83.04		
230V AC	0	0.06	12.15	1.75	1.22S	62.4Mv	OK	\	84.08	82.9
	0.25A	3.65	12.13					83.08		
	0.50A	7.20	12.12					84.17		
	0.75A	10.74	12.11					84.56		
	1.00A	14.31	12.09					84.48		
264V AC	0	0.07	12.15	1.80	1.0S	58.4mV	OK	\	83.71	\
	0.25A	3.68	12.14					82.47		
	0.50A	7.23	12.12					83.81		
	0.75A	10.78	12.11					84.25		
	1.00A	14.35	12.10					84.32		

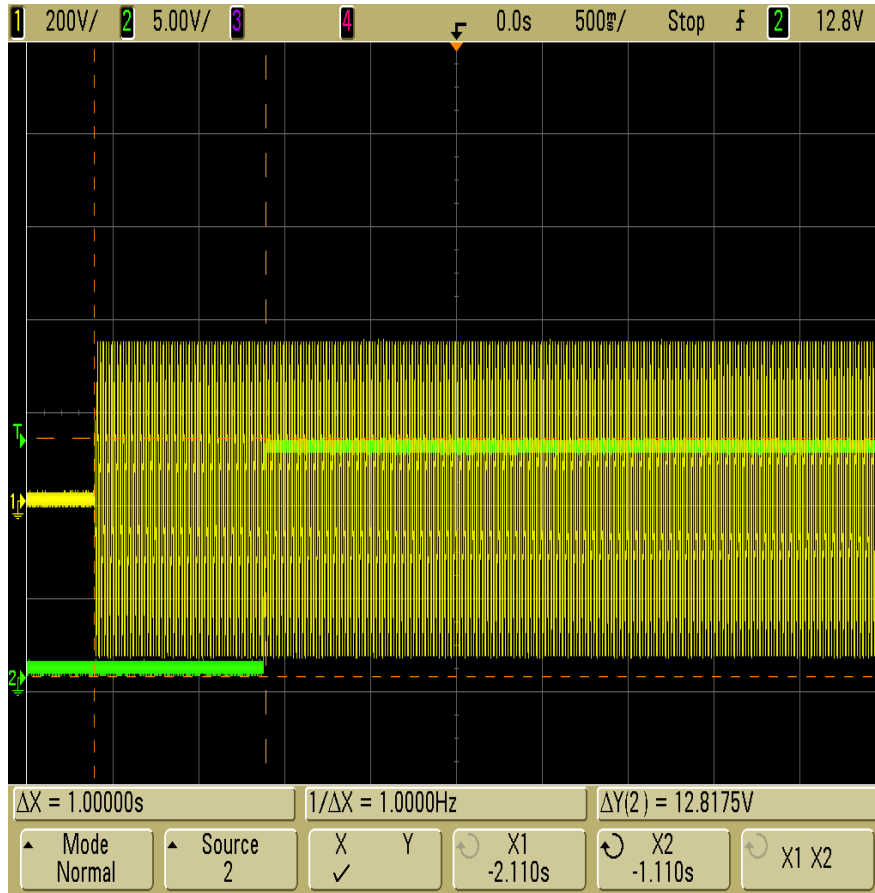
样板室温下测试波形



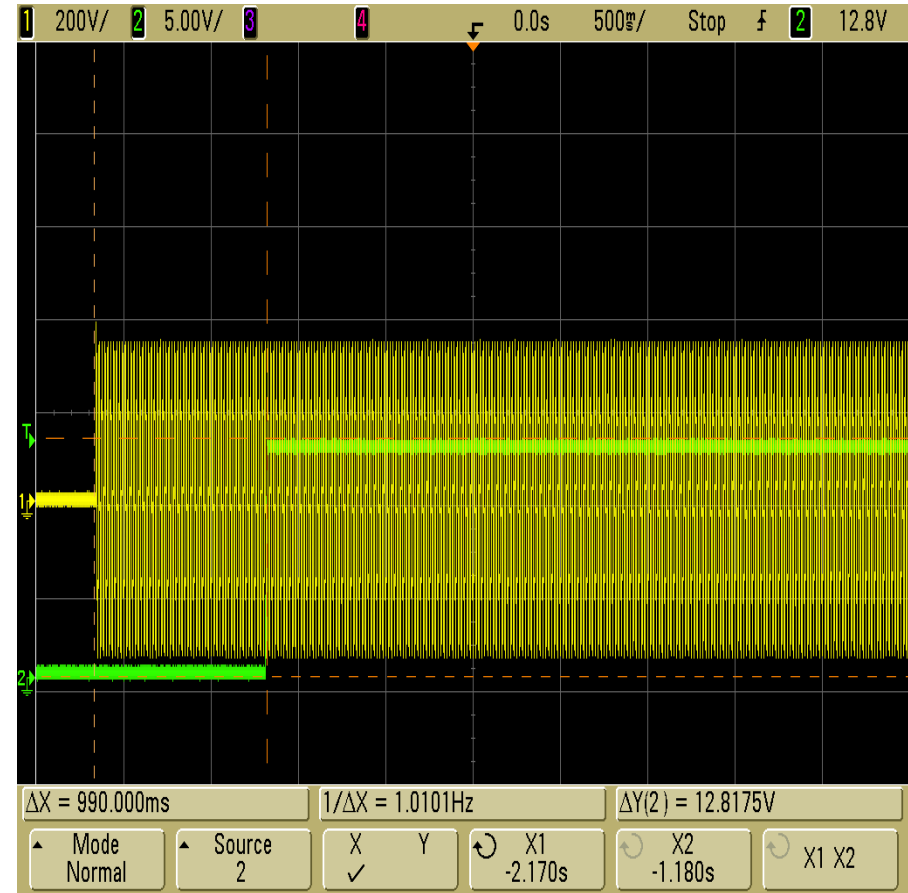
Vin=90Vac/60Hz, 空载; 开机延迟时间2.96S



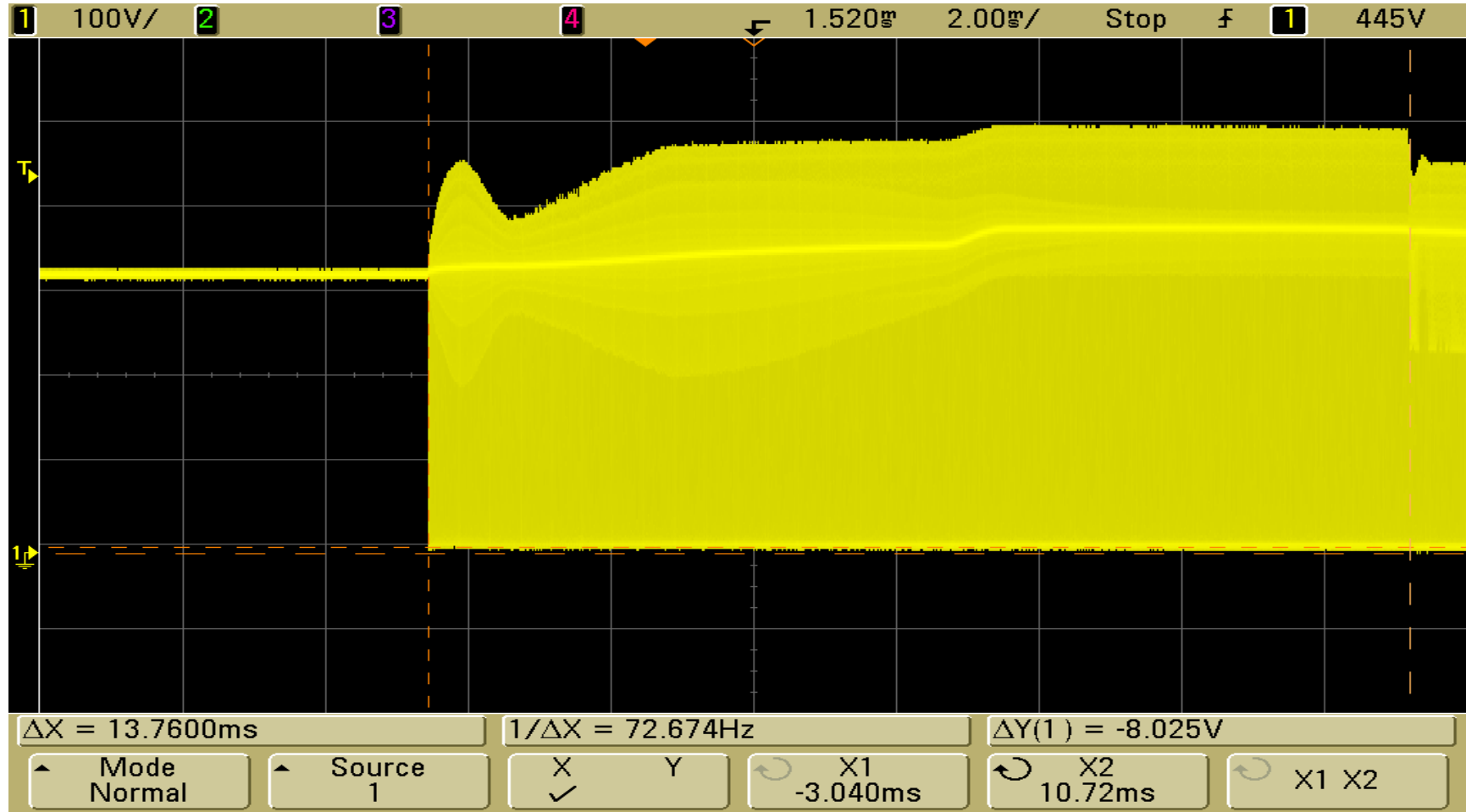
Vin=90Vac/60Hz, 满载; 开机延迟时间2.97S



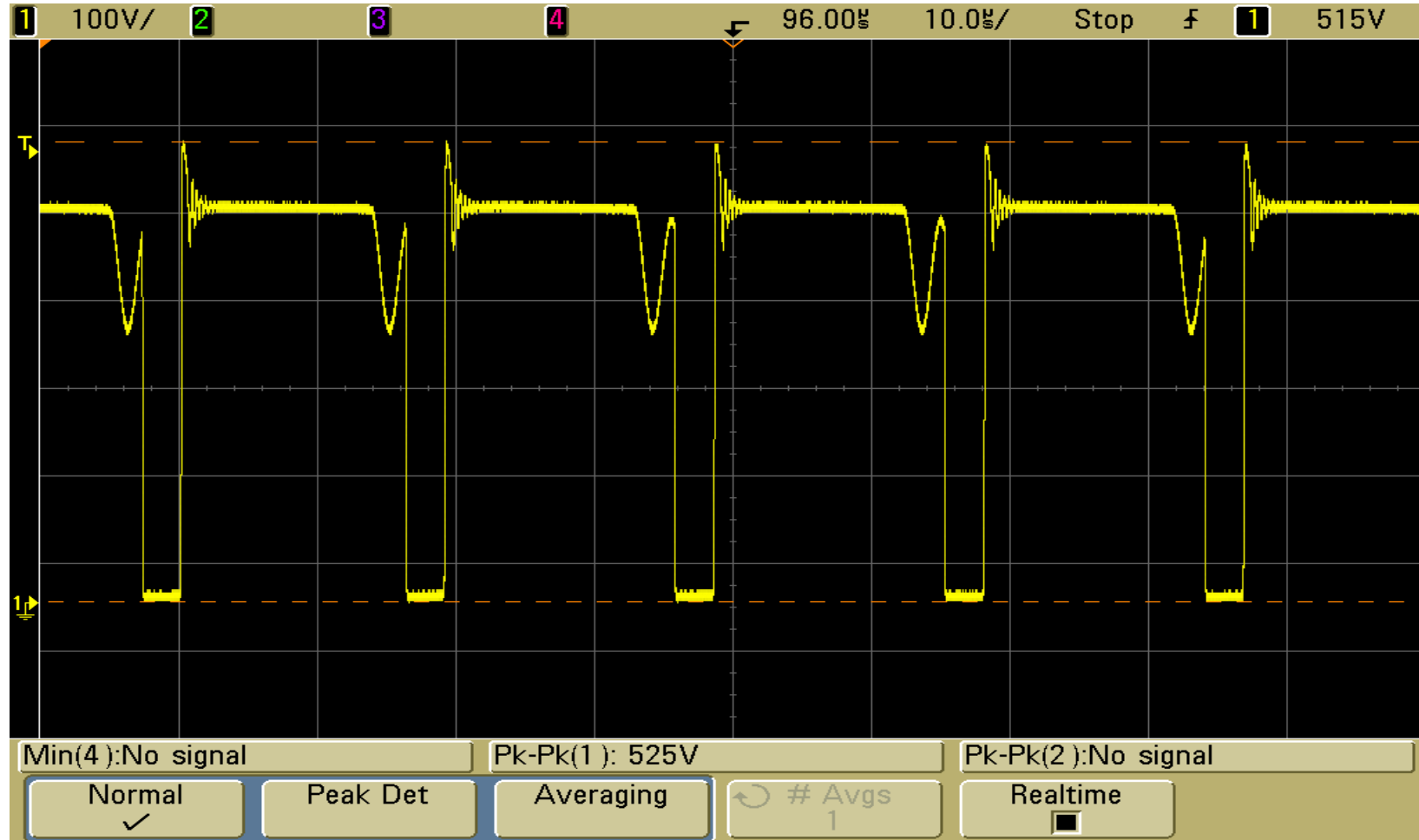
$V_{in}=230V_{ac}/50Hz$, 空载; 开机延迟时间1.0S



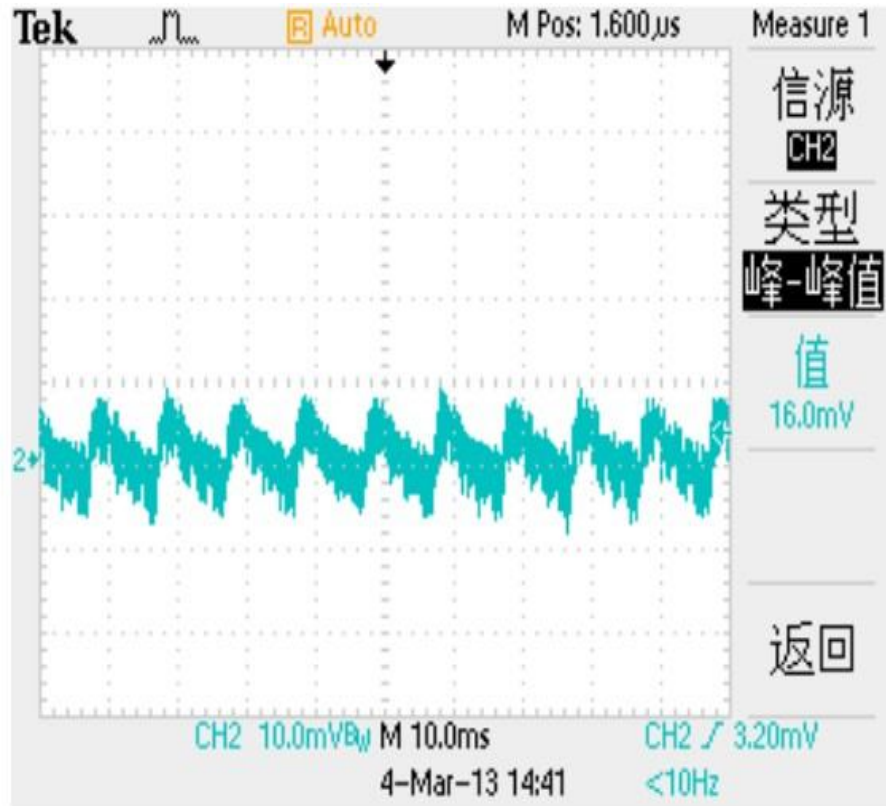
$V_{in}=230ac/50Hz$, 满载; 开机延迟时间0.99S



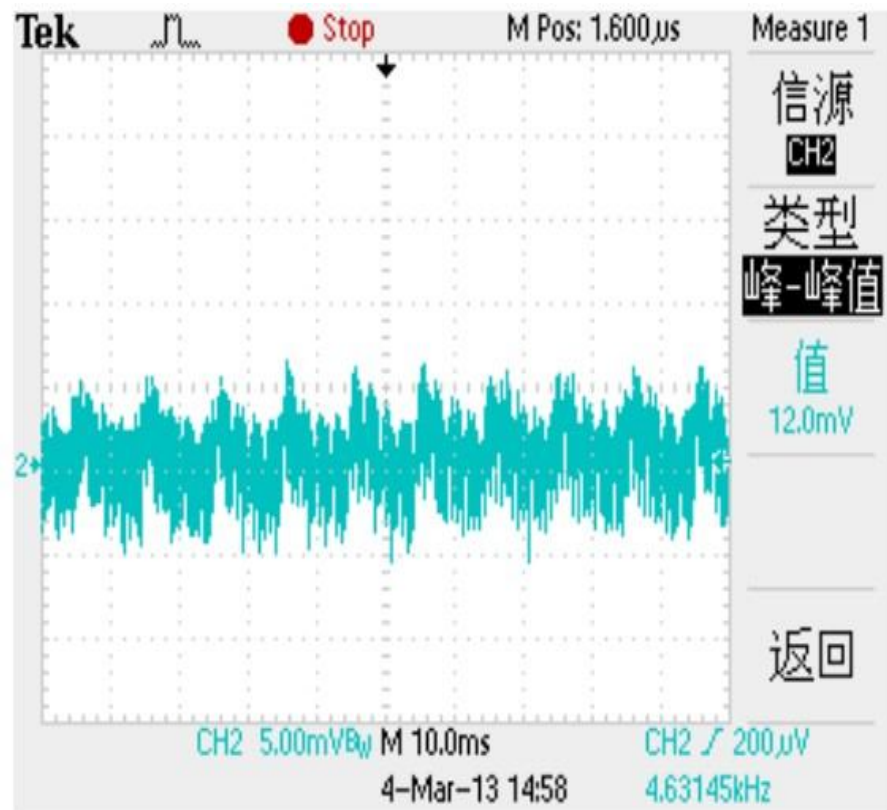
满载开机软启动时间13.76ms



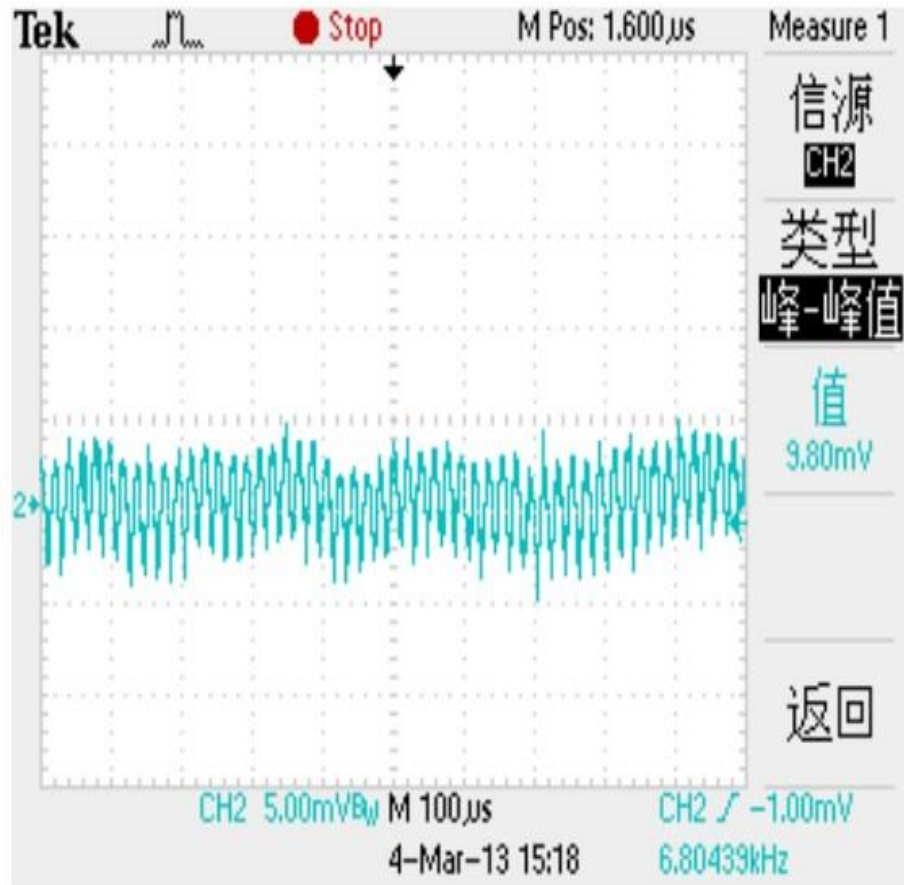
$V_{in}=264ac/50Hz$, 满载; $V_{ds\ max}=525V$



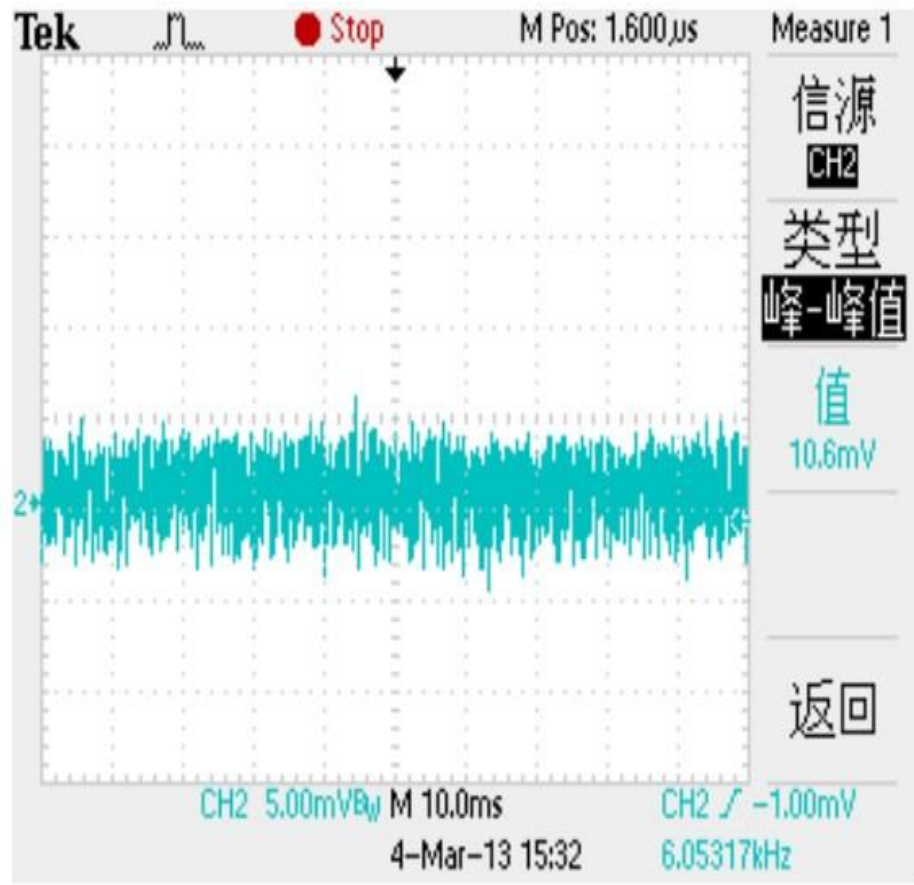
$V_{in}=90V_{ac}/50Hz$,满载,输出纹波 16.0mv.



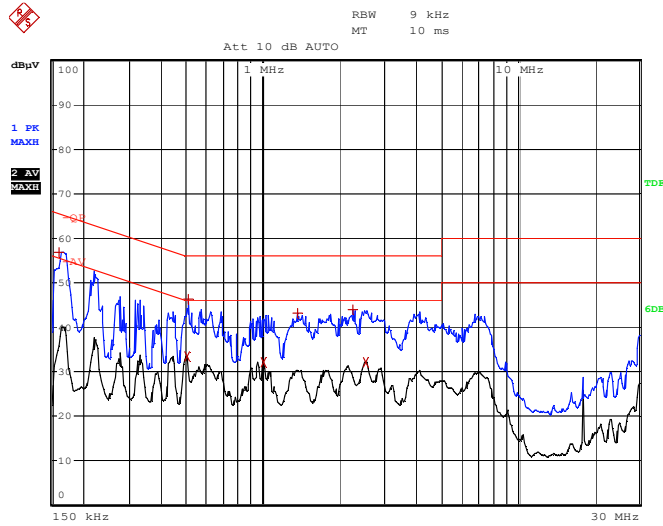
$V_{in}=115V_{ac}/50Hz$,满载,输出纹波 12.0mv.



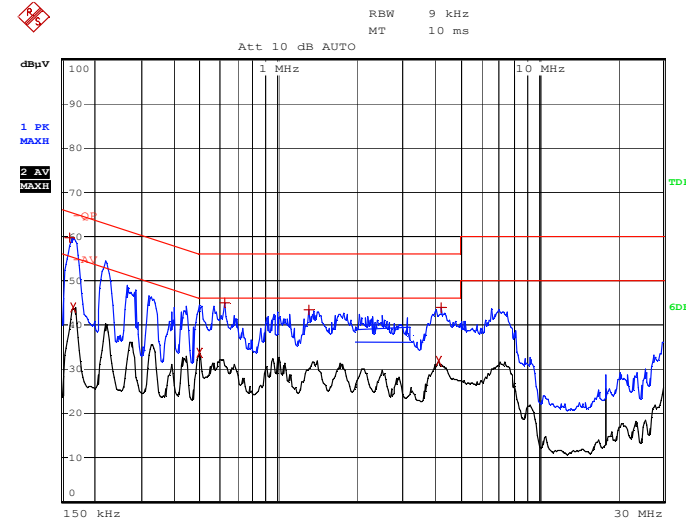
$V_{in}=230V_{ac}/50Hz$, 满载, 输出纹波 9.8mV



$V_{in}=264V_{ac}/50Hz$, 满载, 输出纹波 10.6mV



EDIT PEAK LIST (Prescan Results)			
Trace1:	-OP		
Trace2:	-AV		
Trace3:	---		
TRACE	FREQUENCY	LEVEL dBuV	DELTA LIMIT dB
1 Max Peak	162 kHz	56.89	-8.46
2 Average	502 kHz	33.41	-12.59
1 Max Peak	810 kHz	46.26	-9.73
2 Average	1.01 MHz	32.12	-13.87
1 Max Peak	1.366 MHz	43.19	-12.81
1 Max Peak	2.239 MHz	44.06	-11.93
2 Average	2.526 MHz	32.28	-13.72



EDIT PEAK LIST (Prescan Results)			
Trace1:	-OP		
Trace2:	-AV		
Trace3:	---		
TRACE	FREQUENCY	LEVEL dBuV	DELTA LIMIT dB
1 Max Peak	162 kHz	39.53	-5.72
2 Average	166 kHz	43.99	-11.16
2 Average	498 kHz	33.68	-12.35
1 Max Peak	525 kHz	45.00	-10.99
1 Max Peak	1.331 MHz	43.49	-12.50
2 Average	4.142 MHz	31.78	-14.22
1 Max Peak	4.198 MHz	43.87	-12.12

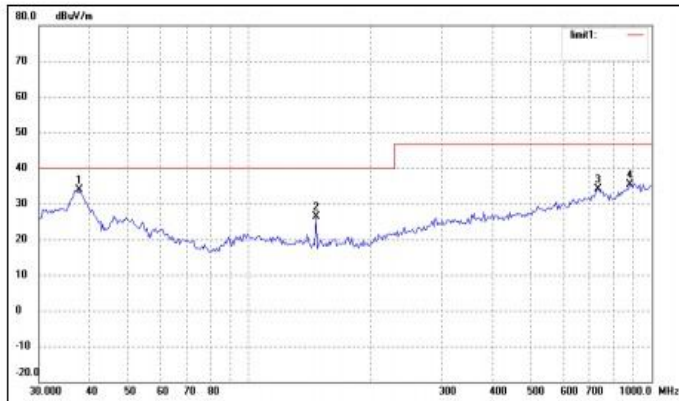


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http://www.semtest.com.cn

SEM Test Compliance

Job No.:	RE	Polarization:	Vertical
Standard:	CISPR22 ClassB 3M Radiation	Power Source:	AC 230V/50Hz
Test item:	Radiation Test	Date:	12/12/19/
Temp.:	26(C)/60%RH	Time:	15/39/30
C)/Hum.(%RH):			
EUT:	adapter	Test By:	
Model:	SW3658-6-2	Distance:	3m
Note:			



No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ()	Height (cm)	Remark
1	37.8121	24.53	9.33	33.86	40.00	-6.14			peak
2	146.3735	22.99	3.49	26.48	40.00	-13.52			peak
3	734.4913	16.50	17.68	34.18	47.00	-12.82			peak
4	881.4067	16.24	19.03	35.27	47.00	-11.73			peak

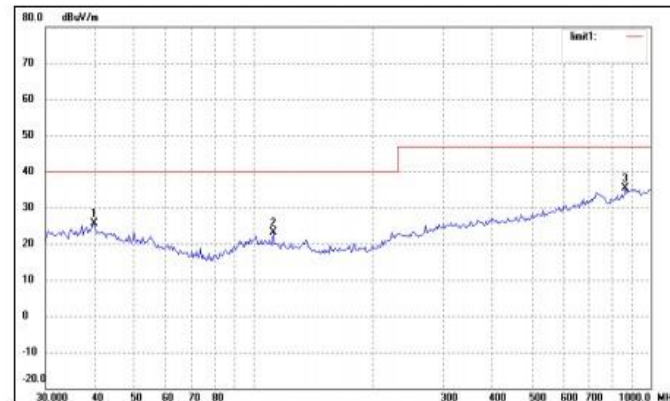


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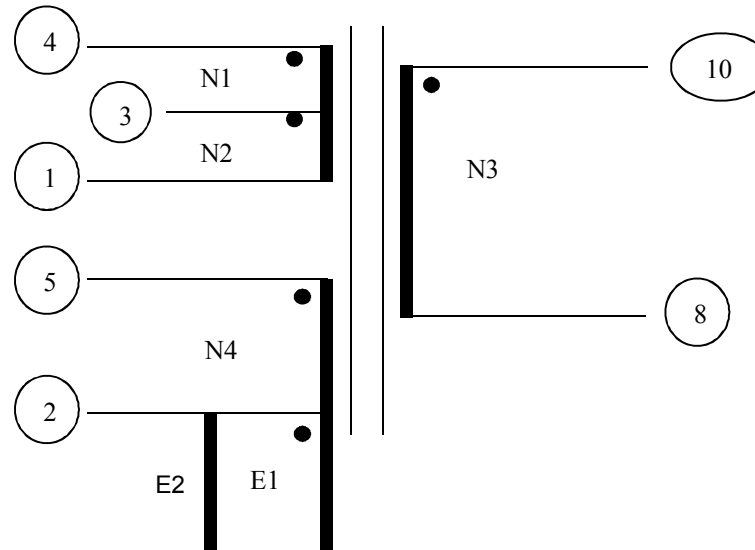
SEM Test Compliance

Job No.:	RE	Polarization:	Horizontal
Standard:	CISPR22 ClassB 3M Radiation	Power Source:	AC 230V/50Hz
Test item:	Radiation Test	Date:	12/12/19/
Temp.:	26(C)/60%RH	Time:	15/40/26
C)/Hum.(%RH):			
EUT:	adapter	Test By:	
Model:	SW3658-6-2	Distance:	3m
Note:			



No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ()	Height (cm)	Remark
1	39.7147	16.09	9.64	25.73	40.00	-14.27			peak
2	112.1305	17.58	5.65	23.23	40.00	-16.77			peak
3	863.0562	17.16	18.27	35.43	47.00	-11.57			peak

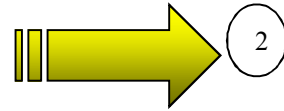
示意图 : Bobbin - EE19 5+5Pin



变压器参数

Primary Inductance	Pin 4-1, all other windings open, measured at 1kHz, 0.4VRMS	1.0mH, ±5%
Primary Leakage Inductance	Pin 4-1, all other windings shorted, measured at 10kHz, 0.4VRMS	50 uH (Max.)

绕制方法



要求



MATERIALS:

1. Core : EE19 (Ferrite Material TDK PC40 or equivalent)
2. Bobbin : EE19 Horizontal.
3. Magnet Wires (Pri) : Type 2-UEW
4. Magnet Wire (Sec) : Triple Insulated Wires

