



设计参考手册

Design Reference Manual

GaN 氮化镓
润新微150W 适配器设计参考手册
(VER: 1.0)

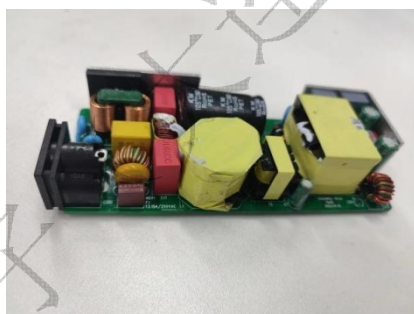
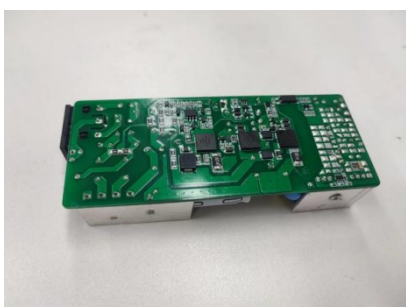
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GaN 氮化镓 润新微150W设计参考 手册	版本:A1 XG150W-24V6.25A
	文档版本: VER: 1.0

基于**氮化镓**设计的 润新微150W-24V6.25A 适配器外观图(外型尺寸: L*W*H/130*58*33mm)



PCB图



主要特性:

- 1、整机采用高效率电路架构: PFC+QR电路模式, 满功率输出可达93.77%以上超高效率;
- 2、全电压输入设计; 工作电压范围 90VAC~264VAC;
- 3、具有输出过流保护、短路保护、过温保护等功能;
- 4、输出符合“DOE&COC”6 级能效标准;
- 5、通过 GB4943 EN55022 ClassB 的 EMI 测试标准
- 6、通过 EFT 4KV 测试标准;
- 7、温升测试满足国内 CCC 认证标准和国际 IEC62368 认证标准。

版本更改说明			
时间	更改内容	版本升级	备注
	初版发布	V1.0	

润新微电子 (大连) 有限公司

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一 DEMO 参数信息

描述	符号	最小	额定值	最大	单位	备注
一，输入特性						
输入电压范围	V _{IN}	90	230	264	Vac	单相输入
输入频率范围	F _{LINE}	47	50/60	63	Hz	
待机功耗	P _{stb}		137		mW	
二，输出特性 (220V 输入时测试)						
最大输出功率 163.8 W						
输出电压	V _{OUT}	22.8	24	25.2	V	
输出电流 (最大为 OCP)	I _{OUT}	0	6.25	6.5	A	

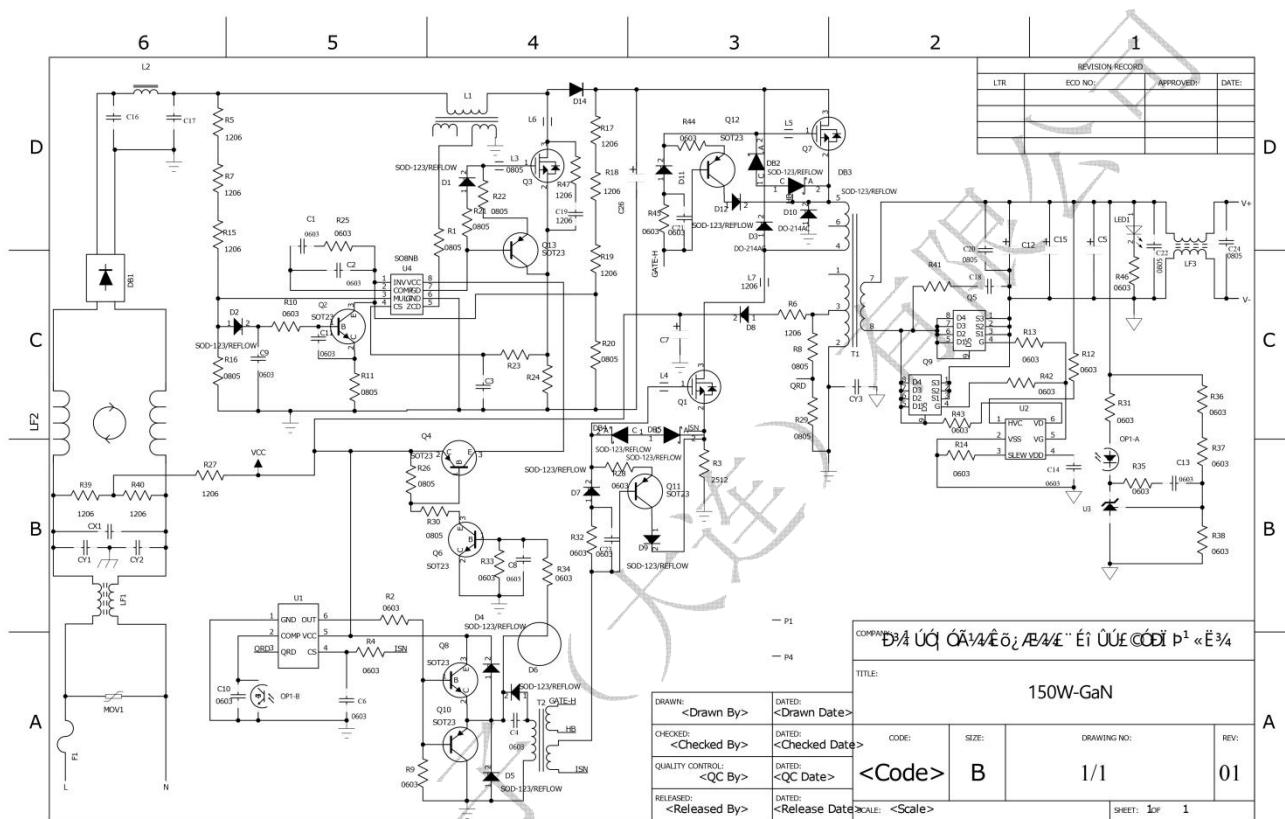
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三，性能描述

3.1 性能描述						
描述	符号	最小	典型值	最大	单位	备注
24V 输出, 100%负载效率	η		93.77		%	@230V _{AC}
24V 输出, 平均效率	η		91.98		%	25/50/75/100% @230V _{AC}
24V 输出, 平均效率	η		92.74		%	25/50/75/100% @115V _{AC}
电压调整率				±3	%	
负载调整率				±3	%	
电压纹波与噪声	$V_{R\&N}$		重测试波形	113/1 34	mV	115/230V _{ac}
启动时间	T_{ST_DELAY}	<2			s	
EMI		EN55022B				
3.2 保护特性						
短路保护		输出关闭（打嗝模式），可自恢复				
过流保护		输出关闭（打嗝模式），可自恢复				
过温保护		输出关闭，可自恢复				
3.3 环境特性						
工作温度		0		40	°C	
工作湿度		20%		90%	R. H.	
储存温度		-40		60	°C	
储存湿度		0%		95%	R. H.	
外部尺寸	W*H*L	130*58*33			mm	
单只产品重量	Weight				g	

二 电源结构

2.1 电原理图



润新微电子

2.1 材料清单

润新微电子(大连)有限公司							
初始BOM物料清单							
日期: 2022. 3. 31							
一	插件件	24V6. 25A 150W 氮化镓电源适配器 产品型号:	PCS	1		无	
1	压敏电阻	ZVR10D471KK837F1 11*6mm 脚距7.5mm	PCS	1	MOV1		
1	电解电容	10uF 50V 105°C Φ5*11mm PIN距2.0mm 脚长3.4±0.2mm GF系列 品牌:威迪	PCS	1	C7	13828899258	威迪
2	电解电容	150uF 420V 105°C Φ18*31.5mm PIN距7.5mm弯脚 品牌: 威迪	PCS	1	C26	13828899258	威迪
3	固态电容	680uF 35V 105°C Φ8*14mm PIN距3.5mm脚长3.4±0.3mm 品牌: 威迪	PCS	1	C15	13828899258	威迪
4	电解电容	470uF 35V 105°C Φ8*20mm PIN距3.5mm脚长3.4±0.3mm 品牌: 威迪	PCS	2	C5, C12	13828899258	威迪
5	金属薄膜电容	CBB21 450V/105J L12.5*W8*H14.5mm P=10MM 品牌: 威迪	PCS	2	C16, C17	13828899258	威迪
6	变压器	KT-PQ3220-001 200uH±5% 骨架6+6 磁芯材质: PC95 品牌: 弘昇	PCS	1	T1	18617284679	弘昇
7	变压器	KT-EE16-001 骨架5+5 磁芯材质: PC95 品牌: 弘昇	PCS	1	T2	18617284679	弘昇
8	PFC电感	KT-RM10-001 200uH±5% 骨架6+6 磁芯材质: PC95 品牌: 弘昇	PCS	1	L8	18617284679	弘昇
9	共模电感	安	PCS	1	LF1	15899789503	格瑞安
11	共模电感	SQ1515 >15mH 0.2*1.5mm 脚距8*10 材质: 锰锌 品牌: 格瑞安	PCS	1	LF2	15899789503	格瑞安
12	差模电感	CS112125 210uH 0.5*62T 铁硅铝 立式 包套管 品牌: 格瑞安	PCS	1	L2	15899789503	格瑞安
13	Y电容	332M/400VAC PIN=10mm Y5V 125°C 脚长3.4±0.2mm 品牌: 威迪	PCS	1	CY3	13828899258	威迪
14	Y电容	471K/400VAC PIN=7.5mm Y5V 125°C 脚长3.4±0.2mm 品牌: 威迪	PCS	1	CY1, CY2	13828899258	威迪
15	方形保险丝	T3.15A 250V 慢断 Φ8.3*8.0*4mm I2T≥57A2S SMT1315AP 品牌: 奥特	PCS	1	F1		
16	整流桥	GBU1010 1KV 10A	PCS	1	DB1		
17	插件MOS	CRST073N15N 150V 7.3mΩ TO-220 品牌: 华润微	PCS	2	Q5, Q9	18061188505	艾立德
18	X电容	MPX 0.47uF 334K 310V X1 P=10 13*8*14mm 品牌: 威迪	PCS	1	CX1	13828899258	威迪
19	梅花母座	DE-6-4P5PP3-15	PCS	1	CON1		
20	PCB板	FR-4 S/S 20ZCu 94V-0 双面板 松香123*49*1.6mm 双面绿油 品牌:	PCS	1			
二	贴片件大板	24V6. 25A 150W 氮化镓电源适配器 产品型号:	PCS	1		无	
1	贴片电阻	2.2Ω ±5% 1206 1/4W品牌:国巨	PCS	1	R6		
2	贴片电阻	10Ω ±5% 1206 1/4W品牌:国巨	PCS	2	R47, R41		
3	贴片电阻	430KΩ ±5% 1206 1/4W品牌:国巨	PCS	1	R19		
4	贴片电阻	430KΩ ±5% 1206 1/4W品牌:国巨	PCS	1	R27		
5	贴片电阻	910KΩ ±5% 1206 1/4W品牌:国巨	PCS	1	R15		
6	贴片电阻	1MΩ ±5% 1206 1/4W品牌:国巨	PCS	5	R39, R40, R18, R5, R7		
7	贴片电阻	2MΩ ±5% 1206 1/4W品牌:国巨	PCS	1	R17		
8	贴片电阻	15Ω ±5% 0805 1/10W 品牌:国巨	PCS	1	R22		
9	贴片电阻	510Ω ±5% 0805 1/10W 品牌:国巨	PCS	1	R21		
10	贴片电阻	47KΩ ±5% 0805 1/10W 品牌:国巨	PCS	2	R26, R11		
11	贴片电阻	36KΩ ±5% 0805 1/10W 品牌:国巨	PCS	2	R20, R29		
12	贴片电阻	30KΩ ±5% 0805 1/10W 品牌:国巨	PCS	3	R16, R30, R1		
13	贴片电阻	200KΩ ±5% 0805 1/10W 品牌:国巨	PCS	1	R8		
14	贴片电阻	100KΩ ±5% 0603 1/10W 品牌:国巨	PCS	1	R46		
15	贴片电阻	200KΩ ±5% 0603 1/10W 品牌:国巨	PCS	1	R14		
16	贴片电阻	30KΩ ±5% 0603 1/10W 品牌:国巨	PCS	1	R10		
17	贴片电阻	4.3KΩ ±5% 0603 1/10W 品牌:国巨	PCS	1	R35		
18	贴片电阻	4.7KΩ ±1% 0603 1/10W 品牌:国巨	PCS	1	R38		
19	贴片电阻	3.9KΩ ±1% 0603 1/10W 品牌:国巨	PCS	1	R31		
19	贴片电阻	1.5KΩ ±1% 0603 1/10W 品牌:国巨	PCS	1	R37		
20	贴片电阻	39KΩ ±1% 0603 1/10W 品牌:国巨	PCS	1	R36		
21	贴片电阻	680Ω ±5% 0603 1/10W 品牌:国巨	PCS	1	R23		
22	贴片电阻	330Ω ±5% 0603 1/10W 品牌:国巨	PCS	2	R4, R43		
23	贴片电阻	100Ω ±5% 0603 1/10W 品牌:国巨	PCS	1	R12		
24	贴片电阻	510Ω ±5% 0603 1/10W 品牌:国巨	PCS	2	R45, R32		
25	贴片电阻	5.6Ω ±5% 0603 1/10W 品牌:国巨	PCS	2	R44, R28		
26	贴片电阻	1Ω ±5% 0603 1/10W 品牌:国巨	PCS	2	R13, R14		
27	贴片电阻	150Ω ±5% 0603 1/10W 品牌:国巨	PCS	1	R2		
28	贴片电阻	27KΩ ±5% 0603 1/10W 品牌:国巨	PCS	1	R25		
29	贴片电阻	150KΩ ±5% 0603 1/10W 品牌:国巨	PCS	1	R33		

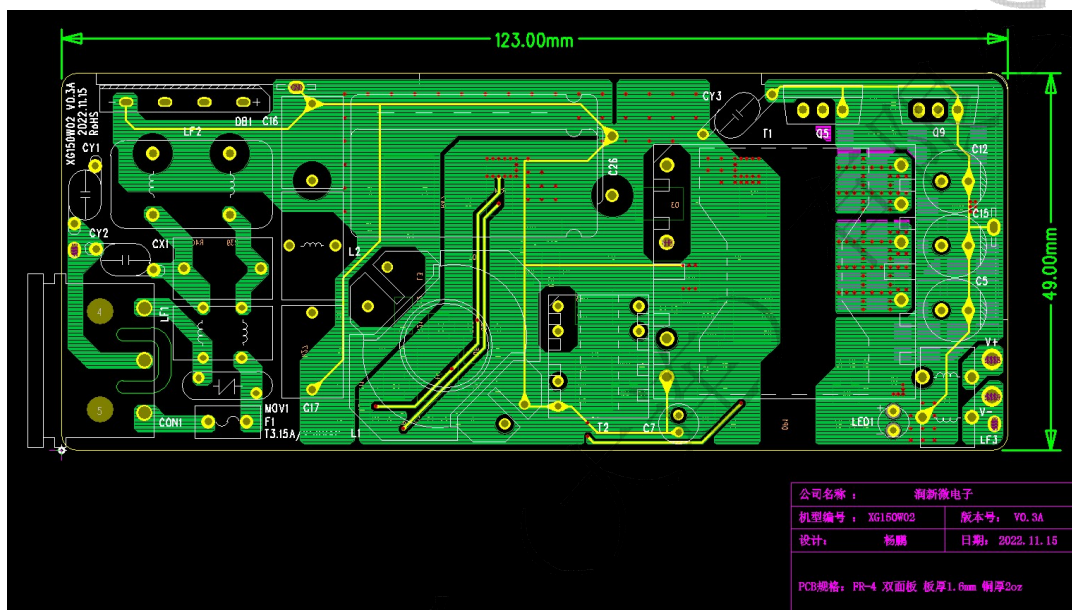
30	贴片电阻	10K Ω \pm 1% 0603 1/10W 品牌:国巨	PCS	1	R9		
	贴片电阻	33K Ω \pm 5% 0603 1/10W 品牌:国巨	PCS	1	R34		
31	合金电阻	120m Ω \pm 1% 2512 2W 颜色白面 品牌:萨特	PCS	1	R24		
32	合金电阻	130m Ω \pm 1% 2512 2W 颜色白面 品牌:萨特	PCS	1	R3		
33	贴片磁珠	300 Ω Bead0805S301A20T 宝仁弘	PCS	3	L5, L4, L3		
34	贴片磁珠	120 Ω 1206 Bead1206S121A60T 宝仁弘 IDC:6A max	PCS	2	L7, L6		
35	贴片电容	1nF \pm 10% 250V X7R 1206 102K 品牌:国巨	PCS	1	C18		
	贴片电容	470nF \pm 10% 50V X7R 0603 474K 品牌:国巨	PCS	1	C1		
36	贴片电容	1 μ F \pm 10% 50V X7R 0603 105K 品牌:国巨	PCS	3	C9, C8, C4		
37	贴片电容	2.2 μ F \pm 10% 50V X7R 0603 225K 品牌:国巨	PCS	1	C14		
	贴片电容	1 μ F \pm 10% 50V X7R 0805 105K 品牌:国巨	PCS	3	C20, C22, C24		
38	贴片电容	470pF \pm 10% 50V X7R 0603 471K 品牌:国巨	PCS	3	C3, C21, C23		
39	贴片电容	10nF \pm 10% 50V X7R 0603 103K 品牌:国巨	PCS	1	C2		
40	贴片电容	150pF \pm 10% 50V X7R 0603 151K 品牌:国巨	PCS	1	C11		
41	贴片电容	680pF \pm 10% 50V X7R 0603 681K 品牌:国巨	PCS	1	C6		
42	贴片电容	1nF \pm 10% 50V X7R 0603 102K 品牌:国巨	PCS	1	C10		
43	贴片电容	470nF \pm 10% 50V X7R 0603 474K 品牌:国巨	PCS	1	C13		
44	贴片电容	150pF \pm 10% 1000V X7R 1206 151J 品牌:国巨	PCS	1	C19		
45	贴片二极管	1N4148W 150mA 75V SOD-123 品牌:长电	PCS	6	D2, D1, D7, D9, D12, D11		
46	贴片二极管	FR107 DFR1M SOD-123F 平伟	PCS	1	D8		
47	贴片三极管	MMBT2222 集射极击穿电压(V _{ceo}): 40V 集电极电流(I _c): 600mA 功率(P _d):	PCS	2	Q6, Q8		
48	贴片三极管	2N2907 600mA 60V SOT-23 品牌:时科	PCS	5	Q4, Q13, Q10, Q11, Q12		
49	贴片三极管	BC817 SOT23 品牌:长电	PCS	1	Q2		
50	肖特基二极管	SS1040L 40V 1A SOD-123	PCS	2	D5, D6		
51	贴片稳压二极	15V 500mW SOD-123 (BZT52C15W) 品牌:	PCS	4	DB2, DB3, DB4, DB5		
52	贴片IC	MMBT431LT1 2.495V \geq 36V 0.5% SOT-23 品牌:龙晶微	PCS	1	U3		
53	贴片IC	MP6908A SOT23-6 品牌:MPS	PCS	1	U2		
54	贴片IC	MK2697 SOT23-6 频率200KHZ 品牌:茂睿芯	PCS	1	U1		
55	贴片IC	MP44014GS SOIC8 品牌:MPS	PCS	1	U4		
56	贴片光耦	EL1019 SOP-4 本体黑色 品牌:亿光	PCS	1	OP1		
57	氮化镓MOS	RX65T125HS2A DFN 8 \times 8 650V 18A 品牌:润新微	PCS	1	Q3		
58	氮化镓MOS	RX65T300HS2A DFN 8 \times 8 650V 9A 品牌:润新微	PCS	2	Q1, Q7		
59	贴片二极管	ES5J 5A 600V SMC 长电	PCS	1	D14		
60	贴片二极管	ES5JBF 5A 600V SMC 长电	PCS	2	D3, D10		
61	PCB板	FR-4 S/S 20ZCu 94V-0 双面板 松香123*49*1.6mm 双面绿油 品牌:	PCS	1			

润新微电子

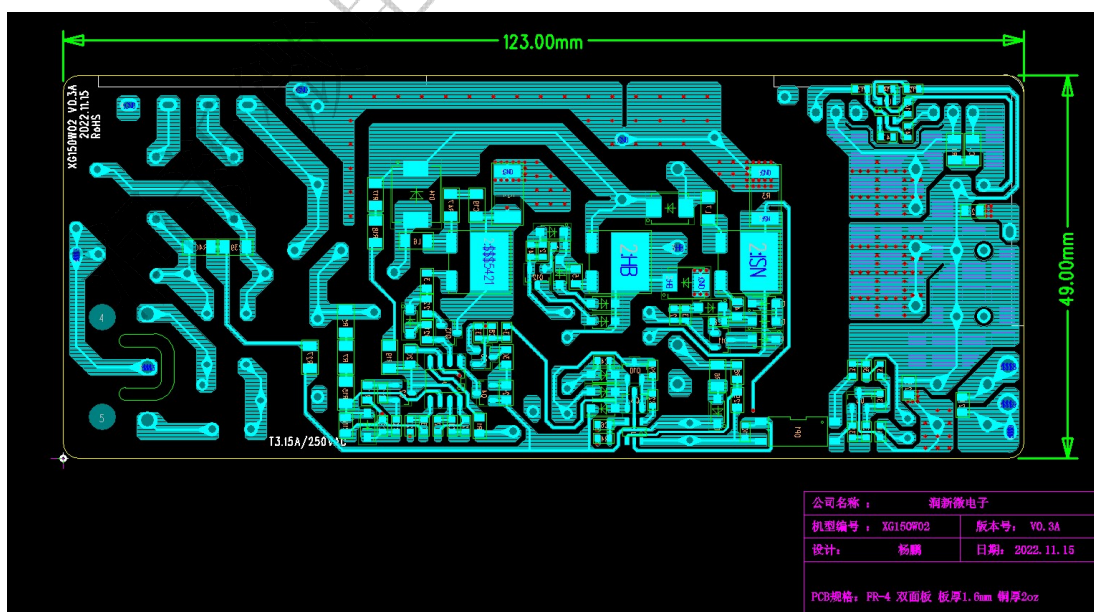
2. 2Demo 板 PCB 结构示意图

主板 PCB 结构示意图

顶层布线图



底层布线图



三 变压器设计

3.1 开关变压器KT -PQ3220

润新微电子(大连)有限公司
技术 规范
标 题: 开关变压器KT-PQ3220-001

版本号: A
修改号: 03
第 1 页 共 2 页

1. 电气特性

1.1 感量: PIN1-3 200uH±5%
1.2 漏感: PIN1-3 20uH MAX
测试条件: 10KHz 0.25V, PIN5, PIN6, PIN10, PIN11, PIN12. 短路
1.3 高压测试
1.3.1 初级-次级 3750VAC 10mA 1MIN
1.3.2 次级-磁芯 3750VAC 10mA 1MIN

2. 绕线结构图

N6 2 → 3 0.1*20绞线*1P*12Ts
N5 6 → 0 0.2*2P*18Ts
N4 10 → 12 TEX0.1*130*1P 三层绝缘*5Ts
N3 9 → 11 TEX0.1*130*1P 三层绝缘*5Ts
N2 5 → 6 0.2*2P*4Ts
N1 1 → 2 0.1*20绞线*1P*13Ts

3. 原理图

4. 绕线描述

序号	位号	挡墙	绕线描述				挡墙	绝缘胶 涂层数	
			起点	终点	线径 mm	圈数			绕线方式
1	N1	0mm	1	2	0.1*20*1P绞线	13	密绕	0mm	2TS
2	N2	0mm	5	6	0.2*3P	4	居中密绕	0mm	2TS
3	N3	0mm	9	11	TEX0.1*130*1P 三层绝缘线	5	密绕	0mm	2TS
4	N4	0mm	10	12	TEX0.1*130*1P 三层绝缘线	5	密绕	0mm	2TS
5	N5	0mm	6	0	0.2*3P	18	密绕	0mm	2TS
6	N6	0mm	2	3	0.1*20*1P绞线	12	密绕	0mm	2TS
7									
8									
9									
10									
11									
12									

注:
 <<注意事项>>
 1. N1, N6 绕组为绞线, N3, N4 绕组为多股三层绝缘线
 2. PIN4, 7, 8 拔掉, PIN3 剪掉2/3, 3. 气隙研磨中柱. 4. PIN1, 2, 3, 5, 6, 9, 10, 11, 12. 套TEFLON TUBE.
 5. 做好CORE反包处理, 外露磁芯套再包 TAPE 2 TS.
 6. 变压器底部靠近次级一侧磁芯需要做反包处理
 7. 在磁芯中柱气隙点处做
 变压器磁芯外用需用自粘铜箔长25mm*宽10mm*接PIN6脚, 再沿线包方向包自粘铜箔宽6mm一圈
 接PIN6脚

THIRD ANGLE PROJECTION 第三角法	颜色 COLOR	材料 MATERIAL	比例 SCALE	单位 UNIT	重量 WEIGHT	图版 PLATE	是否符合IPC PROCESS OF PART	表面处理 SURFACE PROCESSING
			1:1	mm	-	A4	YES	-

序号	版本	变更时间	变更内容	承认 APPROVED	确认 CHECKED	检图 CHECKED	制图 DRAWING	范围 RANGE	公差 TOLERANCE	品名	日期 DATE
0								范围	公差	品名	日期
1								LOG	10.00 10.00 10.10	24V6.25A	1/3
2								10-10.20	10.00 10.10 10.20		
3								10-10.40	10.10 10.20 10.30		
								10-11.00	10.10 10.20 10.30		
								1-100	10.20 10.30 10.50		

润新微电子(大连)有限公司
技术 规范
标 题: 开关变压器KT-PQ3220-001

版本号: A
修改号: 03
第 2 页 共 2 页

6. 标签

6.1 标签纸可用透明印刷, 打印或是激光打印均可, 但应保证字体清晰可见, 且标贴纸的粘性良好, 能耐130° C不易脱落。
6.2 标签内容应包括以下内容:

7. 材料清单

序号	物料名称	规格描述	品牌指定或外观要求
1	骨架	PHENOLIC T375J/T373J Minimum V-2 150 Degree C	QMFZ2
2	磁芯	PQ3220	使用PC95材质
3	铜线	2UEW 130°C	OBMW2
4	三层绝缘线	HW-2/TEX-E/TEX-ECEW3/TEX-ELZ 130°C	OBJT2
5	胶带	1350-1, 1350F-1, 1351-1, PZ, GT, WF 130° C	OANZ2
6	凡立水	BC-359 130°C	UL认证
7	套管	TEFLON TUBE TPT/TFS-2T-FF1547RTURB0117E/TURB0117F/TFS-SW-600	YDPU2
8	铜箔	0.025 x 12mm	不限

注:
 1. 骨架规格: PQ3220 12PIN.
 2. 要求外露磁芯包TAPE 2TS (宽度22mm)
 3. 铜箔贴于变压器底部磁芯表面并用0.2mm的铜线焊接于PIN6, 再沿线包方向包自粘铜箔宽6mm一圈接PIN6脚

9. 包装要求

变压器包装要采用泡沫包装以免变压器变形。

THIRD ANGLE PROJECTION 第三角法	颜色 COLOR	材料 MATERIAL	比例 SCALE	单位 UNIT	重量 WEIGHT	图版 PLATE	是否符合IPC PROCESS OF PART	表面处理 SURFACE PROCESSING
			1:1	mm	-	A4	YES	-

序号	版本	变更时间	变更内容
0			
1			
2			
3			

承认 APPROVED	确认 CHECKED	检图 CHECKED	制图 DRAWING	范围 RANGE	公差 TOLERANCE	品名	日期 DATE
				范围	公差	品名	日期
				LOG	10.00 10.00 10.10	24V6.25A	2/3
				10-10.20	10.00 10.10 10.20		
				10-10.40	10.10 10.20 10.30		
				10-11.00	10.10 10.20 10.30		
				1-100	10.20 10.30 10.50		

四 测试数据

4.1 测试工具

名称	品牌	型号
交流源	远方	DPS1020
功率仪	远方	PF9800
电子负载	艾德克斯 (ITECH)	IT8512A+
示波器	RIGOL	MD05204
万用表	FULKE	17B+

4.2 测试报告请见附件

序号	测试项目	测试结果
1	Turn on time 开机时间	PASS
2	Hold up time 关机保持时间	PASS
3	Input Current 输入电流	PASS
4	Power Factor 功率因素	PASS
5	Efficiency 效率	PASS
6	Power Consumption 待机功率	PASS
7	Inrush Current 倾入电流 (浪涌)	PASS
8	Rise time 输出上升时间	PASS
9	Overshoot&Undershoot 过充和欠充	PASS
10	Ripple voltage&noise 纹波和噪声	PASS
11	Line&Load Regulation 过载调整率	PASS
12	Over Current Protection 过流保护	PASS
13	Short Circuit Protection 短路保护	PASS
14	Over Voltage Protection 过压保护	PASS
15	Over Temperature Protection 温升	PASS
16	EMI	PASS
17	Components De-rating 器件降级	PASS

Turn On Time Test

Tested By: 24V6.25A 150W

Test date: 2022/04/14

1. Test condition:

Input voltage: 115Vac
 Input frequency: 60Hz
 Ambient temperature: 25±5°C
 Output Load: Full Load

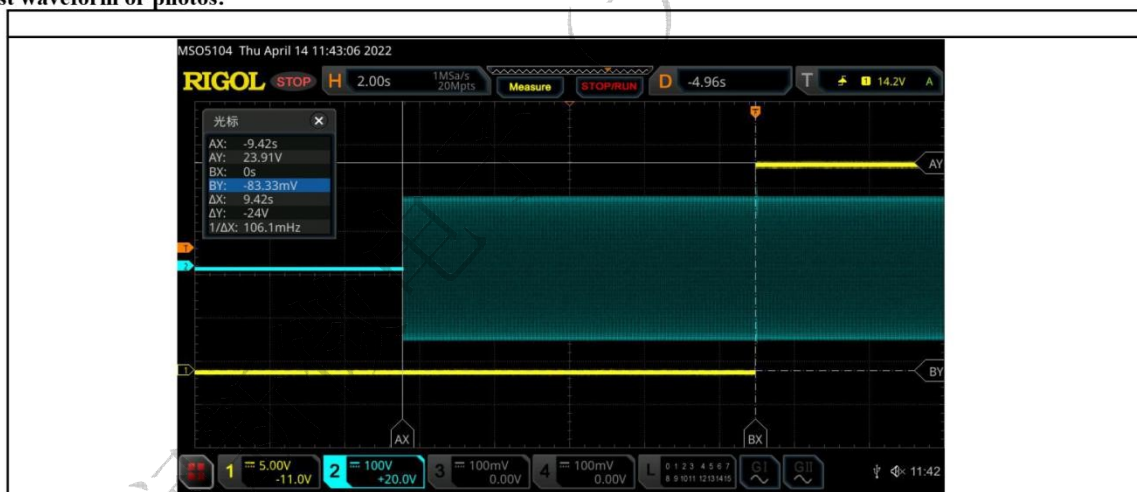
2. Test equipment:

AC Source:	DPS1020 V100	Oscilloscope:	RIGOL MSO5204
DC Load:	IT8512A+	Power meter:	YOKOGAWA WT1800

3. Test result:

Test condition			SPEC	Test result (S)	Judge	Note
AC Input Vin	Fin	DC Load				
115V	60Hz	Full load	10S	9.42	Pass	

4. Test waveform or photos:



Hold up Time Test

Tested By: 24V6.25A 150W

Test date: 2022/04/14

1. Test condition:

Input voltage: 115Vac
 Input frequency: 60Hz
 Ambient temperature: 25±5℃
 Output Load: Full Load

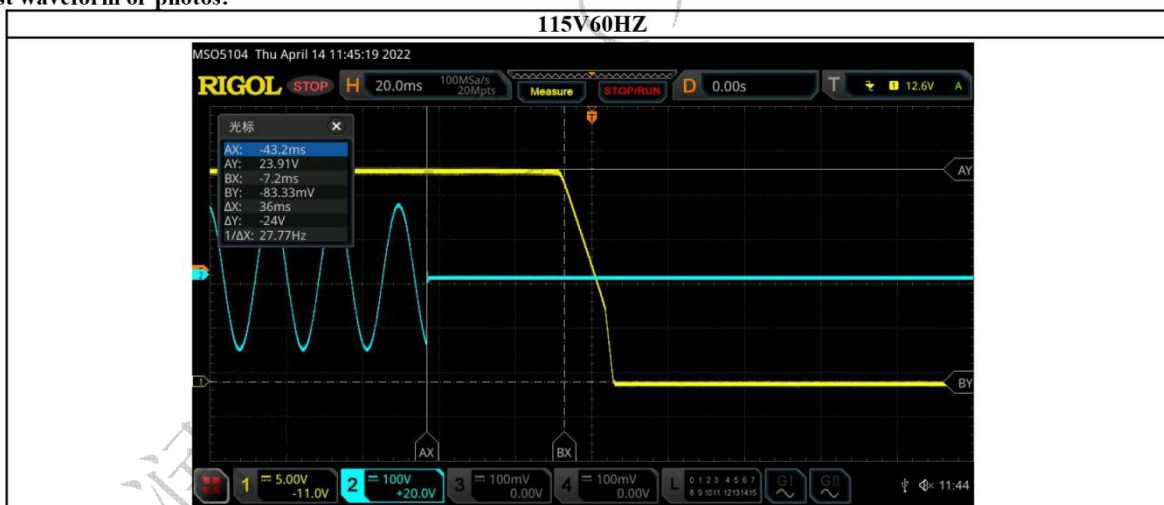
2. Test equipment:

AC Source:	DPS1020 V100	Oscilloscope:	RIGOL MSO5204
DC Load:	IT8512A+	Power meter:	YOKOGAWA WT1800

3. Test result:

Test condition		SPEC	Test result (ms)	Judge	Note
AC Input	DC Load				
Vin	Fin		1#	Pass/Fail	
115V	60Hz	Full load	>20mS	36	Pass

4. Test waveform or photos:



Input Current Test

Tested By: 24V6. 25A 150W

Test date: 2022/04/14

1. Test condition:

Input voltage: 90Vac/264Vac
 Input frequency: 47Hz/63Hz
 Ambient temperature: 25±5℃
 Output Load: Full Load

2. Test equipment:

AC Source:	DPS1020 V100	Oscilloscope:	RIGOL MSO5204
DC Load:	IT8512A+	Power meter:	YOKOGAWA WT1800

3. Test result:

Test condition		SPEC	Test result (A)		Judge	Note	
AC Input Vin	Fin		DC Load	1#	2#		Pass/Fail
90V	63Hz	Full load	<2A	1.83		Pass	
264V	47Hz			0.637		Pass	



Power Factor Test

Tested By: 24V6.25A 150W

Test date: 2022/04/14

1. Test condition:

Input voltage: 90Vac/264Vac
 Input frequency: 47Hz/63Hz
 Ambient temperature: 25±5°C
 Output Load: Full Load

2. Test equipment:

AC Source:	DPS1020 V100	Oscilloscope:	RIGOL MSO5204
DC Load:	IT8512A+	Power meter:	YOKOGAWA WT1800

3. Test result:

Test condition		SPEC	Test result		Judge	Note
AC Input	DC Load		1#	2#	Pass/Fail	
Vin	Fin					
90V	63Hz	>0.93	0.999		Pass	
264V	47Hz		0.956		Pass	



Efficiency Test

Tested By: 24V6.25A 150W
Test date: 2022/04/14
1. Test condition:

Input voltage: 115Vac/230Vac

Input frequency: 50Hz/60Hz

Ambient temperature: 25±5℃

Output Load: 10%、25%、50%、75%、100%Full Load

2. Test equipment:

AC Source:	DPS1020 V100	Oscilloscope:	RIGOL MSO5204
DC Load:	IT8512A+	Power meter:	YOKOGAWA WT1800

3. Test result:

S/N	Input & Output		10%load	25%load	50%load	75%load	100%load	Average efficiency	Spec	Judge	Note
			0.625A	1.5625A	3.125A	4.6875A	6.25A			Pass/Fail	
1#	115Vac/60Hz	Input power	17.300W	41.200W	81.500W	121.900W	162.800W	92.74%	>88.7%	Pass	
		Output voltage	24.260V	24.250V	24.240V	24.220V	24.200V				
		Output power	15.163W	37.891W	75.750W	113.531W	151.250W				
		Efficiency	87.64%	91.97%	92.94%	93.13%	92.91%				
	230Vac/50Hz	Input power	16.300W	42.700W	82.200W	121.700W	161.300W	91.98%			
		Output voltage	24.270V	24.260V	24.240V	24.200V	24.200V				
		Output power	15.170W	37.906W	75.750W	113.438W	151.250W				
		Efficiency	93.07%	88.77%	92.15%	93.21%	93.77%				

Power Consumption Test

Tested By: 24V6.25A 150W

Test date: 2022/05/06

1. Test condition:

Input voltage: 230Vac
 Input frequency: 50Hz
 Ambient temperature: 25±5℃
 Output Load: no Load

2. Test equipment:

AC Source:	DPS1020 V100	Oscilloscope:	RIGOL MSO5204
DC Load:	IT8512A+	Power meter:	YOKOGAWA WT1800

3. Test result:

Test condition			SPEC	Test result (W) 1#	Judge Pass/Fail	Note
AC Input Vin	Fin	DC Load				
230V	50Hz	no load	<0.21W	0.12	Pass	

4. Test waveform or photos:



Inrush current Test

Tested By: 24V6.25A 150W

Test date: 2022/04/14

1. Test condition:

Input voltage: 230Vac
 Input frequency: 50Hz
 Ambient temperature: 25±5°C
 Output Load: Full Load

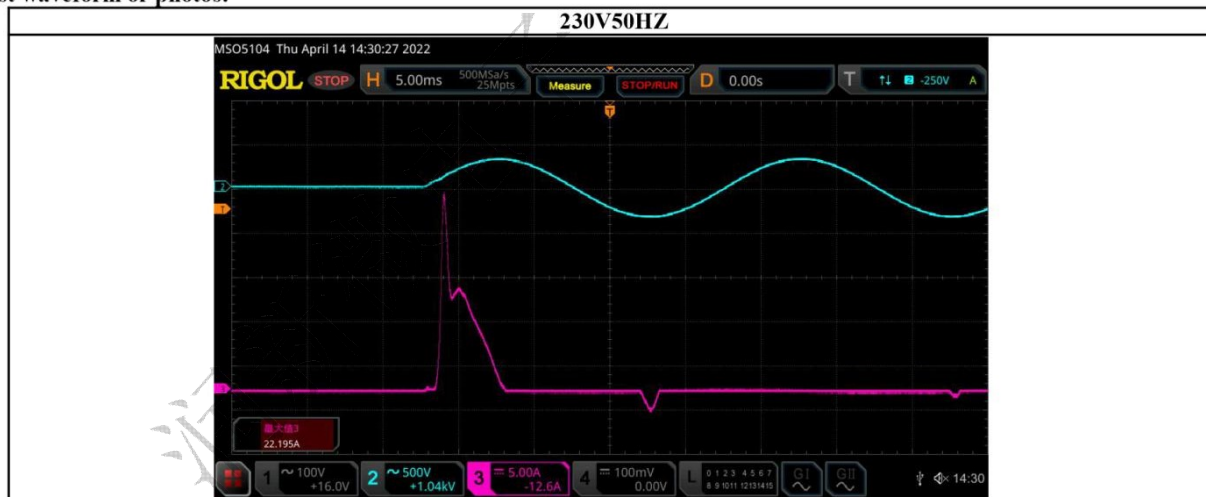
2. Test equipment:

AC Source:	DPS1020 V100	Oscilloscope:	RIGOL MSO5204
DC Load:	IT8512A+	Power meter:	YOKOGAWA WT1800

3. Test result:

Test condition		SPEC			Test result			Judge	Note
AC Input		Inrush Current(A)	Fuese I ² t (A ² S)	Bridge Rectifiers Ipeak (A&mS)	Inrush Current (A)	Fuse I ² t (A ² S)	Bridge Rectifiers Ipeak (A&mS)	Pass/Fail	
Vin	Fin								
230V	50Hz	Full load		201A@8.3mS	22.195			Pass	

4. Test waveform or photos:



Rise time Test

Tested By: 24V6.25A 150W

Test date: 2022/04/14

1. Test condition:

Input voltage: 115Vac
 Input frequency: 60Hz
 Ambient temperature: 25±5°C
 Output Load: Full Load

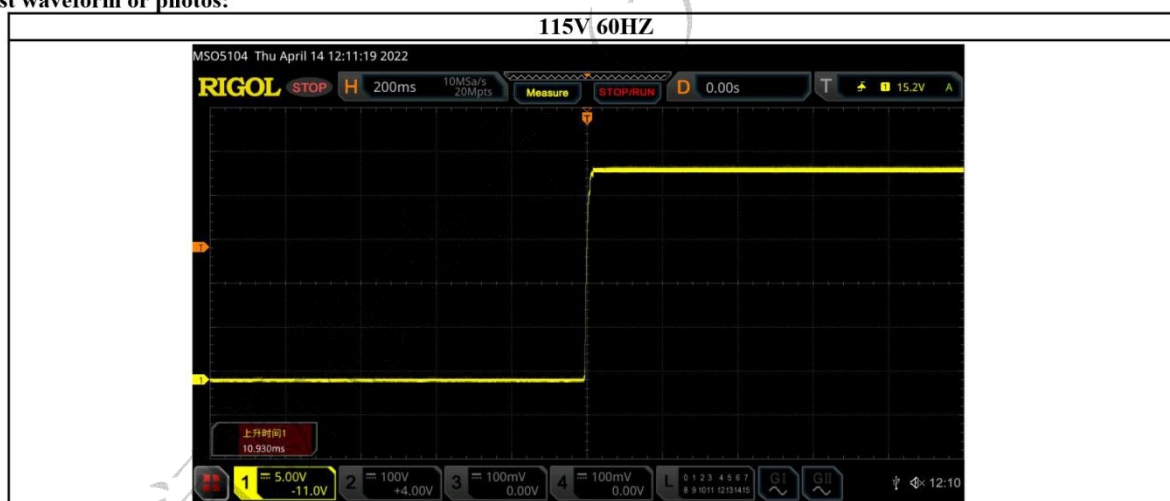
2. Test equipment:

AC Source:	DPS1020 V100	Oscilloscope:	RIGOL MSO5204
DC Load:	IT8512A+	Power meter:	YOKOGAWA WT1800

3. Test result:

Test condition			SPEC	Test result (ms)	Judge	Note
AC Input		DC Load				
Vin	Fin			1#	Pass/Fail	
115V	60Hz	Full load	<20mS	10.93	Pass	

4. Test waveform or photos:



Overshoot&Undershoot Test

Tested By: 24V6.25A 150W

Test date: 2022/04/14

1. Test condition:

Input voltage: 90Vac/264Vac
 Input frequency: 47Hz/63Hz
 Ambient temperature: 25±5°C
 Output Load: Full Load

2. Test equipment:

AC Source:	DPS1020 V100	Oscilloscope:	RIGOL MSO5204
DC Load:	IT8512A+	Power meter:	YOKOGAWA WT1800

3. Test result:

Test Items	Test condition		SPEC	Test result (%)		Judge	Note
	AC Input			1#	2#		
	Vin	Fin				Pass/Fail	
Overshoot	90V	63Hz	<10%	2.5	Pass		
	264V	47Hz		2.5	Pass		
Undershoot	90V	63Hz	<10%	0.83	Pass		
	264V	47Hz		0.83	Pass		

4. Test waveform or photos:



Ripple voltage&noise Test

Tested By: 24V6.25A 150W

Test date: 2022/04/14

1. Test condition:

Input voltage: 115Vac/230Vac
 Input frequency: 50Hz/60Hz
 Ambient temperature: 25±5℃
 Output Load: Full Load

2. Test equipment:

AC Source:	DPS1020 V100	Oscilloscope:	RIGOL MSO5204
DC Load:	IT8512A+	Power meter:	YOKOGAWA WT1800

3. Test result:

Test condition		SPEC	Test result (mVp-p)		Judge	Note
AC Input Vin	DC Load Fin		1#	2#		
115V	60Hz	Full load	113		Pass	
230V	50Hz		134		Pass	

4. Test waveform or photos:



Line&Load Regulation Test

Tested By: 24V6.25A 150W

Test date: 2022/04/14

1. Test condition:

Input voltage: 90Vac/264Vac
 Input frequency: 47Hz/63Hz
 Ambient temperature: 25±5℃
 Output Load: Full Load

2. Test equipment:

AC Source:	DPS1020 V100	Oscilloscope:	RIGOL MSO5204
DC Load:	IT8512A+	Power meter:	YOKOGAWA WT1800

3. Test result:

Items S/N	Input Load	90Vac	100Vac	240Vac	264Vac	Max.	Min.	Line Regulation	SPEC			Judge
									Output voltage	Load Regulation	Line Regulation	Pass/Fail
1#	0%	24.190V	24.193V	24.193V	24.196V	/	/	/				
	25%	24.087V	24.090V	24.090V	24.094V	/	/	/				
	50%	23.986V	23.987V	23.988V	23.991V	/	/	/				
	75%	23.883V	23.883V	23.885V	23.884V	/	/	/				
	100%	23.782V	23.781V	23.783V	23.783V	0.00%	0.01%	0.01%				
	Min.	0.85%	0.86%	0.85%	0.87%	/	/	/				
	Max.	0.85%	0.86%	0.85%	0.85%	/	/	/				
	Load Regulation	0.87%										

润新微电子

Over Current Protection Test

Tested By: 24V6.25A 150W

Test date: 2022/05/07

1. Test condition:

Input voltage: 90Vac/264Vac
 Input frequency: 47Hz/63Hz
 Ambient temperature: 25°C、40°C
 Output Load: 0A~OCP

2. Test equipment:

AC Source:	DPS1020 V100	Oscilloscope:	RIGOL MSO5204
DC Load:	IT8512A+	Power meter:	PF9800

3. Test result:

3.1 25°C Test

Test condition			SPEC	Test result			Judge	Note
AC Input		DC Load		1#		2#		
Vin	Fin			Current (A)	Protection mode	Protection mode	Pass/Fail	
90V	63Hz	0A~OCP	9A	8.52	Hiccup→Self-recovery	constant power→chopping current	Pass	
264V	47Hz			8.205	Hiccup→Self-recovery			Pass

4. Test waveform or photos:



Short Circuit Protection Test

Tested By: 24V6.25A 150W

Test date: 2022/05/07

1. Test condition:

Input voltage: 90Vac/264Vac
 Input frequency: 47Hz/63Hz
 Ambient temperature: 25±5°C
 Output Load: Short

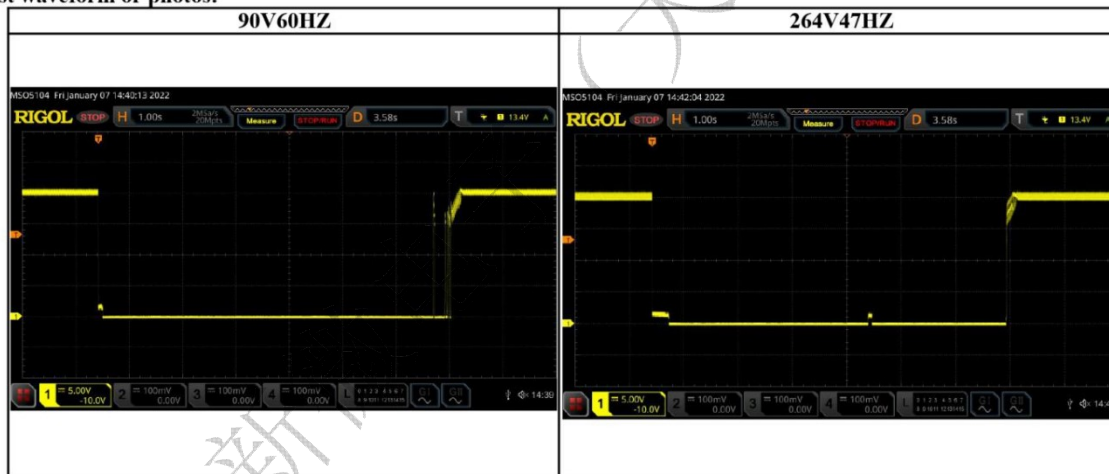
2. Test equipment:

AC Source:	DPS1020 V100	Oscilloscope:	RIGOL MSO5204
DC Load:	IT8512A+	Power meter:	YOKOGAWA WT1800

3. Test result:

Test condition			SPEC	Test result		Judge	Note
AC Input		DC Load		1#			
Vin	Fin			Power (W)	Protection mode	Pass/Fail	
90V	63Hz	short	150W	Hiccup→Self-recovery	Pass		
264V	47Hz		150W	Hiccup→Self-recovery	Pass		

4. Test waveform or photos:



Over Voltage Protection Test

Tested By: 24V6.25A 150W

Test date: 2022/05/07

1. Test condition:

Input voltage: 90Vac/264Vac
 Input frequency: 47Hz/63Hz
 Ambient temperature: 25±5°C
 Output Load: Full Load or No Load

2. Test equipment:

AC Source:	DPS1020 V100	Oscilloscope:	RIGOL MSO5204
DC Load:	IT8512A+	Power meter:	YOKOGAWA WT1800

3. Test result:

Test condition			SPEC	Test result				Judge	Note
AC Input		DC Load		1#		2#		Pass/Fail	
Vin	Fin		Output Voltage (V)	Protection mode	Output Voltage (V)	Protection mode			
90V	63Hz	Full Load	31	30.155	Hiccup→Self-recovery			Pass	
264V	47Hz			30.155	Hiccup→Self-recovery			Pass	

4. Test


Temperature Test		
	Tested By: 24V6.25A 150W	Test date: 2022/05/06

1. Test condition:

Input voltage: 90Vac/264Vac
 Input frequency: 47Hz/63Hz
 Ambient temperature: Rated temperature→OTP
 Output Load: Full Load
 (During testing, the UUT needs to be wrapped by a blanket tightly and evenly.)

2. Test equipment:

AC Source:	DPS1020 V100	Temperature humidity chamber:	
DC Load:	IT8512A+	Thermograph:	KEYSIGHT 34970A

3. Test result:

Test condition	Input Voltage	90V	264V			Spec		Judge	Note
	Output Load	Full Load				Rated value	De-rating	Pass/Fail	
	Ambient temperature	35.0°C	35.0°C						
Location	Description	Measure data(°C)							
	Q3	XG65T125	102	82.2					
	Q7	XG65T230	104	85.5					
	DB1	GBU1010	113	81.1					
	Q1	XG65T230	99	81.4					
	LF2	共模电感	114	77.7					
	CX1	X电容	102	74.72					
	LF1	共模电感	100	73.17					
	MOV1	压敏电阻	95	73.87					
	L2	差模电感	114	79.79					
	C26	输入电容	104.5	82.06					
	L1	线圈	109	79.93					
	L1	磁芯	99.8	77.36					
	CY3	Y电容	104.1	88.29					
	T1	线圈	108.2	91.08					
	T1	磁芯	102.2	86.87					
	Q5	CRST073N15N	107.8	94.41					
	C12	输出电容	104.3	94.82					
	LF3	共模电感	105.5	93.07					
	T2	线圈	102.3	83.21					
	T2	磁芯	101.2	81.17					
	OP1	光耦	97	81.25					

EMI Test		
	Tested By: 24V6.25A 150W	Test date: 2022/05/07

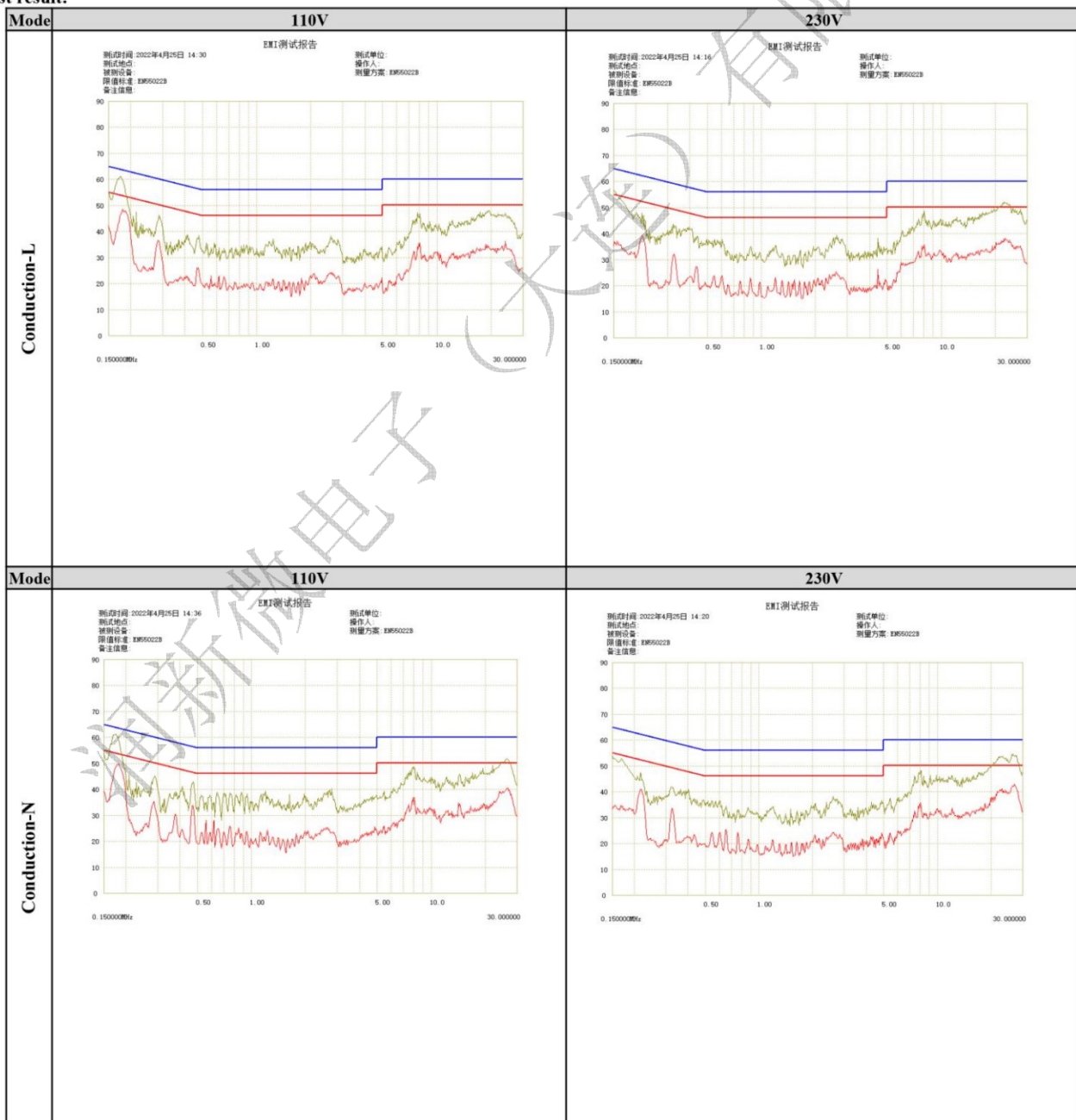
1. Test condition:

Input voltage: 115Vac/230Vac
 Input frequency: 50Hz/60Hz
 Ambient temperature: 25±5°C
 Output Load: Full Load

2. Test equipment:

EMI equipment:			
DC Load:	cement resistor		

3. Test result:



Mode	120V	230V																																																																								
Radiation-Horizontal	<p>ANCI 东莞市安福检测技术有限公司/东莞市松山湖总部2路11号A栋1-2层 1-2 Floor Building A.No.11,Headquarters 2 Road Songshan Lake Hi-tech Industrial Development Zone,Dongguan City,Guangdong Pr.,China</p> <p>Radiated Emission Measurement</p> <p>File: #103 Date: #103 Date: 2022/02/04 Time: 20:10:07</p> <p>Site LAB Limit: BSM Class(B)(GP) EUT: Adapter MN: 150W Mode: Full load Note: 24V/6.25A Polarization: Horizontal Power: AC 120V/50Hz Distance: 3m Temperature: 24.3 Humidity: 53.2%</p> <table border="1"> <thead> <tr> <th>No.</th> <th>Mk.</th> <th>Freq. MHz</th> <th>Reading dBμV</th> <th>Correct Level dB</th> <th>Measure Factor</th> <th>Measurement dBμV/m</th> <th>Limit dB</th> <th>Over dB</th> <th>Antenna Height m</th> <th>Table Degree</th> <th>Comment</th> </tr> </thead> <tbody> <tr> <td>1</td> <td></td> <td>166.0680</td> <td>47.06</td> <td>-13.78</td> <td>33.28</td> <td>40.00</td> <td>-6.72</td> <td>peak</td> <td></td> <td></td> <td></td> </tr> <tr> <td>2</td> <td>*</td> <td>181.2634</td> <td>48.14</td> <td>-12.15</td> <td>35.99</td> <td>40.00</td> <td>-4.01</td> <td>peak</td> <td></td> <td></td> <td></td> </tr> </tbody> </table> <p>*Maximum data x:Over limit /over margin (Reference Only)</p> <p>File: #Data #103 Page: 1 Engineer Signature: Dean</p>	No.	Mk.	Freq. MHz	Reading dBμV	Correct Level dB	Measure Factor	Measurement dBμV/m	Limit dB	Over dB	Antenna Height m	Table Degree	Comment	1		166.0680	47.06	-13.78	33.28	40.00	-6.72	peak				2	*	181.2634	48.14	-12.15	35.99	40.00	-4.01	peak				<p>ANCI 东莞市安福检测技术有限公司/东莞市松山湖总部2路11号A栋1-2层 1-2 Floor Building A.No.11,Headquarters 2 Road Songshan Lake Hi-tech Industrial Development Zone,Dongguan City,Guangdong Pr.,China</p> <p>Radiated Emission Measurement</p> <p>File: #100 Date: #100 Date: 2022/02/04 Time: 20:06:30</p> <p>Site LAB Limit: BSM Class(B)(GP) EUT: Adapter MN: 150W Mode: Full load Note: 24V/6.25A Polarization: Horizontal Power: AC 230V/50Hz Distance: 3m Temperature: 24.3 Humidity: 53.2%</p> <table border="1"> <thead> <tr> <th>No.</th> <th>Mk.</th> <th>Freq. MHz</th> <th>Reading dBμV</th> <th>Correct Level dB</th> <th>Measure Factor</th> <th>Measurement dBμV/m</th> <th>Limit dB</th> <th>Over dB</th> <th>Antenna Height m</th> <th>Table Degree</th> <th>Comment</th> </tr> </thead> <tbody> <tr> <td>1</td> <td></td> <td>166.0680</td> <td>48.50</td> <td>-13.78</td> <td>34.72</td> <td>40.00</td> <td>-5.28</td> <td>peak</td> <td></td> <td></td> <td></td> </tr> <tr> <td>2</td> <td>*</td> <td>181.2634</td> <td>48.45</td> <td>-12.15</td> <td>36.30</td> <td>40.00</td> <td>-3.70</td> <td>peak</td> <td></td> <td></td> <td></td> </tr> </tbody> </table> <p>*Maximum data x:Over limit /over margin (Reference Only)</p> <p>File: #Data #100 Page: 1 Engineer Signature: Dean</p>	No.	Mk.	Freq. MHz	Reading dBμV	Correct Level dB	Measure Factor	Measurement dBμV/m	Limit dB	Over dB	Antenna Height m	Table Degree	Comment	1		166.0680	48.50	-13.78	34.72	40.00	-5.28	peak				2	*	181.2634	48.45	-12.15	36.30	40.00	-3.70	peak			
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1		166.0680	48.50	-13.78	34.72	40.00	-5.28	peak																																																																		
2	*	181.2634	48.45	-12.15	36.30	40.00	-3.70	peak																																																																		
Radiation-Vertical	<p>ANCI 东莞市安福检测技术有限公司/东莞市松山湖总部2路11号A栋1-2层 1-2 Floor Building A.No.11,Headquarters 2 Road Songshan Lake Hi-tech Industrial Development Zone,Dongguan City,Guangdong Pr.,China</p> <p>Radiated Emission Measurement</p> <p>File: #102 Date: #102 Date: 2022/02/04 Time: 20:09:08</p> <p>Site LAB Limit: BSM Class(B)(GP) EUT: Adapter MN: 150W Mode: Full load Note: 24V/6.25A Polarization: Vertical Power: AC 120V/50Hz Distance: 3m Temperature: 24.3 Humidity: 53.2%</p> <table border="1"> <thead> <tr> <th>No.</th> <th>Mk.</th> <th>Freq. MHz</th> <th>Reading dBμV</th> <th>Correct Level dB</th> <th>Measure Factor</th> <th>Measurement dBμV/m</th> <th>Limit dB</th> <th>Over dB</th> <th>Antenna Height m</th> <th>Table Degree</th> <th>Comment</th> </tr> </thead> <tbody> <tr> <td>1</td> <td></td> <td>147.4636</td> <td>47.93</td> <td>-14.71</td> <td>33.22</td> <td>40.00</td> <td>-6.78</td> <td>peak</td> <td></td> <td></td> <td></td> </tr> <tr> <td>2</td> <td>*</td> <td>178.1327</td> <td>47.17</td> <td>-12.46</td> <td>34.71</td> <td>40.00</td> <td>-5.29</td> <td>peak</td> <td></td> <td></td> <td></td> </tr> </tbody> </table> <p>*Maximum data x:Over limit /over margin (Reference Only)</p> <p>File: #Data #102 Page: 1 Engineer Signature: Dean</p>	No.	Mk.	Freq. MHz	Reading dBμV	Correct Level dB	Measure Factor	Measurement dBμV/m	Limit dB	Over dB	Antenna Height m	Table Degree	Comment	1		147.4636	47.93	-14.71	33.22	40.00	-6.78	peak				2	*	178.1327	47.17	-12.46	34.71	40.00	-5.29	peak				<p>ANCI 东莞市安福检测技术有限公司/东莞市松山湖总部2路11号A栋1-2层 1-2 Floor Building A.No.11,Headquarters 2 Road Songshan Lake Hi-tech Industrial Development Zone,Dongguan City,Guangdong Pr.,China</p> <p>Radiated Emission Measurement</p> <p>File: #101 Date: #101 Date: 2022/02/04 Time: 20:07:36</p> <p>Site LAB Limit: BSM Class(B)(GP) EUT: Adapter MN: 150W Mode: Full load Note: 24V/6.25A Polarization: Vertical Power: AC 230V/50Hz Distance: 3m Temperature: 24.3 Humidity: 53.2%</p> <table border="1"> <thead> <tr> <th>No.</th> <th>Mk.</th> <th>Freq. MHz</th> <th>Reading dBμV</th> <th>Correct Level dB</th> <th>Measure Factor</th> <th>Measurement dBμV/m</th> <th>Limit dB</th> <th>Over dB</th> <th>Antenna Height m</th> <th>Table Degree</th> <th>Comment</th> </tr> </thead> <tbody> <tr> <td>1</td> <td></td> <td>147.4636</td> <td>47.42</td> <td>-14.71</td> <td>32.71</td> <td>40.00</td> <td>-7.29</td> <td>peak</td> <td></td> <td></td> <td></td> </tr> <tr> <td>2</td> <td>*</td> <td>178.1327</td> <td>47.12</td> <td>-12.40</td> <td>34.66</td> <td>40.00</td> <td>-5.34</td> <td>peak</td> <td></td> <td></td> <td></td> </tr> </tbody> </table> <p>*Maximum data x:Over limit /over margin (Reference Only)</p> <p>File: #Data #101 Page: 1 Engineer Signature: Dean</p>	No.	Mk.	Freq. MHz	Reading dBμV	Correct Level dB	Measure Factor	Measurement dBμV/m	Limit dB	Over dB	Antenna Height m	Table Degree	Comment	1		147.4636	47.42	-14.71	32.71	40.00	-7.29	peak				2	*	178.1327	47.12	-12.40	34.66	40.00	-5.34	peak			
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Components De-rating Test

Tested By: 24V6.25A 150W

Test date: 2022/05/07

1. Test condition:

 Input voltage: 90Vac/264Vac
 Input frequency: 47Hz/63Hz
 Ambient temperature: 25±5℃
 Output Load: Full Load

2. Test equipment:

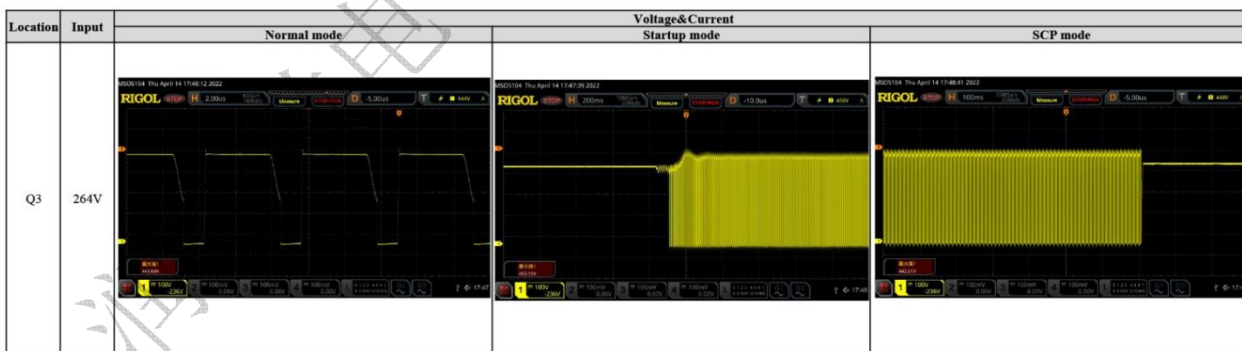
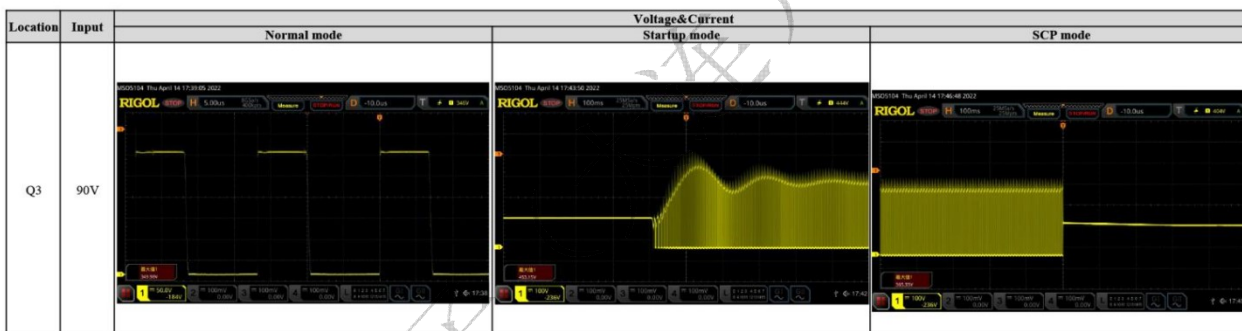
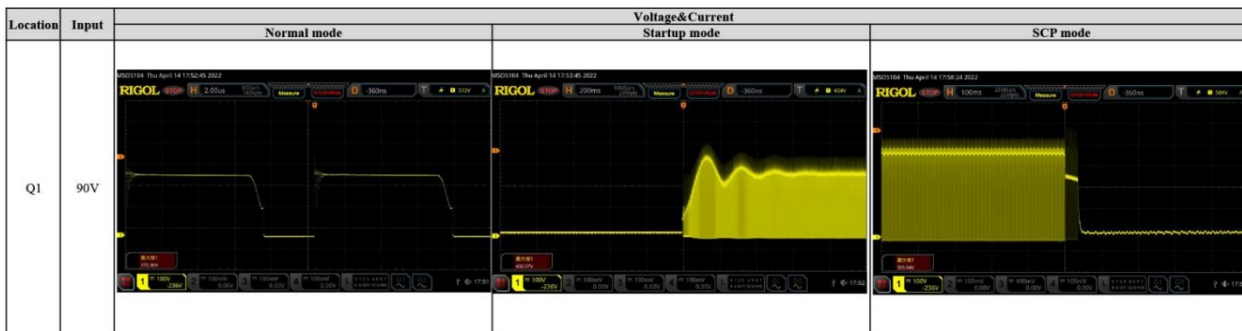
AC Source:	DPS1020 V100	Oscilloscope:	RIGOL MSO5204
DC Load:	IT8512+	Power meter:	YOKOGAWA WT1800

3. Test result:
1). Input: 90Vac/47Hz

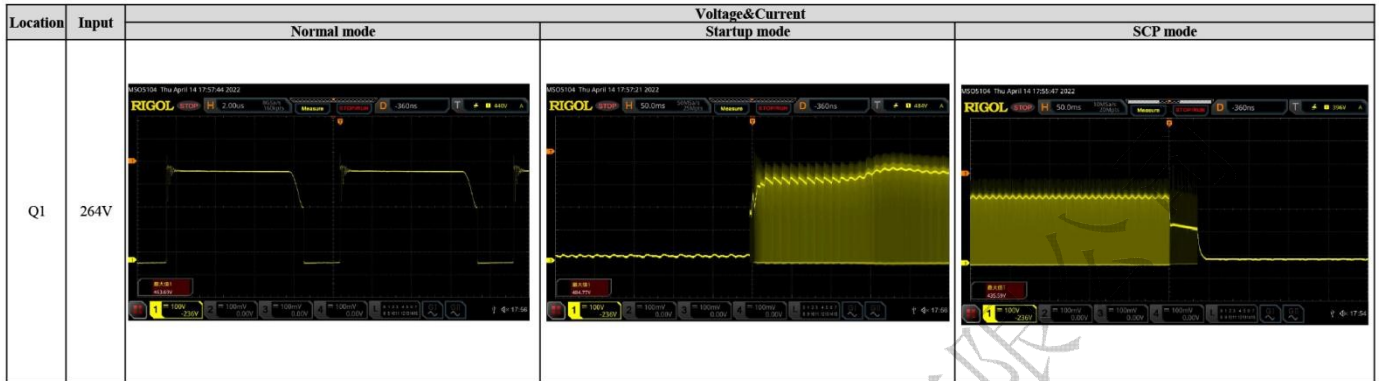
MOSFET			Component Spec				Test result						Judge	Note
							Voltage(Vmax)							
Location	Model&Type	Supplier	Vds (V)	Vgs (V)	ID (A)	IDM (A)	Normal mode	De-rating	Startup mode	De-rating	SCP & OCP	De-rating	Pass/Fail	
Q3	XG65T125HS1B		650				349	53.69%	453	69.69%	365	56.15%	Pass	
Q1	XG65T230HS1B		650				372	57.23%	432	66.46%	435	66.92%	Pass	
Q5			150				97	64.67%	121	80.67%	126	84.00%	Pass	

2). Input: 264Vac/63Hz

MOSFET			Component Spec				Test result						Judge	Note
							Voltage(Vmax)							
Location	Model&Type	Supplier	Vds (V)	Vgs (V)	ID (A)	IDM (A)	Normal mode	De-rating	Startup mode	De-rating	SCP & OCP	De-rating	Pass/Fail	
Q3	XG65T125HS1B		650				449	69.08%	453	69.69%	442	68.00%	Pass	
Q1	XG65T230HS1B		650				463	71.23%	485	74.62%	505	77.69%	Pass	
Q5	CR036N08N3		150				139	92.67%	147	98.00%	174	116.00%	Pass	

4. Test waveform or photos:

5. Test waveform or photos:


6. Test waveform or photos:



7. Test waveform or photos:



8. Test waveform or photos:



五、主要器件资料

5.1 氮化镓 MOS

650V GaN Power Transistor (FET)

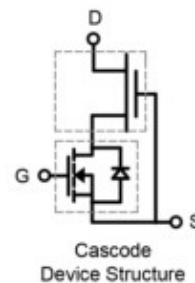
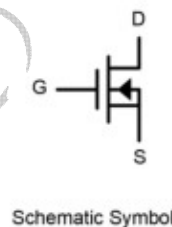
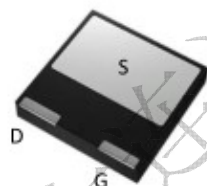
Features

- Easy to use, compatible with standard gate drivers
- Excellent $Q_G \times R_{DS(on)}$ figure of merit (FOM)
- Low Q_{RR} , no free-wheeling diode required
- Low switching loss
- RoHS compliant and Halogen-free

Product Summary		
V_{DSS}	650	V
$R_{DS(on), typ}$	120	m Ω
$Q_{G, typ}$	38	nC
$Q_{RR, typ}$	26	nC

Applications

- High efficiency power supplies
- Telecom and datacom
- Automotive
- Servo motors



Packaging

Part Number	Package	Packaging	Base QTY
RX65T125HS2A	DFN 8 x 8	Tape and Reel	2500

Maximum ratings, at $T_C=25^\circ\text{C}$, unless otherwise specified

Symbol	Parameter	Limit Value	Unit
I_D	Continuous drain current @ $T_C=25^\circ\text{C}$	18	A
	Continuous drain current @ $T_C=100^\circ\text{C}$	11.5	A
I_{DM}	Pulsed drain current @ $T_C=25^\circ\text{C}$ (pulse width: 10 μs)	80	A
	Pulsed drain current @ $T_C=150^\circ\text{C}$ (pulse width: 10 μs)	58	A
V_{DSS}	Drain to source voltage ($T_J = -55^\circ\text{C}$ to 150°C)	650	V
V_{TDSS}	Transient drain to source voltage ^a	800	V
V_{GSS}	Gate to source voltage	± 20	V
P_D	Maximum power dissipation @ $T_C=25^\circ\text{C}$	67.5	W
T_C	Operating temperature	Case	-55 to 150
T_J		Junction	-55 to 150
T_S	Storage temperature	-55 to 150	$^\circ\text{C}$
T_{CSOLD}	Soldering peak temperature	260	$^\circ\text{C}$

650V GaN Power Transistor (FET)

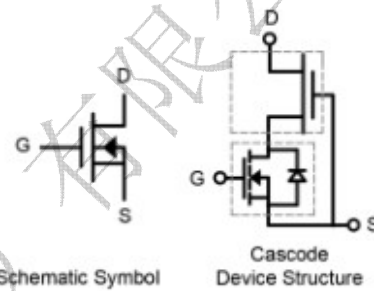
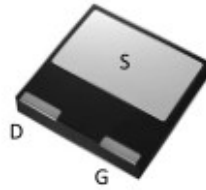
Features

- Easy to use, compatible with standard gate drivers
- Excellent $Q_G \times R_{DS(on)}$ figure of merit (FOM)
- Low Q_{RR} , no free-wheeling diode required
- Low switching loss
- RoHS compliant and Halogen-free

Product Summary		
V_{DSS}	650	V
$R_{DS(on), typ}$	240	m Ω
Q_G, typ	21.5	nC
$Q_{RR, typ}$	39	nC

Applications

- High efficiency power supplies
- High efficiency USB PD adapters
- Other consumer electronics



Packaging

Part Number	Package	Packaging	Base QTY
RX65T300HS2A	DFN 8 x 8	Tape and Reel	2500

Maximum ratings, at $T_C=25^\circ\text{C}$, unless otherwise specified

Symbol	Parameter	Limit Value	Unit
I_D	Continuous drain current @ $T_C=25^\circ\text{C}$	9	A
	Continuous drain current @ $T_C=100^\circ\text{C}$	6	A
I_{DM}	Pulsed drain current @ $T_C=25^\circ\text{C}$ (pulse width: 10us)	31	A
	Pulsed drain current @ $T_C=150^\circ\text{C}$ (pulse width: 10us)	23	A
V_{DSS}	Drain to source voltage ($T_J = -55^\circ\text{C}$ to 150°C)	650	V
V_{TDSS}	Transient drain to source voltage ^a	800	V
V_{GSS}	Gate to source voltage	± 20	V
P_D	Maximum power dissipation @ $T_C=25^\circ\text{C}$	38	W
T_C	Operating temperature	Case	-55 to 150
T_J		Junction	-55 to 150
T_S	Storage temperature	-55 to 150	$^\circ\text{C}$
T_{CSOLD}	Soldering peak temperature	260	$^\circ\text{C}$

5.2 PWM 控制芯片



MK2697

MK2697 - 宽供电高频 QR PWM 控制器

DESCRIPTION

MK2697 是专为PD/快充应用优化的QR PWM 控制器。其很宽的 VCC 工作电压范围(10V-90V) 可以使其覆盖 PD/PPS 从 3.3V-23V 的输出范围而不需要使用额外的绕组或者线性降

FEATURES

- 宽范围 VCC 工作电压(9V-90V)
- 最高可达 260KHz 的开关频率
- 针对于不同输出电压和负载的多模式控制

5.3 SR 制芯片



MP6908

**Fast Turn-Off Intelligent Rectifier
with No Need for Auxiliary Winding**

DESCRIPTION

The MP6908 is a low-drop diode emulator IC that, when combined with an external switch, replaces Schottky diodes in high-efficiency flyback converters. The MP6908 regulates the forward drop of an external synchronous rectifier (SR) MOSFET to about 40mV, which switches off once the voltage becomes negative.

The MP6908 can generate its own supply voltage for battery charging applications with potential low output voltage, and at short circuit output condition, or for high-side SR configuration. Programmable ringing detection circuitry prevents the MP6908 from turning on falsely at Vds oscillations during discontinuous conduction mode (DCM) and quasi-resonant operation.

The MP6908 is available in a space-saving TSOT23-6 package.

FEATURES

- Wide Output Range down to 0V, No Short Circuit Current Flows through Body Diode
- No Need for Auxiliary Winding for High-Side or Low-Side Rectification
- Ringing Detection Prevents False Turn-On during DCM and Quasi-Resonant Operations
- Works with Standard and Logic Level SR MOSFETS
- Compatible with Energy Star
- ~30ns Fast Turn-Off and Turn-On Delay
- ~100µA Quiescent Current
- Supports DCM, CCM, and Quasi-Resonant Operations
- Supports both High-Side and Low-Side Rectification
- TSOT23-6 Package Available

APPLICATIONS

- USB PD Quick Chargers
- Adaptors
- Flyback Power Supplies with Very Low and/or Variable Output Voltage