

Demo Board Test Report for
LD7792SGS

150 W LED Constant Current Power
(100V~50V / 1.45 A)

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I. Design Check List

No. (項目)	Test Item (測試項目)	Spec. (規格)	Page (頁)
I	Design Check List		
II	Executive Summary		
1	Input Voltage & Frequency	100~277V _{AC} /47~63Hz	4
2	Output Load	1.45A _{DC} / 100~50V _{DC}	4
3	Basic characteristic		
3-1	Efficiency & Power Factor & THDi	See content	5
3-2	Total Regulation of Output Current	$\Delta I_{LED} < +/-5\% \times I_{LED,main}$	7
3-3	LED Current Ripple	$\Delta I_{LED,p-p} < 10\% \times I_{LED,main}$	9
3-4	Start up Time	$T_s=(T_d+T_r) < 0.8 \text{ Sec}@ 90V_{ac}$	11
3-5	Output Over Voltage Protection	When photo coupler is short circuit, No Components Damage.	12
3-6	LED Short Protection	1. $P_{IN,AVG} \leq 1W.$ 2. No Component Damage	13
3-7	LED Open Protection	1. $V_{OUT,OPEN} \leq \text{Voltage rating of } C_{OUT}$ 2. $P_{IN,OPEN} \leq 1\% \times P_{IN,MAX}$	14
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II. Executive Summary

Test Equipment	
Equipment	Equipment Model No.
Electrical Load	Chroma 6312A 、63113A
Digital Power Meter	WT310
AC Power Source	Chroma 61602
Scope	Tektronix DMO3034
Current Probe	Tektronix TCP0030A

Note: All test conditions are based on ambient temperature 25°C if haven't special highlight

1. Input Voltage & Frequency

The unit shall be capable of operating as a universal AC input power supply accepting AC inputs. The power supply shall operate between the following voltages (from 90 V to 277 V). The supply will be designed to operate for Table 1.

	Minimum	Normal		Maximum
Input Voltage (V _{AC})	90	100/120	220/240	277
Frequency (Hz)	63	60/50	50	47

Table 1

2. Output Load

The line and load regulation for each of the outputs are shown in Table 2.

Parameter	Output Current (A)			Output Voltage (V)	
	Minimum	Typical	Maximum	Minimum	Maximum
90 ~ 277 V _{AC}	1.38	1.45	1.52	50	100

Table 2

3. Basic characteristic

3.1 Efficiency & Power Factor

Symbol	Item	Condition	Rating			Unit
			Min.	Typ.	Max.	
I_{LED}	Output constant current	$V_{IN} = 90V_{AC} \sim 277V_{AC}$ $F_{IN} = 47 \sim 63Hz$ and output load is electrical load	1380	1450	1520	mA
V_{OUT}	Output Voltage		50		100	V
P_{IN}	Rate Power			150		W
η	Efficiency		89	91		%
PF	Power Factor		0.92			-

LEDs number	Load is LED Lamp η (%)	
	17 Series	34 Series
90 V_{AC} / 47Hz	90.089%	89.023%
110 V_{AC} / 60Hz	90.572%	90.205%
132 V_{AC} / 60Hz	90.888%	90.997%
198 V_{AC} / 50Hz	90.038%	91.345%
230 V_{AC} / 50Hz	89.917%	91.592%
277 V_{AC} / 50Hz	89.800%	91.774%

V_{IN} (V_{AC})	F_{IN} (Hz)	I_{IN} (A)	PF	THDi(%)	P_{IN} (W)	I_{LED} (mA)	V_{LED} (V_{DC})	η (%)
90	60	0.9051	0.998	3.811	81.06	1.45459	50.2037	90.089%
100	60	0.8119	0.997	4.051	80.81	1.45461	50.2041	90.369%
110	60	0.7365	0.996	4.305	80.62	1.45441	50.2054	90.572%
120	60	0.6745	0.995	4.575	80.47	1.45467	50.2036	90.754%
132	60	0.6129	0.993	4.888	80.33	1.45432	50.2024	90.888%
198	50	0.4171	0.981	9.677	81.09	1.45441	50.2002	90.038%
220	50	0.3786	0.973	11.275	81.16	1.45487	50.2052	89.998%
230	50	0.3639	0.969	12.003	81.21	1.45452	50.2033	89.917%
240	50	0.3505	0.965	12.831	81.26	1.45435	50.2053	89.855%
264	50	0.3229	0.953	15.334	81.33	1.45491	50.2032	89.808%
277	50	0.31	0.946	16.558	81.31	1.45431	50.2071	89.800%

V _{IN} (V _{AC})	F _{IN} (Hz)	I _{IN} (A)	PF	THDi(%)	P _{IN} (W)	I _{LED} (mA)	V _{LED} (V _{DC})	η(%)
90	60	1.8281	0.9991	3.825	163.34	1.45437	99.9812	89.023%
100	60	1.6332	0.998	4.602	162.15	1.45437	99.9721	89.668%
110	60	1.475	0.998	5.193	161.17	1.45422	99.9735	90.205%
120	60	1.345	0.997	5.475	160.47	1.45422	99.9717	90.597%
132	60	1.218	0.997	5.633	159.77	1.45425	99.9726	90.997%
198	50	0.8113	0.993	5.578	159.16	1.45423	99.9741	91.345%
220	50	0.7286	0.991	5.516	158.83	1.45439	99.9769	91.548%
230	50	0.6973	0.989	5.571	158.77	1.45461	99.9723	91.592%
240	50	0.6688	0.988	5.589	158.67	1.45432	99.9782	91.637%
264	50	0.6099	0.984	6.079	158.49	1.45433	99.9748	91.739%
277	50	0.5823	0.981	6.628	158.38	1.45382	99.9791	91.774%

Note: Efficiency calculation: $P_{IN}=(V_{IN}*I_{IN})*PF$, $\eta=(V_{LED}*I_{LED})/(P_{IN})*100\%$

Note: Short NTC (TH1) when measuring efficiency.

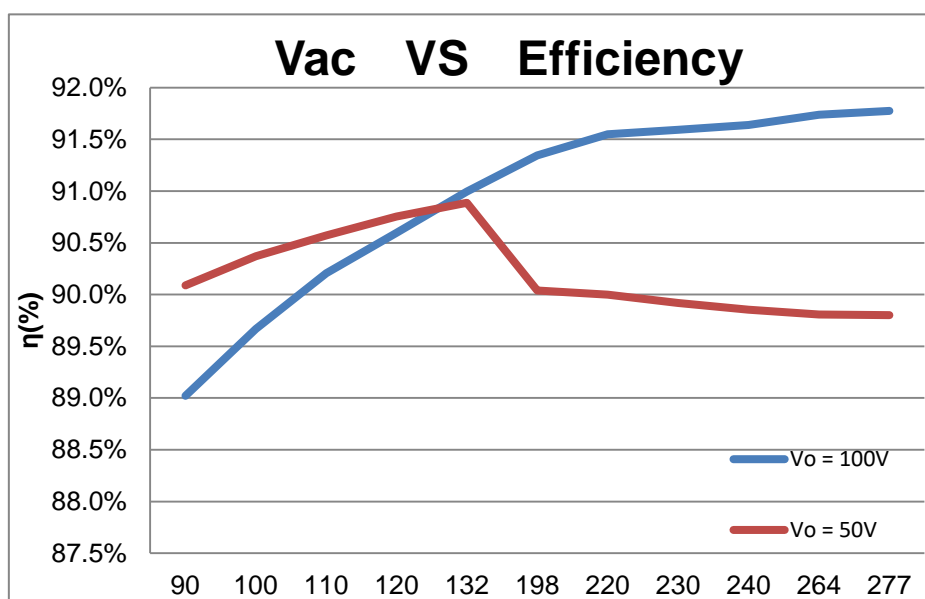


Fig1. Efficiency & V_{AC} Curve

3.2 Total Regulation of Output Current

Symbol	Item	Condition	Rating			Unit
			Min.	Typ.	Max.	
V _{LOAD-REG}	Load Regulation	V _O = 50V _{DC} ~ 100V _{DC} ; and output load is electrical load	-1		+1	%
V _{LINE-REG}	Line Regulation	V _{IN} = 100V _{AC} ~ 277V _A ; and output load is electrical load	-1		+1	%

V _{IN} (V _{AC})	f (Hz)	I _{LED} (mA)	V _{LED} (V)	Regulation(%)	Judgement
100	60	1.45461	50.2041	0.02	Pass
115	60	1.45467	50.2036		
230	50	1.45452	50.2033		
277	50	1.45431	50.2071		

V _{IN} (V _{AC})	f (Hz)	I _{LED} (mA)	V _{LED} (V)	Regulation(%)	Judgement
100	60	1.45437	99.9721	0.05	Pass
115	60	1.45422	99.9717		
230	50	1.45461	99.9723		
277	50	1.45382	99.9791		

Line regulation calculation: $(\Delta I_{LED} / I_{LED}) * 100\%$

$\Delta I_{LED} = I_{LED}(V_{IN}=100V_{AC}@60Hz) - I_{LED}(V_{IN}=277V_{AC}@50Hz)$

$I_{LED} = I_{LED(AVE)}$ of the measure value.

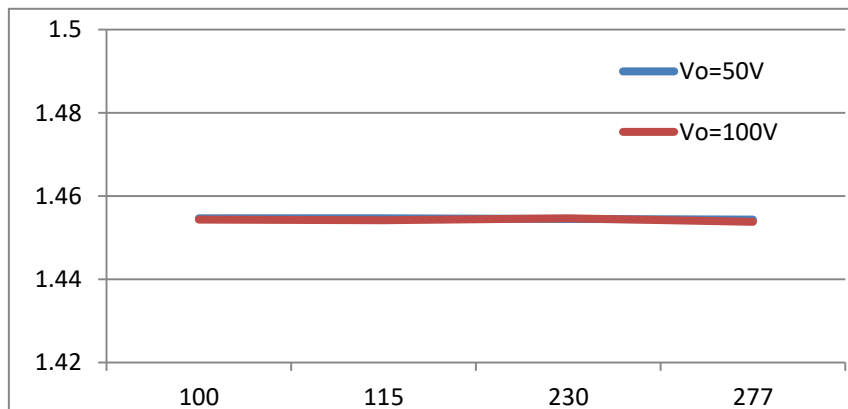


Fig2. Output Current Total Regulation

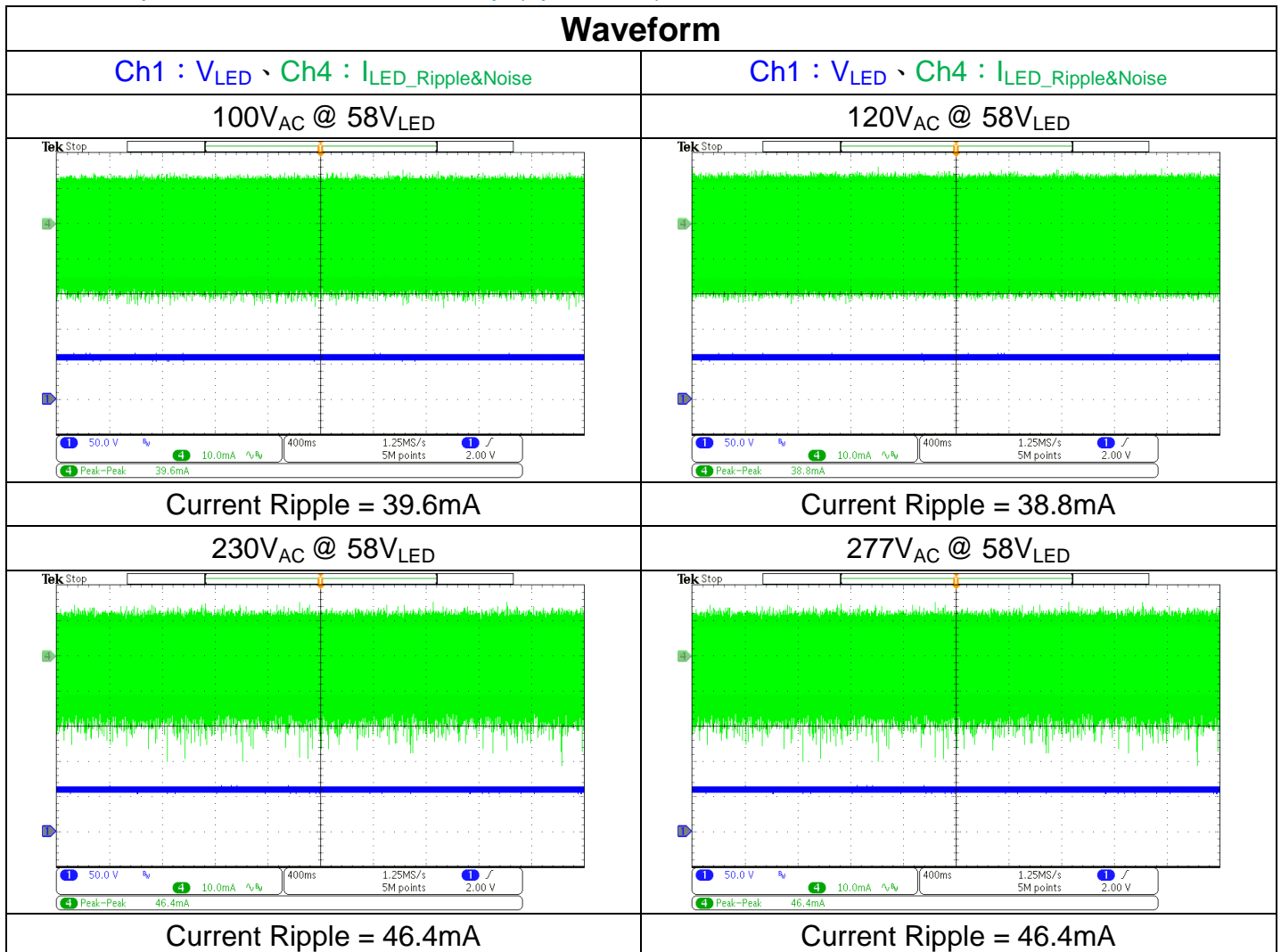
3.3 LED Current Ripple

Symbol	Item	Condition	Flicker Spec.			Unit
			Min.	Typ.	Max.	
ΔI_{LED}	Current Ripple	$V_{IN}=90V_{AC} \sim 277V_{AC}$ and output load is real LED lamp		10		%

V_{IN} (V _{AC})	F(Hz)	I_{LED} (A)	ΔI_{LED} (mA) (Include high freq.)	V_{OUT}	Current Ripple (%)
100	60	1.46271	39.6	57.6371	2.72
120	60	1.46268	38.8	57.5942	2.65
230	50	1.46281	46.4	57.5104	3.17
277	50	1.45411	46.4	57.4818	3.17

Note: Output load is the real LED lamp (2pcs COB).

Waveform



V_{IN} (V _{AC})	F(Hz)	I_{LED} (mA)	ΔI_{LED} (mA) (Include high freq.)	V_{OUT}	Current Ripple (%)
100	60	1.46253	34.4	87.1049	5.955
120	60	1.45431	37.6	86.9472	5.979
230	50	1.46222	34	86.8251	5.938
277	50	1.46404	38.4	86.6691	5.920

Note: Output load is the real LED lamp (3pcs COB) .

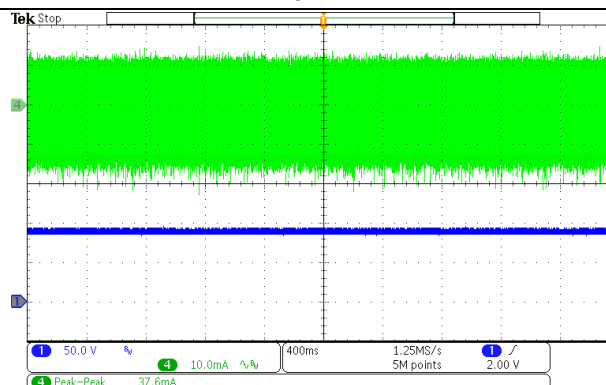
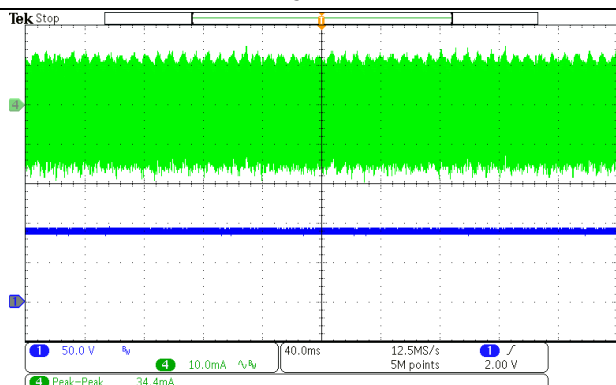
Waveform

Ch1 : V_{LED} 、 Ch4 : $I_{LED_Ripple\&Noise}$

Ch1 : V_{LED} 、 Ch4 : $I_{LED_Ripple\&Noise}$

100V_{AC} @ 88V_{LED}

120V_{AC} @ 88V_{LED}

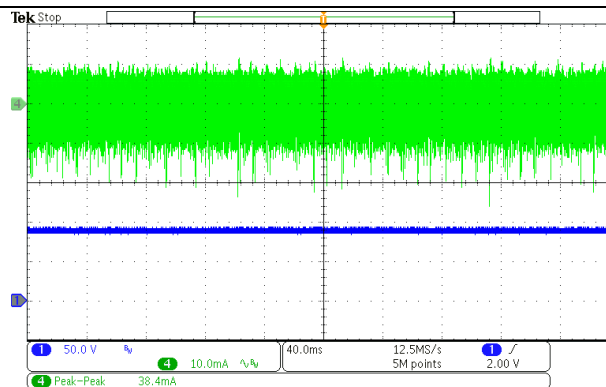
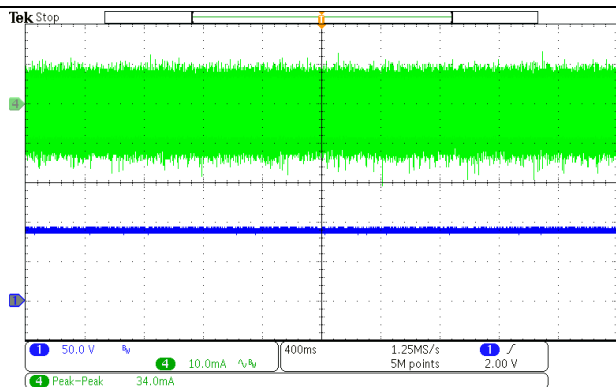


Current Ripple = 34.4mA

Current Ripple = 37.6mA

230V_{AC} @ 88V_{LED}

277V_{AC} @ 88V_{LED}



Current Ripple = 34mA

Current Ripple = 38.4mA

Note: Add a capacitor (160V/100uF/CY series/Nichicon) at output terminal during output ripple current test .

3.4 Start up Time

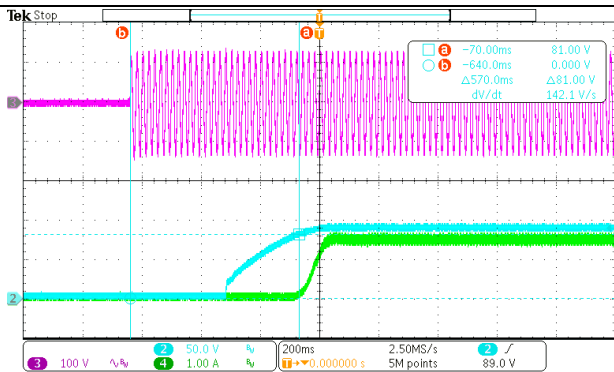
Symbol	Item	Condition	Spec.			Unit
			Min.	Typ.	Max.	
$T_{TURN-ON}$	Turn-On delay time After $I_{LED} \geq 90\%$ spec.	$V_{IN,AC}=90V_{AC}$ or $277V_{AC}$; and output load is real LED lamp	-	0.5	0.8	Sec

V_{IN} (V_{AC})	f (Hz)	V_{LED} (V) (LED Lamp)	I_{LED} (A)	Output Voltage $\Delta T_{TURN-ON}$ (Sec)	Output Current $\Delta T_{TURN-ON}$ (Sec)
90	60	100	1.45	570mS	660mS
277	50	100	1.45	524mS	610mS

Waveform

Ch2 : V_{LED} 、Ch3 : V_{AC} 、Ch4 : I_{LED}

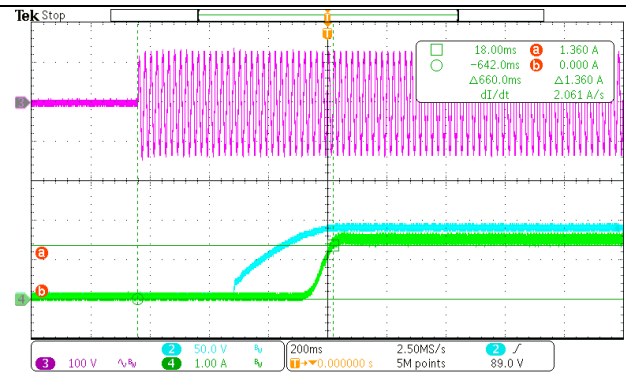
90V_{AC} @ 100V_{LED}



Output Voltage $\Delta T_{TURN-ON}$ (Sec) = 570mS

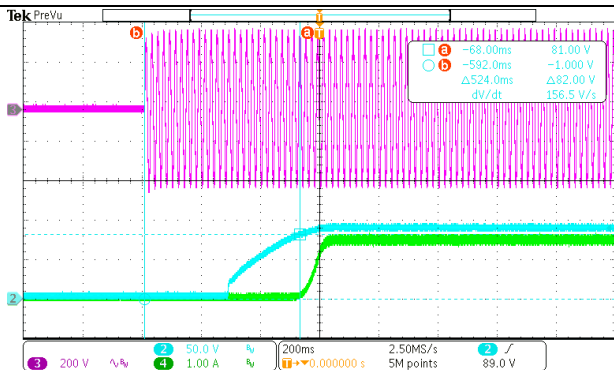
Ch2 : V_{LED} 、Ch3 : V_{AC} 、Ch4 : I_{LED}

90V_{AC} @ 100V_{LED}



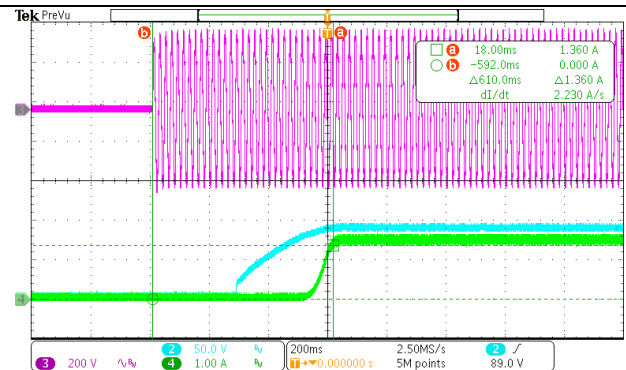
Output Current $\Delta T_{TURN-ON}$ (Sec) = 660mS

277V_{AC} @ 100V_{LED}



Output Voltage $\Delta T_{TURN-ON}$ (Sec) = 524mS

277V_{AC} @ 100V_{LED}



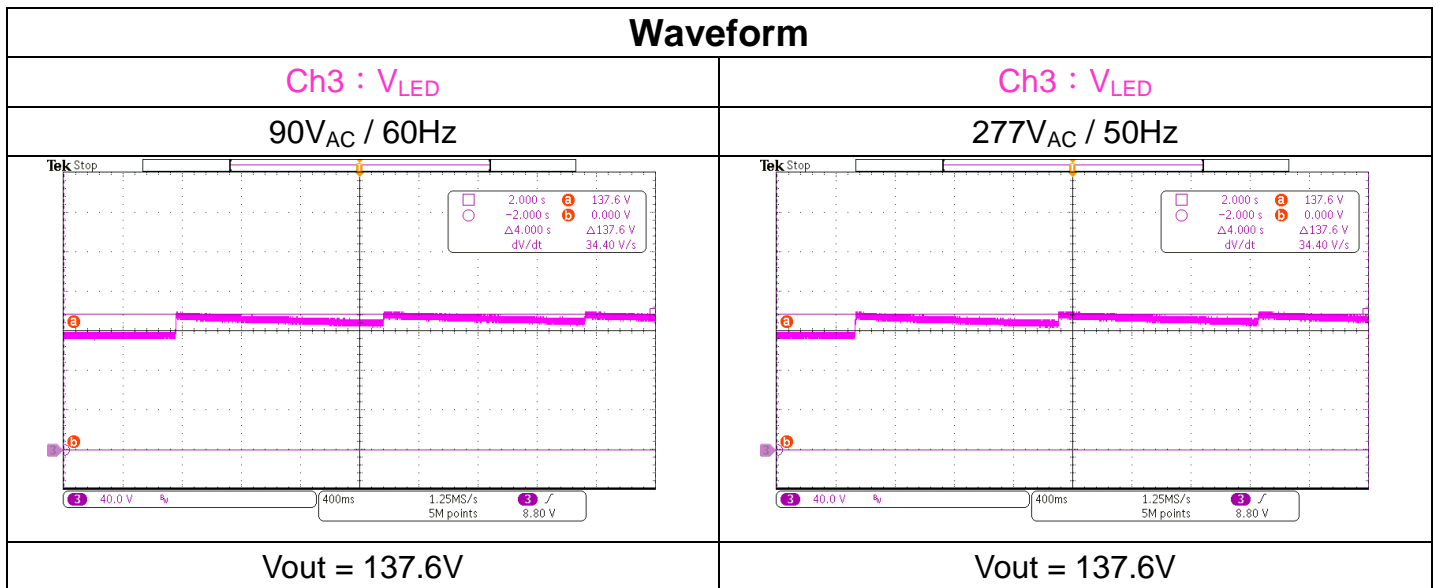
Output Current $\Delta T_{TURN-ON}$ (Sec) = 610mS

Note: Length of set up time is a measurement at the cold first start at room temp. turning ON/OFF the driver may lead to an increase in the setup time

3.5 Output Over Voltage Protection

Symbol	Item	Condition	Function
LED _{OVP}	Output Over Voltage Protection (Short photocoupler)	V _{IN} = 90 ~ 277V _{AC} , LED + & - short	Shutdown until the re-start & Auto-recovery when the fault is removed.

Waveform



Note: Output Capacitor voltage rating is 160V

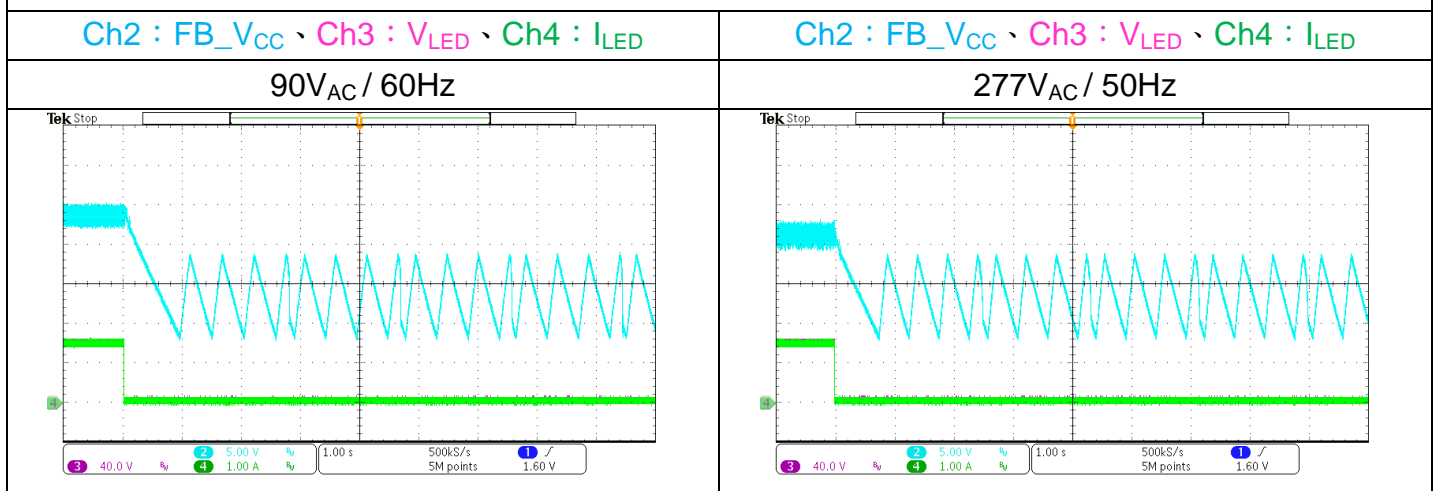
3.6 LED Short Protection

Symbol	Item	Condition	Function
LED _{SCP}	LED short protection	$V_{IN} = 90V_{AC}$ and $277V_{AC}$ LED + & - short	Shutdown until the re-start & Auto-recovery when the fault is removed.

3.6.1 Short output terminal before turn on.

V_{IN} (V_{AC})	f (Hz)	Normal		LED short 10 minutes and remove fault	
		P_{IN} (W)	I_{LED} (mA)	$P_{IN, SHORT}$ (W)	I_{LED} (mA)
90	60	100	1.45431	0.0827	0
277	50	100	1.45431	0.259	0

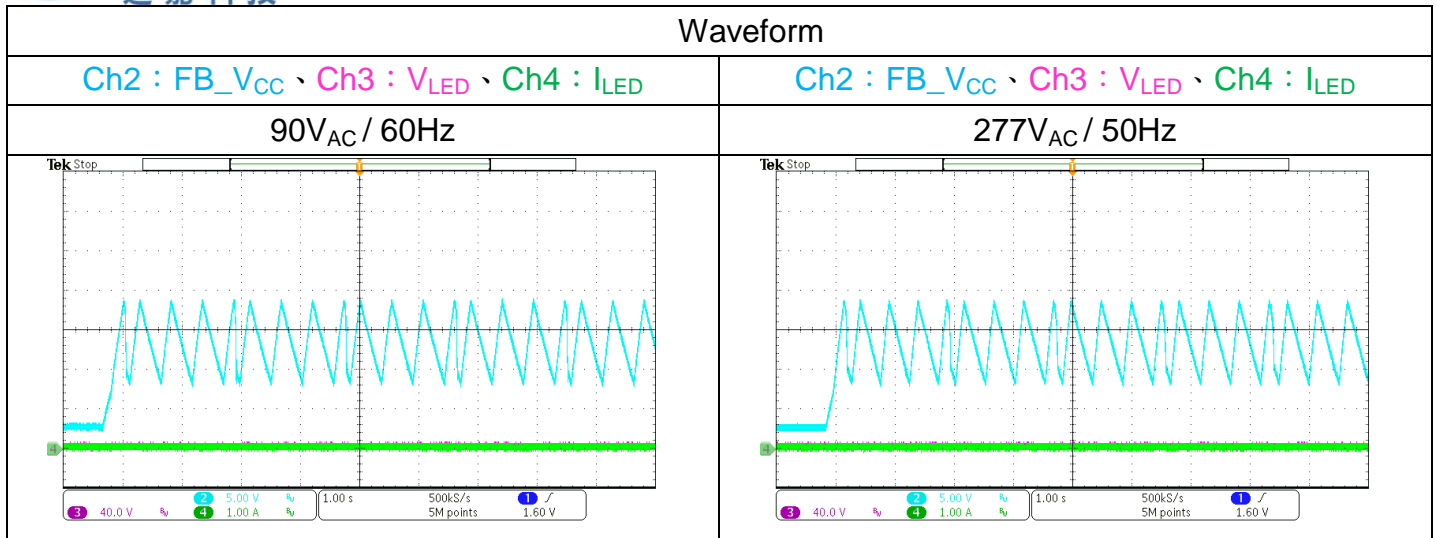
Waveform



3.6.1 Short output terminal after turn on.

V_{IN} (V_{AC})	f (Hz)	Normal		LED short 10 minutes and remove the fault	
		P_{IN} (W)	I_{LED} (mA)	$P_{IN, SHORT}$ (W)	I_{LED} (mA)
90	60	100	1.45386	0.0846	0
277	50	100	1.45377	0.259	0

Waveform

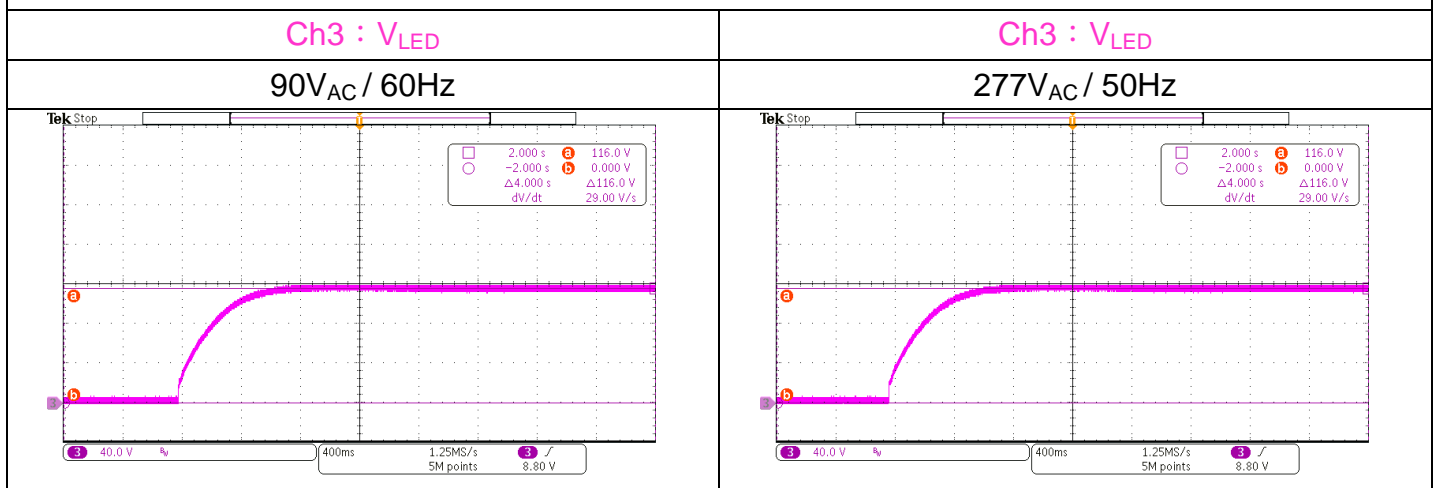


3.7 LED Open Protection

Symbol	Item	Condition	Function
LED _{Open}	LED open protection	V _{IN} = 90 ~ 277V _{AC} , LED + & - open	Shutdown until the re-start & Auto-recovery when the fault is removed.

V _{IN} (V _{AC})	f (Hz)	Normal		LED open 10 minutes and remove the fault	
		P _{IN} (W)	I _{LED} (mA)	P _{IN, OPEN} (W)	V _{OUT} (V)
90	60	116	0	1.297	116
277	50	116	0	1.072	116

Waveform



3.8 Power Saving at Dimming off

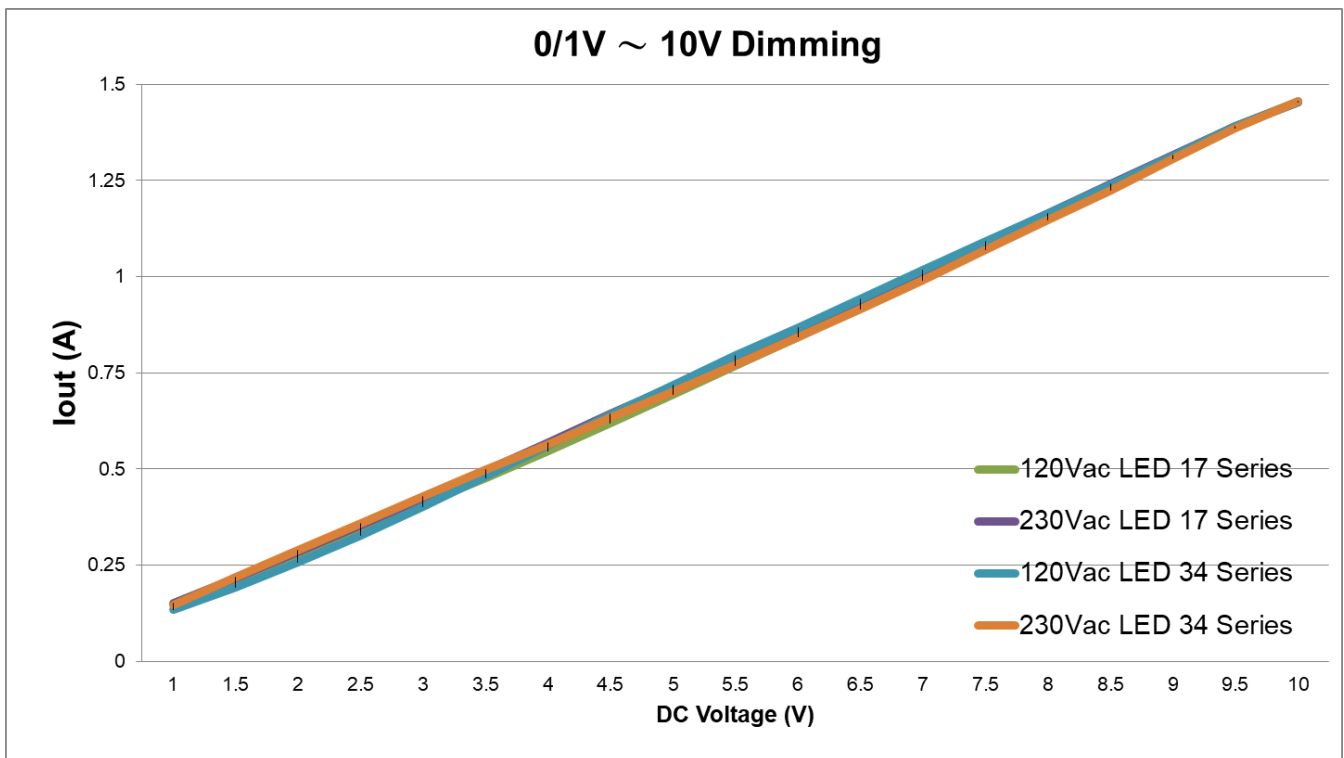
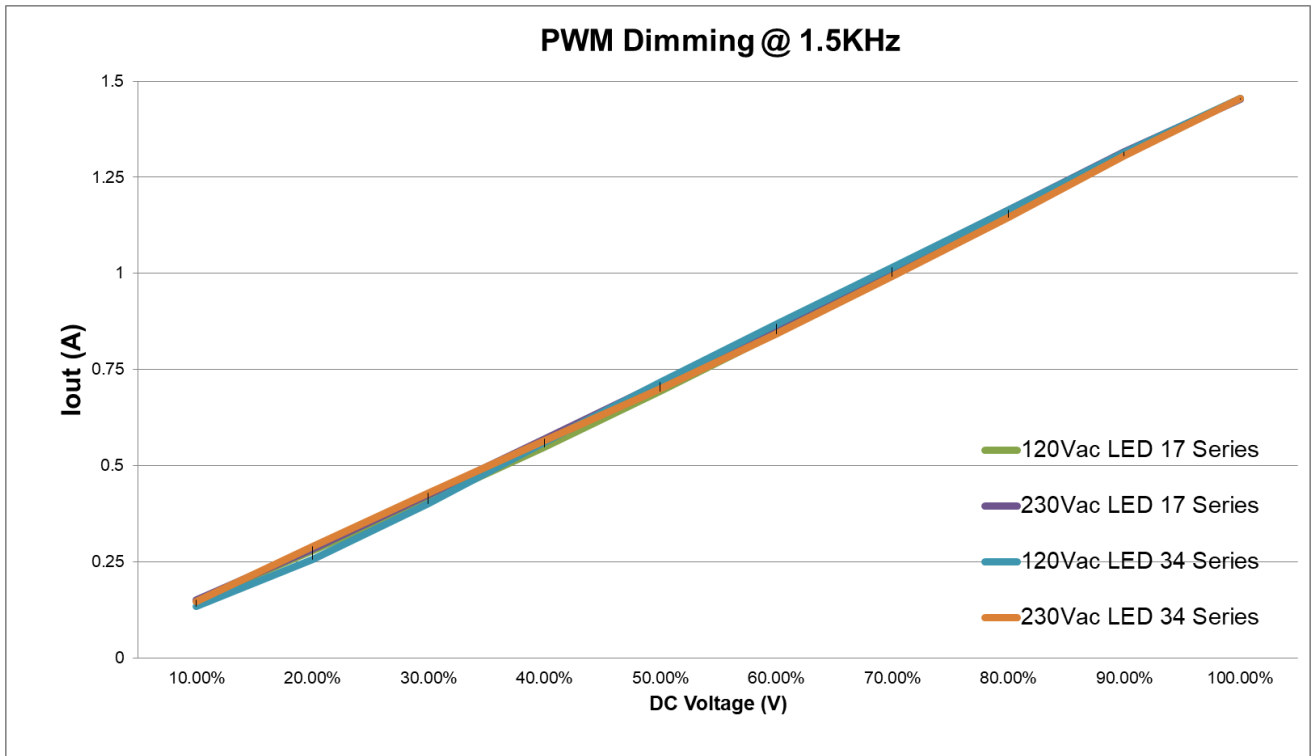
Symbol	Item	Condition	Function
P_{DIM_OFF}	DIM pin is GND	$V_{IN}=135V_{AC} \sim 277V_{AC}$	LED lamp is no light (off) But output voltage is being ; $V_{OUT} \leq V_{LED}$, typ.

V_{IN} (V _{AC})	f (Hz)	Dimming Off 10 minutes	
		$P_{IN,OFF\ MODE}$ (mW)	V_{OUT} (V)
135Vac	60Hz	52.7	33.5942
230Vac	50Hz	147.9	33.8789
277Vac	50Hz	218.6	34.6281

3.9 Turn-On test check after 12 Hr. at Ta= -40°C

V_{IN} (V _{AC})	f (Hz)	Dimming Voltage		Judgement
		1V	10.5V	
100	60	V	V	Pass
115	60	V	V	
230	50	V	V	
277	50	V	V	


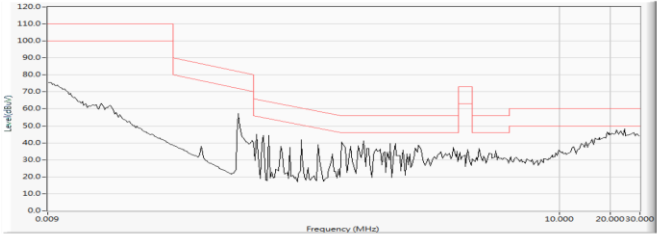

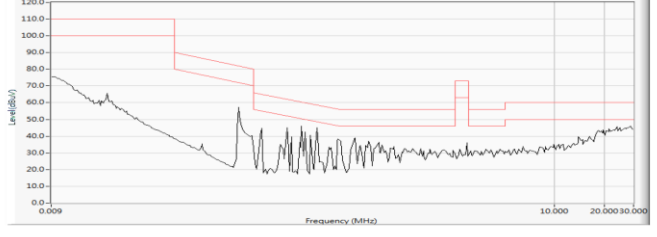

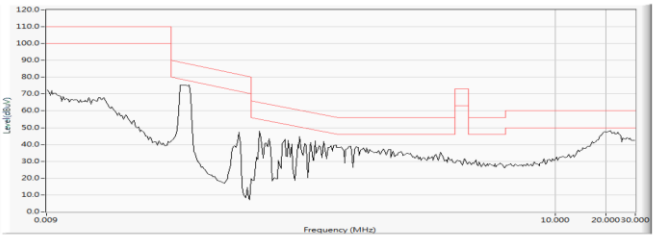

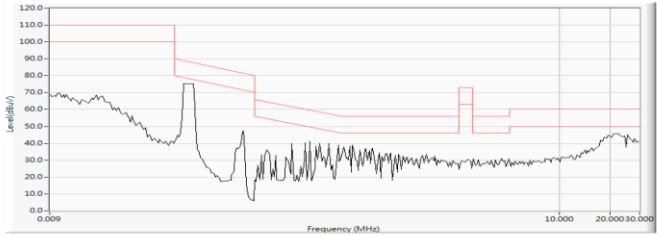
3.10 Dimming Performance Test



3.11 EMI Conduction Test


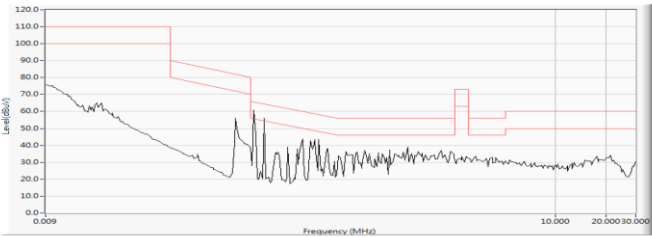

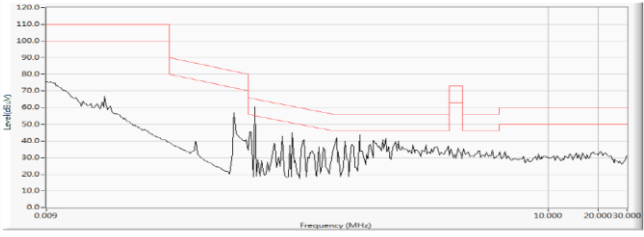

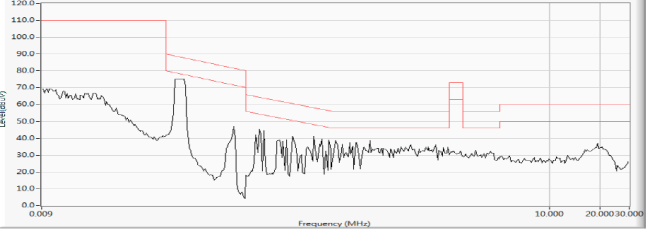

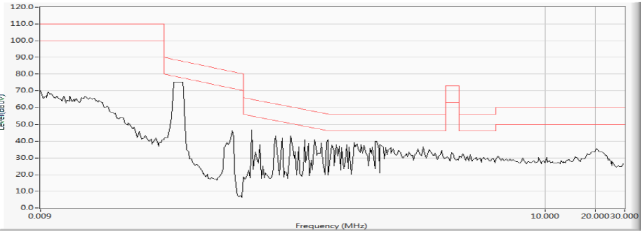
Specification : EN55015

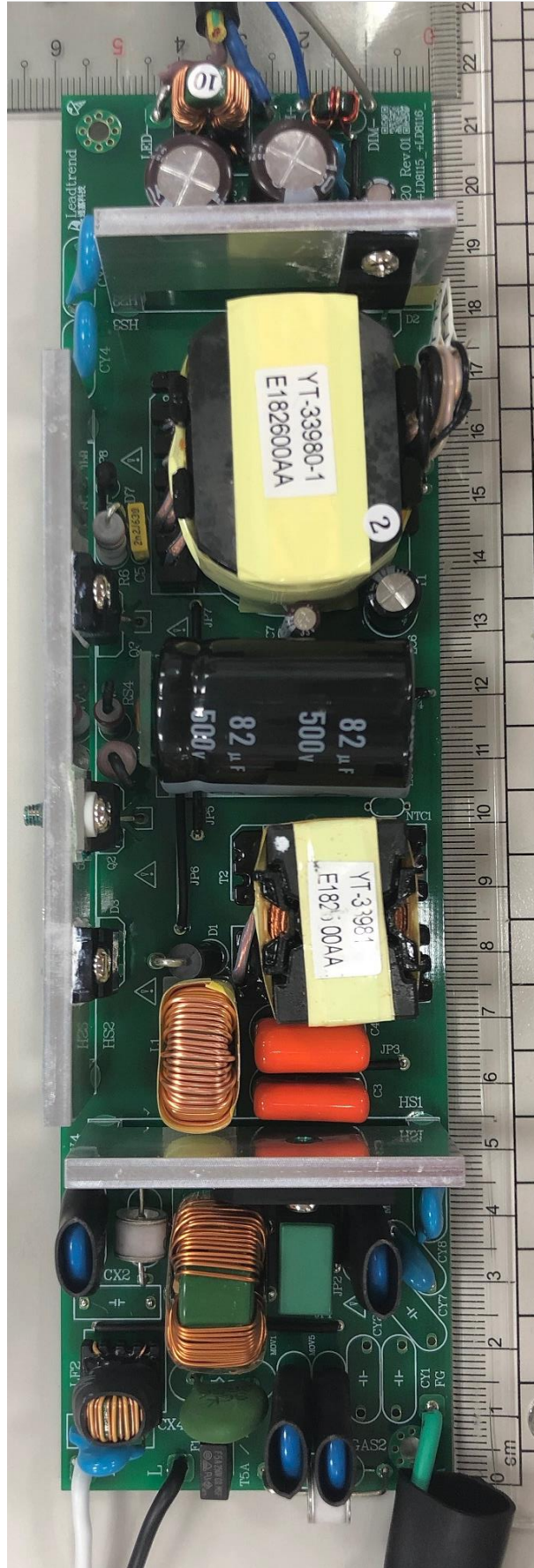
Load condition: 100V/1.45A (LED's Lamp COB)

230V _{AC} / 50Hz , With Earth GND , L		230V _{AC} / 50Hz , With Earth GND , N																					
 <p>File#: 通嘉 - Page: 311</p> <table border="1"> <tr> <td>Engineer : Rich</td> <td></td> </tr> <tr> <td>Site : SR2-H</td> <td>Time : 2018/08/02 - 11:03</td> </tr> <tr> <td>Limit : CNS14115_00M_QP</td> <td>Margin : 10</td> </tr> <tr> <td>Probe : SR2-B127_LISN(16A)-8 - L</td> <td>Power : AC 230V/50Hz</td> </tr> <tr> <td>EUT : LD7792S demo board</td> <td>Note :</td> </tr> </table> 		Engineer : Rich		Site : SR2-H	Time : 2018/08/02 - 11:03	Limit : CNS14115_00M_QP	Margin : 10	Probe : SR2-B127_LISN(16A)-8 - L	Power : AC 230V/50Hz	EUT : LD7792S demo board	Note :	 <p>File#: 通嘉 - Page: 312</p> <table border="1"> <tr> <td>Engineer : Rich</td> <td></td> </tr> <tr> <td>Site : SR2-H</td> <td>Time : 2018/08/02 - 11:05</td> </tr> <tr> <td>Limit : CNS14115_00M_QP</td> <td>Margin : 10</td> </tr> <tr> <td>Probe : SR2-B127_LISN(16A)-8 - N</td> <td>Power : AC 230V/50Hz</td> </tr> <tr> <td>EUT : LD7792S demo board</td> <td>Note :</td> </tr> </table> 		Engineer : Rich		Site : SR2-H	Time : 2018/08/02 - 11:05	Limit : CNS14115_00M_QP	Margin : 10	Probe : SR2-B127_LISN(16A)-8 - N	Power : AC 230V/50Hz	EUT : LD7792S demo board	Note :
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EUT : LD7792S demo board	Note :																						
Test result		PASS (under -6dB)																					
110V _{AC} / 60Hz , With Earth GND , L		110V _{AC} / 60Hz , With Earth GND , N																					
 <p>File#: 通嘉 - Page: 313</p> <table border="1"> <tr> <td>Engineer : Rich</td> <td></td> </tr> <tr> <td>Site : SR2-H</td> <td>Time : 2018/08/02 - 11:09</td> </tr> <tr> <td>Limit : CNS14115_00M_QP</td> <td>Margin : 10</td> </tr> <tr> <td>Probe : SR2-B127_LISN(16A)-8 - L</td> <td>Power : AC 110V/60Hz</td> </tr> <tr> <td>EUT : LD7792S demo board</td> <td>Note :</td> </tr> </table> 		Engineer : Rich		Site : SR2-H	Time : 2018/08/02 - 11:09	Limit : CNS14115_00M_QP	Margin : 10	Probe : SR2-B127_LISN(16A)-8 - L	Power : AC 110V/60Hz	EUT : LD7792S demo board	Note :	 <p>File#: 通嘉 - Page: 315</p> <table border="1"> <tr> <td>Engineer : Rich</td> <td></td> </tr> <tr> <td>Site : SR2-H</td> <td>Time : 2018/08/02 - 11:12</td> </tr> <tr> <td>Limit : CNS14115_00M_QP</td> <td>Margin : 10</td> </tr> <tr> <td>Probe : SR2-B127_LISN(16A)-8 - N</td> <td>Power : AC 110V/60Hz</td> </tr> <tr> <td>EUT : LD7792S demo board</td> <td>Note :</td> </tr> </table> 		Engineer : Rich		Site : SR2-H	Time : 2018/08/02 - 11:12	Limit : CNS14115_00M_QP	Margin : 10	Probe : SR2-B127_LISN(16A)-8 - N	Power : AC 110V/60Hz	EUT : LD7792S demo board	Note :
Engineer : Rich																							
Site : SR2-H	Time : 2018/08/02 - 11:09																						
Limit : CNS14115_00M_QP	Margin : 10																						
Probe : SR2-B127_LISN(16A)-8 - L	Power : AC 110V/60Hz																						
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EUT : LD7792S demo board	Note :																						
Test result		PASS (under -6dB)																					

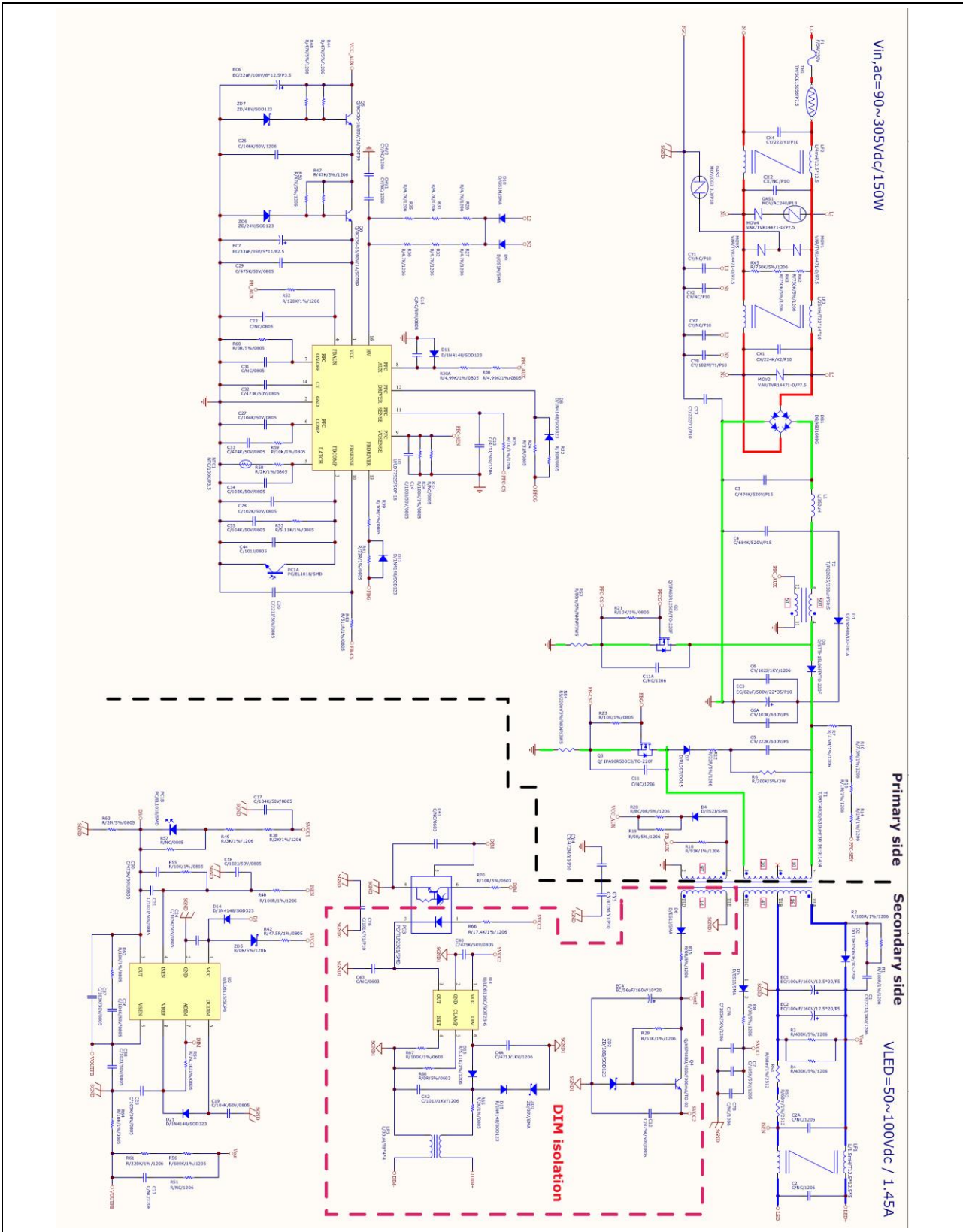
Specification : EN55015

Load condition: 100V/1.45A (LED's Lamp COB)

230V_{AC} / 50Hz , None Earth GND , L	230V_{AC} / 50Hz , None Earth GND , N																				
 <p>File#: 通嘉 - Page: 317</p> <table border="1" data-bbox="108 645 770 772"> <tr><td>Engineer : Rich</td><td></td></tr> <tr><td>Site : SR2-H</td><td>Time : 2018/08/02 - 11:17</td></tr> <tr><td>Limit : CNS14115_00M_QP</td><td>Margin : 10</td></tr> <tr><td>Probe : SR2-B127_LISN(16A)-8 - L</td><td>Power : AC 230V/50Hz</td></tr> <tr><td>EUT : LD7792S demo board</td><td>Note : none Erath GND</td></tr> </table> 	Engineer : Rich		Site : SR2-H	Time : 2018/08/02 - 11:17	Limit : CNS14115_00M_QP	Margin : 10	Probe : SR2-B127_LISN(16A)-8 - L	Power : AC 230V/50Hz	EUT : LD7792S demo board	Note : none Erath GND	 <p>File#: 通嘉 - Page: 319</p> <table border="1" data-bbox="826 645 1477 772"> <tr><td>Engineer : Rich</td><td></td></tr> <tr><td>Site : SR2-H</td><td>Time : 2018/08/02 - 11:20</td></tr> <tr><td>Limit : CNS14115_00M_QP</td><td>Margin : 10</td></tr> <tr><td>Probe : SR2-B127_LISN(16A)-8 - N</td><td>Power : AC 230V/50Hz</td></tr> <tr><td>EUT : LD7792S demo board</td><td>Note : none Erath GND</td></tr> </table> 	Engineer : Rich		Site : SR2-H	Time : 2018/08/02 - 11:20	Limit : CNS14115_00M_QP	Margin : 10	Probe : SR2-B127_LISN(16A)-8 - N	Power : AC 230V/50Hz	EUT : LD7792S demo board	Note : none Erath GND
Engineer : Rich																					
Site : SR2-H	Time : 2018/08/02 - 11:17																				
Limit : CNS14115_00M_QP	Margin : 10																				
Probe : SR2-B127_LISN(16A)-8 - L	Power : AC 230V/50Hz																				
EUT : LD7792S demo board	Note : none Erath GND																				
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Test result	PASS (under -6dB)																				
110V_{AC} / 60Hz , None Earth GND , L	110V_{AC} / 60Hz , None Earth GND , N																				
 <p>File#: 通嘉 - Page: 321</p> <table border="1" data-bbox="108 1319 770 1447"> <tr><td>Engineer : Rich</td><td></td></tr> <tr><td>Site : SR2-H</td><td>Time : 2018/08/02 - 11:25</td></tr> <tr><td>Limit : CNS14115_00M_QP</td><td>Margin : 10</td></tr> <tr><td>Probe : SR2-B127_LISN(16A)-8 - L</td><td>Power : AC 110V/60Hz</td></tr> <tr><td>EUT : LD7792S demo board</td><td>Note : none Erath GND</td></tr> </table> 	Engineer : Rich		Site : SR2-H	Time : 2018/08/02 - 11:25	Limit : CNS14115_00M_QP	Margin : 10	Probe : SR2-B127_LISN(16A)-8 - L	Power : AC 110V/60Hz	EUT : LD7792S demo board	Note : none Erath GND	 <p>File#: 通嘉 - Page: 323</p> <table border="1" data-bbox="826 1319 1477 1447"> <tr><td>Engineer : Rich</td><td></td></tr> <tr><td>Site : SR2-H</td><td>Time : 2018/08/02 - 11:27</td></tr> <tr><td>Limit : CNS14115_00M_QP</td><td>Margin : 10</td></tr> <tr><td>Probe : SR2-B127_LISN(16A)-8 - N</td><td>Power : AC 110V/60Hz</td></tr> <tr><td>EUT : LD7792S demo board</td><td>Note : none Erath GND</td></tr> </table> 	Engineer : Rich		Site : SR2-H	Time : 2018/08/02 - 11:27	Limit : CNS14115_00M_QP	Margin : 10	Probe : SR2-B127_LISN(16A)-8 - N	Power : AC 110V/60Hz	EUT : LD7792S demo board	Note : none Erath GND
Engineer : Rich																					
Site : SR2-H	Time : 2018/08/02 - 11:25																				
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Probe : SR2-B127_LISN(16A)-8 - N	Power : AC 110V/60Hz																				
EUT : LD7792S demo board	Note : none Erath GND																				
Test result	PASS (under -6dB)																				



III. Schematic



IV. BOM

Designator & Footprint	Number	Location
Resistor, 0 ohm, 5%, 0603	1	R68
Resistor, 10 ohm, 5%, 0603	1	R70
Resistor, 100K ohm, 1%, 0603	1	R67
Resistor, 0 ohm, 5%, 0805	6	JPP2, JPP3, JPP4, JPP5, JPP6, R60
Resistor, 10 ohm, 1%, 0805	2	R22, R39
Resistor, 33 ohm, 1%, 0805	1	R41
Resistor, 47.5 ohm, 1%, 0805	1	R42
Resistor, 51 ohm, 1%, 0805	1	R24
Resistor, 511 ohm, 1%, 0805	1	R43
Resistor, 2K ohm, 1%, 0805	2	R58, R65
Resistor, 4.99K ohm, 1%, 0805	2	R30, R30A
Resistor, 5.11K ohm, 1%, 0805	1	R53
Resistor, 10K ohm, 1%, 0805	6	R21, R23, R55, R59, R62, R64
Resistor, 19.1K ohm, 1%, 0805	1	R54
Resistor, 100K ohm, 1%, 0805	1	R34
Resistor, 2M ohm, 1%, 0805	1	R63
Resistor, 0 ohm, 5%, 1206	10	R8, R15, R19, R20, JPP7, JPS1, JPS2, JPS3, JPS4, ZD5
Resistor, 22 ohm, 5%, 1206	1	R12
Resistor, 100 ohm, 1%, 1206	3	R1, R2, R40
Resistor, 1K ohm, 1%, 1206	1	R25
Resistor, 2K ohm, 1%, 1206	1	R38
Resistor, 3K ohm, 1%, 1206	1	R49
Resistor, 4.7K ohm, 1%, 1206	6	R26, R27, R31, R32, R35, R36
Resistor, 5.11K ohm, 1%, 1206	1	D13
Resistor, 10K ohm, 1%, 1206	1	R29
Resistor, 17.4K ohm, 1%, 1206	1	R66
Resistor, 47K ohm, 5%, 1206	4	R44, R47, R48, R50
Resistor, 91K ohm, 1%, 1206	1	R18
Resistor, 120K ohm, 1%, 1206	1	R52
Resistor, 430K ohm, 5%, 1206	2	R3, R4

Designator & Footprint	Number	Location
Resistor, 220K ohm, 1%, 1206	1	R61
Resistor, 680K ohm, 1%, 1206	1	R56
Resistor, 750K ohm, 5%, 1206	3	RX2, RX3, RX5
Resistor, 1M ohm, 1%, 1206	2	R14, R16
Resistor, 7.5M ohm, 1%, 1206	2	R7, R10
Resistor, 68m ohm, 1%, 3W, 2512	2	RS1, RS2
Capacitor, 100pF, 50V, NPO, 0805	1	C44
Capacitor, 220pF, 50V, NPO, 0805	1	C20
Capacitor, 1000pF, 50V, NPO, 0805	4	C18, C21, C28, C38
Capacitor, 10nF, 50V, X7R, 0805	3	C14, C34, C37
Capacitor, 47nF, 50V, X7R, 0805	2	C30, C32
Capacitor, 0.1uF, 50V, X7R, 0805	5	C17, C19, C27, C35, C36
Capacitor, 0.47uF, 50V, X7R, 0805	1	C33
Capacitor, 1uF, 50V, X7R, 0805	2	C24, C40
Capacitor, 4.7uF, 25V, X7R, 0805	2	C12, C40
Capacitor, 4.7uF, 50V, X5R, 0805	1	C29
Capacitor, 470pF, 50V, NPO, 1206	1	C13
Capacitor, 100pF, 1KV, NPO, 1206	1	C42
Capacitor, 220pF, 1KV, NPO, 1206	1	C1
Capacitor, 470pF, 1KV, NPO, 1206	1	C4A
Capacitor, 1000pF, 1KV, NPO, 1206	1	C6
Capacitor, 1uF, 50V, X7R, 1206	2	C7, C7A
Capacitor, 10uF, 50V, X5R, 1206	1	C26
Diode, 1N4148, 75V, 0.15A, SOD-323	3	D8, D14, D21
Diode, 1N4148, 75V, 0.15A, SOD-123	3	D11, D12, D15
Diode, Super, ES1J, 600V, 1A, SMA	2	D5, D6
Diode, Super, ES2J, 600V, 1A, SMB	1	D4
Diode, General, GS1M, 1000V, 1A, SMA	2	D9, D10
Zener diode, 24V, 2%, SOD-123	1	ZD6
Zener diode, 18V, 2%, SOD-123	1	ZD2
Zener diode, 39V, 5%, SMA	1	ZD1

Designator & Footprint	Number	Location
Zener diode, 48V, 2%, SOD-123	1	ZD7
Optocoupler, EL1018, SMD, Everlight	1	PC1
Optocoupler, TLP2301, SMD, Toshiba	1	PC3
BJT, NPN, BCX56-16, hfe=100~250, 1A, 100V, SOT-89, SECOS	2	Q5, Q6
LD7792S, SO-16	1	U1
LD8115, SO-8	1	U2
LD8116C, SOT23-6	1	U3
NTC, SCK15056, 5 ohm, 6A, D=16mm, T=6mm, P=10mm, THINKING	1	TH1
Fuse, 250V, 5A, 8.5*4*8mm, P=5mm, time lag, 369 serise, littlefuse	1	F1
Varistor, TVR14471-D, D=16.5mm, T=6mm, P=10mm, THINKING	4	MOV1, MOV2, MOV4, MOV5
DIODE, Ultrafast, STTH15L06FP, 600V, 15A, TO-220FPAC, ST	2	D3
DIODE, Ultrafast, LTTH15L06DF, 600V, 15A, TO-220FPAC, LITEON	1	D2
DIODE, General, 1N5408, 1000V, 3A, DO-201	1	D1
DIODE, General, RL207, 1000V, 2A, DO-15	1	D7
MOSFET, cool, IPA60R125CP, 650V, 16A, PG-TO220, INFINEON	1	Q2
MOSFET, cool, IPA90R500C3, 900V, 6.8A, PG-TO220, INFINEON	1	Q3
BJT, NPN, KSP44BU, hfe=50~200, 0.3A, 400V, TO-92, ON semi	1	Q4
Resistor, 200K ohm, 5%, MOF, 3WS	1	R6
Resistor, 0.08 ohm, 5%, NKNP, 3WS	1	RS3
Resistor, 0.22 ohm, 5%, NKNP, 3WS	1	RS4
Capacitor, MLCC, 10nF, 630V, P5, C322C103KBR5TA, KEMET	1	C6A
Capacitor, MLCC, 2.2nF, 630V, P5, Chiefcon	1	C5
Capacitor, film, MPNVI34704JJA, 0.47uF, 520V, P15, DURA	1	C3
Capacitor, film, MPNVI36804JJA, 0.68uF, 520V, P15, DURA	1	C4
Safety, Y1, 101K, CD70-B2GA101KY, 400VAC, P10, TDK	1	CY6
Safety, Y1, 102M, CD70ZU2GA102MY, 400VAC, P10, TDK	1	CY8
Safety, Y1, 222M, CD90ZU2GA222MY, 400VAC, P10, TDK	2	CY3, CX4
Safety, Y1, 472M, CD12ZU2GA472MY, 400VAC, P10, TDK	2	CY4, CY5
Safety, X2, 0.22uF, 305VAC, 13*14*8, P10, MKP-X2, HJC	1	CX1
Capacitor, AL, 33uF, 35V, 5*11, P2.5, 4000hours, -40~105°C	1	EC7

Designator & Footprint	Number	Location
Capacitor, AL, 22uF, 100V, 8*12.5, P2.5, 4000hours, -40~105°C	1	EC6
Capacitor, AL, UCY series, 100uF, 160V, 12.5*20, P5, NICHICON, 10000hours, -40~105°C	2	EC1, EC2
Capacitor, AL, 56uF, 160V, 10*20, P5, 4000hours, -40~105°C	1	EC4
Capacitor, AL, LGX series, 82uF, 500V, 22*35, P10, NICHICON, 5000hours, -20~105°C	1	EC3
Common choke, 1.5mH(min), YT-33979-1	1	LF1
Common choke, 4mH(min), YT-31867	1	LF2
Common choke, 25mH(min), YT-34207	1	LF3
Common choke, 30uH(min), YT-34208	1	LF5
Inductor, 330uH, T17*9*7, YT-33982-1	1	L1
Transformer, PQ2620, 330uH, 50:5, YT-33981	1	T2
Transformer, POT4020, 560uH, 30:16:9:14:4, YT-33980-2	1	T1
Bridge diode, KBJ1008G, 10A, 800V, LITEON	1	DB1
Gas Discharge Tubes, AC240, Littelfuse	1	GAS1
Gas Discharge Tubes, CG3 3.3, Littelfuse	1	GAS2
Jump wire, cooper, 1mm, L=44mm, KINK 3&41mm, 90 deg	2	JP1, JP6
Jump wire, cooper, 1mm, L=20mm, KINK 3&17mm, 90 deg	1	JP2
Jump wire, cooper, 1mm, L=23mm, KINK 3&20mm, 90 deg	2	JP3, JP5
Jump wire, cooper, 1mm, L=21mm, KINK 3&18mm, 90 deg	1	JP7
Jump wire, cooper, 1mm, L=30mm, KINK 3&27mm, 90 deg	1	JP4
Jump wire, cooper, 1mm, L=49mm, KINK 3&46mm, 90 deg	1	JP8
Jump wire, cooper, 1mm, L=18mm, KINK 3&15mm, 90 deg	2	JP9, JP10
Heat tube, 1.5mm , L=41mm, 125°C	1	For JP8
Heat tube, 1.5mm , L=36mm, 125°C	2	For JP1, For JP6
Heat tube, 1.5mm , L=12mm, 125°C	1	For JP2
Heat tube, 1.5mm , L=15mm, 125°C	3	For JP3, For JP5, For D7
Heat tube, 1.5mm , L=13mm, 125°C	1	For JP7
Heat tube, 1.5mm , L=22mm, 125°C	3	For JP4, For RS3, For RS4
Heat tube, 1.5mm , L=10mm, 125°C	2	For JP9, For JP10
Heat tube, 18mm , L=18mm, 125°C	4	For MOV1, For MOV2, For MOV4, For MOV5
Heat tube, 25mm , L=25mm, 125°C	1	For FG Ring Core

Designator & Footprint	Number	Location
HEATSINK, AL, T=3mm, L=53mm	1	HS1
HEATSINK, AL, T=3mm, L=105mm	1	HS2
HEATSINK, AL, T=3mm, L=50mm	1	HS2
M3 螺絲, 圓頭, 8mm	4	For D2, For D3, For Q2, For Q3,
M3 螺絲, 圓頭, 10mm	1	For DB1
M3 螺絲, 圓頭, 6mm	5	For HS1*2, For HS2*2, For HS3*1
RI 14*8*10, A8, EROCORE	1	For FG wire* 6T
RH 3.5x4x1 ,KING CORE	2	For Q2 Gate Pin , For Q3 Drain Pin
AWM1452, 18AWG, 90°C, 1000V, E77981, solid, BLACK, L=350mm	1	L wire
AWM1452, 18AWG, 90°C, 1000V, E77981, solid, WHITE, L=350mm	1	N wire
AWM1452, 18AWG, 90°C, 1000V, E77981, solid, GREEN, L=450mm	1	FG wire
AWM1452, 18AWG, 90°C, 1000V, E77981, solid, PURPLE, L=350mm	1	DIM+ wire
AWM1452, 18AWG, 90°C, 1000V, E77981, solid, GRAY, L=350mm	1	DIM- wire
AWM1452, 18AWG, 90°C, 1000V, E77981, solid, BLUE, L=350mm	1	LED-
AWM1452, 18AWG, 90°C, 1000V, E77981, solid, RED, L=350mm	1	LED+
PCB, 58.5*215mm, CEM-1, T=1.6mm, 2OZ	1	Main PCB
PCB, 16*23mm, FR4, T=1.0mm, 2OZ	1	For EC3

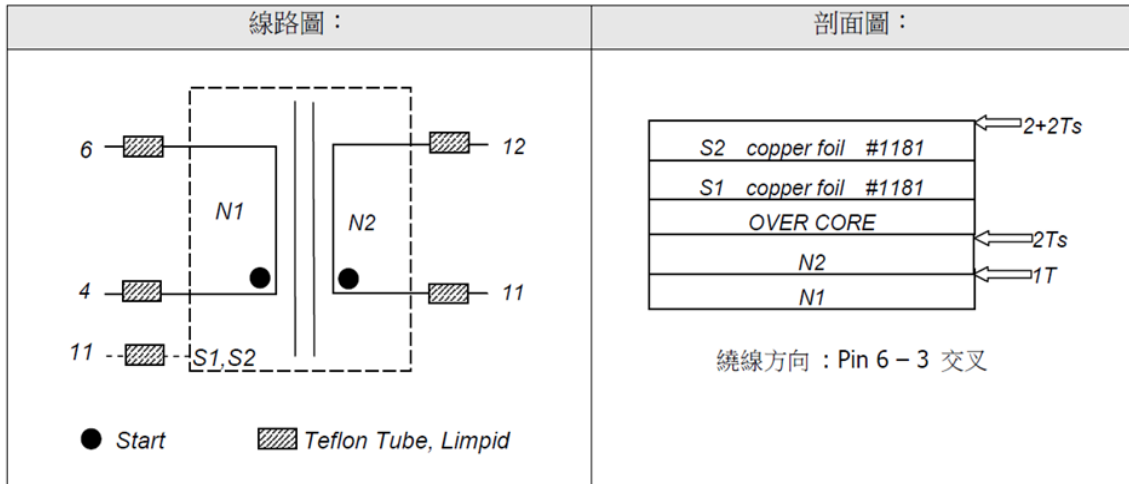
V. P.F.C. Choke & Transformer Spec. (Vender : 音律)

T2 (P.F.C. Choke) :

Bobbin / Core = PQ-2625 / PC-44A

Inductance = 350 $\mu\text{H} \pm 5\%$ @ 10 kHz / 1 V

$A_e = 124.3 \text{ mm}^2$



WINDING TABLE : (繞線結構)

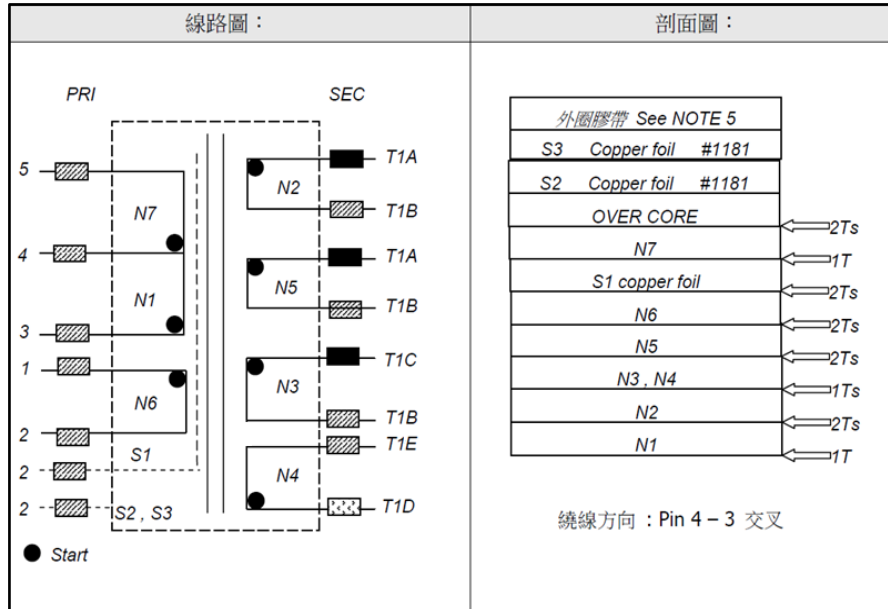
WINDING (繞組)	DIAMETER AND TYPE (線徑及線種)	TURNS (圈數)	ML TAPE (絕緣膠帶)	WINDING METHOD (繞線方式)
N1(4 --- 6)	2UEW 0.1mm * 40(litz) * 1P	50TS	1Ts	密繞一層
N2(11 --- 12)	2UEW 0.25mm*1P	2TS	2Ts	置中密繞
	OVER Core			
S1	Copper Foil W=7mm #1181	1TS		垂直
S2(11 --- X)	Copper Foil W=7mm #1181	1TS		水平
				外圈膠帶 Tape 2+2Ts

T1 (Transformer) :

Bobbin / Core = POT-4022 / PC-44A

Inductance = 560uH±5% @ 10 kHz / 1 V

Ae = 211 mm²



WINDING TABLE:(繞線結構)

WINDING (繞組)	DIAMETER AND TYPE (線徑及線種)	URNS (圈數)	MLTAPE (絕緣膠帶)	WINDING METHOD (繞線方式)
N1(3 --- 4)	2UEW 0.1mm * 40(litz) * 1P	20Ts	2Ts	第一層密繞 第二層疏繞
N2(T1A --- T1B)	TIW 0.4mm*2P	16Ts	1Ts	密繞
N3(1 --- 2)	2UEW 0.35mm*1P	9Ts	2Ts	疏繞
N4(T1C - T1B)	TIW 0.4mm*1P	4Ts	2Ts	雙線並繞
N5(T1D - T1E)	TIW 0.4mm*1P	14Ts		
N6(T1A --- T1B)	TIW 0.4mm*2P	16Ts	2Ts	密繞
S1(2 --- X)	Copper Foil W=8mm #1181	1Ts	1Ts	
N7(4 --- 5)	2UEW 0.1mm * 40(litz) * 1P	10Ts	2Ts	密繞
	OVER Core			
S2	Copper Foil W=10mm #1181	1TS		垂直
S3(2 --- X)	Copper Foil W=8mm #1181	1TS		水平
				外圈膠帶 2Ts