

PM30006-00

**ATX 300W SMPS ICs: SG6931, SG6515,
SG5701**

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Typical Power Distribution for a 300 W ATX12V Configuration

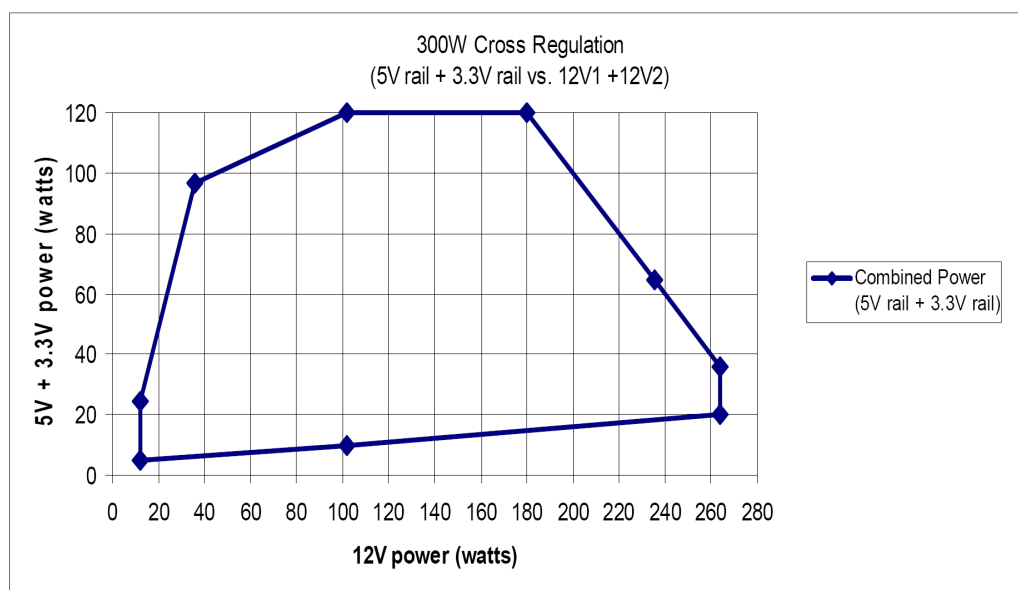
Output	Min. Current (amps)	Max. Current (amps)	Peak Current (amps)
+12 V1DC ⁽¹⁾	1.0	8.0	9
+12 V2DC ^(1, 2)	1.0	13.0	16.5
+5 VDC	0.3	12.0	
+3.3 VDC	0.5	18	
-12 VDC	0.0	0.3	
+5 VSB	0.0	2.5	3.5

Note: Total combined output of 3.3 V and 5 V is ≤ 120 W

Peak currents may last up to 17 seconds with not more than one occurrence per minute

⁽¹⁾12V1DC and 12V2DC should have separate current limit circuits to meet 240VA safety requirements.

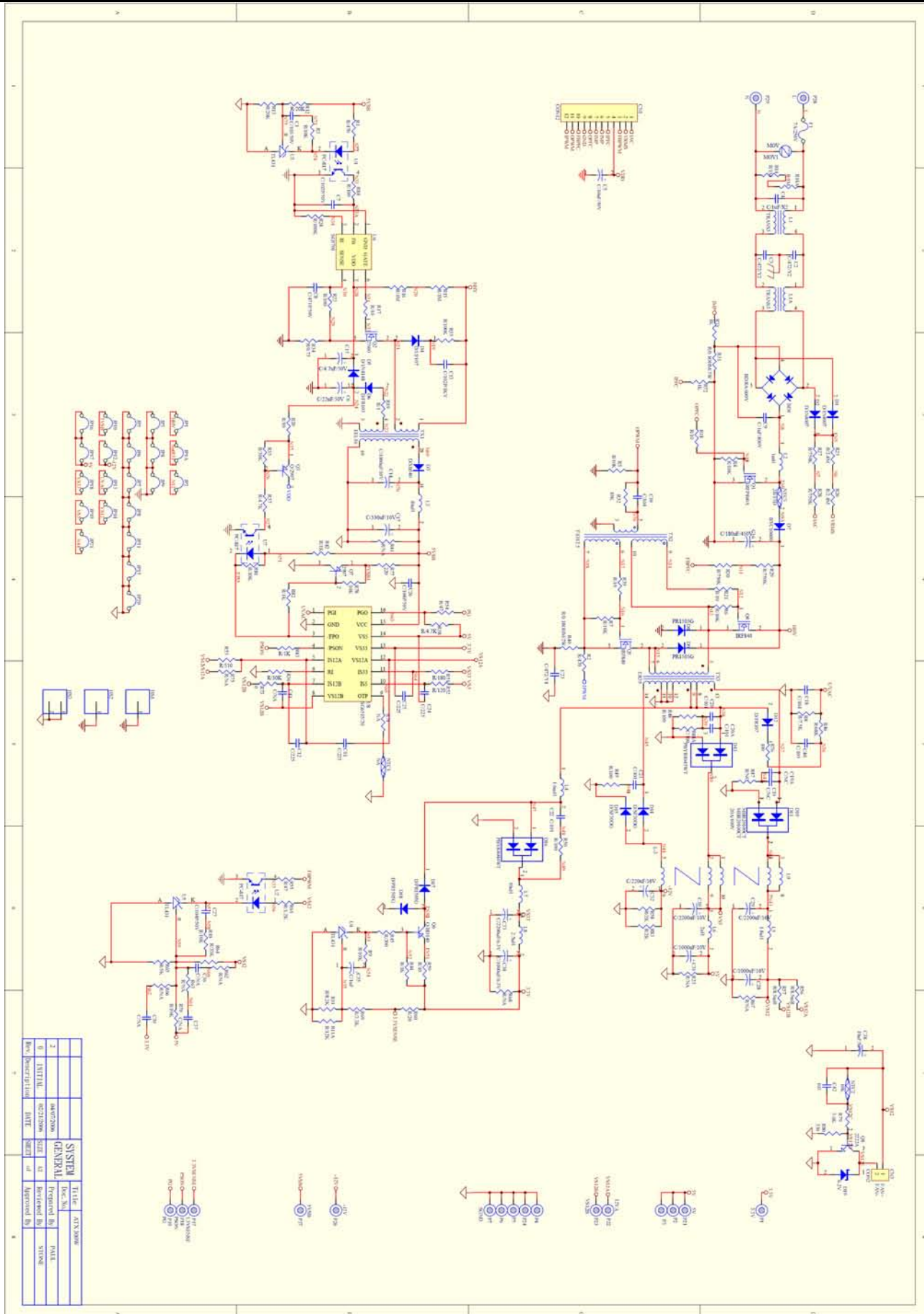
⁽²⁾12V2DC supports processor power requirements and must have a separate current limit and provide 16.5A peak current for 10 ms; minimum voltage during peak is > 11.0 VDC



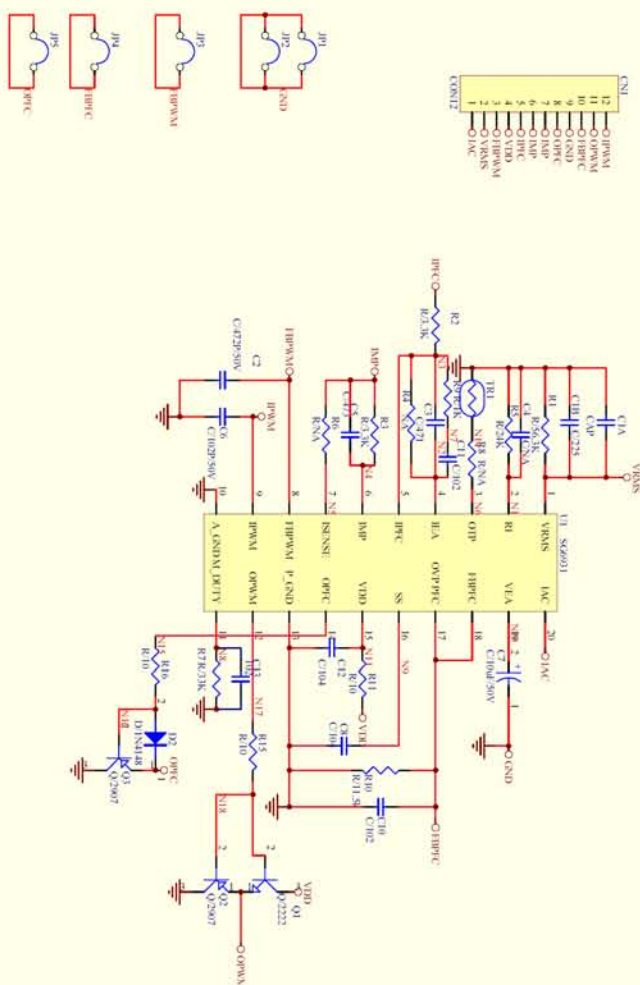
300W (loading shown in Amps)

Loading	+12V1	+12V2	+5V	+3.3V	-12V	+5Vsb
Full	6	10.5	9	13.5	0.3	1.0
Typical	3	5.3	4.5	6.8	0.1	1.0
Light	1.2	2.1	1.8	2.7	0.0	1.0

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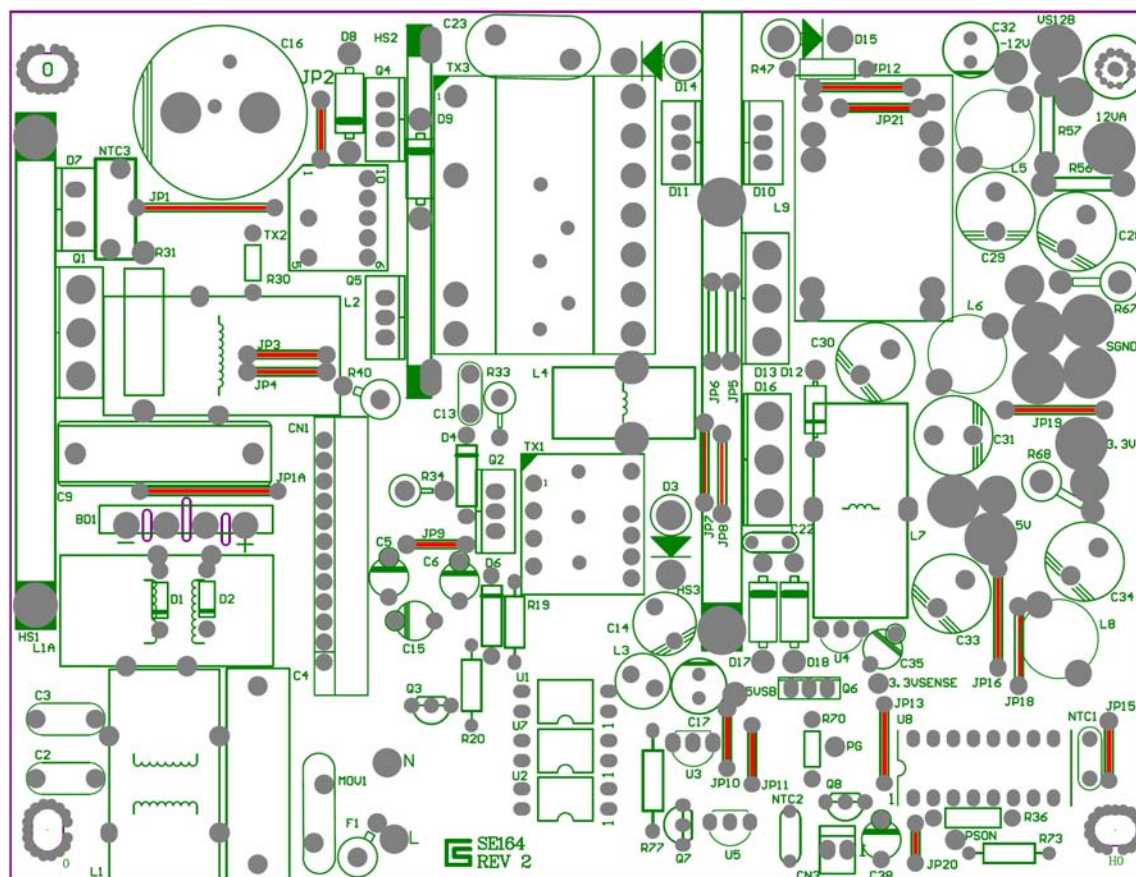
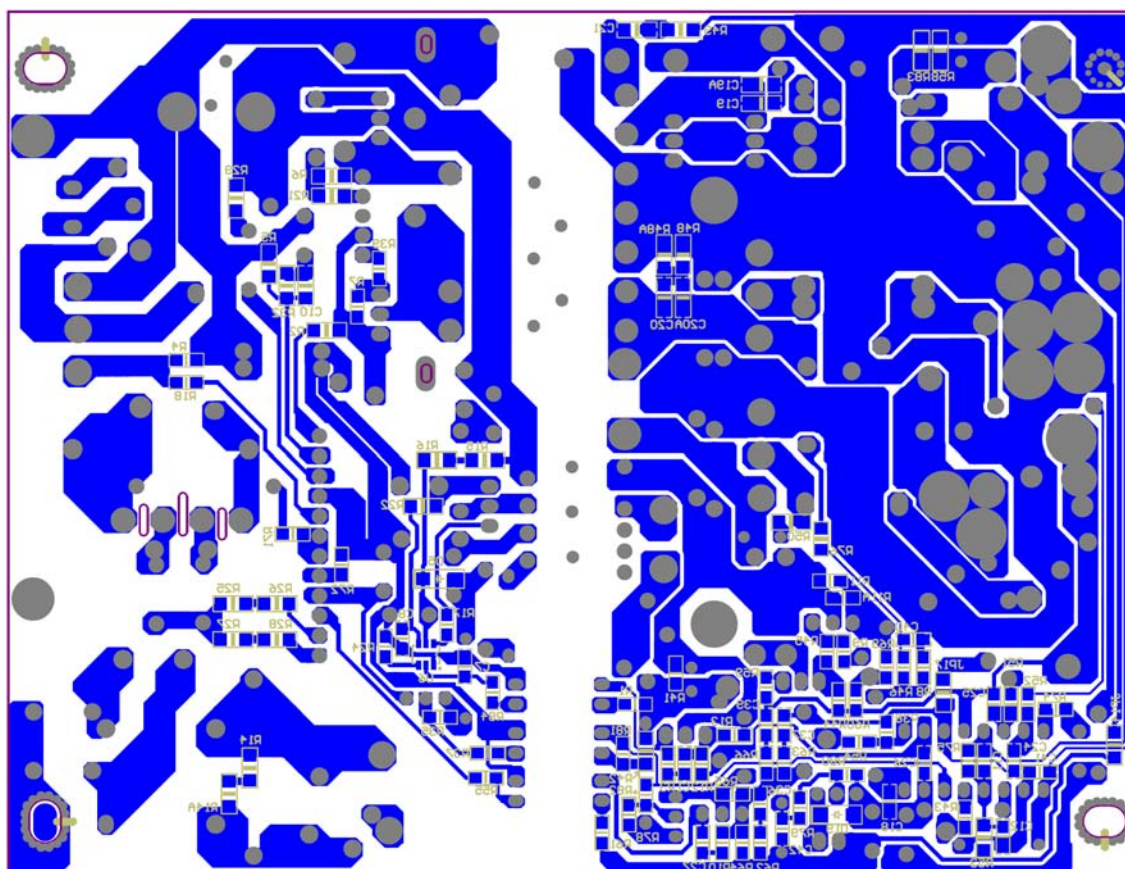


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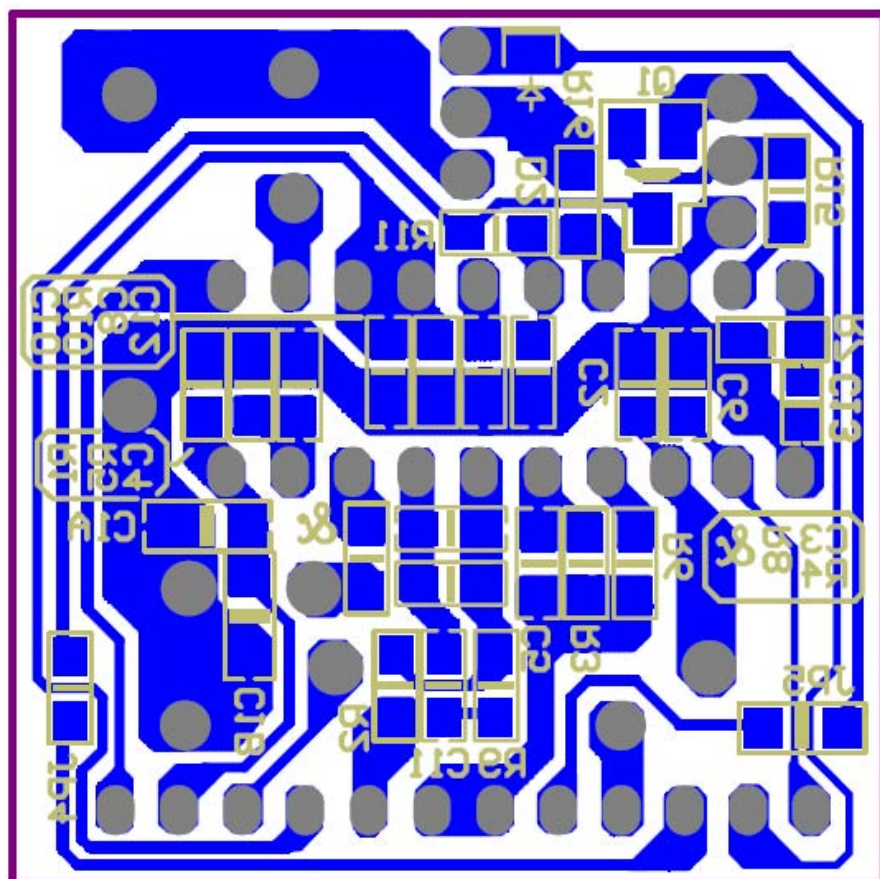
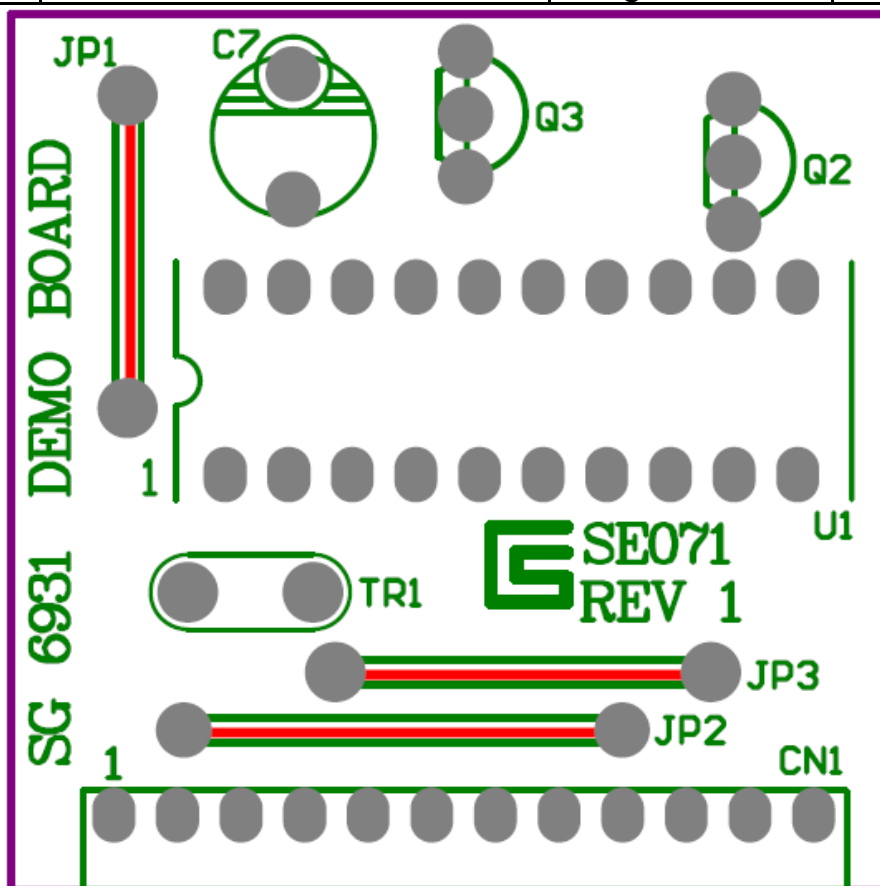


		TITLE	IC 6931
		SOURCE	300M PFC ATY
		SYSTEM GENERAL	
		Prepared By	PALL
		Reviewed by	STONE
0	INITIAL	DATE	02/21/2006
Rev.	Description	SHEET	1 of 1
		Approved By	

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Main Power :

Number	Location	Name	SPEC	Quantity	Note
300W1001	R40	0.18Ω 2W DIP metal film fixed resistor 1%		1	
300W1002	R31	0.1Ω 3WS DIP metal film fixed resistor5%	Mini size	1	
300W1003	R34	0.75Ω 1W DIP metal film fixed resistor1%		1	
300W1004	R73	0Ω 1/4W DIP carbon film fixed resistor5%		1	
300W1005	R61	1.2KΩ 0805 SMD resistor5%		1	
300W1006	R17、R18、R39、R59	10Ω 0805 SMD resistor5%		4	
300W1007	R20	10Ω 1/4W DIP carbon film fixed resistor5%		1	
300W1008	R21	10Ω 1206 SMD resistor5%		1	
300W1009	R42	1KΩ 1206 SMD resistor5%		1	
300W1010	R84	100Ω 0805 SMD resistor5%		1	
300W1011	R22、R48、R48A、R49、R50、R76	100Ω 1206 SMD resistor5%		6	
300W1012	R47	100Ω 1/4W DIP carbon film fixed resistor5%		1	
300W1013	R24	100KΩ 0805 SMD resistor5%		1	
300W1014	R33	100KΩ 1/2W DIP carbon film fixed resistor5%		1	
300W1015	R3、R4、R7、R9、R10、R11、R78	10KΩ 0805 SMD resistor5%		7	
300W1016	R6	10KΩ 1206 SMD resistor5%		1	
300W1017	R70	11KΩ 1/8W DIP resistor5%		1	
300W1018	R51	180Ω 0805 SMD resistor5%		1	
300W1019	R43、R44、R71、R72、R82	1KΩ 0805 SMD resistor5%		5	
300W1020	R14、R14A、R15、R16	1MΩ 1206 SMD resistor5%		4	
300W1021	R25、R26	2.4MΩ 1206 SMD resistor5%		2	
300W1022	R60	20Ω 0805 SMD resistor5%		1	
300W1023	R12、R13	20KΩ 0805 SMD resistor5%		2	
300W1024	R77	220Ω 1/2W DIP carbon film fixed resistor5%		1	
300W1025	R58、R83	2KΩ 1206 SMD resistor5%		2	
300W1026	R81	2KΩ 0805 SMD resistor5%		1	
300W1027	R69	3.3KΩ 0805 SMD resistor5%		1	
300W1028	R79	3.6KΩ 0805 SMD resistor5%		1	
300W1029	R45	300Ω 0805 SMD resistor5%		1	
300W1030	R35	30KΩ 0805 SMD resistor5%		1	
300W1031	R36	30KΩ 1/4W DIP resistor5%		1	
300W1032	R56、R57	8.5mΩ Copper-Manganese		2	
300W1033	R80	330Ω 0805 SMD resistor5%		1	
300W1034	R64	33KΩ 0805 SMD resistor5%		1	
300W1035	R53、R2	470Ω 1206 SMD resistor5%		2	
300W1036	R37、R38	4.7KΩ 0805 SMD resistor5%		2	
300W1037	R54、R55	47Ω 0805 SMD resistor5%		2	
300W1038	R1	470Ω 0805 SMD resistor5%		1	
300W1040	R52	120Ω 0805 SMD resistor5%		1	
300W1041	R65	4.7KΩ 0805 SMD resistor5%		1	
300W1042	R46	68KΩ 0805 SMD resistor5%		1	
300W1043	R8	6.98KΩ 0805 SMD resistor5%		1	

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300W1044	R27、R28、R29	750K Ω 1206 SMD resistor5%		3	
300W1045	R30	750K Ω 1/4W DIP carbon film fixed resistor5%		1	
300W1046	R19	1 Ω 1/4W DIP carbon film fixed resistor5%		1	
300W1047	JP14、JP17	0 Ω /1206 SMD resistor5%		2	
300W1048	JP20	JUMPER WIRE 0.6 ϕ (mm)	W5	1	
300W1049	JP2、JP9、JP10、JP11、JP15	JUMPER WIRE 0.6 ϕ (mm)	W7.5	5	
300W1050	JP3、JP4、JP5、JP6、JP7、JP8、JP13、JP18、JP21	JUMPER WIRE 0.6 ϕ (mm)	W10	9	
300W1051	JP12、JP16、JP19	JUMPER WIRE 0.6 ϕ (mm)	W12.5	3	
300W1052	JP1、JP1A	JUMPER WIRE 0.6 ϕ (mm)	W17.5	2	
300W1053	NTC2	Thermistors 5 ϕ 10K	TTC05103KSY	1	
300W1054	NTC3	Thermistors 13 ϕ 2 Ω	SCK132R56MYS	1	
300W1055	C4	0.47uF/X1275V +/-20%	8*20*16mm	1	
300W1056	C14、C31	1000uF/10V \pm 20%	KMG 8*19.5	2	
300W1057	C28	1000uF/16V \pm 20%	KMG 10*16	1	
300W1058	C34	1000uF/6.3V \pm 20%	KMG 8*11.5	1	
300W1059	C19、C20、C20A、C21	101/100V 1206 SMD capacity	X7R \pm 10%	4	
300W1060	C22	101/1KV ceramics capacity \pm 10%		1	
300W1061	C13	102P/1KV ceramics capacity \pm 10%		1	
300W1062	C7	102P/50V 0805 SMD capacity	X7R \pm 10%	1	
300W1063	C1、C42	103/50V 0805 SMD capacity	X7R \pm 10%	2	
300W1064	C10	104/50V 1206 SMD capacity	X7R \pm 10%	1	
300W1065	C18、C26、C27	104/50V 0805 SMD capacity	X7R \pm 10%	3	
300W1066	C40	105/50V 0805 SMD capacity	X7R \pm 10%	1	
300W1067	C5、C38	10uF/50V \pm 20%	KMG 5*11	2	
300W1068	C16	180uF/450V \pm 20%	KMQ 22*40	1	
300W1069	C35	1uF/50V \pm 20%	KMG 5*11	1	
300W1070	C9	4105KF 1uF/400V \pm 20%	CMT27	1	
300W1071	C30	2200uF/10Vs \pm 20%	KMG 10*20	1	
300W1072	C29	2200uF/16V \pm 20%	KMG 10*25	1	
300W1073	C33	2200uF/6.3V \pm 20%	KMG 10*20	1	
300W1074	C32	220uF/16V \pm 20%	KMG 6.3*11	1	
300W1075	C2、C3	222/Y2/250V 20%	D 8mm F 10mm T 4mm	2	
300W1076	C11、C12、C24、C25	225/25V 0805 SMD capacity	Y5V +80/-20%	4	
300W1077	C6	22uF/50V \pm 20%	KMG 5*11	1	
300W1078	C17	330uF/10V \pm 20%	KMG 6.3*11	1	
300W1079	C15	4.7uF/50V \pm 20%	KMG 5*11	1	
300W1080	C8	471/50V 0805 SMD capacity	X7R \pm 10%	1	
300W1081	C23	472/Y1/400V 20%	D 19mm F 10mm T 8mm	1	

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300W1082	L1、L1A	Common choke 9mH	27*13mm	2	
300W1083	L2	Ring choke 1mH	30*15mm	1	
300W1084	L3	Drww core 10uH	6.8*10mm	1	
300W1085	L4	MAG AMP 1.6mH	18*9mm	1	
300W1086	L5	Rod core 1.8uH	10*12mm	1	
300W1087	L6	Rod core 2uH	9.87*10mm	1	
300W1088	L7	Ring core 10uH	27*10mm	1	
300W1089	L8	Rod core 2.5uH	10*10mm	1	
300W1090	L9	Multi-choker	30*20mm	1	
300W1091	TX1	EEL16		1	
300W1092	TX2	E112.5		1	
300W1093	TX3	ERL35		1	
300W1094	BD1	GBU805/8A/600V	HFA08TB60P BF	1	
300W1095	D1、D2	1N4007	DO-41	2	
300W1096	D10、D11	Schottky MBR20100CT 20A/100V	TO-220	2	
300W1097	D12	FR107	DO-41	1	
300W1098	D13、D16	Schottky PBYR4045WT 40A/45V	TO-247	2	
300W1099	D14、D15	SF34	DO-210AD	2	
300W1101	D8、D9、D17、D18	FR157	DO-15	4	
300W1102	D19	SMD ZENER 1/2W 6.2V	SOD-80	1	
300W1103	D3	SB540	DO-210AD	1	
300W1104	D4	UF1007	DO-41	1	
300W1105	D5	SMD Diode 1N4148	LL-34	1	
300W1106	D6	FR103	DO-41	1	
300W1107	D7	BYC10600	TO220AC	1	
300W1108	Q1	IRFP460A	TO-247AC	1	
300W1109	Q2	SSS2N60B	TO-220F	1	
300W1110	Q3、Q7	PN2907	TO-92	2	
300W1111	Q4、Q5	IRF840	TO-220	2	
300W1112	Q6	BD140	TO-126	1	
300W1113	Q8	PN2222	TO-92	1	
300W1114	U3、U4、U5	Regulator TL431 AZ +/-1%	TO92	3	
300W1115	U1、U2、U7	IC PC-817A DIP		3	
300W1116	U6	SMD SG5701		1	
300W1117	U8	DIP SG6515		1	
300W1118	F1	FUSE GLASS 250V 7A Quick	5mm*20mm	1	
300W1119	MOV	Varistors 14 ϕ 470V		1	
300W1122	PCB	Main Power Connector		1	
300W1123	PCB	Peripheral Power Connector		3	
300W1124	PCB	+12V Power Connector		1	
300W1125	PCB	Inlet line		2	
300W1128	HS1	65mm*40mm*5mm	HS5X65-2	1	
300W1129	HS2	45.5mm*30mm*3mm	HS3X45-1	1	
300W1130	HS3	80.5mm*40mm*5mm	HS5X80.5-1	1	
300W1132	JP20	KEGNAFU CORPORATION 5mm	W5	1	

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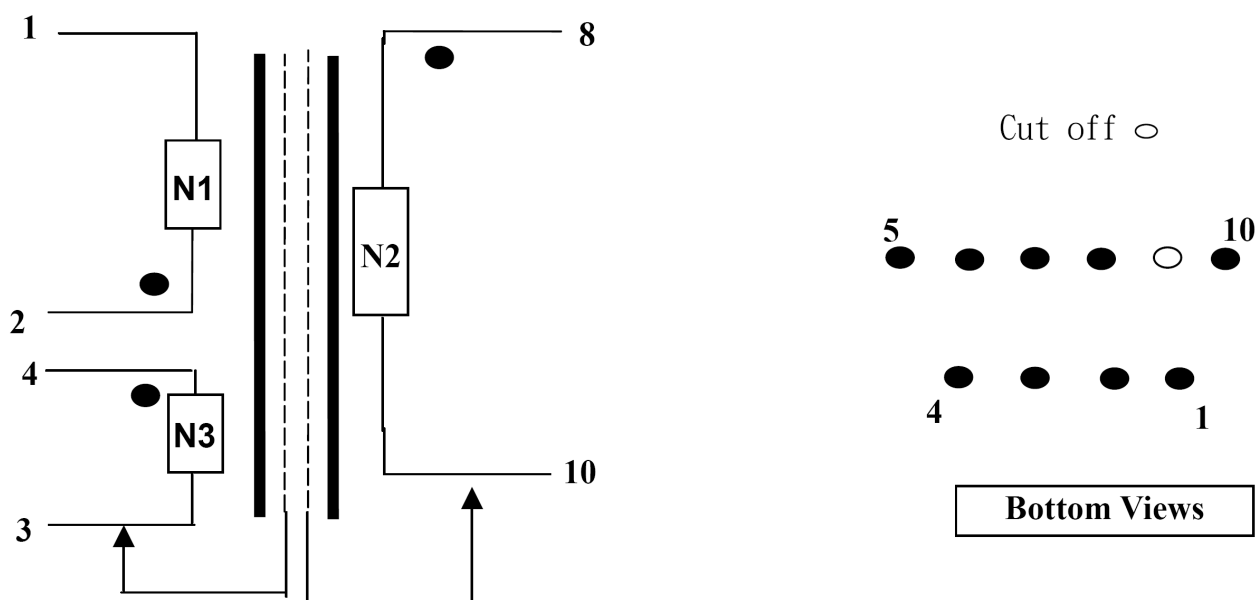
300W1133	JP2、JP9、JP10、JP11、JP15	KEGNAFU CORPORATION 7.5mm	W7.5	5	
300W1134	JP3、JP4、JP5、JP6、JP7、JP8、JP13、JP18、JP21	KEGNAFU CORPORATION 10mm	W10	9	
300W1135	JP12、JP16、JP19	KEGNAFU CORPORATION 12.5mm	W12.5	3	
300W1136	JP1、JP1A	KEGNAFU CORPORATION 17.5mm	W17.5	2	
300W1137	NTC2	KEGNAFU CORPORATION 27.5mm		2	
300W1138	D7、D10、D11、Q4、Q5	Silicone Rubber TO-220		5	
300W1139	Q1、D13、D16	Silicone Rubber TO-3P		3	
300W1140	D7、D10、D11、Q4、Q5	Bushing		5	
300W1141	D10、D11	Screw nut 3*5 Black		1	
300W1142	D10、D11	Wafer head screw 3φ12mm	Black	1	
300W1143	D7、D13、D16、Q1	Wafer head screw 3φ8mm	Black	4	
300W1144	HS1、HS3、Q4、Q5	Wafer head screw 3φ6mm	Black	6	
300W1145	PCB	SE164 REV : 2		1	
300W1146	Inlet	Inlet		1	

6931 Card

Number	Location	Name	SPEC	Quantity	Note
300W2001	R11、R15、R16	10Ω 0805 SMD resistor 5%		3	
300W2002	R10	11.5kΩ 0805 SMD resistor 5%		1	
300W2003	R9	1KΩ 0805 SMD resistor 5%		1	
300W2004	R5	24KΩ 0805 SMD resistor 5%		1	
300W2005	R2、R3	3.3KΩ 0805 SMD resistor 5%		2	
300W2006	JP5	0Ω/1206 SMD resistor 5%		1	
300W2007	R7	33KΩ 0805 SMD resistor 5%		1	
300W2008	R1	56KΩ 0805 SMD resistor 5%		1	
300W2009	JP4	0Ω/0805 SMD resistor 5%		1	
300W2010	JP1	JUMPER WIRE 0.6φ (mm)	W12.5	1	
300W2011	JP3	JUMPER WIRE 0.6φ (mm)	W15	1	
300W2012	JP2	JUMPER WIRE 0.6φ (mm)	W17.5	1	
300W2013	C6、C10、C11、C13	102P/50V 0805 SMD capacity	X7R ±10%	4	
300W2014	C8、C12	104P/50V 0805 SMD capacity	X7R ±10%	2	
300W2015	C3	471P/50V 0805 SMD capacity	X7R ±10%	1	
300W2016	C2	472P/50V 0805 SMD capacity	X7R ±10%	1	
300W2017	C5	473P/50V 0805 SMD capacity	X7R ±10%	1	
300W2018	C1B	225P/25V 1206 SMD capacity	Y5V +80/-20%	1	
300W2019	C7	10uF/50V ±20%	KMG 5*11	1	
300W2020	D2	SMD diode 1N4148	LL-34	1	
300W2021	Q1	MMBT2222AK	SOT-23	1	
300W2022	Q3、Q2	PN2907	TO-92	2	
300W2023	U1	DIP SG6931		1	
300W2024	PCB	Pin header right angle type 2.54mm 12P		1	
300W2025	JP1	KEGNAFU CORPORATION 12.5mm	W12.5	1	
300W2026	JP3	KEGNAFU CORPORATION 15mm	W15	1	
300W2027	JP2	KEGNAFU CORPORATION 17.5mm	W17.5	1	
300W2028	PCB	SE071 REV : 1		1	

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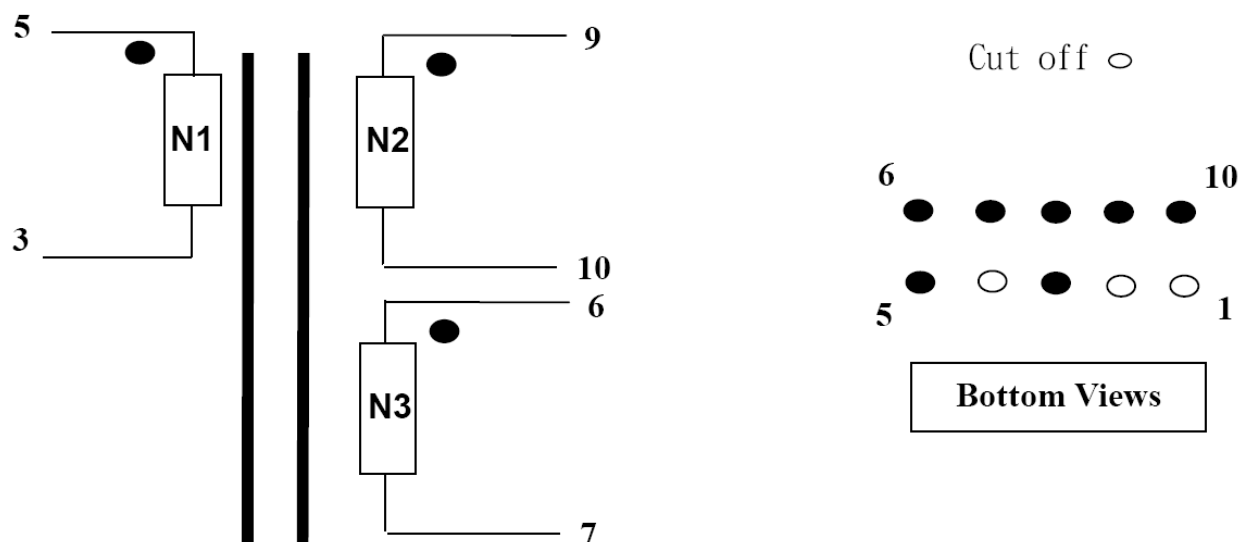


層 數 Winding	終端(pin) Terminal	銅線尺寸 Wire Gauge (mm)	繞線圈數 (Turns)	感 量 Inductance	備註 Note
	Bobbin				
N1	2→1	0.3 ϕ *1	104	800uH	+/-5% , 1V/1KV
	Mylar Tape *2T				
P1	Copper-Foil →Pin3 1.2T Open loop				Copper-Foil width 14mm
	Mylar Tape *3T				
P2	Copper-Foil →Pin10 1.2T Open loop				Copper-Foil width 14mm
	Mylar Tape *2T				
N2	8→10	0.4 ϕ *3	9		Triple insulated winding wire
	Mylar Tape *2T				
N3	4→3	0.2 ϕ * 1	32		
	Mylar Tape *3T				
	Core – EEL-16				
	Copper-Foil →Pin3 1.2T Close loop				
	Mylar Tape *3T				

- Each winding(including P1,P2 Copper Foil) draw out with Tubing .

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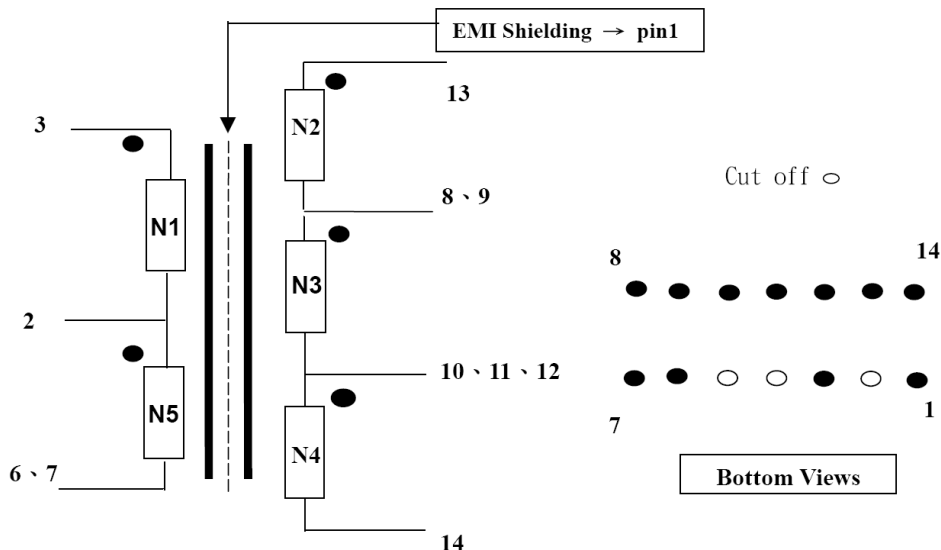


層 數 Winding	終端(pin) Terminal	銅線尺寸 Wire Gauge (mm)	繞線圈數 (Turns)	感 量 Inductance	備註 Note
Bobbin					
N1	5→3	0.2 ϕ *1	15		
N2	9→10	0.2 ϕ *1	18		Triple insulated winding wire
N3	6→7	0.2 ϕ *1	18		
Mylar Tape *3T					
Core – T/EI-12.5					
Mylar Tape *3T					

1. N1、N2、N3 twisted together
2. N2 use Triple insulated winding wire

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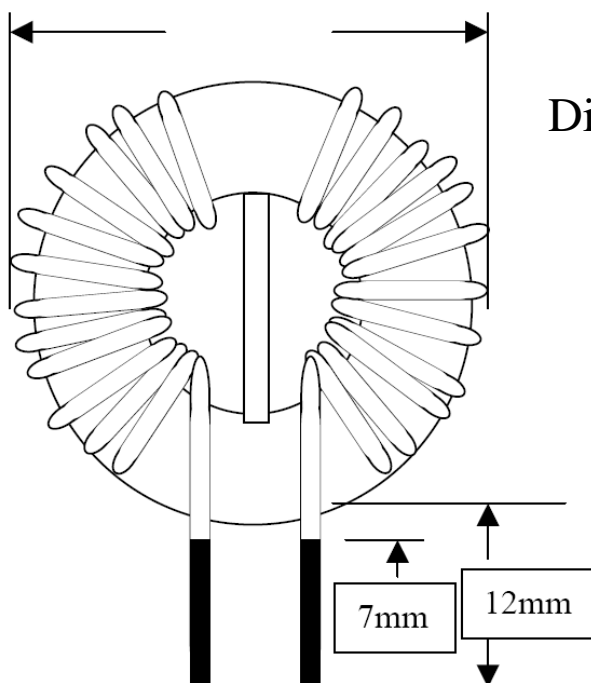


層 數 Winding	終端(pin) Terminal		銅線尺寸 Wire Gauge (mm)	繞線圈數 (Turns)	感 量 Inductance		備註 Note
	Bobbin						
N1	3mm marge type	3→2	0.6φ *1	29		3mm marge type	
	Mylar Tape *3T						
N2	3mm Margin Tape	13→8、9	1.0φ*3	4		3mm Margin Tape	
	Mylar Tape *1T						
N3	3mm Margin Tape	8、9→ 10、11、12	10MIL Copper-Foil * 1	3		3mm Margin Tape	Copper-Foil width 18mm
	Mylar Tape *1T						
N4	3mm Margin Tape	10、11、12 → 14	0.4φ* 1	6		3mm Margin Tape	
	Mylar Tape *1T						
N5	3mm Margin Tape	2 →6、7	0.6φ*1	45		3mm Margin Tape	
	Mylar Tape *3T						
	Core – ER-35						
	Mylar Tape *3T						
	Copper-Foil →Pin1 1.2T Open loop						
	Maver Tape * 3T						

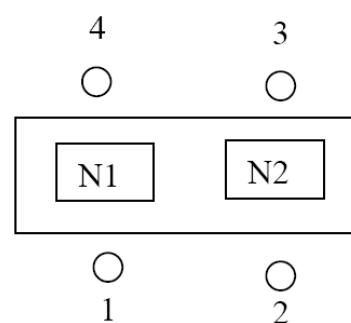
- Each winding (N1,N2,N3,N4)add Margin Tape upper 3mm and lower 3mm 。
- Each winding(including P1 Copper Foil) draw out with Tubing 。
- N1: PIN1-PIN2 wind fill one layer , other wind to PIN2-PIN4

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SPECIFCATION APPROVAL



Dimensions



Bottom Views

層 數 Winding	終 端 (pin) Terminal	銅線尺寸 Wire Gauge (mm)	繞線圈數 (Turns)	備 註 Note
N1	1→4	0.9	30.5	$\geq 8\text{mH}$, 1V/1KHz
N2	2→3	0.9	30.5	$\geq 8\text{mH}$, 1V/1KHz

NOTE :

- Between N1&N2 with isolated slab 2mm 。
- Each winding draw out with tubing and reserve wire 12mm 。

Core

Toroids Core TR Type :

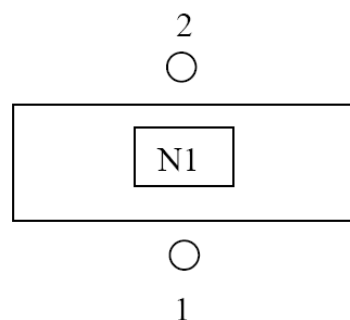
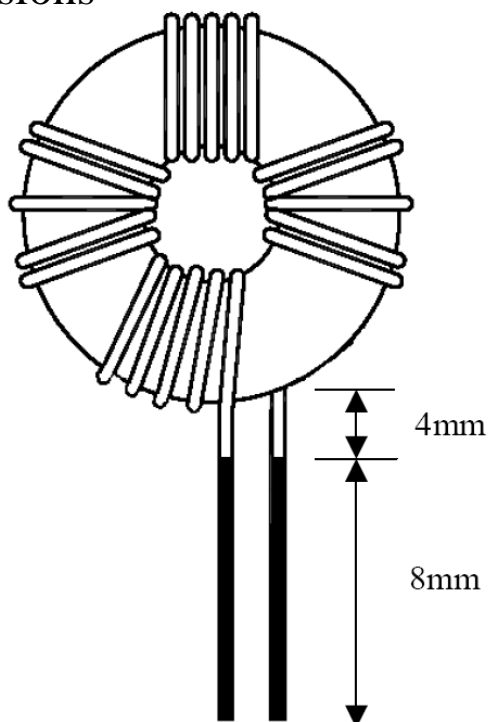
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OD=14mm ; ID=6.6mm ; HT=6.3mm

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SPECIFCATION APPROVAL

Dimensions



Bottom Views

層 數 Winding	終 端 (pin) Terminal	銅線尺寸 Wire Gauge (mm)	繞線圈數 (Turns)	備 註 Note
N1	1 → 2	0.8	117Ts	$\geq 900\mu\text{H}$, 1V/1KHz

Core

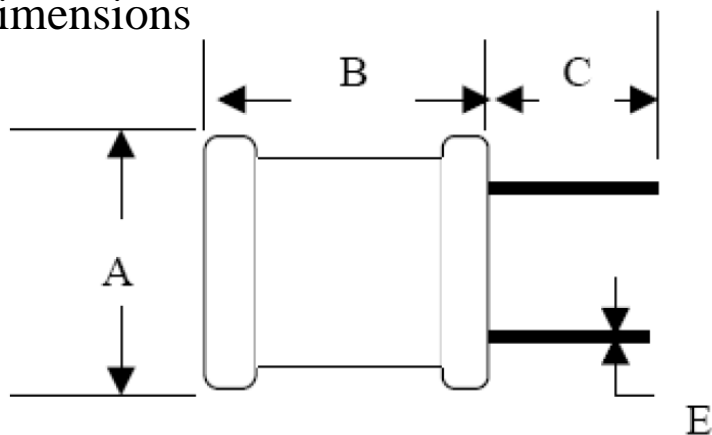
Toroids Core TR Type :
(CM270060、55894)

OD=26.9mm ; ID=14.7mm ; HT=11.2mm

Doc.Title	L3 Specifcation	Institute by	SE
Doc.Number	A0	Page Number	16/36

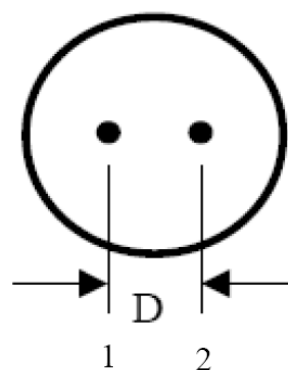
SPECIFCATION APPROVAL

Dimensions



UNIT : mm

A	8.0 max
B	12 max
C	10 min
D	3.0±0.5
E	φ0.65±0.05



Bottom Views

層 數 Winding	終 端 (pin) Terminal	銅線尺寸 Wire Gauge (mm)	繞線圈數 (Turns)	備 註 Note
N1	1 → 2	0.55	18	≥ 8uH , 1V/1KHz

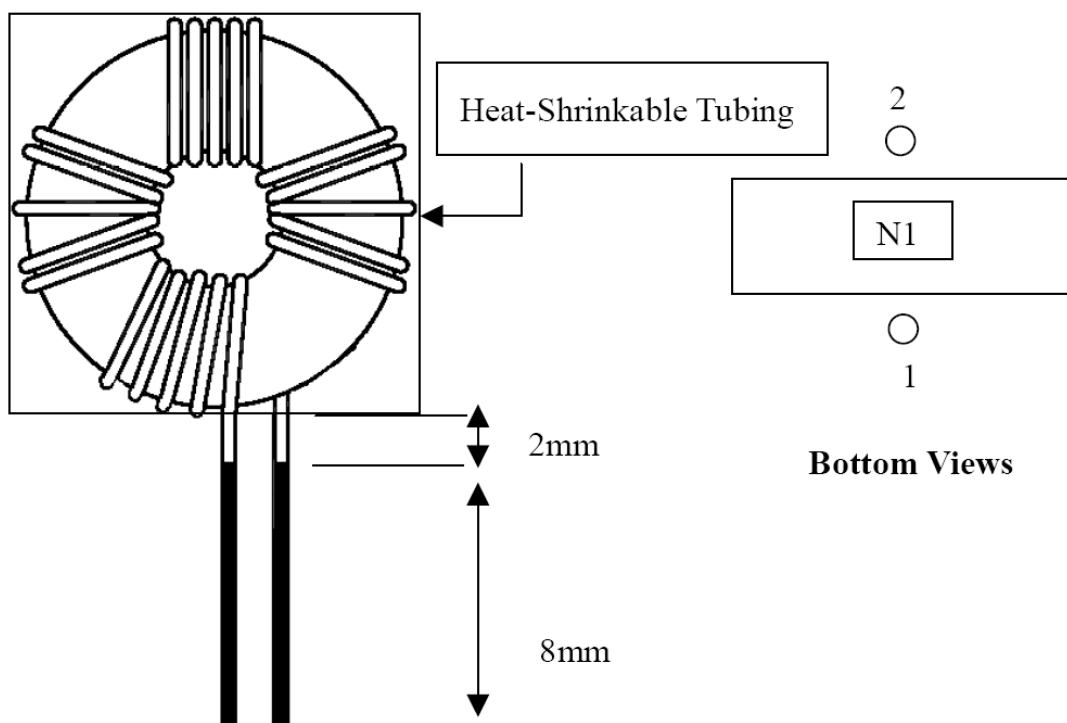
Core

Ferrite core DRWW 6x10(6 φ *10mm)

Doc.Title	L4 Specifcation	Institute by	SE
Doc.Number	A0	Page Number	17/36

SPECIFCATION APPROVAL

Dimensions



層 數 Winding	終 端 (pin) Terminal	銅線尺寸 Wire Gauge (mm)	繞線圈數 (Turns)	備 註 Note
N1	1 → 2	0.8 ϕ * 2	7.5	$\geq 1.3\text{mH}$ 1V/1KHz

Note:

1. Exit twisted-pair Wires and reserve 8mm.
2. Please packing core with Heat-Shrinkable Tubing.

Core

Toroids Core TR Type :

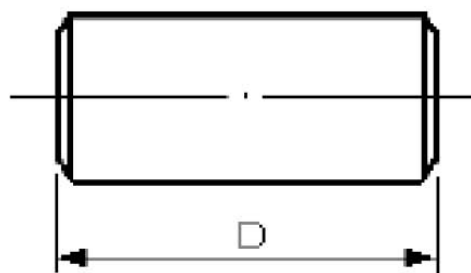
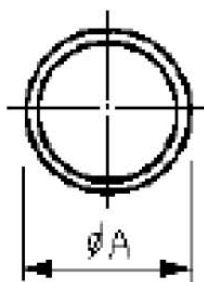
Amorphous cores(AMSA-12S-N)

OD=14mm ; ID=6.6mm ; HT=6.3mm

Doc.Title	L5 Specification	Institute by	SE
Doc.Number	A0	Page Number	18/36

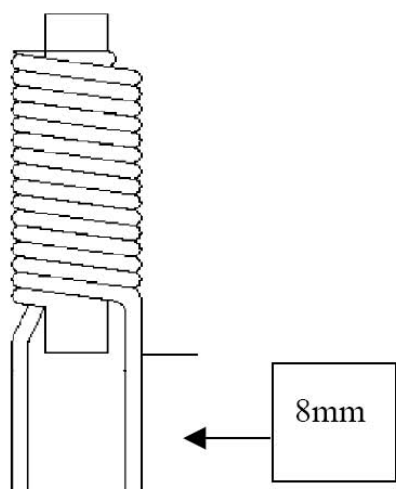
SPECIFICATION APPROVAL

Dimensions



$\Phi A=6$

$D=15$



8mm

層 數 Winding	終 端 (pin) Terminal	銅 線 尺 寸 Wire Gauge (mm)	繞 線 圈 數 (Turns)	備 註 Note
N1	1 → 2	1.4	4.5	$\geq 1.5U_h$, 1V/1KHz

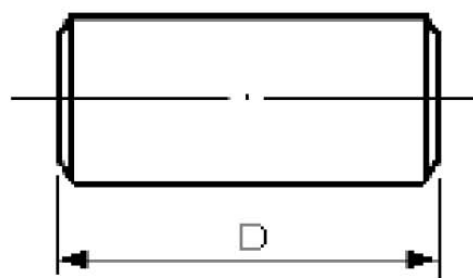
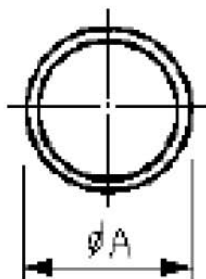
Core

Rod core 6x15(6 ϕ *15mm)

Doc.Title	L6 Specifcation	Institute by	SE
Doc.Number	A0	Page Number	19/36

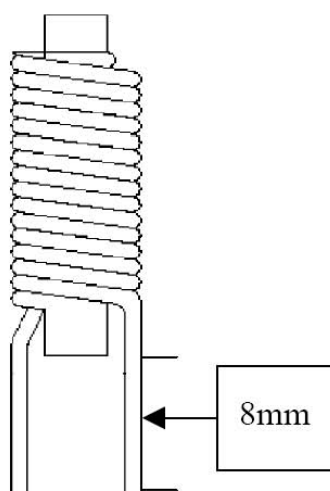
SPECIFCATION APPROVAL

Dimensions



$\Phi A=6$

$D=15$



8mm

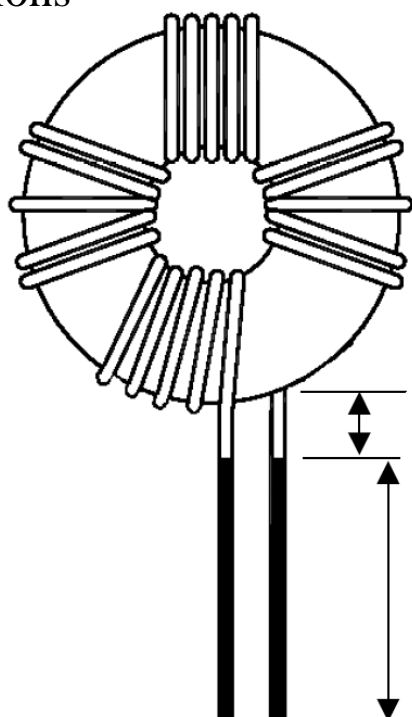
層 數 Winding	終端(pin) Terminal	銅線尺寸 Wire Gauge (mm)	繞線圈數 (T)	備註 Note
N1	1→2	1.4	5.5	$\geq 1.7\mu\text{H}$, 1V/1KHz

Core

Rod core 6x15(6 ϕ *15mm)

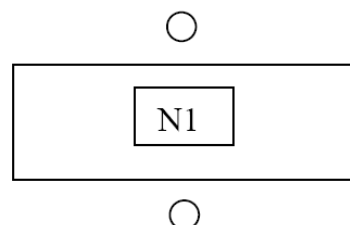
Doc.Title	L7 Specification	Institute by	SE
Doc.Number	A0	Page Number	20/36

Dimensions



4mm

8mm



Bottom Views

層 數 Winding	終 端 (pin) Terminal	銅線尺寸 Wire Gauge (mm)	繞線圈數 (Turns)	備 註 Note
N1	1 → 2	1.2	12.5	$\geq 8\mu\text{H}$ 1V/1KHz

Core

Toroids Core TR Type :

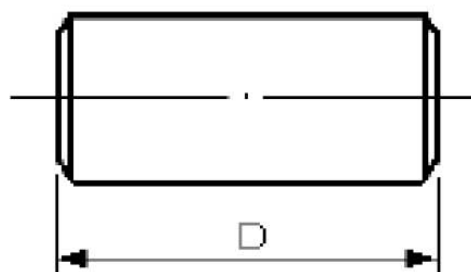
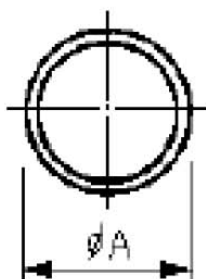
Powder (T80-26 YELLOW/WHITE)

OD=20.3mm ; ID=12.7mm ; HT=6.35mm

GENERAL MATERIAL PROPERTIES				
Material Mix No.	Reference Permeability	Material Density	Relative Cost	Color Code
	(μo)	(g/cm ³)		
-26	75	7	1	Yellow/White

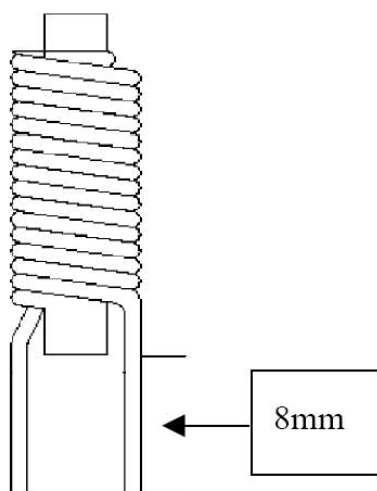
Doc.Title	L8 Specification	Institute by	SE
Doc.Number	A0	Page Number	21/36

Dimensions



$\Phi A=6$

$D=15$

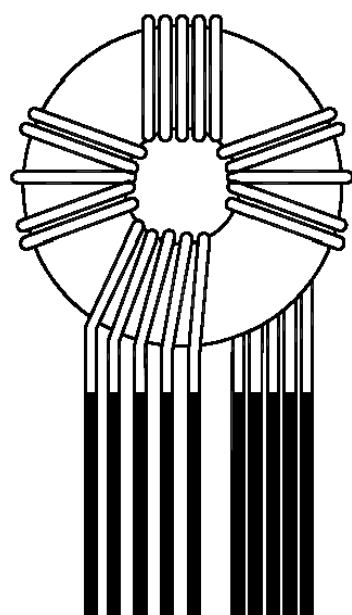


層 數 Winding	終 端 (pin) Terminal	銅 線 尺 寸 Wire Gauge (mm)	繞 線 圈 數 (Turns)	備 註 Note
N1	1 → 2	1.4	7.5	$\geq 2\mu\text{H}$, 1V/1KHz

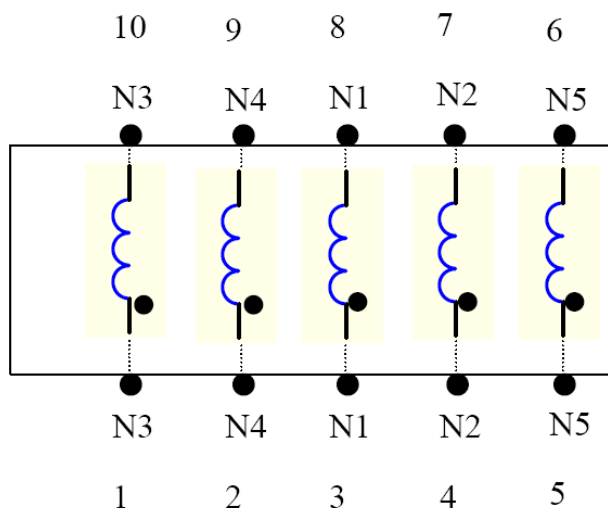
Core

Rod core 6x15(6 ϕ *15mm)

Doc.Title	L9 Specification	Institute by	SE
Doc.Number	A0	Page Number	22/36



Dimensions



Bottom Views

層 數 Winding	終 端 (pin) Terminal	銅線尺寸 Wire Gauge (mm)	繞線圈數 (Turns)	備 註 Note
N1	3→8	1.0	24.5	$\geq 24\mu\text{H}$, 1V/1KHz
N2	4→7	1.0	24.5	
N3	1→10	0.8	10.5	
N4	2→9	0.8	10.5	
N5	5→6	0.5	23.5	

Note:

1. N1,N2 shunt winding.
2. N3,N4 shunt winding.
3. N1,N2 use red enamel-insulated wire, N3,N4 use green enamel-insulated wire, N5 use golden enamel-insulated wire.

Core

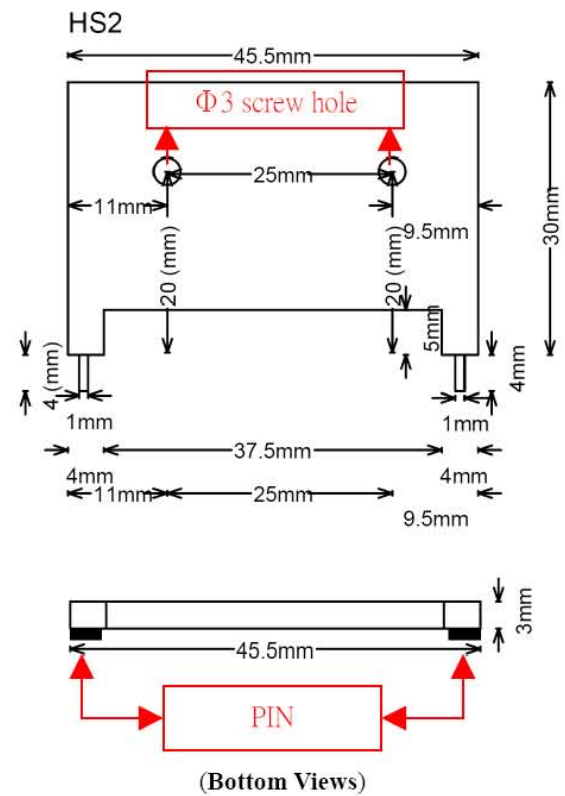
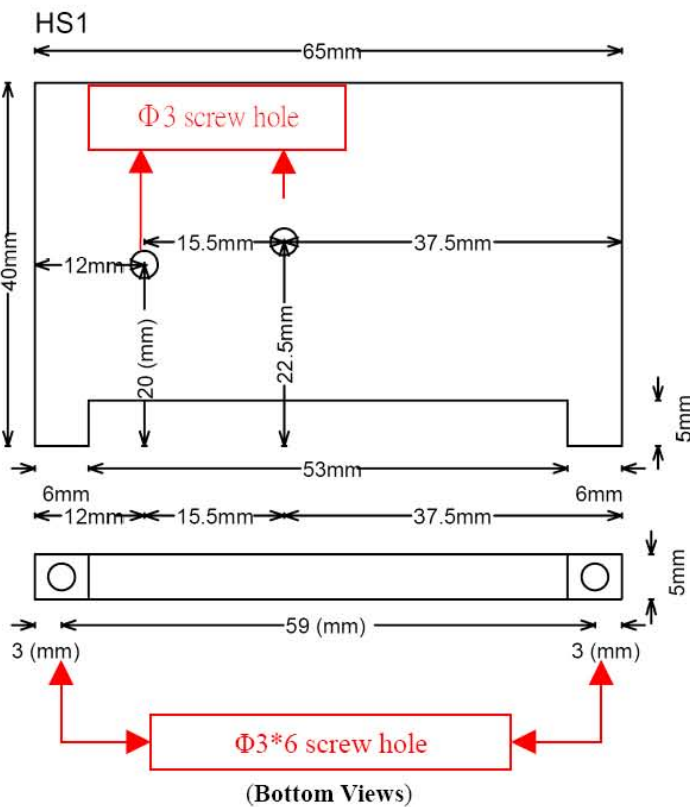
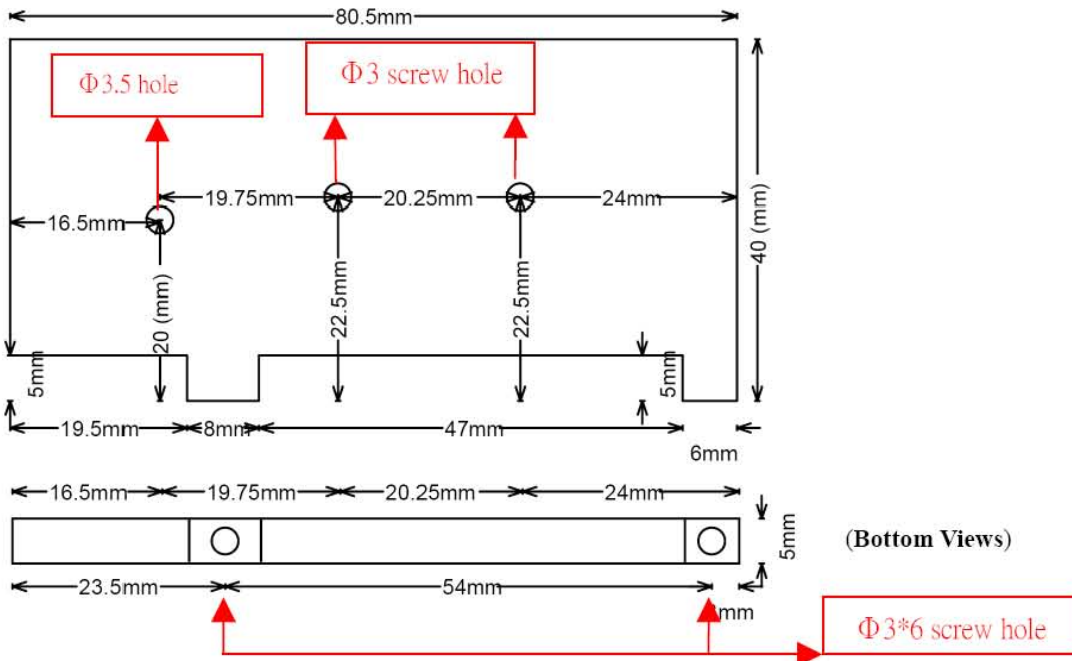
Toroids Core TR Type :

Powder (T094-1603、T94-26 YELLOW/WHITE)

OD=23.93mm ; ID=14.22mm ; HT=7.92mm

Doc.Title	Heat Sink Structure Drawing	Institute by	SE
Doc.Number	A0	Page Number	23/36

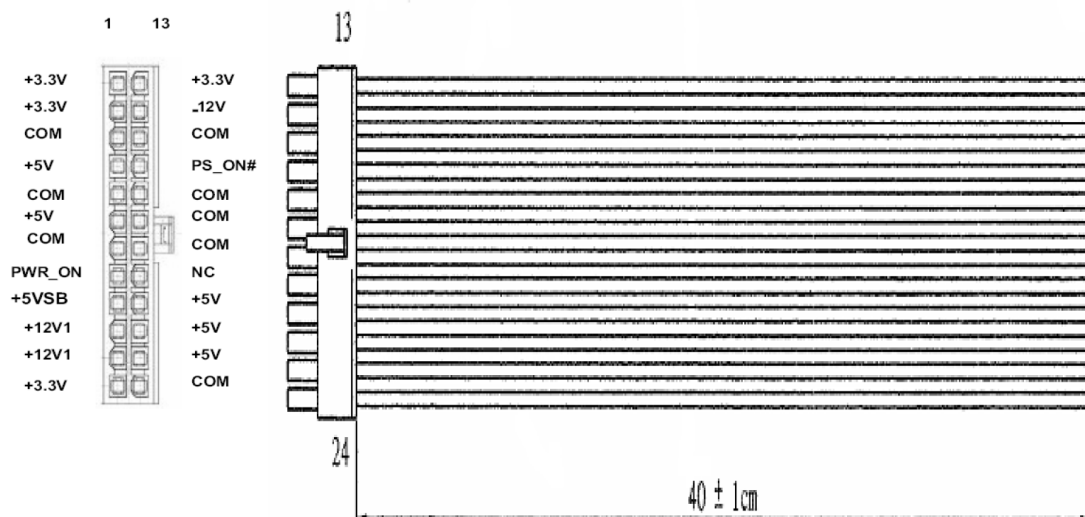
HS3



Doc.Title	Dc Connectors Approved Data	Institute by	SE
Doc.Number	A0	Page Number	24/36

Main Power Conneractor

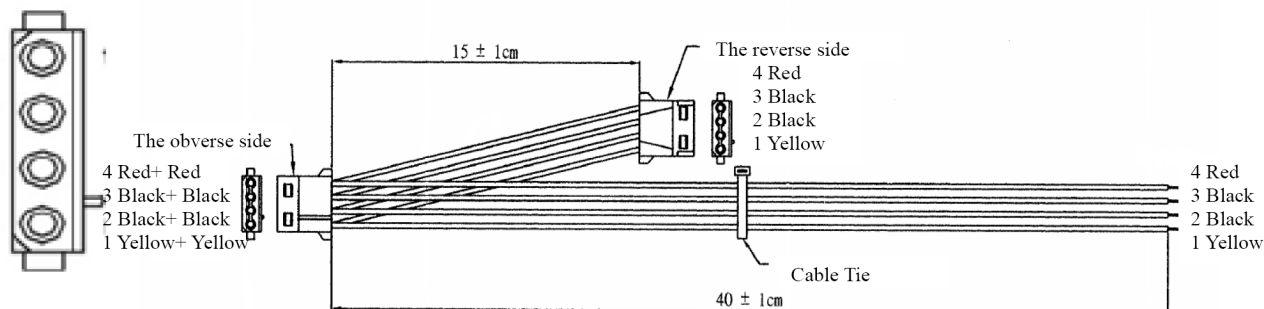
1 Orange	13 Orange + Brown
2 Orange	14 Blue
3 Black	15 Black
4 Red	16 Green
5 Black	17 Black
6 Red	18 Black
7 Black	19 Black
8 Gray	20 N/C
9 Purple	21 Red
10 Yellow	22 Red
11 Yellow	23 Red
12 Orange	24 Black



NOTE :

1. 13PIN use UL1007 #18 Orange and UL1007 #22 Brown
2. 9PIN use UL1007 #18
3. 8PIN and 16PIN use UL1007 #22
4. 9PIN and 14PIN use UL1007 #18
5. Other PIN use UL1007 #16
6. Please use cable tie on the wire

Peripheral Power Connector

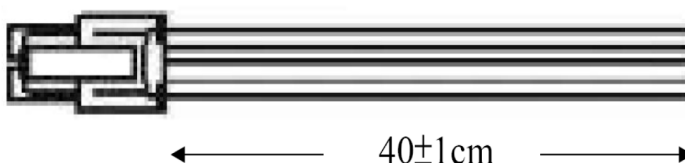
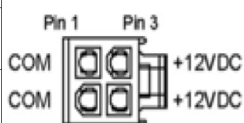


NOTE :

1. Each PIN use UL1007 #18
2. Please use cable tie on the wire

12V Power Connector

Pin 1	Pin 3
Black	Yellow/Black Stripe
Pin 2	Pin 4
Black	Yellow/Black Stripe



NOTE :

1. Each PIN use UL1007 #18
2. Please use cable tie on the wire

Doc.Title	PM30006-00 Functional Check Report	Institute by	SE
Doc.Number	A0	Page Number	25/36

3bp6 Test Model	SG6931	S/N :
Test Date:	7.13.2006	
Test Temperature	Ambient	
Test Equipment	AC Source: EXTECH 6220 Electronic Load: Chroma 63030 Multimeter: IDRC CP660 Oscilloscope: Tektronix TDS3032	
	1	Inrush Current:
	2	Over current protection:
	3	Input Wattage at Stand-by:
	4	Line Regulation & Load Regulation:
	5	Current Harmonic test:
	6	Efficiency:
	7	Power down warning:
	8	Cross regulation test:
	9	Output Transient Response :
	10	DC output rise time:
	11	Over shoot & Under Shoot:
	12	Hold up time:
	13	Short circuit protection:
	14	Brown out test:
	15	AC Trim up & Trim down:
	16	Temperate
	17	Surge & ESD:
	18	Input Power Waveform
	19	EMI
Note		

1 、 Inrush Current:

Test Condition:

Measure the startup input current waveform at maximum loading

Test Result:

Input Voltage	Inrush Current	Test Specifications
	SG6931	
115V/60Hz	29.6A	
230V/50Hz	51.8A	

2 、 Over current protection:

Test Condition:

Each DC output should not exceed 240VA during over loading test

Test Result:

	Input Voltage	12V1	12V2	5V	3.3V	5VSB	Test Condition
SG6931	115V/47Hz	17	17	15.5	23.5	4.1	
	230V/63Hz	17	17	15.5	23.5	4.1	

3 、 Input Wattage at Stand-by:

Test Condition:

The input wattage should be less than 1W at standby mode with 0.5W loading
--

Test Result:

Input Voltage	Input Power	Stability	Test Specifications
	SG6931	SG6931	
120V/60Hz	0.91	5.023	
240V/50Hz	1.35	5.023	

4、Line Regulation & Load Regulation:

Test Condition:

Line regulation: 1% Max.
Load regulation: 5% Max.

Test Result:

Input Voltage	Min. Load				Mid. Load				Max. Load			
	12V1	12V2	5V	3.3V	12V1	12V2	5V	3.3V	12V1	12V2	5V	3.3V
115V/60Hz	12.08	12.06	5.04	3.28	12.03	11.98	4.97	3.23	11.98	11.89	4.86	3.20
230V/50Hz	12.08	12.06	5.04	3.28	12.03	11.98	4.97	3.23	11.98	11.89	4.86	3.20
Line Regulation	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Load Regulation	12V1				12V2				5V			
	0.83%				1.42%				3%			

5、Current Harmonic test:

Test Condition:

Measure input current power factor (PF) and total harmonic distortion(THD) at various line and output loading

Test Result:

Input Voltage		SG6931		Test Specifications
		PF	THD (%)	
120V/60Hz	Typ. Load	0.9975	6.23%	
	Max. Load	0.9994	4.041%	
240V/50Hz	Typ. Load	0.9915	8.49%	
	Max. Load	0.9989	7.314%	

6、Efficiency:

Test Condition:

Measure efficiency at Min., Mid. and Max. loading						
300W (loading shown in Amps)						
Loading	+12V1	+12V2	+5V	+3.3V	-12V	+5Vsb
Full	6	10.5	9	13.5	0.3	1.0
Typical	3	5.3	4.5	6.8	0.1	1.0
Light	1.2	2.1	1.8	2.7	0.0	1.0

Test Result:(Loading distribution is defined by ATX12V power supply design guide V2.2 spec.)

Input Voltage		Full Load	Typical Load	Light load
SG6931	90V/60Hz	76.66%	78.09%	75.54%
	115V/60Hz	77.89%	79.59%	77.07%
	180V/50Hz	79.31%	80.45%	78.05%
	230V/50Hz	79.46%	80.65%	78.48%
	264V/50Hz	79.58%	81.36%	78.68%
Test Spec.				
Required		70%	72%	65%
Recommended		77%	80%	75%

7、Power down warning:

Test Condition:

Load: Max. load
During AC power off, the PG signal should go low at least 1ms before the 5V output down to 4.75V

Test Result:

	Max. Load	Test Spec.(mS)
	SG6931	
Vin=90V	4.4 mS	>1

8、 Cross regulation test:

Test Condition:

Measure the output voltage in the list loads at 120V input.

Test Result:

		12V1	12V2	5V	3.3V	Test Spec.
12V1/6A, 12V2/10.5A ,5V/9A, 3.3V/13.5A	SG6931	12.03	11.92	4.92	3.20	
12V1/9A, 12V2/13A, 5V/0.3A, 3.3V/6A	SG6931	11.50	11.40	5.16	3.22	
12V1/1.5A/ 2V2/1.5A, 5V/12A, 3.3V/10A	SG6931	12.44	12.44	4.78	3.21	
12V1/0.5A 12V2/0.5A, 5V/0.3A, 3.3V/0.5A	SG6931	12.10	12.09	5.06	3.36	
12V1/0.5A 12V2/0.5A, 5V/4.5A, 3.3V/0.5A	SG6931	12.46	12.46	4.90	3.38	
12V1/6A, 12V2/9A, 5V/12A, 3.3V/18A	SG6931	12.13	12.01	4.83	3.18	

9、Output Transient Response：

Test Condition:

summarizes the expected output transient step sizes for each output. The transient load slew rate is = 1.0 A/μs.

Output	Max. step size (% of rated output amps per Sec 3.2.3) ⁽¹⁾	Max. step size (amps)
+12 V1DC	40%	
+12 V2DC	60%	
+5 VDC	30%	
+3.3 VDC	30%	
-12 VDC		0.1 A
+5 VSB		0.5 A

⁽¹⁾ For example, for a rated +5 VDC output of 18 A, the transient step would be 30% × 18 A = 5.4 A

Test Result:

	Input Voltage	Max. Load				Test Spec		
		12V1	12V2	5V	3.3V	12V	5V	3.3V
SG6931	115V/60Hz	150/188	124/154	126/144	134/152			
	230V/50Hz	150/188	124/154	126/144	134/152			

10、DC output rise time:

Test Condition:

Load: Max. load & Min. load
DC Output rise time: 20mS max.

Test Result:

Input Voltage	Max. Load			
	12V1	12V2	5V	3.3V
120V /60Hz	8.8	8.8	8.8	5.64
230V /50Hz	8.9	8.7	8.79	5.46

11 、 Over shoot & Under Shoot:

Test Condition:

Less than 5% of nominal voltage value
Load: Max. load

Test Result:

	Input Voltage	Over Shoot				Under Shoot			
		12V1	12V2	5V	3.3V	12V1	12V2 _C	5V	3.3V
SG6931	230V/50Hz Max load	0mV	0mV	0mV	0mV	0mV	0mV	0mV	0mV
	230V/50Hz Min load	0mV	0mV	0mV	0mV	0mV	0mV	0mV	0mV

12 、 Hold up time:

Test Condition:

After AC power off, the output voltages should stay at nominal value for at least 17ms.

Test Result:

Input Voltage	Max. Load	Test Spec.
	SG6931	
220V/50Hz	17.2	>16mS

13 、 Short circuit protection:

Test Condition:

In case of short circuit on any DC output, the power supply should be protected without damage.

Test Result:

Input Voltage	Max. Load	Mid. Load	Min. Load	Test Condition
	SG6931	SG6931	SG6931	
90V/47Hz	PASS	PASS	PASS	
264V/63Hz	PASS	PASS	PASS	

14 、 Brown out test:

Test Condition:

Decrease input AC voltage gradually and measure the turn-off threshold. After DC power off, increase input voltage and measure the recovery threshold.

Test Result:

Turn off Voltage		Turn on voltage		Test Spec.
Max. Load	Min. load	Max. Load	Min. load	
SG6931	SG6931	SG6931	SG6931	
75V	70V	85V	80V	

15 、 AC Trim up & Trim down:

Test Condition:

Switch the input voltage from 120V to 240V or from 240V to 120V, the output voltages should be normal and the output of PFC bus should be less than 450V.

Test Result:

Input Voltage	Max. Load	Min. Load	Test Condition
	SG6931	SG6931	
120V → 240V	LATCH OFF	LATCH OFF	
240V → 120V	LATCH OFF	LATCH OFF	

16、 Temperature :

Test Condition:

Max. load & total combined output 3.3V& 5V is=120W when input voltage is 90V/50Hz

Test Result:

@ 5Vsb=2.5A 3.3VDC=18A 5VDC=12A 12V1DC=6A 12V2DC=8A -12VDC=0.3A

WITH 12CM FAN

		0hr	1hr	3hr
1	Q1(PFC MOSFET)	24.3℃	76.1	79.3
2	D7(PFC DIODE)	24.3℃	76.3	75.4
3	C16(BUCK CAPACITY)	24.3℃	34.5	32.6
4	L2(PFC CHOKE)	24.3℃	53.8	52.9
5	BD1(BRIDGE)	24.3℃	66.2	67.2
6	Q4(HIGH SIDE MOS)	24.3℃	51.4	50.7
7	Q5(LOW SIDE MOS)	24.3℃	53.5	53.2
8	TX2(PLUSE TRANSFER)	24.3℃	28.3	28.1
9	TX3(FORWARD TRANSFER)	24.3℃	48.0	50.2
10	Q2(FLYBACK MOS)	24.3℃	42.5	41.6
11	TX1(FLYBACK TRANSFER)	24.3℃	45.4	44.9
12	L4 (Mag-Amp choke)	24.3℃	39.5	40.0
13	D10、 D11(12V DIODE)	24.3℃	80.4	81.7
14	D15(-12V DIODE)	24.3℃	37.0	35.6
15	D13(5V DIODE)	24.3℃	64.7	63.5
16	L9(CHOKE)	24.3℃	52.4	51.6
17	D16(3.3V DIODE)	24.3℃	71.9	71.2
18	L7(3.3VCHOKE)	24.3℃	57.3	53.7

17、 SURGE & ESD

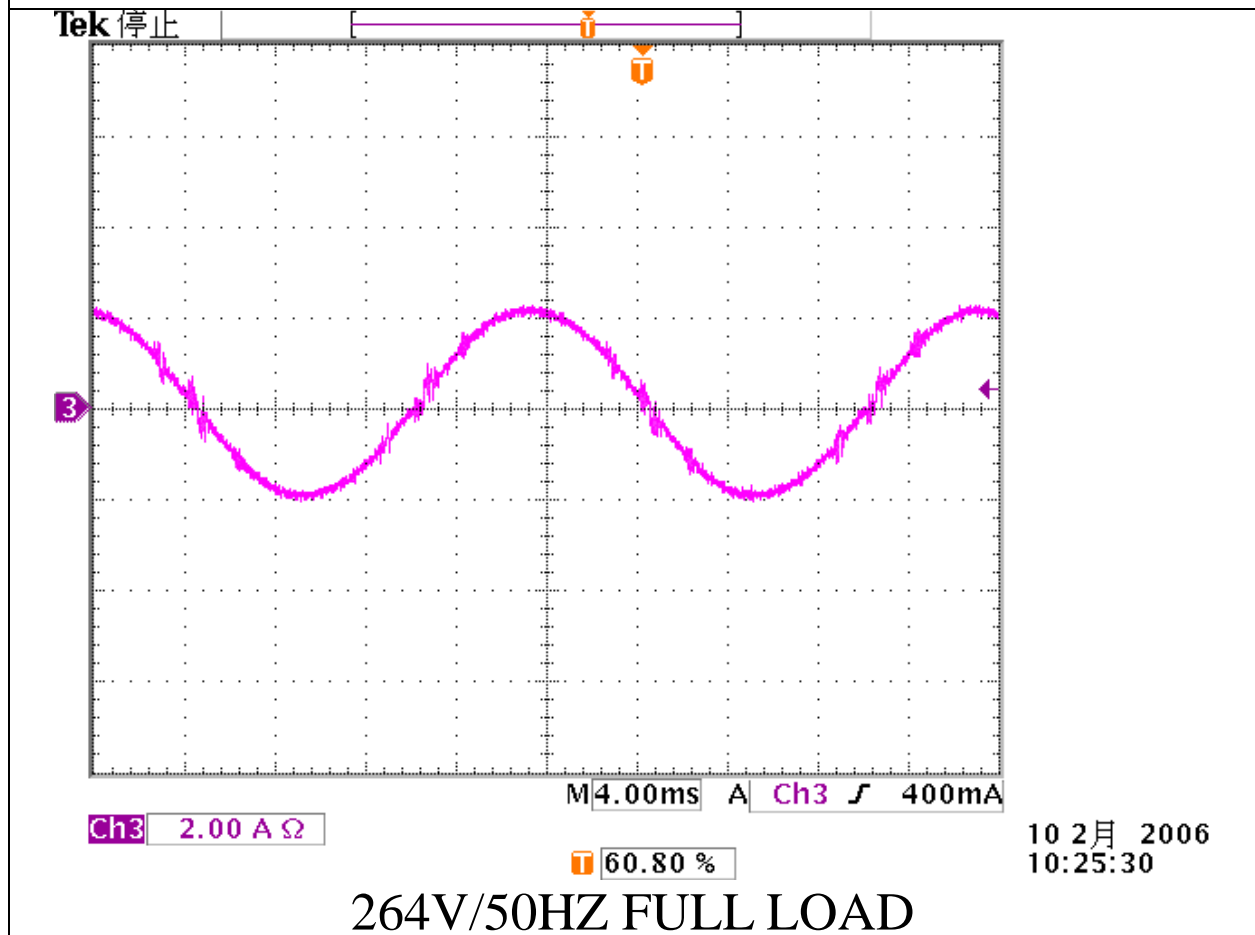
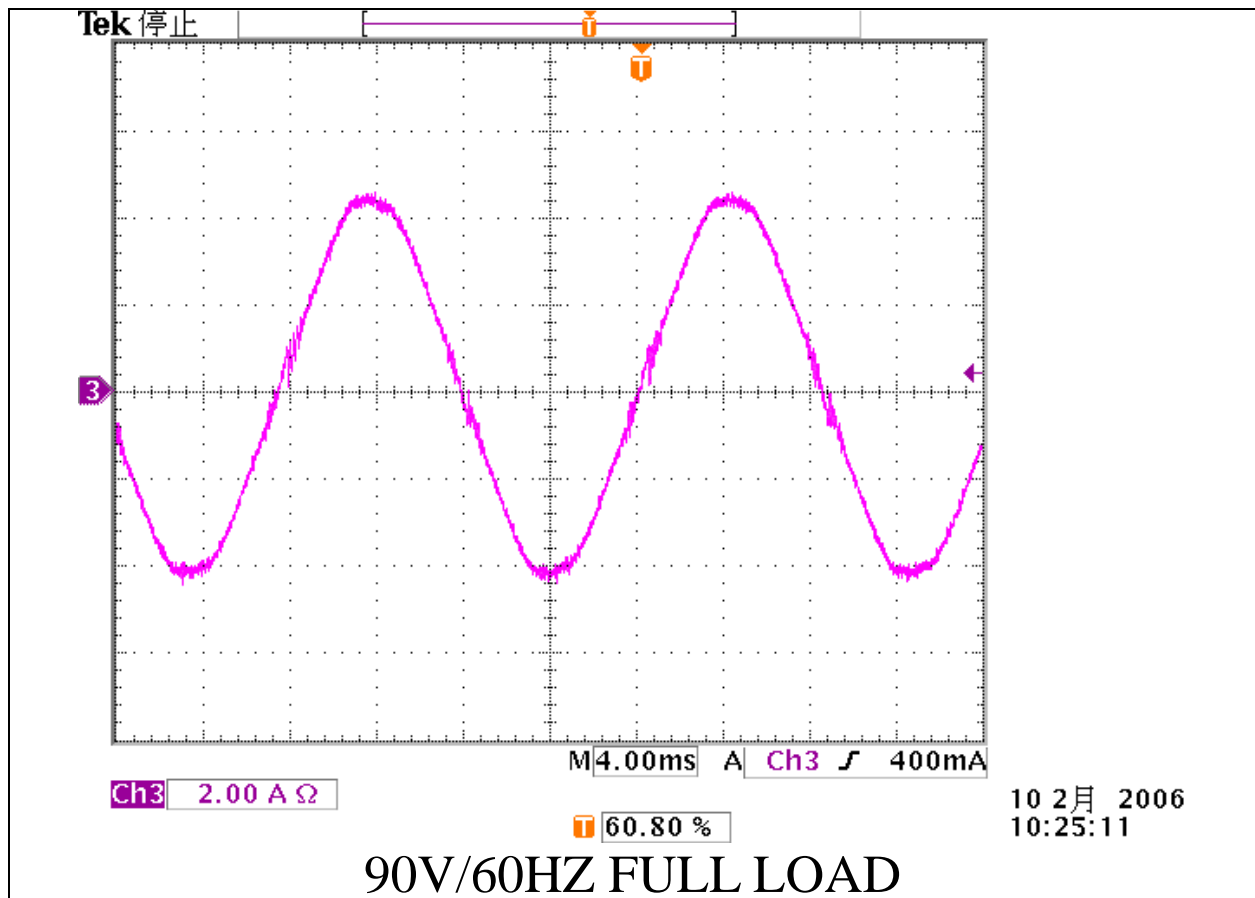
SURGE : L-N 1KV PASS

L-PE N-PE 2.5KV PASS

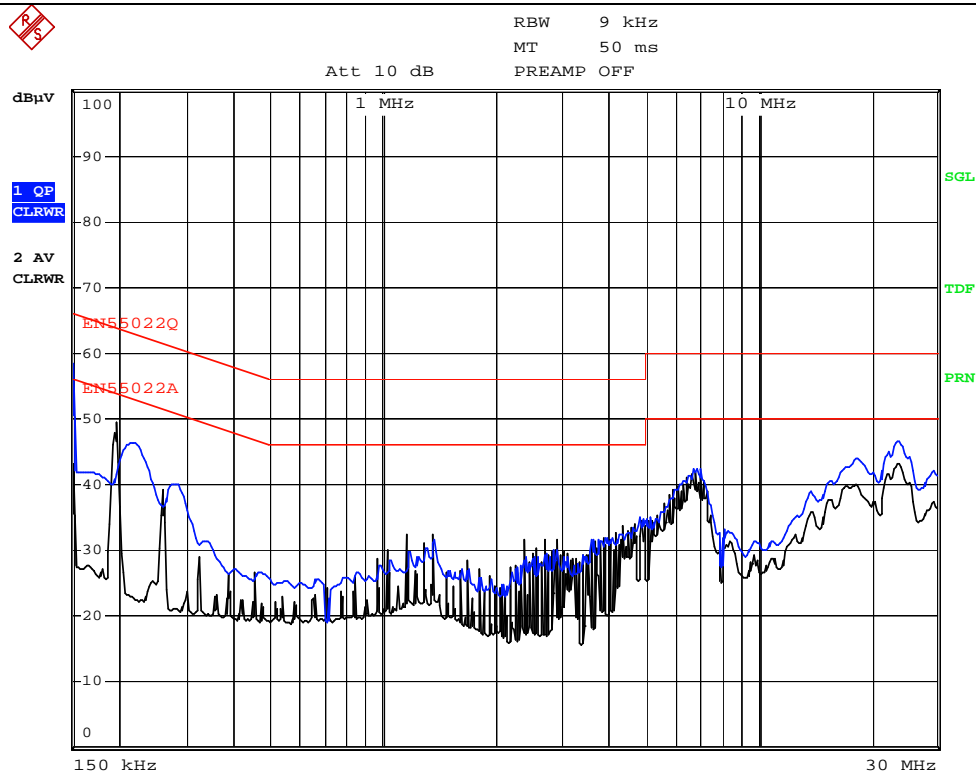
ESD : CONTACT 8.8KV PASS

AIR 16.5KV PASS

18、 Input Power Waveform : SG6931

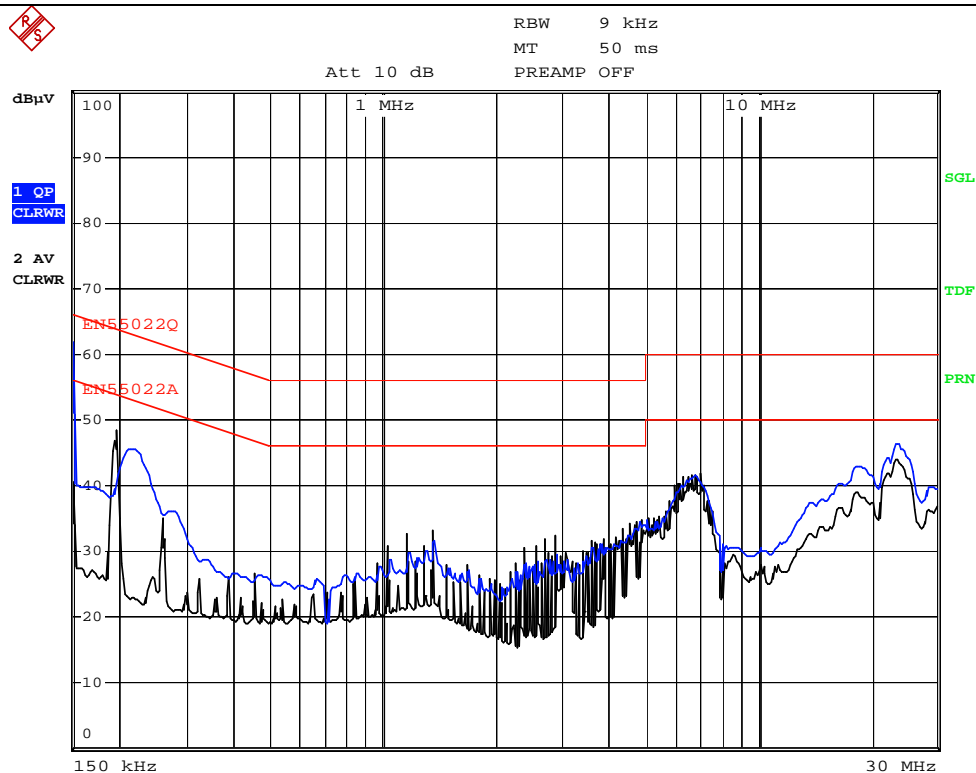


19、 EMI TEST :



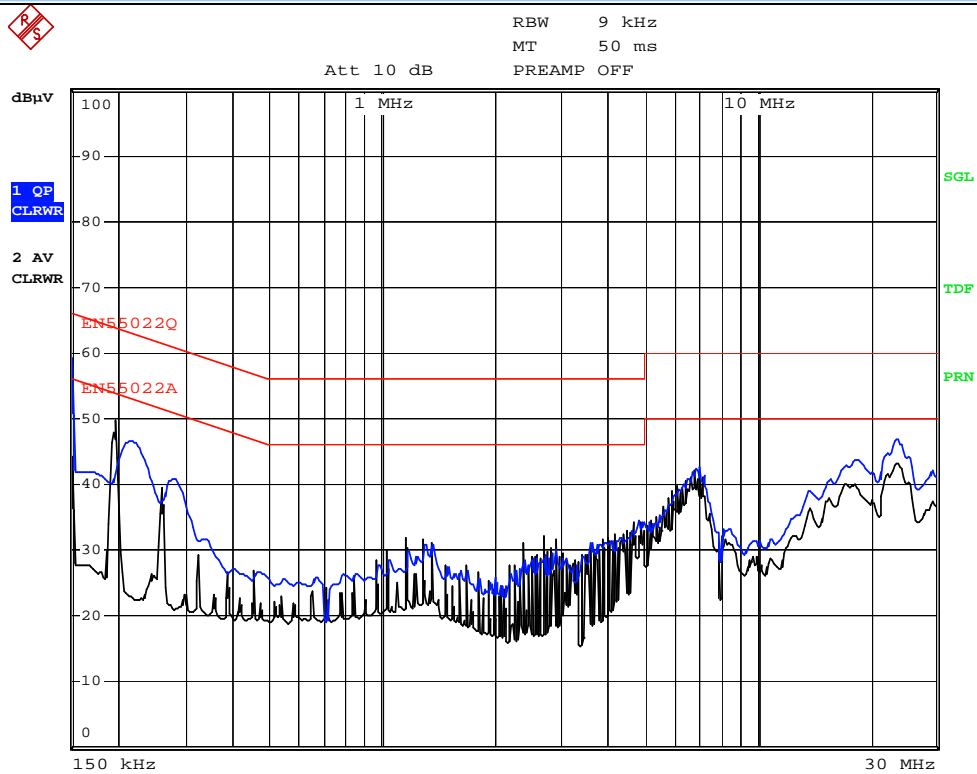
Date: 19.MAR.2006 20:11:05

115/60HZ CONDUCTION-L



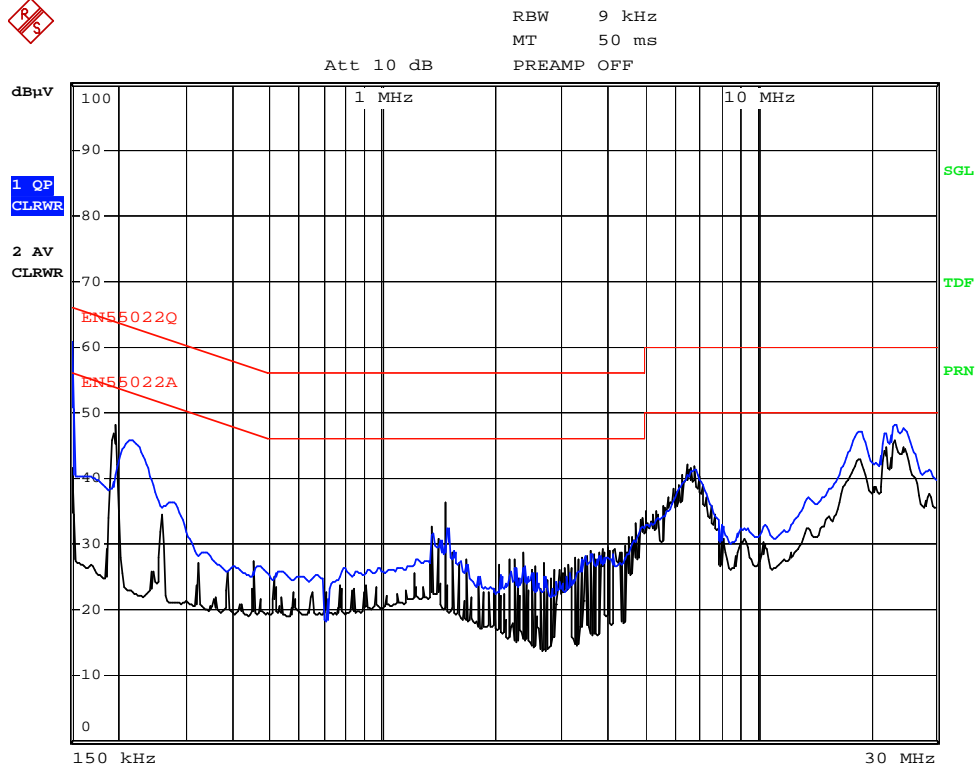
Date: 19.MAR.2006 20:01:48

230/50HZ CONDUCTION-L



Date: 19.MAR.2006 19:44:12

115/60HZ CONDUCTION-N



Date: 19.MAR.2006 19:52:46

230/50HZ CONDUCTION-N