

SPECIFICATION FOR APPROVAL

MESSER:

DESCRIPTION: SWITCHING POWER SUPPLY

MODEL NO. : CFI-N090X

APPROVED BY		

L&C Technology Inc.

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1.0 SCOPE

The Power Supply is a 90 Watts 5 outputs, universal input switching power supply, which could be use on many products.

2.0 Electrical

The Following electrical requirements must be met over the environmental ranges as defined in Section 6 ◦

2.1 AC Input

Table 1 lists AC input voltage and frequency requirements for continuous operation. The power supply shall be capable of supplying full-rated output power over two input voltage ranges rated 103-127 VAC and 207-240 VAC RMS nominal. The correct input range for use in a given environment may be either switch-selectable or auto-ranging. The power supply shall automatically recover from AC power loss. The power supply must be able to start up under peak loading at 180 VAC ◦

Table 1. AC Input Line Requirements

	Minimum	Nominal	Maximum	Units
Input Voltage	90	100-240	264	Vac
Input Frequency	47	50/60	63	Hz

2.1.1 Input Over Current Protection

The power supply shall be protected from primary over current by means of the input fuse rated as: 5 Arms/ 250VAC ◦

2.1.2 Range Switching

Not Applicable.

2.1.3 AC Input Current

Table 2. AC Input Current

AC Input	Maximum	Units
115Vac	5	Amps
230Vac	3	Amps

2.1.4 Inrush Current

60A maximum at 240Vac/50Hz,25°C maximum load cold start.

2.2 DC Output

2.2.1 DC Voltage Regulation

Table 3. DC Voltage Regulation

Output	Range	Minimum	Nominal	Maximum	Unit
+12VDC	±5%	+11.40	+12.00	+12.60	Volts
+5VDC	±5%	+4.75	+5.00	+5.25	Volts
+3.3VDC	±5%	+3.14	+3.30	+3.47	Volts
-12VDC	±10%	-10.80	-12.00	-13.20	Volts
+5Vsb	±5%	+4.75	+5.00	+5.25	Volts

2.2.2 DC Output load current ranges

Combined Line and Cross-Load Regulations Over any combination of line voltage specified in Section 2.1 and the cross-load condition shown Table below. The output voltage must be as shown in the following ◦

Table 4. DC Output load current ranges

Output#	Output	I min	I max.
1	+12 V	0.6A	2.5A
2	+5 V	0.2A	7.0A
3	+3.3 V	0.1A	5.0A
4	-12 V	0.0A	0.1A
5	+5 VSB	0.0A	1.0A
Total power rating		At 115 V _{AC}	60W
		At 230 V _{AC}	90W

2.2.3 Output Ripple/Noise

Ripple and noise are defined as periodic or random signals over a frequency band of 10 Hz to 20 MHz. Measurements shall be made with an oscilloscope with 20 MHz bandwidth. Outputs should be bypassed at the connector with a 0.1uF ceramic disk capacitor and a 47uF electrolytic capacitor to simulate system loading ◦

Table 5. DC Output Ripple/Noise

Output	Maximum Ripple and Noise
+12VDC	200mV
+5VDC	80mV
+3.3VDC	80mV
-12VDC	200mV
+5Vsb	80mV

2.2.4 Efficiency

It should provide an efficiency of (75%) minimum , when measured at 115Vac/60Hz maximum load .

2.2.5 Capacitive Load

The power supply should be able to power up and operate with the regulation limits defined in Section 2.2.1 with the following capacitances simultaneously present on the DC outputs.

Table 6. Output Capacitive Load

Output	Capacitive load (uF)
+12V	10,000
+5V	20,000
+3.3V	6,000
-12V	350
+5Vsb	350

3.0 Timing / Housekeeping / Control

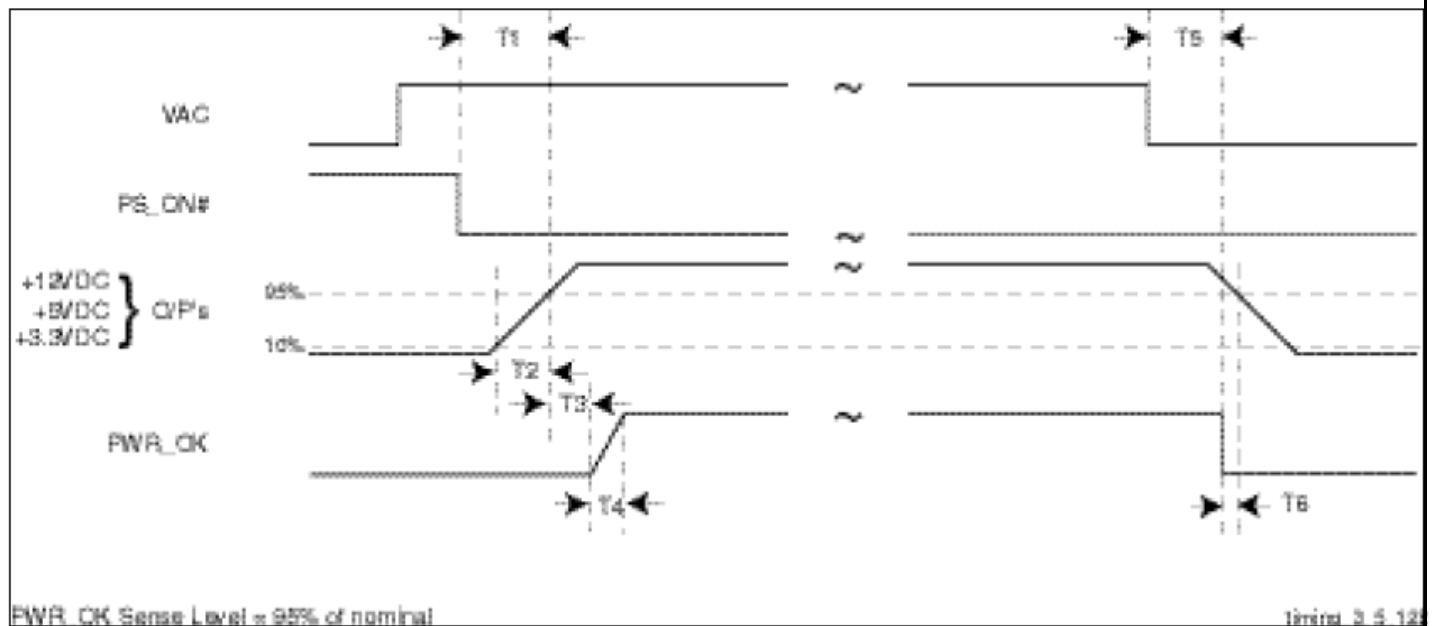


Figure 1. Power Supply Timing

3.1 Power Good signal (PWR-OK)

The power good signal (TTL compatible) shall be provided to indicate normal operating conditions of the power supply. The power good signal will be asserted (low state) during power up until the +5VDC outputs are within the regulation range defined in Section 2.2.1 The electrical and timing characteristics of the power good signal, are shown in Table 7 and Figure1: Power Supply Timing.

Table 6. PWR_OK Signal Characteristics

Signal Type	+5 V TTL compatible
Logic level low	< 0.4 V while sinking 4 mA
Logic level high	Between 2.4 V and 5 V output while sourcing 200 μ A
High-state output impedance	1 k Ω from output to common
PWR_OK delay	100 ms < T3 < 500 ms
PWR_OK rise time	T4 \leq 10 ms
AC loss to PWR_OK hold-up time	T5 \geq 17 ms
Power-down warning	T6 > 1 ms

3.2 PS_ON#

PS_ON# is an active-low, TTL-compatible signal that allows a motherboard to remotely control the power supply in conjunction with features such as soft on/off, Wake on LAN, or wake-on-modem. When PS_ON# is pulled to TTL low, the power supply should turn on the five main DC output rails: +12VDC, +5VDC, +3.3VDC, and -12VDC. When PS_ON# is pulled to TTL high or open-circuited, the DC output rails should not deliver current and should be held at zero potential with respect to ground. PS_ON# has no effect on the +5VSB output, which is always enabled whenever the AC power is present.

Table 7. PS_ON# Signal Characteristics

	Min.	Max.
V _{IL} , Input Low Voltage	0.0 V	0.8 V
I _{IL} , Input Low Current (V _{in} = 0.4 V)		-1.6 mA
V _{IH} , Input High Voltage (I _{in} = -200 μ A)	2.0 V	
V _{IH} open circuit, I _{in} = 0		5.25 V

3.3 Power-on Time

The power-on time is defined as the time from when PS_ON# is pulled low to when the +12 VDC, +5 VDC, and +3.3 VDC outputs are within the regulation ranges specified in Section 2.2.1. The power-on time shall be less than 500 ms (T1 < 500 ms). +5 VSB shall have a power-on time of two seconds maximum after application of valid AC voltages.

3.4 Rise Time

The output voltages shall rise from \leq 10% of nominal to within the regulation ranges specified in Section 2.2.1 within 0.1 ms to 20 ms (0.1 ms \leq T2 \leq 20 ms) .

3.5 HOLD-UP TIME

Upon the loss of AC input power, the output shall remain within regulation under maximum load as specified in paragraph 2.2.2 and at nominal input voltage for minimum of 10 ms after the last current pulse drawn from the line .

3.6 Overshoot at Turn-on / Turn-off

The output voltage overshoot upon the application or removal of the input voltage, or the assertion/de-assertion of PS_ON#, under the conditions specified in Section 2.1, shall be less than 10% above the nominal voltage. No voltage of opposite polarity shall be present on any output during turn-on or turn-off ◦

4.0 Output Protection

4.1 Short-circuit Protection

A short circuit placed between DC return and output (approximately 0.1 ohm) shall Cause no damage and the main output shall shutdown and latch off, but only the +5VSB shall recover automatically ◦

4.2 Over Voltage Protection

When the DC output (+5V,+12V,and +3.3V) have over voltage condition , the power supply shall provide latch mode over voltage protection ◦

Table 8. Over Voltage Protection

Output	Minimum	Nominal	Maximum	Unit
+12V	13.4	15	15.6	Volts
+5V	5.74	6.3	7.0	Volts
+3.3V	3.76	4.2	4.3	Volts

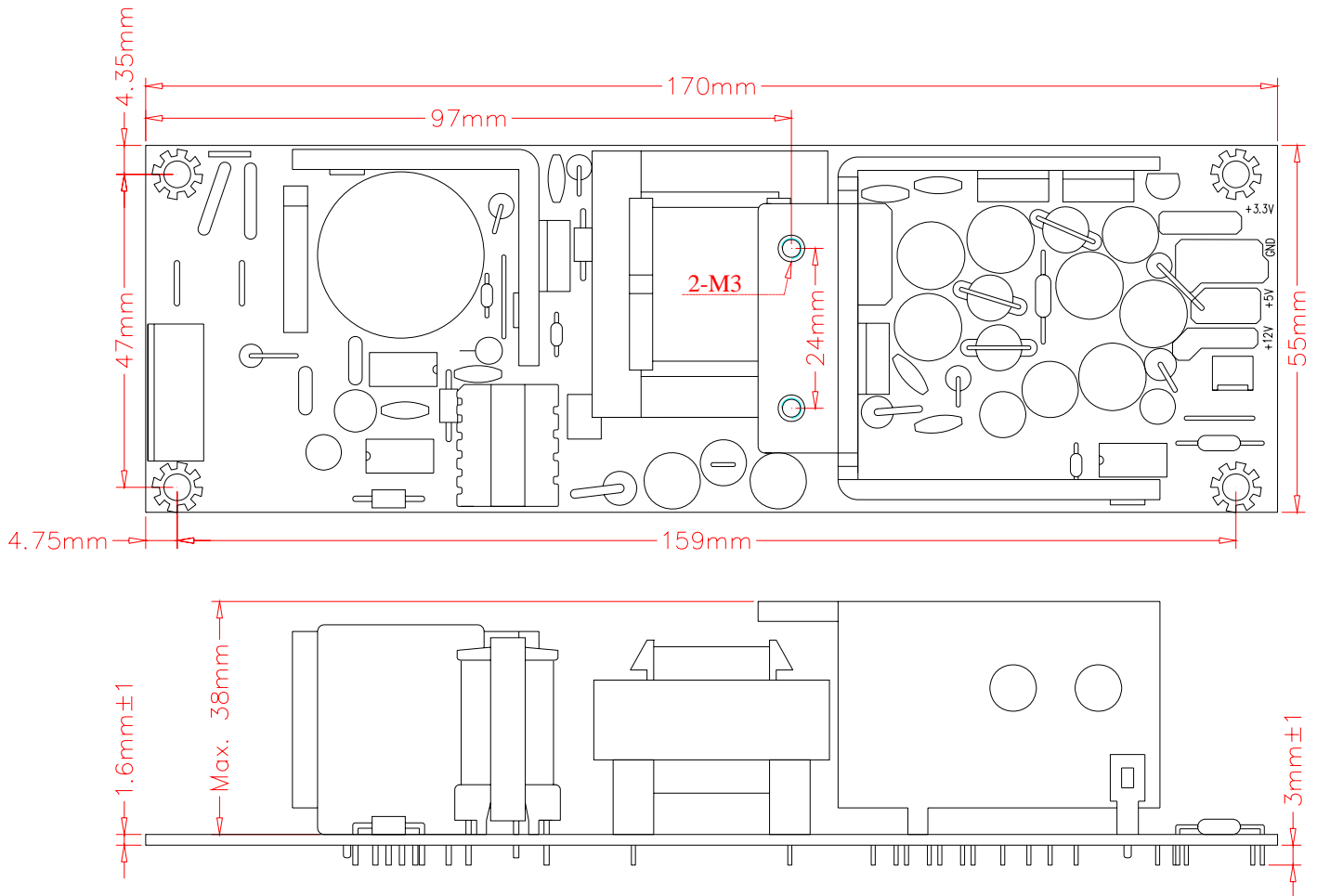
4.3 Reset after Shutdown

If the power supply latches into a shutdown state because of a fault condition on its outputs, the power supply shall return to normal operation only after the fault has been removed and the PS_ON# has been cycled OFF/ON with a minimum OFF time of 1 second ◦

5.0 Mechanical

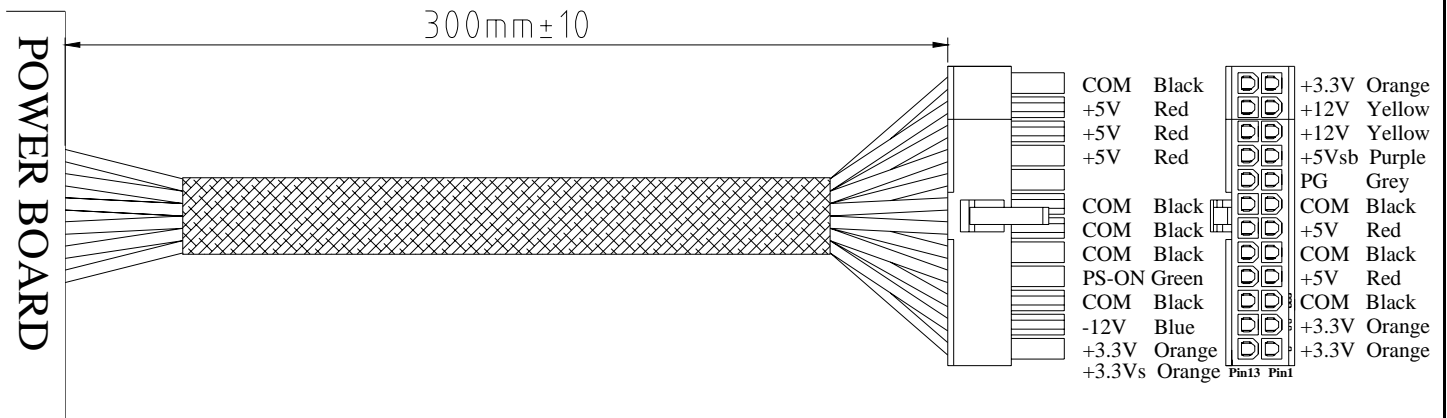
5.1 Physical Dimensions

The physical outline of 170(L)*55(W)*38(H)mm ◦



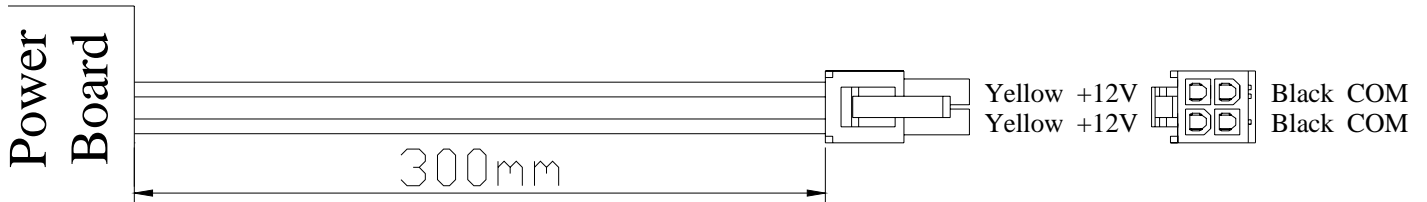
5.2 DC CONNECTORS

5.2.1 ATX Main Power Connector



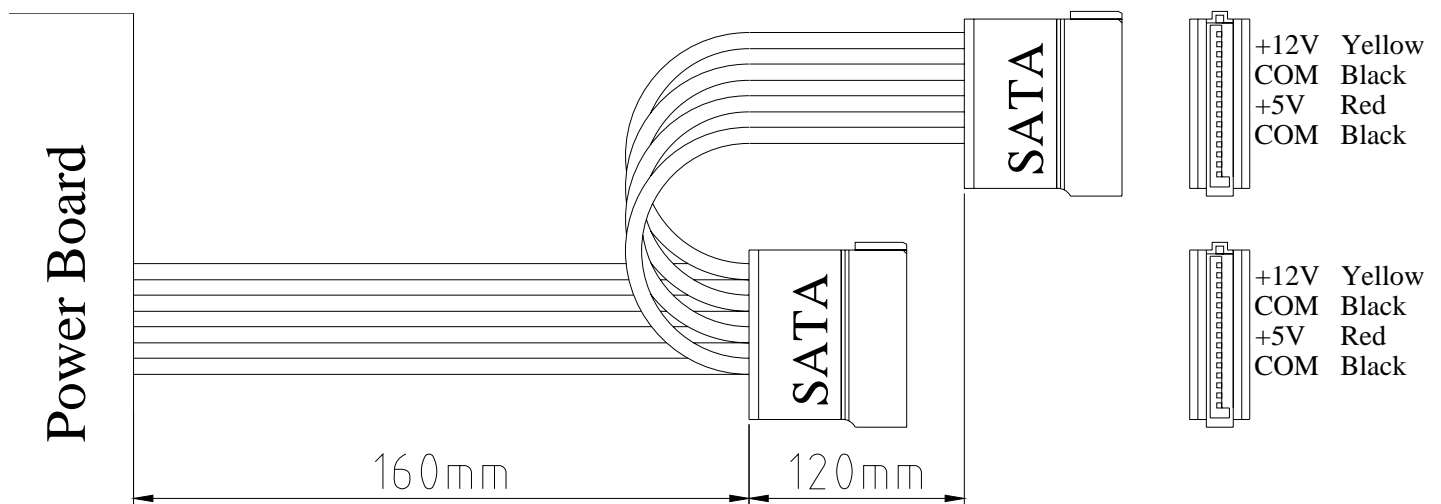
Wire	Signal	AWG	Pin	Pin	AWG	Signal	Wire
Orange	+3.3V	22	13	1	22	+3.3V	Orange
Blue	-12VDC	22	14	2	22	+3.3V	Orange
Black	COM	22	15	3	22	COM	Black
Green	PS-ON	22	16	4	22	+5VDC	Red
Black	COM	22	17	5	22	COM	Black
Black	COM	22	18	6	22	+5VDC	Red
Black	COM	22	19	7	22	COM	Black
White	NC	22	20	8	22	POK	Grey
Red	+5VDC	22	21	9	22	+5VSB	Purple
Red	+5VDC	22	22	10	22	+12VDC	Yellow
Red	+5VDC	22	23	11	22	+12VDC	Yellow
Black	COM	22	24	12	22	+3.3V	Orange

5.2.2 +12 V Power Connector



Wire	Signal	AWG	Pin	Pin	AWG	Signal	Wire
Black	COM	22	3	1	22	+12VDC	Yellow
Black	COM	22	4	2	22	+12VDC	Yellow

5.2.3 Serial ATA Drive Connectors



Pin	AWG	Signal	Wire
1	--	N/A	N/A
2	22	COM	Black
3	22	+5VDC	Red
4	22	COM	Black
5	22	+12VDC	Yellow

6.0 Environment

6.1 Temperature

Operating ambient :5°C ~ +50°C

Non-operating ambient: -20°C ~ +70°C

6.2 Humidity

Operating:5% to 85% relative humidity(non-condensing)

Non-operating:5% to 95% relative humidity(non-condensing)

6.3 Altitude

Operate properly at any altitude between 0 to 10,000 feet ◦

7.0 BURN IN TEST

The power supply do the burn in test that with 80% load for each piece power supply, the tested temperature be controlled at 40+/-5 degree centigrade. The test be finished after 45minutes later ◦

8.0 HI-POT TEST

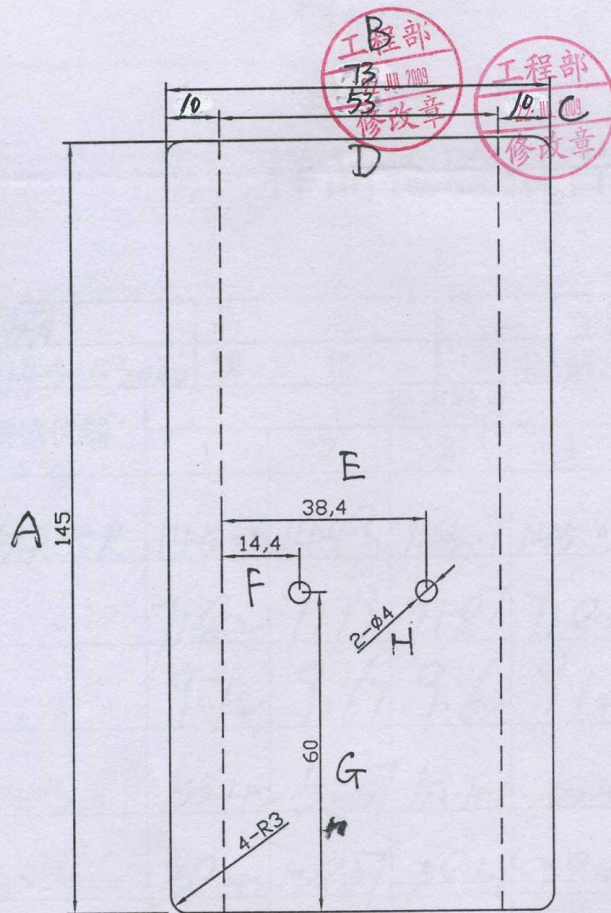
The power supply shall be capable of withstanding:

Input power line to frame ground high potential test of 300Vdc for 5 second minimum without breakdown.

9.0 Mean Time Between Failures (MTBF)

The calculated MTBF shall be greater than 50,000 hours ◦

While tempered at 25 °C ambient, 230Vac input line voltage and 80% load ◦



沿压痕向上折成形
 THICKNESS: 0.35 ± 0.03
 SIZE TOLERANCE: ± 0.5
 UNIT: MM

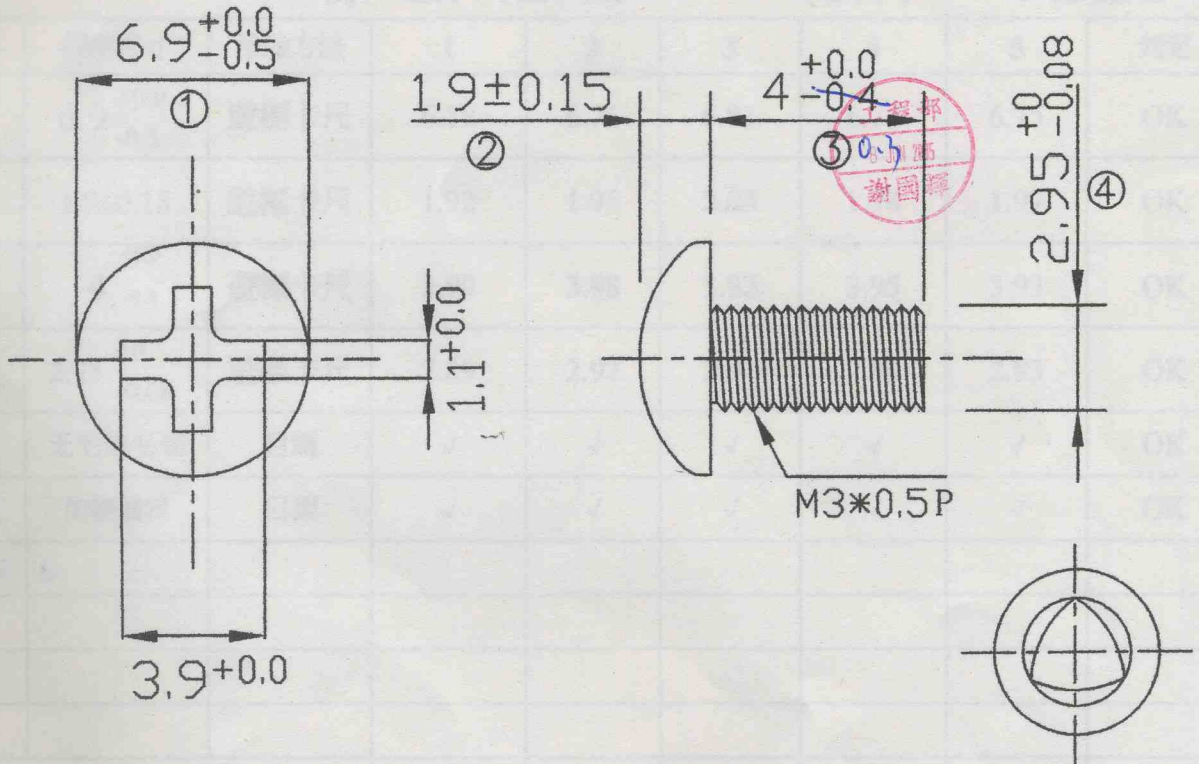
PURCHASER	成翔电子(东莞)有限公司	APPROVAL SOURCE	GARWARE POLYESTER LTD
MATERIAL	MYLAR FILM (EM6-TYPE) UL-94V2	VENODR AGENT	恆碩電子廠
PART NO.	ZPMA145053000	PART NAME	MLC71.8-145*0.35mT
COLOR	乳白色	DRAWN BY	熊丽华
APPVD. BY		SCALE	DATE 2009.07.21
DATE		REV.	A

骏业五金制品厂

样品承认书

工程图

品名	螺丝	版本	A	客户代码		客户品名	
规格	3*4TM三角尾	图档序号		客户编号		客户规格	
料号		电脑档名		单重		客户料号	



品名重点	材 质	1018* ϕ 2.56
	表面处理	加硬镀镍
	包装规范	

检 验 重 点			公差使用规范	客户承认章
重点尺寸	次要尺寸	一般尺寸	.x ± 0.1	
			.xx ± 0.1	
			.xxx $+0.1$ -0	
①②③④				

视图方法	比例	单位	核 准	工程 审核	制 图	
第三角视图	无	MM	张镜源	徐容泰	姚瑞娟	