

Product Sheets for Approval

Model No.
438-6190

- 1. Specification**
- 2. Specification & Dimension**
Heat Sink / Clip / Fan / Phase change material
- 3. Test Reports**
- 4. RoHS Compliant: "all materials and processes used in fabrication of this assembly must ensure compliance to European Union DIRECTIVE 2002/95/EC (RoHS) current revision".**

Thermal Performance

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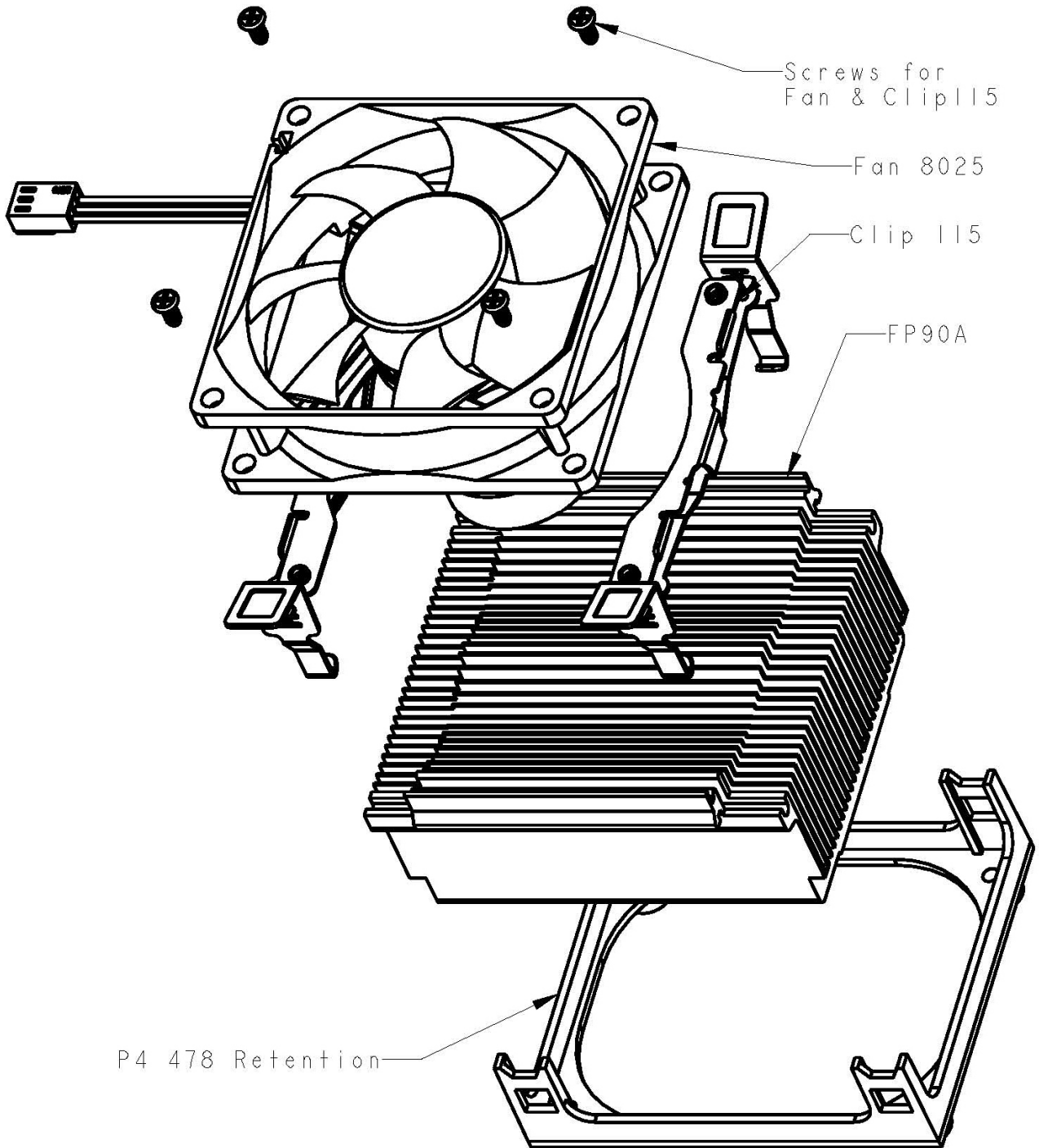
Doc No. :	Audited by	Checked by	Drafted by
Issued Date : 01 Oct., 2008			
Edition :			

Specification

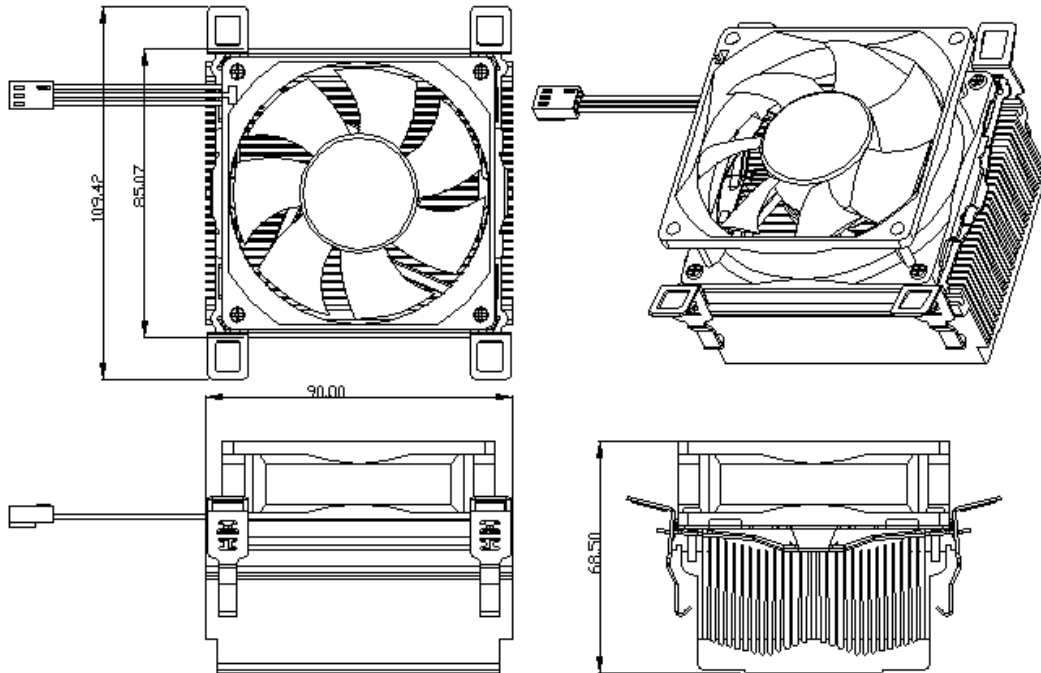
Part Number :	438-6190
Fan (Per Fan)	
Sensor Temperature	
Operation Voltage	DC 10.2 ~ 13.8V
Rated Voltage	DC12 V
Input Current	0.24 A MAX.
Input Power	2.88 W MAX.
Bearing System	ELR
Fan Speed(RPM)	3000±15%RPM
Max. Air Delivery(CFM)	33.60 ±15%CFM
Noise Level	34.00 ±2dB(A)
Fan Safety	UL Approved
Fan with RPM signal output	YES
Heatsink	
Dimension	90*85*44 mm
Material	Aluminum(6063)
CLIP	
Material	Steel(K7)
Thermal Interface	High thermal conductive interface
Material	GW101
Connector	CKM2510 3P
Wire Length	200±10 mm
Total Weight	370 g

* **ELR = Elastic Lubricant Retainer Bearing**

EXPLODER



DIMENSION DRAWING



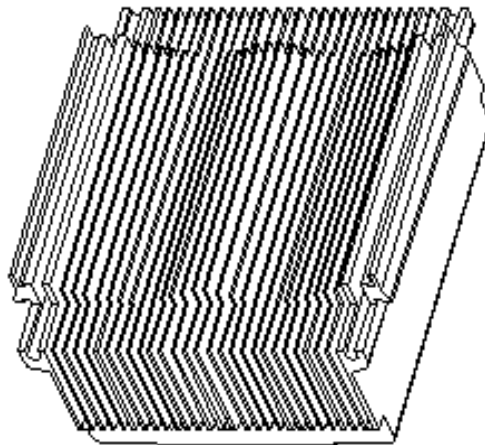
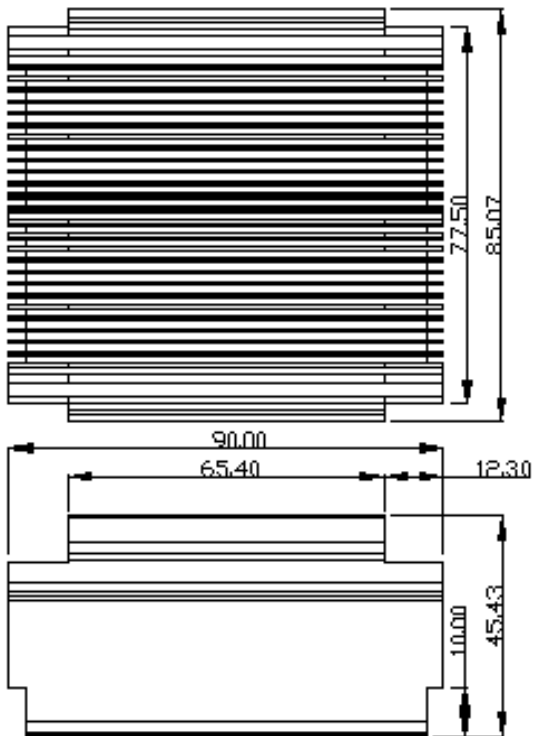
Specification & Dimension

HEAT SINK

Material : Aluminum Alloy

Chemistry Ingredient & Temper Designation :

Value	Si	Fe	Cu	Mn	Cr	Mg	Zn	Ti
Specified Values	0.393	0.206	0.0030	0.0042	0.0022	0.4935	0.0001	0.0021
Value	Flatness			Hardness				
Specified Values	0.04 mm ↓			74°				

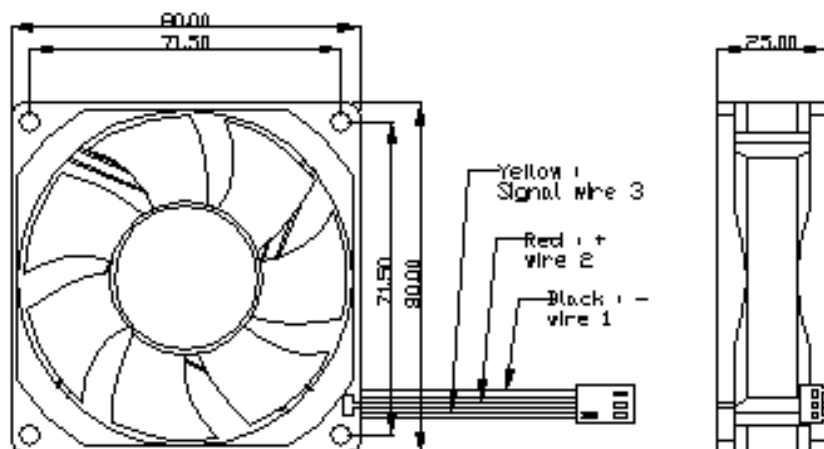


GENERAL DIMENSION TOLERANCES (UNIT : mm)			
0	→	30	± 0.2
31	→	60	± 0.3
61	→	100	± 0.4
101	→	OVER	± 0.5

Specification & Dimension

FAN

Specification	ELR
Dimensions	80 * 80 * 25 mm
Rated Speed	3000 ± 15 % RPM
Air Flow	33.60 ± 15 % CFM
Noise Level	34.00 ± 2dB(A)
Rated Voltage	DC12 V
Operating Voltage Range	DC 10.2 ~ 13.8 V
Housing / Fan Blade	UL: 94V-0 Rating+Fibre Glass
Max Air-Pressure	2.79 ± 15% mmH ₂ O
Input Current	0.24 A MAX.
Input Power	2.88 W MAX.
Direction of Rotation	Clockwise,Air Discharged
Life Expectancy	50,000 Hours continuous operating
Lead wire	"+ POSITIVE-----RED" UL 1007 #26AWG "- NEGATIVE-----BLACK" "SENSOR OUTPUT----YELLOW(3 rd WIRE)"
Operating Temperature	-10 TO +70°C



Specification & Dimension

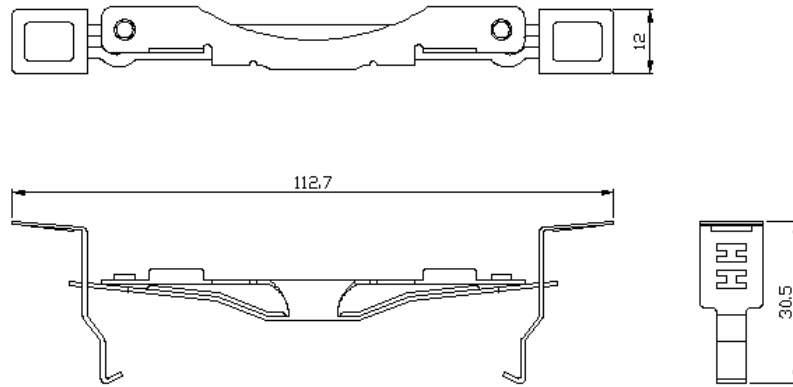
CLIP

Material : Steel(K7)

Physical Characteristics

Item	Finish	Hardness(HRC)	Thickness
Steel	Hard Finished	63°	0.9 ± 0.02 mm

VALUE	C	Si	Mn	P	S	Cr	Ni	V
SK7	0.7	0.35	0.5					



GENERAL DIMENSION TOLERANCES (UNIT : mm)	
0 —————> 30	± 0.2
31 —————> 60	± 0.3
61 —————> 100	± 0.4
101 —————> OVER	± 0.5

Specification & Dimension

THERMAL PAST

Model Type : SILICONE HEAT SINK PAST

COLOR	WHITE
BULK PENETRATION	201~260
SPECIFIC GRAVITY	2.3 at 25°C
VOLATILE MATTER	after 4h/200°C below 0.5°C
BLEED	after 4h/200°C on vertical surface no bleeding
DIELECTRIC STRENGTH	1.2kv at 0.1mm , ASTM D-149
VOLUME RESISTIVITY	1*10ohm-cm,ASTM D-257
THERMAL CONDUCTIVITY	0.0015 Kcal/cm/sec/°C or 0.63w/m/°C

Test Report

Date : 2006/8/23

MODEL : 438-6190 Intel P4 Processor 3.2G (478Pin/800MHz/512K--42°C -70°C,0.341°C/W)

PART NUMBER	Fan 80*80*25	Heat Sink 28 (Fins)	Grease 30*30	*Temperature Tj/Ta/Td	(Q) Watts	* RJa(°C/W)
438-6190	3000 RPM	90*85*44 276 g	GW101	62.0 /42/ 20.0	58.0	0.345
438-6190	3000 RPM	90*85*44 276 g	GW101	65.7 /42/ 23.7	69.7	0.340
438-6190	3000 RPM	90*85*44 276 g	GW101	69.7 /42/ 27.7	82.0	0.338

3000RPM 33.60CFM 34.0dB.

Rja: Thermal Resistance From Junction To Ambient

Tj: simulate CPU junction temperature

Ta: Ambient temperature at inlet of fan

Td: Temperature Differnce ($T_d = T_j - T_a$)

Heater: Heater To Simulate CPU

Space: Close

Time: 2H.

