SUNON

SPECIFICATION FOR APPROVAL

FOR REFERENCE

CUSTOMER	:	
DESCRIPTION	:	**DC BRUSHLESS Fan**
DIMENSIONS	:	**83.6X76.9X6.8 mm**
M O D E L	:	**EG75050S1-C050-S9A**
SUNON SPEC. NO.	:	**D07024270F-01**
CUSTOMER APPROVAL NO.	:	**6033B0068201**
REVISION	:	**A01**
APPROVED BY CUSTOMER	:	

(AUTHORIZED)

DRAWN	**Mayun**	**CHECKED**	**Qian**	**APPROVED**	**Henry**	**SPEC.NO**	**D07024270F-01**
						ISSUE DATE	**04. 10. 2019**
						EDITION	**2**
						REVISION DATE	**06. 27. 2019**
						E.SPEC	**E11900058**

建準電機工業股份有限公司
SUNONWEALTH ELECTRIC MACHINE INDUSTRY CO., LTD.
NO. 30, LN. 296, XINYA RD., QIANZHEN DIST., KAOHSIUNG CITY 80673, TAIWAN (R.O.C)
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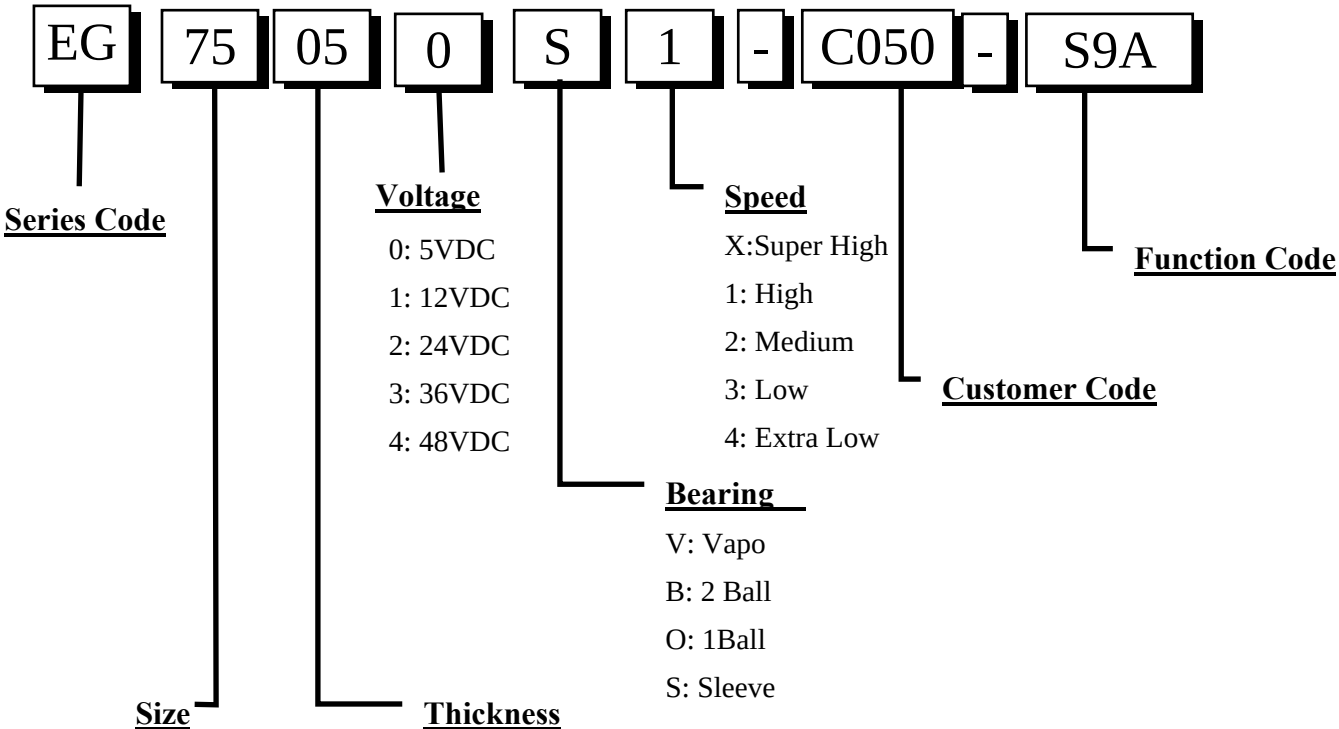
FAX:886-7-8230505/8230606/8231010
URL:http://www.sunon.com
E-mail: sunon@email.sunon.com.tw

I. MODEL NUMBERING SYSTEM



編碼	尺寸(mm)	編碼	尺寸(mm)	編碼	尺寸(mm)	編碼	尺寸(mm)
01~09	01~09	A0~A9	100~109	K0~K9	200~209	V0~V9	300~309
10~19	10~19	B0~B9	110~119	L0~L9	210~219	W0~W9	310~319
20~29	20~29	C0~C9	120~129	M0~M9	220~229	X0~X9	320~329
30~39	30~39	D0~D9	130~139	N0~N9	230~239	Y0~Y9	330~339
40~49	40~49	E0~E9	140~149	P0~P9	240~249	Z0~Z9	340~349
50~59	50~59	F0~F9	150~159	Q0~Q9	250~259		
60~69	60~69	G0~G9	160~169	R0~R9	260~269		
70~79	70~79	H0~H9	170~179	S0~S9	270~279		
80~89	80~89	I0~I9	180~189	T0~T9	280~289		
90~99	90~99	J0~J9	190~199	U0~U9	290~299		

II. SPECIFICATION

1. MECHANICAL CHARACTERISTIC

MOTOR DESIGN	**3 phases, 4 poles Brushless DC motor**
BEARING SYSTEM	**Lubricated sleeve bearing system**
DIMENSIONS	**See Page 5**
MATERIALS OF COVER	**SGCC**
THICKNESS OF COVER	**0.6 mm**
MATERIALS OF HOUSING	**SGCC(0.6mm)+Thermoplastic PPE of UL 94V-0**
MATERIALS OF FAN BLADE	**Thermoplastic LCP of UL 94V-0**
DIRECTION OF ROTATION	**Counter-clockwise viewed from front of fan blade**
FAN BLADES DIAMETER	**55 mm**
WEIGHT	**48 g**
PWM FREQUENCY	**23 kHz**
STARTING PWM DUTY-CYCLE	**28%**
PWM INPUT HIGH LEVEL	**2.5~5.5V**
PWM INPUT LOW LEVEL	**0~1.1V**

2. ELECTRIC CHARACTERISTIC

RATED VOLTAGE	**5 VDC**
RATED CURRENT	**0.40 A (Max. 0.45 A) (SAFBTY CURENT 0.45 A)**
OPERATING CURRENT	**0.40 A (Max. 0.44A)**
LOCKED CURRENT	**0.612 A**
RATED POWER CONSUMPTION	**2.25 WATTS**
OPERATING POWER CONSUMPTION	**2.00 WATTS**
OPERATING VOLTAGE RANGE	**2.4~5 VDC**
STARTING VOLTAGE	**2.4 VDC (25 deg. C POWER ON/OFF)**
OPERATING TEMPERATURE RANGE	**-10 to + 70 deg. C**
STORAGE TEMPERATURE RANGE	**-40 to + 70 deg. C**

3. PERFORMANCE CHARACTERISTIC

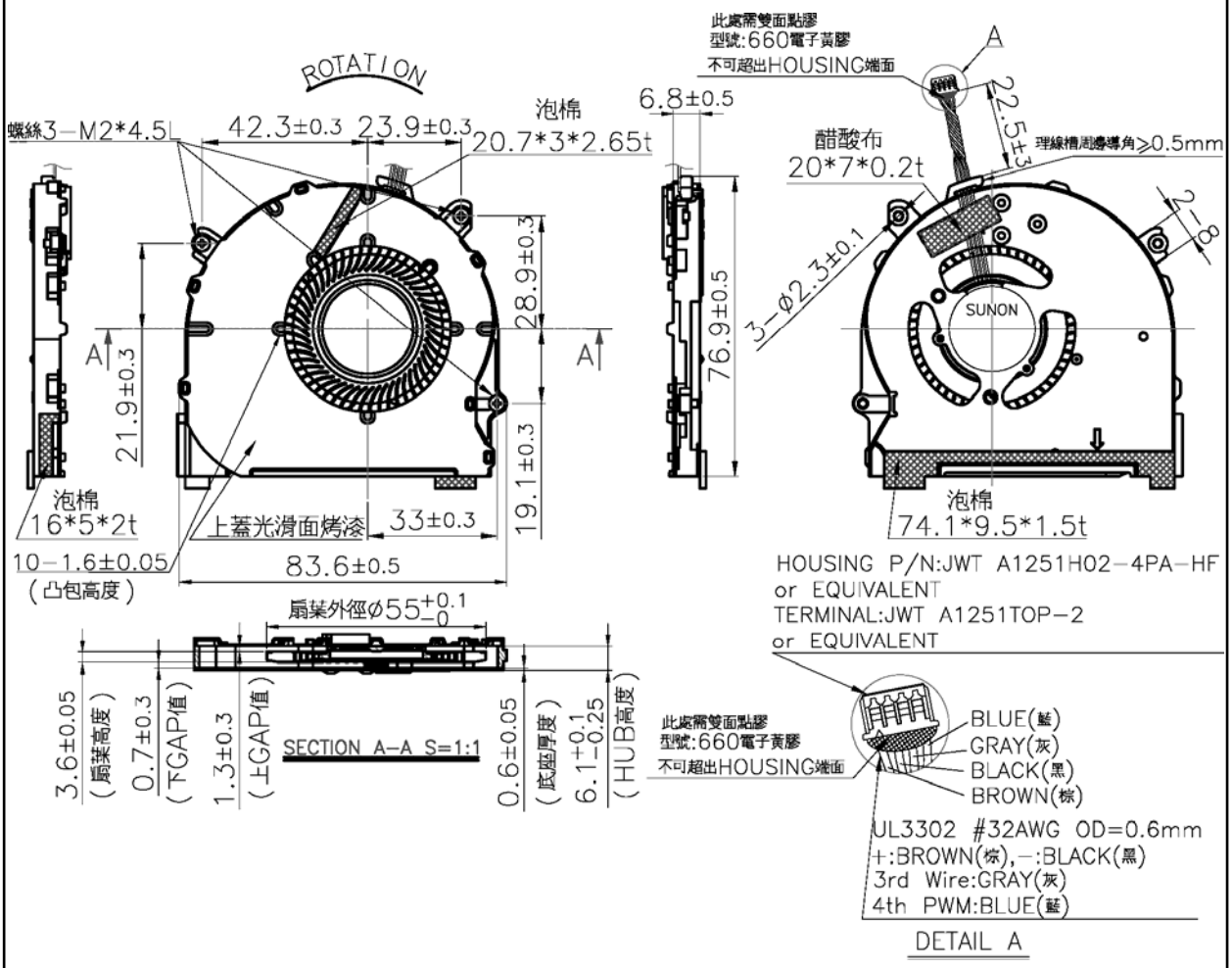
RATED SPEED	**3400 RPM ± 7% at rated voltage**
AIR FLOW	**4.9 CFM ; Min. 4.3 CFM**
STATIC PRESSURE	**149.4 Pa (Typical Max.) ;122.01Pa(Min.)** **15.24 mm-H_2O (Typical Max.) ; 12.45mm-H_2O(Min.)**
ACOUSTIC NOISE	**36.5dB(A) (Less than 40.6 dB(A) under 3400 RPM + 7%)**
AIR FLOW V.S. PRESSURE	**See Page 20**
INSULATION CLASS	**UL Class A**
INSULATION RESISTANCE **PLASTIC HOUSING**	**10M ohm at 500 VDC between internal stator and lead wire (+)**
DIELECTRIC STRENGTH	**Applied AC 500 V for one minute or AC 600 V for 2 Seconds between housing and lead wire (+)**
LIFE EXPECTANCY	**20,000 HOURS CONTINUOUS OPERATION AT 60°C WITH 15~ 65% RH.(REF)**
PROTECTION	☑**Automatic Restart** Note: In a situation where the fan is locked by an external force while the electricity is on, an increase in coil temperature will be prevented by temporarily turning off the electrical power to the motor. The fan will automatically restart when the locked rotor condition is released.
	☐**Polarity Protection**

SPEC / CONDITION	CURRENT (A)	SPEED(RPM)	MAX. AIR FLOW (M3/MIN) (AT ZERO STATIC PRESSURE) (CFM)	MAX.AIR PRESSURE (mmH2O) (AT ZERO AIRFLOW) (Pa)
40 dBA	**0.415**	**3600**	**0.14/ 5.1**	**16.51/ 161.85**

4. SAFETY

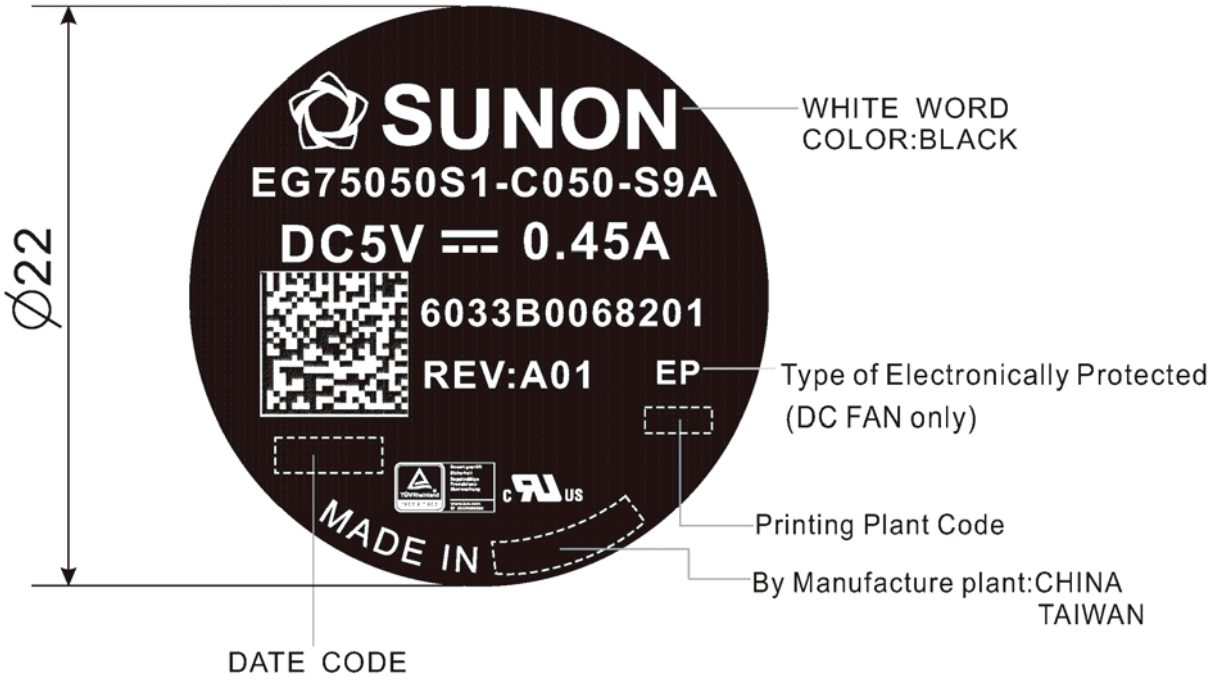
SAFETY	UL	CUR	TUV	CE
NO.	E77551	E77551	✓	✓

DIMENSIONS



UNIT：mm

LABEL


SUNON
EG75050S1-C050-S9A
DC5V ⎓ 0.45A
6033B0068201
REV:A01
EP
MADE IN
Ø22
WHITE WORD
COLOR:BLACK
Type of Electronically Protected
(DC FAN only)
Printing Plant Code
By Manufacture plant:CHINA
TAIWAN
DATE CODE

LABEL

條碼內容爲 :B0068201 330895 A01 YYMMDD
(1) (2) (3) (4)

*2D條碼內容說明如下 :(條碼尺寸爲7.5*7.5mm)

(1)IEC P/N(8碼):料號:6033B0068201,取後8碼B0068201,
其中"0""1""2"爲數字.

(2)IEC Vendor code(6碼):330895(固定碼),"0"爲數字.

(3)版本:A01(固定碼),"0""1"為數字.

(4)Date Code:依製單出貨日期

YY:西元年,2019=19,2020=20....
MM:月,1月=01,2月=02....
DD:日,1日=01,2日=02....
如 :2018年3月25日=180325

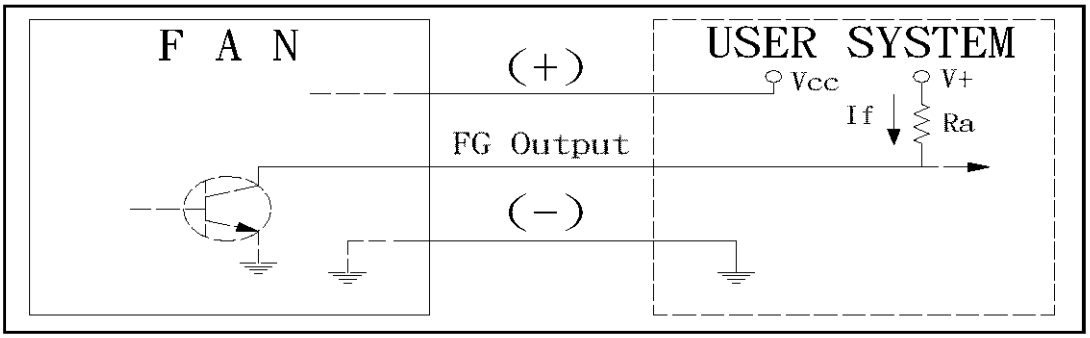
*2D條碼掃描後內容爲 :B0068201330895A01YYMMDD

*條碼規格用 :23 Digit barcode規格.

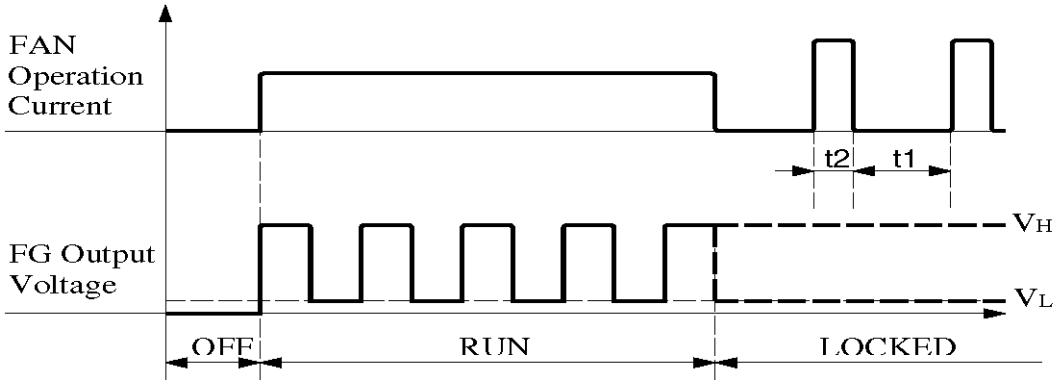
*條碼格式以Data Matrix碼.

FAN 3rd WIRE SIGNAL

● F Type (Frequency Generator)

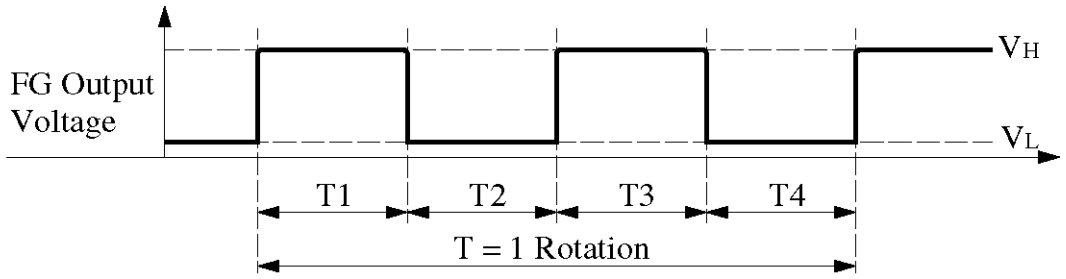


***Ra ≧ V⁺ / If (max)**



★Electrical Characteristics ：(at Ta = 25℃) Vcc =5V±10%

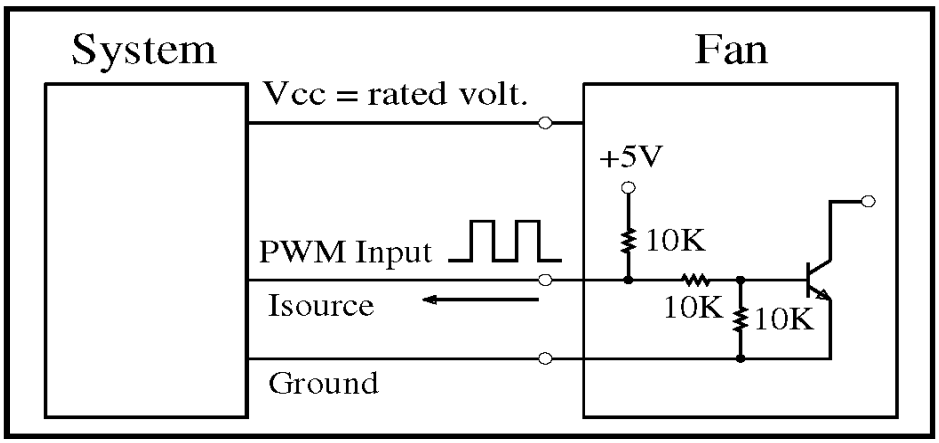
Parameter	Ratings			Unit
	min	typ.	max	
FG Supply Voltage(V+)	2.4	V+	Vcc	Voltage
FG Output Current (If)	--	--	10	mA
FG Output (VL)	--	--	0.4	Voltage
FG Output (VH)	--	V+	--	Voltage
Ratio(=t1/t2)	--	2.26	--	



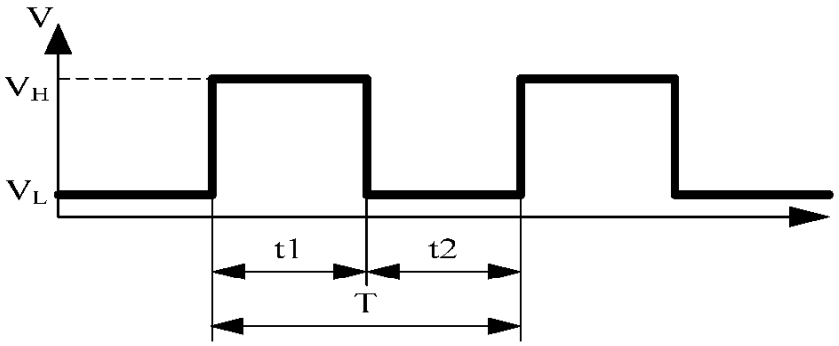
T= T1+T2+T3+T4=1 Rotation

$$T=\frac{60}{rpm}$$

PWM INPUT SIGNAL



★PWM INPUT WAVEFORM



1. Period : $T = \frac{1}{f_{PWM}} = t1 + t2(sec)$.

2. Duty Cycle（D.C.）： $\frac{t1}{t1+t2} * 100 = \frac{t1}{T} * 100(\%)$.

3.PWM Duty Cycle VS Speed (at Ta = 25℃,Vcc =V,fpwm=23KHz

PWM Duty Cycle (%)	FAN Speed（R.P.M.）(REF.)
28	1600±30%
100	3400±7%

★Electrical Characteristics ：(at Ta = 25℃ · Vcc =V.)

Parameter	Min	Typical	Max	Unit
f pwm	20k	23k	50k	Hz
V_H	2.5	-	5.5	V
V_L	0	-	1.1	V
Isource	0	-	0.5	mA
D.C.	28	-	100	%

* The speed is default to be maximum if PWM input pin is unconnected.
* Min. start up duty cycle is 28%. Please don't apply 1 ~ 27% duty cycle to prevent unstable fan speed.

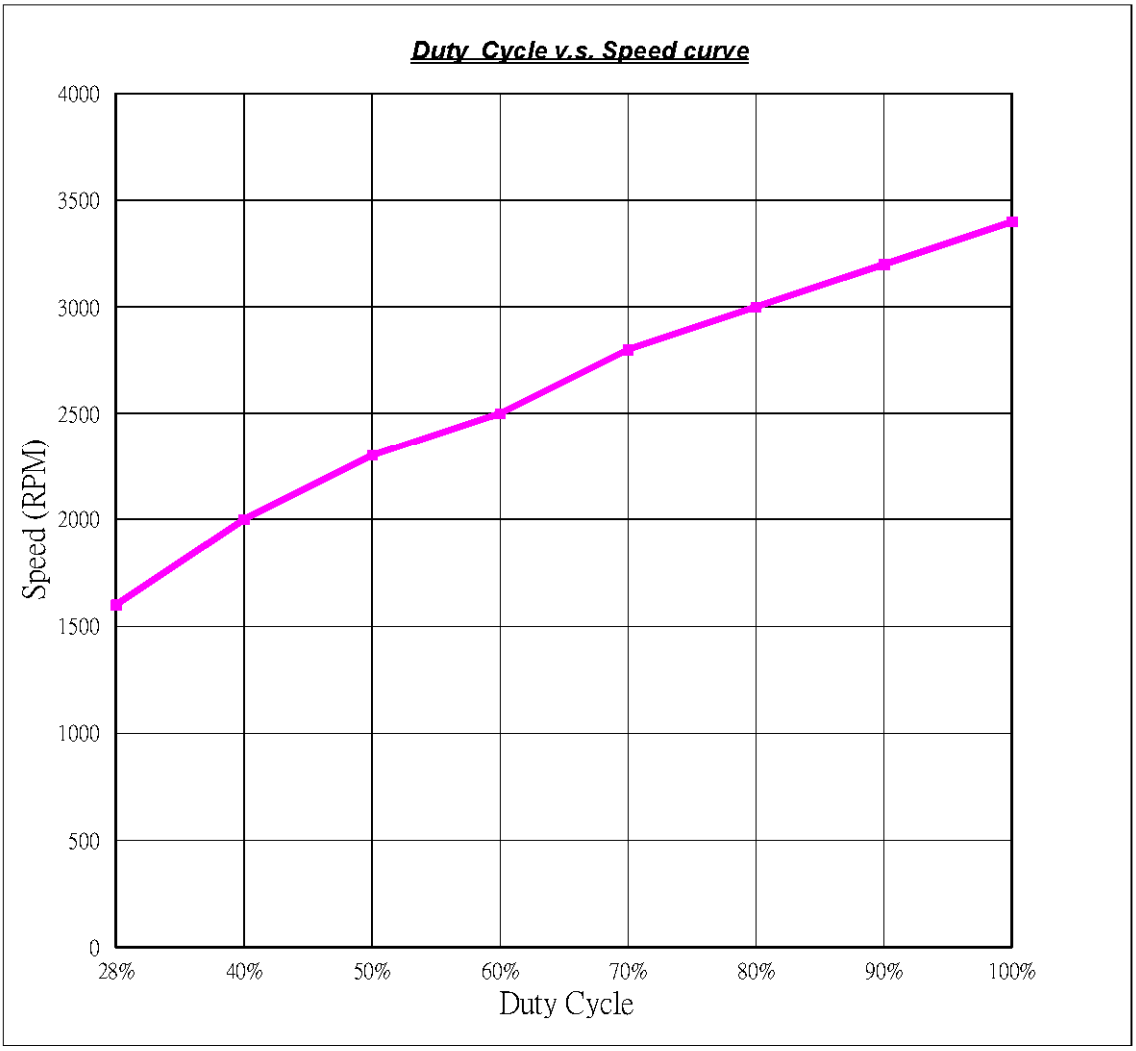
DUTY CYCLE & SPEED CURVE

MODEL: EG75050S1-C050-S9A

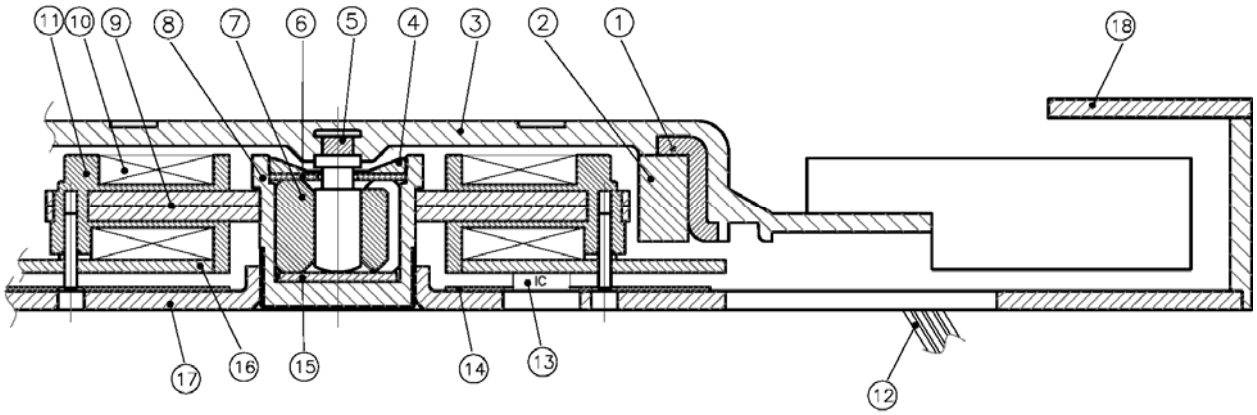
■ **Duty Cycle v.s. Speed curve @ Vcc= rated volt.**

PWM控制頻率: 23K Hz

Duty Cycle	28%	40%	50%	60%	70%	80%	90%	100%
Typ.	1600	2000	2300	2500	2800	3000	3200	3400



CROSS-SECTIONAL VIEW OF FAN



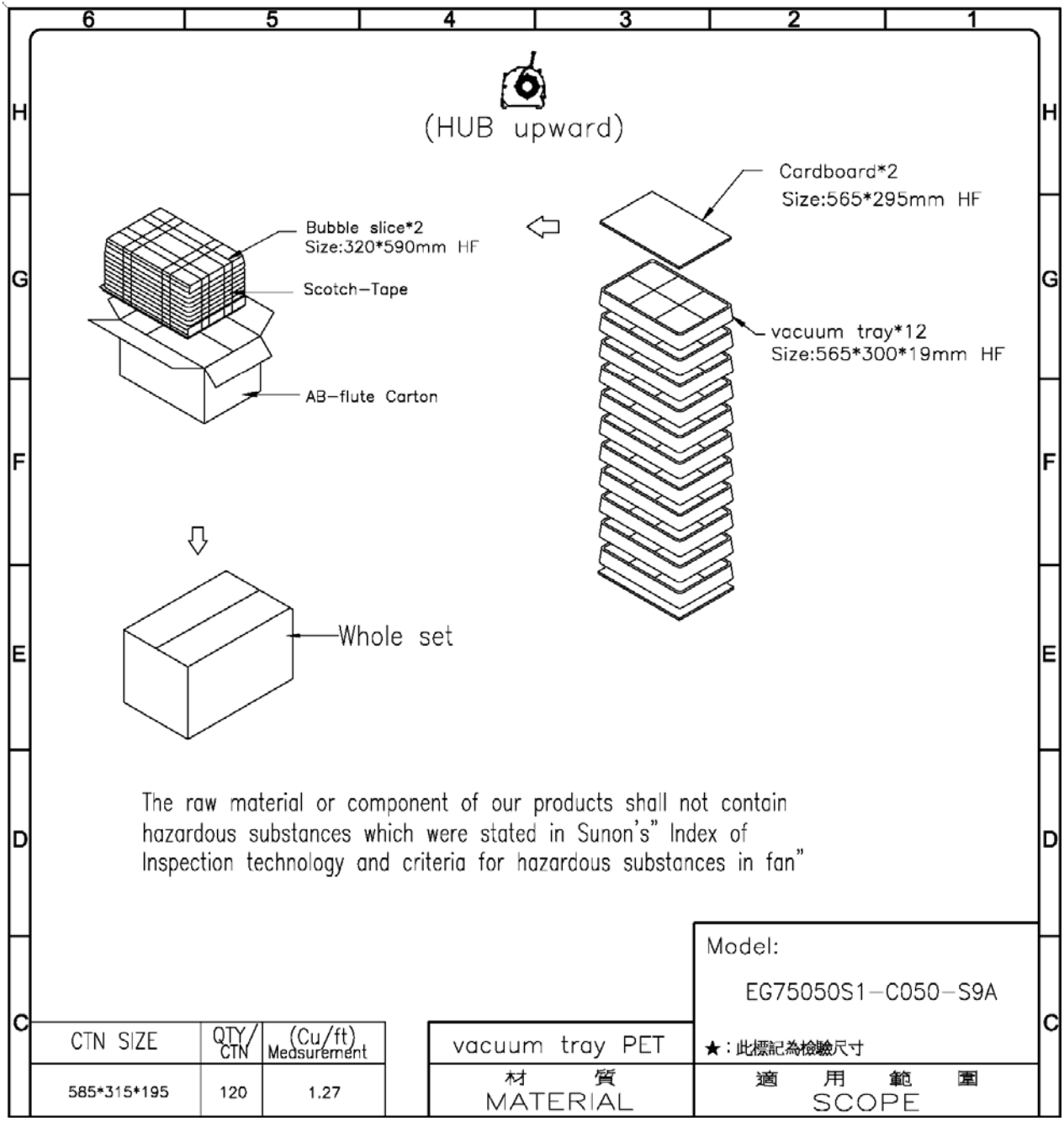
P A R T S L I S T

ITEM	DESCRIPTION	MATERIAL	MAKER/SUPPLIER
1	Rotor Cup Assembly	SECC	SUNON HARDWARE CO., LTD TECHLUXE INDUSTRIES LIMITED (KUNSHAN CHANG-HE PRECISION ELECTRONICS CO., LTD.)
2	Flexible Magne	SR-FERRITERUBBER MAGNET	TDK TAIWAN CORPORATION (TDK SHANGHAI INTERNATIONAL TRADING CO., LTD.) SUPERTECH ELECTRONICS CO., LTD. MOUNTAIN HARVEST HOLDINGS LTD.
3	Impeller	LCP	ZHAO WEI ENTERPRISE (H.K.)COMPANY LIMLTED
4	Fixing Ring	Copper Alloys C3604BD	CIRCUIT SJTY ENTERPRJSE CORP WE HSIANG PRECISE ELECTRIC INDUSTRY (KUNSHAN) CO., LTD. HUIZHOU CITY TENGMAO PRECISION INDUSTRY CO., LTD. CHIANENG METAL MFY. CO., LTD. Chuan Li Co., Ltd. SUNON HARDWARE CO., LTD. HUANG LIANG PRECISION ENTERPRISE CO., LTD. SHIN YUAN ELECTRONICS PRODUCTS (KUN SHAN) CO., LTD.
5	Shaft	SUS-420	Jin Yi Cherng Precision Co., Ltd. Chien Chi Elaborate Enterprise Co., Ltd. FENGHUA FENGYING ELECTRIC APPLIANCE PLASTICS HARDWARE FACTORY
6	Retaining Ring	TORAY/H10	KUNSHAN GONKEEN ELECTRONICS Co., Ltd.
7	Bearing System	Sleeve Bearing System Cu	LI-YO POWDER METALLURGY MANUFACTUR IND. CO., LTD (SHANGHAI LIDA/FAMOUS UP CORP.) PORITE CORPORTATION HUANG LIANG PRECISION ENTERPRISE CO., LTD. Hitachi Powdered Metals (S) Pte.Ltd.
8	Copper Tube	Cu 3604	SUNON HARDWARE CO., LTD. HUANG LIANG PRECISION ENTERPRISE CO., LTD. FOR AND ON BEHALF OF ON WARD INC. LIMITED
9	Stator	H23	TECHLUXE INDUSTRIES LIMITED (KUNSHAN CHANG-HE PRECISION ELECTRONICS CO., LTD.)

P A R T S L I S T

ITEM	DESCRIPTION	MATERIAL	MAKER/SUPPLIER
10	Winding(Coil)	Enamelled Copper Wire UEW2 UL NO.: E174837 UL NO.: E196473 UL NO.: E164502	Jung Shing Wire Co., Ltd. CHIN YIH WIRE L.L.C GUANG DONG RONSEN SUPER MICRO-WIRE CO., LTD.
11	Bobbin	H23+PBT	KUNSHAN CHANG-HE PRECISION ELECTRONICS CO., LTD.
12	Lead Wire	PVC Insulated Wire 32 awg TR-64 UL NO. :E41396 UL NO. :E148000	DEJOINT ELECTRICAL INDUSTRIAL LTD. NBO Electronics Dong Guan Ltd. SAN DA LI (H.K)COMPANY LIMITED SHEN ZHEN MING WANG XING ELECTRON CO., LTD. Dongguan JALINK ELECTRONICS Co., Ltd LTK WIRING Co., Ltd. Pacific Electric Wire & Cable Co., Ltd.
13	IC	IC DFN10 AM8907N HF	AmtekSEMICONDCTORS CO.,LTD
14	Insulation Tape	SB00+3M467	KUNSHAN ELECTRONIC Tongyu CO., LTD
15	Shaft Cushion	N6M1 Polyamide 6 (PA6)	TUNG HENG CHENG CO., LTD. TSUEN JYI HARDWARE & ELECTRONIC APPLIANCES CO., LTD.
16	P.C.Board	FR-4 94V-0 UL NO. :E131979 UL NO. :E78604 UL NO. :E105119 UL NO.: E233153 UL NO.: E211670 UL NO.: E208307	Lu Hsiang Enterprise Co., Ltd. Lu Yuh Industrial Co., Ltd. CHIH HSIEN ENTERPISE CO., LTD.. DONGGUA MAAN KUEN CHENGHO ELECTRON LTD. Kunshan Wangzheng Printed Circuit Board Co., Ltd. NCF (HK) LTD.
17	Housing	SGCC	KUNSHAN CHANG-HE PRECISION ELECTRONICS CO., LTD.
18	COVER	SGCC	KUNSHAN CHANG-HE PRECISION ELECTRONICS CO., LTD.
PS:All Vender of this parts need to be approved by SUNON or The other else which as the same level.			

PACKAGE

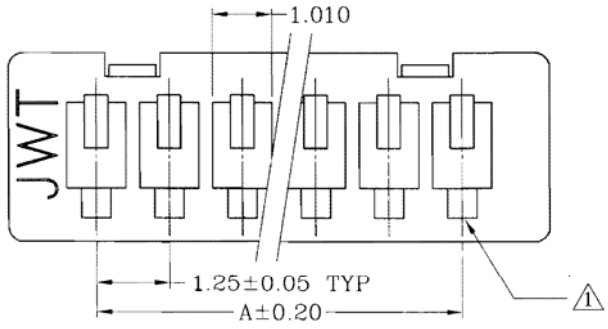

(HUB upward)
Cardboard*2
Size:565*295mm HF
Bubble slice*2
Size:320*590mm HF
Scotch-Tape
AB-flute Carton
vacuum tray*12
Size:565*300*19mm HF
Whole set
The raw material or component of our products shall not contain hazardous substances which were stated in Sunon's" Index of Inspection technology and criteria for hazardous substances in fan"
Model:
EG75050S1-C050-S9A
★:此標記為檢驗尺寸
CTN SIZE
QTY/CTN
(Cu/ft) Measurement
585*315*195
120
1.27
vacuum tray PET
材質 MATERIAL
適用範圍 SCOPE

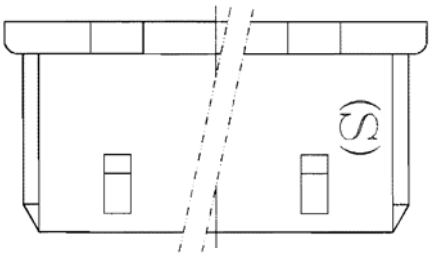
加煒興業股份有限公司
JOWLE TECHNOLOGY CO., LTD.
台北縣新莊市化成路660巷13號
TEL : 85217306 FAX : 85217273

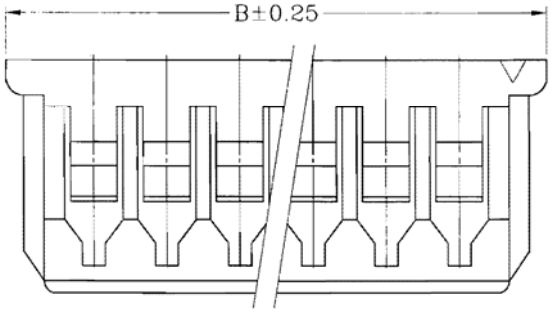
DOCUMENT NO.
RDE0508B
SERIAL NO.
A1251H02-NP-HF

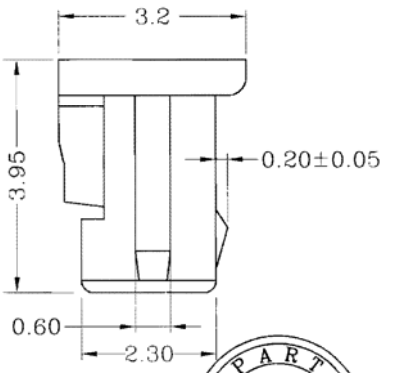
Material: NYLON 66 UL 94V-0 (White)

⚠1 Circuit No.1





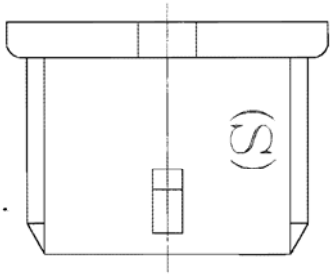




Dimensional & Ordering Information:

Circuits	Part No	Dimensions A	Dimensions B	PCS/BAG
2	A1251H02-2P-HF	—	4.25	1000
3	A1251H02-3P-HF	2.50	5.50	1000
4	A1251H02-4P-HF	3.75	6.75	1000
5	A1251H02-5P-HF	5.00	8.00	1000
6	A1251H02-6P-HF	6.25	9.25	1000
7	A1251H02-7P-HF	7.50	10.50	1000
8	A1251H02-8P-HF	8.75	11.75	1000
9	A1251H02-9P-HF	10.00	13.00	1000
10	A1251H02-10P-HF	11.25	14.25	1000
11	A1251H02-11P-HF	12.50	15.50	1000
12	A1251H02-12P-HF	13.75	16.75	1000
13	A1251H02-13P-HF	15.00	18.00	1000
14	A1251H02-14P-HF	16.25	19.25	1000
15	A1251H02-15P-HF	17.50	20.50	1000

PART COMPLIANCE RoHS HF



REV.	ECN NO.	UNIT	TOLERANCE	PROJECTION	DRAWING	CHECK	APPROVAL
⚠A	NEW DRAWING	mm	.*** ±0.08 .** ±0.15 .* ±0.25		4/20		6/21.10

NO	Test Item	Q'ty	Test Condition
1	Acceleration life test	50units (90 degree) 50units (135 degree) 50units (180 degree) Total 150 unit	1. Test temp.:80℃ ±2℃ 2. Input voltage : 115%Rate voltage 3. Power switch:ON/60s OFF/30s 4.Total time:2400Hrs
2	Mechanical shock test	10 units	1. Input voltage:Rated voltage 2. Pulse shape:half-sine wave. 3. Velocity:600G(W/fixtures) 4. Duration of pulse:2 ms 5. Number of shock:1 times shock for each six faces. (The total is 6 shocks)
3	Vibration Test	10 units	1. Orientation : X, Y, Z (3 axes) 2. Overall RMS = 3.2 G 3. Frequency (Hz) PSD(G2/HZ) 10 0.04 20 0.1 40 0.1 800 0.002 1000 0.002 4. Duration : 2 hours on each orientation 5. Sample condition: non-packing;operation 5-Voltage
4	Thermal Shock Test	10 units	1. Non-operation 2. Low-temp :-40°C 3. Hi-temp :85°C 4. Dwell time :30mins/each 5. Temperature transfer ramp rate: Less than 5mins 6. Total cycle:20cycles
5	Power & thermal cycling test	10 units	1. low temp.: -25 ℃,High temp: 85℃(8Hrs each) Test humidity : 90%RH 2. Input voltage :Rated voltage 3. Dwell time: 8 hrs/each 4. Temperature transfer ramp rate : 2 hrs/each 5. Total cycle: 10 cycles 6. Duration:240 hours 7. On-5mins off-5mins
6	Swing Test	20units (10pcs for inlet up; 10pcs for inlet down)	1. Test Temperature: 70℃ 2. Test Voltage: Rated voltage 3. Hub Angle: 0 degree & 180 degree 4. Operating path: One cycle: -45°->0° ->45° ->0 ° ->-45 °(12 times/min ; 5s/cycle) 5. Check Point: each 36000/cycle confirm test criteria

III. OTHER SPECIFIED TESTING

The following is a general description of certain tests that are performed on representative Sunon fans. Nothing in this document is intended to suggest that these tests are performed on every model of Sunon fan. Moreover, the descriptions that follow each test are meant only to provide a general explanation of each test. If you would like a more detailed explanation as to any test identified in this Section, Sunon can provide such an explanation upon request.

1. DROP PROOF TEST

Fans are packaged in a standard size shipping box and are dropped to the ground from certain heights and angles depending on the weight of the particular box.

2. HUMIDITY PROOF TEST

The fan is operated for 96 continuous hours in an environment with humidity of 90% to 95% RH at 60°C ± 2°C.

3. VIBRATION PROOF TEST

Vibration with an amplitude 2mm and a frequency of 5-55-5hz is applied in all 3 directions (X,Y,Z), in cycles of 1 hour each, for a total vibration time of 3hours.

4. THERMAL CYCLING TEST

The fan is operated in a testing chamber for 50 cycles. In each cycle, the temperature is gradually increased from -10°C to 70°C for 90 minutes, and subsequently operated at 70°C for 120 minutes. The temperature is then gradually decreased from 70°C to -10°C for 90 minutes, and subsequently operated at -10°C for 120 minutes.

5. SHOCK PROOF TEST

Temperature: +25℃
Orientation: X, Y, Z
Power: Non-Operating
Number of shocks: 3 shock for each direction
Sample size: 5pcs
1 Acceleration: 300G Min.
Pulse: 2 ms half-sine wave
Criterion: There is no any breakage of fan structures
except for melt structure of fan cover
2 Acceleration: 100G Min.
Pulse: 2 ms half-sine wave
Criterion: There is no any breakage of entire fan,
and meet fan electrical, performance and noise spec

6. LIFE EXPECTANCY

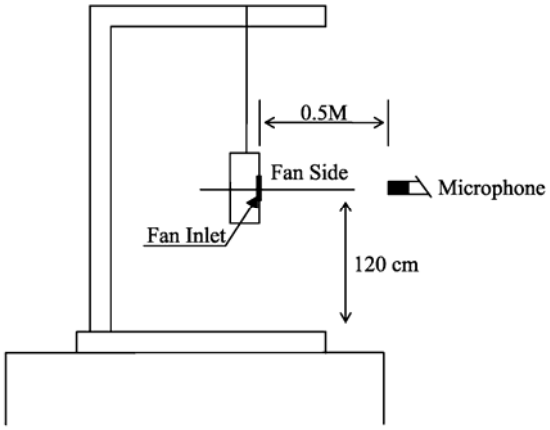
The “Life Expectancy” of SUNON fans is determined in SUNON’s reliability test laboratory by using temperature chambers. The “Life Expectancy” of this fan has not been evaluated for use in combination with any end application. Therefore, the Life Expectancy Test Reports (L10 and MTTF Report) that relate to this fan are only for reference. The "Life Expectany" of this fan follows Inventec life test procedure(rev 4.0) and weibull method.

IV. CHARACTERISTIC DEFINITION

The following is a general description of certain tests that are performed on representative Sunon fans in order to determine the specifications of the fan**.** Nothing in this document is intended to suggest that these tests are performed on every model of Sunon fan. Moreover, the descriptions that follow each test are meant only to provide a general explanation of each test. If you would like a more detailed explanation as to any test identified in this Section, Sunon can provide such an explanation upon request.

1. ACOUSTICAL NOISE

Measured in a semi-anechoic chamber with background noise level below 15dB(A).



0.5 METER FROM MICROPHONE TO FAN INTAKE

The fan is running in free air under shaft horizontal condition with microphone at distance of 0.5 meter from the fan intake.

2. INPUT POWER

Measured after continuous 10 minute operation at rated voltage in clean air (STATIC PRESSURE=0), and at ambient temperature of 25 degrees C under shaft horizontal condition.

3. RATED CURRENT

Measured after continuous 10 minute operation at rated voltage in clean air (STATIC PRESSURE=0), and at ambient temperature of 25 degrees C under shaft horizontal condition.

4. RATED SPEED

Measured after continuous 10 minute operation at rated voltage in clean air (STATIC PRESSURE=0), and at ambient temperature of 25 degrees C under shaft horizontal condition.

5. STARTING VOLTAGE

Measured the voltage which enables to start the fan in the clean air (static pressure = 0) by switching on at the voltage under shaft horizontal condition. It is not at continuously increasing voltage adjustment.

6. LOCKED ROTOR CURRENT

Measured immediately after the fan blade is locked.

7. AIR FLOW AND STATIC PRESSURE

The performance specification of air flow and static pressure shown in this specification for approval is measured using the exhaust method. A double chamber is used in accordance with AMCA 210 standard or DIN 24163 specification . The values are recorded when the fan speed has stabilized at rated voltage.

8. INSULATION RESISTANCE

1. PLASTIC HOUSING:
   (1) Measured between internal stator and lead wire(+).
   (2) Measured between housing and lead wire(+).

2. ALUMINIUM HOUSING:
   Measured between internal stator and lead wire(+).

9. DIELECTRIC STRENGTH

Measure between housing and lead wire(+).

V. NOTE

Ⅰ.SAFETY

1. DO NOT use or operate this fan in excess of the limitations set forth in this specification. SUNON is not responsible for the non-performance of this fan and/or any damages resulting from its use, if it is not used or operated in accordance with the specifications.

2. SUNON recommends adding a protection circuit to the product or application in which this fan is installed, such as a thermo-fuse, or current-fuse or thermo-protector. The failure to use such a device may result in smoke, fire, electric shock by insulation degradation in cases of motor lead short circuit, overload, or over voltage, and/or other failure.

3. SUNON recommends installing a protection device to the product or application in which this fan is installed if there is a possibility of reverse-connection between VDC (+) and GND (-). The failure to install such a device may result in smoke, fire, and/or destruction, although these conditions may not manifest immediately.

4. This fan must be installed and used in compliance with all applicable safety standards and regulations.

5. Use proper care when handling and/or installing this fan. Improper handling or installation of this fan may cause damage that could result in unsafe conditions.

6. Use proper care during installation and/or wiring. Failure to use proper care may cause damage to certain components of the fan including, but not limited to, the coil and lead wires, which could result in smoke and/or fire.

7. DO NOT use power or ground PWM to control the fan speed. If the fan speed needs to be adjusted, please contact SUNON to customize the product design for your application.

8. For critical or extreme environments, including non stop operation, please contact SUNON and we will gladly provide assistance with your product selection to ensure an appropriate cooling product for your application.

II. SPECIFICATION MODIFICATION

1. SUNON offers engineering assistance on fan installation and cooling system design.

2. All changes, modifications and/or revisions to the specifications, if any, are incorporated in the attached specifications.

3. No changes, modifications and/or revisions to these specifications are effective absent agreement, by both SUNON and the customer, in writing.

4. This fan will be shipped in accordance with the attached specification unless SUNON and the customer have agreed otherwise, in writing, as specified in Paragraph 3, above.

III. OTHER

1. When building your device, please examine thoroughly any variation of EMC, temperature rise, life data, quality, etc. of this product by shock/drop/vibration testing, etc. If there are any problems or accidents in connection with this product, it should be mutually discussed and examined.

2. Use proper care when handling this fan. Components such as fan holders or bearings may be damaged, if touched with fingers or other objects. Additionally, static electricity (ESD) may damage the internal circuits of the fan.

3. DO NOT operate this fan in proximity to hazardous materials such as organic silicon, cyanogens, formalin, phenol, or corrosive gas environments including, but not limited to, H_2S, SO_2, NO_2, or Cl_2.

4. SUNON recommends that you protect this fan from exposure to outside elements such as dust, condensation, humidity or insects. Exposure of this fan to outside elements such as dust, condensation, humidity or insects may affect its performance and may cause safety hazards. SUNON does not warrant against damage to the product caused by outside elements.
   Re: The term can be excluded, if the fan has been with IP design and meets customer's IP requirement.

5. This fan must be installed properly and securely. Improper mounting may cause harsh resonance, vibration, and noise.

6. Fan guards may prevent injury during handling or installation of the fan and are available for sale with this fan.

7. Unless otherwise noted, all testing of this fan is conducted at 25°C ambient temperature and sixty-five percent (65%) relative humidity.

8. DO NOT store this fan in an environment with high humidity. This fan must be stored in accordance with the attached specifications regarding storage temperature. If this fan is stored for more than 6 months, SUNON recommends functional testing before using.

9. SUNON reserves the right to use components from multiple sources at its discretion. The use of components from other sources will not affect the specifications as described herein.

10. The “Life Expectancy” of this fan has not been evaluated for use in combination with any end application. Therefore, the Life Expectancy Test Reports (L10 and MTTF Report) that relate to this fan are only for reference.

VI. WARRANTY

This fan is warranted against all defects which are proved to be fault in our workmanship and material for one year from the date of our delivery. The sole responsibility under the warranty shall be limited to the repair of the fan or the replacement thereof, at SUNON’s sole discretion. SUNON will not be responsible for the failures of its fans due to improper handing, misuse or the failure to follow specifications or instructions for use. In the event of warranty claim, the customer shall immediately notify SUNON for verification. SUNON will not be responsible for any consequential damage to the customer’s equipment as a result of any fans proven to be defective.

Declaration of Restricted Materials

Control declaration of environment- related substances/ materials

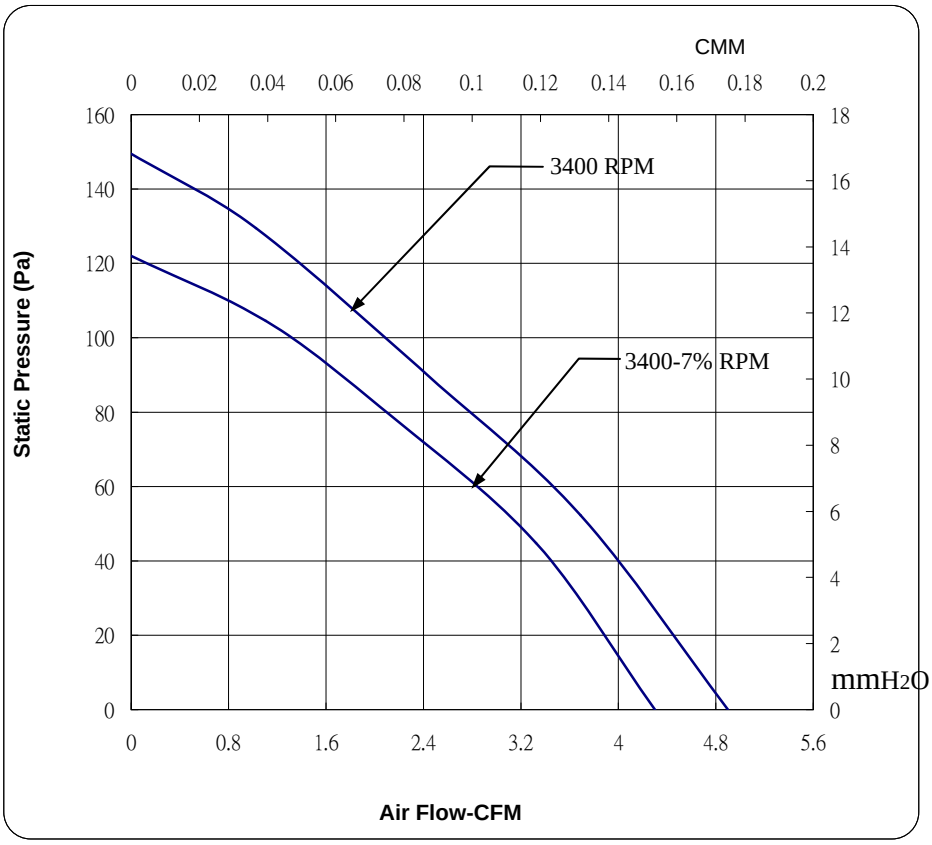
1. **In accordance with the Restriction of Hazardous Substances (RoHS) Directive 2011/65/EU and specific market requirements, Sunon Halogen-Free Product have complied with law and discipline not to employ the forbidden substances, and restrict the allowable concentration of some limited substances deliberately in our components.**

No	Substance		Criteria
1	CFCs & HCFCs (ozone depleting substances)		Forbidden
2	Chlorinated Organic Solvent		Forbidden
3	Lead and its compounds	Plastic (Frame, Impeller, wire harness, etc.)	<100ppm
		Solder	<1000ppm
		Steel alloy	<3500ppm
		Aluminium alloy	<4000ppm
		Copper alloy	<4wt%
4	Cadmium and its compounds	Solder	<20ppm
		Parts composed of metals containing zinc (e.g. brass, zinc for die casting)	<100ppm
		Plastic	<5ppm
5	PBBs and PBDEs		Forbidden
6	PCB and PCT		Forbidden
7	CP, Short-chain Chlorinated paraffins C10-13, Cl ≥48 wt%		Forbidden
8	Mirex		Forbidden
9	PCN		Forbidden
10	Hexavalent Chromium compounds		<100ppm
11	Mercury and its compounds		Forbidden
12	Asbestos		Forbidden
13	Organic Tin compounds		Forbidden
14	Azo compounds		Forbidden
15	TBBP-A in external case plastic parts of products (PCB is exempted)		<1000ppm
16	Nickel in external case parts, which are likely to result in prolonged skin exposure		<1000ppm
17	Hexabromocyclododecane (HBCDD)		<1000ppm
18	Di-butyl Phthalate (DBP)		<1000ppm
19	Benzyl butyl Phthalate (BBP)		<1000ppm
20	Di-ethylhexyl Phthalate (DEHP)		<1000ppm
21	Di-isobutyl Phthalate (DIBP)		<1000ppm
22	Brominated/chlorinated flame retardants (other than PBBs or PBDEs), applicatable item: frame, bobbin, impeller, lear wire, connector, mylar insulator.		Br<900ppm Cl<900ppm Br+Cl<1500ppm
23	PAHs and its 16 compounds in unusual contact material		BaP < 20ppm Total <200ppm
24	PCB and electroplating material, PFOS content complianced with 2006/122/EC		PFOS ≤1000ppm; coating material PFOS ≤ 1μg/m^2

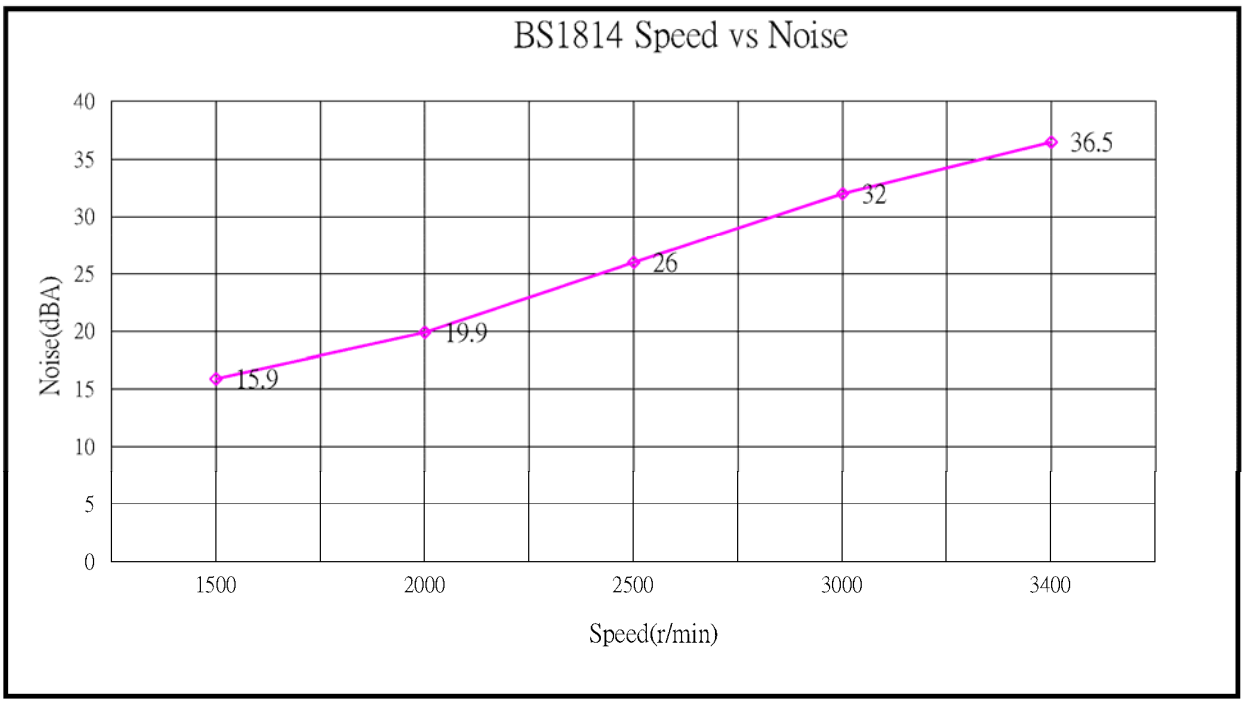
MODEL : EG75050S1-C050-S9A

PERFORMANCE CURVES

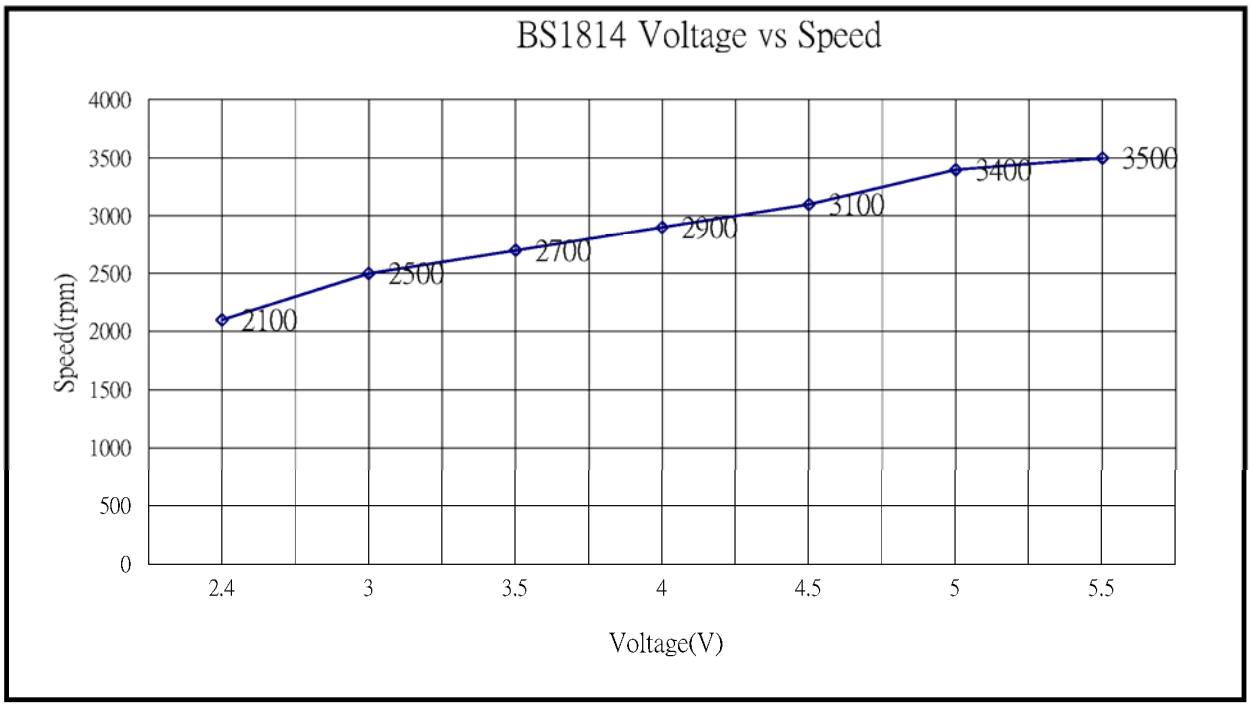
Voltage Constant Measurement



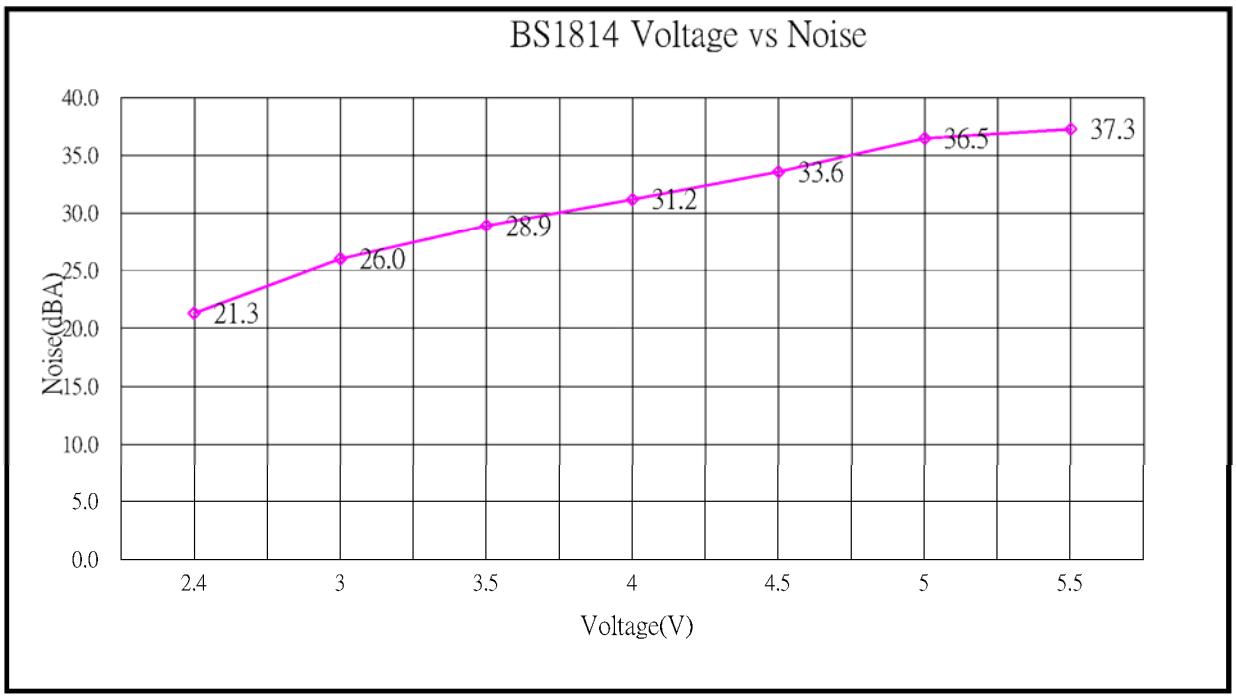
Speed-Noise


BS1814 Speed vs Noise
Noise(dBA)
40
35
30
25
20
15
10
5
0
15.9
19.9
26
32
36.5
1500
2000
2500
3000
3400
Speed(r/min)

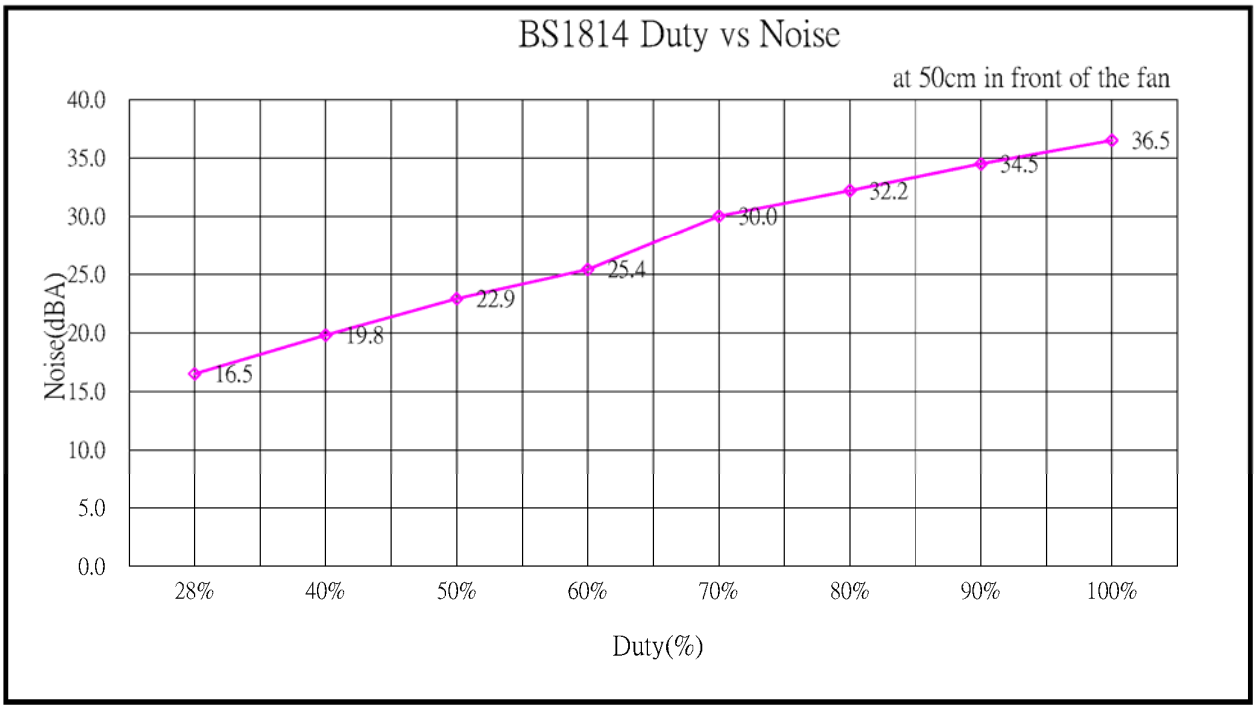
Voltage-Speed



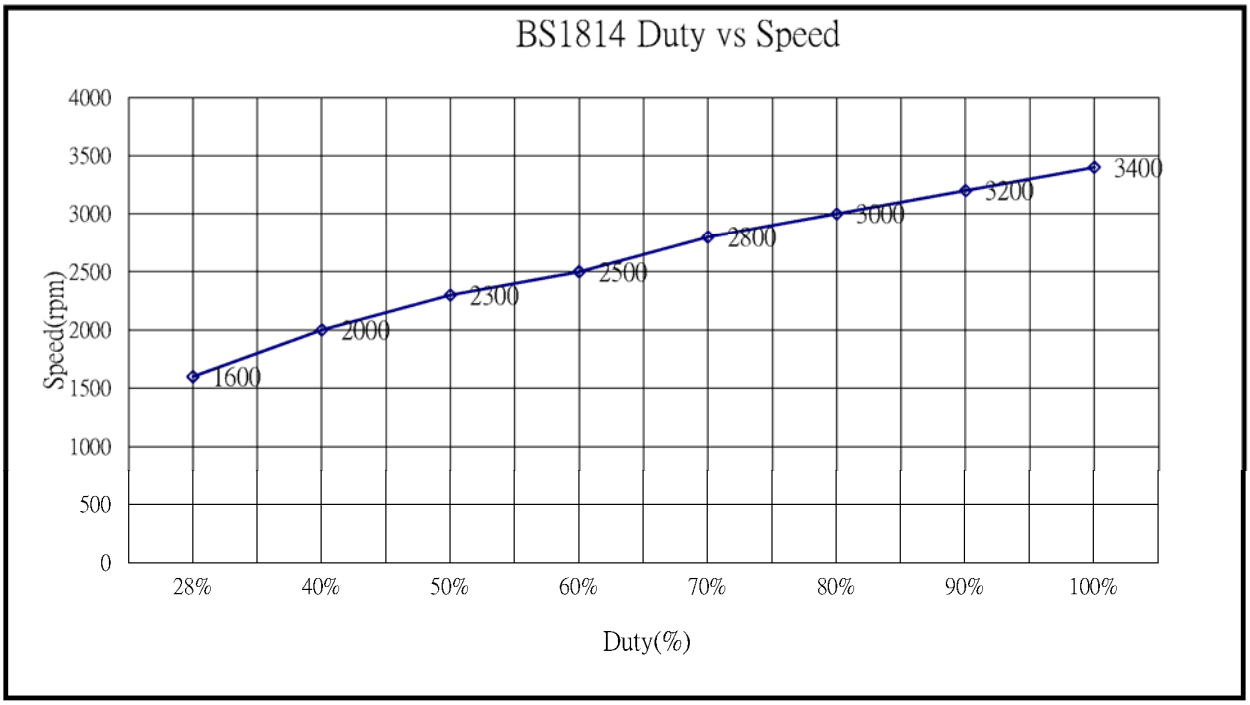
Voltage-Noise



Duty-Noise


BS1814 Duty vs Noise
at 50cm in front of the fan
Noise(dBA)
40.0
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
16.5
19.8
22.9
25.4
30.0
32.2
34.5
36.5
28%
40%
50%
60%
70%
80%
90%
100%
Duty(%)

Duty-Speed


BS1814 Duty vs Speed
Speed(rpm)
4000
3500
3000
2500
2000
1500
1000
500
0
1600
2000
2300
2500
2800
3000
3200
3400
28%
40%
50%
60%
70%
80%
90%
100%
Duty(%)

Zertifikat *Certificate*

TÜVRheinland®

Zertifikat Nr. *Certificate No.*
R 50275749

Blatt *Page*
0144

Ihr Zeichen *Client Reference*	**Unser Zeichen** *Our Reference*	**Ausstellungsdatum**	*Date of Issue (day/mo/yr)*
TUV181207/114084932	ZTW1-LinPa- 10045484 075	28.12.2018	

Genehmigungsinhaber *License Holder*
Sunonwealth Electric Machine
Industry Co., Ltd.
No. 30, Ln. 296, Xinya Rd.
Qianzhen Dist. Kaohsiung 80673
Taiwan, R.O.C.

Fertigungsstätte *Manufacturing Plant*
Sunon Electronics (Kunshan)
Co., Ltd.
168 Nanban Road, Kunshan
Jangsu 215301
P. R. China

Prüfzeichen *Test Mark*

TÜVRheinland ZERTIFIZIERT
Bauart geprüft
Sicherheit
Regelmäßige Produktions-überwachung
www.tuv.com
ID 2000000000

Geprüft nach *Tested acc. to*
EN 60950-1:2006+A11+A1+A12+A2
EN 62368-1:2014

Zertifiziertes Produkt (Geräteidentifikation) *Certified Product* (*Product Identification*)	**Lizenzentgelte - Einheit** *License Fee - Unit*
Ventilator (DC Fan)	
wie Blatt (as page) 01, Ergänzung (Addition)	
Bezeichnung (Type Designation):	
EG50040S1-CH4Z, EG75070S1-1C02Z, MG75100V1-1CZ,	3
MG75090V1-1CZ, EG75070S1-1C04Z, EG75070S1-1C05Z,	3
EG70030S1-C0Z, EG75050S1-C05Z, MF40100V2-1QZ,	3
EG75070S1-C48Z, EG75070S1-C47Z, MF50200V1-1CZ,	3
EG50050S1-CF1Z, MF20100V4-1Q0Z, MF25101V2-1QZ,	3
MF30101V2-1QZ, MG60151VX-CZ, MG60151VX-C0Z,	3
EFC5591B4-CZ, EFB0381B4-CZ, VF40281BX- Q7Z,	3
MF40201V2-1DZ, MFE0251V3Z, MFE0251V4Z, MF50201V1-1CZ,	4
EF80251B1-1Z, EF80251B2-1Z, EF80251B3-1Z, EF80251B1-1ZXZ,	4
EF80251B2-1ZXZ, EF80251B3-1ZXZ, EF80252B1-1Z, EF80252B2-1Z	4
EF80252B3-1Z, EF80252B1-1ZXZ, EF80252B2-1ZXZ,	3
EF80252B3-1ZXZ, PF40282B1-QZ, PF80804BX-QZ,	3
PF80384B1-Q1Z (SUNON)	1
Fortsetzung Blatt (continued on page) 145	
	40

ANLAGE (Appendix): 7.5

Dem Zertifikat liegt unsere Prüf- und Zertifizierungsordnung zugrunde und es bestätigt die Konformität des Produktes mit den oben genannten Standards und Prüfgrundlagen. Zusätzliche Anforderungen in Ländern, in denen das Produkt in Verkehr gebracht werden soll, müssen zusätzlich betrachtet werden. Die Herstellung des zertifizierten Produktes wird überwacht.
This certificate is based on our Testing and Certification Regulation and states the conformity of the product with the standards and testing requirements as indicated above. Any additional requirements in countries where the product is going to be marketed have to be considered additionally. The manufacturing of the certified product is subject to surveillance.

Zertifizierungsstelle

TÜV Rheinland LGA Products GmbH
TÜVRheinland®
Albin Yang

TÜV Rheinland LGA Products GmbH - Tillystraße 2 - 90431 Nürnberg
Tel.: (+49/221)8 06 - 13 71 e-mail: cert-validity@de.tuv.com
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Zertifikat *Certificate*

TÜVRheinland®

Zertifikat Nr. *Certificate No.*
R 50275749

Blatt *Page*
0145

Ihr Zeichen *Client Reference*	Unser Zeichen *Our Reference*	Ausstellungsdatum	*Date of Issue* (day/mo/yr)
TUV181207/114084932	ZTW1-LinPa- 10045484 075	28.12.2018	

Genehmigungsinhaber *License Holder*
Sunonwealth Electric Machine
Industry Co., Ltd.
No. 30, Ln. 296, Xinya Rd.
Qianzhen Dist. Kaohsiung 80673
Taiwan, R.O.C.

Fertigungsstätte *Manufacturing Plant*
Sunon Electronics (Kunshan)
Co., Ltd.
168 Nanban Road, Kunshan
Jangsu 215301
P. R. China

Prüfzeichen *Test Mark*

TÜVRheinland ZERTIFIZIERT
Bauart geprüft
Sicherheit
Regelmäßige Produktions-überwachung
www.tuv.com
ID 2000000000

Geprüft nach *Tested acc. to*
EN 60950-1:2006+A11+A1+A12+A2
EN 62368-1:2014

Zertifiziertes Produkt (Geräteidentifikation) *Certified Product (Product Identification)*	**Lizenzentgelte - Einheit** *License Fee - Unit*
Ventilator (DC Fan)	
wie Blatt (as page) 01, Fortsetzung (Continuation)	
Z steht für 30 Kennzeichen. Jedes Kennzeichen entspricht einem der folgenden Zeichen. (Z stands for 30 characters. Each character stands for one of the following signs): 0-9, A-Z, (,), ., /, - oder (or) freibleibend (blank) Nur zum Zwecke der Vermarktung (for marketing purpose only). Nennspannung/Nennstrom/Nennleistung : siehe Anlage (Rated Voltage/Rated Current/Rated Power) (see appendix)	1
Vermerke: Dieses Netzgerät ist auch geprüft und klassifizieret als MS3. (Remark: The equipment is also tested and classified as MS3.)	
	1

ANLAGE (Appendix): 7.5

Dem Zertifikat liegt unsere Prüf- und Zertifizierungsordnung zugrunde und es bestätigt die Konformität des Produktes mit den oben genannten Standards und Prüfgrundlagen. Zusätzliche Anforderungen in Ländern, in denen das Produkt in Verkehr gebracht werden soll, müssen zusätzlich betrachtet werden. Die Herstellung des zertifizierten Produktes wird überwacht.
This certificate is based on our Testing and Certification Regulation and states the conformity of the product with the standards and testing requirements as indicated above. Any additional requirements in countries where the product is going to be marketed have to be considered additionally. The manufacturing of the certified product is subject to surveillance.

Zertifizierungsstelle

Albin Yang
ppa.

TÜV Rheinland LGA Products GmbH - Tillystraße 2 - 90431 Nürnberg
Tel.: (+49/221)8 06 - 13 71 e-mail: cert-validity@de.tuv.com
Fax: (+49/221)8 06 - 39 35 http://www.tuv.com/safety

ESD (HUMAN BODY MODE) TEST REPORT

Company : AMtek SEMICONDUCTORS CO., LTD.

Model Name : AM8907N

Date Received : MAR 20, 2013

Date Tested : MAR 25, 2013

TESTING LABORATORY IS ACCREDITED BY:

IEC/IECQ 17025 certificate of independent test laboratory approval

Certificate No. : 1.72.0031

ISO 9001 certificate is approved by TUV CERT certification body of TUV NORD Cert GmbH

WE HEREBY CERTIFY THAT:

The test(s) shown in the attachment were conducted according to the indicating procedures. We assume full responsibility for the accuracy and completeness of these tests and vouch for the qualifications of all personnel performing them.

	Name	Signature	Date
Test Engineer	Jerry Chen	Jerry Chen	Mar 26, 2013
Manager	Even Lin		Mar 26, 2013

NOTE :

1. This report will be invalid if reproduced in whole or in part.
2. This report refers only to the specimen(s) submitted to test, and is invalid if used separately.
3. This report is ONLY valid with the examination seal and signature of this institute.
4. The tested specimen(s) will only be preserved for thirty days from the date issued, if not collected by the applicant.
5. The failure criteria should be based on parametric and functional testing; the curve trace provided in this report is for reference only.

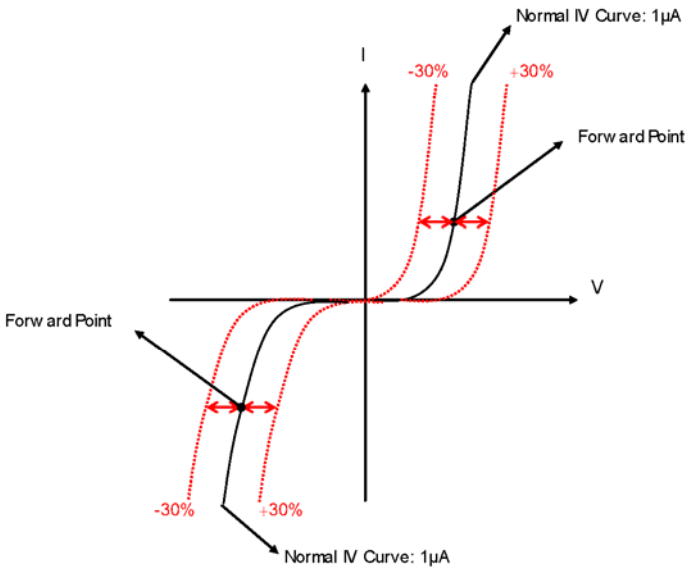
TABLE OF CONTENTS

1. GENERAL INFORMATION

1.1 DESCRIPTION OF UNIT

MANUFACTURER	: AMtek SEMICONDUCTORS CO., LTD.
DEVICE NAME	: AM8907N
PACKAGE / PIN COUNT	: DFN-10
REFERENCE DOCUMENT	: JEDEC EIA/JESD22-A114-B
TEST VOLTAGE	: 2000V ~ 8000V (±), Step: 1000V (±)
SAMPLE QUANTITY	: 18 ea
FAILURE CRITERIA	: FOR V CHANGE AT 1μA±30%
JEDEC ZAP	: 1 time, 0.3 sec

※ Failure Judgment: IV curve shift over 1μA±30% at forward point.



2. ESD (HUMAN BODY MODE) TEST

2.1 TEST EQUIPMENT

Test Equipment	Equipment Number	Tester
KEYTEK ZAPMASTER	#3	10100

2.2 LABORATORY AMBIENCE CONDITION

Temperature : 25 °C ± 5 °C

Relative humidity : 55 % ± 10 % (RH)

2.3 REFERENCE DOCUMENT

The test method refers to JEDEC EIA/JESD22-A114-B

2.4 TEST CONDITION

ALL – VSS (+)
ALL – VSS (-)
ALL – VCC (+)
ALL – VCC (-)
VCC – VSS (+)
VCC – VSS (-)

2.5 SUMMARY OF TEST

Test Model : HBM	ESD Sensitivity Passed : ±8000V		JEDEC Classification Class : 3B
Test Condition	Sample Quantity	Passed Volts	Class 0 : < 250V. Class 1A : ≧ 250V , <500V Class 1B : ≧ 500V , <1000V Class 1C : ≧ 1000V , <2000V Class 2 : ≧ 2000V , <4000V Class 3A : ≧ 4000V , <8000V Class 3B : ≧ 8000V
ALL – VSS (+)	3	+8000V	
ALL – VSS (-)	3	-8000V	
ALL – VCC (+)	3	+8000V	
ALL – VCC (-)	3	-8000V	
VCC – VSS (+)	3	+8000V	
VCC – VSS (-)	3	-8000V	

ALL:1-3,5,6-7,9-10 VSS:EP,8
VCC:4

2.6 CONTENTS OF TEST

ALL – VSS (+) (UNIT:V)							
Test Pin FAIL VOLTAGE	#1	#2	#3	Test Pin FAIL VOLTAGE	#1	#2	#3
1	PASS	PASS	PASS	6	PASS	PASS	PASS
2	PASS	PASS	PASS	8	PASS	PASS	PASS
3	PASS	PASS	PASS	9	PASS	PASS	PASS
5	PASS	PASS	PASS	10	PASS	PASS	PASS

ALL – VSS (-) (UNIT:V)							
Test Pin FAIL VOLTAGE	#4	#5	#6	Test Pin FAIL VOLTAGE	#4	#5	#6
1	PASS	PASS	PASS	6	PASS	PASS	PASS
2	PASS	PASS	PASS	8	PASS	PASS	PASS
3	PASS	PASS	PASS	9	PASS	PASS	PASS
5	PASS	PASS	PASS	10	PASS	PASS	PASS

ALL – VCC (+) (UNIT:V)							
Test Pin FAIL VOLTAGE	#7	#8	#9	Test Pin FAIL VOLTAGE	#7	#8	#9
1	PASS	PASS	PASS	6	PASS	PASS	PASS
2	PASS	PASS	PASS	8	PASS	PASS	PASS
3	PASS	PASS	PASS	9	PASS	PASS	PASS
5	PASS	PASS	PASS	10	PASS	PASS	PASS

ALL – VCC (-) (UNIT:V)							
Test Pin FAIL VOLTAGE	#10	#11	#12	Test Pin FAIL VOLTAGE	#10	#11	#12
1	PASS	PASS	PASS	6	PASS	PASS	PASS
2	PASS	PASS	PASS	8	PASS	PASS	PASS
3	PASS	PASS	PASS	9	PASS	PASS	PASS
5	PASS	PASS	PASS	10	PASS	PASS	PASS

VCC – VSS (+) (UNIT: V)				
Test Pin	FAIL VOLTAGE	#13	#14	#15
4		PASS	PASS	PASS

VCC – VSS (-) (UNIT: V)				
Test Pin	FAIL VOLTAGE	#16	#17	#18
4		PASS	PASS	PASS