Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!

## Contact us

Tel: +86-755-8981 8866 Fax: +86-755-8427 6832
Email & Skype: info@chipsmall.com Web: www.chipsmall.com
Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China

# Delta Electronics Corp.

# APPROVAL SHEET

**Customer Name：** _____

**Model Name：** **COOLER**

**Model Name：** **FHS-K8020S00**

**Customer Part No：** _____

**Spec Issue Date：** **2015/3/11**

**Spec Revision：** **04**

**PLEASE SEND ONE COPY OF THIS SPECIFICATION BACK AFTER YOU SIGNED APPROVAL FOR PRODUCTION PRE-ARRANGMENT.**

**Approved By:** _____

**Date:** _____

| Approval | Check | Designer |
|---|---|---|
| Alex-Hsia | Charles Chen | REEK.LI |

# Delta Electronics Corp.

| REV. | Description | Drawn | Checked | Approved | Issue Date |
|---|---|---|---|---|---|
| **00** | **ISSUE SPEC** | REEK.LI2011/10/07 | Charles. Chen 2011/10/07 | Alex-Hsia 2011/10/07 | 2011/10/07 |
| **01** | **MODIFY INSULATOR TAPE TO 3246134300 & SCREW TO 3105377200** | REEK.LI2014/4/10 | Charles. Chen 2014/4/10 | Alex-Hsia 2014/4/10 | 2014/4/10 |
| **02** | **CORRECT PACKING SPEC** | REEK.LI2014/7/17 | Charles. Chen 2014/7/17 | Alex-Hsia 2014/7/17 | 2014/7/17 |
| **03** | **CORRECT BOM MATERIAL<br>ADD MATERIAL RoHS REPORTS<br>ADD FAN UL, CE, VDE CERTIFICATIONS** | REEK.LI2014/8/15 | Charles. Chen 2014/8/15 | Alex-Hsia 2014/8/15 | 2014/8/15 |
| **04** | **ADD LABEL PN ON PAGE 4<br>UPDATE RoHS REPORTS** | REEK.LI2015/3/11 | Charles. Chen 2015/3/11 | Alex-Hsia 2015/3/11 | 2015/3/11 |
| | | | | | |

| | | |
|---|---|---|
| Description:<br>SAMPLE REVISION CODE LIST | | |
| Part No. | | REV |
| DELTA MODEL :<br>FHS-K8020S00 | TOTAL **146** PAGE | 04 |

Delta Electronics Corp.

# CONTENTS


| Item | Element Description | Page | Note |
|---|---|---|---|
| 1 | Specification | 4 | |
| 2 | Print | 5 | |
| 3 | Packing Plan | 11 | |
| 4 | Fan | 14 | |
| 5 | MATERIAL RoHS REPORT | 33 | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| 9 | | | |

# Delta Electronics Corp.

# 1. SPECIFICATION

## Characters

| Item | Description |
|---|---|
| Scope | THIS SPECIFICATION DEFINES THE ELECTRICAL AND MECHANICAL CHARACTERISTICS OF THE FAN HEATSINK |
| Application | INTEL LGA1155 CPU COOLER |
| Specification | |
| a: Thermal Resistance | 0.37 (℃/W) (REF.) |
| b: total weight | 320 g (REF.) |
| c: clip force | 16 kgf (REF.) |

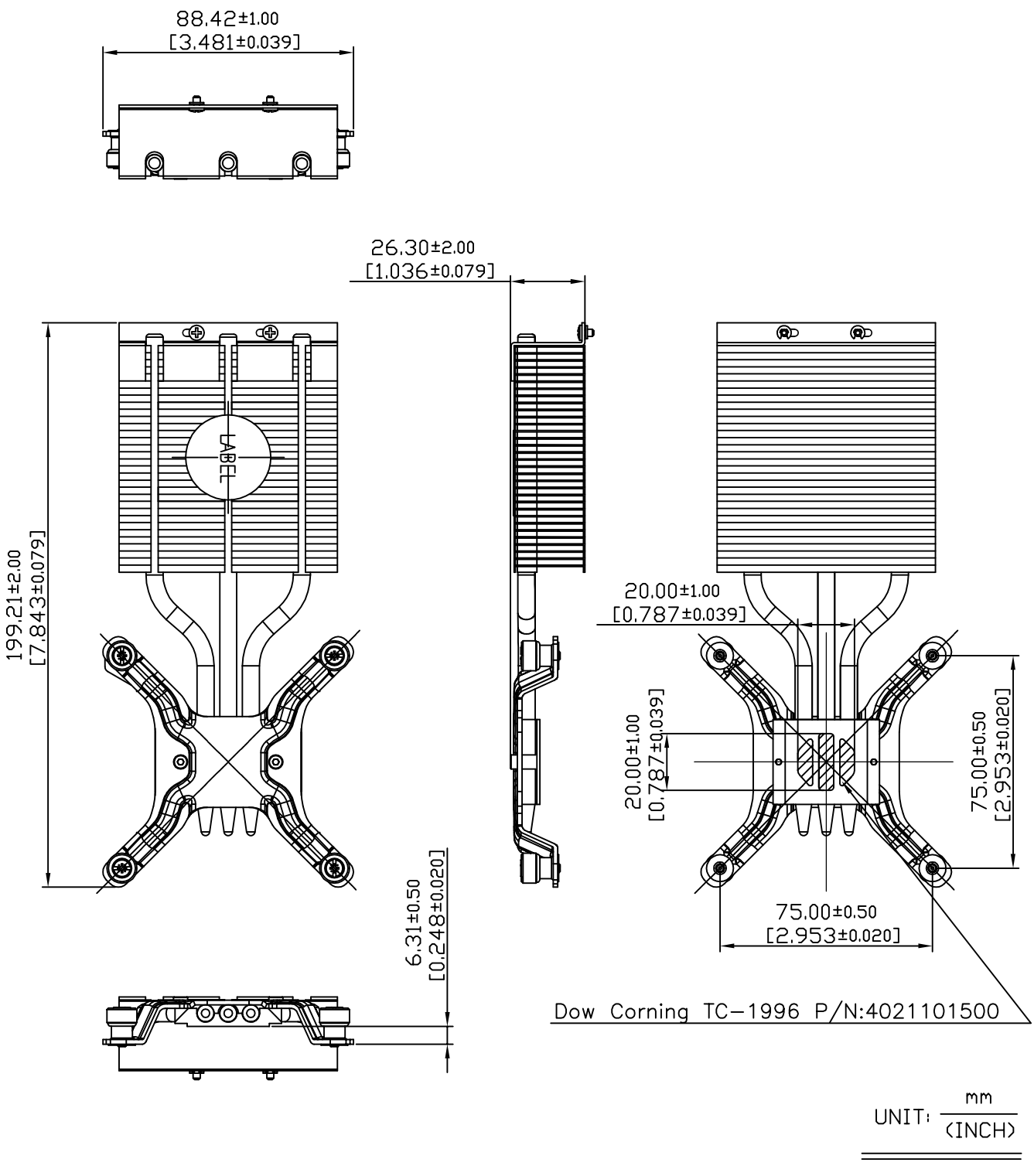
## BOM

| Item | Part Name | Material | Part NO. | Q'TY | Remark |
|---|---|---|---|---|---|
| 1 | Screw | SWRCH18A | 3105371800 | 2 pce | REV03 |
| 2 | Screw | SWRCH18A | 3105377200 | 2 pce | REV03 |
| 3 | Screw | PEM QUICK | 3107005700 | 4 pce | |
| 4 | Washer | SK7 | 3110264300 | 2 pce | |
| 5 | Insulator tape | Mylar | 3244675000 | 2 pce | |
| 6 | Insulator tape | PC | 3246134300 | 4 pce | REV01 |
| 7 | Label | INK+PP+PET | 3267133400 | 1 pce | REV04 |
| 8 | Fin | AL1100 | 3346911100 | 1 pce | |
| 9 | Copper base | C1100 | 3346935800 | 1 pce | |
| 10 | Heatpipe | C1020 | 3460027900 | 2 pce | |
| 11 | Heatpipe | C1020 | 3460028200 | 1 pce | |
| 12 | Bracket | SK7 | 3460457800 | 1 pce | |
| 13 | X-Clip | SK7 | 3460457900 | 1 pce | |
| 14 | Back plate | PBT | 3470651300 | 1 pce | |
| 15 | Screw & bag | SWRCH18A | 3534186200 | 1 pce | REV03 |
| 16 | Fan | PBT | 3622849111 | 1 pce | |
| 17 | Solder | SN42/BI58 | 4090207000 | 5.8g | |
| 18 | TIM | TC-1996 | 4021101500 | 0.14g | |
| 19 | | | | | |

# 2. PRINT

## Assembly Drawing

DRAWING:




UNIT: mm (INCH)

台達電子工業股份有限公司
DELTA ELECTRONICS, INC.

DELTA MODEL: FHS-K8020S00

Drawn: REEK.LI 10/6'11

THESE DRAWINGS AND SPECIFICATIONS ARE THE PROPERTY OF DELTA ELECTRONICS, INC. AND SHALL NOT BE REPRODUCED OR USED AS THE BASIS FOR THE MANUFACTURE OR SELL OF APPARATUSES OR DEVICES WITHOUT PERMISSION.

CUSTOMER NAME: STD

CUSTOMER P/N: ---

DIMENSIONAL TOLERANCES HOLES : ±0.05 ANGLES : ±0.5°

| ( ) | | ( ) | | ( ) | | ( ) | |
|---|---|---|---|---|---|---|---|
| <30 | :±0.25 | DECIMALS | UP~100 :±0.2 | 250~300 :±0.4 | UP~600 | :±1.5 |
| >30~100 | :±0.35 | X :±0.3 | 100~150 :±0.25 | 300~350 :±0.45 | 600~900 | :±2.4 |
| >100~300 | :±0.5 | XX :±0.2 | 150~200 :±0.3 | 350~400 :±0.5 | 900~OVER | :±3.1 |
| ABOVE 300 | :±0.6 | X.XX :±0.1 | 200~250 :±0.35 | | | |

THIRD ANGLE PROJECTION

Description: PRODUCTION SPEC. (PHYSICAL DIMENSION)

A4 SIZE

Part No. FHS-K8020S00-PD

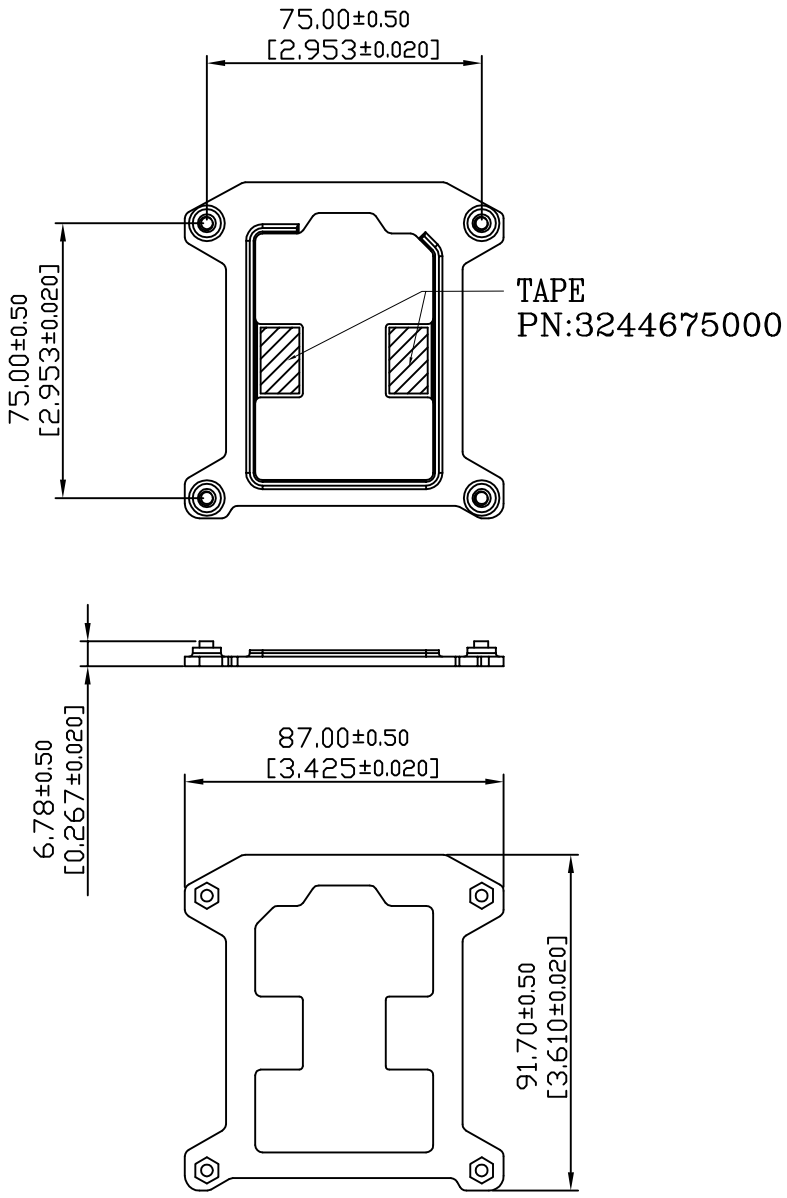
REV. 00

| SCALE | --- | UNIT | mm | USED ON | COOLER |
|---|---|---|---|---|---|

SHEET 1 OF 4

ISSUE DATE:

DRAWING: 3470651300




BOTTOM SIDE

UNIT: mm / (INCH)

台達電子工業股份有限公司
DELTA ELECTRONICS, INC.

DELTA MODEL: FHS-K8020S00

Drawn: REEK.LI 10/6'11

THESE DRAWINGS AND SPECIFICATIONS ARE THE PROPERTY OF DELTA ELECTRONICS, INC. AND SHALL NOT BE REPRODUCED OR USED AS THE BASIS FOR THE MANUFACTURE OR SELL OF APPARATUSES OR DEVICES WITHOUT PERMISSION.

CUSTOMER NAME: STD

CUSTOMER P/N: ---

DIMENSIONAL TOLERANCES HOLES : ±0.05 ANGLES : ±0.5°

| ( ) | | ( ) | | ( ) | | ( ) | |
|---|---|---|---|---|---|---|---|
| <30 | :±0.25 | DECIMALS | UP~100 :±0.2 | 250~300 :±0.4 | UP~600 | :±1.5 |
| >30~100 | :±0.35 | X :±0.3 | 100~150 :±0.25 | 300~350 :±0.45 | 600~900 | :±2.4 |
| >100~300 | :±0.5 | XX :±0.2 | 150~200 :±0.3 | 350~400 :±0.5 | 900~OVER | :±3.1 |
| ABOVE 300 | :±0.6 | XXX :±0.1 | 200~250 :±0.35 | | | |

THIRD ANGLE PROJECTION

Description: PRODUCTION SPEC. (PHYSICAL DIMENSION)

A4 SIZE

Part No. FHS-K8020S00-PD

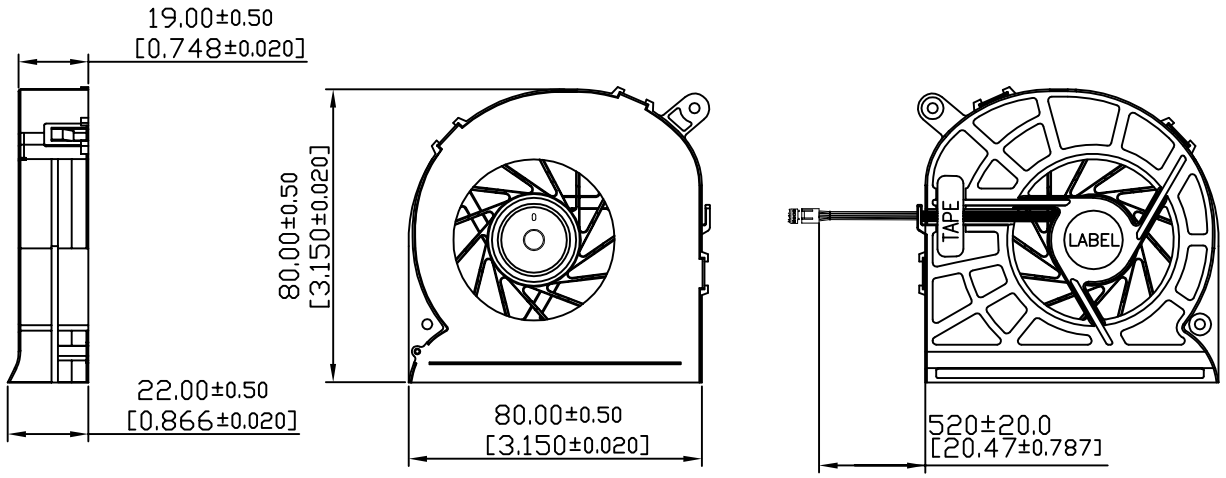
REV. 00

| SCALE | --- | UNIT | mm | USED ON | COOLER |
|---|---|---|---|---|---|

SHEET 2 OF 4

ISSUE DATE:

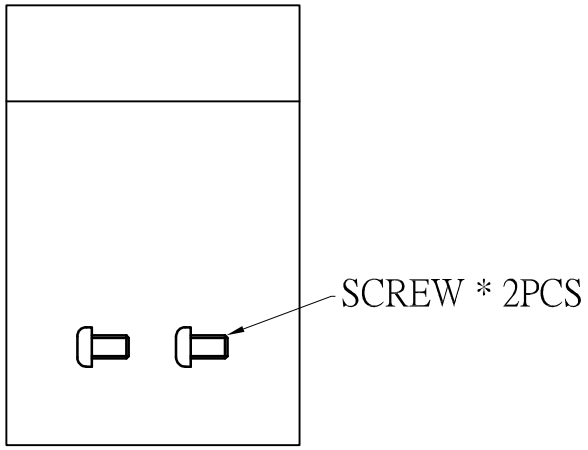
DRAWING: 3622849111




UNIT: mm / (INCH)

| | | | |
|---|---|---|---|
| 台達電子工業股份有限公司 DELTA ELECTRONICS, INC. | | DELTA MODEL: FHS-K8020S00 | Drawn: REEK.LI 10/6'11 |
| THESE DRAWINGS AND SPECIFICATIONS ARE THE PROPERTY OF DELTA ELECTRONICS, INC. AND SHALL NOT BE REPRODUCED OR USED AS THE BASIS FOR THE MANUFACTURE OR SELL OF APPARATUSES OR DEVICES WITHOUT PERMISSION. | | CUSTOMER NAME: STD | |
| | | CUSTOMER P/N: --- | |
| DIMENSIONAL TOLERANCES HOLES : ±0.05 ANGLES : ±0.5° | | THIRD ANGLE PROJECTION | Description: PRODUCTION SPEC. (PHYSICAL DIMENSION) |
| ( ) <30 :±0.25 >30~100 :±0.35 >100~300 :±0.5 ABOVE 300:±0.6 | ( ) DECIMALS X :±0.3 XX :±0.2 XXX:±0.1 | ( ) UP~100 :±0.2 100~150 :±0.25 150~200 :±0.3 200~250:±0.35 | ( ) 250~300 :±0.4 300~350 :±0.45 350~400 :±0.5 UP~600 :±1.5 600~900 :±2.4 900~OVER :±3.1 |
| A4 SIZE | | Part No. FHS-K8020S00-PD | REV. 00 |
| SCALE --- UNIT mm USED ON COOLER | | SHEET 3 OF 4 | ISSUE DATE: |

DRAWING: 3534186200




UNIT: mm (INCH)

台達電子工業股份有限公司
DELTA ELECTRONICS, INC.

DELTA MODEL: FHS-K8020S00

Drawn: REEK.LI 10/6'11

THESE DRAWINGS AND SPECIFICATIONS ARE THE PROPERTY OF DELTA ELECTRONICS, INC. AND SHALL NOT BE REPRODUCED OR USED AS THE BASIS FOR THE MANUFACTURE OR SELL OF APPARATUSES OR DEVICES WITHOUT PERMISSION.

CUSTOMER NAME: STD

CUSTOMER P/N: ---

DIMENSIONAL TOLERANCES HOLES : ±0.05 ANGLES : ±0.5°

| ( ) | | ( ) | | ( ) | | ( ) | |
|---|---|---|---|---|---|---|---|
| <30 | :±0.25 | DECIMALS | UP~100 :±0.2 | 250~300 :±0.4 | UP~600 | :±1.5 |
| >30~100 | :±0.35 | X :±0.3 | 100~150 :±0.25 | 300~350 :±0.45 | 600~900 | :±2.4 |
| >100~300 | :±0.5 | X.X :±0.2 | 150~200 :±0.3 | 350~400 :±0.5 | 900~OVER | :±3.1 |
| ABOVE 300 | :±0.6 | X.XX :±0.1 | 200~250 :±0.35 | | | |

THIRD ANGLE PROJECTION

Description: PRODUCTION SPEC. (PHYSICAL DIMENSION)

| SCALE | --- | UNIT | mm | USED ON | COOLER |
|---|---|---|---|---|---|

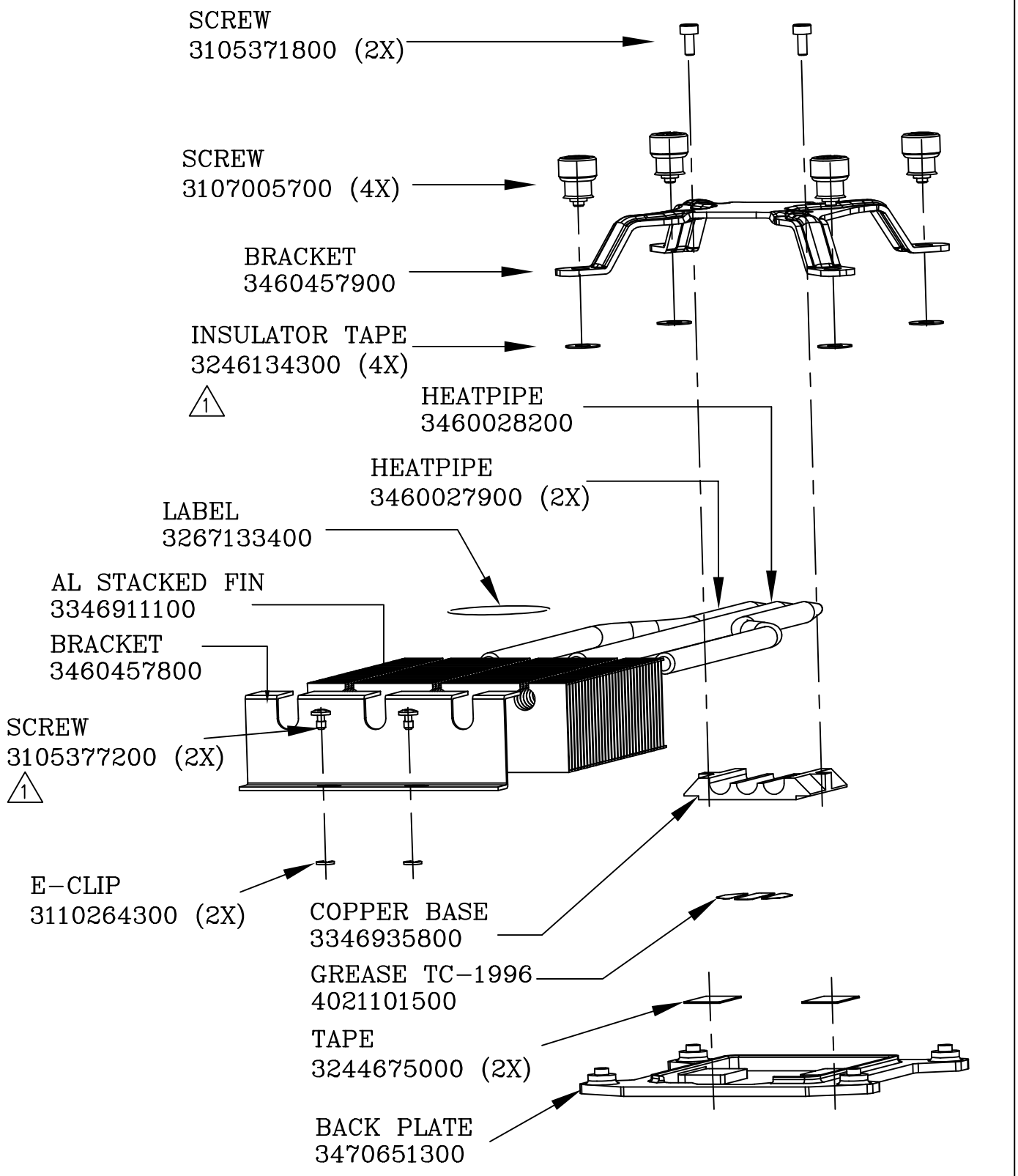
A4 SIZE

Part No. FHS-K8020S00-PD

REV. 00

SHEET 4 OF 4

ISSUE DATE:




台達電子工業股份有限公司
DELTA ELECTRONICS, INC.

| | |
|---|---|
| DELTA MODEL: FHS-K8020S00 | Drawn: REEK.LI 4/10'14 |
| CUSTOMER NAME: STD | |
| CUSTOMER P/N: --- | |

THESE DRAWINGS AND SPECIFICATIONS ARE THE PROPERTY OF DELTA ELECTRONICS, INC. AND SHALL NOT BE REPRODUCED OR USED AS THE BASIS FOR THE MANUFACTURE OR SELL OF APPARATUSES OR DEVICES WITHOUT PERMISSION.

DIMENSIONAL TOLERANCES HOLES : ±0.05 ANGLES : ±0.5°

| ( ) | | ( ) DECIMALS | | ( ) | | | | ( ) | |
|---|---|---|---|---|---|---|---|---|---|
| <30 | ±0.25 | X | ±0.3 | UP~100 | ±0.2 | 250~300 | ±0.4 | UP~600 | ±1.5 |
| >30~100 | ±0.35 | X.X | ±0.2 | 100~150 | ±0.25 | 300~350 | ±0.45 | 600~900 | ±2.4 |
| >100~300 | ±0.5 | X.XX | ±0.1 | 150~200 | ±0.3 | 350~400 | ±0.5 | 900~OVER | ±3.1 |
| ABOVE 300 | ±0.6 | | | 200~250 | ±0.35 | | | | |

THIRD ANGLE PROJECTION

Description: PRODUCTION SPEC. (ASSEMBLY ORDER)

| SCALE | --- | UNIT | mm | USED ON | COOLER |
|---|---|---|---|---|---|

A4 SIZE

Part No. FHS-K8020S00-AS

REV. 01

SHEET 1 OF 1 ISSUE DATE:

FRAME NAME : DF-PSLA4V-3R01.DWG

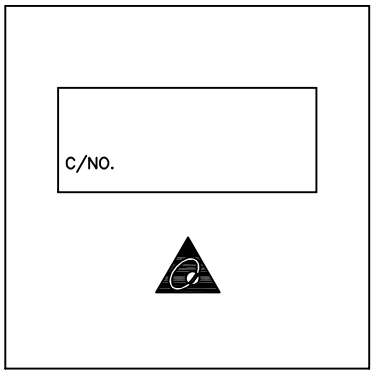
# 3. PACKING PLAN

## Packing Specification

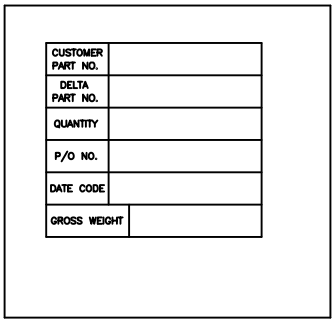
| CARTON ILLUSTRATE | SIZE | 498(L)*298(w)*270(H)(mm) | PACKING QUANTITY | 6LAYERS/CARTON |
|---|---|---|---|---|
| | MATERIAL | 3 LAYERS"AB" FLUTE | CARTON WEIGHT | 0.62 kg (REF.) |

CARTON OUTSIDE DEMONDTRATE

FRONT

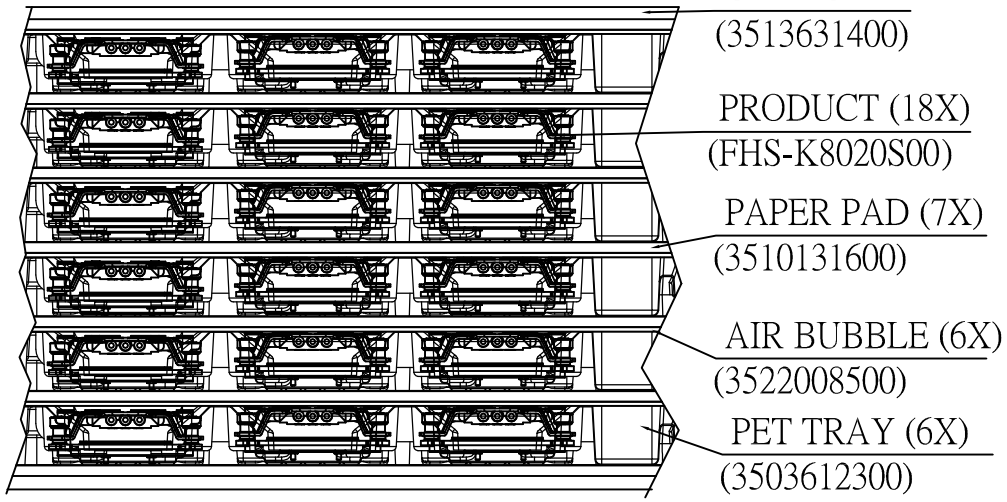



BACK




(ONE LABEL PER CARTON)

| TRAY PACKING ILLUSTRATE | SIZE | 490 (L)*290 (w)*33.8 (H)(mm) | PACKING QUANTITY | 3PCS/TRAY |
|---|---|---|---|---|
| | MATERIAL | PET TRAY | | |
| | MATERIAL WEIGHT | 250g (REF.) | | |




台達電子工業股份有限公司
DELTA ELECTRONICS, INC.

DELTA MODEL: FHS-K8020S00

Drawn: REEK.LI 7/17'14

THESE DRAWINGS AND SPECIFICATIONS ARE THE PROPERTY OF DELTA ELECTRONICS, INC. AND SHALL NOT BE REPRODUCED OR USED AS THE BASIS FOR THE MANUFACTURE OR SELL OF APPARATUSES OR DEVICES WITHOUT PERMISSION.

CUSTOMER NAME: STD

CUSTOMER P/N: ---

DIMENSIONAL TOLERANCES HOLES : ±0.05 ANGLES : ±0.5°

| ( ) | | ( ) | | ( ) | | ( ) | |
|---|---|---|---|---|---|---|---|
| <30 | :±0.25 | DECIMALS | UP~100 :±0.2 | 250~300 :±0.4 | UP~600 | :±1.5 |
| >30~100 | :±0.35 | X :±0.3 | 100~150 :±0.25 | 300~350 :±0.45 | 600~900 | :±2.4 |
| >100~300 | :±0.5 | XX :±0.2 | 150~200 :±0.3 | 350~400 :±0.5 | 900~OVER | :±3.1 |
| ABOVE 300 | :±0.6 | X.XX :±0.1 | 200~250 :±0.35 | | | |

THIRD ANGLE PROJECTION

Description: PRODUCTION SPEC. (PACKING ASSMEBLY)

A4 SIZE

Part No. FHS-K8020S00-PA

REV. --

| SCALE | --- | UNIT | mm | USED ON | COOLER | SHEET 1 OF 2 | ISSUE DATE: |
|---|---|---|---|---|---|---|---|

| | | | | |
|---|---|---|---|---|
| PART NO. | FHS-K8020S00 | | | |
| BASIC DATA | QUANTITY/CARTON | 18PCS (6 LAYERS/CARTON, 3PCS/LAYER) ⚠2 | | |
| | PRODUCTION NET WEIGHT | 5.8kg (REF.) | | |
| | PRODUCTION GROSS WEIGHT | 7.8kg (REF.) | | |
| 20(ft)CONTAINER ILLUSTRATE | SIZE | 5.889(L)*2.352(w)*2.386(H)m | PACKING QUANTITY | 20PALLETS/CONTAINER |
| | CONTAINER | STEEL | | |

CONTAINER FORM

CONTAINER LOADING MATHOD

| | | | | |
|---|---|---|---|---|
| PALLET | PALLET | PALLET | PALLET | PALLET |
| PALLET | PALLET | PALLET | PALLET | PALLET |

TOP VIEW

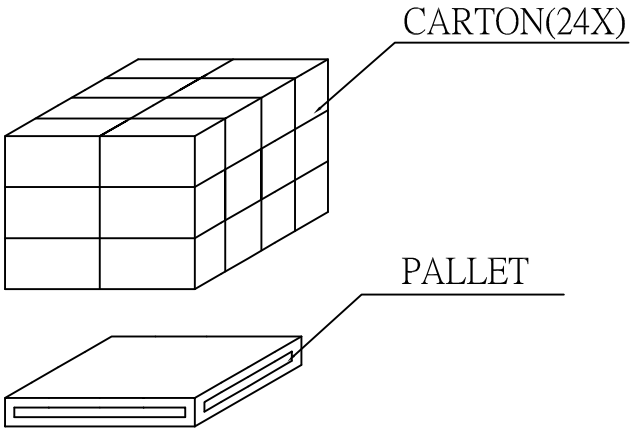
| | |
|---|---|
| PALLET | PALLET |
| PALLET | PALLET |

FRONT VIEW

| | | | | |
|---|---|---|---|---|
| PALLET LOADING ILLUSTRATE | SIZE | 120(L)*100(w)*15(H)cm | PACKING QUANTITY | 24 CARTONS/PALLET |
| | PALLET | PAPER | | |

PALLET ILLUSTRATE

PALLET LOADING MATHOD




台達電子工業股份有限公司
DELTA ELECTRONICS, INC.

DELTA MODEL: FHS-K8020S00

Drawn: REEK.LI 7/17'14

THESE DRAWINGS AND SPECIFICATIONS ARE THE PROPERTY OF DELTA ELECTRONICS, INC. AND SHALL NOT BE REPRODUCED OR USED AS THE BASIS FOR THE MANUFACTURE OR SELL OF APPARATUSES OR DEVICES WITHOUT PERMISSION.

CUSTOMER NAME: STD

CUSTOMER P/N: ---

DIMENSIONAL TOLERANCES HOLES : ±0.05 ANGLES : ±0.5°

| ( ) | | ( ) | | ( ) | | ( ) | |
|---|---|---|---|---|---|---|---|
| <30 | :±0.25 | DECIMALS | UP~100 :±0.2 | 250~300 :±0.4 | UP~600 | :±1.5 |
| >30~100 | :±0.35 | X :±0.3 | 100~150 :±0.25 | 300~350 :±0.45 | 600~900 | :±2.4 |
| >100~300 | :±0.5 | X.X :±0.2 | 150~200 :±0.3 | 350~400 :±0.5 | 900~OVER | :±3.1 |
| ABOVE 300 | :±0.6 | X.XX :±0.1 | 200~250 :±0.35 | | | |

THIRD ANGLE PROJECTION

Description: PRODUCTION SPEC. (PACKING ASSMEBLY)

| SCALE | --- | UNIT | mm | USED ON | COOLER |
|---|---|---|---|---|---|

A4 SIZE

Part No. FHS-K8020S00-PA

REV. --

SHEET 2 OF 2 ISSUE DATE:

# 4. FAN

## Fan Specification

# SPECIFICATION FOR APPROVAL

Customer T M P B U

Description D C B L O W E R

CustomerP/N: 3 6 2 2 8 4 9 1 1 1 R E V . _____

Delta Model No. KDB0712HB-BD22 REV. 00

Sample Issue No._____

Sample Issue Date JUL.28.2011

PLEASE SEND ONE COPY OF THIS SPECIFICATION BACK AFTER YOU SIGNED APPROVAL FOR PRODUCTION PRE-ARRANGMENT.

APPROVED BY:_____

DATE :_____

DELTA ELECTRONICS, INC.
TAOYUAN PLANT
252, SHANG YING ROAD, KUEI SAN INDUSTRIAL ZONE TAOYUAN SHIEN, TAIWAN, R.O.C.
TEL:886-(0)3-3591968
FAX:886-(0)3-3591991

DELTA ELECTRONICS, INC.
252, SHANG YING ROAD, KUEI SAN
TAOYUAN HSIEN 333, TAIWAN, R. O. C.
TEL : 886-(0)3-3591968
FAX : 886-(0)3-3591991

# SPECIFICATION FOR APPROVAL

| | | | |
|---|---|---|---|
| Customer: | TMPBU | | |
| Description: | DC BLOWER | | |
| Customer P/N: | **3622849111** | REV: | |
| Delta Model NO.: | KDB0712HB-BD22 | **Delta Safety Model NO.: KDB0712HB** | |
| Sample Rev: | 00 | Issue NO: | |
| Sample Issue Date: | **JUL.28.2011** | Quantity: | |

1. SCOPE:
   THIS SPECIFICATION DEFINES THE ELECTRICAL AND MECHANICAL CHARACTERISTICS OF THE DC BRUSHLESS AXIAL FLOW FAN. THE FAN MOTOR IS WITH SINGLE PHASE AND FOUR POLES.

2. CHARACTERS:

| ITEM | DESCRIPTION |
|---|---|
| RATED VOLTAGE | 12.0 VDC |
| OPERATION VOLTAGE | 10.8 - 12.6 VDC |
| INPUT CURRENT | 0.23 ( MAX. 0.45) A<br>**(SAFETY CURRENT 0.45 A)** |
| INPUT POWER | 2.76 ( MAX. 5.40 ) W |
| SPEED | 3400±10% R.P.M. |
| MAX. AIR FLOW<br>(AT ZERO STATIC PRESSURE) | 0.357 (MIN. 0.314) $M^3$/MIN.<br>12.61 (MIN. 10.32 ) CFM |
| MAX. AIR PRESSURE<br>(AT ZERO AIRFLOW) | 10.99 (MIN. 8.424 ) $mmH_20$<br>0.433 (MIN. 0.351 ) $inchH_20$ |
| ACOUSTICAL NOISE (AVG.) | 42.5 (MAX. 46.5) dB-A (AT 50CM) |
| INSULATION TYPE | UL: CLASS A |

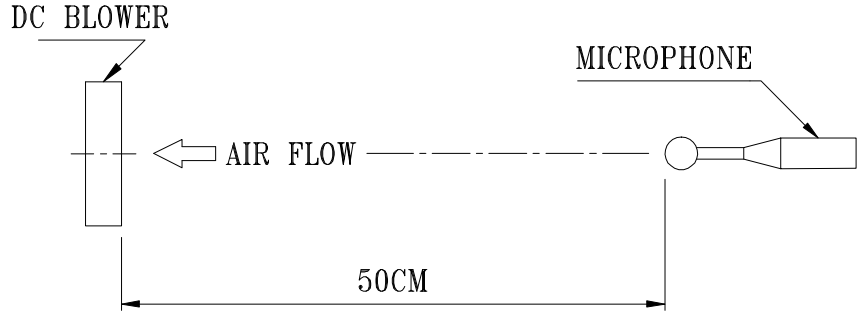
(continued)

PART NO: **3622849111**

DELTA MODEL: KDB0712HB-BD22

| | |
|---|---|
| INSULATION STRENGTH | 10 MEG OHM MIN. AT 500 VDC (BETWEEN FRAME AND (+) TERMINAL) |
| DIELECTRIC STRENGTH | 5 mA MAX. AT 500 VAC 50/60 Hz ONE MINUTE, (BETWEEN FRAME AND (+) TERMINAL) |
| LIFE EXPECTANCE | 30,000 HOURS CONTINUOUS OPERATION AT 50 °C WITH 15 ~ 65 %RH. |
| ROTATION | CLOCKWISE VIEW FROM TOP SIDE VIEW |
| OVER CURRENT SHUT DOWN | THE CURRENT WILL SHUT DOWN WHEN LOCKING ROTOR |
| LEAD WIRE | UL1061 AWG#28<br>BLACK WIRE: (−)<br>YELLOW WIRE: (+)<br>GREEN WIRE: (FOO)<br>BLUE WIRE: (PWM) |

NOTES:
1. ALL READINGS ARE MEASURED AFTER STABLY WARMING UP THROUGH 10 MINUTES.
2. THE VALUES WRITTEN IN PARENS , ( ), ARE LIMITED SPEC.
3. ACOUSTICAL NOISE MEASURING CONDITION:




NOISE IS MEASURED AT RATED VOLTAGE IN FREE AIR IN ANECHOIC CHAMBER WITH B & K SOUND LEVEL METER WITH MICROPHONE AT A DISTANCE OF ONE METER FROM THE FAN INTAKE.

PART NO: **3622849111**

DELTA MODEL: KDB0712HB-BD22

3. MECHANICAL:

3-1. DIMENSIONS ---------- SEE DIMENSIONS DRAWING

3-2. FRAME ---------- PLASTIC UL: 94V-0

3-3. IMPELLER ---------- PLASTIC UL: 94V-0

3-4. COVER ---------- SECC

3-5. BEARING SYSTEM ---------- FDB BEARING

3-6. WEIGHT ---------- 44.50 GRAMS

4. ENVIRONMENTAL:

4-1. OPERATING TEMPERATURE ---------- 0 TO +60 DEGREE C

4-2. STORAGE TEMPERATURE ---------- -10 TO +75 DEGREE C

4-3. OPERATING HUMIDITY ---------- 5 TO 90 % RH

4-4. STORAGE HUMIDITY ---------- 5 TO 95 % RH

5. PROTECTION:

5-1. LOCKED ROTOR PROTECTION

IMPEDANCE OF MOTOR WINDING PROTECTS MOTOR FROM FIRE IN 96 HOURS OF LOCKED ROTOR CONDITION AT THE RATED VOLTAGE.

5-2. POLARITY PROTECTION

BE CAPABLE OF WITHSTANDING IF REVERSE CONNECTION FOR POSITIVE AND NEGATIVE LEADS.

6. RE OZONE DEPLETING SUBSTANCES:

6-1. NO CONTAINING PBBs, PBBOs, CFCs, PBBEs, PBDPEs AND HCFCs.

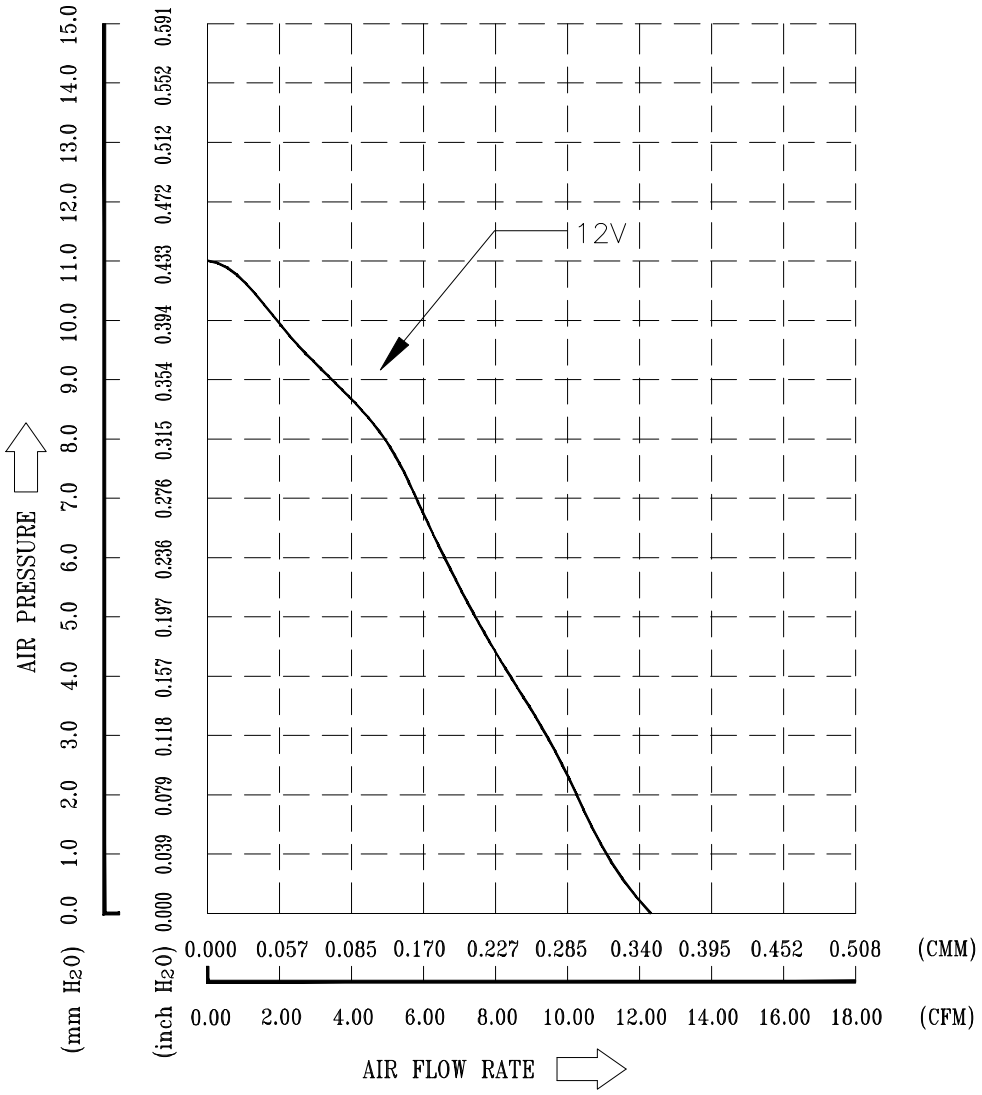
7. PRODUCTION LOCATION

7-1. PRODUCTS WILL BE PRODUCED IN CHINA OR THAILAND OR TAIWAN.

PART NO: **3622849111**

DELTA MODEL: KDB0712HB-BD22

8. PQ CURVE:



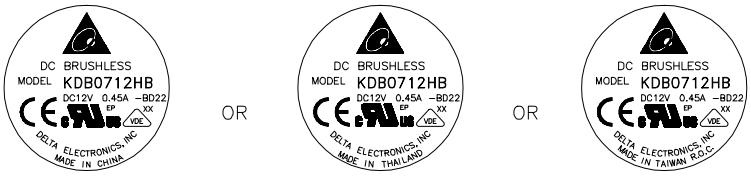

* TEST CONDITION: INPUT VOLTAGE ----- OPERATION VOLTAGE
TEMPERATURE ------ ROOM TEMPERATURE
HUMIDITY ---------- 65%RH

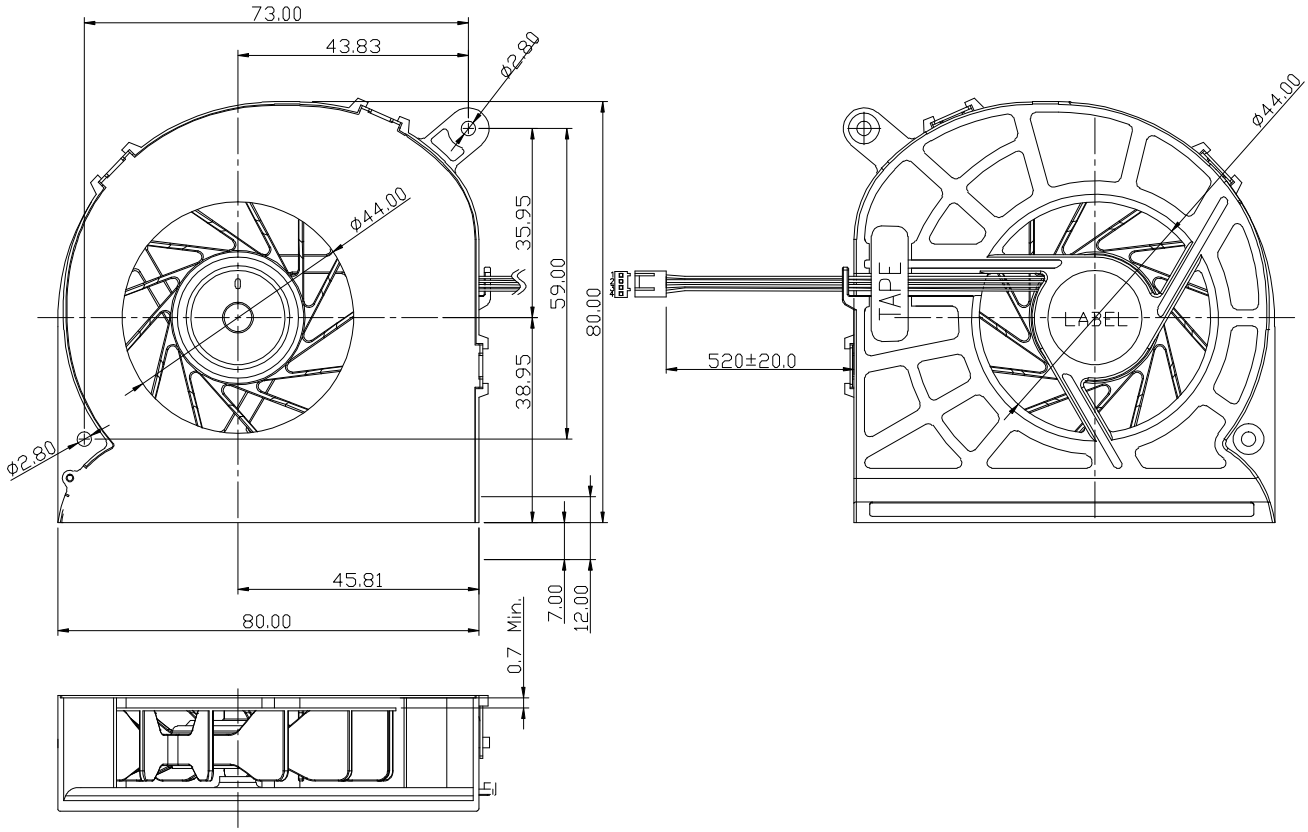
PART NO: **3622849111**

DELTA MODEL: KDB0712HB-BD22

9. DIMENSION DRAWING:

LABEL:



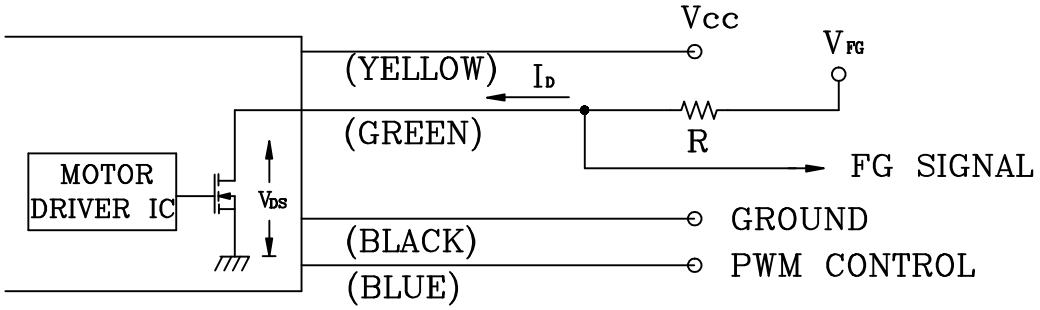

NOTES:

UNIT: mm

1.LEAD WIRE: UL1061 AWG#28
  PIN 1: BLACK WIRE: NEGATIVE(−)
  PIN 2: YELLOW WIRE: POSITIVE(+)
  PIN 3: GREEN WIRE: TACHOMETER OUTPUT (F00)
  PIN 4: BLUE WIRE: SPEED CONTROL (PWM)
2.HOUSING: MOLEX 47054−1000 OR EQUIVALENT
3.TERMINAL: MOLEX 2759T 08−50−0113 OR EQUIVALENT
4.INSULATOR: TAPE ACETATE
5.THIS PRODUCT IS RoHS COMPLIANT

## 10. FREQUENCY GENERATOR (FG) SIGNAL:

### 10-1. OUTPUT CIRCUIT - OPEN COLLECTOR MODE:



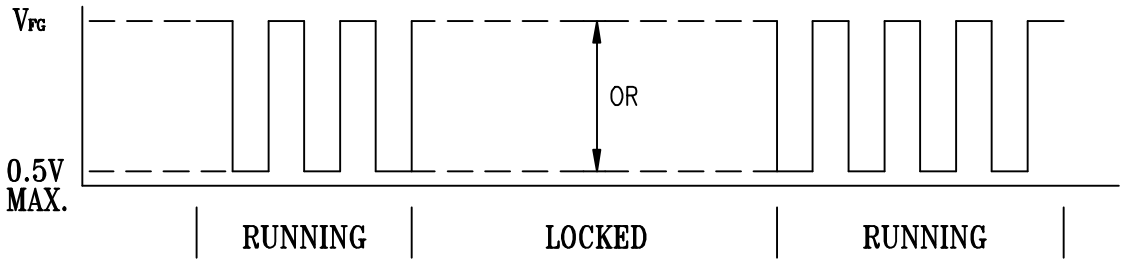

CAUTION: THE FG SIGNAL LEAD WIRE MUST BE KEPT AWAY FROM "+" LEAD WIRE & "−" LEAD WIRE.

### 10-2. SPECIFICATION:

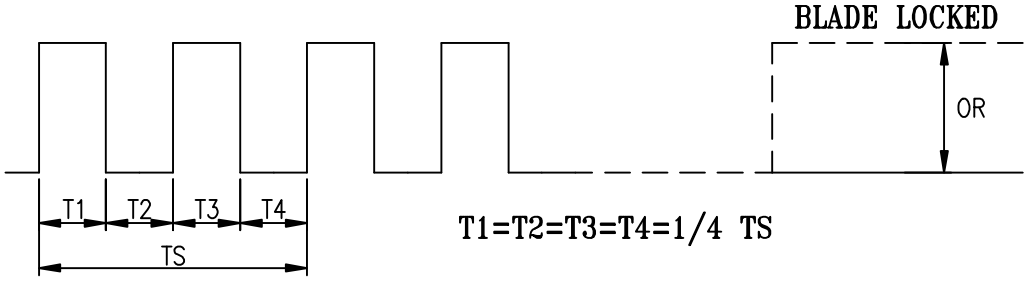
$V_{DS}$ (linear)=0.5V MAX. $V_{FG}$ =5.0V TYP. (Vcc MAX.)

$I_D$ =5mA MAX. $R \geq V_{FG}/I_D$

### 10-3. FREQUENCY GENERATOR WAVEFORM:




FAN RUNNING FOR 4 POLES




T1=T2=T3=T4=1/4 TS

N=R.P.M

TS=60/N(SEC)

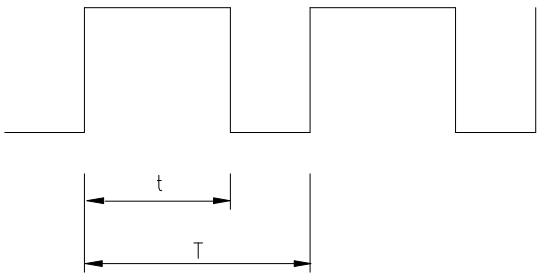
*VOLTAGE LEVEL AFTER BLADE LOCKED

*4 POLES

A00

11. PWM CONTROL SIGNAL:

SIGNAL VOLTAGE RANGE: 0~5 VDC




HIGH SIGNAL: 20 VDC MAX. 2.8 VDC MIN.

LOW SIGNAL: 0.8 VDC MAX. 0 VDC MIN.

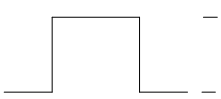
DUTY CYCLE= $\frac{t}{T}$ *100(%)

- THE FREQUENCY FOR CONTROL SIGNAL OF THE FAN SHALL BE ABLE TO ACCEPT A 30HZ~300KHZ.
- THE PREFERRED OPERATING POINT FOR THE FAN IS 25K HZ.
- AT 100% DUTY CYCLE,THE ROTOR WILL SPIN AT MAXIMUM SPEED.
- AT 0% ~ 20% DUTY CYCLE,THE ROTOR WILL SPIN AT MINIMUM SPEED.
- WITH CONTROL SIGNAL LEAD DISCONNECTED,THE FAN WILL SPIN AT MAXIMUM SPEED.

12. SPEED VS PWM CONTROL SIGNAL:
(AT 25°C, RATED VOLTAGE & PWM SIGNAL AS FOLLOW)

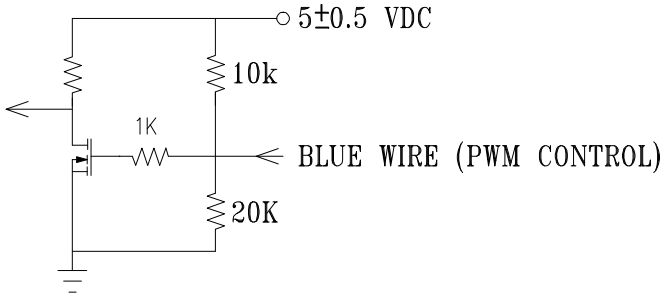
| DUTY CYCLE (%) | SPEED R.P.M. | CURRENT (A) TYP. |
|---|---|---|
| 100 | 3400±10% | 0.23 |
| 0~20 | 1200±300 | 0.03 |

* PWM SIGNAL
PWM FREQUENCY = 25KHz




- MIN. START DUTY CYCLE : 20%.
WHEN DUTY CYCLE IS SET FOR MORE THAN 20%, THE FAN WILL BE ABLE TO START FROM A DEAD STOP.

13. PWM CONTROL LEAD WIRE INPUT IMPEDANCE:



# Application Notice

1. Delta will not guarantee the performance of the products if the application condition falls outside the parameters set forth in the specification.
2. A written request should be submitted to Delta prior to approval if deviation from this specification is required.
3. Please exercise caution when handling fans. Damage may be caused when pressure is applied to the impeller, if the fans are handled by the lead wires, or if the fan was hard-dropped to the production floor.
4. Except as pertains to some special designs, there is no guarantee that the products will be free from any such safety problems or failures as caused by the introduction of powder, droplets of water or encroachment of insect into the hub.
5. The above-mentioned conditions are representative of some unique examples and viewed as the first point of reference prior to all other information.
6. It is very important to establish the correct polarity before connecting the fan to the power source. Positive (+) and Negative (-). Damage may be caused to the fans if connection is with reverse polarity, if there is no foolproof method to protect against such error specifically mentioned in this spec.
7. Delta fans without special protection are not suitable where any corrosive fluids are introduced to their environment.
8. Please ensure all fans are stored according to the storage temperature limits specified. Do not store fans in a high humidity environment. We highly recommend performance testing is conducted before shipping, if the fans have been stored over 6 months.
9. Not all fans are provided with the Lock Rotor Protection feature. If you impair the rotation of the impeller for the fans that do not have this function, the performance of those fans will lead to failure.
10. Please be cautious when mounting the fan. Incorrect mounting of fans may cause excess resonance, vibration and subsequent noise.
11. It is important to consider safety when testing the fans. A suitable fan guard should be fitted to the fan to guard against any potential for personal injury.
12. Except where specifically stated, all tests are carried out at room (ambient) temperature and relative humidity conditions of 25°C, 65% RH. The test value is only for fan performance itself.
13. Be certain to connect an " 4.7µF or greater" capacitor to the fan externally when the application calls for using multiple fans in parallel, to avoid any unstable power.

ONLINE CERTIFICATIONS DIRECTORY

# GPWV2.E132003
# Fans, Electric - Component

Page Bottom

## Fans, Electric - Component

See General Information for Fans, Electric - Component

**DELTA ELECTRONICS INC** E132003
252 SHANG YING RD
KUEI SHAN
TAOYUAN HSIEN, 333 TAIWAN

**DC fans**, Model AFB followed by 0405, followed by HA, HHA, LA or MA, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model AFB followed by 0505, followed by HB, LB or MB, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model AFB followed by 0512, followed by HB, HHB, LB or MB, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model AFB followed by 0605, followed by H, L or M, followed by R00, R05, RR0 or RR05, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model AFB followed by 0805, followed by H, L or M, followed by (Y); Model AFB followed by 0612, 0624, followed by EH, SH, VH, followed by (Y); Model AFB0612LB followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model AFB followed by 0612, 0624, 0812, 0824, 0912 or 0924, followed by H, HB, HH, HHB, L, LB, LLB, M, MB, SHB or VHB, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Models ASB0412MA, ASB0412LA, ASB0405MA followed by (Y); Model ASB followed by 0405, 0412, followed by HA, HHA, LA or MA, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model ASB followed by 0505, followed by HB, LB or MB, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model ASB followed by 0512, 0524, followed by HB, HHB, LB or MB, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model ASB followed by 0812, 0824, followed by HB, HHB, LB, LLB, MB, SHB or VHB, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model ASB followed by 0612 or 0624, followed by H, HH, L or M, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model ASB followed by 0812, followed by L or M, followed by (Y); Model ASB followed by 0912 or 0924, followed by H, L or M, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model AUB followed by 0505, 0512 or 0524, followed by HB, HHB, LB or MB, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model AUB followed by 0612, 0624, followed by H, HH, L or M, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model AUB followed by 0912, 0924, followed by H, HH, L, M or VH, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model AUB followed by 0612 or 0624, followed by L, M, H or HH, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model AUB followed by 0812 or 0824, followed by HB, HHB, LB, LLB, MB, SHB or VHB, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model AUB followed by 0924, followed by L, M, H, HH or VH, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model BFB followed by 1212, followed by H, HH, L, LL, M or VH, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model BFB followed by 1224, followed by H, HH, L, LL, M or VH, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model BFB followed by 1248, followed by H, HH, L, LL, M, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model BFC followed by 1012, followed by A, B or C, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model DFB followed by 0405 or 0412, followed by H, L, LL, M, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model DFB followed by 0612, 0812, 0912, 0824 or 0924 followed by H, L or M, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model DFB followed by 0612, 0812, 0824, 0912 or 0924, followed by HH, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model DFB followed by 0424, followed by H, L, LL, M, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model DFB followed by 0612, 0624, followed by H, HH, L or M, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model DFC followed by 0612, 0812 or 0912, followed by "A" or "B", followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model DFD followed by 0612 or 0624, followed by H, HH, L or M, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model SB followed by 0412, followed by H, L, LL or M, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model SB followed by 0612, 0624, followed by HH, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model SB followed by 0612, 0624, 0812, 0824, followed by H, L or M, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model SB followed by 0612, 0624, followed by HD, LD or MD, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model SB followed by 0812, 0824, followed by HH, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model SB followed by 0812, followed by MSA or MSG, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model AFC0612D(Y) where (Y) may be A through Z, 0 through 9, "-" or blank; Models AFB0612DH-8G33(Y), E47199(Y), E47159(Y), DTC-CDA(Y), DTC-CDC(Y), FFR1212DHE(Y), FFR0812DHE(Y), KFB0612HD-8K16(Y), BFB0712HB-8A97(Y), KUC1012D(Y) series, where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Models TFA1424AG(Y), TFA1424AGL(Y), TFA1448(X)G(Y), TFA1448AGL(Y) series, where (X) may be A, B or C, (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank

Model AFB followed by 02505, followed by HA, HHA, LA or MA, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model AFB followed by 02512, followed by HA, HHA, LA or MA, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model AFB followed by 0305, followed by -HA, -LA, -LLA, MA, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model AFB followed by 0312, followed by -HA, LA, LLA, MA, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model AFB followed by 03505, followed by HA, LA, MA, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model AFB followed by 0405, followed by HD, LD or MD, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model AFB followed by 03512, followed by LA, MA or HA, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model AFB followed by 0405, 0412 or 0424, followed by HD, HHD, LD, MD, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model AFB followed by 0412 or 0424, followed by HD, HHD, LD or MD, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model AFB followed by 0505, 0512, followed by HA, LA or MA, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model AFB followed by 0524, followed by HB, HHB, LB or MB, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model AFB followed by 0605, followed by HB, HHB, LB, LLD, MB, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model AFB followed by 0605, followed by LLD, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model AFB followed by 0605, followed by HA, LA or MA, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model AFB followed by 0612, followed by HA, HB, HHB, LA, MA or MB, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model AFB followed by 0612 or 0624, followed by HD, HHD, LB, LD, LLD, MD, VHB or VHD, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model AFB followed by 0624, followed by HB, HHB, LB, MB or VHB, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model AFB followed by 0648, followed by EH, H, HH, L, M, SH or VH, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model AFB followed by 0705, followed by H, L or M, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model AFB followed by 0712 or 0724, followed by H, HA, HH, HHA, L, LA, M, MA, VH or VHA, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model AFB followed by 0748, followed by H, HH, L or MM, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model AFB followed by 0812 or 0824, followed by LL, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model AFB followed by 0812 or 0824, followed by H, L, LL, M, SH or VH, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9,

Model BDB05405HHB(Y) Series, where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank.

Model AFB1548(X)-C(Y) Series, where (X) may be VH, SH or EH, (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank.

Model BFB1012M-7M2B(Y) Series, where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank.

Model GFC0612DS(Y) Series, where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank.

Model PFB0812XHE(Y) series, where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank.

Model KSB0505HB(Y) series, where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank.

Model DSB0405LD(Y) series, where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank.

Model BFB1024(Y)H-A(X) series, where (Y) may be V, or H, (X) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank.

Model AUB0412(X)D(Y) series, where (X) may be H, M or L, (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank.

Model TAA0412(X)D(Y) series, where (X) may be A, B or C, (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank.

Models GFC0612DW-A(Y), BUB1012L-8S29(Y), FFR0612DHE(Y), FFR0912DHE(Y), BSB0412HA-SM05(Y) series, where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank.

Models EFB1248HHF-6C94(Y), EFB1248HHF-SE(Y), BUB0712HHD-HM(Y) series, where (Y) may be XXXXX, where X may be A through Z, 0 through 9, "-" or blank.

Models AUC0912DF(Y), QUR0912VH(Y), series, where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank.

Models KSB0605HC(Y), KSB05105HC(Y), EFB1248HF-8H55(Y), EFB1248HF-SX(Y), FFB0848SH-SX(Y), FFB0848HH-SX(Y), FFB0848HH-7L58(Y), FFB0812VH-HM(Y), AFB0912EHE-SX(Y) series, where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank.

Models QUR0812HH(Y), QUR0812VH(Y), QUR0812SH(Y), GFB0412SHS-D(Y), GFB0412EHS-D(Y), GFC0412DS-D(Y), FFB1212SHE(Y), FFB1212EHE(Y) series, where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank.

Models BUB0412(X)HD(Y), BFB0712HB-HM(Y), BFB0712HF-8A72(Y), ASB04505(Z)A-A(Y), ASB04512(Z)A-A(Y) series, where (X) may be S or V, (Y) may be XXXXX, where X may be A through Z, 0 through 9, "-" or blank, (Z) may be H, M or L.

Models KSB0705HA-8J02(Y), KSB0705HA-8J04(Y) series, where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank.

Models FFB0818UHE-8V2E(Y), 141373-1(Y), 141074-2(Y) series, where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank.

Models QFR0824SH(Y), KSB0505HB-8K1C(Y) series, where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank.

Models KSB0405HB, KSB0405HB(Y) series, where (Y) may be xxxxx, where x may be A through Z, 0 through 9 or "-".

Models PFC1212DE-8H85(Y), PFC1212DE-SM(Y) series, where (X) may be L, M, H, HH or VH, (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank.

Models FFB0612DHE-8F58(Y), FFB0612DHE-SM(Y), KSB0305HA(Y), EFB0412(X)D-C(Y) series, where (X) may be L, M, H, HH or VH, (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank.

Model KFB0405HA-SE(Y) series, where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank.

Models KDB0712HB(Y), GFB1212(X)W-A(Y), GFC1212DW-A(Y), AUB0812VH-C(Y), AUB0812VH-8G76(Y), AUB0812HH-C(Y) series, where (X) may be SH, EH or GH, (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank.

Models GFB0412EHG-D(Y), GFB0412GHG-D(Y), GFC0412DG-D(Y), KSB0505HA-9D1H(Y) series, where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank.

Models AFB2848VHW(Y), AFC2848DW(Y), AUC0912D-8L2V(Y), E41997-(Y), E41759-(Y), DTC-DAA(Y), DTC-DAB(Y), KSB06305HA(Y) series, where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank.

Models AFB0648EHE(Y), AFC0612D-9B24(Y), AFC0612D-SM00(Y), PFR0912(X)HE(Y), PFR1212(Z)HE(Y) series, where (X) may be D or X, (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank, (Z) may be U or D.

Models AUB0405(X)D(Y), TDA1348AE(Y), TDA1348AE-8D31(Y), BUB0512(Z)D-A(Y), BFB0512(Z)D-A(Y) series, where (X) may be L, M or H, (Z) may be H, HH, VH or SH, (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank.

Models TDA1548AG(Y), TDA1748AG(Y), AFB1248DHE-6D21(Y), ASB02512(A)HA-A(Y), FFC0412DN-D(Y), FFB0412(B)HN-D(Y) series, where (A) may be V or H, (B) may be U or E, (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank.

Models BFB1012UH(Y), BFB1012GH(Y) series, where (Y) may be xxxxx, each x may be A through Z, 0 through 9, "-" or blank.

Models AUC1212DE(Y), AUB1212HHE(Y) series, where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank.