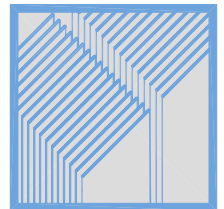


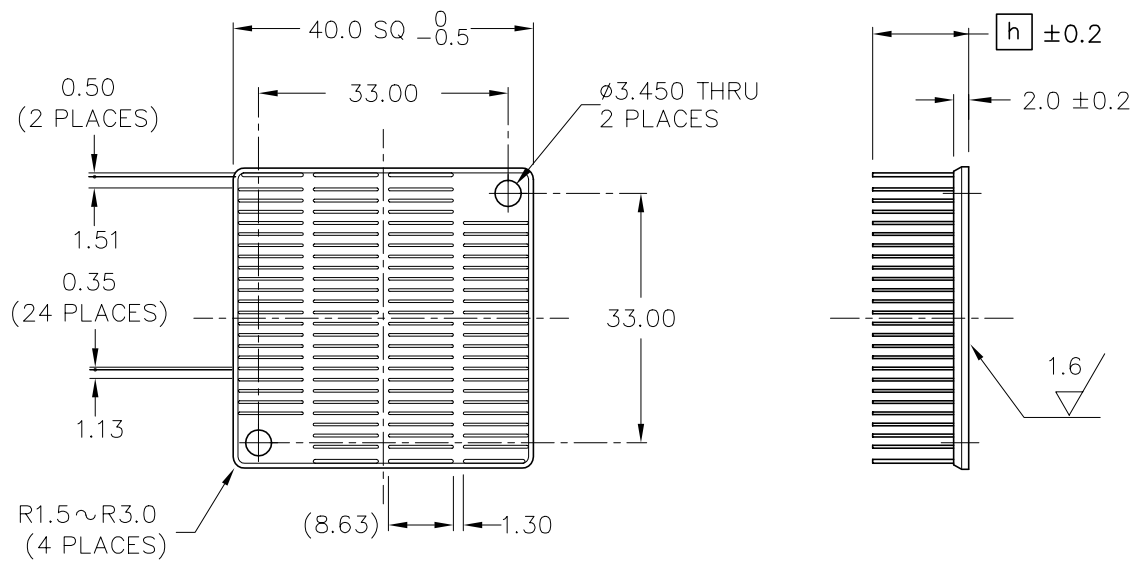
# ZM Series ZH Series

Ultra-High Performance Heat Sink  
with Attachment Holes

**ALPHA**

**ALPHA****Ultra-High Performance Heat Sink**  
with attachment holes**ZM40**

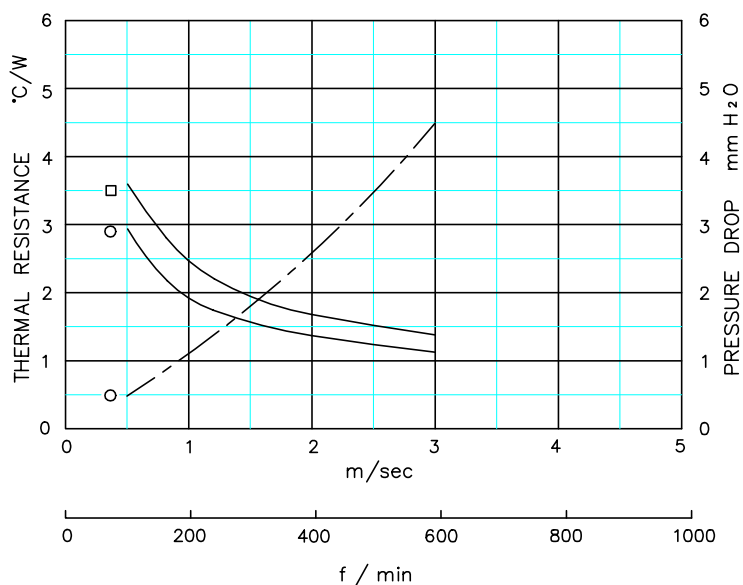
DIM



| MODEL      | HEIGHT $h$ | WEIGHT (grams) |
|------------|------------|----------------|
| ZM40-9.5B  | 9.5        | 14.9           |
| ZM40-12.7B | 12.7       | 17.6           |

MATERIAL : A 6063  
 FINISH : BLACK ANODIZE  
 DIMENSIONS : mm

DATA



□ ZM40-9.5B  
 ○ ZM40-12.7B

● DUCTED CONDITION  
 DUMMY HEATER SIZE: 12.7 SQ  
 THERMAL RESISTANCE ———  
 PRESURE DROP - - -

AIR VELOCITY: DUCTED CONDITION

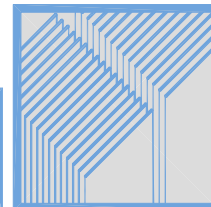
■ BASED ON ALPHA'S STANDARD TEST PROCEDURE.  
 REFER TO TECHNICAL INFORMATION.

Alpha Company Ltd.

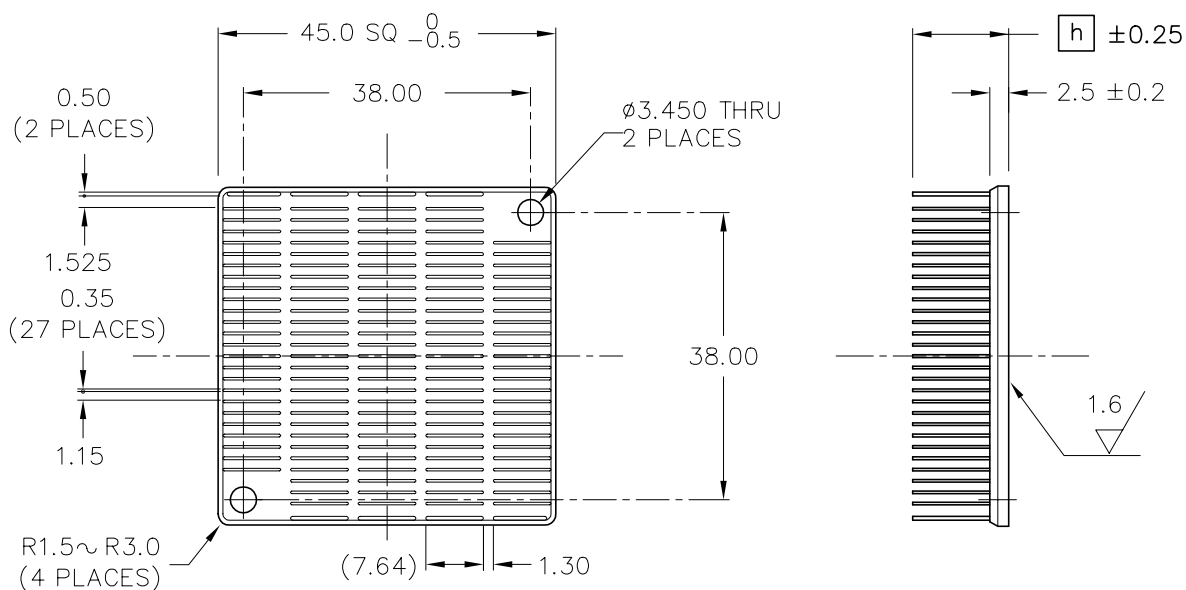
256-1 UEDA, NUMAZU-CITY SHIZUOKA-PREF., JAPAN  
 PHONE +81(55)966 0789  
 FAX +81(55)966 9192  
 E mail : alpha@micforg.co.jp  
 URL : <http://www.micforg.co.jp>

Alpha Novatech, Inc. - a subsidiary of Alpha Company.

473 Sapena Ct. #12 Santa Clara, CA 95054 USA  
 PHONE +1(408)567-8082  
 FAX +1(408)567-8053  
 E mail : sales@alphanovatech.com  
 URL : <http://www.alphanovatech.com>

**ALPHA**Ultra-High Performance Heat Sink  
with attachment holes**ZM45**

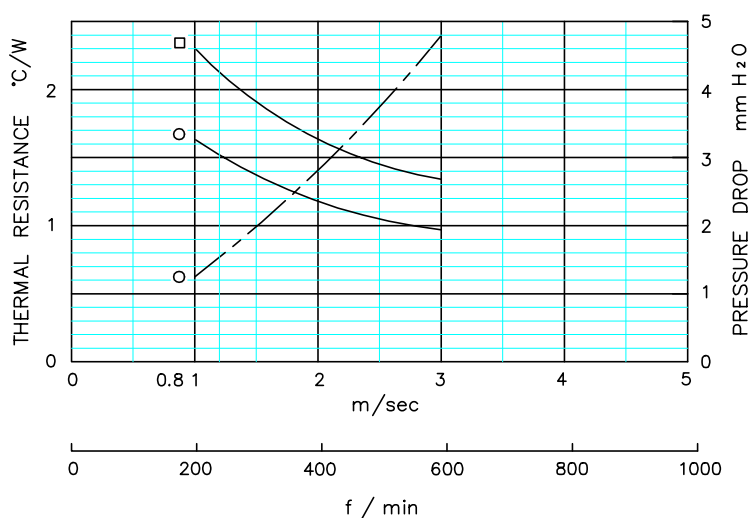
DIM



| MODEL      | HEIGHT $h$ | WEIGHT (grams) |
|------------|------------|----------------|
| ZM45-9.5B  | 9.5        | 20.9           |
| ZM45-12.7B | 12.7       | 24.7           |

MATERIAL : A 6063  
 FINISH : BLACK ANODIZE  
 DIMENSIONS : mm

DATA



□ ZM45-9.5B  
 ○ ZM45-12.7B

● DUCTED CONDITION  
 DUMMY HEATER SIZE: 12.7 SQ  
 THERMAL RESISTANCE ———  
 PRESURE DROP - - -

AIR VELOCITY: DUCTED CONDITION

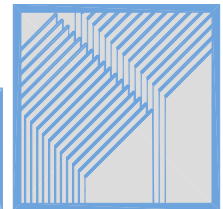
■ BASED ON ALPHA'S STANDARD TEST PROCEDURE.  
 REFER TO TECHNICAL INFORMATION.

Alpha Company Ltd.

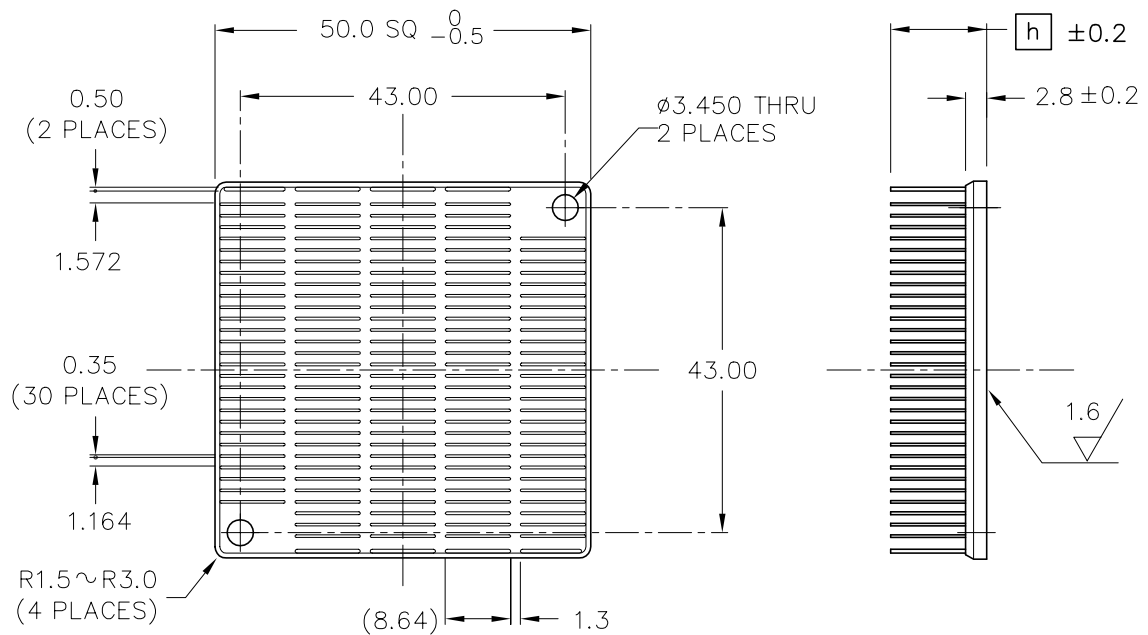
256-1 UEDA, NUMAZU-CITY SHIZUOKA-PREF., JAPAN  
 PHONE +81(55)966 0789  
 FAX +81(55)966 9192  
 E mail : alpha@micforg.co.jp  
 URL : <http://www.micforg.co.jp>

Alpha Novatech, Inc. - a subsidiary of Alpha Company.

473 Sapena Ct. #12 Santa Clara, CA 95054 USA  
 PHONE +1(408)567-8082  
 FAX +1(408)567-8053  
 E mail : sales@alphanovatech.com  
 URL : <http://www.alphanovatech.com>

**ALPHA**Ultra-High Performance Heat Sink  
with attachment holes**ZM50**

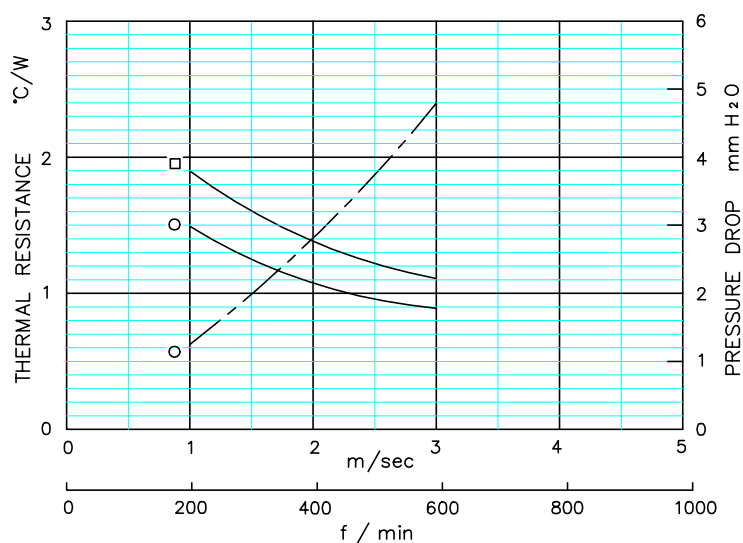
DIM



| MODEL      | HEIGHT $h$ | WEIGHT (grams) |
|------------|------------|----------------|
| ZM50-9.5B  | 9.5        | 26.4           |
| ZM50-12.7B | 12.7       | 30.7           |

MATERIAL : A 6063  
 FINISH : BLACK ANODIZE  
 DIMENSIONS : mm

DATA



□ ZM50-9.5B  
 ○ ZM50-12.7B

● DUCTED CONDITION  
 DUMMY HEATER SIZE: 12.7 SQ  
 THERMAL RESISTANCE ———  
 PRESSURE DROP - - -

AIR VELOCITY: DUCTED CONDITION

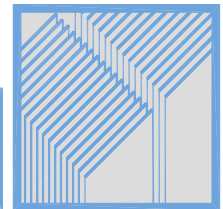
■ BASED ON ALPHA'S STANDARD TEST PROCEDURE.  
 REFER TO TECHNICAL INFORMATION.

Alpha Company Ltd.

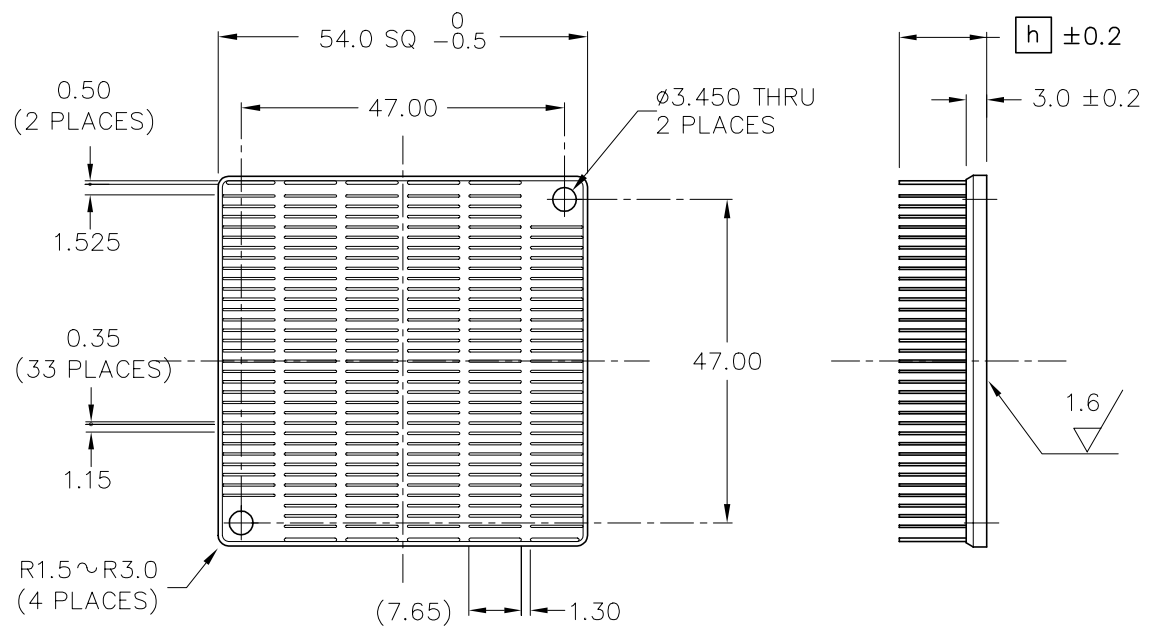
256-1 UEDA, NUMAZU-CITY SHIZUOKA-PREF., JAPAN  
 PHONE +81(55)966 0789  
 FAX +81(55)966 9192  
 E mail : alpha@micforg.co.jp  
 URL : <http://www.micforg.co.jp>

Alpha Novatech, Inc. - a subsidiary of Alpha Company.

473 Sapena Ct. #12 Santa Clara, CA 95054 USA  
 PHONE +1(408)567-8082  
 FAX +1(408)567-8053  
 E mail : sales@alphanovatech.com  
 URL : <http://www.alphanovatech.com>

**ALPHA**Ultra-High Performance Heat Sink  
with attachment holes**ZM54**

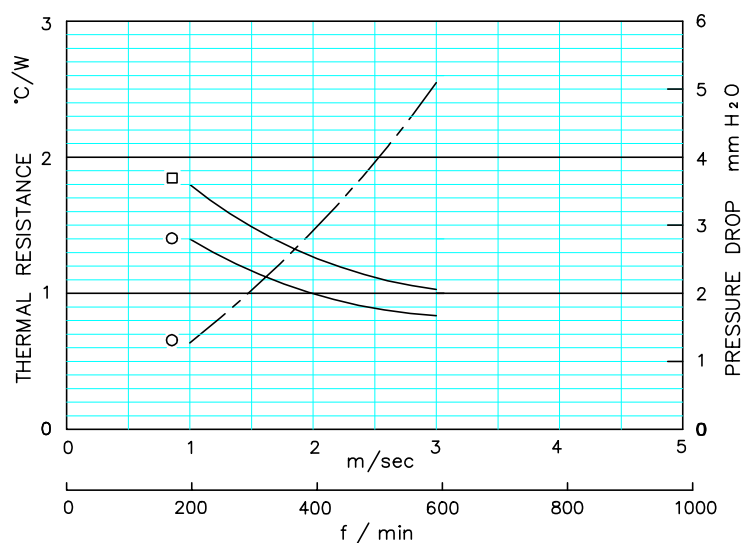
DIM



| MODEL      | HEIGHT $h$ | WEIGHT (grams) |
|------------|------------|----------------|
| ZM54-9.5B  | 9.5        | 32.4           |
| ZM54-12.7B | 12.7       | 37.2           |

MATERIAL : A 6063  
 FINISH : BLACK ANODIZE  
 DIMENSIONS : mm

DATA



AIR VELOCITY: DUCTED CONDITION

□ ZM54-9.5B  
 ○ ZM54-12.7B

● DUCTED CONDITION  
 DUMMY HEATER SIZE: 12.7 SQ  
 THERMAL RESISTANCE ———  
 PRESSURE DROP - - -

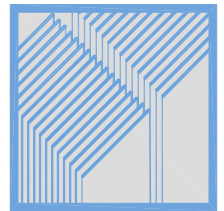
■ BASED ON ALPHA'S STANDARD TEST PROCEDURE.  
 REFER TO TECHNICAL INFORMATION.

Alpha Company Ltd.

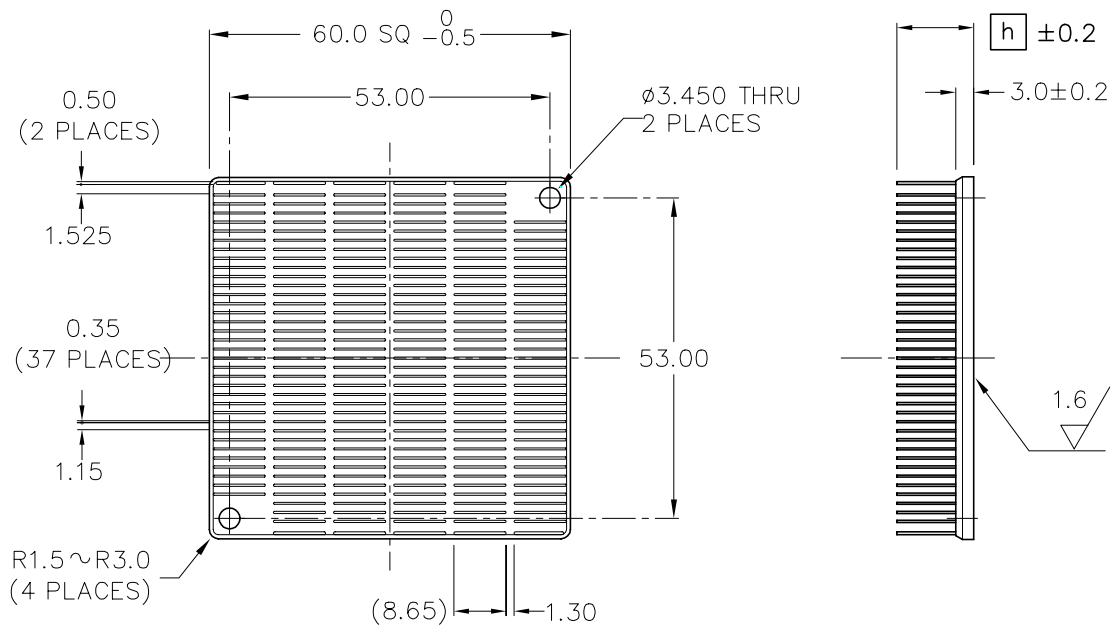
256-1 UEDA, NUMAZU-CITY SHIZUOKA-PREF., JAPAN  
 PHONE +81(55)966 0789  
 FAX +81(55)966 9192  
 E mail : alpha@micforg.co.jp  
 URL : <http://www.micforg.co.jp>

Alpha Novatech, Inc. - a subsidiary of Alpha Company.

473 Sapena Ct. #12 Santa Clara, CA 95054 USA  
 PHONE +1(408)567-8082  
 FAX +1(408)567-8053  
 E mail : sales@alphanovatech.com  
 URL : <http://www.alphanovatech.com>

**ALPHA****Ultra-High Performance Heat Sink**  
with attachment holes**ZM60**

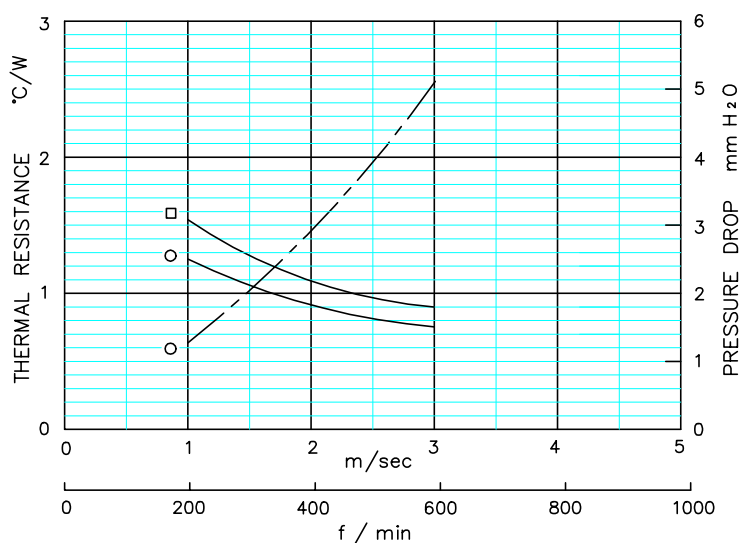
DIM



| MODEL      | HEIGHT $h$ | WEIGHT (grams) |
|------------|------------|----------------|
| ZM60-9.5B  | 9.5        | 40.9           |
| ZM60-12.7B | 12.7       | 46.7           |

MATERIAL : A 6063  
 FINISH : BLACK ANODIZE  
 DIMENSIONS : mm

DATA



AIR VELOCITY: DUCTED CONDITION

□ ZM60-9.5B  
 ○ ZM60-12.7B

● DUCTED CONDITION  
 DUMMY HEATER SIZE: 12.7 SQ  
 THERMAL RESISTANCE ———  
 PRESSURE DROP - - -

■ BASED ON ALPHA'S STANDARD TEST PROCEDURE.  
 REFER TO TECHNICAL INFORMATION.

Alpha Company Ltd.

256-1 UEDA, NUMAZU-CITY SHIZUOKA-PREF., JAPAN  
 PHONE +81(55)966 0789  
 FAX +81(55)966 9192  
 E mail : alpha@micforg.co.jp  
 URL : <http://www.micforg.co.jp>

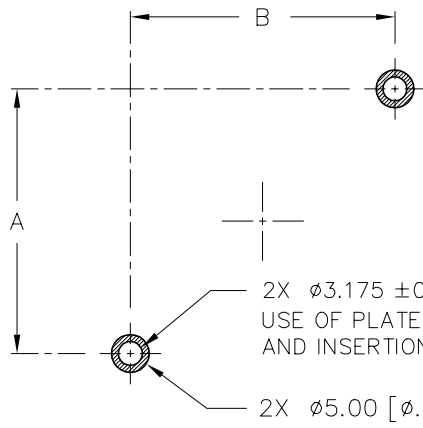
Alpha Novatech, Inc. - a subsidiary of Alpha Company.

473 Sapena Ct. #12 Santa Clara, CA 95054 USA  
 PHONE +1(408)567-8082  
 FAX +1(408)567-8053  
 E mail : sales@alphanovatech.com  
 URL : <http://www.alphanovatech.com>

REF

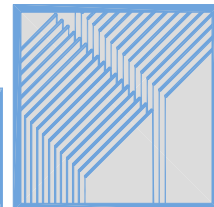


## BOARD KEEPOUT PATTERNS

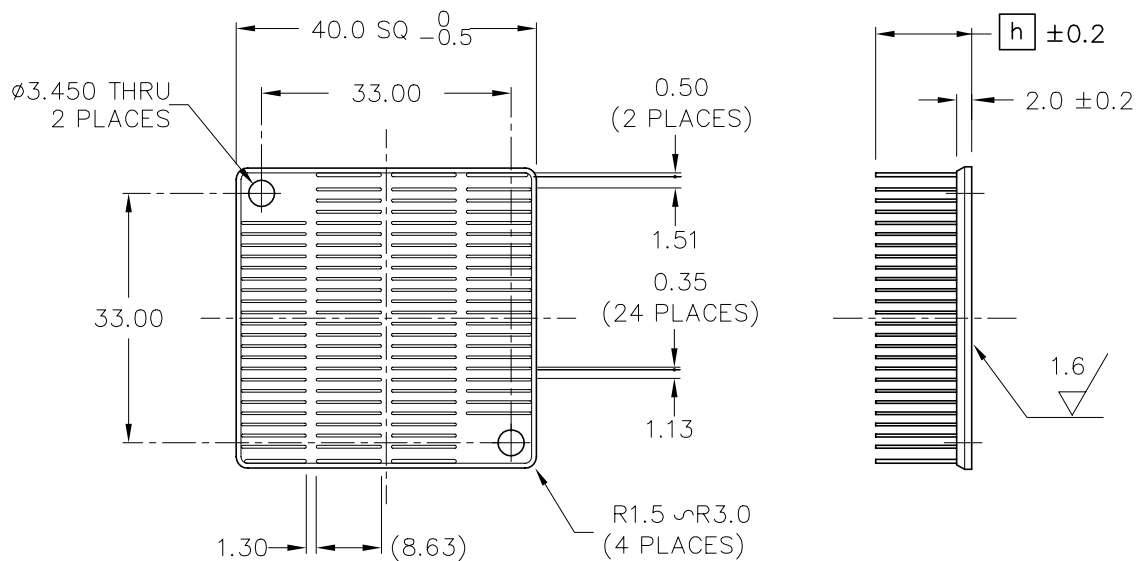


|                        |      |      |
|------------------------|------|------|
| LPDM40, UBM40 AND ZM40 | 33.0 | 33.0 |
| LPDM45, UBM45 AND ZM45 | 38.0 | 38.0 |
| LPDM50, UBM50 AND ZM50 | 43.0 | 43.0 |
| LPDM54, UBM54 AND ZM54 | 47.0 | 47.0 |
| LPDM60, UBM60 AND ZM60 | 53.0 | 53.0 |
| LPDM70 AND UBM70       | 63.0 | 63.0 |
| MODEL                  | A    | B    |

PUSH-IN-PIN CATALOG: <http://www.micforg.co.jp/dxf/PIP-3175.pdf>

**ALPHA****Ultra-High Performance Heat Sink**  
with attachment holes**ZH 40**

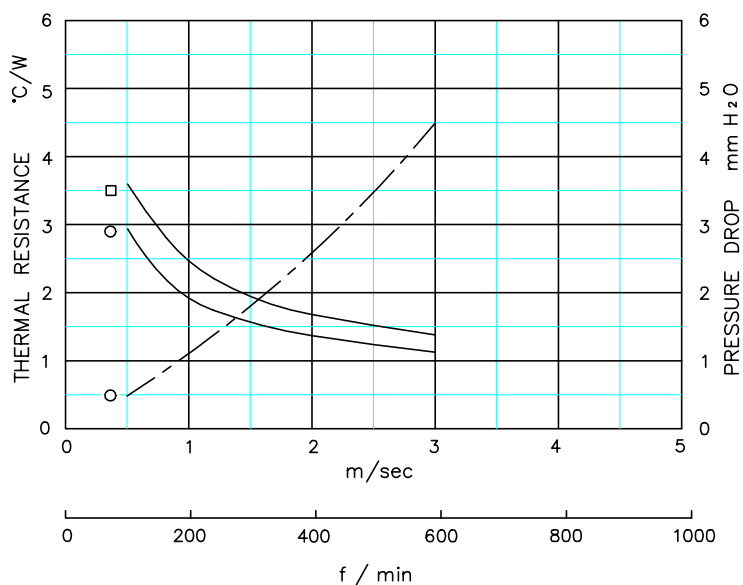
DIM



| MODEL      | HEIGHT $h$ | WEIGHT (grams) |
|------------|------------|----------------|
| ZH40-9.5B  | 9.5        | 14.9           |
| ZH40-12.7B | 12.7       | 17.6           |

MATERIAL : A 6063  
 FINISH : BLACK ANODIZE  
 DIMENSIONS : mm

DATA



AIR VELOCITY: DUCTED CONDITION

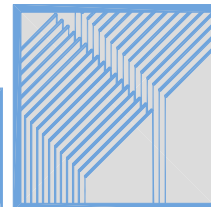
■ BASED ON ALPHA'S STANDARD TEST PROCEDURE.  
 REFER TO TECHNICAL INFORMATION.

Alpha Company Ltd.

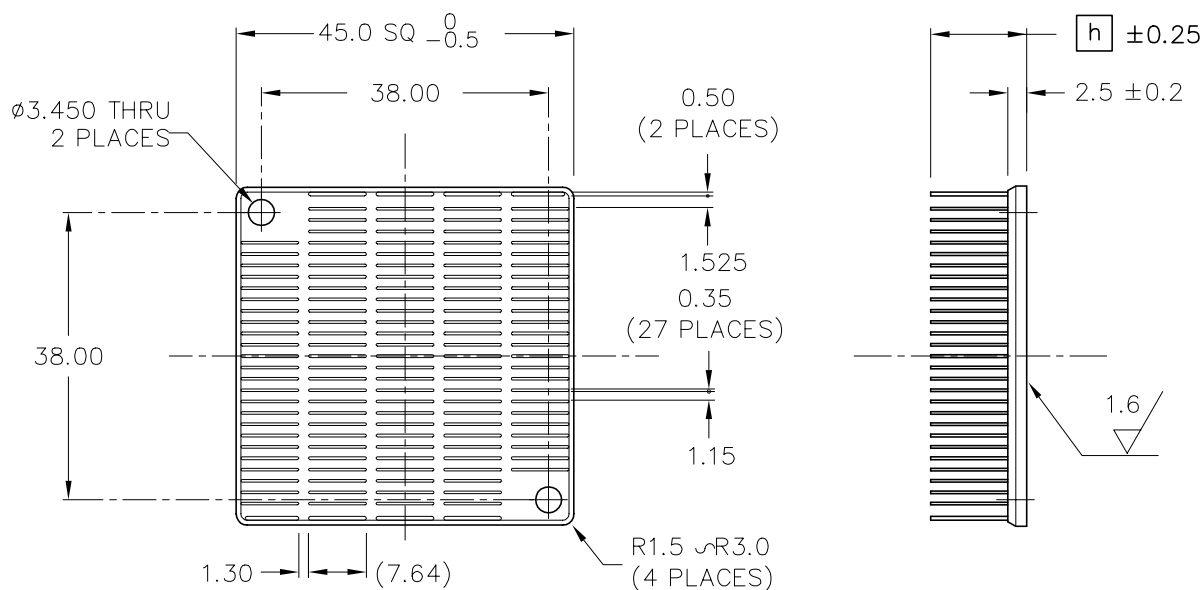
256-1 UEDA, NUMAZU-CITY SHIZUOKA-PREF., JAPAN  
 PHONE +81(55)966 0789  
 FAX +81(55)966 9192  
 E mail : alpha@micforg.co.jp  
 URL : <http://www.micforg.co.jp>

Alpha Novatech, Inc. - a subsidiary of Alpha Company.

473 Sapena Ct. #12 Santa Clara, CA 95054 USA  
 PHONE +1(408)567-8082  
 FAX +1(408)567-8053  
 E mail : sales@alphanovatech.com  
 URL : <http://www.alphanovatech.com>

**ALPHA**Ultra-High Performance Heat Sink  
with attachment holes**ZH 45**

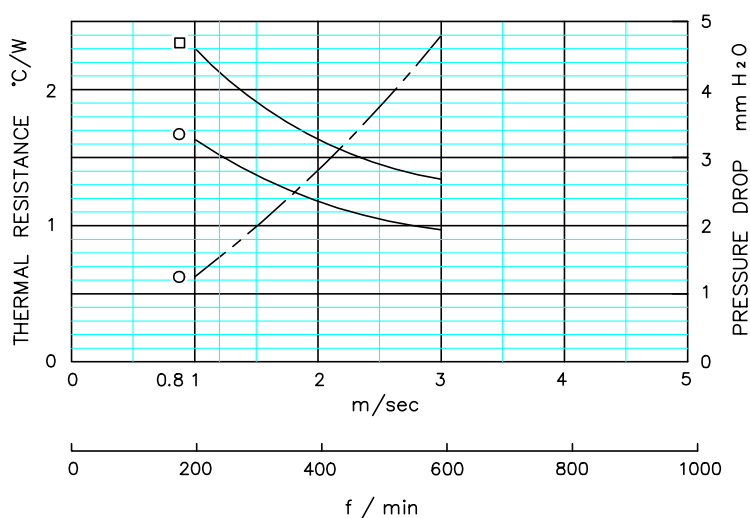
DIM



| MODEL      | HEIGHT $h$ | WEIGHT (grams) |
|------------|------------|----------------|
| ZH45-9.5B  | 9.5        | 20.9           |
| ZH45-12.7B | 12.7       | 24.7           |

MATERIAL : A 6063  
 FINISH : BLACK ANODIZE  
 DIMENSIONS : mm

DATA



□ ZH45-9.5B  
 ○ ZH45-12.7B

● DUCTED CONDITION  
 DUMMY HEATER SIZE: 12.7 SQ  
 THERMAL RESISTANCE ———  
 PRESSURE DROP - - -

AIR VELOCITY: DUCTED CONDITION

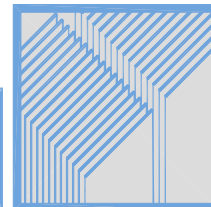
■ BASED ON ALPHA'S STANDARD TEST PROCEDURE.  
 REFER TO TECHNICAL INFORMATION.

Alpha Company Ltd.

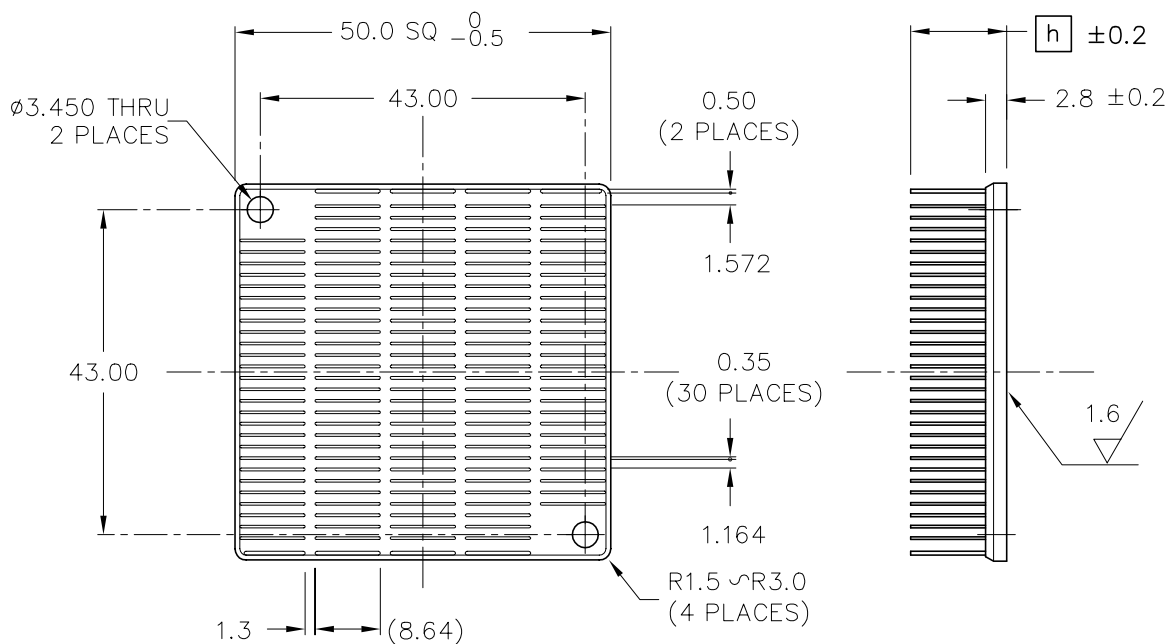
256-1 UEDA, NUMAZU-CITY SHIZUOKA-PREF., JAPAN  
 PHONE +81(55)966 0789  
 FAX +81(55)966 9192  
 E mail : alpha@micforg.co.jp  
 URL : <http://www.micforg.co.jp>

Alpha Novatech, Inc. - a subsidiary of Alpha Company.

473 Sapena Ct. #12 Santa Clara, CA 95054 USA  
 PHONE +1(408)567-8082  
 FAX +1(408)567-8053  
 E mail : sales@alphanovatech.com  
 URL : <http://www.alphanovatech.com>

**ALPHA****Ultra-High Performance Heat Sink**  
with attachment holes**ZH50**

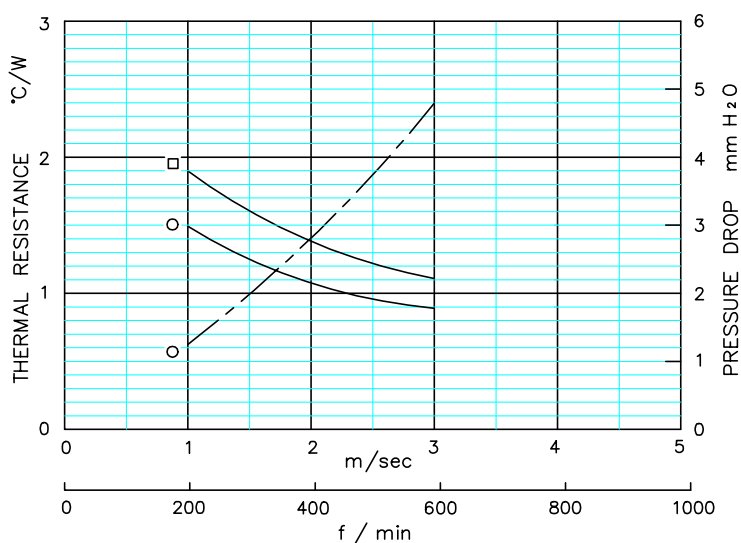
DIM



| MODEL      | HEIGHT $h$ | WEIGHT (grams) |
|------------|------------|----------------|
| ZH50-9.5B  | 9.5        | 26.4           |
| ZH50-12.7B | 12.7       | 30.7           |

MATERIAL : A 6063  
 FINISH : BLACK ANODIZE  
 DIMENSIONS : mm

DATA



□ ZH50-9.5B  
 ○ ZH50-12.7B

● DUCTED CONDITION  
 DUMMY HEATER SIZE: 12.7 SQ  
 THERMAL RESISTANCE ———  
 PRESSURE DROP - - -

AIR VELOCITY: DUCTED CONDITION

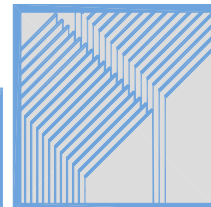
■ BASED ON ALPHA'S STANDARD TEST PROCEDURE.  
 REFER TO TECHNICAL INFORMATION.

Alpha Company Ltd.

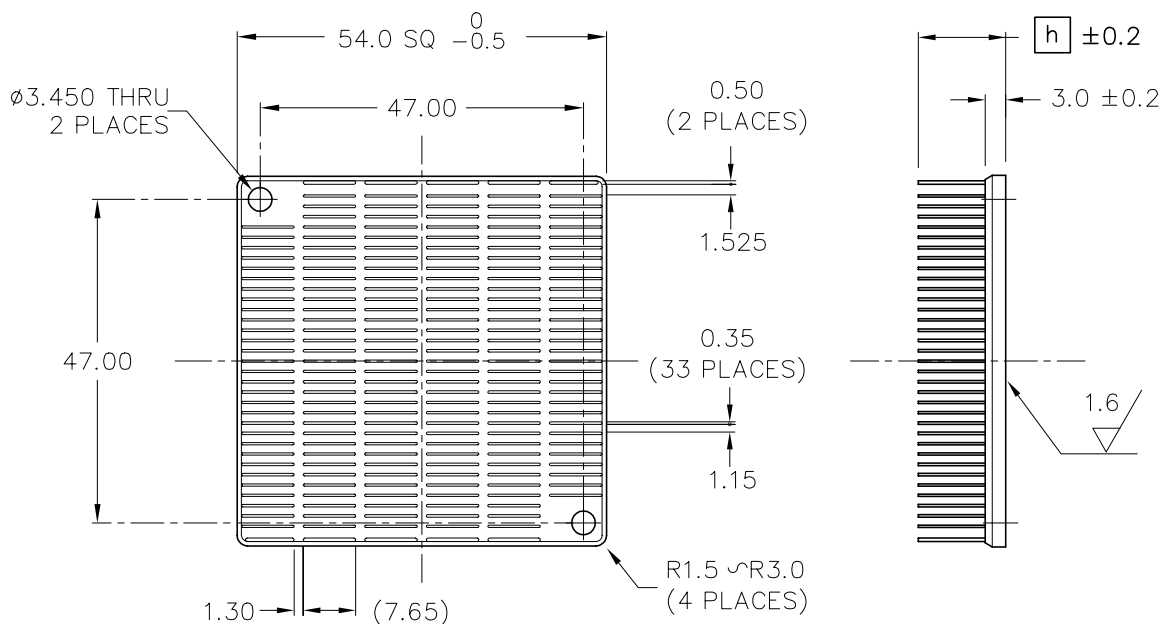
256-1 UEDA, NUMAZU-CITY SHIZUOKA-PREF., JAPAN  
 PHONE +81(55)966 0789  
 FAX +81(55)966 9192  
 E mail : alpha@micforg.co.jp  
 URL : <http://www.micforg.co.jp>

Alpha Novatech, Inc. - a subsidiary of Alpha Company.

473 Sapena Ct. #12 Santa Clara, CA 95054 USA  
 PHONE +1(408)567-8082  
 FAX +1(408)567-8053  
 E mail : sales@alphanovatech.com  
 URL : <http://www.alphanovatech.com>

**ALPHA**Ultra-High Performance Heat Sink  
with attachment holes**ZH54**

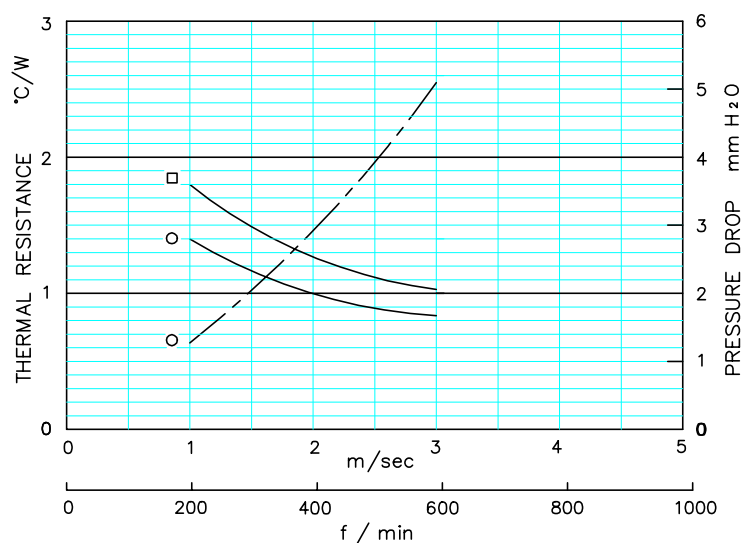
DIM



| MODEL      | HEIGHT $h$ | WEIGHT (grams) |
|------------|------------|----------------|
| ZH54-9.5B  | 9.5        | 32.4           |
| ZH54-12.7B | 12.7       | 37.2           |

MATERIAL : A 6063  
 FINISH : BLACK ANODIZE  
 DIMENSIONS : mm

DATA



□ ZH54-9.5B  
 ○ ZH54-12.7B

● DUCTED CONDITION  
 DUMMY HEATER SIZE: 12.7 SQ  
 THERMAL RESISTANCE \_\_\_\_\_  
 PRESURE DROP - - - - -

AIR VELOCITY: DUCTED CONDITION

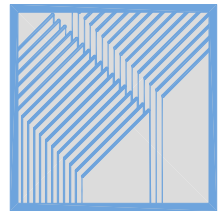
■ BASED ON ALPHA'S STANDARD TEST PROCEDURE.  
 REFER TO TECHNICAL INFORMATION.

Alpha Company Ltd.

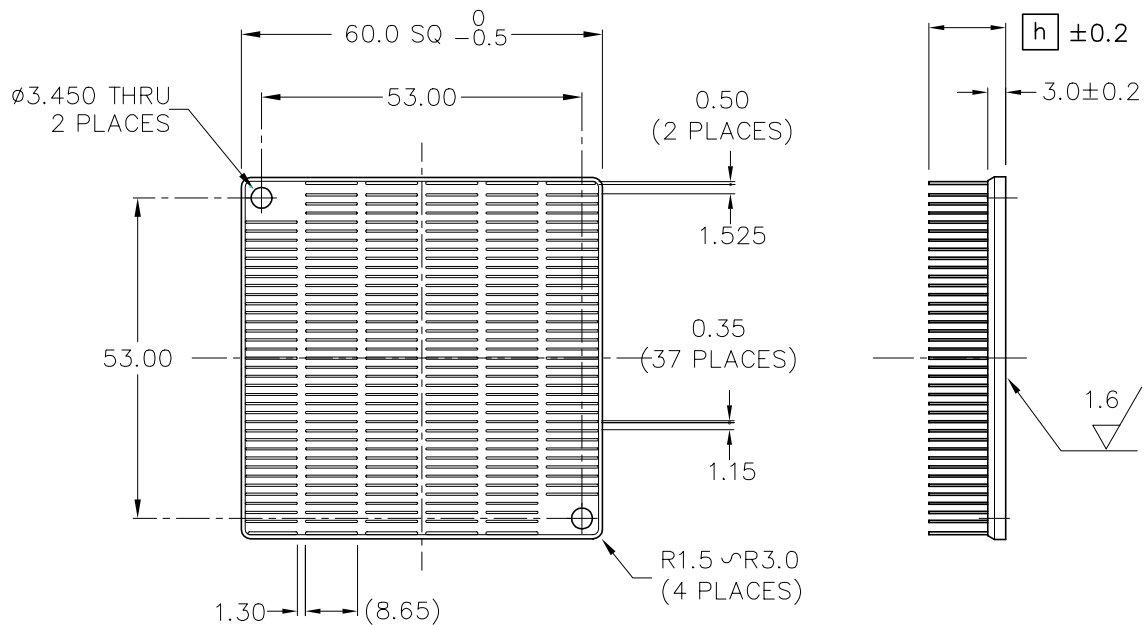
256-1 UEDA, NUMAZU-CITY SHIZUOKA-PREF., JAPAN  
 PHONE +81(55)966 0789  
 FAX +81(55)966 9192  
 E mail : alpha@micforg.co.jp  
 URL : <http://www.micforg.co.jp>

Alpha Novatech, Inc. - a subsidiary of Alpha Company.

473 Sapena Ct. #12 Santa Clara, CA 95054 USA  
 PHONE +1(408)567-8082  
 FAX +1(408)567-8053  
 E mail : sales@alphanovatech.com  
 URL : <http://www.alphanovatech.com>

**ALPHA****Ultra-High Performance Heat Sink**  
with attachment holes**ZH60**

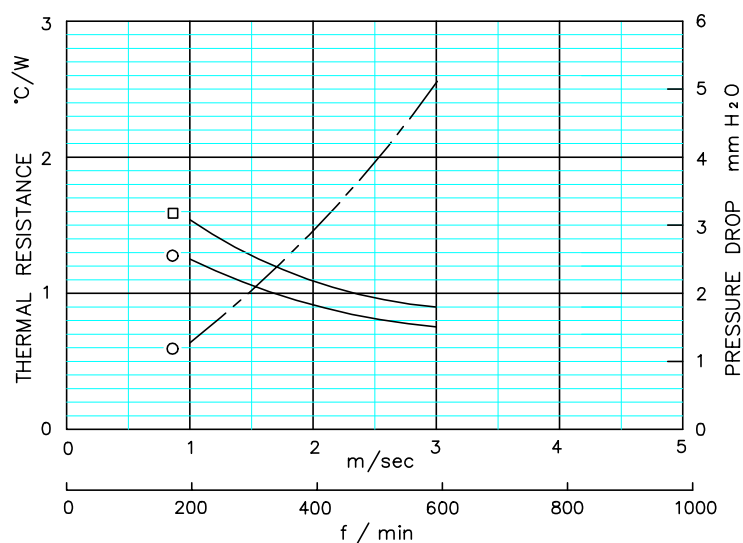
DIM



| MODEL      | HEIGHT $h$ | WEIGHT (grams) |
|------------|------------|----------------|
| ZH60-9.5B  | 9.5        | 40.9           |
| ZH60-12.7B | 12.7       | 46.7           |

MATERIAL : A 6063  
 FINISH : BLACK ANODIZE  
 DIMENSIONS : mm

DATA



AIR VELOCITY: DUCTED CONDITION

■ BASED ON ALPHA'S STANDARD TEST PROCEDURE.  
 REFER TO TECHNICAL INFORMATION.

Alpha Company Ltd.

256-1 UEDA, NUMAZU-CITY SHIZUOKA-PREF., JAPAN  
 PHONE +81(55)966 0789  
 FAX +81(55)966 9192  
 E mail : alpha@micforg.co.jp  
 URL : <http://www.micforg.co.jp>

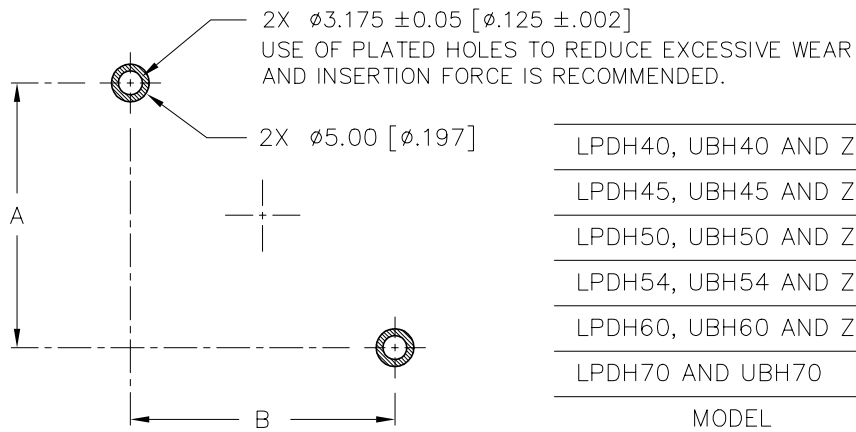
Alpha Novatech, Inc. - a subsidiary of Alpha Company.

473 Sapena Ct. #12 Santa Clara, CA 95054 USA  
 PHONE +1(408)567-8082  
 FAX +1(408)567-8053  
 E mail : sales@alphanovatech.com  
 URL : <http://www.alphanovatech.com>

REF



## BOARD KEEPOUT PATTERNS



|                        |      |      |
|------------------------|------|------|
| LPDH40, UBH40 AND ZH40 | 33.0 | 33.0 |
| LPDH45, UBH45 AND ZH45 | 38.0 | 38.0 |
| LPDH50, UBH50 AND ZH50 | 43.0 | 43.0 |
| LPDH54, UBH54 AND ZH54 | 47.0 | 47.0 |
| LPDH60, UBH60 AND ZH60 | 53.0 | 53.0 |
| LPDH70 AND UBH70       | 63.0 | 63.0 |
| MODEL                  | A    | B    |

PUSH-IN-PIN CATALOG: <http://www.micforg.co.jp/dxf/PIP-3175.pdf>