



## SPECIFICATION FOR APPROVAL

**CUSTOMER**

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**CUSTOMER'S P/N**

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**DATE** 13/Aug/2021 **REVISION NO.** A

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**PART NO.** AMPI070804GDR33MT

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**DRAWN NO.**

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**Signature**

| Approved by | Checked by | Drawn by |
|-------------|------------|----------|
|             |            |          |

**ARLITECH ELECTRONIC CORP.**

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RoHS+HF

## SPECIFICATION FOR APPROVAL

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## PRODUCT IDENTIFICATION

|                |                    |            |              |          |          |
|----------------|--------------------|------------|--------------|----------|----------|
| <u>A M P I</u> | <u>0 7 0 8 0 4</u> | <u>G D</u> | <u>R 3 3</u> | <u>M</u> | <u>T</u> |
| ①              | ②                  | ③          | ④            | ⑤        | ⑥        |

① Product Series:AMPI=Arlitech Molding Power Inductors

② Dimension:Length\*Width\*High

③ Type:Type Code

④ Inductance(uH):R33=0.33

⑤ ToleranceM=±20%

⑥ Package: T=Taping

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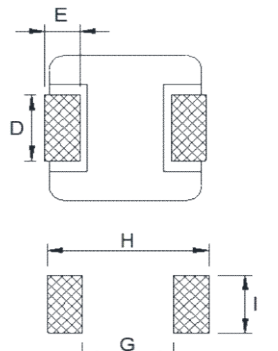
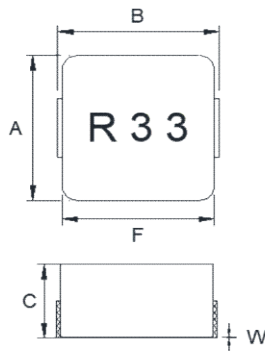
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## SHAPE & DIMENSION (UNIT: mm)



|   |         |
|---|---------|
| A | 8.3±0.2 |
| B | 8.6±0.4 |
| C | 3.8±0.2 |
| D | 3.0±0.5 |
| E | 2.0±0.5 |
| F | 7.8±0.2 |
| W | 0.15±0  |
| G | 3.2     |
| H | 9.5     |
| I | 3.5     |

## ELECTRICAL SPECIFICATION

| MEAS. ITEM | SPEC. |                  |       |      | TEST FREQ. | CONDITIONS                                         |
|------------|-------|------------------|-------|------|------------|----------------------------------------------------|
| $L_0$      | 0.33  | $\mu\text{H}$    | $\pm$ | 20%  | 100KHz/1V  | $T_a=20\sim 25^\circ\text{C}$ , $I_{dc}=0\text{A}$ |
| DCR        | 1.5   | $\text{m}\Omega$ | $\pm$ | 4.5% |            | $T_a=20^\circ\text{C}$                             |
| $I_{sat}$  | 55    | A                | Typ.  |      | 100KHz/1V  | $\Delta L/L \leq 30\%$                             |
| $I_{rms}$  | 28    | A                | Typ.  |      | 100KHz/1V  | $\Delta T \leq 40^\circ\text{C}$                   |

## GENERAL SPECIFICATION

Electrical specifications : at 20~25°C

Operation Temperature : -40~+125°C (Including self-temperature rise)

Storage Temperature : -40~85°C(after PCBA);-5~35°C(before PCBA)

Storage R.H. : 40~70%(before PCBA)

Resistance to solder heat: 260°C/10 seconds

Coating: Gray

## NOTE:

※Test Instrument : LCR METER(Chroma3250,Test1790), BIAS CURRENT SOURCE(Chroma1320,Chroma1320S)

※ $I_{sat}$  : For Inductance drop approximately 30% from its value without bias current.

※ $I_{rms}$  : Typical Heat Rating D.C current would cause an approximately  $\Delta T$  of 40°C ( $T_a=20\sim 25^\circ\text{C}$ )

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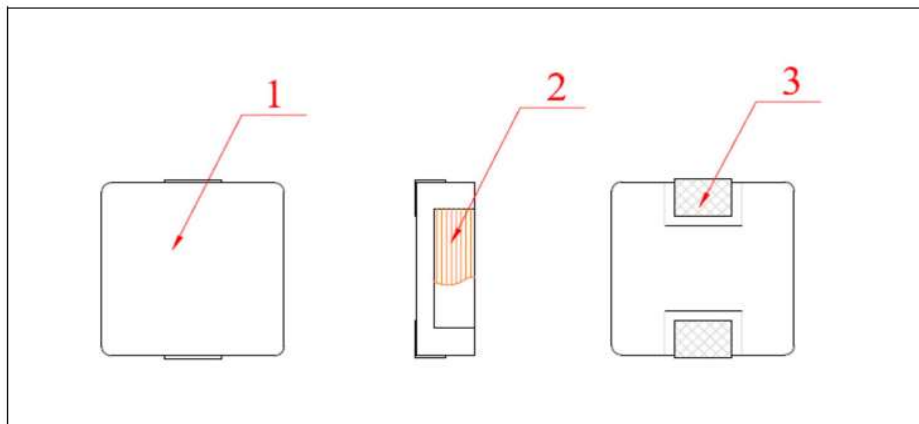
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## MATERIAL LIST



| NO. | ITEM      | MATERIAL    | VENDER                                                | Remark |
|-----|-----------|-------------|-------------------------------------------------------|--------|
| 1   | Core      | Powder      | ARLITECH<br>OR EQUIVALENT                             |        |
| 2   | Wire      | Copper Wire | JUNG SHING<br>PACIFIC<br>ELEKTRISOLA<br>OR EQUIVALENT |        |
| 3   | Electrode | Sn-Ag-Cu    | YANKANGDA<br>OR EQUIVALENT                            |        |
|     |           |             |                                                       |        |
|     |           |             |                                                       |        |
|     |           |             |                                                       |        |
|     |           |             |                                                       |        |
|     |           |             |                                                       |        |

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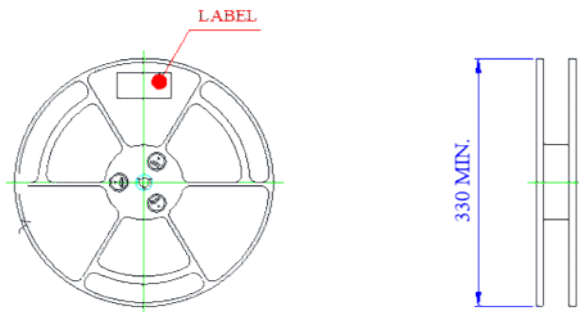
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## PACKAGING

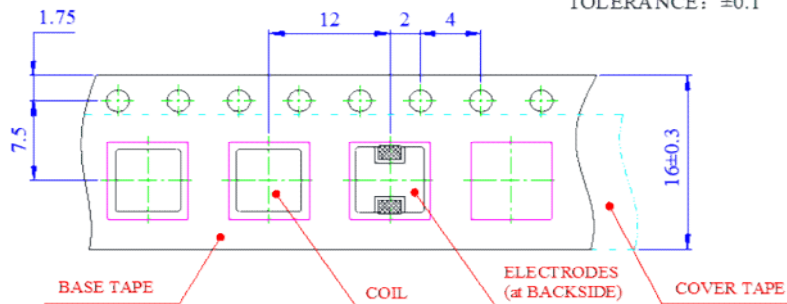
Reel dimensions

UNIT: mm



Tape dimensions

UNIT: mm  
TOLERANCE:  $\pm 0.1$



Packaging

Quantity: 500 pcs/reel

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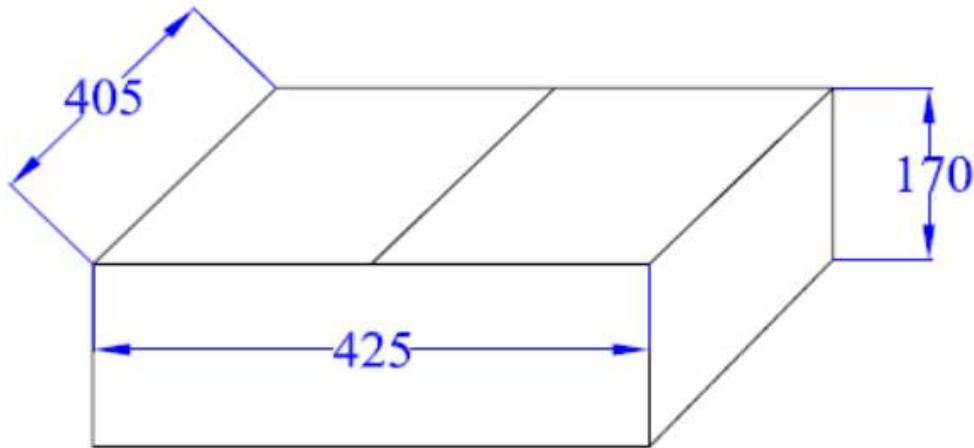
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## CARTON



500 pcs/reel

5 reel/carton

2500pcs/carton

Carton:425x405x170mm

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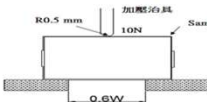
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## RELIABILITY TEST

| MECHANICAL RELIABILITY                  |                                                                                                                                                                                                                                                                                  |                                                                                |
|-----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------|
| Test Items                              | Test Conditions                                                                                                                                                                                                                                                                  | Criteria                                                                       |
| Adhesion strength                       | <p>A static load using a R0.5 pressing tool with 10N shall be applied to the body of the specimen in the direction of the arrow and shall be hold for 10s,measure after removing pressure.</p>  | change from an initial value<br>L:within±10%                                   |
| Terminal strength                       | <p>Add static load 10N to inductor through hole of test board for 5±2 sec.</p>                                                                                                                  | no detachment of terminal pin and no breakage of wire.                         |
| Vibration test                          | <p>Frequency: 10 ~ 55 ~ 10Hz<br/>Amplitude: 1.5mm<br/>Sweep time: 2 cycle<br/>Test Directions: X,Y,Z<br/>Test Time: 2 hours each direction</p>                                                                                                                                   | change from an initial value<br>L:within±10%                                   |
| Drop test                               | Drop specimen three times on concrete floor from a height of 1 meter which mounted on test board.                                                                                                                                                                                | change from an initial value<br>L:within±10%                                   |
| ENDURANCE RELIABILITY                   |                                                                                                                                                                                                                                                                                  |                                                                                |
| Test Items                              | Test Conditions                                                                                                                                                                                                                                                                  | Criteria                                                                       |
| Withstanding voltage                    | Ac voltage of 50V and Ac current of 1mA applied between inductor's terminal and core for 3 secs.                                                                                                                                                                                 | Inductors shall have no evidence of electrical and mechanical damage           |
| Low temperature storage                 | Placed at -40°C for 1000 hours, then measured at room ambient temperature after placing 24 hours.                                                                                                                                                                                | change from an initial value<br>L:within±10%                                   |
| High temperature storage                | Placed at +125°C for 1000 hours, then measured at room ambient temperature after placing 24 hours.                                                                                                                                                                               | change from an initial value<br>L:within±10%                                   |
| Thermal shock                           | Condition for 1 cycle:<br>-40°C, 30min. ~ +125°C, 30min.<br>Number of cycles:100                                                                                                                                                                                                 | change from an initial value<br>L:within±10%                                   |
| Humidity resistance                     | Placed at 90 to 95%RH,+60±2°C for 500 hours, then measured at room ambient temperature after placing 24 hours.                                                                                                                                                                   | change from an initial value<br>L:within±10%                                   |
| High temperature dynamic operation test | Placed at +85°C for 500 hours, then measured at room ambient temperature with current test after placing 24 hours.                                                                                                                                                               | Inductance shall be within ±10% of the initial value.<br>Appearance: No damage |
| Solderability test                      | Terminals shall be immersed for 5 to 10 seconds in flux at room temperature. Dip sample into solder bath containing molten soldr at 245±3°C for 3±0.5 seconds                                                                                                                    | New solder shall cover 90% minimum of the surface immersed.                    |

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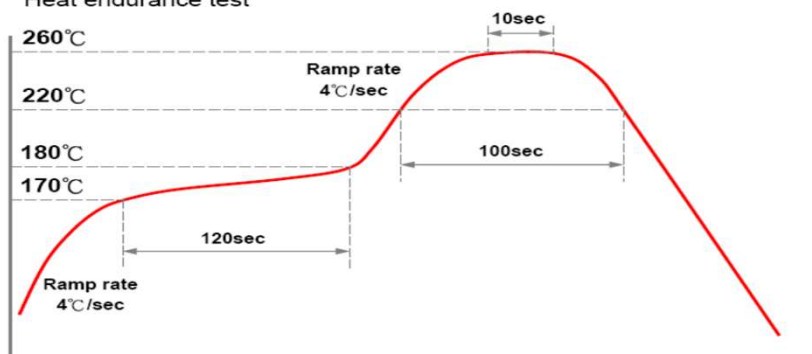
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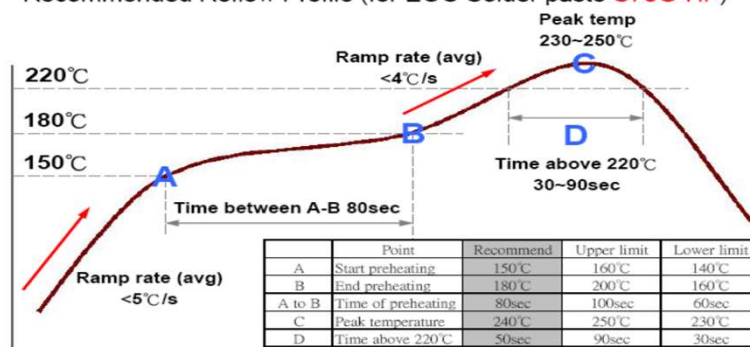
## REFLOW-PROFILE

Heat endurance test



- ◎ The test should be made under the conditions according to the chart, after the test it is kept for 2 hours under the normal temperature and humidity.
- ◎ The reflow test can be done twice, but the interval should be more than one hour under the normal conditions.
- ◎ The reflow test conditions are based on the testing instruments available in Arlitech.

Recommended Reflow Profile (for EOC Solder paste **S70G-HF**)



- ◎ The reflow condition recommended above is according to the machine used by our company. Big differences will arise as a result of the type of machine, reflow conditions, method, etc used. Hence, before setting up your reflow conditions, please confirm with the above.

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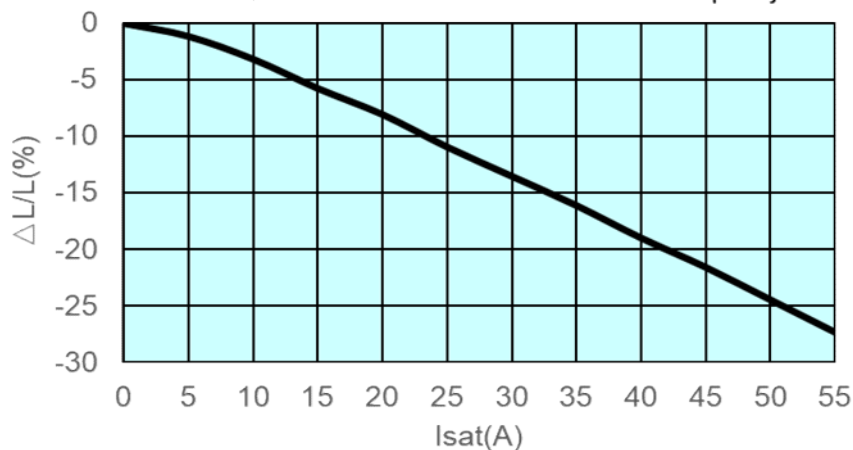
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## Isat(Saturation Current):Transient current

### AMPI070804GDR33MT

| TIME(s) | Isat(A) | L(uH) | $\Delta L/L(\%)$ |
|---------|---------|-------|------------------|
| 1.00    | 0       | 0.348 | 0.00%            |
| 1.00    | 5       | 0.344 | -1.15%           |
| 1.00    | 10      | 0.337 | -3.16%           |
| 1.00    | 15      | 0.328 | -5.75%           |
| 1.00    | 20      | 0.320 | -8.05%           |
| 1.00    | 25      | 0.310 | -10.92%          |
| 1.00    | 30      | 0.301 | -13.51%          |
| 1.00    | 35      | 0.292 | -16.09%          |
| 1.00    | 40      | 0.282 | -18.97%          |
| 1.00    | 45      | 0.273 | -21.55%          |
| 1.00    | 50      | 0.263 | -24.43%          |
| 1.00    | 55      | 0.253 | -27.30%          |

\* DC bias current characteristics in the ambient temperature 20~25°C Frequency 100KHz/1V



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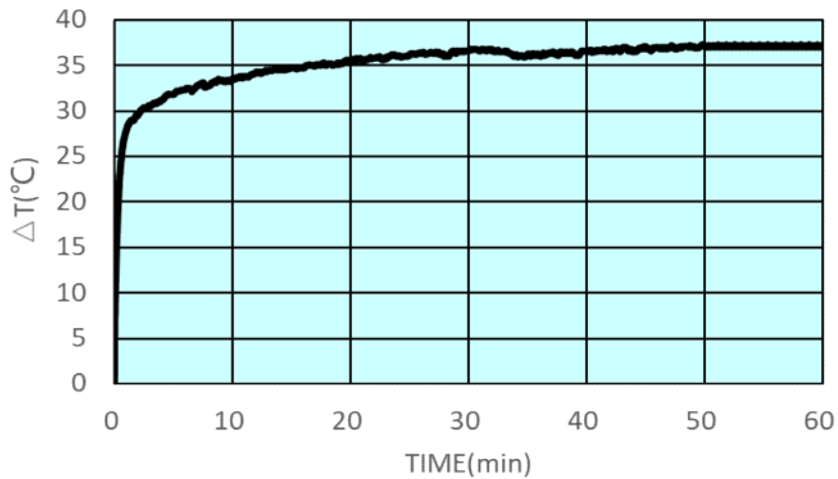
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**Irms(RMS current):The inductor can work continuously for a long time**

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| TIME(min) | Irms(A) | L(uH) | $\Delta L/L(\%)$ | TEMP(°C) | $\Delta T(^{\circ}\text{C})$ |
|-----------|---------|-------|------------------|----------|------------------------------|
| 0         | 0       | 0.348 | 0                | 23.5     | 0                            |
| 10        | 28      | 0.305 | 12.36            | 57.0     | 33.5                         |
| 20        | 28      | 0.305 | 12.36            | 59.0     | 35.5                         |
| 30        | 28      | 0.305 | 12.36            | 60.1     | 36.6                         |
| 40        | 28      | 0.305 | 12.36            | 60.2     | 36.7                         |
| 50        | 28      | 0.305 | 12.36            | 60.6     | 37.1                         |
| 60        | 28      | 0.305 | 12.36            | 60.5     | 37                           |

\* DC bias current characteristics in the ambient temperature 20~25°C Frequency 100KHz/1V



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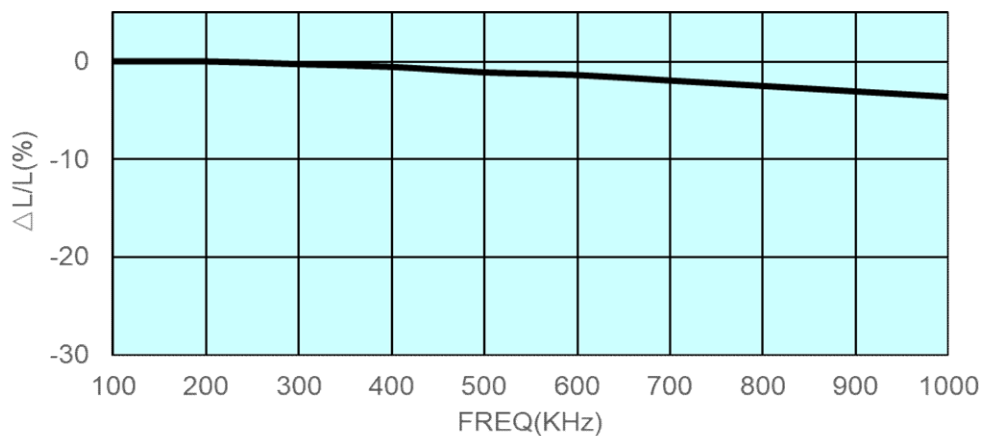
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## L-F CURVE

### AMPI070804GDR33MT

| FREQ(KHz) | L(uH) | $\Delta L/L(\%)$ |
|-----------|-------|------------------|
| 100       | 0.358 | 0.00%            |
| 200       | 0.358 | 0.00%            |
| 300       | 0.357 | -0.28%           |
| 400       | 0.356 | -0.56%           |
| 500       | 0.354 | -1.12%           |
| 600       | 0.353 | -1.40%           |
| 700       | 0.351 | -1.96%           |
| 800       | 0.349 | -2.51%           |
| 900       | 0.347 | -3.07%           |
| 1000      | 0.345 | -3.63%           |



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**TEST R.H.** 40~85%

**TEST TEMP.** 20~25°C

**DATE** 2021/8/13

**TEST DATA FOR PREPRODUCTION SAMPLE**

| TEST RESOLUTION |                  |                  |                        |                       |  |  |  | DIMENSION (Unit : mm) |         |         |         |         |
|-----------------|------------------|------------------|------------------------|-----------------------|--|--|--|-----------------------|---------|---------|---------|---------|
| MEAS.<br>ITEM   | L0<br>μH         | DCR<br>mΩ        | Isat<br>A              | Irms<br>A             |  |  |  | A                     | B       | C       | D       | E       |
| SPEC.           | 0.33<br>±<br>20% | 1.5<br>±<br>4.5% | 55<br>Typ.<br>ΔL/L≒30% | 28<br>Typ.<br>ΔT≒40°C |  |  |  | 8.3±0.2               | 8.6±0.4 | 3.8±0.2 | 3.0±0.5 | 2.0±0.5 |
| TEST<br>FREQ.   | 100KHz/1V        |                  | 100KHz/1V              | 100KHz/1V             |  |  |  |                       |         |         |         |         |
| 1               | 0.358            | 1.510            | 0.259                  | 37.1                  |  |  |  | 8.44                  | 8.91    | 3.92    | 2.90    | 2.17    |
| 2               | 0.348            | 1.506            | 0.253                  | 37.0                  |  |  |  | 8.43                  | 8.89    | 3.89    | 2.88    | 2.14    |
| 3               | 0.351            | 1.503            | 0.254                  | 37.4                  |  |  |  | 8.45                  | 8.89    | 3.92    | 2.92    | 2.20    |
| 4               | 0.353            | 1.498            | 0.256                  | 36.9                  |  |  |  | 8.46                  | 8.91    | 3.83    | 2.83    | 2.23    |
| 5               | 0.349            | 1.508            | 0.253                  | 37.0                  |  |  |  | 8.45                  | 8.89    | 3.89    | 2.89    | 2.21    |
| 6               | 0.350            | 1.500            | 0.254                  | 37.6                  |  |  |  | 8.46                  | 8.89    | 3.89    | 2.89    | 2.18    |
| 7               | 0.352            | 1.502            | 0.255                  | 37.2                  |  |  |  | 8.44                  | 8.90    | 3.88    | 2.86    | 2.14    |
| 8               | 0.358            | 1.507            | 0.259                  | 37.8                  |  |  |  | 8.44                  | 8.88    | 3.89    | 2.87    | 2.10    |
| 9               | 0.360            | 1.500            | 0.259                  | 37.0                  |  |  |  | 8.45                  | 8.88    | 3.89    | 2.88    | 2.17    |
| 10              | 0.361            | 1.501            | 0.260                  | 36.7                  |  |  |  | 8.45                  | 8.91    | 3.93    | 2.92    | 2.15    |
| AVG.            | 0.354            | 1.5035           | 0.2562                 | 37.2                  |  |  |  | 8.447                 | 8.895   | 3.893   | 2.884   | 2.169   |
| R               | 0.013            | 0.012            | 0.007                  | 1.1                   |  |  |  | 0.03                  | 0.03    | 0.10    | 0.09    | 0.13    |

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|          |  |  |  |            |  |  |  |             |  |  |  |  |