

# ECS-MPIP0420 Series

High Current, High Frequency, Miniature Power Inductors



#### Applications:

- Handheld/mobile devices
- Portable media players
- GPS/PDAs
- MP3 Players
- Battery operated devices
- Notebook/netbook
- Tablets/smartbooks
- LCD Displays
- LED Drivers
- POL Converters

#### Environmental data:

- Storage temperature range (component) : -55°C to +150°C
- Operating temperature range: -55°C to +150°C
- (Ambient plus self-temperature rise)
- Solder reflow temperature: J-STD-020D compliant

#### Product description:

- Handles high transient inrush current spikes
- Magnetically shielded
- Frequency range 20kHz to 10MHz
- Inductance range from 0.22μH to 10μH
- Current range from 2,3A to 14.0A
- Rugged construction
- Halogen free, lead free, RoHS compliant





## SPECIFICATION FOR APPROVED

**Customer** : \_\_\_\_\_

**Customer P/N** : \_\_\_\_\_

**Description** : **SMD POWER INDUCTOR**

**Device No.** : **ECS-MPIP0420 Series**

**Drawing No.** : \_\_\_\_\_

**Rev No.** : **A**

| DRAWING         |            |             |
|-----------------|------------|-------------|
| Prepared By     | Checked By | Approved By |
| I.L.            | A.A.       | D.K.        |
| DATE: 12/4/2025 |            |             |

| CUSTOMER APPROVAL |
|-------------------|
|                   |
| DATE:             |



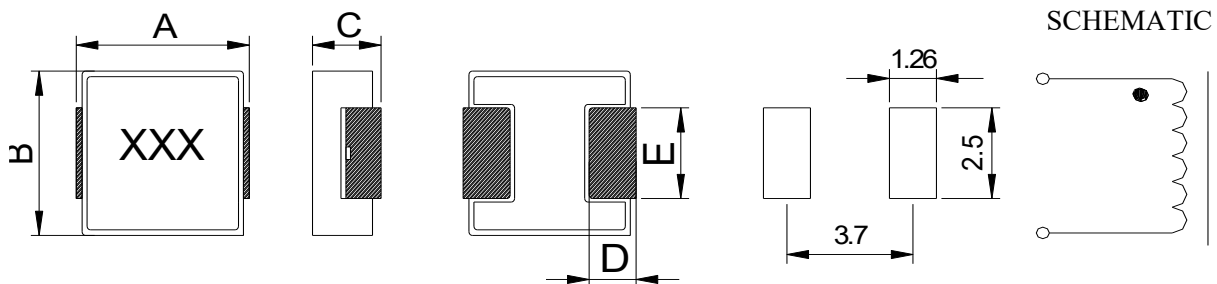
|                                          |                     |           |                 |                       |         |
|------------------------------------------|---------------------|-----------|-----------------|-----------------------|---------|
| <b><i>SPECIFICATION FOR APPROVAL</i></b> |                     |           |                 | <b>RoHS COMPLIANT</b> |         |
| CUSTOMER                                 |                     |           | CUSTOMER No.    |                       |         |
| DEVICE No                                | ECS-MPIP0420 Series |           | DRAWING No.     |                       |         |
| ISSUE DATE                               | 12/4/2025           |           | VERSION         | A                     |         |
| <b>MODIFY RECORD</b>                     |                     |           |                 |                       |         |
| Symbol                                   | Version             | Date      | Content         | Prepared              | Checked |
|                                          | A                   | 12/4/2025 | Initial Release |                       |         |
|                                          |                     |           |                 |                       |         |
|                                          |                     |           |                 |                       |         |
|                                          |                     |           |                 |                       |         |
|                                          |                     |           |                 |                       |         |
|                                          |                     |           |                 |                       |         |
|                                          |                     |           |                 |                       |         |
|                                          |                     |           |                 |                       |         |
|                                          |                     |           |                 |                       |         |
|                                          |                     |           |                 |                       |         |
|                                          |                     |           |                 |                       |         |
|                                          |                     |           |                 |                       |         |
|                                          |                     |           |                 |                       |         |
|                                          |                     |           |                 |                       |         |
|                                          |                     |           |                 |                       |         |
|                                          |                     |           |                 |                       |         |
|                                          |                     |           |                 |                       |         |

# SPECIFICATION FOR APPROVAL

RoHS COMPLIANT

|            |                     |              |   |      |
|------------|---------------------|--------------|---|------|
| CUSTOMER   |                     | CUSTOMER No. |   | PAGE |
| DEVICE No  | ECS-MPIP0420 Series | DRAWING No.  |   | 1/7  |
| ISSUE DATE | 12/4/2025           | VERSION      | A |      |

## 1、 DIMENSION (mm):



Recommended patterns

| A       | B       | C       | D       | E       |
|---------|---------|---------|---------|---------|
| 4.4±0.4 | 4.2±0.2 | 1.8±0.2 | 0.8±0.2 | 2.0±0.3 |

ECS MPIP 0420 XXX MC

TOLERANCE & Rohs Compliant

INDUCTANCE (ex : 4R7=4.7uH)

SIZE CODE

SERIES NAME

## 2、 TEMPERATURE RATING:

Operating Temperature : -55 ~ +150°C(Including self - temperature rise)

Storage Temperature : -55 ~ +150°C



| PREPARED | CHECKED | APPROVED |
|----------|---------|----------|
| I.L.     | A.A.    | D.K.     |

**SPECIFICATION FOR APPROVAL****RoHS COMPLIANT**

|            |                     |              |   |      |
|------------|---------------------|--------------|---|------|
| CUSTOMER   |                     | CUSTOMER No. |   | PAGE |
| DEVICE No  | ECS-MPIP0420 Series | DRAWING No.  |   | 2/7  |
| ISSUE DATE | 12/4/2025           | VERSION      | A |      |

**3、 ELECTRICAL REQUIREMENTS:**

| PART NUMBER        | INDUCTANCE<br>(uH) | DCR (mΩ) |       | Isat (A) |      | Irms (A) |      | Marker |
|--------------------|--------------------|----------|-------|----------|------|----------|------|--------|
|                    |                    | Typ      | Max   | Typ      | Max  | Typ      | Max  |        |
| ECS-MPIP0420-R22MC | 0.22 ± 20%         | 6.0      | 6.6   | 14.0     | 12.0 | 12.0     | 10.0 | R22    |
| ECS-MPIP0420-R33MC | 0.33 ± 20%         | 8.0      | 11.0  | 12.0     | 10.0 | 10.0     | 9.0  | R33    |
| ECS-MPIP0420-R47MC | 0.47 ± 20%         | 12.0     | 14.0  | 10.0     | 8.5  | 9.0      | 8.0  | R47    |
| ECS-MPIP0420-1R0MC | 1.0 ± 20%          | 24.0     | 27.0  | 7.5      | 6.5  | 6.0      | 5.2  | 1R0    |
| ECS-MPIP0420-1R5MC | 1.5 ± 20%          | 38.0     | 46.0  | 7.0      | 5.7  | 5.2      | 4.5  | 1R5    |
| ECS-MPIP0420-2R2MC | 2.2 ± 20%          | 48.0     | 58.0  | 6.0      | 5.0  | 4.2      | 3.7  | 2R2    |
| ECS-MPIP0420-3R3MC | 3.3 ± 20%          | 70.0     | 87.0  | 4.0      | 3.5  | 3.4      | 3.0  | 3R3    |
| ECS-MPIP0420-4R7MC | 4.7 ± 20%          | 90.0     | 105.0 | 3.0      | 2.5  | 3.2      | 2.8  | 4R7    |
| ECS-MPIP0420-6R8MC | 6.8 ± 20%          | 137.0    | 175.0 | 2.5      | 2.0  | 2.4      | 2.0  | 6R8    |
| ECS-MPIP0420-100MC | 10.0 ± 20%         | 235.0    | 282.0 | 2.3      | 1.8  | 1.8      | 1.4  | 100    |

Isat: DC current at which the inductance drops approximate 30% from its value without current;

Irms: DC current that causes the temperature rise ( $\Delta T \leq 40^{\circ}\text{C}$ ) from  $25^{\circ}\text{C}$  ambient.

**Absolute maximum voltage: DC 75V**

**AEC-Q200 Compliant**



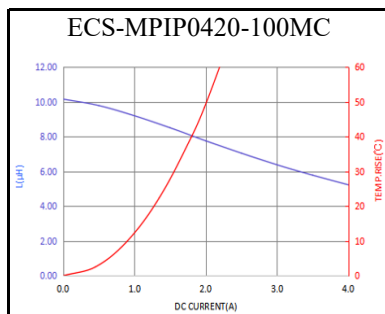
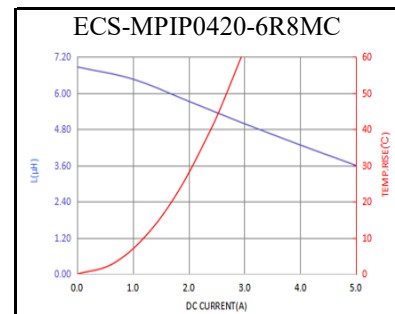
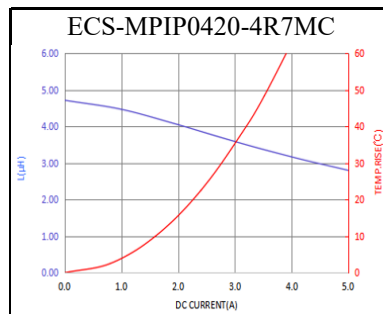
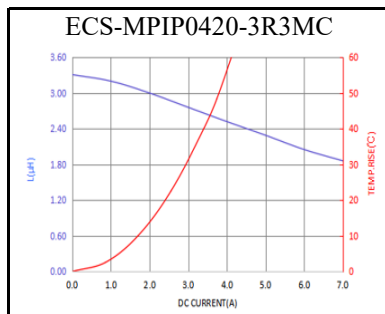
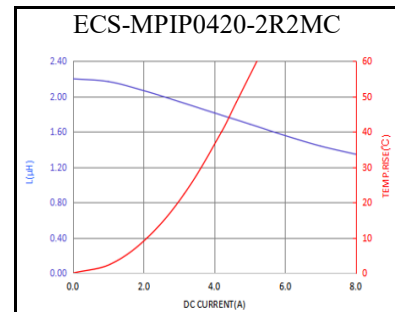
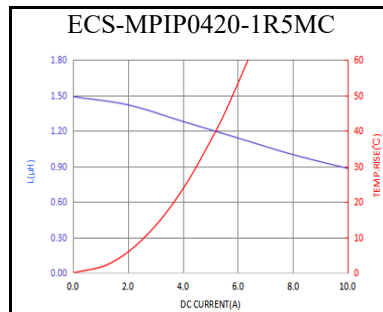
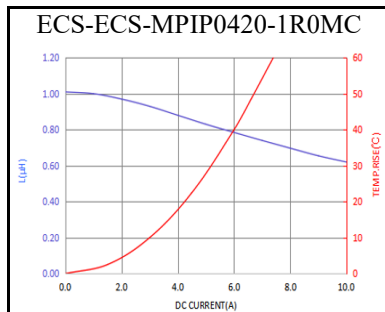
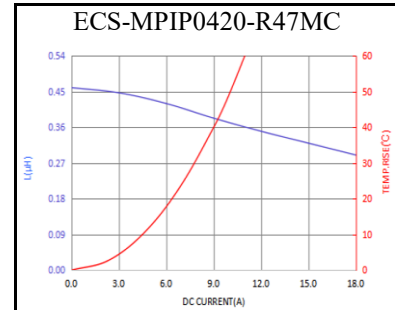
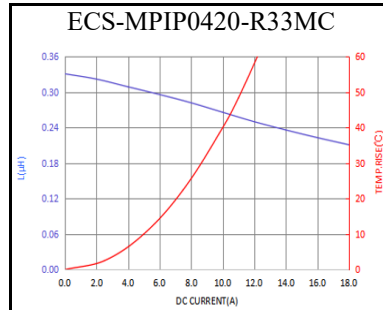
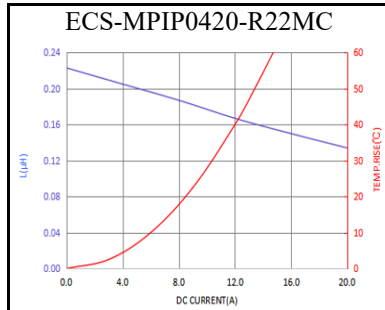
|          |         |          |
|----------|---------|----------|
| PREPARED | CHECKED | APPROVED |
| I.L.     | A.A.    | D.K.     |

# SPECIFICATION FOR APPROVAL

RoHS COMPLIANT

|            |                     |              |   |      |
|------------|---------------------|--------------|---|------|
| CUSTOMER   |                     | CUSTOMER No. |   | PAGE |
| DEVICE No  | ECS-MPIP0420 Series | DRAWING No.  |   | 3/7  |
| ISSUE DATE | 12/4/2025           | VERSION      | A |      |

## 4 · INDUCTANCE ( $\mu\text{H}$ ) VS DC BIAS (A) CURVE & TEMPERATURE( $\Delta^\circ\text{C}$ ) VS DC BIAS (A) CURVE



TESTING CONDITION: 100kHz , 1Vrms



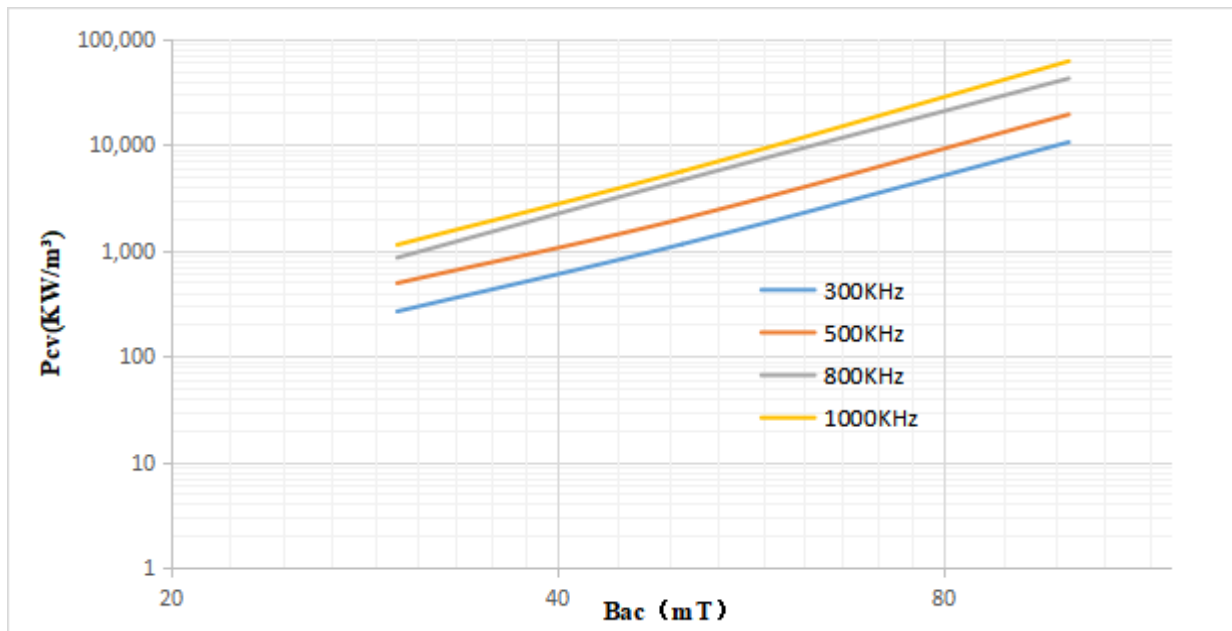
|          |         |          |
|----------|---------|----------|
| PREPARED | CHECKED | APPROVED |
| I.L.     | A.A.    | D.K.     |

# **SPECIFICATION FOR APPROVAL**

**RoHS COMPLIANT**

|            |                     |              |   |      |
|------------|---------------------|--------------|---|------|
| CUSTOMER   |                     | CUSTOMER No. |   | PAGE |
| DEVICE No  | ECS-MPIP0420 Series | DRAWING No.  |   | 4/7  |
| ISSUE DATE | 12/4/2025           | VERSION      | A |      |

## **5・CORE LOSS**



|          |         |          |
|----------|---------|----------|
| PREPARED | CHECKED | APPROVED |
| I.L.     | A.A.    | D.K.     |

# SPECIFICATION FOR APPROVAL

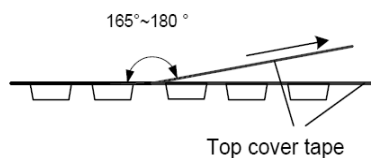
RoHS COMPLIANT

|            |                     |              |   |      |
|------------|---------------------|--------------|---|------|
| CUSTOMER   |                     | CUSTOMER No. |   | PAGE |
| DEVICE No  | ECS-MPIP0420 Series | DRAWING No.  |   | 5/7  |
| ISSUE DATE | 12/4/2025           | VERSION      | A |      |

## 6、PACKAGE :

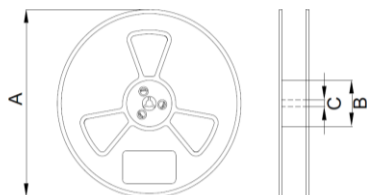
### (1) Packaging -Cover Tape

The force for tearing off cover tape is 10 to 130 grams in the arrow direction.



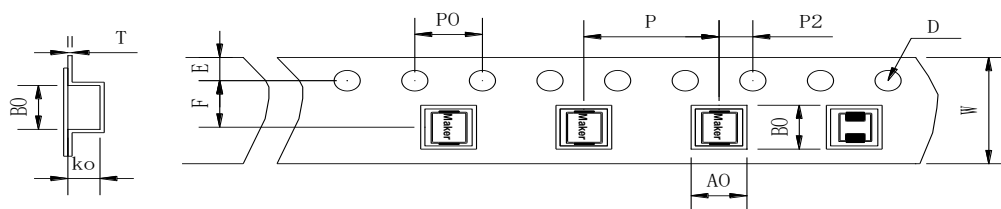
Peel-off speed: 300mm/min.

### (2) Reel Dimensions (Unit:mm)

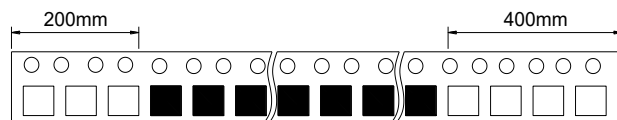


| Item | Dimension |
|------|-----------|
| A    | 330±1     |
| B    | 100±1     |
| C    | 13±0.5    |

### (3) Tape Dimensions(Unit:mm)



| W            | A0          | B0          | K0          | D           | F           | E            | P           | P0          | P2          | T            |
|--------------|-------------|-------------|-------------|-------------|-------------|--------------|-------------|-------------|-------------|--------------|
| 12.0<br>±0.3 | 4.3<br>±0.1 | 5.4<br>±0.1 | 2.2<br>±0.1 | 1.5<br>±0.1 | 5.5<br>±0.1 | 1.75<br>±0.1 | 8.0<br>±0.1 | 4.0<br>±0.1 | 2.0<br>±0.1 | 0.3<br>±0.05 |



| PREPARED | CHECKED | APPROVED |
|----------|---------|----------|
| I.L.     | A.A.    | D.K.     |

## SPECIFICATION FOR APPROVAL

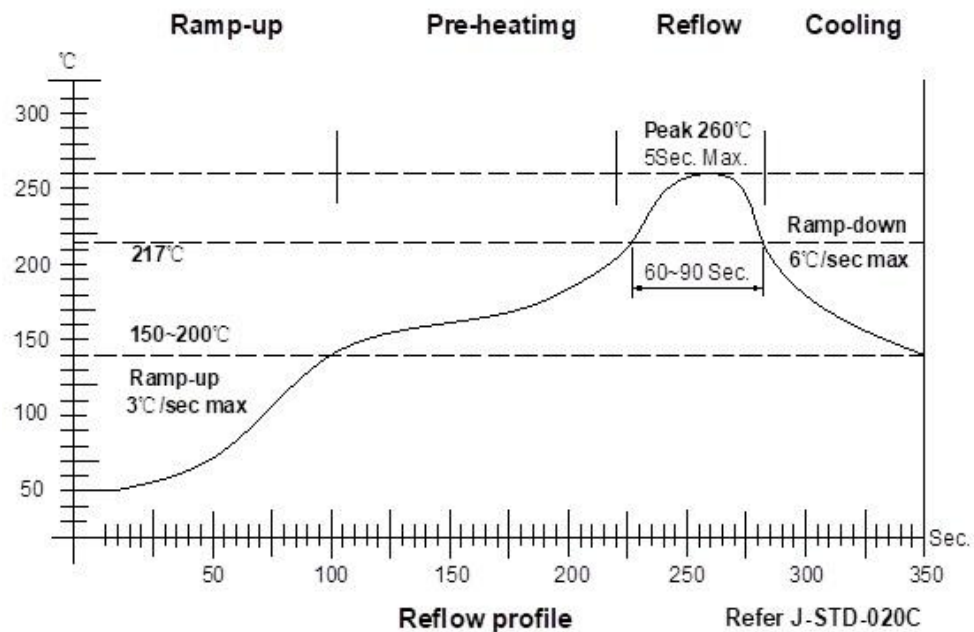
**RoHS COMPLIANT**

|            |                     |              |   |      |
|------------|---------------------|--------------|---|------|
| CUSTOMER   |                     | CUSTOMER No. |   | PAGE |
| DEVICE No  | ECS-MPIP0420 Series | DRAWING No.  |   | 6/7  |
| ISSUE DATE | 12/4/2025           | VERSION      | A |      |

### (4) Packaging Quantity

| Quantity (Pcs) |
|----------------|
| Reel           |
| 3,000          |
| 1Reel          |

### 7、Reflow Soldering



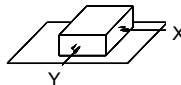
|          |         |          |
|----------|---------|----------|
| PREPARED | CHECKED | APPROVED |
| I.L.     | A.A.    | D.K.     |

# SPECIFICATION FOR APPROVAL

**RoHS COMPLIANT**

|            |                     |              |   |      |
|------------|---------------------|--------------|---|------|
| CUSTOMER   |                     | CUSTOMER No. |   | PAGE |
| DEVICE No  | ECS-MPIP0420 Series | DRAWING No.  |   | 7/7  |
| ISSUE DATE | 12/4/2025           | VERSION      | A |      |

## 8、Reliability Test

| No. | ITEM                              | REQUEST                                                                                                                             | CONDITIONS                                                                                                               |
|-----|-----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|
| 1   | TERMINAL STRENGTH                 | A STATIC PULLING FORCE OF 10N IN A DIRECTION PARALLEL TO THE TERMINALS FOR 5 SECONDS                                                | NO TERMINAL BREAKAGE OR LOOSENING<br> |
| 2   | RESISTANCE TO SOLDERING HEAT TEST | FIX THE SAMPLES ON A 1.6mm THICKNESS PCB, THEN DIP THE SAMPLE LEADS INTO A SOLDERING BATH OF 260±5°C UP TO THE PCB FOR 5±1 SECONDS. | NO MECHANICAL BREAKAGE.<br>DEVIATION RELATIVE TO INITIAL VALUE: L: WITHIN ±10.0%                                         |
| 3   | SOLDER ABILITY TEST               | IMMERSE THE TERMINAL IN FLUX FOR 5 SECONDS. THEN DIP THE TERMINAL INTO A SOLDERING BATH OF 245±5°C FOR 2±0.5 SECONDS.               | OVER 90% OF THE SURFACE BEING IMMERSED SHALL BE COVERED WITH NEW SOLDER UNIFORMITY.                                      |
| 4   | HUMIDITY TEST                     | TEMPERATURE :40±2°C<br>HUMIDITY :90%~95%RH<br>DURATION:96±4 Hours                                                                   | DEVIATION RELATIVE TO INITIAL VALUE:<br>L: WITHIN ±10.0%                                                                 |
| 5   | HIGH TEMPERATURE TEST             | TEMPERATURE : 125±2°C<br>TIME : 96±4 Hours<br>ROOM CONDITION : 1~2 hours                                                            | DEVIATION RELATIVE TO INITIAL VALUE:<br>L : WITHIN ±10.0%                                                                |
| 6   | LOW TEMPERATURE TEST              | TEMPERATURE : -25±2°C<br>TIME : 96±4 Hours<br>ROOM CONDITION : 1~2 hours                                                            | DEVIATION RELATIVE TO INITIAL VALUE:<br>L : WITHIN ±10.0%                                                                |
| 7   | THERMAL SHOCK TEST                | FIRST -25±5°C FOR 30±2 MINUTES, LAST 125°C 30±2 MINUTES AS 1 CYCLE. TOTAL 10 CYCLES.                                                | DEVIATION RELATIVE TO INITIAL VALUE:<br>L : WITHIN ±10.0%                                                                |
| 8   | VIBRATION TEST                    | APPLY FREQUENCY 10~55Hz 1.55mm AMPLITUDE IN EACH OF PERPENDICULAR DIRECTION FOR 2 HOURS.(TOTAL 6H)                                  | DEVIATION RELATIVE TO INITIAL VALUE:<br>L: WITHIN ±10.0%                                                                 |



| PREPARED | CHECKED | APPROVED |
|----------|---------|----------|
| I.L.     | A.A.    | D.K.     |