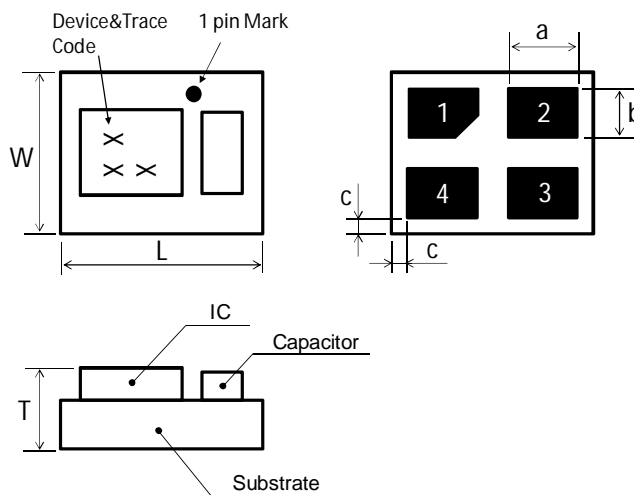


1. Features

- Low EMI noise and small footprint using inductor-imbedded ferrite substrate
- High efficiency using synchronous rectifier technology and PFM/PWM auto-select function
- Input voltage range : 2.3~5.5V
- Maximum Load Current: 600mA (depends on output voltage)
- Fixed output voltage: 0.8V – 4V
- Switching frequency : 3.0MHz

2. Mechanical details

2-1 Outline



Unit: mm

| Mark | Dimension |
|------|---------------|
| L | 2.5 +/- 0.2 |
| W | 2.0 +/- 0.2 |
| T | 1.1 MAX |
| a | 0.85 +/- 0.1 |
| b | 0.60 +/- 0.1 |
| c | 0.15 +/- 0.15 |

2-2. Pin configuration

| Pin | Symbol | I/O | Description |
|-----|--------|--------|---|
| 1 | Vin | Input | Voltage input pin |
| 2 | EN | Input | ON/OFF control pin H: Enable, L: Disable |
| 3 | Vout | Output | Voltage output pin |
| 4 | GND | - | GND pin |

3. Ordering Information

| Part number | Output Voltage | Device Specific Feature | MOQ |
|----------------|----------------|-------------------------|----------------|
| LXDC2HL10A-080 | 1.0V | | T/R, 3000pcs/R |
| LXDC2HL12A-050 | 1.2V | | T/R, 3000pcs/R |
| LXDC2HL1DA-087 | 1.35V | | T/R, 3000pcs/R |
| LXDC2HL15A-051 | 1.5V | | T/R, 3000pcs/R |
| LXDC2HL18A-052 | 1.8V | | T/R, 3000pcs/R |
| LXDC2HL25A-053 | 2.5V | | T/R, 3000pcs/R |
| LXDC2HL30A-054 | 3.0V | | T/R, 3000pcs/R |
| LXDC2HL33A-055 | 3.3V | | T/R, 3000pcs/R |

4. Electrical Specification

4-1 Absolute maximum ratings

| Parameter | symbol | rating | Unit |
|-----------------------|------------------|------------|------|
| Maximum input voltage | V _{in} | 6.3 | V |
| Operating temperature | T _{OP} | -40 to +85 | °C |
| Storage temperature | T _{STO} | -40 to +85 | °C |

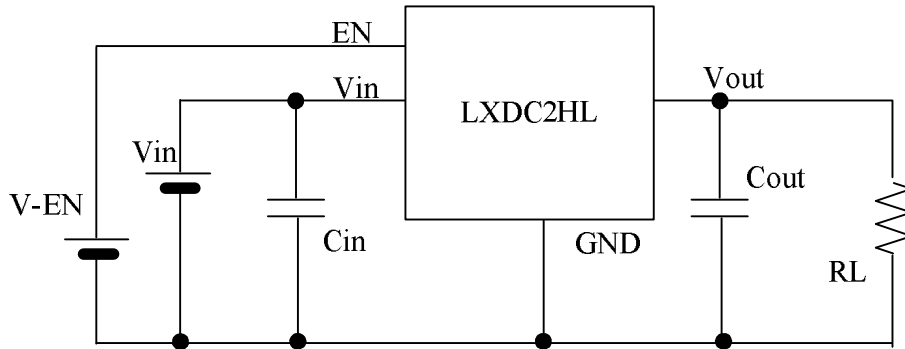
4-2 Electrical characteristics (Ta=25°C)

| Parameter | Symbol | Condition | | Min. | Typ. | Max. | Unit | | |
|-------------------------|----------------|---|----------------|-------|------|-------|------|---|-----|
| Input voltage | V_{in} | | | 2.3 | 3.6 | 5.5 | V | | |
| UVLO voltage | UVLO | | | 1.0 | 1.4 | 1.8 | V | | |
| Input leak current | lin-off | $V_{in}=3.6V$, $EN=0V$ | LXDC2HL10A-080 | | 0 | 2 | uA | | |
| | | | LXDC2HL12A-050 | | | | | | |
| | | | LXDC2HL1DA-087 | | | | | | |
| | | | LXDC2HL15A-051 | | | | | | |
| | | | LXDC2HL18A-052 | | | | | | |
| | | | LXDC2HL25A-053 | | | | | | |
| | | $V_{in}=5.0V$, $EN=0V$ | LXDC2HL30A-054 | | | | | | |
| | | | LXDC2HL33A-055 | | | | | | |
| Output voltage accuracy | Vout | $V_{in}-V_{out}>1V$ | LXDC2HL10A-080 | 0.976 | 1.0 | 1.024 | V | | |
| | | | LXDC2HL12A-050 | 1.176 | 1.20 | 1.224 | | | |
| | | | LXDC2HL1DA-087 | 1.323 | 1.35 | 1.377 | | | |
| | | | LXDC2HL15A-051 | 1.47 | 1.50 | 1.53 | | | |
| | | | LXDC2HL18A-052 | 1.764 | 1.80 | 1.836 | | | |
| | | | LXDC2HL25A-053 | 2.45 | 2.50 | 2.55 | | | |
| | | $V_{in}-V_{out}>0.7V$ | LXDC2HL30A-054 | 2.94 | 3.00 | 3.06 | | | |
| $V_{in}-V_{out}>0.5V$ | LXDC2HL33A-055 | 3.234 | 3.30 | 3.366 | | | | | |
| Load current range | Iout | LXDC2HL10A-080 | | 0 | | 600 | mA | | |
| | | LXDC2HL12A-050 | | | | | | | |
| | | LXDC2HL1DA-087 | | | | | | | |
| | | LXDC2HL15A-051 | | | | | | | |
| | | LXDC2HL18A-052 | | | | | | | |
| | | LXDC2HL25A-053 | | | | | | 0 | 500 |
| | | LXDC2HL30A-054 | | | | | | 0 | 400 |
| | | LXDC2HL33A-055 | | | | | | 0 | 300 |
| Ripple voltage | Vrpl | $V_{in}=3.6V$, $I_{out}=300mA$, $BW=100MHz$ | LXDC2HL10A-080 | | 15 | 30 | mV | | |
| | | | LXDC2HL12A-050 | | | | | | |
| | | | LXDC2HL1DA-087 | | | | | | |
| | | | LXDC2HL15A-051 | | | | | | |
| | | | LXDC2HL18A-052 | | | | | | |
| | | | LXDC2HL25A-053 | | | | | | |
| | | $V_{in}=5V$, $I_{out}=300mA$, $BW=100MHz$ | LXDC2HL30A-054 | | | | | | |
| | | | LXDC2HL33A-055 | | | | | | |

| Parameter | Symbol | Condition | Min. | Typ. | Max. | Unit | |
|-------------------------|---|--|----------------|------|------|------|---|
| Efficiency | EFF | Vin=3.6V, Iout=150mA | LXDC2HL10A-080 | 73 | 78 | | % |
| | | | LXDC2HL12A-050 | 75 | 80 | | |
| | | | LXDC2HL1DA-087 | 77 | 82 | | |
| | | | LXDC2HL15A-051 | 81 | 85 | | |
| | | | LXDC2HL18A-052 | 81 | 85 | | |
| | | | LXDC2HL25A-053 | 84 | 88 | | |
| | | Vin=5V, Iout=150mA | LXDC2HL30A-054 | 83 | 87 | | |
| | | | LXDC2HL33A-055 | 84 | 88 | | |
| EN control voltage | VENH | ON ; Enable | 1.4 | | Vin | V | |
| | VENL | OFF ; Disable | 0 | | 0.25 | V | |
| SW Frequency | fosc | | 2.5 | 3.0 | 3.5 | MHz | |
| Over current protection | OCP | LXDC2HL10A-080 | 600 | 900 | 1200 | mA | |
| | | LXDC2HL12A-050 | | | | | |
| | | LXDC2HL1DA-087 | | | | | |
| | | LXDC2HL15A-051 | | | | | |
| | | LXDC2HL18A-052 | | | | | |
| | | LXDC2HL25A-053 | 550 | 900 | 1200 | | |
| | | LXDC2HL30A-054 | 450 | 900 | 1200 | | |
| | | LXDC2HL33A-055 | 350 | 900 | 1200 | | |
| | | If the over current event continues less than Tlatch, auto-recovery. If the over current event continues more than Tlatch, latch-up. Restart by toggling EN voltage or Vin voltage | | | | | |
| Tlatch | Latch-up mask time @ Vout=0.8 × Vnom | | 20 | | Usec | | |
| Start-up time | Ton | | 0.9 | | Msec | | |

* Test condition is shown in section 6.

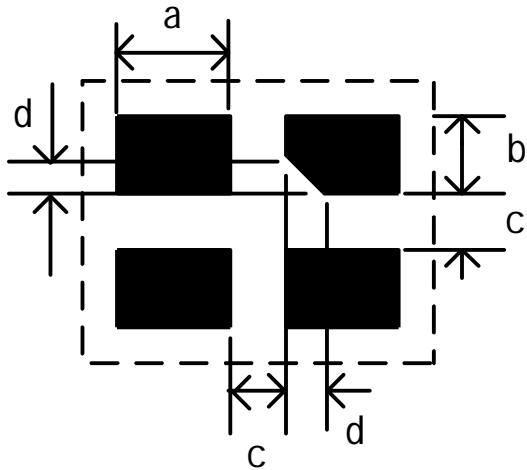
5. Test Circuit



Cin : 4.7uF/6.3V (GRM188B30J475K)

Cout : 10uF/6.3V (GRM188B30J106M)

6. Reference Land Pattern



Unit: mm

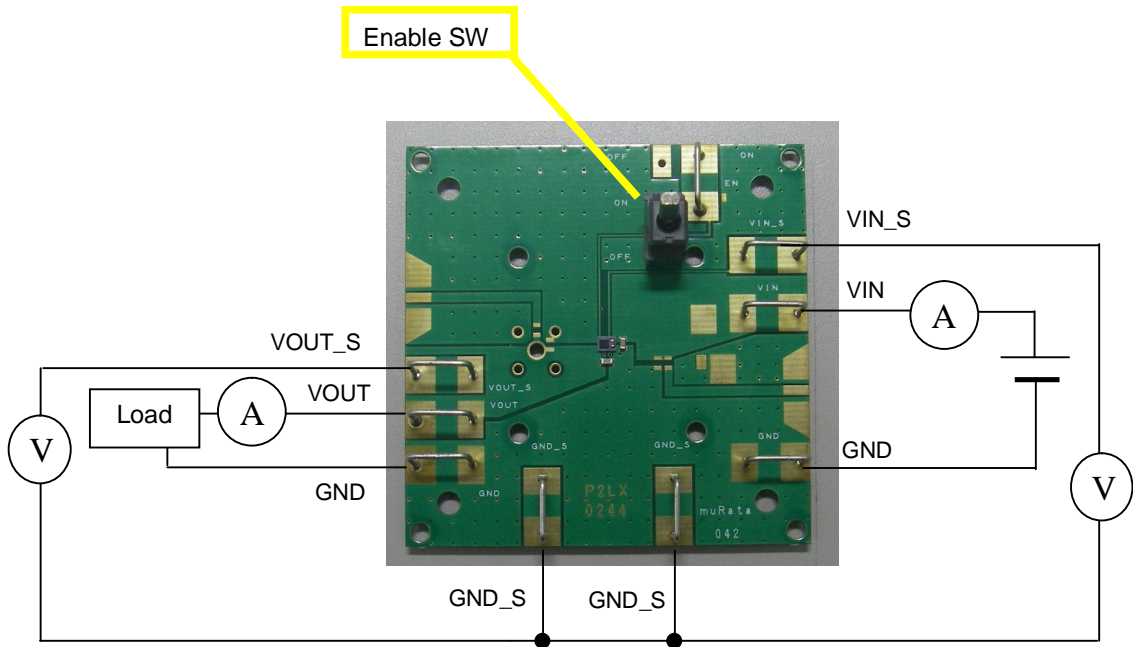
| Mark | Dimension |
|------|-----------|
| a | 0.85 |
| b | 0.60 |
| c | 0.5 |
| d | 0.2 |

Notes: this land layout is for reference purpose only.

7. Measurement Data

Micro DCDC Converter evaluation board (P2LX0244)

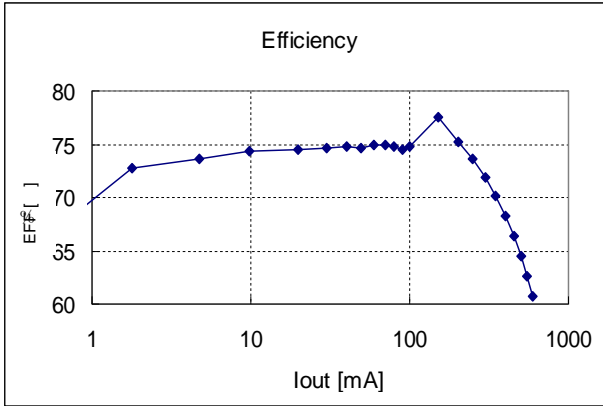
Measurement setup



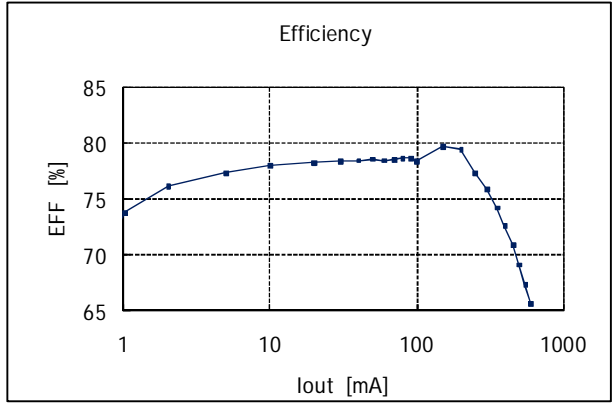
Typical Measurement Data (reference purpose only)

Efficiency

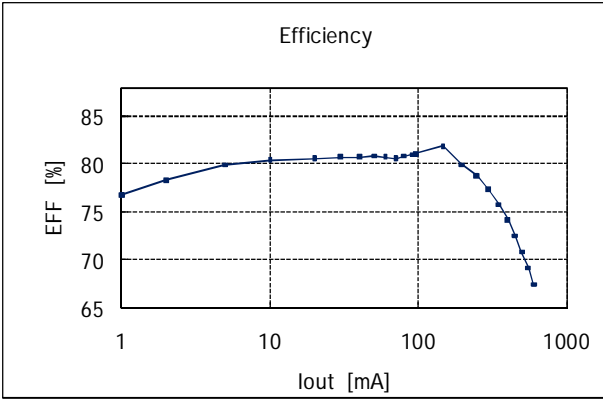
Vin=3.6V, Vout=1.0V



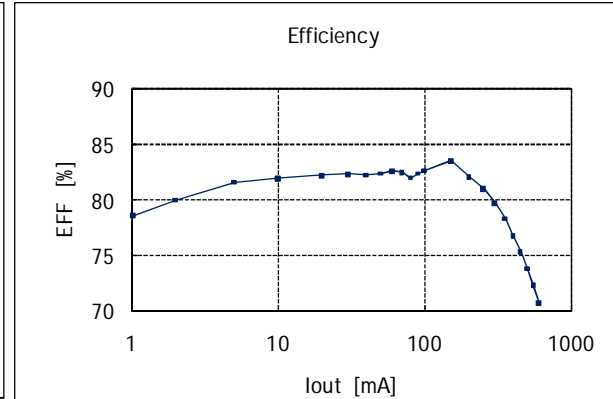
Vin=3.6V, Vout=1.2V



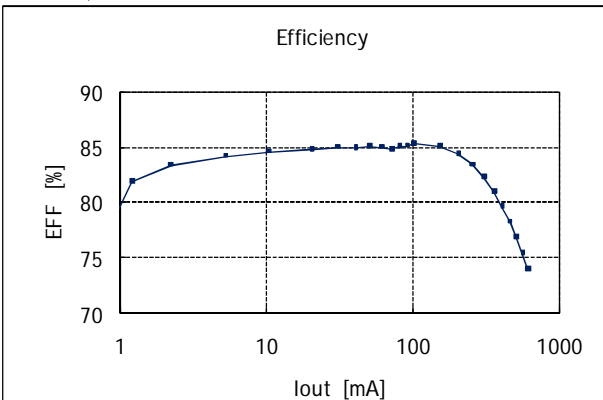
Vin=3.6V, Vout=1.35V



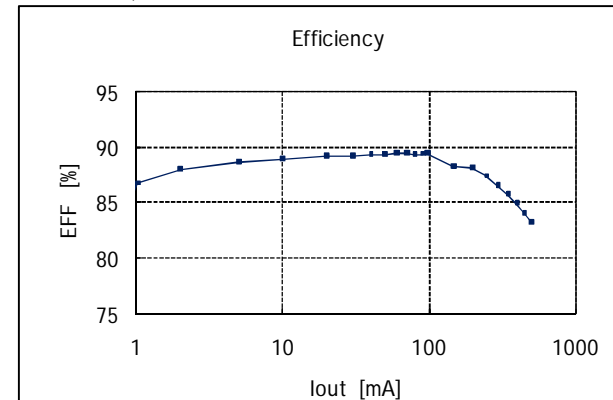
Vin=3.6V, Vout=1.5V



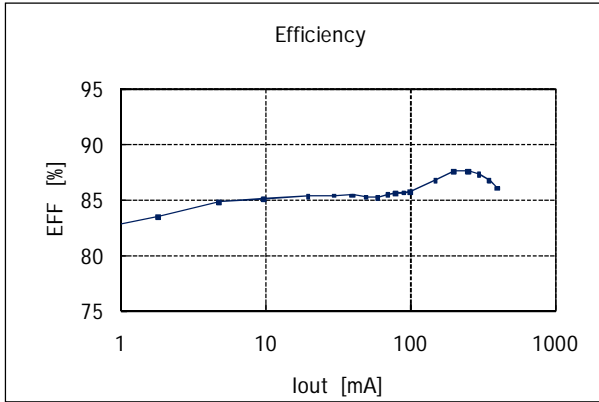
Vin=3.6V, Vout=1.8V



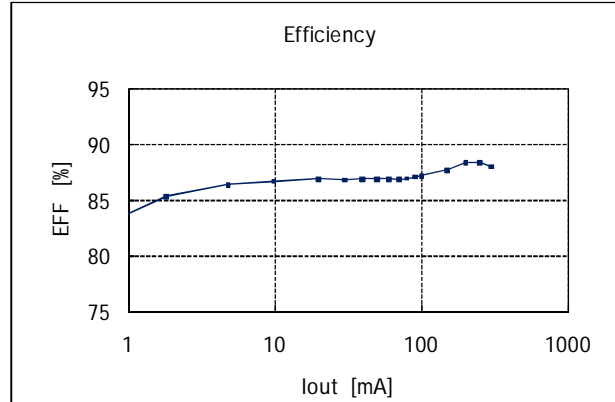
Vin=3.6V, Vout=2.5V



Vin=5.0V, Vout=3.0V



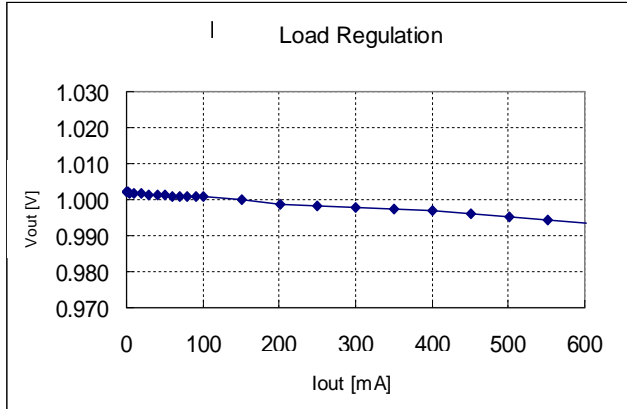
Vin=5.0V, Vout=3.3V



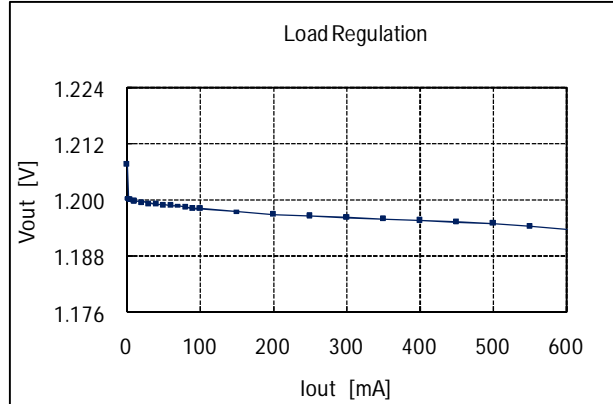
Typical Measurement Data (reference purpose only)

Load Regulation

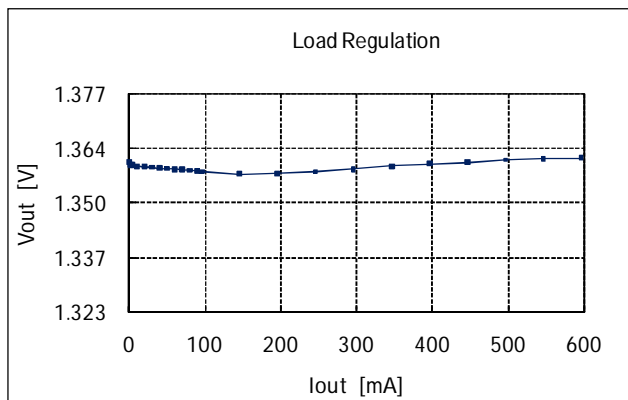
Vin=3.6V, Vout=1.0V



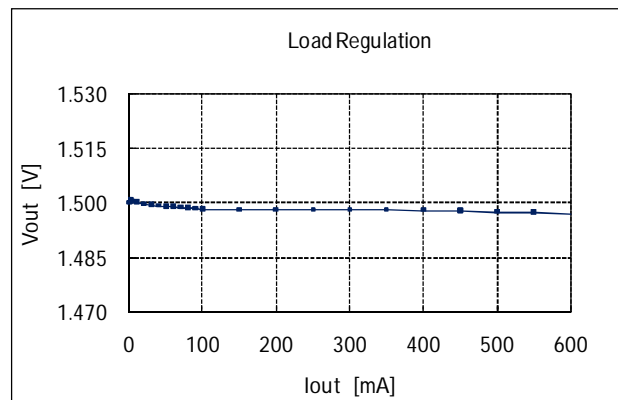
Vin=3.6V, Vout=1.2V



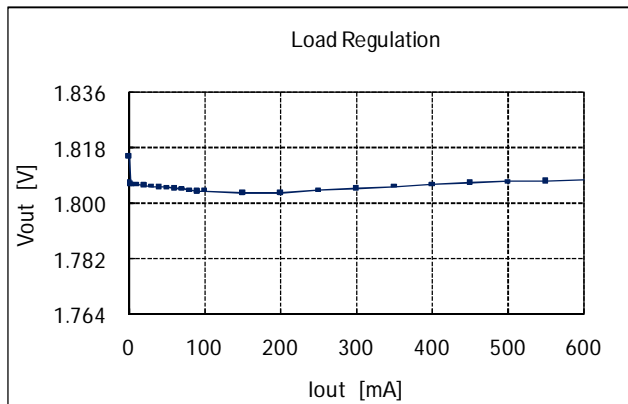
Vin=3.6V, Vout=1.35V



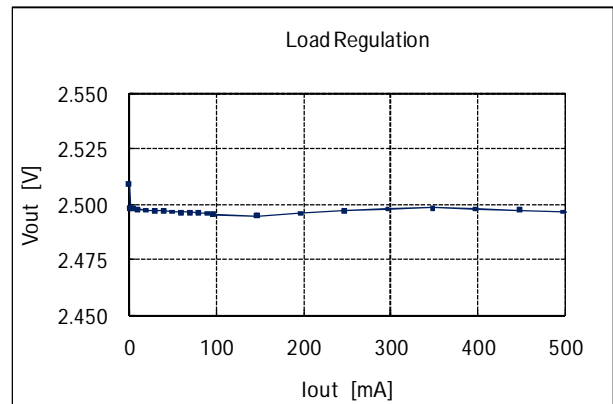
Vin=3.6V, Vout=1.5V



Vin=3.6V, Vout=1.8V

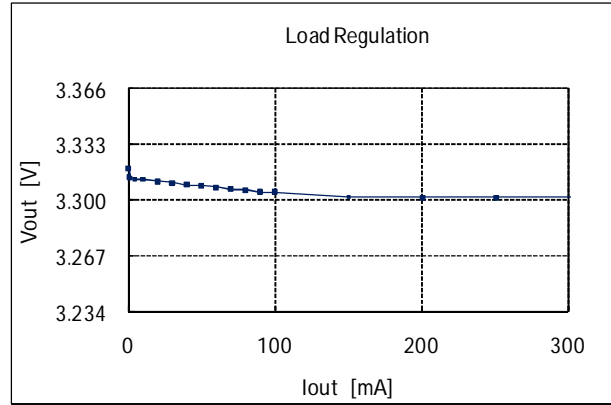
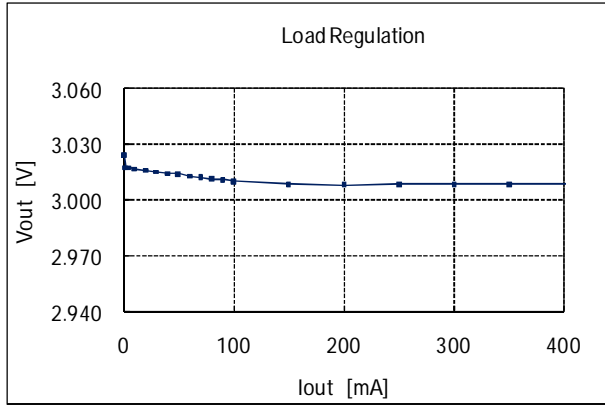


Vin=3.6V, Vout=2.5V



Vin=5.0V, 3.0V

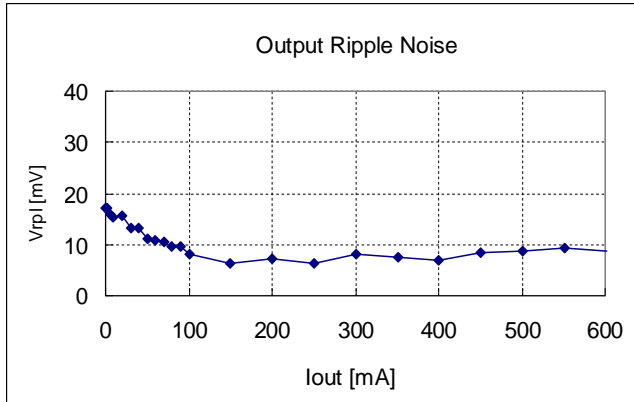
Vin=5.0V, Vout=3.3V



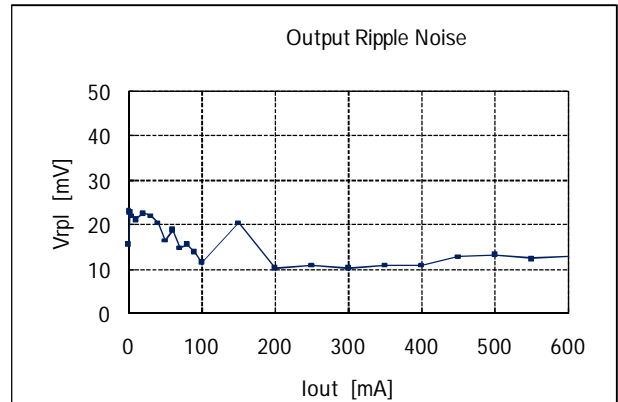
Typical Measurement Data (reference purpose only)

Output Ripple-Noise

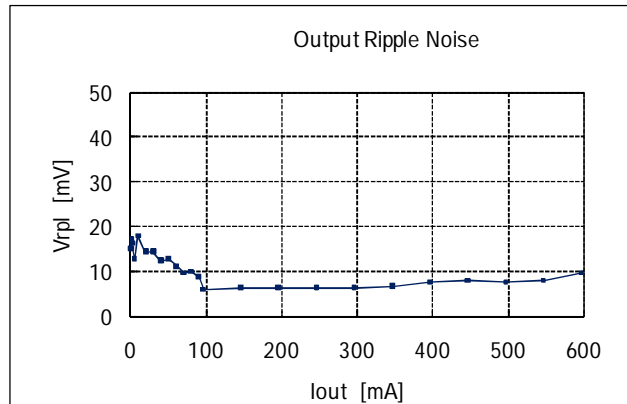
Vin=3.6V, Vout=1.0V, BW : 100MHz



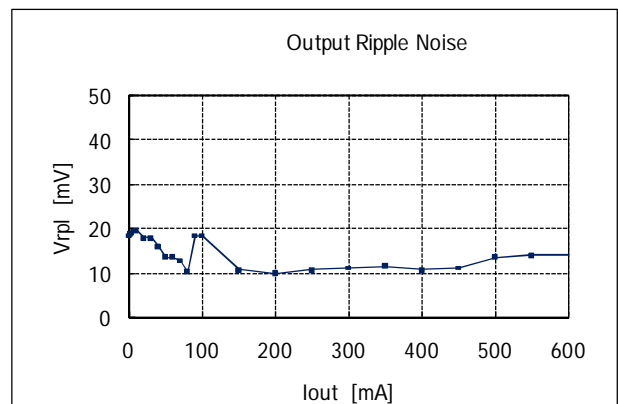
Vin=3.6V, Vout=1.2V, BW: 150MHz



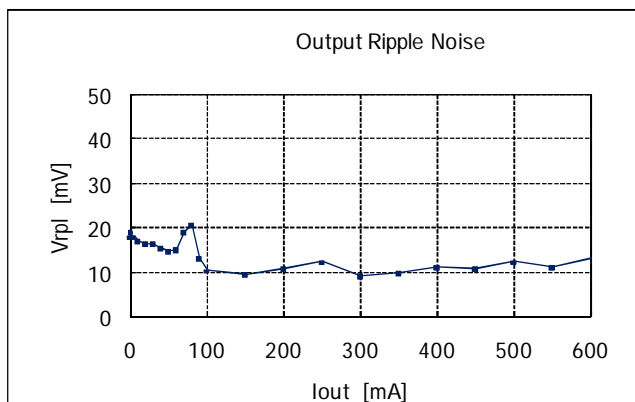
Vin=3.6V, Vout=1.35V, BW: 150MHz



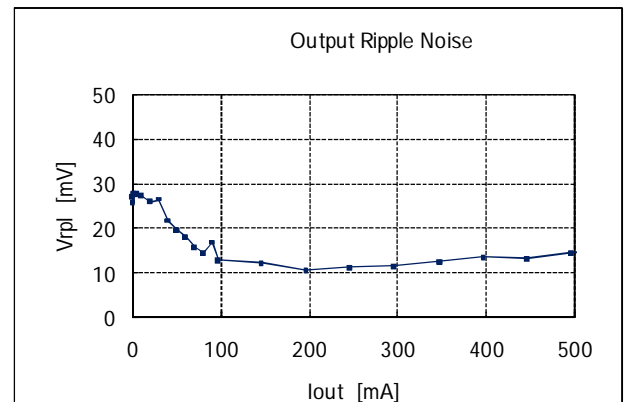
Vin=3.6V, Vout=1.5V, BW: 150MHz



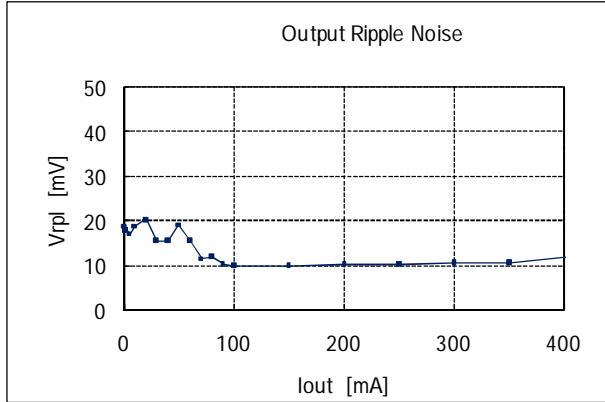
Vin=3.6V, Vout=1.8V, BW: 150MHz



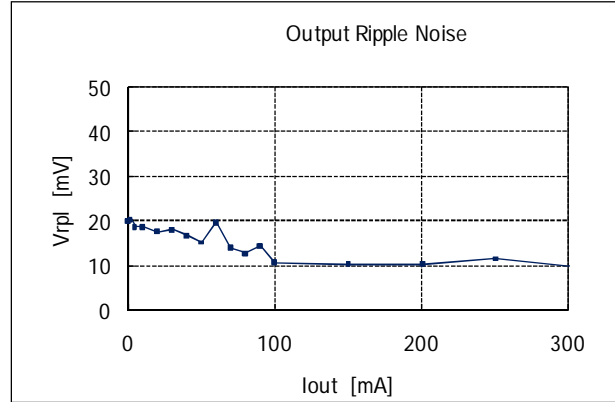
Vin=3.6V, Vout=2.5V, BW: 150MHz



Vin=5.0V, Vout=3.0V, BW: 150MHz



Vin=5.0V, Vout=3.3V, BW: 150MHz



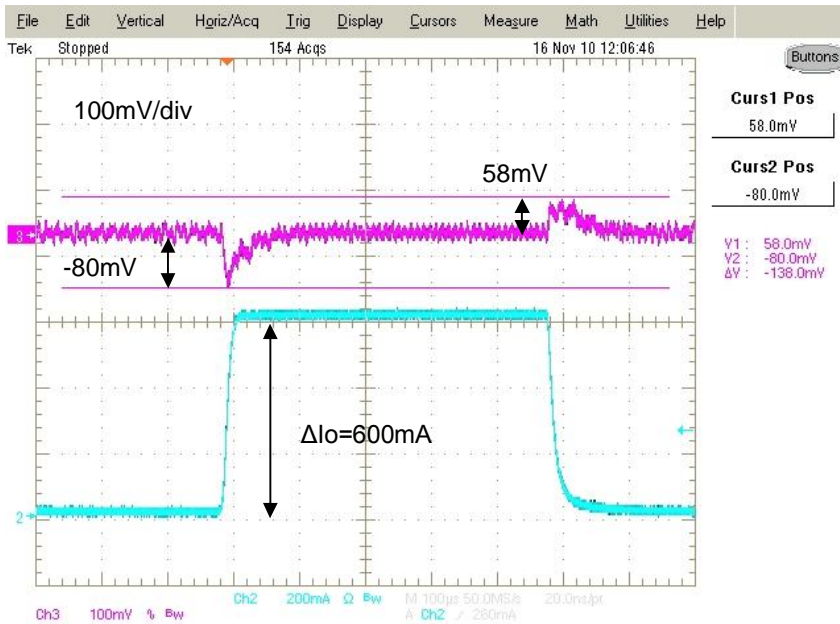
Typical Measurement Data (reference purpose only)

Load Transient Response

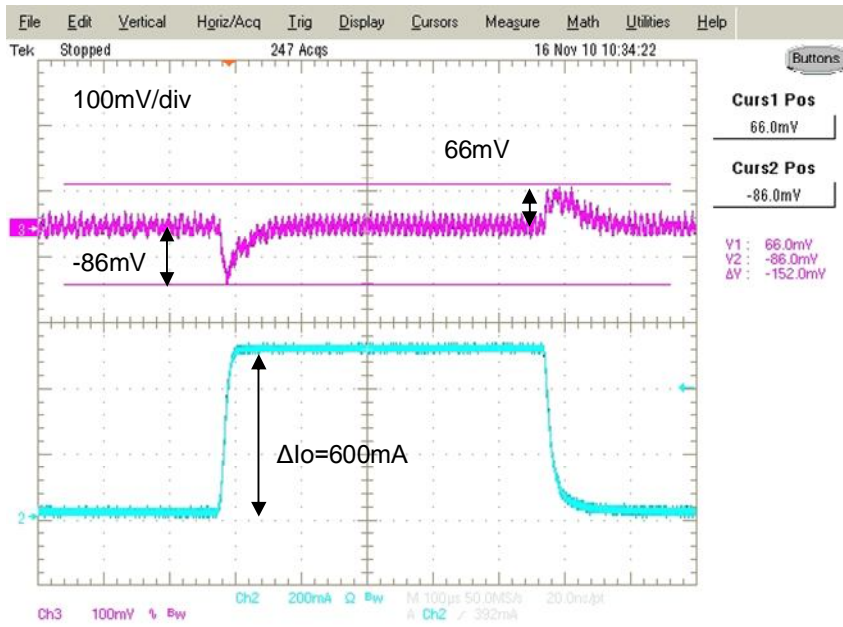
Vin=3.6V, Vout=1.0V

TBD

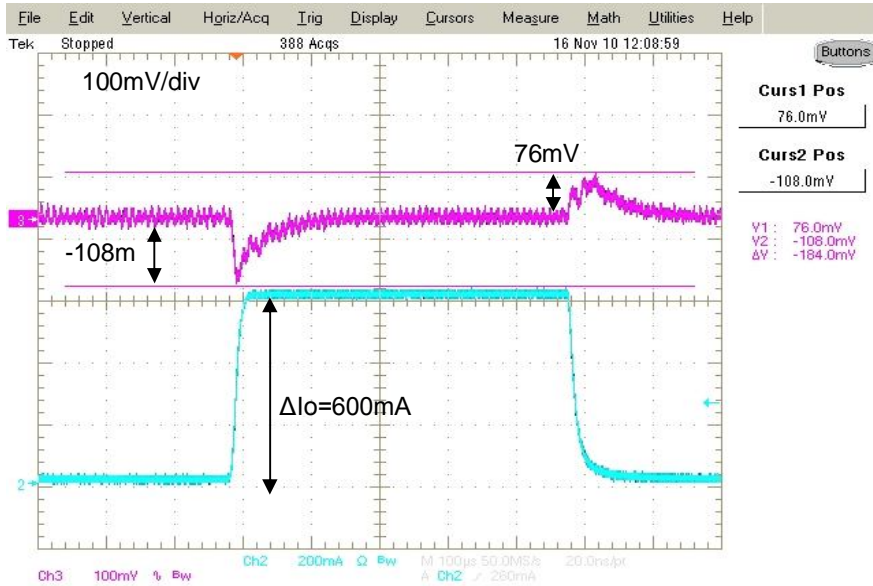
Vin=3.6V, Vout=1.2V



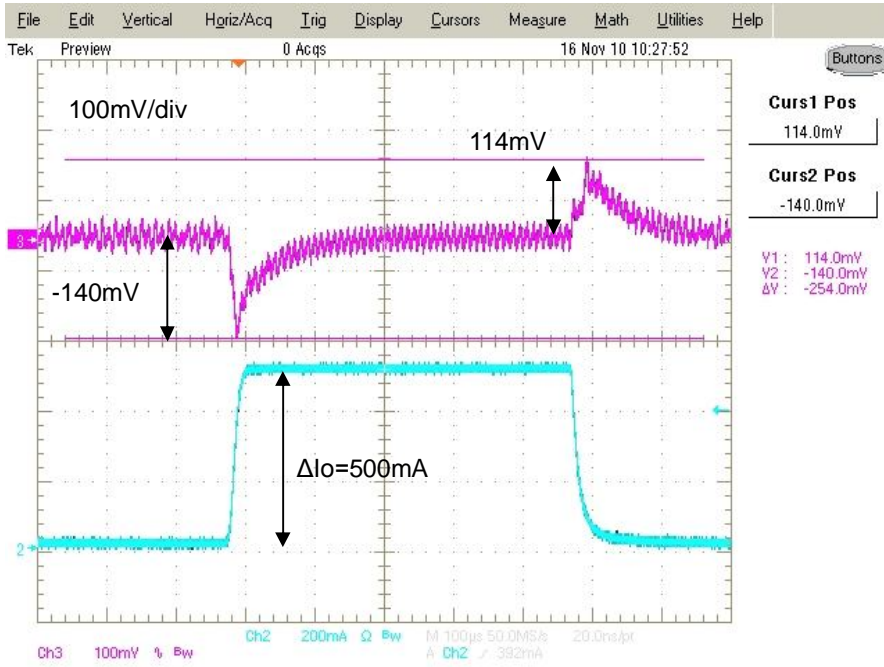
Vin=3.6V, Vout=1.35V



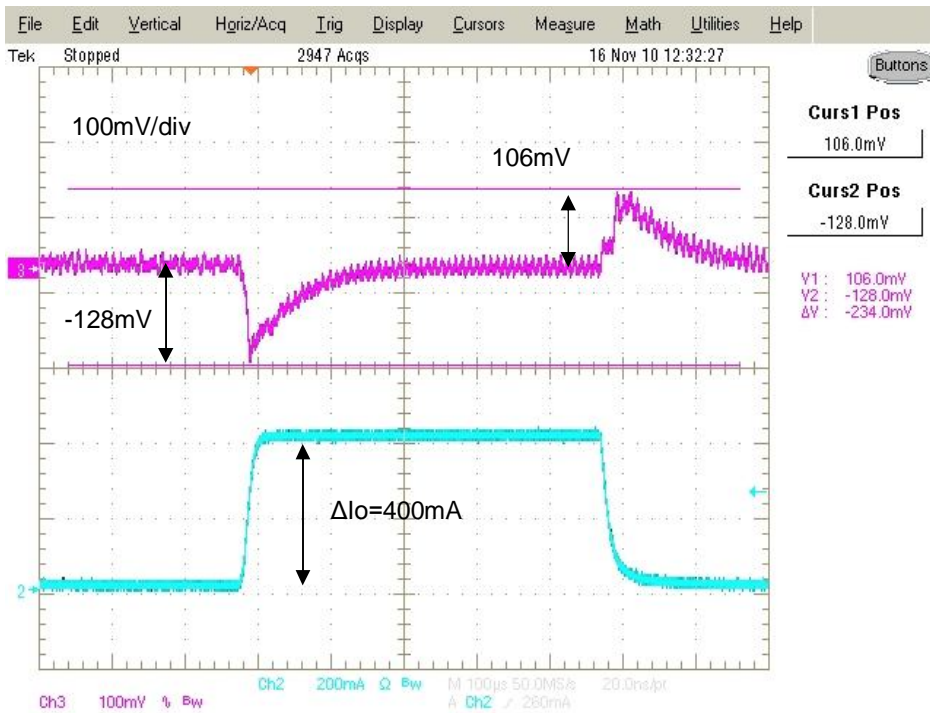
Vin=3.6V, Vout=1.8V



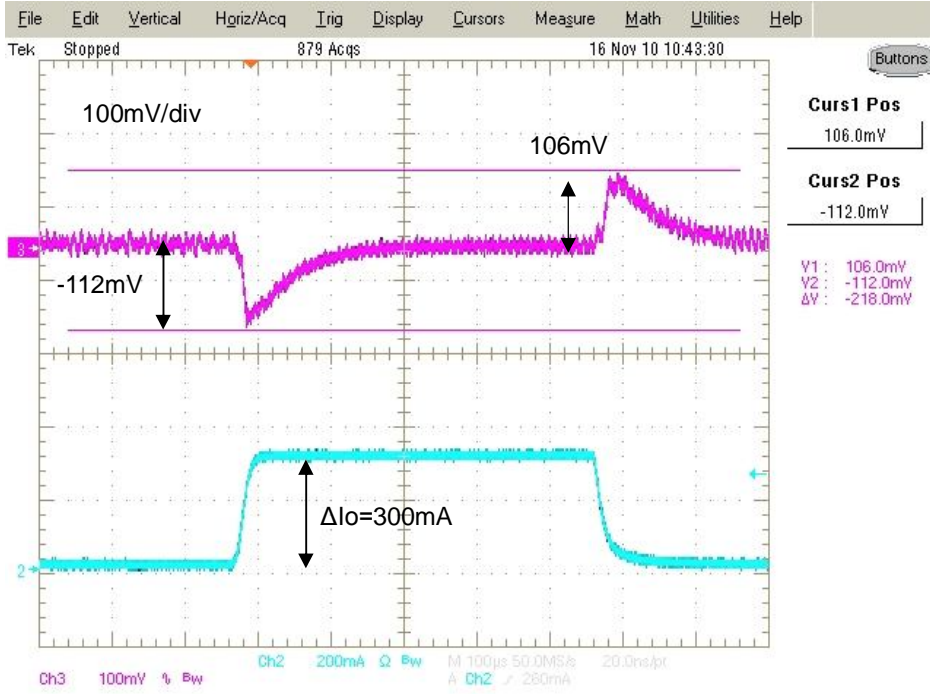
Vin=3.6V, Vout=2.5V



Vin=5.0V, Vout=3.0V



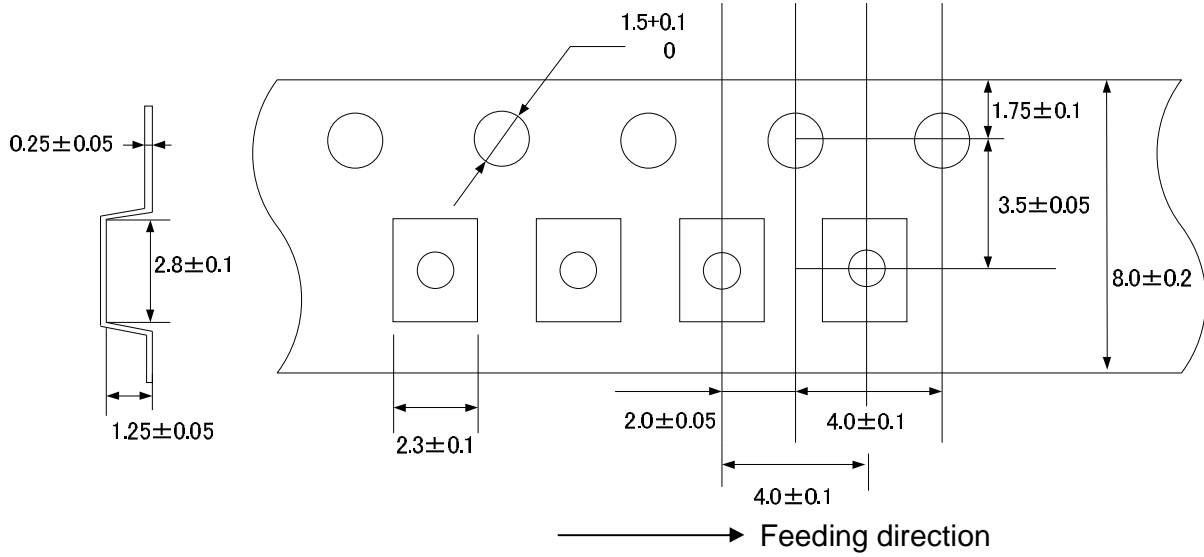
Vin=5.0V, Vout=3.3V



8. Tape and Reel Packing

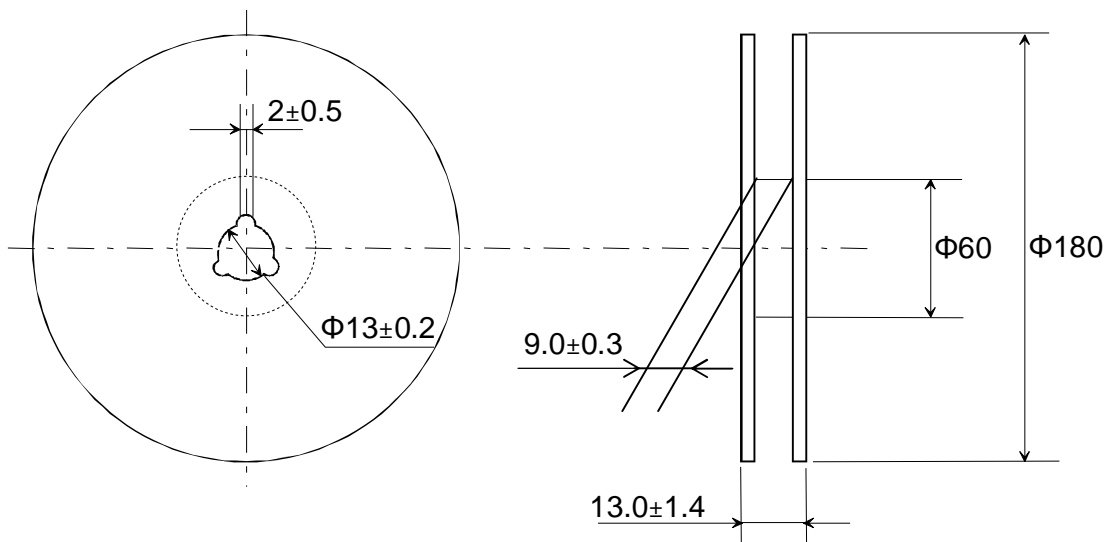
1) Dimensions of Tape (Plastic tape)

Unit: mm



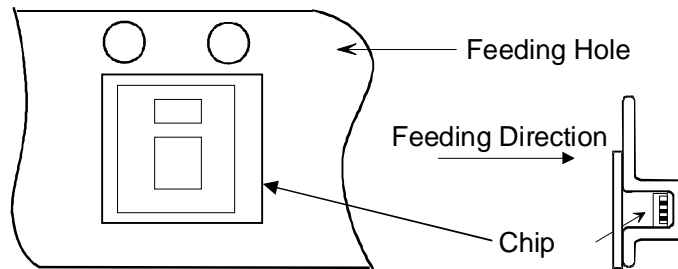
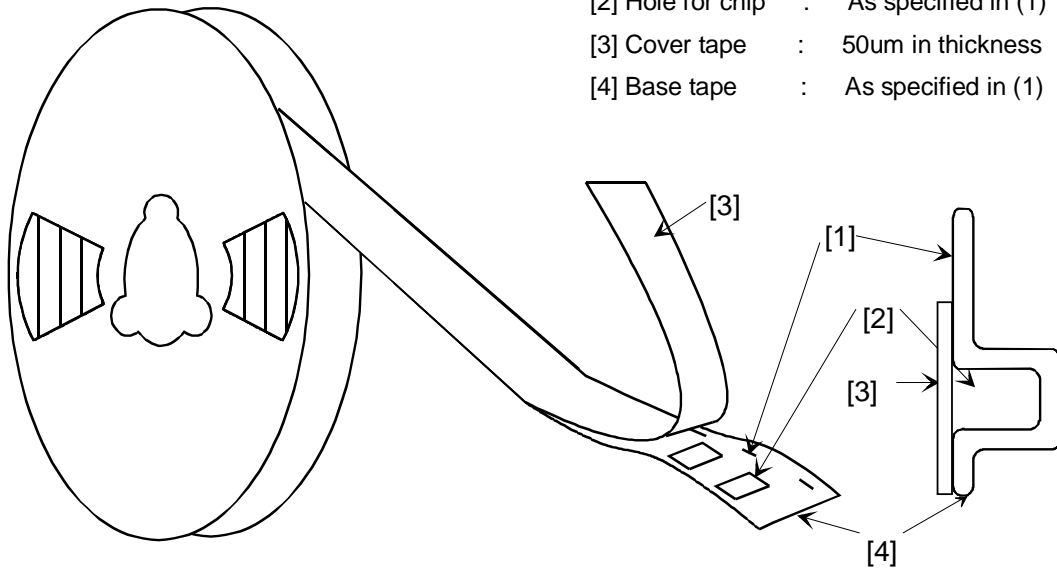
2) Dimensions of Reel

Unit: mm

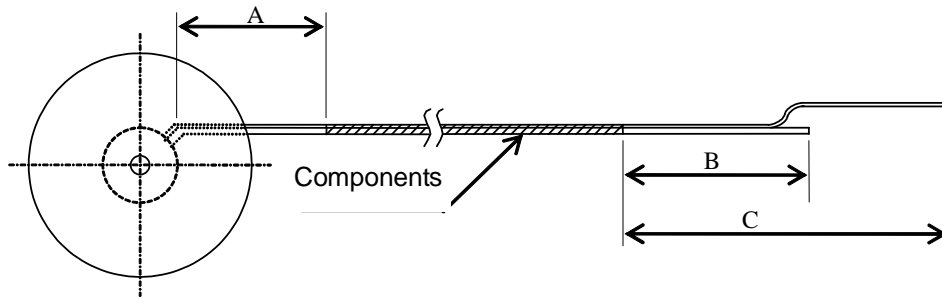


3) Taping Diagrams

- [1] Feeding Hole : As specified in (1)
- [2] Hole for chip : As specified in (1)
- [3] Cover tape : 50um in thickness
- [4] Base tape : As specified in (1)



4) Leader and Tail tape



| Symbol | Items | Ratings(mm) |
|--------|--------------------------|-------------|
| A | No components at trailer | min 160 |
| B | No components at leader | min 100 |
| C | Whole leader | min 400 |

5) The tape for chips are wound clockwise, the feeding holes to the right side as the tape is pulled toward the user.

6) Packaging unit: 3,000 pcs./ reel

7) Material: Base Tape ... Plastic

Reel ... Plastic

Antistatic coating for both base tape and reel

8) Peeling of force

