

LOW-POWER J-FET INPUT OPERATIONAL AMPLIFIERS

FEATURES

- Wide Power Supply Range ± 2 to $\pm 18V$
- High Input Resistance $10^{12}\Omega$ typ.
- Wide Temperature Range $-40^{\circ}C$ to $125^{\circ}C$
- Bipolar Technology
- Low Operating Current $200\mu A/amp$ typ.
- Slew Rate $3.5V/\mu s$ typ.
- Internal ESD Protection
Human Body Model (HBM) $\pm 2000V$ typ.
- Package
 - NJM062C/062CA SOP8
 - NJM064C/064CA SSOP8
SOP14
SSOP14

DESCRIPTION

The NJM062C/064C are J-FET input operational amplifiers designed as low-power versions of the NJM072C/074C. It features high input impedance, high slew rate and low input offset and bias current.

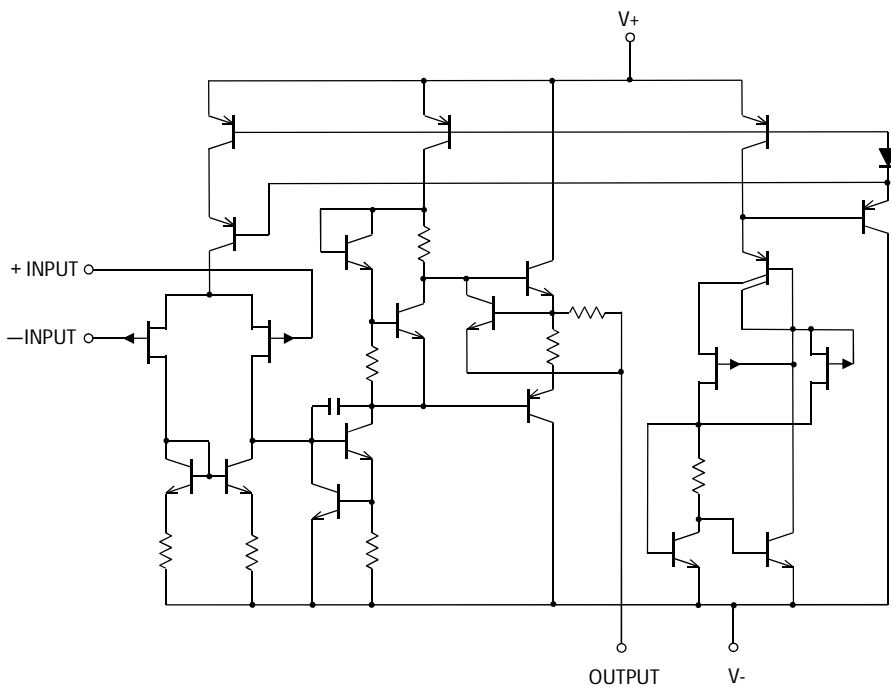
The NJM062C/064C are suitable for audio amplifier applications and measurement applications. In addition, the realization of a wide operating temperature reaches by a new design.

| Product Name | Dual | NJM062CG/CV | NJM062CAG/CAV |
|----------------------|------|-------------|---------------|
| | Quad | NJM064CG/CV | NJM064CAG/CAV |
| Input Offset Voltage | | 15mV max. | 6mV max. |

APPLICATIONS

- Battery Powered Measuring Instruments
- Active Filters
- Sensor Amplifiers
- Audio Amplifiers / Filters
- Photodiode Amplifiers

■ EQUIVALENT CIRCUIT



■ PIN CONFIGURATIONS

| PRODUCT NAME | NJM062CG/CAG | NJM062CV/CAV | NJM064CG/CAG | NJM064CV/CAV |
|---------------|---|--------------|--|--------------|
| Package | SOP8 | SSOP8 | SOP14 | SSOP14 |
| Pin Functions | <p>(Top View)</p> <p>A OUTPUT 1, A -INPUT 2, A +INPUT 3, V⁻ 4, V⁺ 8, B OUTPUT 7, B -INPUT 6, B +INPUT 5</p> | | <p>(Top View)</p> <p>A OUTPUT 1, A -INPUT 2, A +INPUT 3, V⁺ 4, B +INPUT 5, B -INPUT 6, B OUTPUT 7, D OUTPUT 14, D -INPUT 13, D +INPUT 12, V⁻ 11, C +INPUT 10, C -INPUT 9, C OUTPUT 8</p> | |

■ PRODUCT NAME INFORMATION



■ ORDER INFORMATION

| PRODUCT NAME | PACKAGE | RoHS | HALOGEN-FREE | TERMINAL FINISH | MARKING | WEIGHT (mg) | MOQ (pcs) |
|--------------|---------|------|--------------|-----------------|---------|-------------|-----------|
| NJM062CG | SOP8 | Yes | Yes | Pure Sn | 062 | 88 | 2500 |
| NJM062CAG | SOP8 | Yes | Yes | Pure Sn | 062A | 88 | 2500 |
| NJM062CV | SSOP8 | Yes | Yes | Sn2Bi | 062 | 42 | 2000 |
| NJM062CAV | SSOP8 | Yes | Yes | Sn2Bi | 062A | 42 | 2000 |
| NJM064CG | SOP14 | Yes | Yes | Pure Sn | 064 | 150 | 2500 |
| NJM064CAG | SOP14 | Yes | Yes | Pure Sn | 064A | 150 | 2500 |
| NJM064CV | SSOP14 | Yes | Yes | Sn2Bi | 064 | 65 | 2000 |
| NJM064CAV | SSOP14 | Yes | Yes | Sn2Bi | 064A | 65 | 2000 |

■ ABSOLUTE MAXIMUM RATINGS

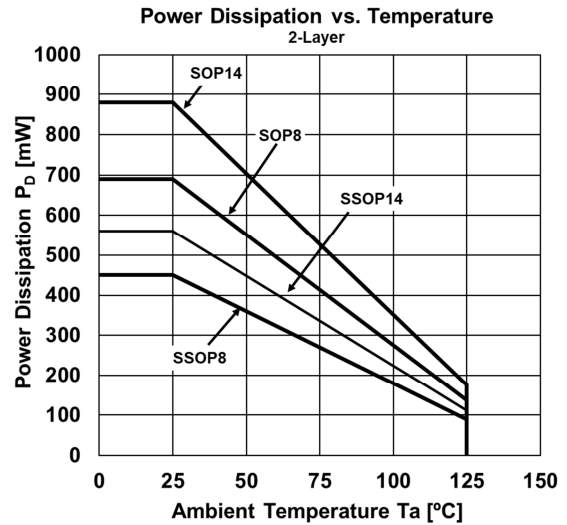
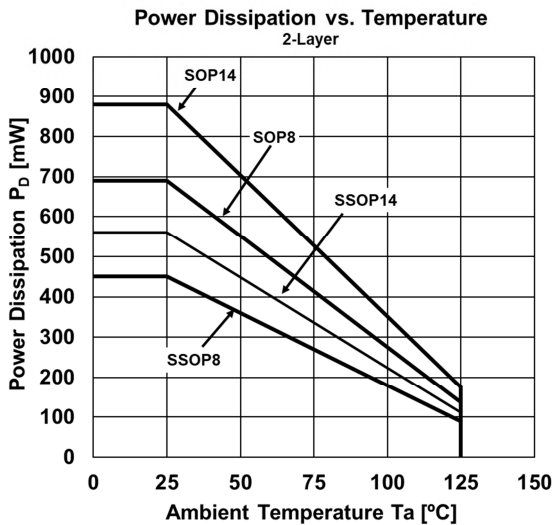
| PARAMETER | SYMBOL | RATING | UNIT |
|---|-------------|----------------------------------|------|
| Supply Voltage | V^+ / V^- | ± 18 | V |
| Differential Input Voltage ⁽¹⁾ | V_{ID} | ± 36 | V |
| Input Voltage ⁽²⁾ | V_{IN} | $V^- - 0.3$ to $V^+ + 36$ | V |
| Output Terminal Input Voltage | V_O | $V^- - 0.3$ to $V^+ + 0.3$ | V |
| Power Dissipation ⁽³⁾ | P_D | 2-Layer / 4-Layer ⁽⁴⁾ | |
| SOP8 | | 690 / 1000 | mW |
| SSOP8 | | 450 / 570 | |
| SOP14 | | 880 / 1200 | |
| SSOP14 | 560 / 700 | | |
| Storage Temperature Range | T_{stg} | -65 to 150 | °C |
| Maximum Junction Temperature | T_{jmax} | 150 | °C |

■ THERMAL CHARACTERISTICS

| PACKAGE | SYMBOL | VALUE | UNIT |
|---|---------------|----------------------------------|------|
| Junction-to-Ambient Thermal Resistance | Θ_{ja} | 2-Layer / 4-Layer ⁽⁴⁾ | °C/W |
| SOP8 | | 181 / 125 | |
| SSOP8 | | 278 / 221 | |
| SOP14 | | 142 / 104 | |
| SSOP14 | | 225 / 179 | |
| Junction-to-Top of Package Characterization Parameter | Ψ_{jt} | 2-Layer / 4-Layer ⁽⁴⁾ | °C/W |
| SOP8 | | 49 / 43 | |
| SSOP8 | | 41 / 40 | |
| SOP14 | | 39 / 34 | |
| SSOP14 | | 40 / 36 | |

- (1) Differential voltage is the voltage difference between +INPUT and -INPUT.
- (2) Input voltage is the voltage should be allowed to apply to the input terminal independent of the magnitude of V^+ .
The normal operation will establish when any input is within the "Common-Mode Input Voltage Range" of electrical characteristics.
- (3) Power dissipation is the power that can be consumed by the IC at $T_a=25^\circ\text{C}$, and is the typical measured value based on JEDEC condition.
- (4) 2-Layer: Mounted on glass epoxy board. (76.2x114.3x1.6 mm: based on EIA/JDEC standard, 2-layer FR-4)
4-Layer: Mounted on glass epoxy board. (76.2x114.3x1.6 mm: based on EIA/JDEC standard, 4-layer FR-4), internal Cu area: 74.2 x 74.2 mm

■ POWER DISSIPATION vs. AMBIENT TEMPERATURE



■ RECOMMENDED OPERATING CONDITIONS

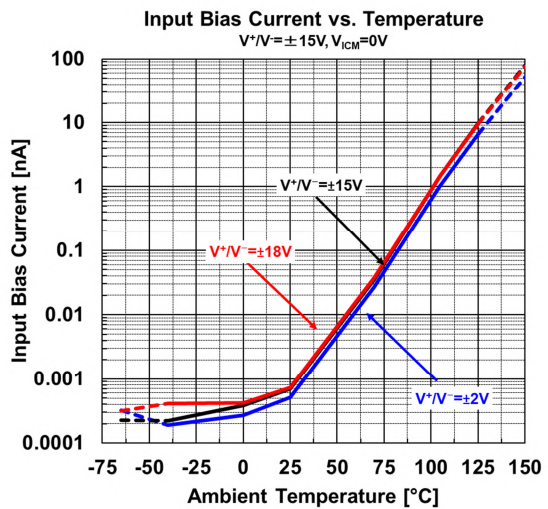
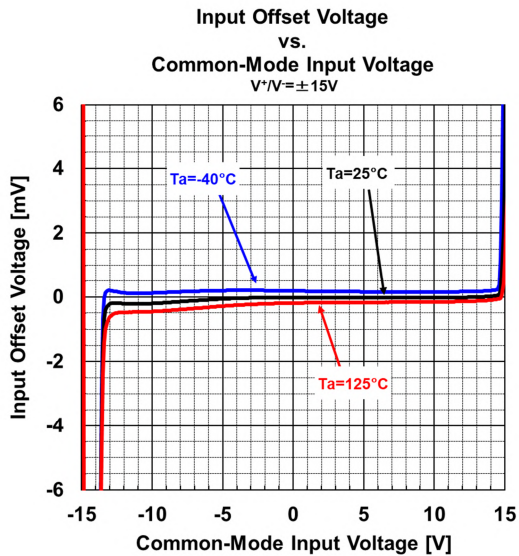
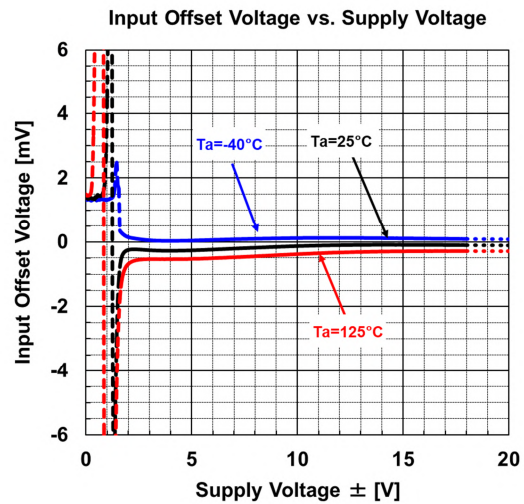
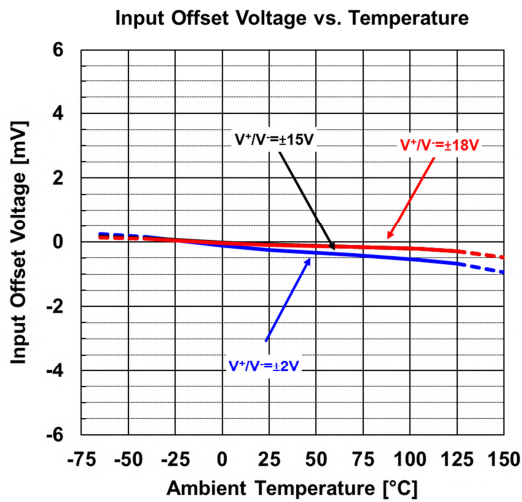
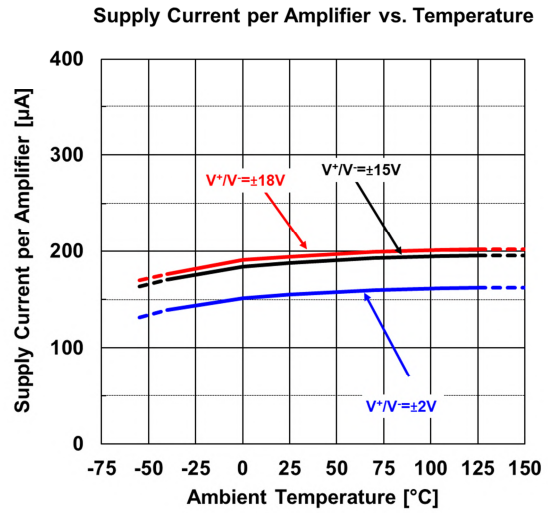
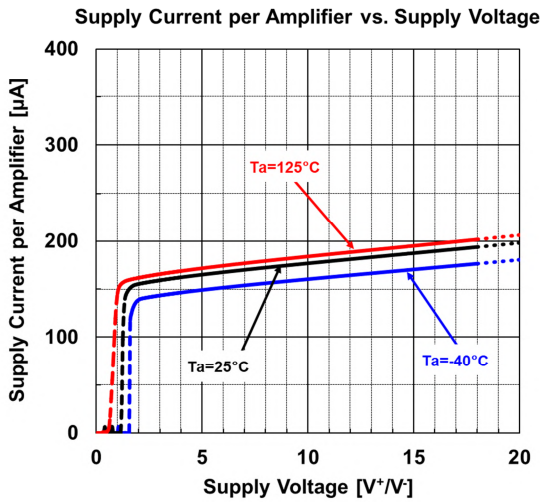
| PARAMETER | SYMBOL | CONDITIONS | VALUE | UNIT |
|-----------------------------|-------------|------------------------|---------------------|------|
| Supply Voltage | V^+ / V^- | $T_a=25^\circ\text{C}$ | ± 2 to ± 18 | V |
| Operating Temperature Range | T_{opr} | | -40 to 125 | °C |

■ **ELECTRICAL CHARACTERISTICS** ($V^+ / V^- = \pm 15V$, $T_a = 25^\circ C$, unless otherwise noted.)

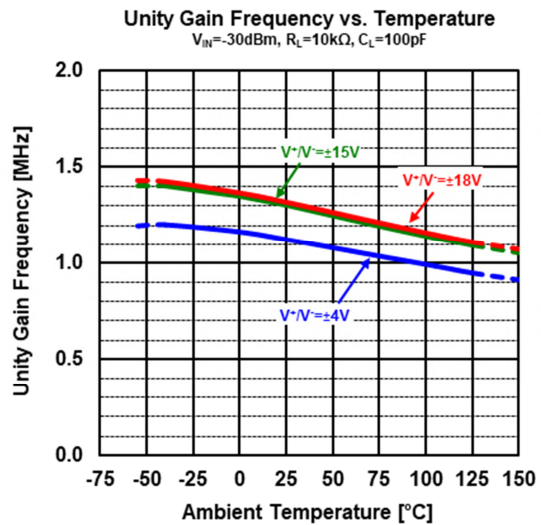
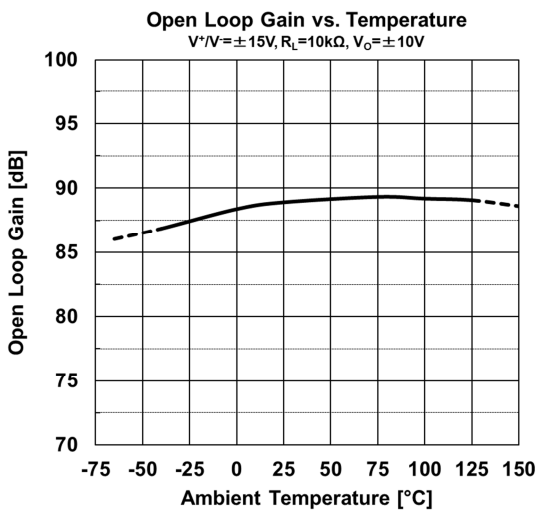
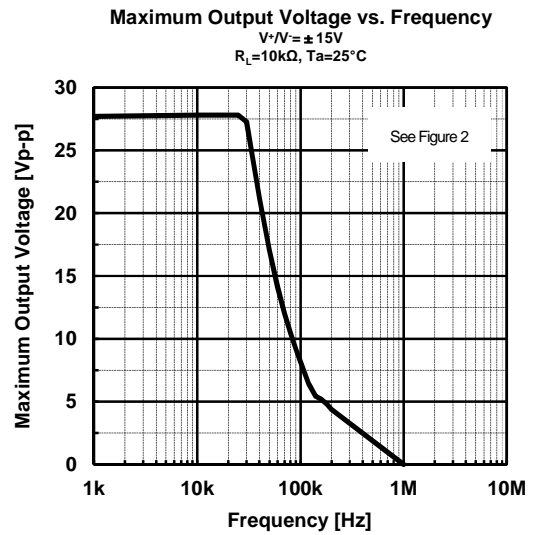
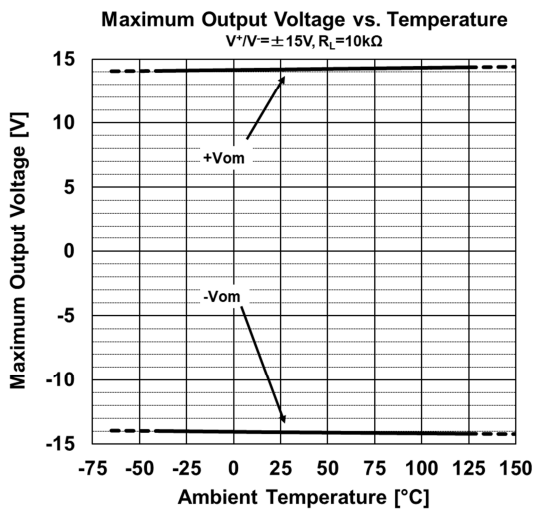
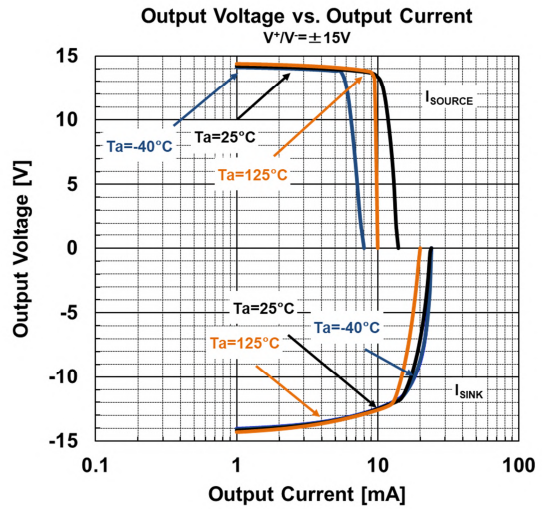
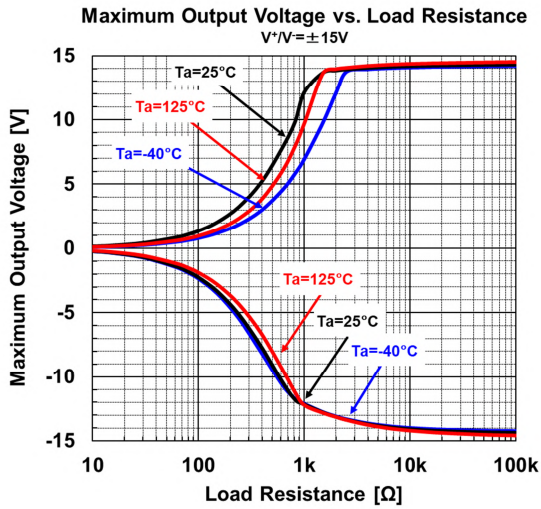
| PARAMETER | SYMBOL | TEST CONDITIONS | NJM062C / NJM064C | | | NJM062CA / NJM064CA | | | UNIT |
|---------------------------------|----------------------------|--|-------------------|-------------|-----|---------------------|-----|-----|--------------------|
| | | | MIN | TYP | MAX | MIN | TYP | MAX | |
| INPUT CHARACTERISTICS | | | | | | | | | |
| Input Offset Voltage | V_{IO} | $R_S = 50\Omega$, $T_a = 25^\circ C$ $R_S = 50\Omega$, $0^\circ C < T_a < 70^\circ C^{(5)}$ | - | 3 | 15 | - | 3 | 6 | mV |
| | | | - | - | 20 | - | - | 7.5 | |
| Input Offset Voltage Drift | $\Delta V_{IO} / \Delta T$ | $R_S = 50\Omega$, $0^\circ C < T_a < 70^\circ C^{(5)}$ | - | 10 | - | ← | ← | ← | $\mu V / ^\circ C$ |
| Input Offset Current | I_{IO} | $T_a = 25^\circ C$ $0^\circ C < T_a < 70^\circ C^{(5)}$ | - | 5 | 200 | - | 5 | 100 | pA |
| | | | - | - | 5 | - | - | 3 | |
| Input Bias Current | I_B | $T_a = 25^\circ C$ $0^\circ C < T_a < 70^\circ C^{(5)}$ | - | 30 | 400 | - | 30 | 200 | pA |
| | | | - | - | 10 | - | - | 7 | |
| Input Resistance | R_{IN} | | - | 10^{12} | - | ← | ← | ← | Ω |
| Open-Loop Voltage Gain | A_V | $R_L \geq 10k\Omega$, $V_O = \pm 10V$, $T_a = 25^\circ C$ $R_L \geq 10k\Omega$, $V_O = \pm 10V$, $0^\circ C < T_a < 70^\circ C^{(5)}$ | 3 | 20 | - | 8 | 20 | - | V/mV |
| | | | 3 | - | - | 8 | - | - | |
| Common-Mode Rejection Ratio | CMR | $V_{IC} = V_{ICM \min}$, $R_S \leq 10k\Omega$ | 70 | 90 | - | 72 | 90 | - | dB |
| Common-Mode Input Voltage Range | V_{ICM} | \geq CMR MIN | ± 13 | -13.5 to 15 | - | ← | ← | ← | V |
| OUTPUT CHARACTERISTICS | | | | | | | | | |
| Maximum Output Voltage | V_{OM} | $R_L = 10k\Omega$, $T_a = 25^\circ C$ $R_L = 10k\Omega$, $0^\circ C < T_a < 70^\circ C^{(5)}$ | ± 10 | ± 13.5 | - | ← | ← | ← | V |
| | | | ± 10 | - | - | ← | ← | ← | |
| POWER SUPPLY | | | | | | | | | |
| Supply Current per Amplifier | I_{SUPPLY} | No Signal | - | 200 | 250 | ← | ← | ← | μA |
| Supply Voltage Rejection Ratio | SVR | $V^+ / V^- = \pm 9V$ to $\pm 15V$, $R_S \leq 50k\Omega$ | 70 | 100 | - | 80 | 100 | - | dB |
| AC CHARACTERISTICS | | | | | | | | | |
| Slew Rate | SR | $V_{IN} = 10V_{pp}$, $R_L = 10k\Omega$, $C_L = 100pF$, See Figure 1 | 1.5 | 3.5 | - | ← | ← | ← | $V / \mu s$ |
| Unity Gain Frequency | f_T | $R_L = 10k\Omega$ | - | 1 | - | ← | ← | ← | MHz |
| Rise Time | t_r | $V_{IN} = 20mV_{pp}$, $R_L = 10k\Omega$, $C_L = 100pF$, See Figure 1 | - | 0.2 | - | ← | ← | ← | μs |
| Overshoot | K_{OV} | $V_{IN} = 20mV_{pp}$, $R_L = 10k\Omega$, $C_L = 100pF$, See Figure 1 | - | 10 | - | ← | ← | ← | % |
| Equivalent Input Noise Voltage | e_n | $R_S = 20\Omega$, $f = 1kHz$ | - | 35 | - | ← | ← | ← | nV / \sqrt{Hz} |
| Channel Separation | CS | $G_V = 40dB$ | - | 120 | - | ← | ← | ← | dB |

(5) This parameter is not 100% test.

■ TYPICAL CHARACTERISTICS



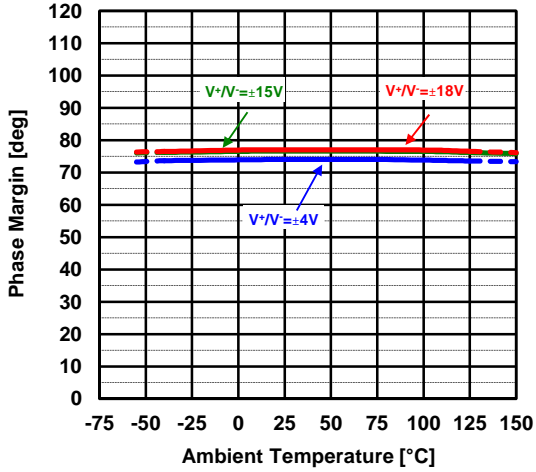
■ TYPICAL CHARACTERISTICS



■ TYPICAL CHARACTERISTICS

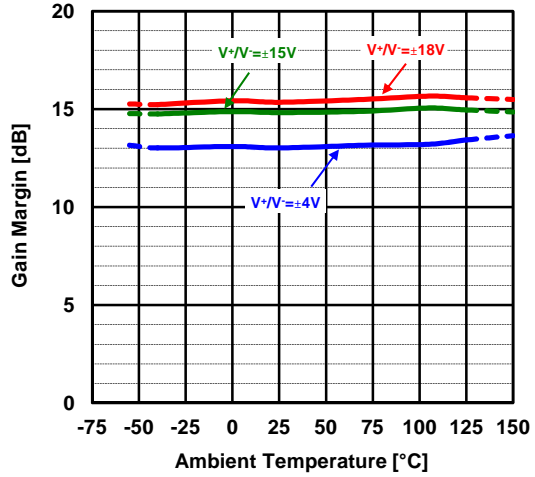
Phase Margin vs. Temperature

$V_{IN} = -30\text{dBm}$, $R_L = 10\text{k}\Omega$, $C_L = 100\text{pF}$



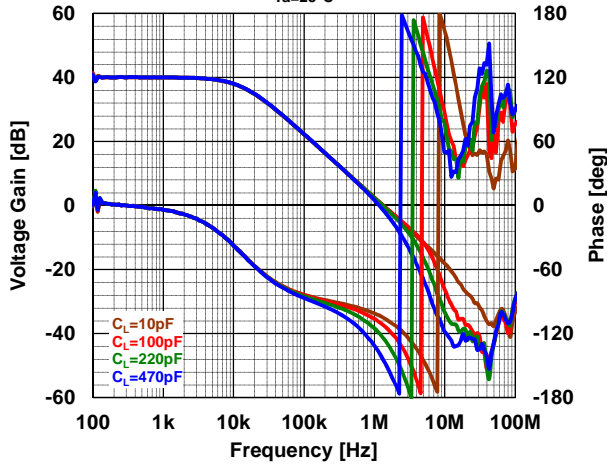
Gain Margin vs. Temperature

$V_{IN} = -30\text{dBm}$, $R_L = 10\text{k}\Omega$, $C_L = 100\text{pF}$



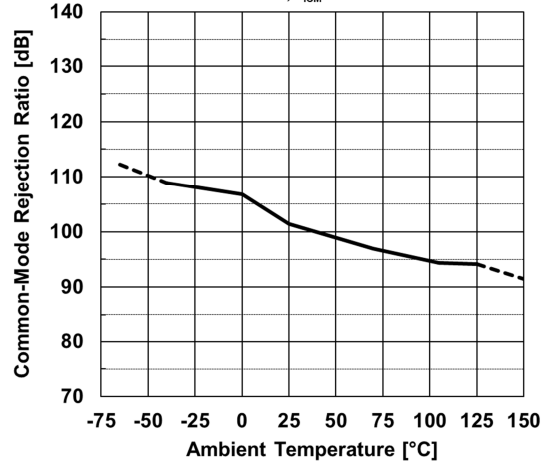
Closed Loop Gain / Phase vs. Frequency

$V^+/V^- = \pm 15\text{V}$, $V_{IN} = -30\text{dBm}$, $R_I = 100\Omega$, $R_F = 10\text{k}\Omega$, $G_V = 40\text{dB}$, $T_a = 25^\circ\text{C}$



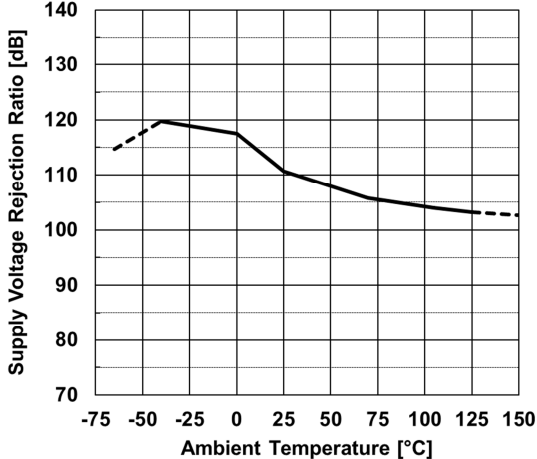
CMR vs. Temperature

$V^+/V^- = \pm 15\text{V}$, $V_{ICM} = -13\text{V}$ to 13V



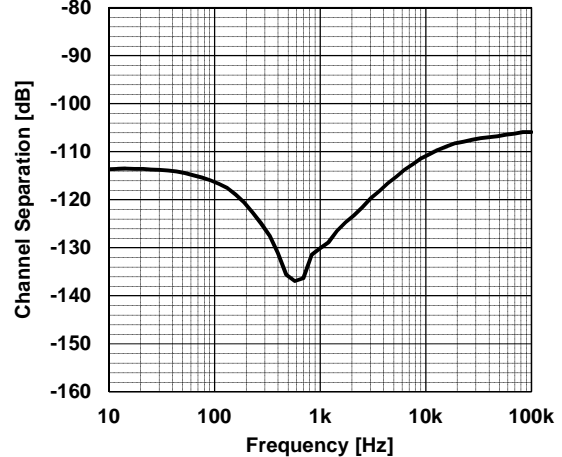
SVR vs. Temperature

$V^+/V^- = \pm 9\text{V}$ to $\pm 18\text{V}$

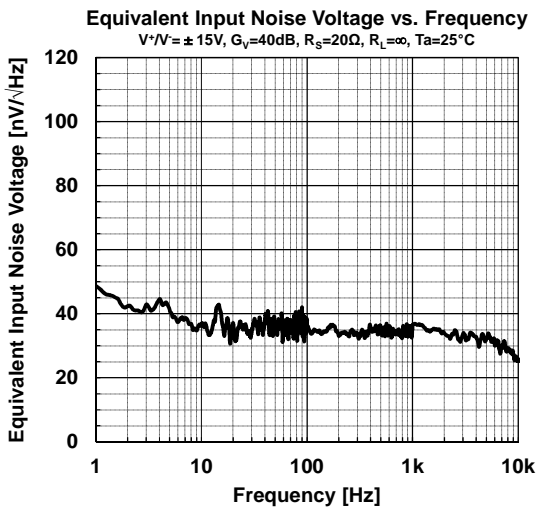
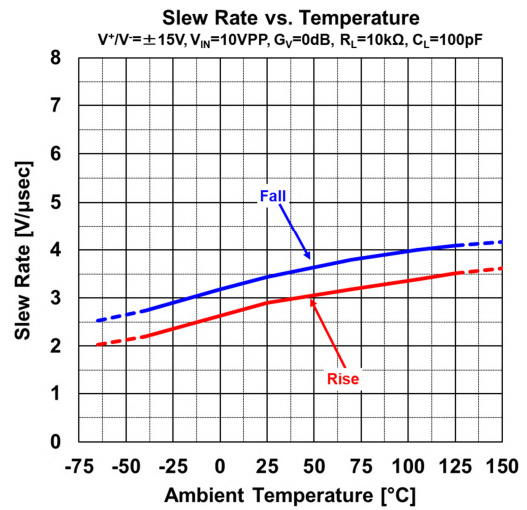
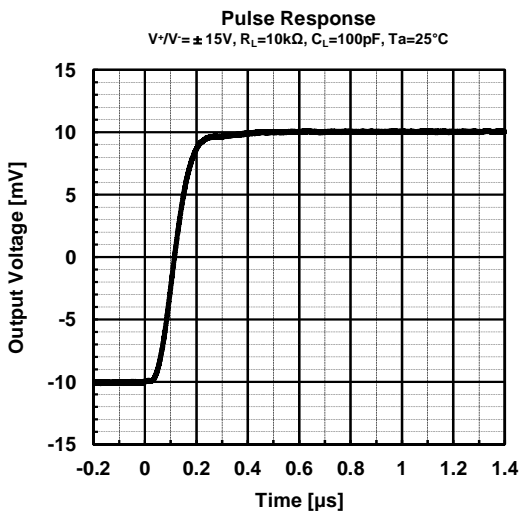
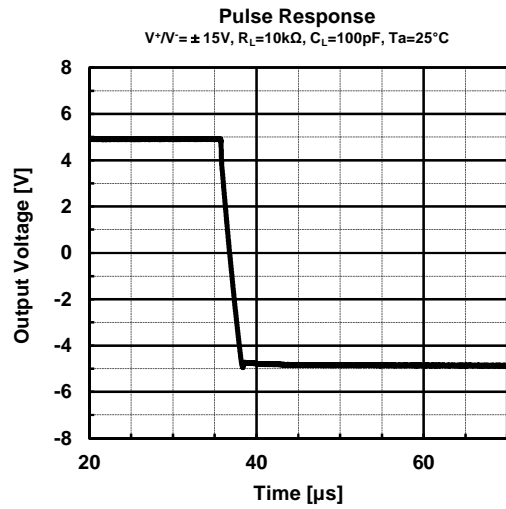
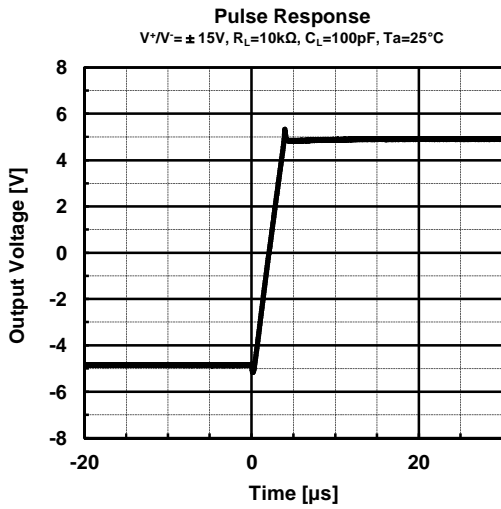


Channel Separation vs. Frequency

$V^+/V^- = \pm 15\text{V}$, $G_V = 40\text{dB}$, $V_O = 5\text{Vrms}$, $R_L = 2\text{k}\Omega$, $T_a = 25^\circ\text{C}$



■ TYPICAL CHARACTERISTICS



■ TEST CIRCUITS

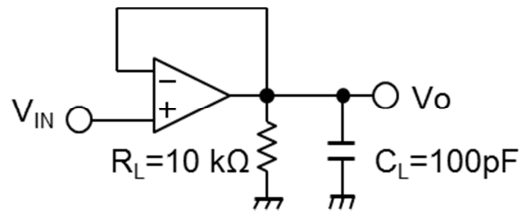


Figure1. Voltage Follower

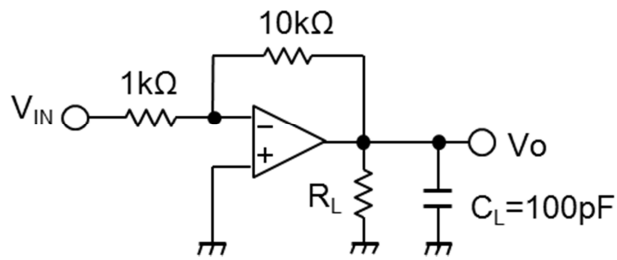


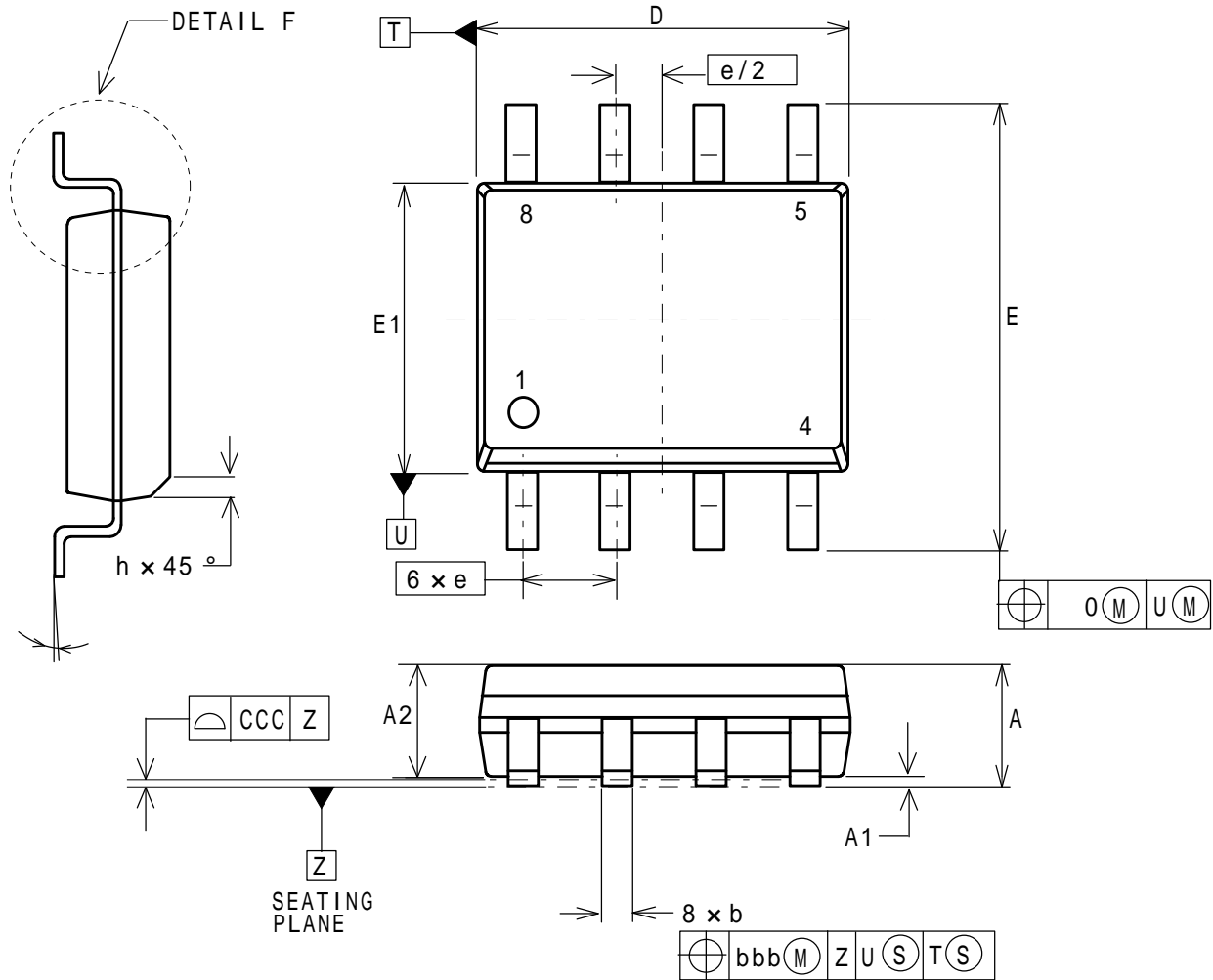
Figure2. 20dB Inverting Amplifier (*)

(*) 20dB Inverting Amplifier uses a Maximum Output Voltage vs. Frequency on page 6.

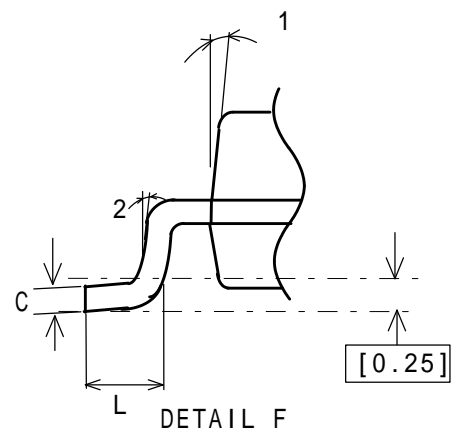
SOP8

Unit: mm

■ PACKAGE DIMENSIONS



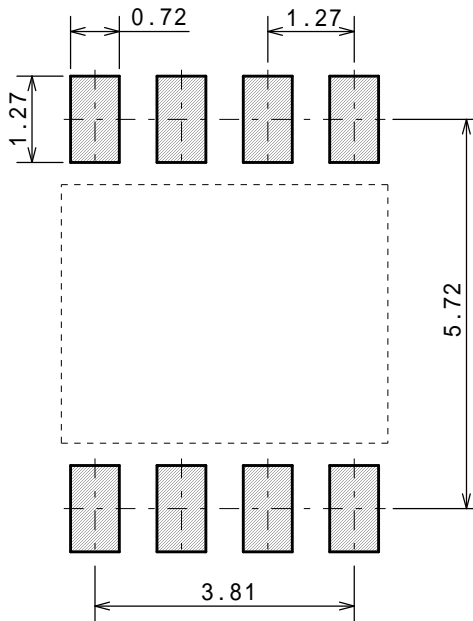
| DESCRIPTION | SYMBOL | INCH | | | MILLIMETER | | |
|------------------|--------|----------|-----|------|------------|-----|------|
| | | MIN | NCM | MAX | MIN | NCM | MAX |
| TOTAL THICKNESS | A | .053 | | .069 | 1.35 | | 1.75 |
| STAND OFF | A1 | .004 | | .010 | 0.10 | | 0.25 |
| MOLD THICKNESS | A2 | .049 | | - | 1.25 | | - |
| LEAD WIDTH | b | .014 | | .019 | 0.35 | | 0.49 |
| L/F THICKNESS | C | .007 | | .010 | 0.19 | | 0.25 |
| BODY SIZE | D | .189 | | .197 | 4.80 | | 5.00 |
| | E1 | .150 | | .157 | 3.80 | | 4.00 |
| | E | .228 | | .244 | 5.80 | | 6.20 |
| LEAD PITCH | e | .050 BSC | | | 1.27 BSC | | |
| | L | .015 | | .049 | 0.40 | | 1.25 |
| | h | .010 | | .020 | 0.25 | | 0.50 |
| | | 0° | | 7° | 0° | | 7° |
| | 1 | 5° | | 15° | 5° | | 15° |
| | 2 | 2° | 7° | 12° | 2° | 7° | 12° |
| LEAD EDGE OFFSET | 0 | | | .010 | | | 0.25 |
| LEAD OFFSET | bbb | | | .010 | | | 0.25 |
| COPLANARITY | CCC | | | .004 | | | 0.10 |



SOP8

Unit: mm

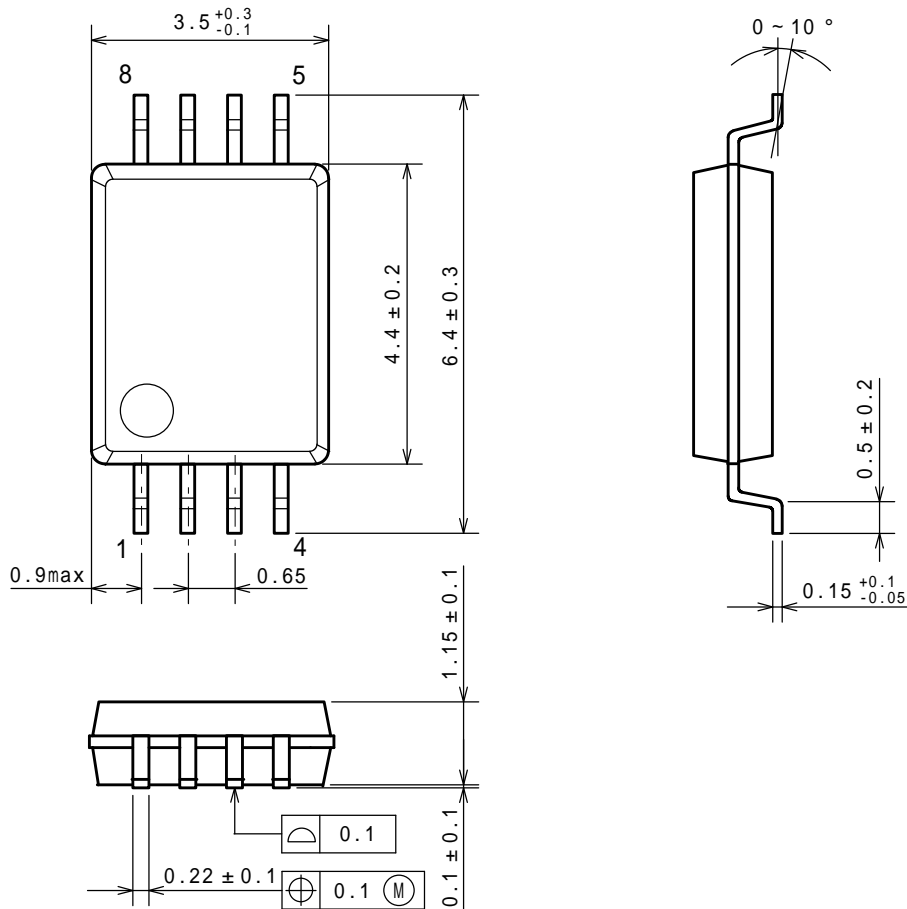
EXAMPLE OF SOLDER PADS DIMENSIONS



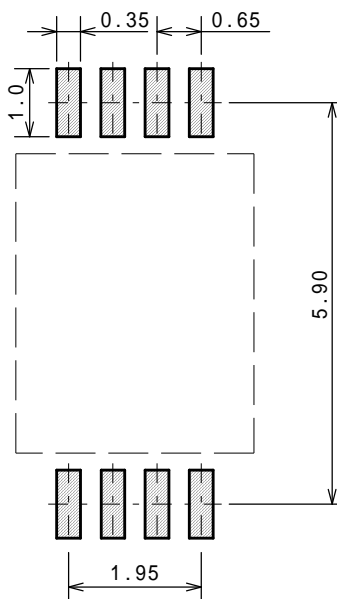
SSOP8

Unit: mm

■ PACKAGE DIMENSIONS



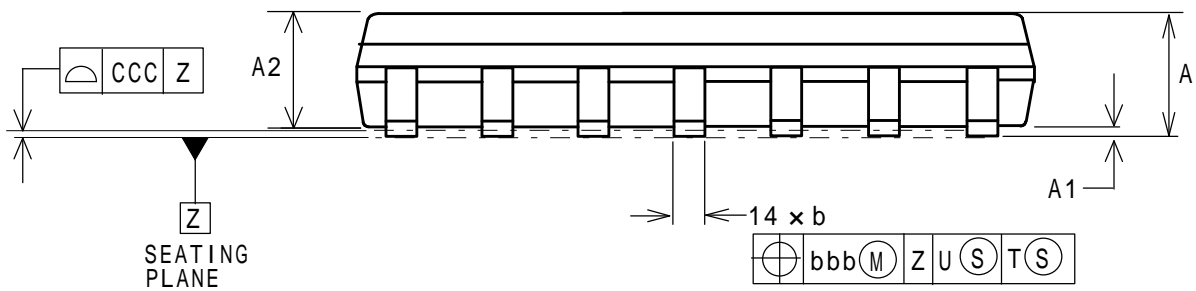
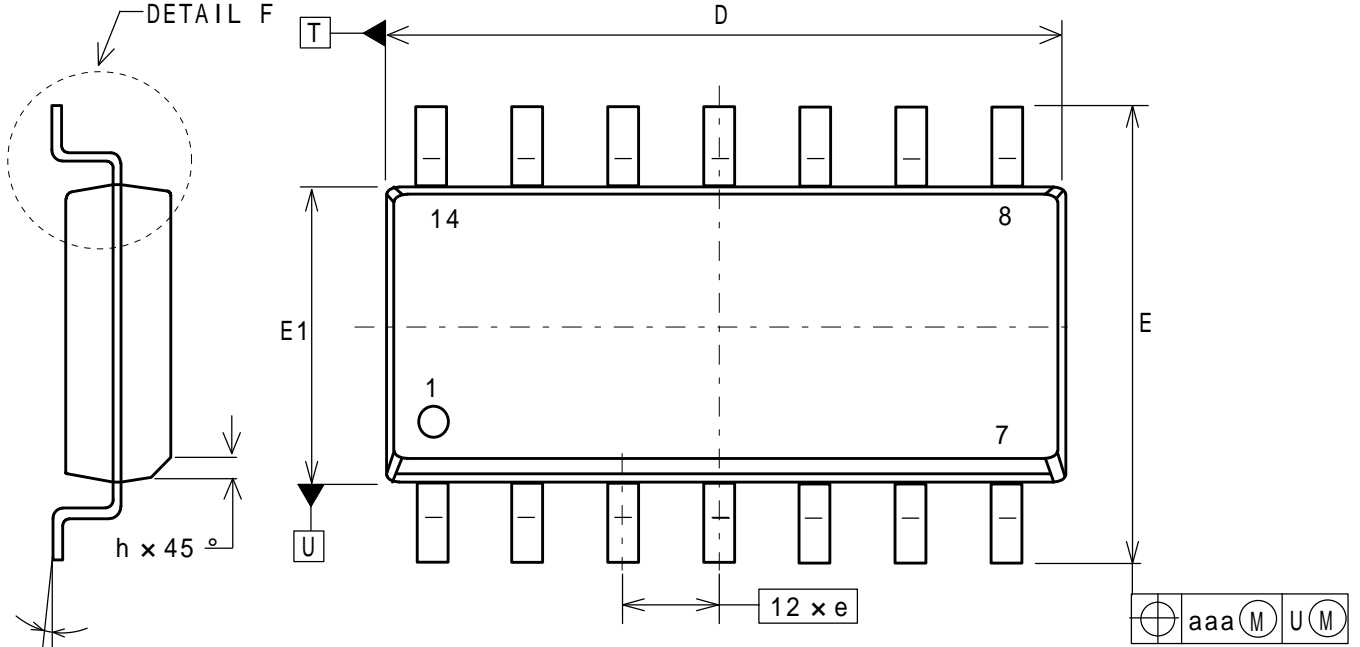
■ EXAMPLE OF SOLDER PADS DIMENSIONS



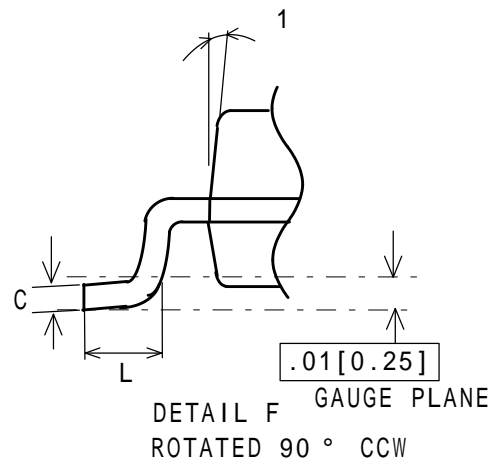
SOP14

Unit: mm

PACKAGE DIMENSIONS



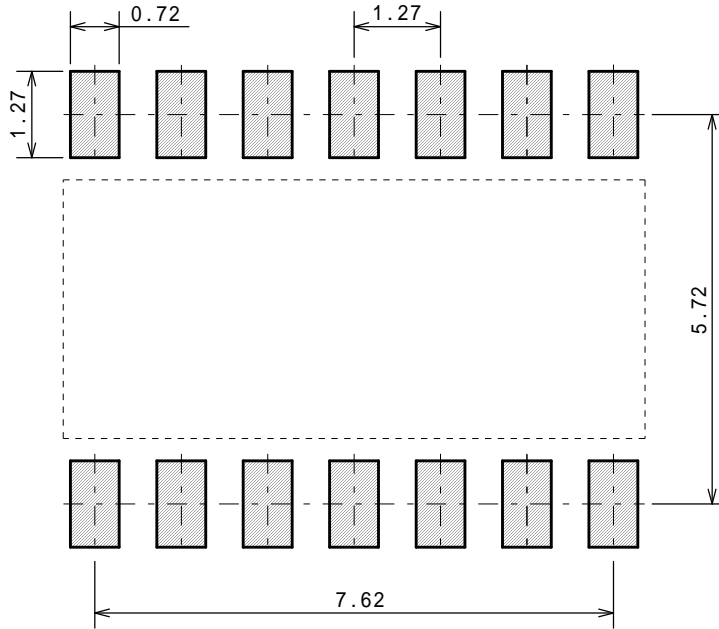
| DESCRIPTION | SYMBOL | INCH | | | MILLIMETER | | |
|------------------|--------|----------|-----|------|------------|-----|------|
| | | MIN | NCM | MAX | MIN | NCM | MAX |
| TOTAL THICKNESS | A | .053 | | .069 | 1.35 | | 1.75 |
| STAND OFF | A1 | .004 | | .010 | 0.10 | | 0.25 |
| MOLD THICKNESS | A2 | .049 | | - | 1.25 | | - |
| LEAD WIDTH | b | .013 | | .020 | 0.33 | | 0.51 |
| L/F THICKNESS | C | .007 | | .010 | 0.19 | | 0.25 |
| BODY SIZE | D | .337 | | .344 | 8.55 | | 8.75 |
| | E1 | .150 | | .157 | 3.80 | | 4.00 |
| | E | .228 | | .244 | 5.80 | | 6.20 |
| LEAD PITCH | e | .050 BSC | | | 1.27 BSC | | |
| | L | .016 | | .050 | 0.40 | | 1.27 |
| | h | .010 | | .020 | 0.25 | | 0.50 |
| | | 0° | | 8° | 0° | | 8° |
| | 1 | 5° | | 15° | 5° | | 15° |
| LEAD EDGE OFFSET | aaa | | | .010 | | | 0.25 |
| LEAD OFFSET | bbb | | | .010 | | | 0.25 |
| COPLANARITY | CCC | | | .004 | | | 0.10 |



SOP14

Unit: mm

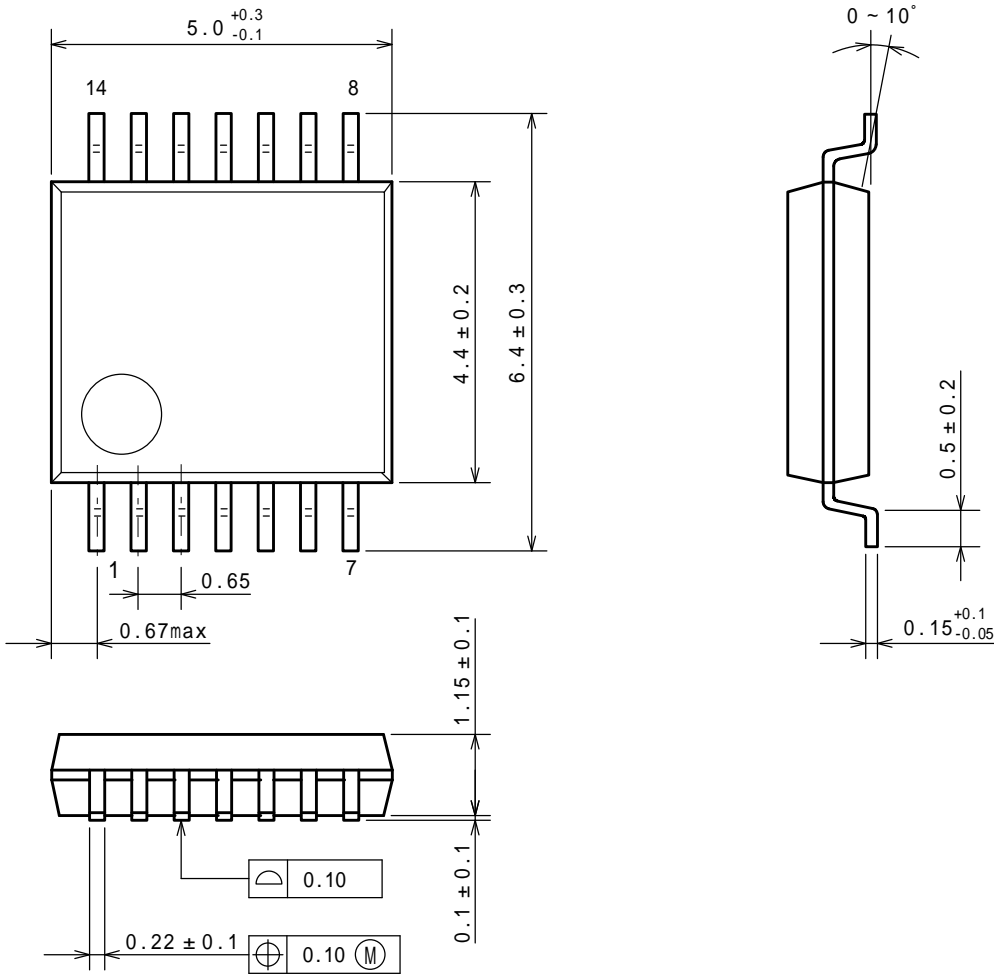
EXAMPLE OF SOLDER PADS DIMENSIONS



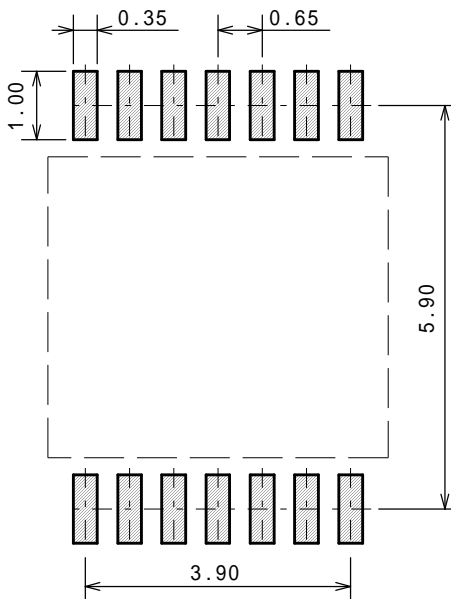
SSOP14

Unit: mm

■ PACKAGE DIMENSIONS



■ EXAMPLE OF SOLDER PADS DIMENSIONS

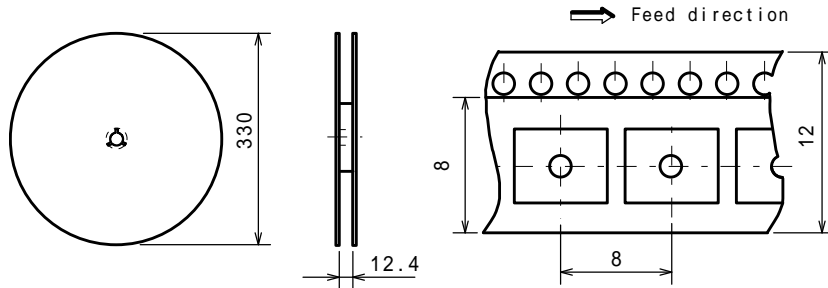


SOP8

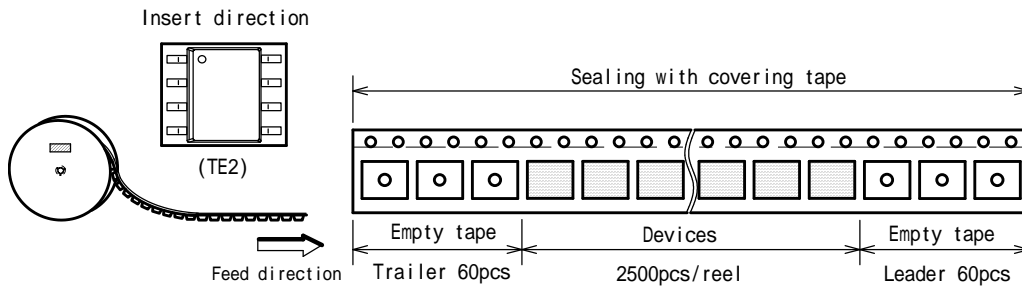
PACKING SPEC

Unit: mm

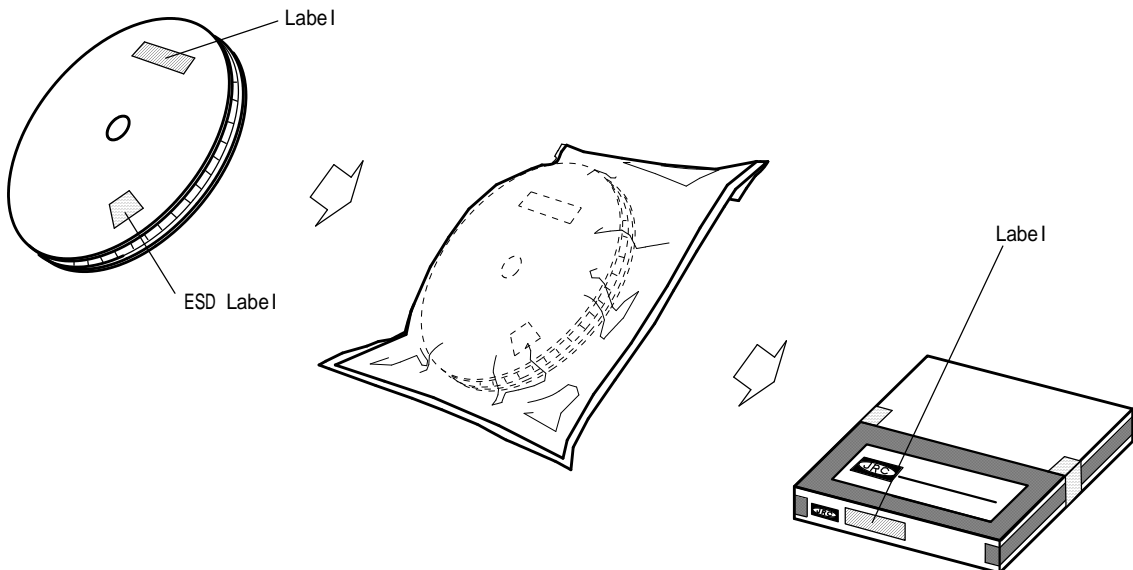
REEL DIMENSIONS / TAPING DIMENSIONS



TAPING STATE



PACKING STATE

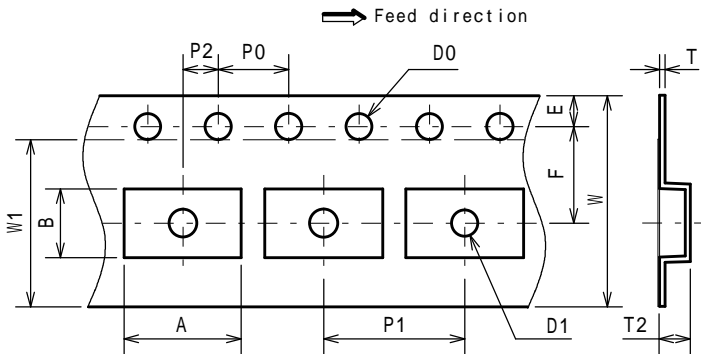


SSOP8

PACKING SPEC

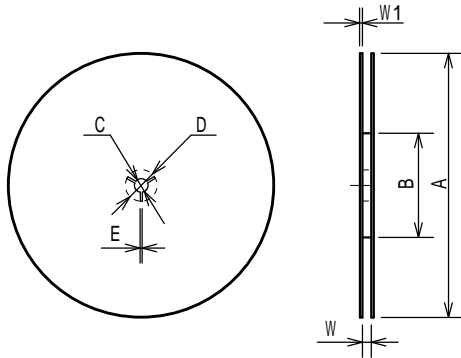
Unit: mm

TAPING DIMENSIONS



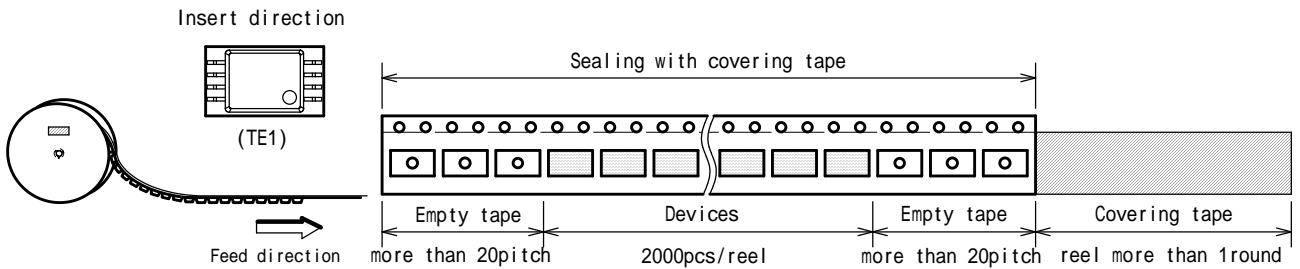
| SYMBOL | DIMENSION | REMARKS |
|--------|-------------|------------------|
| A | 6.7 | BOTTOM DIMENSION |
| B | 3.9 | BOTTOM DIMENSION |
| D0 | 1.55 ± 0.05 | |
| D1 | 1.55 ± 0.1 | |
| E | 1.75 ± 0.1 | |
| F | 5.5 ± 0.05 | |
| P0 | 4.0 ± 0.1 | |
| P1 | 8.0 ± 0.1 | |
| P2 | 2.0 ± 0.05 | |
| T | 0.3 ± 0.05 | |
| T2 | 2.2 | |
| W | 12.0 ± 0.3 | |
| W1 | 9.5 | THICKNESS 0.1max |

REEL DIMENSIONS

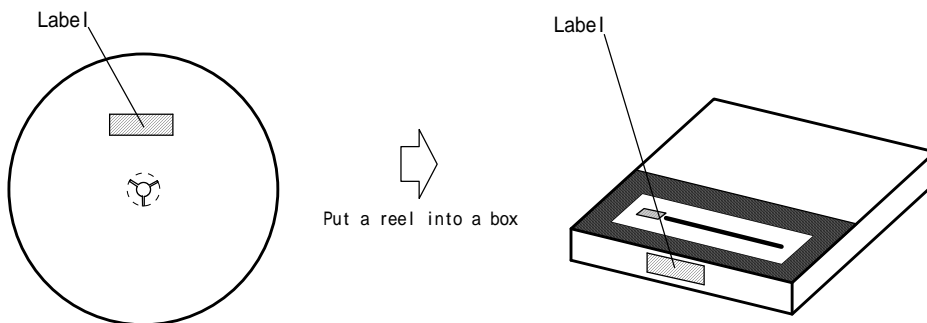


| SYMBOL | DIMENSION |
|--------|------------|
| A | 254 ± 2 |
| B | 100 ± 1 |
| C | 13 ± 0.2 |
| D | 21 ± 0.8 |
| E | 2 ± 0.5 |
| W | 13.5 ± 0.5 |
| W1 | 2 ± 0.2 |

TAPING STATE



PACKING STATE

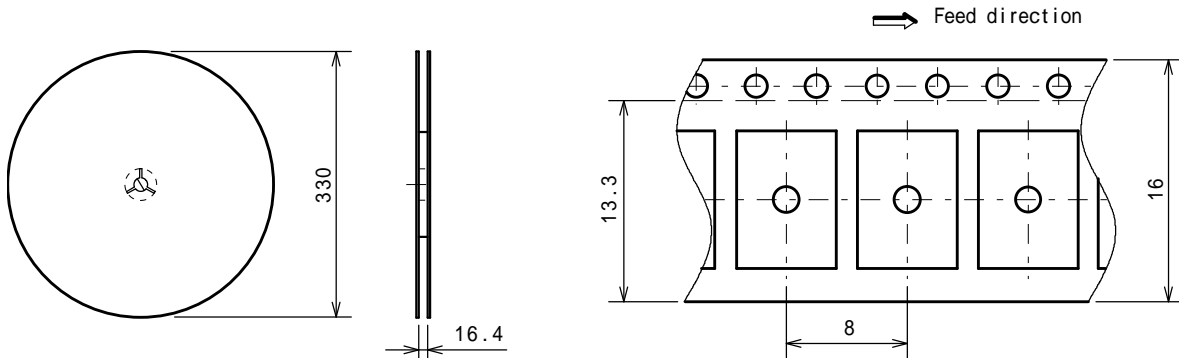


SOP14

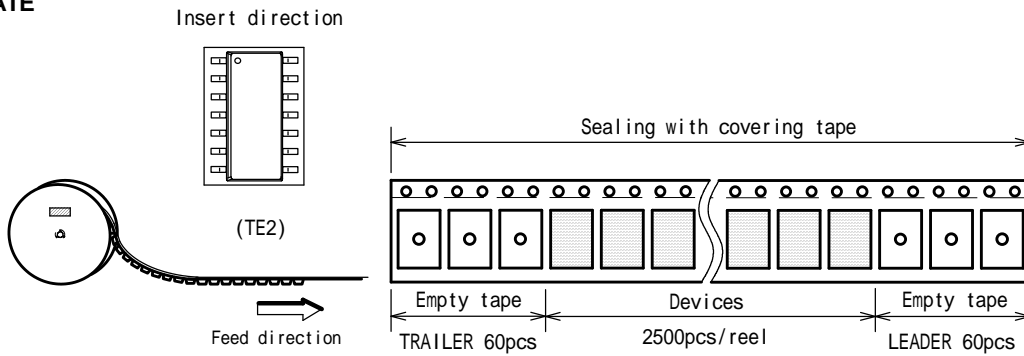
PACKING SPEC

Unit: mm

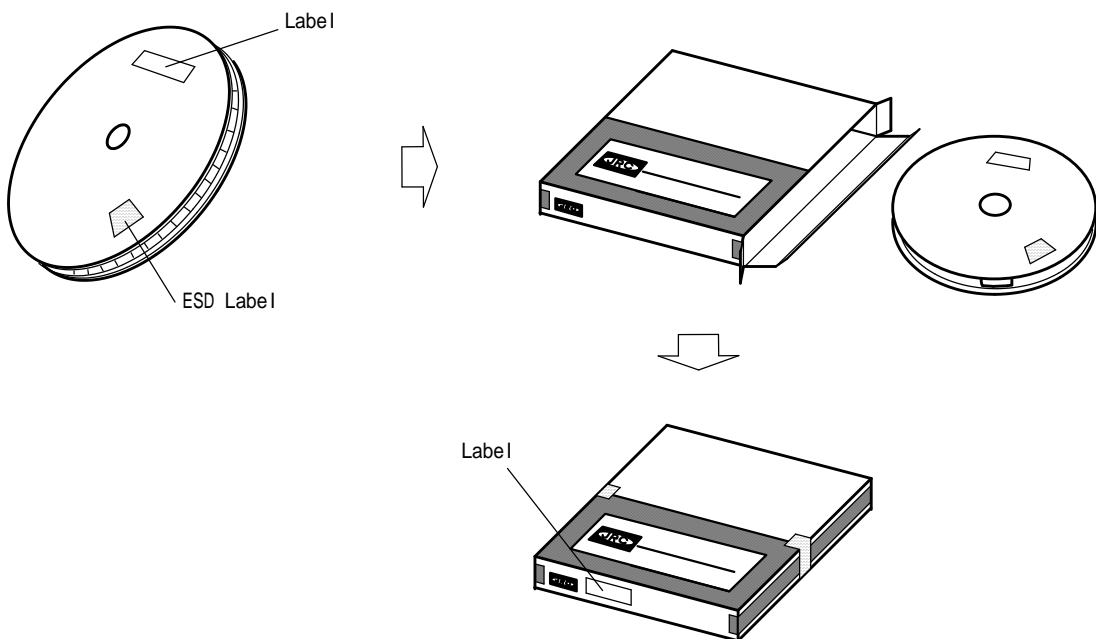
REEL DIMENSIONS / TAPING DIMENSIONS



TAPING STATE



PACKING STATE

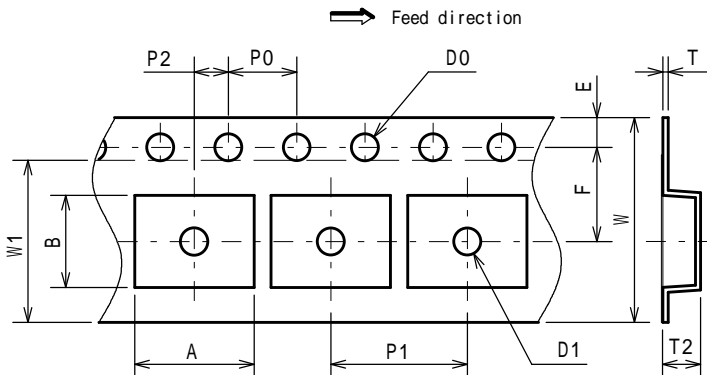


SSOP14

PACKING SPEC

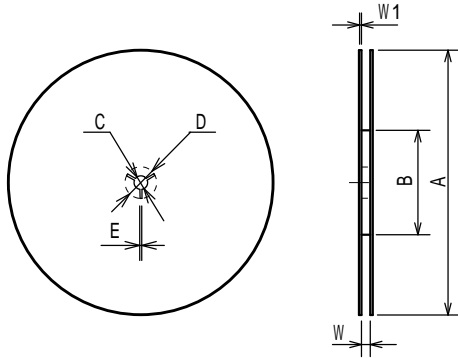
Unit: mm

TAPING DIMENSIONS



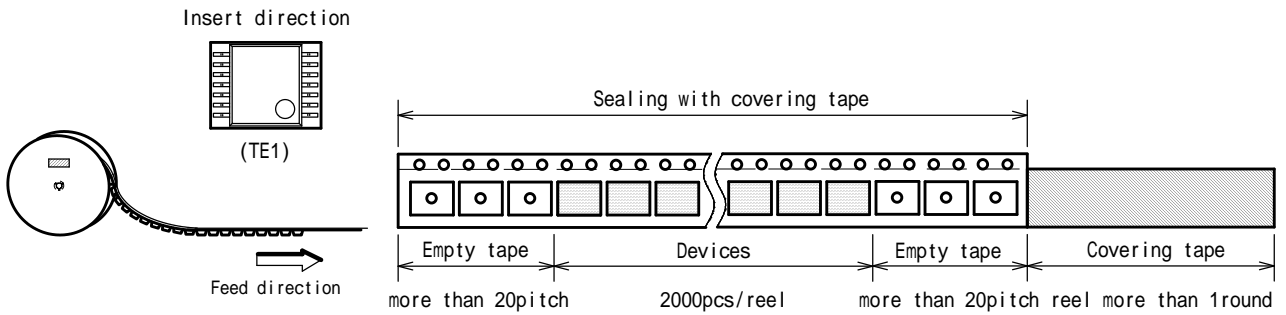
| SYMBOL | DIMENSION | REMARKS |
|--------|-------------|------------------|
| A | 6.95 | BOTTOM DIMENSION |
| B | 5.4 | BOTTOM DIMENSION |
| D0 | 1.55 ± 0.05 | |
| D1 | 1.55 ± 0.1 | |
| E | 1.75 ± 0.1 | |
| F | 5.5 ± 0.05 | |
| P0 | 4.0 ± 0.1 | |
| P1 | 8.0 ± 0.1 | |
| P2 | 2.0 ± 0.05 | |
| T | 0.3 ± 0.05 | |
| T2 | 2.2 | |
| W | 12.0 ± 0.3 | |
| W1 | 9.5 | THICKNESS 0.1max |

REEL DIMENSIONS

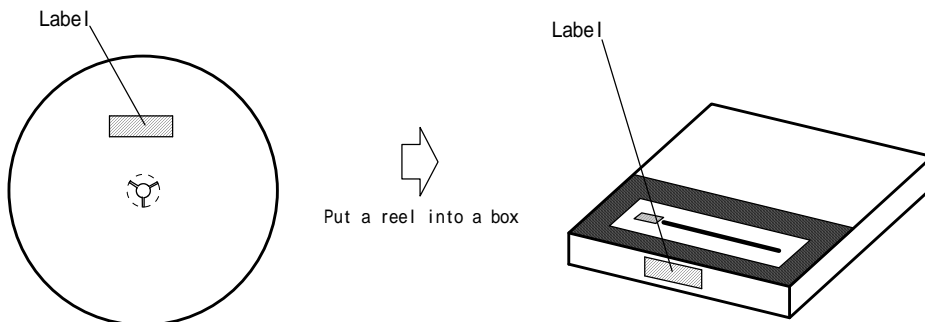


| SYMBOL | DIMENSION |
|--------|------------|
| A | 254 ± 2 |
| B | 100 ± 1 |
| C | 13 ± 0.2 |
| D | 21 ± 0.8 |
| E | 2 ± 0.5 |
| W | 13.5 ± 0.5 |
| W1 | 2 ± 0.2 |

TAPING STATE

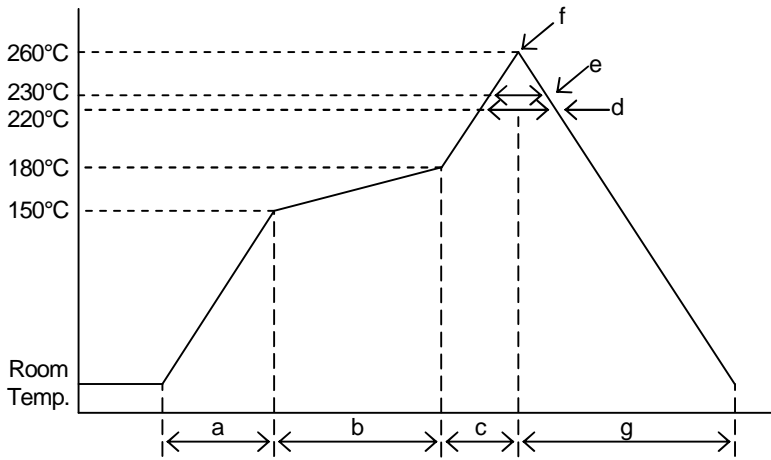


PACKING STATE



■ RECOMMENDED MOUNTING METHOD

INFRARED REFLOW SOLDERING PROFILE



| | | |
|---|--------------------------|------------------|
| a | Temperature ramping rate | 1 to 4°C/s |
| b | Pre-heating temperature | 150 to 180°C |
| | Pre-heating time | 60 to 120s |
| c | Temperature ramp rate | 1 to 4°C/s |
| d | 220°C or higher time | shorter than 60s |
| e | 230°C or higher time | shorter than 40s |
| f | Peak temperature | lower than 260°C |
| g | Temperature ramping rate | 1 to 6°C/s |

The temperature indicates at the surface of mold package.

[CAUTION]

1. NJR strives to produce reliable and high quality semiconductors. NJR's semiconductors are intended for specific applications and require proper maintenance and handling. To enhance the performance and service of NJR's semiconductors, the devices, machinery or equipment into which they are integrated should undergo preventative maintenance and inspection at regularly scheduled intervals. Failure to properly maintain equipment and machinery incorporating these products can result in catastrophic system failures
2. The specifications on this datasheet are only given for information without any guarantee as regards either mistakes or omissions. The application circuits in this datasheet are described only to show representative usages of the product and not intended for the guarantee or permission of any right including the industrial property rights.
All other trademarks mentioned herein are the property of their respective companies.
3. To ensure the highest levels of reliability, NJR products must always be properly handled.
The introduction of external contaminants (e.g. dust, oil or cosmetics) can result in failures of semiconductor products.
4. NJR offers a variety of semiconductor products intended for particular applications. It is important that you select the proper component for your intended application. You may contact NJR's Sale's Office if you are uncertain about the products listed in this datasheet.
5. Special care is required in designing devices, machinery or equipment which demand high levels of reliability. This is particularly important when designing critical components or systems whose failure can foreseeably result in situations that could adversely affect health or safety. In designing such critical devices, equipment or machinery, careful consideration should be given to amongst other things, their safety design, fail-safe design, back-up and redundancy systems, and diffusion design.
6. The products listed in this datasheet may not be appropriate for use in certain equipment where reliability is critical or where the products may be subjected to extreme conditions. You should consult our sales office before using the products in any of the following types of equipment.
 - Aerospace Equipment
 - Equipment Used in the Deep Sea
 - Power Generator Control Equipment (Nuclear, steam, hydraulic, etc.)
 - Life Maintenance Medical Equipment
 - Fire Alarms / Intruder Detectors
 - Vehicle Control Equipment (Airplane, railroad, ship, etc.)
 - Various Safety Devices
7. NJR's products have been designed and tested to function within controlled environmental conditions. Do not use products under conditions that deviate from methods or applications specified in this datasheet. Failure to employ the products in the proper applications can lead to deterioration, destruction or failure of the products. NJR shall not be responsible for any bodily injury, fires or accident, property damage or any consequential damages resulting from misuse or misapplication of the products. The products are sold without warranty of any kind, either express or implied, including but not limited to any implied warranty of merchantability or fitness for a particular purpose.
8. Warning for handling Gallium and Arsenic (GaAs) Products (Applying to GaAs MMIC, Photo Reflector). These products use Gallium (Ga) and Arsenic (As) which are specified as poisonous chemicals by law. For the prevention of a hazard, do not burn, destroy, or process chemically to make them as gas or power. When the product is disposed of, please follow the related regulation and do not mix this with general industrial waste or household waste.
9. The product specifications and descriptions listed in this datasheet are subject to change at any time, without notice.



X-ON Electronics

Largest Supplier of Electrical and Electronic Components

Click to view similar products for [Operational Amplifiers - Op Amps](#) category:

Click to view products by [Nisshinbo](#) manufacturer:

Other Similar products are found below :

[NCV33072ADR2G](#) [LM358SNG](#) [430227FB](#) [UPC824G2-A](#) [LT1678IS8](#) [042225DB](#) [058184EB](#) [UPC822G2-A](#) [UPC259G2-A](#) [UPC258G2-A](#)
[NCV33202DMR2G](#) [NTE925](#) [AZV358MTR-G1](#) [AP4310AUMTR-AG1](#) [HA1630D02MMEL-E](#) [HA1630S01LPEL-E](#) [SCY33178DR2G](#)
[NJU77806F3-TE1](#) [NCV5652MUTWG](#) [NCV20034DR2G](#) [LM324EDR2G](#) [LM2902EDR2G](#) [NTE7155](#) [NTE778S](#) [NTE871](#) [NTE924](#) [NTE937](#)
[MCP6V17T-E/MNY](#) [MCP6V19-E/ST](#) [MXD8011HF](#) [MCP6V17T-E/MS](#) [SCY6358ADR2G](#) [ADA4523-1BCPZ](#) [LTC2065HUD#PBF](#)
[ADA4523-1BCPZ-RL7](#) [NJM2904CRB1-TE1](#) [2SD965T-R](#) [RS6332PXK](#) [BDM8551](#) [BDM321](#) [MD1324](#) [COS8052SR](#) [COS8552SR](#)
[COS8554SR](#) [COS2177SR](#) [COS2353SR](#) [COS724TR](#) [ASOPD4580S-R](#) [RS321BKXF](#) [ADA4097-1HUIZ-RL7](#)