

TL07x Low-Noise JFET-Input Operational Amplifiers

1 Features

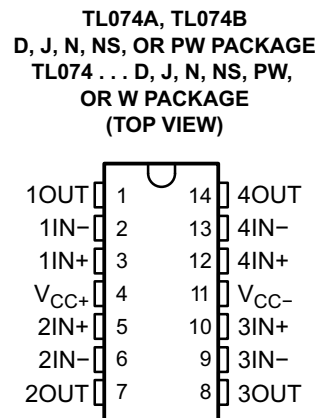
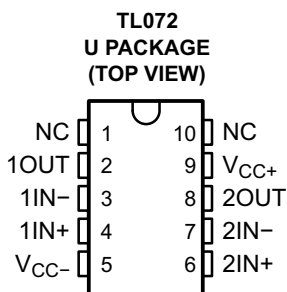
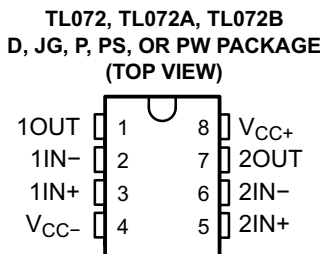
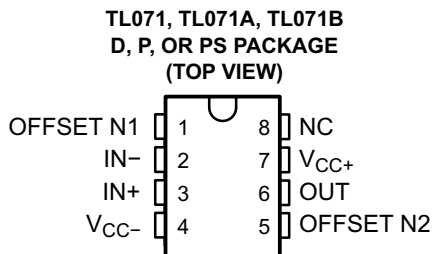
- Low Power Consumption
- Wide Common-Mode and Differential Voltage Ranges
- Low Input Bias and Offset Currents
- Output Short-Circuit Protection
- Low Total Harmonic Distortion: 0.003% Typ
- Low Noise
 $V_n = 18 \text{ nV}/\sqrt{\text{Hz}}$ Typ at $f = 1 \text{ kHz}$
- High Input Impedance: JFET Input Stage
- Internal Frequency Compensation
- Latch-Up-Free Operation
- High Slew Rate: $13 \text{ V}/\mu\text{s}$ Typ
- Common-Mode Input Voltage Range
Includes V_{CC+}

2 Description

The JFET-input operational amplifiers in the TL07x series are similar to the TL08x series, with low input bias and offset currents and fast slew rate. The low harmonic distortion and low noise make the TL07x series ideally suited for high-fidelity and audio preamplifier applications. Each amplifier features JFET inputs (for high input impedance) coupled with bipolar output stages integrated on a single monolithic chip.

The C-suffix devices are characterized for operation from 0°C to 70°C . The I-suffix devices are characterized for operation from -40°C to 85°C . The M-suffix devices are characterized for operation over the full military temperature range of -55°C to 125°C .

3 Terminal Out Drawings



NC – No internal connection



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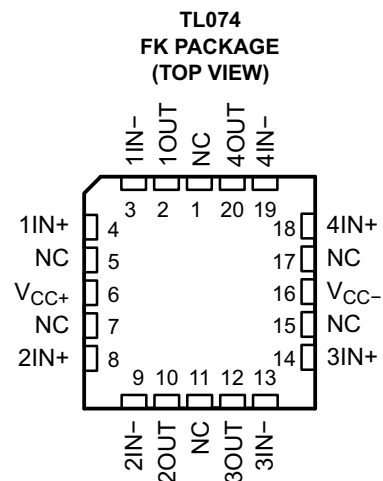
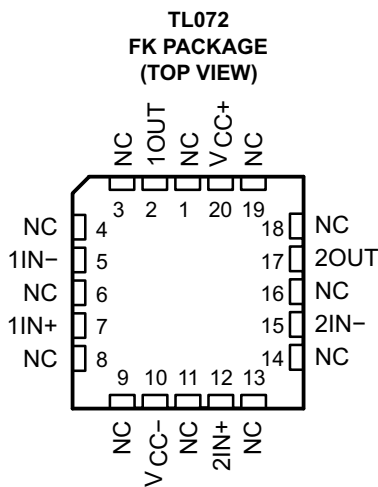
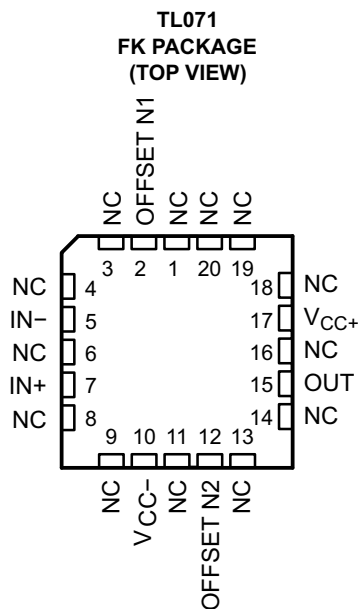
4 Revision History

NOTE: Page numbers for previous revisions may differ from page numbers in the current version.

| Changes from Revision J (March 2005) to Revision K | Page |
|--|-------------|
| • Updated document to new TI datasheet format - no specification changes. | 1 |
| • Added ESD warning. | 17 |

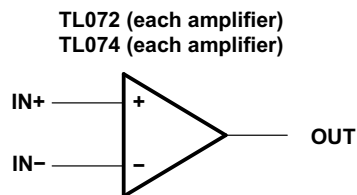
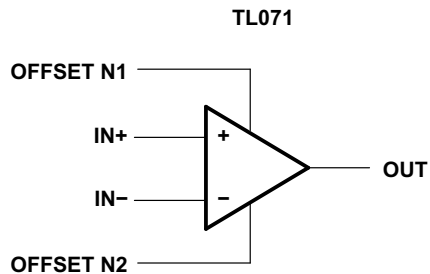
| Changes from Revision K (January 2014) to Revision L | Page |
|--|-------------|
| • Moved T _{stg} to Handling Ratings table. | 5 |
| • Added missing Electrical Characteristics table. | 6 |
| • Added Device and Documentation Support section. | 17 |
| • Added Mechanical, Packaging, and Orderable Information section. | 17 |

5 Terminal Configuration and Functions

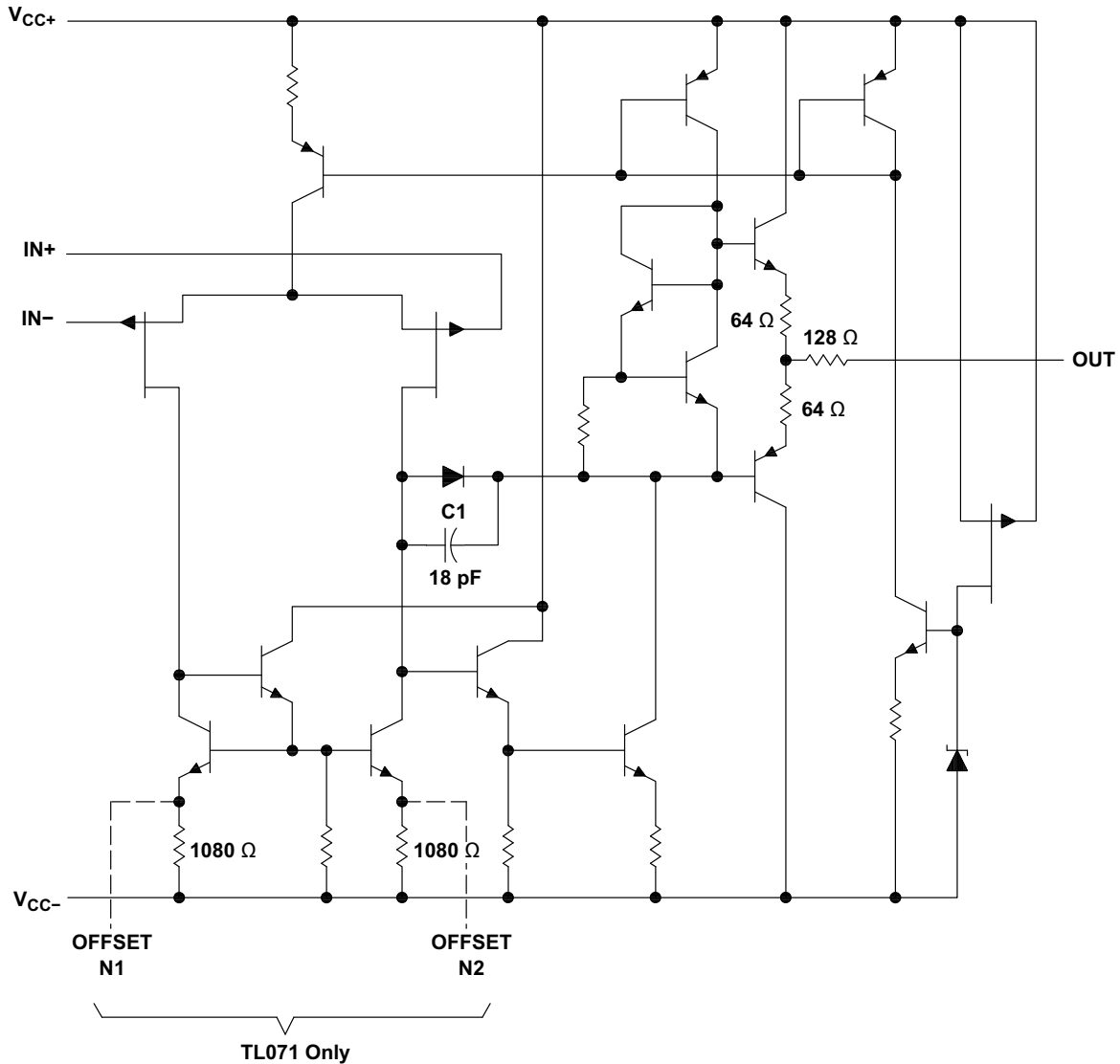


NC – No internal connection

Symbols



Schematic (Each Amplifier)



All component values shown are nominal.

| COMPONENT COUNT† | | | |
|------------------|-------|-------|-------|
| COMPONENT TYPE | TL071 | TL072 | TL074 |
| Resistors | 11 | 22 | 44 |
| Transistors | 14 | 28 | 56 |
| JFET | 2 | 4 | 6 |
| Diodes | 1 | 2 | 4 |
| Capacitors | 1 | 2 | 4 |
| epi-FET | 1 | 2 | 4 |

† Includes bias and trim circuitry

6 Specifications

6.1 Absolute Maximum Ratings⁽¹⁾

over operating free-air temperature range (unless otherwise noted)

| | | VALUE | UNIT | |
|---|--|---------------------|-------|------|
| V_{CC+} | Supply voltage ⁽²⁾ | 18 | V | |
| V_{CC-} | | -18 | | |
| V_{ID} | Differential input voltage ⁽³⁾ | ±30 | V | |
| V_I | Input voltage ⁽²⁾⁽⁴⁾ | ±15 | V | |
| Duration of output short circuit ⁽⁵⁾ | | Unlimited | | |
| θ_{JA} | Package thermal impedance ⁽⁶⁾⁽⁷⁾ | D package (8 pin) | 97 | °C/W |
| | | D package (14 pin) | 86 | |
| | | N package | 80 | |
| | | NS package | 76 | |
| | | P package | 85 | |
| | | PS package | 95 | |
| | | PW package (8 pin) | 149 | |
| | | PW package (14 pin) | 113 | |
| | | U package | 185 | |
| θ_{JC} | Package thermal impedance ⁽⁸⁾⁽⁹⁾ | FK package | 5.61 | °C/W |
| | | J package | 15.05 | |
| | | JG package | 14.5 | |
| | | W package | 14.65 | |
| T_J | Operating virtual junction temperature | 150 | °C | |
| | Case temperature for 60 seconds | FK package | 260 | °C |
| | Lead temperature 1,6 mm (1/16 inch) from case for 10 seconds | J, JG, or W package | 300 | °C |

- (1) Stresses beyond those listed under *Absolute Maximum Ratings* may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated under *Recommended Operating Conditions* is not implied. Exposure to absolute-maximum-rated conditions for extended periods may affect device reliability.
- (2) All voltage values, except differential voltages, are with respect to the midpoint between V_{CC+} and V_{CC-} .
- (3) Differential voltages are at IN+, with respect to IN-.
- (4) The magnitude of the input voltage must never exceed the magnitude of the supply voltage or 15 V, whichever is less.
- (5) The output may be shorted to ground or to either supply. Temperature and/or supply voltages must be limited to ensure that the dissipation rating is not exceeded.
- (6) Maximum power dissipation is a function of $T_{J(max)}$, θ_{JA} , and T_A . The maximum allowable power dissipation at any allowable ambient temperature is $P_D = (T_{J(max)} - T_A)/\theta_{JA}$. Operating at the absolute maximum T_J of 150°C can affect reliability.
- (7) The package thermal impedance is calculated in accordance with JESD 51-7.
- (8) Maximum power dissipation is a function of $T_{J(max)}$, θ_{JC} , and T_C . The maximum allowable power dissipation at any allowable ambient temperature is $P_D = (T_{J(max)} - T_C)/\theta_{JC}$. Operating at the absolute maximum T_J of 150°C can affect reliability.
- (9) The package thermal impedance is calculated in accordance with MIL-STD-883.

6.2 Handling Ratings

| PARAMETER | DEFINITION | VALUE | UNIT |
|-----------|---------------------------|------------|------|
| T_{stg} | Storage temperature range | -65 to 150 | °C |

6.3 Electrical Characteristics

$V_{CC} \pm = \pm 15\text{ V}$ (unless otherwise noted)

| PARAMETER | TEST CONDITIONS ⁽¹⁾ | T_A ⁽²⁾ | TL071C TL072C TL074C | | | TL071AC TL072AC TL074AC | | | TL071BC TL072BC TL074BC | | | TL071I TL072I TL074I | | | UNIT |
|--|--|----------------------|----------------------------|-----|-----|-------------------------------|-----|-----|-------------------------------|-----|-----|----------------------------|-----|-----|------------------------------|
| | | | MIN | TYP | MAX | MIN | TYP | MAX | MIN | TYP | MAX | MIN | TYP | MAX | |
| V_{IO} Input offset voltage | $V_O = 0, R_S = 50\ \Omega$ | 25°C | 3 10 | | | 3 6 | | | 2 3 | | | 3 6 | | | mV |
| | | Full range | 13 | | | 7.5 | | | 5 | | | 8 | | | |
| $^aV_{IO}$ Temperature coefficient of input offset voltage | $V_O = 0, R_S = 50\ \Omega$ | Full range | 18 | | | 18 | | | 18 | | | 18 | | | $\mu\text{V}/^\circ\text{C}$ |
| I_{IO} Input offset current | $V_O = 0$ | 25°C | 5 100 | | | 5 100 | | | 5 100 | | | 5 100 | | | pA |
| | | Full range | 10 | | | 2 | | | 2 | | | 2 | | | nA |
| I_{IB} Input bias current ⁽³⁾ | $V_O = 0$ | 25°C | 65 200 | | | 65 200 | | | 65 200 | | | 65 200 | | | pA |
| | | Full range | 7 | | | 7 | | | 7 | | | 7 | | | nA |
| V_{ICR} Common-mode input voltage range | | 25°C | ± 11 -12 to 15 | | | ± 11 -12 to 15 | | | ± 11 -12 to 15 | | | ± 11 -12 to 15 | | | V |
| V_{OM} Maximum peak output voltage swing | $R_L = 10\ \text{k}\Omega$ | 25°C | ± 12 ± 13.5 | | | ± 12 ± 13.5 | | | ± 12 ± 13.5 | | | ± 12 ± 13.5 | | | V |
| | $R_L \geq 10\ \text{k}\Omega$ | Full range | ± 12 | | | ± 12 | | | ± 12 | | | ± 12 | | | |
| | $R_L \geq 2\ \text{k}\Omega$ | Full range | ± 10 | | | ± 10 | | | ± 10 | | | ± 10 | | | |
| A_{VD} Large-signal differential voltage amplification | $V_O = \pm 10\ \text{V}, R_L \geq 2\ \text{k}\Omega$ | 25°C | 25 200 | | | 50 200 | | | 50 200 | | | 50 200 | | | V/mV |
| | | Full range | 15 | | | 25 | | | 25 | | | 25 | | | |
| B_1 Unity-gain bandwidth | | 25°C | 3 | | | 3 | | | 3 | | | 3 | | | MHz |
| r_i Input resistance | | 25°C | 10^{12} | | | 10^{12} | | | 10^{12} | | | 10^{12} | | | Ω |
| CMRR Common-mode rejection ratio | $V_{IC} = V_{ICRmin}, V_O = 0, R_S = 50\ \Omega$ | 25°C | 70 100 | | | 75 100 | | | 75 100 | | | 75 100 | | | dB |
| k_{SVR} Supply-voltage rejection ratio ($\Delta V_{CC}/\Delta V_{IO}$) | $V_{CC} = \pm 9\ \text{V to } \pm 15\ \text{V}, V_O = 0, R_S = 50\ \Omega$ | 25°C | 70 100 | | | 80 100 | | | 80 100 | | | 80 100 | | | dB |
| I_{CC} Supply current (each amplifier) | $V_O = 0, \text{ No load}$ | 25°C | 1.4 2.5 | | | 1.4 2.5 | | | 1.4 2.5 | | | 1.4 2.5 | | | mA |
| V_{O1}/V_{O2} Crosstalk attenuation | $A_{VD} = 100$ | 25°C | 120 | | | 120 | | | 120 | | | 120 | | | dB |

- (1) All characteristics are measured under open-loop conditions with zero common-mode voltage, unless otherwise specified.
- (2) Full range is $T_A = 0^\circ\text{C to } 70^\circ\text{C}$ for TL07_C, TL07_AC, TL07_BC and is $T_A = -40^\circ\text{C to } 85^\circ\text{C}$ for TL07_I.
- (3) Input bias currents of an FET-input operational amplifier are normal junction reverse currents, which are temperature sensitive, as shown in Figure 4. Pulse techniques must be used that maintain the junction temperature as close to the ambient temperature as possible.

6.4 Electrical Characteristics

 $V_{CC\pm} = \pm 15\text{ V}$ (unless otherwise noted)

| PARAMETER | TEST CONDITIONS ⁽¹⁾ | T _A ⁽²⁾ | TL071M TL072M | | | TL074M | | | UNIT |
|----------------------------------|---|--|------------------|------------------|-----------|------------------|-----------|-------|------|
| | | | MIN | TYP | MAX | MIN | TYP | MAX | |
| V _{IO} | Input offset voltage | V _O = 0, R _S = 50 Ω | 25°C | 3 | 6 | 3 | 9 | mV | |
| | | | Full range | | 9 | 15 | | | |
| α _{VIO} | Temperature coefficient of input offset voltage | V _O = 0, R _S = 50 Ω | Full range | 18 | | 18 | | μV/°C | |
| I _{IO} | Input offset current | V _O = 0 | 25°C | 5 | 100 | 5 | 100 | pA | |
| | | | Full range | | 20 | 20 | nA | | |
| I _{IB} | Input bias current | V _O = 0 | 25°C | 65 | 200 | 65 | 200 | pA | |
| | | | Full range | | 50 | 20 | nA | | |
| V _{ICR} | Common-mode input voltage range | | 25°C | ±11 | -12 to 15 | ±11 | -12 to 15 | V | |
| V _{OM} | Maximum peak output voltage swing | R _L = 10 kΩ | 25°C | ±12 | ±13.5 | ±12 | ±13.5 | V | |
| | | R _L ≥ 10 kΩ | Full range | ±12 | | ±12 | | | |
| | | R _L ≥ 2 kΩ | | ±10 | | ±10 | | | |
| A _{VD} | Large-signal differential voltage amplification | V _O = ±10 V, R _L ≥ 2 kΩ | 25°C | 35 | 200 | 35 | 200 | V/mV | |
| | | | Full range | 15 | | 15 | | | |
| B ₁ | Unity-gain bandwidth | | | 3 | | 3 | | MHz | |
| r _i | Input resistance | | | 10 ¹² | | 10 ¹² | | Ω | |
| CMRR | Common-mode rejection ratio | V _{IC} = V _{ICRmin} , V _O = 0, R _S = 50 Ω | 25°C | 80 | 86 | 80 | 86 | dB | |
| k _{SVR} | Supply-voltage rejection ratio (ΔV _{CC±} /ΔV _{IO}) | V _{CC} = ±9 V to ±15 V, V _O = 0, R _S = 50 Ω | 25°C | 80 | 86 | 80 | 86 | dB | |
| I _{CC} | Supply current (each amplifier) | V _O = 0, No load | 25°C | 1.4 | 2.5 | 1.4 | 2.5 | mA | |
| V _{O1} /V _{O2} | Crosstalk attenuation | A _{VD} = 100 | 25°C | 120 | | 120 | | dB | |

- Input bias currents of an FET-input operational amplifier are normal junction reverse currents, which are temperature sensitive, as shown in Figure 4. Pulse techniques must be used that will maintain the junction temperature as close to the ambient temperature as possible.
- All characteristics are measured under open-loop conditions with zero common-mode voltage, unless otherwise specified. Full range is T_A = -55°C to 125°C.

6.5 Operating Characteristics

 $V_{CC\pm} = \pm 15\text{ V}$, T_A = 25°C

| PARAMETER | TEST CONDITIONS | TL07xM | | | ALL OTHERS | | | UNIT |
|----------------|--|---------------------|-------|-----|------------|-------|-----|--------|
| | | MIN | TYP | MAX | MIN | TYP | MAX | |
| SR | Slew rate at unity gain V _I = 10 V, C _L = 100 pF, R _L = 2 kΩ, See Figure 1 | 5 | 13 | | 8 | 13 | | V/μs |
| t _r | Rise-time overshoot factor V _I = 20 V, C _L = 100 pF, See Figure 1 | | 0.1 | | | 0.1 | | μs |
| | | | 20 | | | 20 | | % |
| V _n | Equivalent input noise voltage R _S = 20 Ω | f = 1 kHz | 18 | | 18 | | | nV/√Hz |
| | | f = 10 Hz to 10 kHz | 4 | | 4 | | | μV |
| I _n | Equivalent input noise current R _S = 20 Ω, f = 1 kHz | | 0.01 | | | 0.01 | | pA/√Hz |
| THD | Total harmonic distortion V _{I rms} = 6 V, R _L ≥ 2 kΩ, f = 1 kHz, A _{VD} = 1, R _S ≤ 1 kΩ, | | 0.003 | | | 0.003 | | % |

7 Parameter Measurement Information

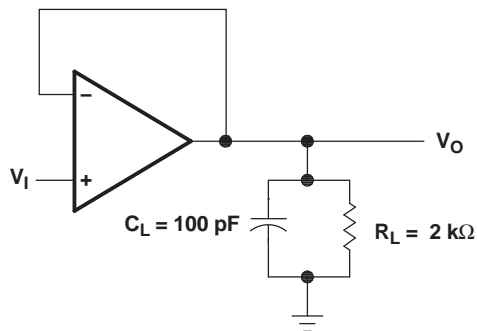


Figure 1. Unity-Gain Amplifier

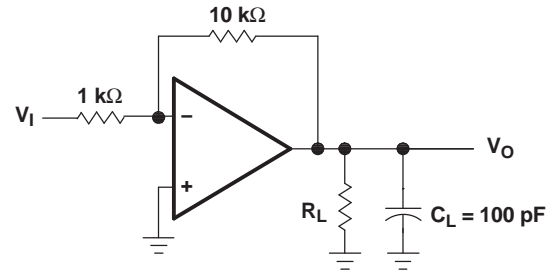


Figure 2. Gain-of-10 Inverting Amplifier

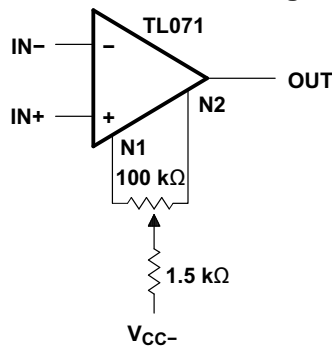


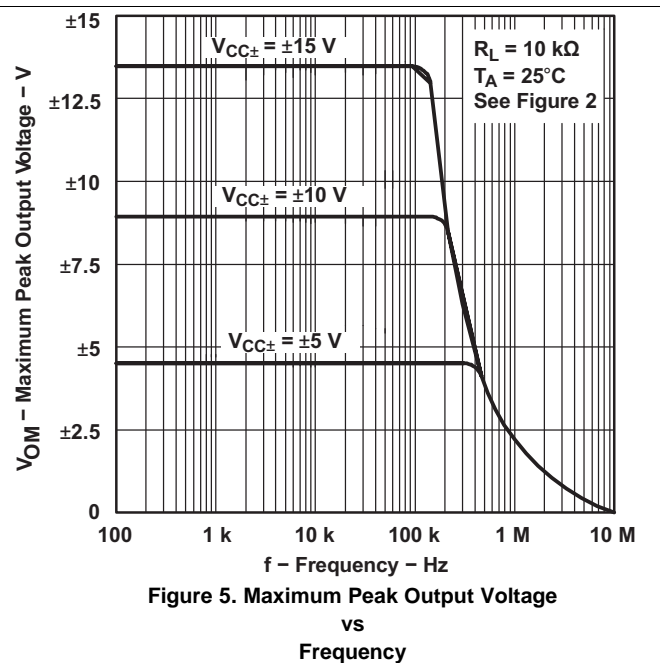
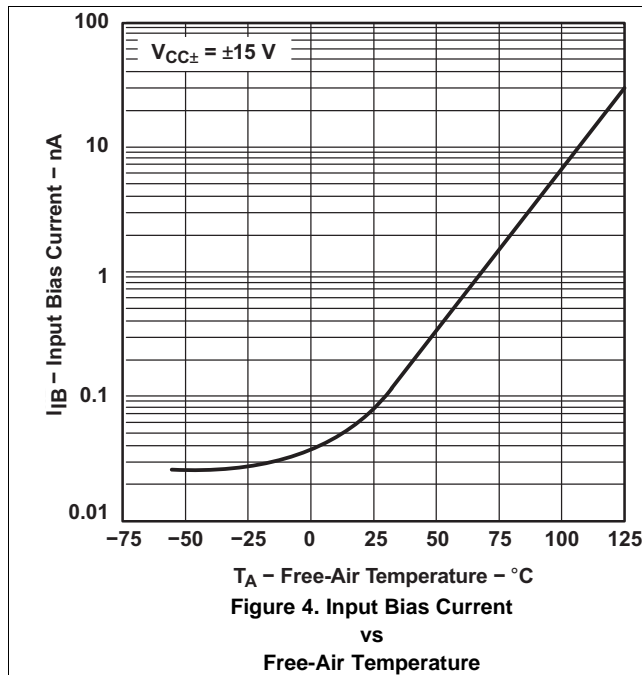
Figure 3. Input Offset-Voltage Null Circuit

8 Typical Characteristics

Data at high and low temperatures are applicable only within the rated operating free-air temperature ranges of the various devices.

Table of Graphs

| | | | Figure |
|----------|---|--|---|
| I_{IB} | Input bias current | versus Free-air temperature | Figure 4 |
| V_{OM} | Maximum peak output voltage | versus Frequency versus Free-air temperature versus Load resistance versus Supply voltage | Figure 5, Figure 6, Figure 7 Figure 8 Figure 9 Figure 10 |
| A_{VD} | Large signal differential voltage amplification | versus Free-air temperature versus Load resistance | Figure 11 Figure 12 |
| | Phase shift | versus Frequency | Figure 12 |
| | Normalized unity-gain bandwidth | versus Free-air temperature | Figure 13 |
| | Normalized phase shift | versus Free-air temperature | Figure 13 |
| CMRR | Common-mode rejection ratio | versus Free-air temperature | Figure 14 |
| I_{CC} | Supply current | versus Free-air temperature versus Supply voltage | Figure 15 Figure 16 |
| P_D | Total power dissipation | versus Free-air temperature | Figure 17 |
| | Normalized slew rate | versus Free-air temperature | Figure 18 |
| V_n | Equivalent input noise voltage | versus Frequency | Figure 19 |
| THD | Total harmonic distortion | versus Frequency | Figure 20 |
| | Large-signal pulse response | versus Time | Figure 21 |
| V_O | Output voltage | versus Elapsed time | Figure 22 |



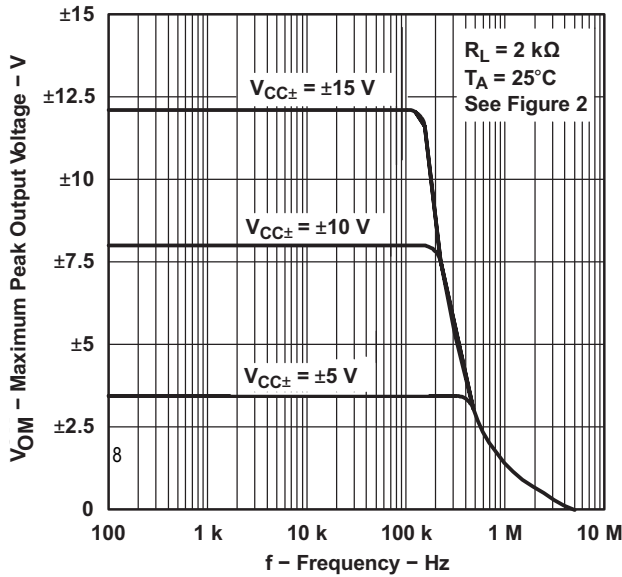


Figure 6. Maximum Peak Output Voltage vs Frequency

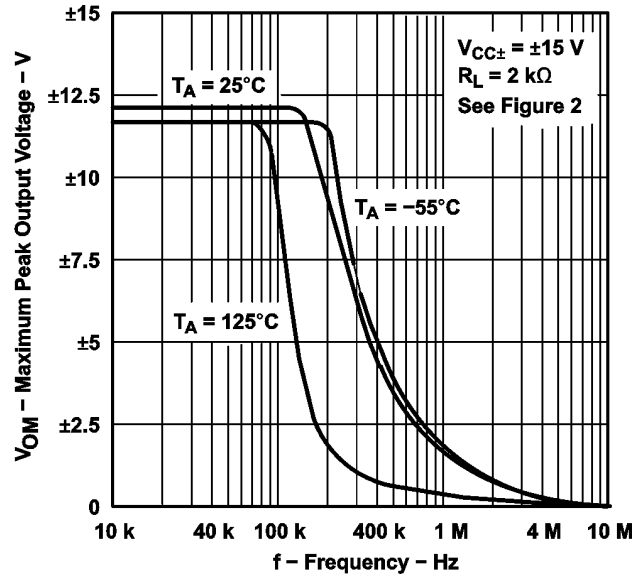


Figure 7. Maximum Peak Output Voltage vs Frequency

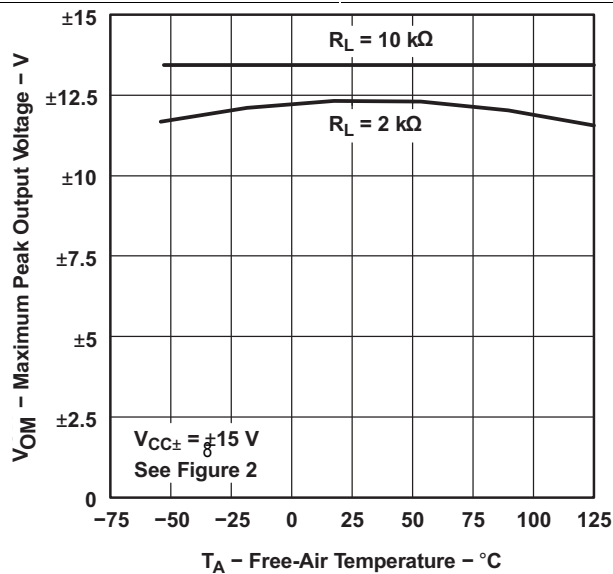


Figure 8. Maximum Peak Output Voltage vs Free-Air Temperature

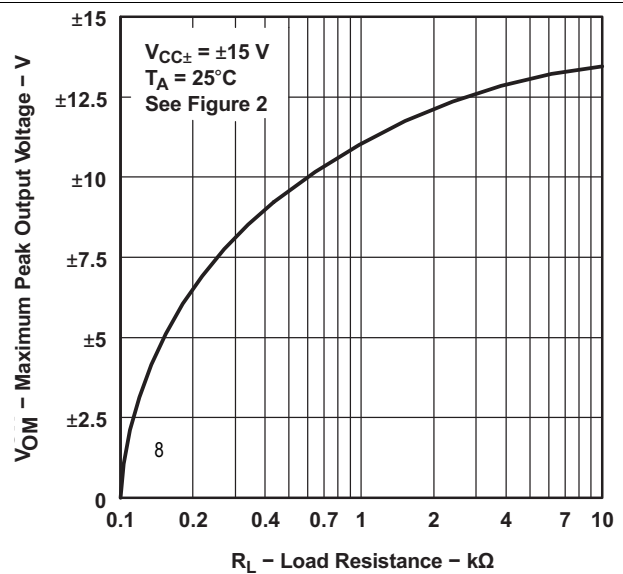


Figure 9. Maximum Peak Output Voltage vs Load Resistance

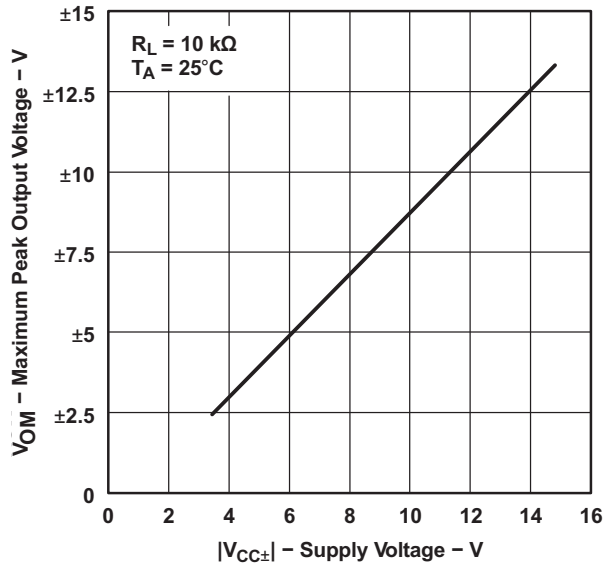


Figure 10. Maximum Peak Output Voltage vs Supply Voltage

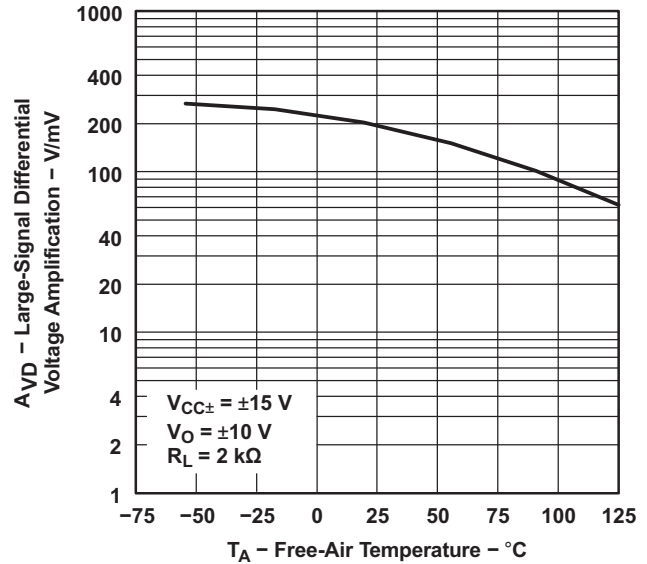


Figure 11. Large-Signal Differential Voltage Amplification vs Free-Air Temperature

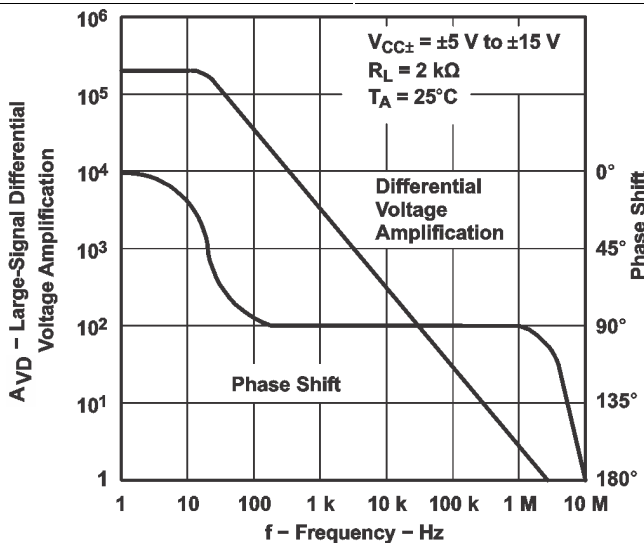


Figure 12. Large-Signal Differential Voltage Amplification and Phase Shift vs Frequency

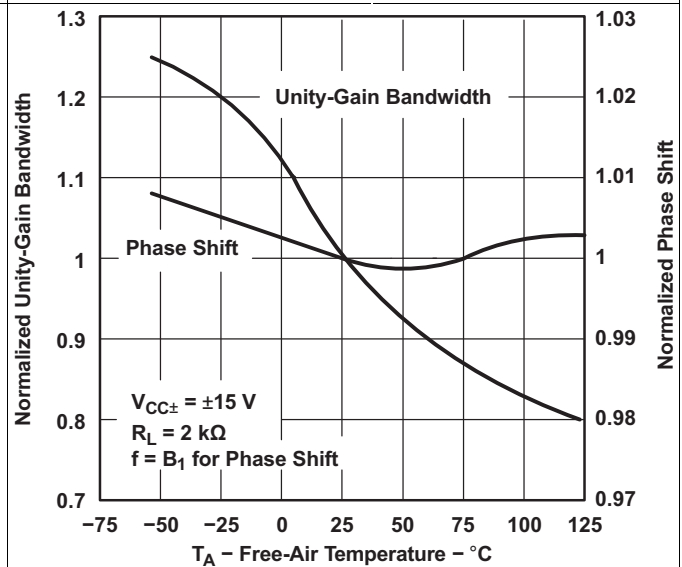


Figure 13. Normalized Unity-Gain Bandwidth and Phase Shift vs Free-Air Temperature

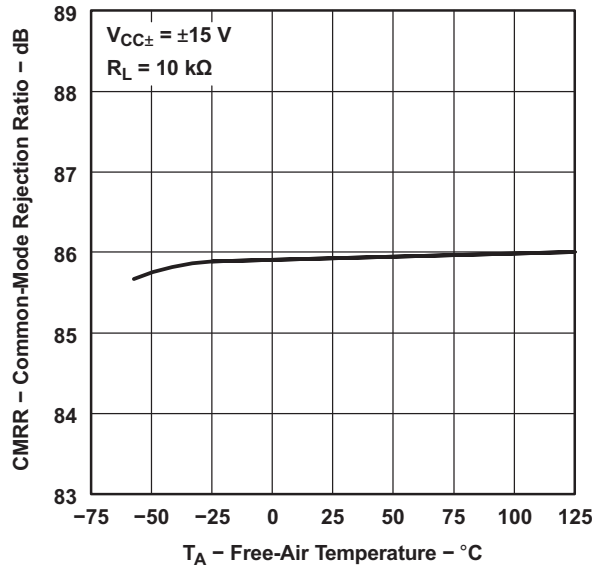


Figure 14. Common-Mode Rejection Ratio vs Free-Air Temperature

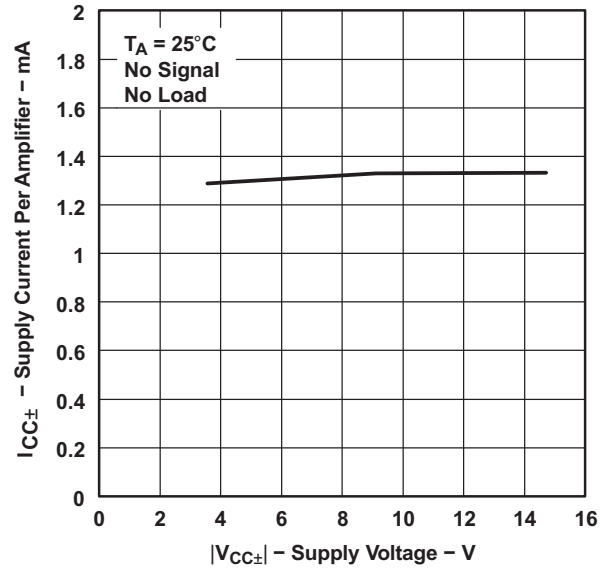


Figure 15. Supply Current Per Amplifier vs Supply Voltage

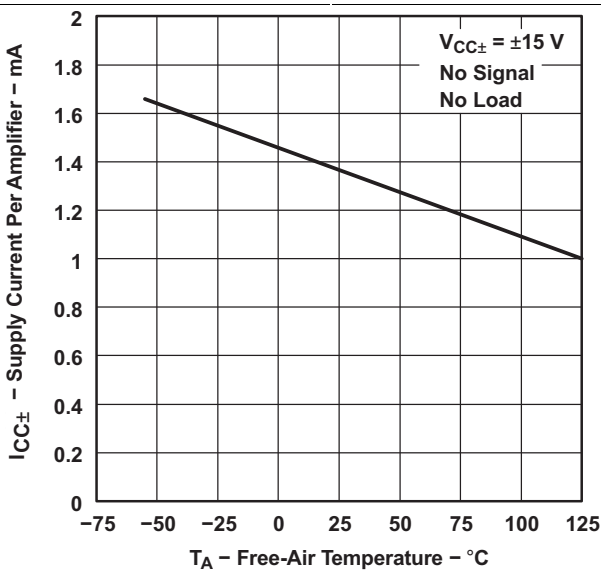


Figure 16. Supply Current Per Amplifier vs Free-Air Temperature

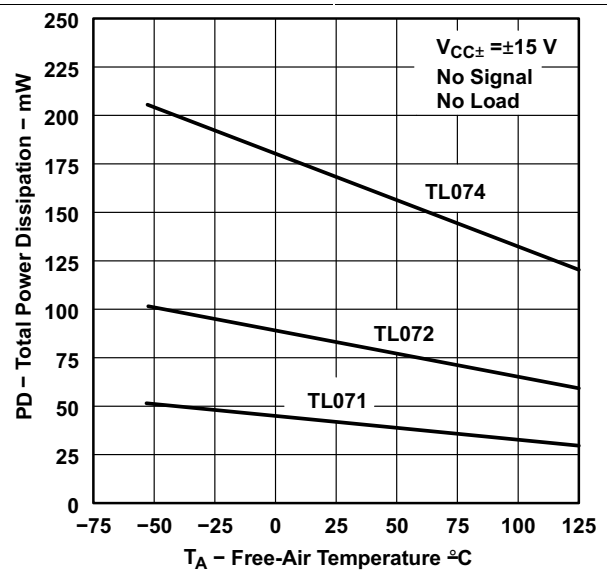
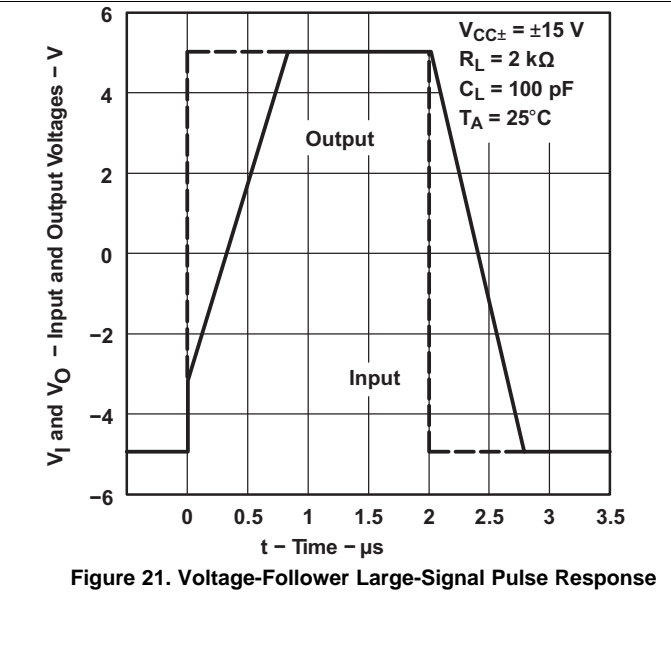
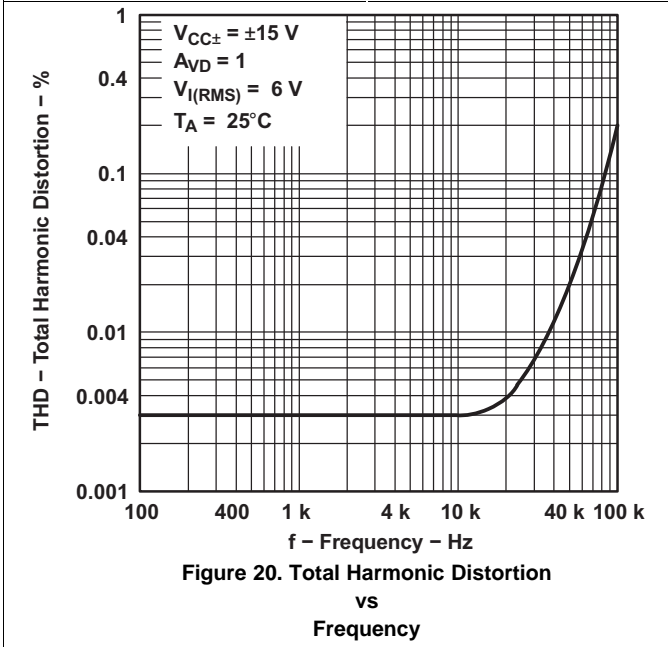
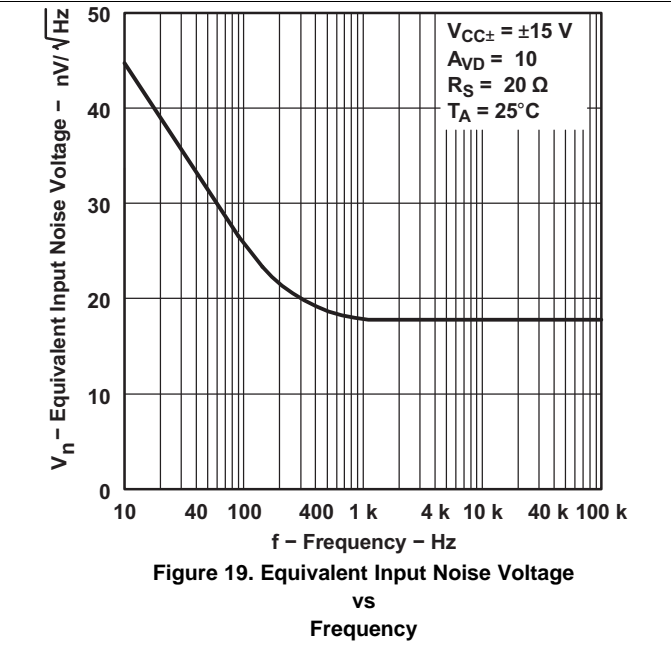
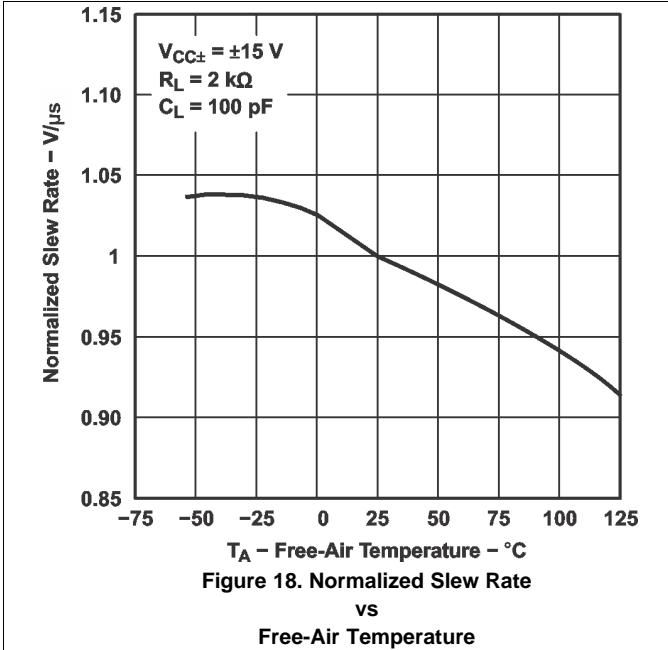


Figure 17. Total Power Dissipation vs Free-Air Temperature



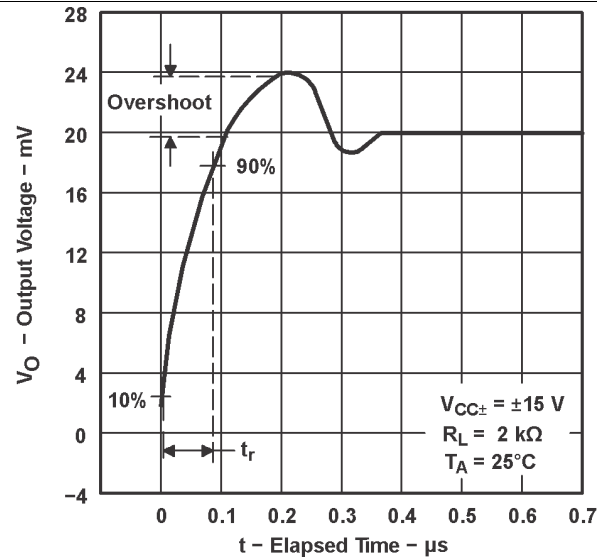


Figure 22. Output Voltage
vs
Elapsed Time

9 Application Information

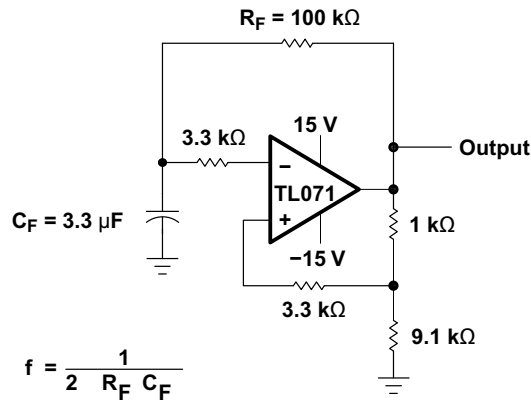


Figure 23. 0.5-Hz Square-Wave Oscillator

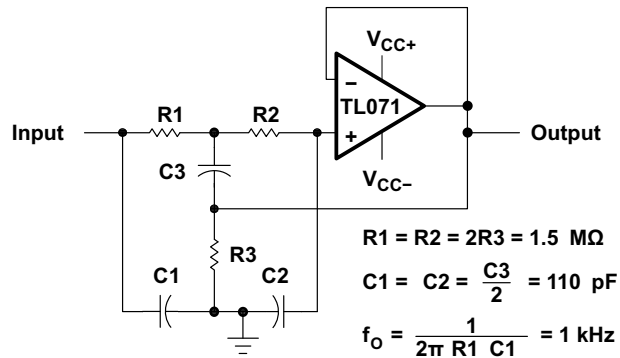


Figure 24. High-Q Notch Filter

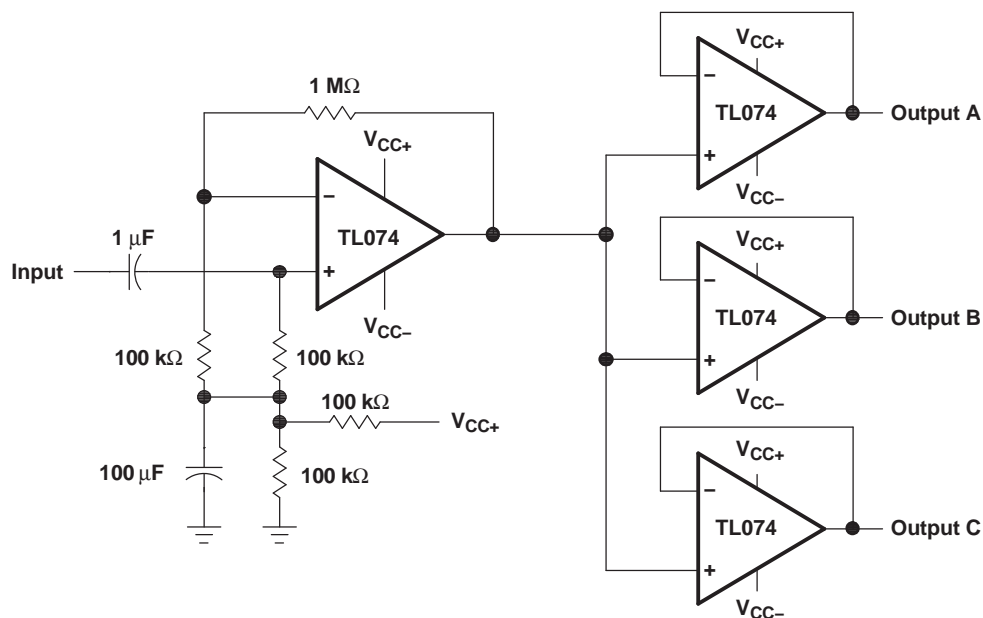


Figure 25. Audio-Distribution Amplifier

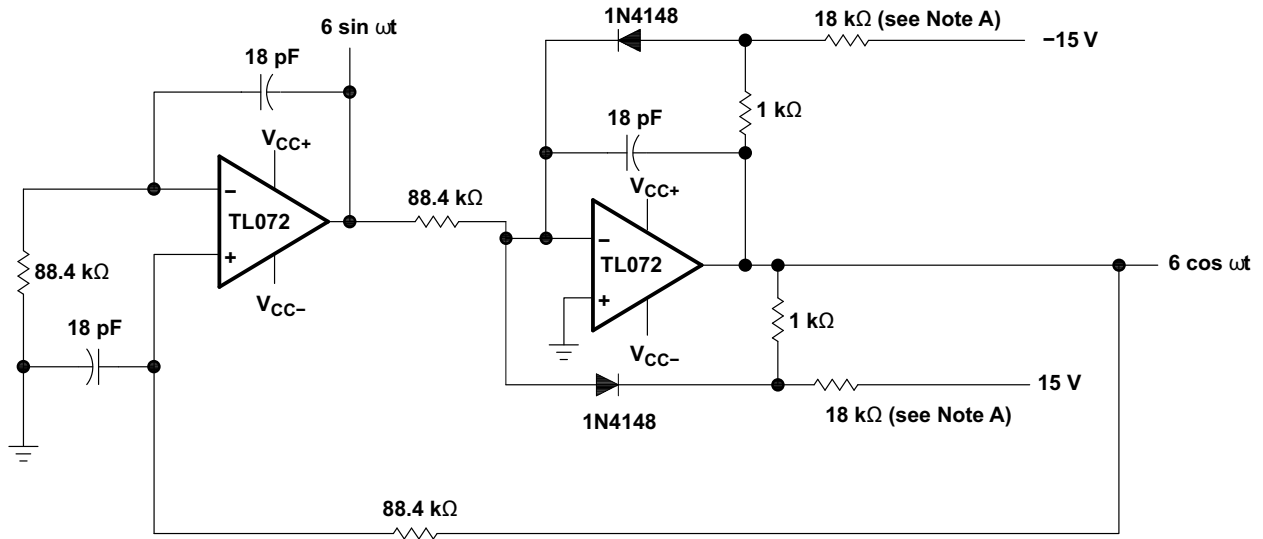


Figure 26. 100-kHz Quadrature Oscillator

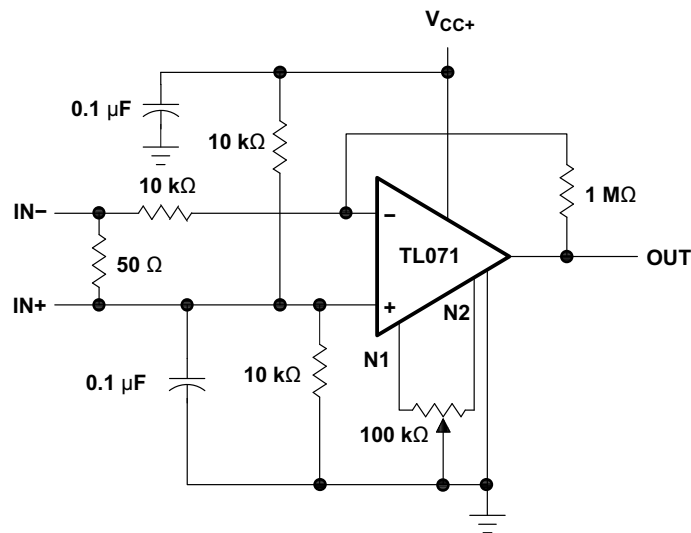


Figure 27. AC Amplifier

10 Device and Documentation Support

10.1 Related Links

The table below lists quick access links. Categories include technical documents, support and community resources, tools and software, and quick access to sample or buy.

Table 1. Related Links

| PARTS | PRODUCT FOLDER | SAMPLE & BUY | TECHNICAL DOCUMENTS | TOOLS & SOFTWARE | SUPPORT & COMMUNITY |
|--------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
| TL071 | Click here | Click here | Click here | Click here | Click here |
| TL071A | Click here | Click here | Click here | Click here | Click here |
| TL071B | Click here | Click here | Click here | Click here | Click here |
| TL072 | Click here | Click here | Click here | Click here | Click here |
| TL072A | Click here | Click here | Click here | Click here | Click here |
| TL072B | Click here | Click here | Click here | Click here | Click here |
| TL074 | Click here | Click here | Click here | Click here | Click here |
| TL074A | Click here | Click here | Click here | Click here | Click here |
| TL074B | Click here | Click here | Click here | Click here | Click here |

10.2 Trademarks

All trademarks are the property of their respective owners.

10.3 Electrostatic Discharge Caution



This integrated circuit can be damaged by ESD. Texas Instruments recommends that all integrated circuits be handled with appropriate precautions. Failure to observe proper handling and installation procedures can cause damage.

ESD damage can range from subtle performance degradation to complete device failure. Precision integrated circuits may be more susceptible to damage because very small parametric changes could cause the device not to meet its published specifications.

10.4 Glossary

[SLYZ022](#) — *TI Glossary*.

This glossary lists and explains terms, acronyms and definitions.

11 Mechanical, Packaging, and Orderable Information

The following pages include mechanical packaging and orderable information. This information is the most current data available for the designated devices. This data is subject to change without notice and revision of this document. For browser based versions of this data sheet, refer to the left hand navigation.

PACKAGING INFORMATION

| Orderable Device | Status (1) | Package Type | Package Drawing | Pins | Package Qty | Eco Plan (2) | Lead/Ball Finish (6) | MSL Peak Temp (3) | Op Temp (°C) | Device Marking (4/5) | Samples |
|------------------|---------------|--------------|--------------------|------|----------------|----------------------------|-------------------------|----------------------|--------------|-------------------------|-------------------------|
| 8102304HA | OBSOLETE | | | 10 | | TBD | Call TI | Call TI | -55 to 125 | | |
| 81023052A | ACTIVE | LCCC | FK | 20 | 1 | TBD | POST-PLATE | N / A for Pkg Type | -55 to 125 | 81023052A TL072MFKB | Samples |
| 8102305HA | ACTIVE | CFP | U | 10 | 1 | TBD | A42 | N / A for Pkg Type | -55 to 125 | 8102305HA TL072M | Samples |
| 8102305PA | ACTIVE | CDIP | JG | 8 | 1 | TBD | A42 | N / A for Pkg Type | -55 to 125 | 8102305PA TL072M | Samples |
| 81023062A | ACTIVE | LCCC | FK | 20 | 1 | TBD | POST-PLATE | N / A for Pkg Type | -55 to 125 | 81023062A TL074MFKB | Samples |
| 8102306CA | ACTIVE | CDIP | J | 14 | 1 | TBD | A42 | N / A for Pkg Type | -55 to 125 | 8102306CA TL074MJB | Samples |
| 8102306DA | ACTIVE | CFP | W | 14 | 1 | TBD | A42 | N / A for Pkg Type | -55 to 125 | 8102306DA TL074MWB | Samples |
| JM38510/11905BPA | ACTIVE | CDIP | JG | 8 | 1 | TBD | A42 | N / A for Pkg Type | -55 to 125 | JM38510 /11905BPA | Samples |
| JM38510/11906BCA | OBSOLETE | CDIP | J | 14 | | TBD | Call TI | Call TI | -55 to 125 | | |
| M38510/11905BPA | ACTIVE | CDIP | JG | 8 | 1 | TBD | A42 | N / A for Pkg Type | -55 to 125 | JM38510 /11905BPA | Samples |
| TL071-W | ACTIVE | WAFERSALE | YS | 0 | | TBD | Call TI | Call TI | | | Samples |
| TL071ACD | ACTIVE | SOIC | D | 8 | 75 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM | 0 to 70 | 071AC | Samples |
| TL071ACDG4 | ACTIVE | SOIC | D | 8 | 75 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM | 0 to 70 | 071AC | Samples |
| TL071ACDR | ACTIVE | SOIC | D | 8 | 2500 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM | 0 to 70 | 071AC | Samples |
| TL071ACP | ACTIVE | PDIP | P | 8 | 50 | Pb-Free (RoHS) | CU NIPDAU | N / A for Pkg Type | 0 to 70 | TL071ACP | Samples |
| TL071ACPE4 | ACTIVE | PDIP | P | 8 | 50 | Pb-Free (RoHS) | CU NIPDAU | N / A for Pkg Type | 0 to 70 | TL071ACP | Samples |
| TL071BCD | ACTIVE | SOIC | D | 8 | 75 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM | 0 to 70 | 071BC | Samples |
| TL071BCDE4 | ACTIVE | SOIC | D | 8 | 75 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM | 0 to 70 | 071BC | Samples |

| Orderable Device | Status (1) | Package Type | Package Drawing | Pins | Package Qty | Eco Plan (2) | Lead/Ball Finish (6) | MSL Peak Temp (3) | Op Temp (°C) | Device Marking (4/5) | Samples |
|------------------|---------------|--------------|-----------------|------|-------------|-------------------------|-------------------------|----------------------|--------------|-------------------------|-------------------------|
| TL071BCDG4 | ACTIVE | SOIC | D | 8 | 75 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM | 0 to 70 | 071BC | Samples |
| TL071BCDR | ACTIVE | SOIC | D | 8 | 2500 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM | 0 to 70 | 071BC | Samples |
| TL071BCP | ACTIVE | PDIP | P | 8 | 50 | Pb-Free (RoHS) | CU NIPDAU | N / A for Pkg Type | 0 to 70 | TL071BCP | Samples |
| TL071BCPE4 | ACTIVE | PDIP | P | 8 | 50 | Pb-Free (RoHS) | CU NIPDAU | N / A for Pkg Type | 0 to 70 | TL071BCP | Samples |
| TL071CD | ACTIVE | SOIC | D | 8 | 75 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM | 0 to 70 | TL071C | Samples |
| TL071CDR | ACTIVE | SOIC | D | 8 | 2500 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM | 0 to 70 | TL071C | Samples |
| TL071CDRE4 | ACTIVE | SOIC | D | 8 | 2500 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM | 0 to 70 | TL071C | Samples |
| TL071CDRG4 | ACTIVE | SOIC | D | 8 | 2500 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM | 0 to 70 | TL071C | Samples |
| TL071CP | ACTIVE | PDIP | P | 8 | 50 | Pb-Free (RoHS) | CU NIPDAU | N / A for Pkg Type | 0 to 70 | TL071CP | Samples |
| TL071CPE4 | ACTIVE | PDIP | P | 8 | 50 | Pb-Free (RoHS) | CU NIPDAU | N / A for Pkg Type | 0 to 70 | TL071CP | Samples |
| TL071CPSR | ACTIVE | SO | PS | 8 | 2000 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM | 0 to 70 | T071 | Samples |
| TL071CPSRG4 | ACTIVE | SO | PS | 8 | 2000 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM | 0 to 70 | T071 | Samples |
| TL071CPWLE | OBSOLETE | TSSOP | PW | 8 | | TBD | Call TI | Call TI | 0 to 70 | | |
| TL071ID | ACTIVE | SOIC | D | 8 | 75 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM | -40 to 85 | TL071I | Samples |
| TL071IDR | ACTIVE | SOIC | D | 8 | 2500 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM | -40 to 85 | TL071I | Samples |
| TL071IDRG4 | ACTIVE | SOIC | D | 8 | 2500 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM | -40 to 85 | TL071I | Samples |
| TL071IJG | OBSOLETE | CDIP | JG | 8 | | TBD | Call TI | Call TI | -40 to 85 | | |
| TL071IP | ACTIVE | PDIP | P | 8 | 50 | Pb-Free (RoHS) | CU NIPDAU | N / A for Pkg Type | -40 to 85 | TL071IP | Samples |
| TL071IPE4 | ACTIVE | PDIP | P | 8 | 50 | Pb-Free (RoHS) | CU NIPDAU | N / A for Pkg Type | -40 to 85 | TL071IP | Samples |

| Orderable Device | Status (1) | Package Type | Package Drawing | Pins | Package Qty | Eco Plan (2) | Lead/Ball Finish (6) | MSL Peak Temp (3) | Op Temp (°C) | Device Marking (4/5) | Samples |
|------------------|---------------|--------------|-----------------|------|-------------|-------------------------|-------------------------|----------------------|--------------|-------------------------|-------------------------|
| TL071MFKB | OBSOLETE | LCCC | FK | 20 | | TBD | Call TI | Call TI | -55 to 125 | | |
| TL071MJG | OBSOLETE | CDIP | JG | 8 | | TBD | Call TI | Call TI | -55 to 125 | | |
| TL071MJGB | OBSOLETE | CDIP | JG | 8 | | TBD | Call TI | Call TI | -55 to 125 | | |
| TL072ACD | ACTIVE | SOIC | D | 8 | 75 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM | 0 to 70 | 072AC | Samples |
| TL072ACDE4 | ACTIVE | SOIC | D | 8 | 75 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM | 0 to 70 | 072AC | Samples |
| TL072ACDR | ACTIVE | SOIC | D | 8 | 2500 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM | 0 to 70 | 072AC | Samples |
| TL072ACDRE4 | ACTIVE | SOIC | D | 8 | 2500 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM | 0 to 70 | 072AC | Samples |
| TL072ACDRG4 | ACTIVE | SOIC | D | 8 | 2500 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM | 0 to 70 | 072AC | Samples |
| TL072ACJG | OBSOLETE | CDIP | JG | 8 | | TBD | Call TI | Call TI | 0 to 70 | | |
| TL072ACP | ACTIVE | PDIP | P | 8 | 50 | Pb-Free (RoHS) | CU NIPDAU | N / A for Pkg Type | 0 to 70 | TL072ACP | Samples |
| TL072ACPE4 | ACTIVE | PDIP | P | 8 | 50 | Pb-Free (RoHS) | CU NIPDAU | N / A for Pkg Type | 0 to 70 | TL072ACP | Samples |
| TL072ACPSR | OBSOLETE | SO | PS | 8 | | TBD | Call TI | Call TI | 0 to 70 | T072A | |
| TL072ACPSRE4 | OBSOLETE | SO | PS | 8 | | TBD | Call TI | Call TI | 0 to 70 | | |
| TL072ACPSRG4 | OBSOLETE | SO | PS | 8 | | TBD | Call TI | Call TI | 0 to 70 | | |
| TL072BCD | ACTIVE | SOIC | D | 8 | 75 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM | 0 to 70 | 072BC | Samples |
| TL072BCDE4 | ACTIVE | SOIC | D | 8 | 75 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM | 0 to 70 | 072BC | Samples |
| TL072BCDG4 | ACTIVE | SOIC | D | 8 | 75 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM | 0 to 70 | 072BC | Samples |
| TL072BCDR | ACTIVE | SOIC | D | 8 | 2500 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM | 0 to 70 | 072BC | Samples |
| TL072BCDRE4 | ACTIVE | SOIC | D | 8 | 2500 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM | 0 to 70 | 072BC | Samples |
| TL072BCDRG4 | ACTIVE | SOIC | D | 8 | 2500 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM | 0 to 70 | 072BC | Samples |
| TL072BCP | ACTIVE | PDIP | P | 8 | 50 | Pb-Free (RoHS) | CU NIPDAU | N / A for Pkg Type | 0 to 70 | TL072BCP | Samples |

| Orderable Device | Status (1) | Package Type | Package Drawing | Pins | Package Qty | Eco Plan (2) | Lead/Ball Finish (6) | MSL Peak Temp (3) | Op Temp (°C) | Device Marking (4/5) | Samples |
|------------------|---------------|--------------|--------------------|------|----------------|----------------------------|-------------------------|----------------------|--------------|-------------------------|-------------------------|
| TL072BCPE4 | ACTIVE | PDIP | P | 8 | 50 | Pb-Free (RoHS) | CU NIPDAU | N / A for Pkg Type | 0 to 70 | TL072BCP | Samples |
| TL072CD | ACTIVE | SOIC | D | 8 | 75 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM | 0 to 70 | TL072C | Samples |
| TL072CDE4 | ACTIVE | SOIC | D | 8 | 75 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM | 0 to 70 | TL072C | Samples |
| TL072CDG4 | ACTIVE | SOIC | D | 8 | 75 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM | 0 to 70 | TL072C | Samples |
| TL072CDR | ACTIVE | SOIC | D | 8 | 2500 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM | 0 to 70 | TL072C | Samples |
| TL072CDRE4 | ACTIVE | SOIC | D | 8 | 2500 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM | 0 to 70 | TL072C | Samples |
| TL072CDRG4 | ACTIVE | SOIC | D | 8 | 2500 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM | 0 to 70 | TL072C | Samples |
| TL072CP | ACTIVE | PDIP | P | 8 | 50 | Pb-Free (RoHS) | CU NIPDAU | N / A for Pkg Type | 0 to 70 | TL072CP | Samples |
| TL072CPE4 | ACTIVE | PDIP | P | 8 | 50 | Pb-Free (RoHS) | CU NIPDAU | N / A for Pkg Type | 0 to 70 | TL072CP | Samples |
| TL072CPSLE | OBSOLETE | SO | PS | 8 | | TBD | Call TI | Call TI | 0 to 70 | | |
| TL072CPSR | ACTIVE | SO | PS | 8 | 2000 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM | 0 to 70 | T072 | Samples |
| TL072CPSRE4 | ACTIVE | SO | PS | 8 | 2000 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM | 0 to 70 | T072 | Samples |
| TL072CPSRG4 | ACTIVE | SO | PS | 8 | 2000 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM | 0 to 70 | T072 | Samples |
| TL072CPWR | ACTIVE | TSSOP | PW | 8 | 2000 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM | 0 to 70 | T072 | Samples |
| TL072CPWRE4 | ACTIVE | TSSOP | PW | 8 | 2000 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM | 0 to 70 | T072 | Samples |
| TL072CPWRG4 | ACTIVE | TSSOP | PW | 8 | 2000 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM | 0 to 70 | T072 | Samples |
| TL072ID | ACTIVE | SOIC | D | 8 | 75 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM | -40 to 85 | TL072I | Samples |
| TL072IDE4 | ACTIVE | SOIC | D | 8 | 75 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM | -40 to 85 | TL072I | Samples |

| Orderable Device | Status (1) | Package Type | Package Drawing | Pins | Package Qty | Eco Plan (2) | Lead/Ball Finish (6) | MSL Peak Temp (3) | Op Temp (°C) | Device Marking (4/5) | Samples |
|------------------|---------------|--------------|-----------------|------|-------------|-------------------------|-------------------------|----------------------|--------------|-------------------------|-------------------------|
| TL072IDG4 | ACTIVE | SOIC | D | 8 | 75 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM | -40 to 85 | TL072I | Samples |
| TL072IDR | ACTIVE | SOIC | D | 8 | 2500 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM | -40 to 85 | TL072I | Samples |
| TL072IDRE4 | ACTIVE | SOIC | D | 8 | 2500 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM | -40 to 85 | TL072I | Samples |
| TL072IDRG4 | ACTIVE | SOIC | D | 8 | 2500 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM | -40 to 85 | TL072I | Samples |
| TL072IP | ACTIVE | PDIP | P | 8 | 50 | Pb-Free (RoHS) | CU NIPDAU | N / A for Pkg Type | -40 to 85 | TL072IP | Samples |
| TL072IPE4 | ACTIVE | PDIP | P | 8 | 50 | Pb-Free (RoHS) | CU NIPDAU | N / A for Pkg Type | -40 to 85 | TL072IP | Samples |
| TL072MFKB | ACTIVE | LCCC | FK | 20 | 1 | TBD | POST-PLATE | N / A for Pkg Type | -55 to 125 | 81023052A TL072MFKB | Samples |
| TL072MJG | ACTIVE | CDIP | JG | 8 | 1 | TBD | A42 | N / A for Pkg Type | -55 to 125 | TL072MJG | Samples |
| TL072MJGB | ACTIVE | CDIP | JG | 8 | 1 | TBD | A42 | N / A for Pkg Type | -55 to 125 | 8102305PA TL072M | Samples |
| TL072MUB | ACTIVE | CFP | U | 10 | 1 | TBD | A42 | N / A for Pkg Type | -55 to 125 | 8102305HA TL072M | Samples |
| TL074ACD | ACTIVE | SOIC | D | 14 | 50 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM | 0 to 70 | TL074AC | Samples |
| TL074ACDE4 | ACTIVE | SOIC | D | 14 | 50 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM | 0 to 70 | TL074AC | Samples |
| TL074ACDG4 | ACTIVE | SOIC | D | 14 | 50 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM | 0 to 70 | TL074AC | Samples |
| TL074ACDR | ACTIVE | SOIC | D | 14 | 2500 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM | 0 to 70 | TL074AC | Samples |
| TL074ACDRE4 | ACTIVE | SOIC | D | 14 | 2500 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM | 0 to 70 | TL074AC | Samples |
| TL074ACDRG4 | ACTIVE | SOIC | D | 14 | 2500 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM | 0 to 70 | TL074AC | Samples |
| TL074ACJ | OBSOLETE | CDIP | J | 14 | | TBD | Call TI | Call TI | 0 to 70 | | |
| TL074ACN | ACTIVE | PDIP | N | 14 | 25 | Pb-Free (RoHS) | CU NIPDAU | N / A for Pkg Type | 0 to 70 | TL074ACN | Samples |

| Orderable Device | Status (1) | Package Type | Package Drawing | Pins | Package Qty | Eco Plan (2) | Lead/Ball Finish (6) | MSL Peak Temp (3) | Op Temp (°C) | Device Marking (4/5) | Samples |
|------------------|---------------|--------------|--------------------|------|----------------|----------------------------|-------------------------|----------------------|--------------|-------------------------|-------------------------|
| TL074ACNE4 | ACTIVE | PDIP | N | 14 | 25 | Pb-Free (RoHS) | CU NIPDAU | N / A for Pkg Type | 0 to 70 | TL074ACN | Samples |
| TL074ACNSR | ACTIVE | SO | NS | 14 | 2000 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM | 0 to 70 | TL074A | Samples |
| TL074BCD | ACTIVE | SOIC | D | 14 | 50 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM | 0 to 70 | TL074BC | Samples |
| TL074BCDE4 | ACTIVE | SOIC | D | 14 | 50 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM | 0 to 70 | TL074BC | Samples |
| TL074BCDG4 | ACTIVE | SOIC | D | 14 | 50 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM | 0 to 70 | TL074BC | Samples |
| TL074BCDR | ACTIVE | SOIC | D | 14 | 2500 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM | 0 to 70 | TL074BC | Samples |
| TL074BCDRE4 | ACTIVE | SOIC | D | 14 | 2500 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM | 0 to 70 | TL074BC | Samples |
| TL074BCDRG4 | ACTIVE | SOIC | D | 14 | 2500 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM | 0 to 70 | TL074BC | Samples |
| TL074BCN | ACTIVE | PDIP | N | 14 | 25 | Pb-Free (RoHS) | CU NIPDAU | N / A for Pkg Type | 0 to 70 | TL074BCN | Samples |
| TL074BCNE4 | ACTIVE | PDIP | N | 14 | 25 | Pb-Free (RoHS) | CU NIPDAU | N / A for Pkg Type | 0 to 70 | TL074BCN | Samples |
| TL074CD | ACTIVE | SOIC | D | 14 | 50 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM | 0 to 70 | TL074C | Samples |
| TL074CDE4 | ACTIVE | SOIC | D | 14 | 50 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM | 0 to 70 | TL074C | Samples |
| TL074CDG4 | ACTIVE | SOIC | D | 14 | 50 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM | 0 to 70 | TL074C | Samples |
| TL074CDR | ACTIVE | SOIC | D | 14 | 2500 | Green (RoHS & no Sb/Br) | CU NIPDAU CU SN | Level-1-260C-UNLIM | 0 to 70 | TL074C | Samples |
| TL074CDRE4 | ACTIVE | SOIC | D | 14 | 2500 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM | 0 to 70 | TL074C | Samples |
| TL074CDRG4 | ACTIVE | SOIC | D | 14 | 2500 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM | 0 to 70 | TL074C | Samples |
| TL074CN | ACTIVE | PDIP | N | 14 | 25 | Pb-Free (RoHS) | CU NIPDAU | N / A for Pkg Type | 0 to 70 | TL074CN | Samples |
| TL074CNE4 | ACTIVE | PDIP | N | 14 | 25 | Pb-Free (RoHS) | CU NIPDAU | N / A for Pkg Type | 0 to 70 | TL074CN | Samples |

| Orderable Device | Status (1) | Package Type | Package Drawing | Pins | Package Qty | Eco Plan (2) | Lead/Ball Finish (6) | MSL Peak Temp (3) | Op Temp (°C) | Device Marking (4/5) | Samples |
|------------------|---------------|--------------|--------------------|------|----------------|----------------------------|-------------------------|----------------------|--------------|-------------------------|-------------------------|
| TL074CNSR | ACTIVE | SO | NS | 14 | 2000 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM | 0 to 70 | TL074 | Samples |
| TL074CNSRG4 | ACTIVE | SO | NS | 14 | 2000 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM | 0 to 70 | TL074 | Samples |
| TL074CPW | ACTIVE | TSSOP | PW | 14 | 90 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM | 0 to 70 | T074 | Samples |
| TL074CPWG4 | ACTIVE | TSSOP | PW | 14 | 90 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM | 0 to 70 | T074 | Samples |
| TL074CPWLE | OBSOLETE | TSSOP | PW | 14 | | TBD | Call TI | Call TI | 0 to 70 | | |
| TL074CPWR | ACTIVE | TSSOP | PW | 14 | 2000 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM | 0 to 70 | T074 | Samples |
| TL074CPWRE4 | ACTIVE | TSSOP | PW | 14 | 2000 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM | 0 to 70 | T074 | Samples |
| TL074CPWRG4 | ACTIVE | TSSOP | PW | 14 | 2000 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM | 0 to 70 | T074 | Samples |
| TL074ID | ACTIVE | SOIC | D | 14 | 50 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM | -40 to 85 | TL074I | Samples |
| TL074IDE4 | ACTIVE | SOIC | D | 14 | 50 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM | -40 to 85 | TL074I | Samples |
| TL074IDG4 | ACTIVE | SOIC | D | 14 | 50 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM | -40 to 85 | TL074I | Samples |
| TL074IDR | ACTIVE | SOIC | D | 14 | 2500 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM | -40 to 85 | TL074I | Samples |
| TL074IDRE4 | ACTIVE | SOIC | D | 14 | 2500 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM | -40 to 85 | TL074I | Samples |
| TL074IDRG4 | ACTIVE | SOIC | D | 14 | 2500 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM | -40 to 85 | TL074I | Samples |
| TL074IJ | OBSOLETE | CDIP | J | 14 | | TBD | Call TI | Call TI | -40 to 85 | | |
| TL074IN | ACTIVE | PDIP | N | 14 | 25 | Pb-Free (RoHS) | CU NIPDAU | N / A for Pkg Type | -40 to 85 | TL074IN | Samples |
| TL074INE4 | ACTIVE | PDIP | N | 14 | 25 | Pb-Free (RoHS) | CU NIPDAU | N / A for Pkg Type | -40 to 85 | TL074IN | Samples |
| TL074MFK | ACTIVE | LCCC | FK | 20 | 1 | TBD | POST-PLATE | N / A for Pkg Type | -55 to 125 | TL074MFK | Samples |
| TL074MFKB | ACTIVE | LCCC | FK | 20 | 1 | TBD | POST-PLATE | N / A for Pkg Type | -55 to 125 | 81023062A TL074MFKB | Samples |

| Orderable Device | Status (1) | Package Type | Package Drawing | Pins | Package Qty | Eco Plan (2) | Lead/Ball Finish (6) | MSL Peak Temp (3) | Op Temp (°C) | Device Marking (4/5) | Samples |
|------------------|---------------|--------------|-----------------|------|-------------|-----------------|-------------------------|----------------------|--------------|-------------------------|-------------------------|
| TL074MJ | ACTIVE | CDIP | J | 14 | 1 | TBD | A42 | N / A for Pkg Type | -55 to 125 | TL074MJ | Samples |
| TL074MJB | ACTIVE | CDIP | J | 14 | 1 | TBD | A42 | N / A for Pkg Type | -55 to 125 | 8102306CA TL074MJB | Samples |
| TL074MWB | ACTIVE | CFP | W | 14 | 1 | TBD | A42 | N / A for Pkg Type | -55 to 125 | 8102306DA TL074MWB | Samples |
| TL081-W | ACTIVE | WAFERSALE | YS | 0 | | TBD | Call TI | Call TI | | | Samples |

(1) The marketing status values are defined as follows:

ACTIVE: Product device recommended for new designs.

LIFEBUY: TI has announced that the device will be discontinued, and a lifetime-buy period is in effect.

NRND: Not recommended for new designs. Device is in production to support existing customers, but TI does not recommend using this part in a new design.

PREVIEW: Device has been announced but is not in production. Samples may or may not be available.

OBSELETE: TI has discontinued the production of the device.

(2) Eco Plan - The planned eco-friendly classification: Pb-Free (RoHS), Pb-Free (RoHS Exempt), or Green (RoHS & no Sb/Br) - please check <http://www.ti.com/productcontent> for the latest availability information and additional product content details.

TBD: The Pb-Free/Green conversion plan has not been defined.

Pb-Free (RoHS): TI's terms "Lead-Free" or "Pb-Free" mean semiconductor products that are compatible with the current RoHS requirements for all 6 substances, including the requirement that lead not exceed 0.1% by weight in homogeneous materials. Where designed to be soldered at high temperatures, TI Pb-Free products are suitable for use in specified lead-free processes.

Pb-Free (RoHS Exempt): This component has a RoHS exemption for either 1) lead-based flip-chip solder bumps used between the die and package, or 2) lead-based die adhesive used between the die and leadframe. The component is otherwise considered Pb-Free (RoHS compatible) as defined above.

Green (RoHS & no Sb/Br): TI defines "Green" to mean Pb-Free (RoHS compatible), and free of Bromine (Br) and Antimony (Sb) based flame retardants (Br or Sb do not exceed 0.1% by weight in homogeneous material)

(3) MSL, Peak Temp. - The Moisture Sensitivity Level rating according to the JEDEC industry standard classifications, and peak solder temperature.

(4) There may be additional marking, which relates to the logo, the lot trace code information, or the environmental category on the device.

(5) Multiple Device Markings will be inside parentheses. Only one Device Marking contained in parentheses and separated by a "-" will appear on a device. If a line is indented then it is a continuation of the previous line and the two combined represent the entire Device Marking for that device.

(6) Lead/Ball Finish - Orderable Devices may have multiple material finish options. Finish options are separated by a vertical ruled line. Lead/Ball Finish values may wrap to two lines if the finish value exceeds the maximum column width.

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OTHER QUALIFIED VERSIONS OF TL072, TL072M, TL074, TL074M :

- Catalog: [TL072](#), [TL074](#)
- Enhanced Product: [TL072-EP](#), [TL072-EP](#), [TL074-EP](#), [TL074-EP](#)
- Military: [TL072M](#), [TL074M](#)

NOTE: Qualified Version Definitions:

- Catalog - TI's standard catalog product
- Enhanced Product - Supports Defense, Aerospace and Medical Applications
- Military - QML certified for Military and Defense Applications

TAPE AND REEL INFORMATION



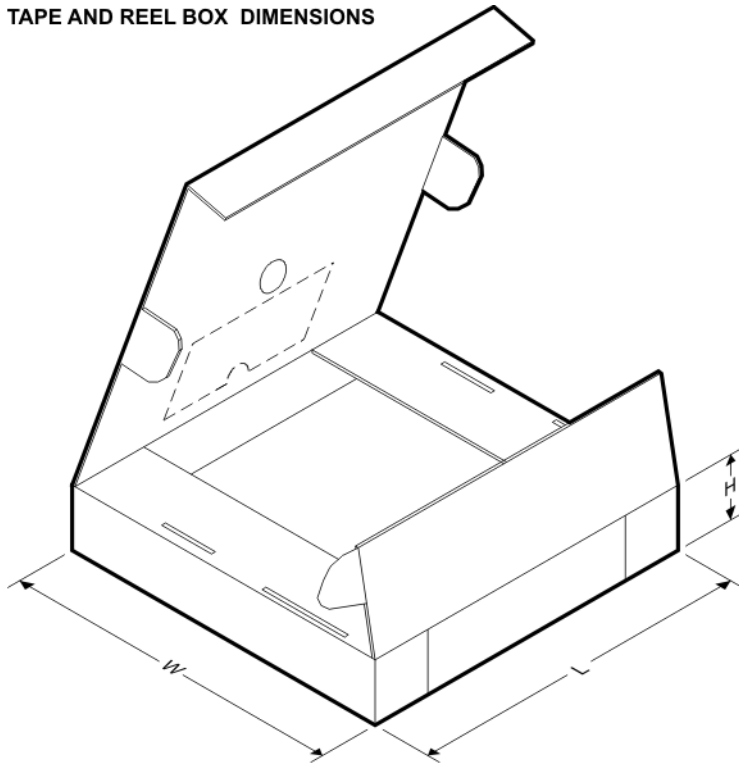
QUADRANT ASSIGNMENTS FOR PIN 1 ORIENTATION IN TAPE



*All dimensions are nominal

| Device | Package Type | Package Drawing | Pins | SPQ | Reel Diameter (mm) | Reel Width W1 (mm) | A0 (mm) | B0 (mm) | K0 (mm) | P1 (mm) | W (mm) | Pin1 Quadrant |
|------------|--------------|-----------------|------|------|--------------------|--------------------|---------|---------|---------|---------|--------|---------------|
| TL071ACDR | SOIC | D | 8 | 2500 | 330.0 | 12.4 | 6.4 | 5.2 | 2.1 | 8.0 | 12.0 | Q1 |
| TL071BCDR | SOIC | D | 8 | 2500 | 330.0 | 12.4 | 6.4 | 5.2 | 2.1 | 8.0 | 12.0 | Q1 |
| TL071CDR | SOIC | D | 8 | 2500 | 330.0 | 12.4 | 6.4 | 5.2 | 2.1 | 8.0 | 12.0 | Q1 |
| TL071CDR | SOIC | D | 8 | 2500 | 330.0 | 12.4 | 6.4 | 5.2 | 2.1 | 8.0 | 12.0 | Q1 |
| TL071CPSR | SO | PS | 8 | 2000 | 330.0 | 16.4 | 8.2 | 6.6 | 2.5 | 12.0 | 16.0 | Q1 |
| TL071IDR | SOIC | D | 8 | 2500 | 330.0 | 12.4 | 6.4 | 5.2 | 2.1 | 8.0 | 12.0 | Q1 |
| TL072ACDR | SOIC | D | 8 | 2500 | 330.0 | 12.4 | 6.4 | 5.2 | 2.1 | 8.0 | 12.0 | Q1 |
| TL072BCDR | SOIC | D | 8 | 2500 | 330.0 | 12.4 | 6.4 | 5.2 | 2.1 | 8.0 | 12.0 | Q1 |
| TL072CDR | SOIC | D | 8 | 2500 | 330.0 | 12.4 | 6.4 | 5.2 | 2.1 | 8.0 | 12.0 | Q1 |
| TL072CDR | SOIC | D | 8 | 2500 | 330.0 | 12.4 | 6.4 | 5.2 | 2.1 | 8.0 | 12.0 | Q1 |
| TL072CPWR | TSSOP | PW | 8 | 2000 | 330.0 | 12.4 | 7.0 | 3.6 | 1.6 | 8.0 | 12.0 | Q1 |
| TL072IDR | SOIC | D | 8 | 2500 | 330.0 | 12.4 | 6.4 | 5.2 | 2.1 | 8.0 | 12.0 | Q1 |
| TL072IDR | SOIC | D | 8 | 2500 | 330.0 | 12.4 | 6.4 | 5.2 | 2.1 | 8.0 | 12.0 | Q1 |
| TL074ACDR | SOIC | D | 14 | 2500 | 330.0 | 16.4 | 6.5 | 9.0 | 2.1 | 8.0 | 16.0 | Q1 |
| TL074ACNSR | SO | NS | 14 | 2000 | 330.0 | 16.4 | 8.2 | 10.5 | 2.5 | 12.0 | 16.0 | Q1 |
| TL074BCDR | SOIC | D | 14 | 2500 | 330.0 | 16.4 | 6.5 | 9.0 | 2.1 | 8.0 | 16.0 | Q1 |
| TL074CDR | SOIC | D | 14 | 2500 | 330.0 | 16.4 | 6.5 | 9.0 | 2.1 | 8.0 | 16.0 | Q1 |
| TL074CDRG4 | SOIC | D | 14 | 2500 | 330.0 | 16.4 | 6.5 | 9.0 | 2.1 | 8.0 | 16.0 | Q1 |

| Device | Package Type | Package Drawing | Pins | SPQ | Reel Diameter (mm) | Reel Width W1 (mm) | A0 (mm) | B0 (mm) | K0 (mm) | P1 (mm) | W (mm) | Pin1 Quadrant |
|-----------|--------------|-----------------|------|------|--------------------|--------------------|---------|---------|---------|---------|--------|---------------|
| TL074CPWR | TSSOP | PW | 14 | 2000 | 330.0 | 12.4 | 6.9 | 5.6 | 1.6 | 8.0 | 12.0 | Q1 |
| TL074IDR | SOIC | D | 14 | 2500 | 330.0 | 16.4 | 6.5 | 9.0 | 2.1 | 8.0 | 16.0 | Q1 |

TAPE AND REEL BOX DIMENSIONS


*All dimensions are nominal

| Device | Package Type | Package Drawing | Pins | SPQ | Length (mm) | Width (mm) | Height (mm) |
|------------|--------------|-----------------|------|------|-------------|------------|-------------|
| TL071ACDR | SOIC | D | 8 | 2500 | 340.5 | 338.1 | 20.6 |
| TL071BCDR | SOIC | D | 8 | 2500 | 340.5 | 338.1 | 20.6 |
| TL071CDR | SOIC | D | 8 | 2500 | 340.5 | 338.1 | 20.6 |
| TL071CDR | SOIC | D | 8 | 2500 | 367.0 | 367.0 | 35.0 |
| TL071CPSR | SO | PS | 8 | 2000 | 367.0 | 367.0 | 38.0 |
| TL071IDR | SOIC | D | 8 | 2500 | 340.5 | 338.1 | 20.6 |
| TL072ACDR | SOIC | D | 8 | 2500 | 340.5 | 338.1 | 20.6 |
| TL072BCDR | SOIC | D | 8 | 2500 | 340.5 | 338.1 | 20.6 |
| TL072CDR | SOIC | D | 8 | 2500 | 340.5 | 338.1 | 20.6 |
| TL072CDR | SOIC | D | 8 | 2500 | 367.0 | 367.0 | 35.0 |
| TL072CPWR | TSSOP | PW | 8 | 2000 | 367.0 | 367.0 | 35.0 |
| TL072IDR | SOIC | D | 8 | 2500 | 367.0 | 367.0 | 35.0 |
| TL072IDR | SOIC | D | 8 | 2500 | 340.5 | 338.1 | 20.6 |
| TL074ACDR | SOIC | D | 14 | 2500 | 333.2 | 345.9 | 28.6 |
| TL074ACNSR | SO | NS | 14 | 2000 | 367.0 | 367.0 | 38.0 |

| Device | Package Type | Package Drawing | Pins | SPQ | Length (mm) | Width (mm) | Height (mm) |
|------------|--------------|-----------------|------|------|-------------|------------|-------------|
| TL074BCDR | SOIC | D | 14 | 2500 | 333.2 | 345.9 | 28.6 |
| TL074CDR | SOIC | D | 14 | 2500 | 333.2 | 345.9 | 28.6 |
| TL074CDRG4 | SOIC | D | 14 | 2500 | 333.2 | 345.9 | 28.6 |
| TL074CPWR | TSSOP | PW | 14 | 2000 | 367.0 | 367.0 | 35.0 |
| TL074IDR | SOIC | D | 14 | 2500 | 333.2 | 345.9 | 28.6 |

JG (R-GDIP-T8)

CERAMIC DUAL-IN-LINE



- NOTES: A. All linear dimensions are in inches (millimeters).
 B. This drawing is subject to change without notice.
 C. This package can be hermetically sealed with a ceramic lid using glass frit.
 D. Index point is provided on cap for terminal identification.
 E. Falls within MIL STD 1835 GDIP1-T8

J (R-GDIP-T**)

14 LEADS SHOWN

CERAMIC DUAL IN-LINE PACKAGE



| DIM \ PINS ** | 14 | 16 | 18 | 20 |
|---------------|------------------------|------------------------|------------------------|------------------------|
| A | 0.300 (7,62) BSC | 0.300 (7,62) BSC | 0.300 (7,62) BSC | 0.300 (7,62) BSC |
| B MAX | 0.785 (19,94) | .840 (21,34) | 0.960 (24,38) | 1.060 (26,92) |
| B MIN | — | — | — | — |
| C MAX | 0.300 (7,62) | 0.300 (7,62) | 0.310 (7,87) | 0.300 (7,62) |
| C MIN | 0.245 (6,22) | 0.245 (6,22) | 0.220 (5,59) | 0.245 (6,22) |

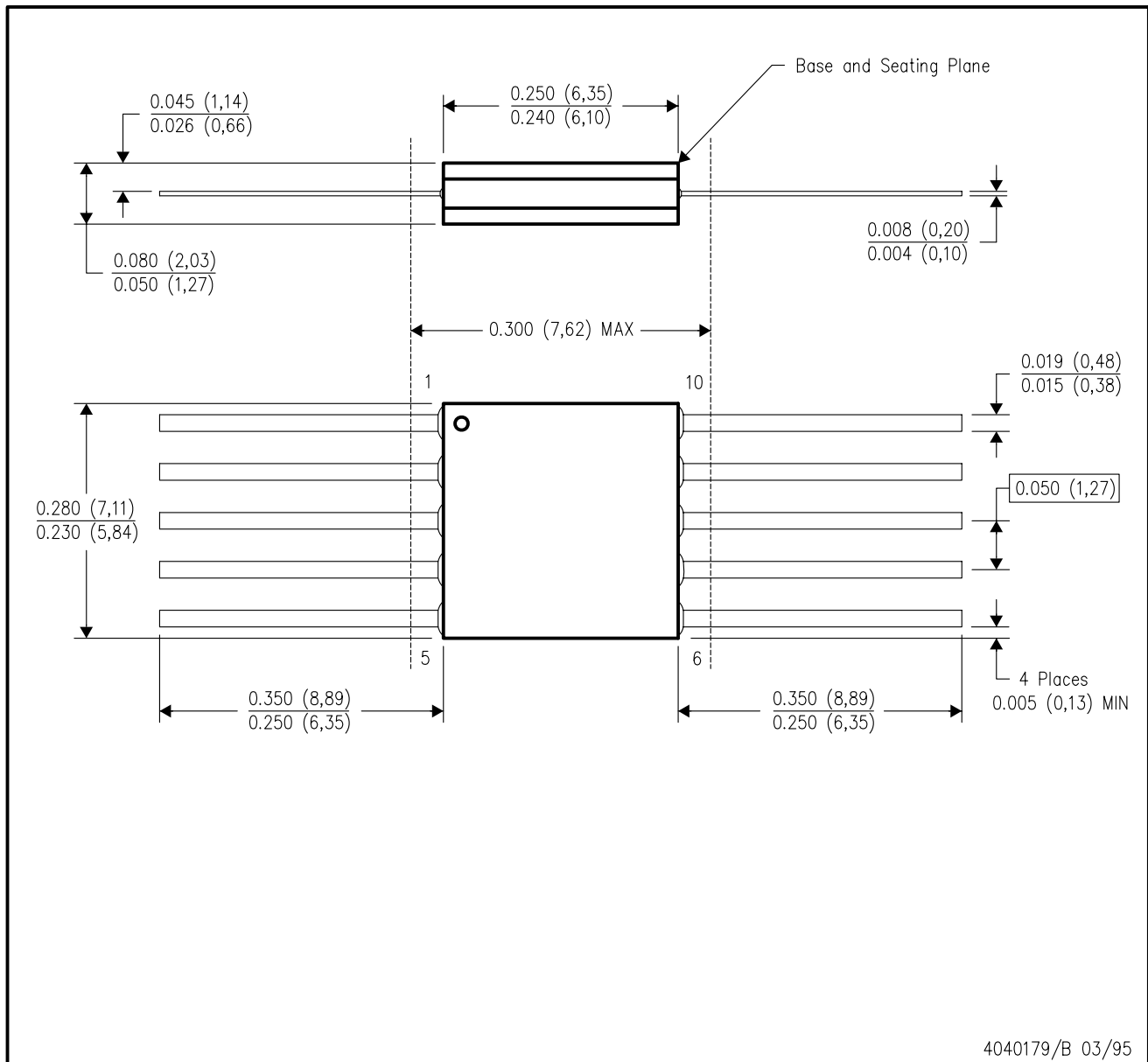


4040083/F 03/03

- NOTES:
- All linear dimensions are in inches (millimeters).
 - This drawing is subject to change without notice.
 - This package is hermetically sealed with a ceramic lid using glass frit.
 - Index point is provided on cap for terminal identification only on press ceramic glass frit seal only.
 - Falls within MIL STD 1835 GDIP1-T14, GDIP1-T16, GDIP1-T18 and GDIP1-T20.

U (S-GDFP-F10)

CERAMIC DUAL FLATPACK



- NOTES:
- All linear dimensions are in inches (millimeters).
 - This drawing is subject to change without notice.
 - This package can be hermetically sealed with a ceramic lid using glass frit.
 - Index point is provided on cap for terminal identification only.
 - Falls within MIL STD 1835 GDFP1-F10 and JEDEC MO-092AA

W (R-GDFP-F14)

CERAMIC DUAL FLATPACK



- NOTES:
- A. All linear dimensions are in inches (millimeters).
 - B. This drawing is subject to change without notice.
 - C. This package can be hermetically sealed with a ceramic lid using glass frit.
 - D. Index point is provided on cap for terminal identification only.
 - E. Falls within MIL STD 1835 GDFP1-F14

FK (S-CQCC-N**)

LEADLESS CERAMIC CHIP CARRIER

28 TERMINAL SHOWN



| NO. OF TERMINALS ** | A | | B | |
|---------------------|------------------|------------------|------------------|------------------|
| | MIN | MAX | MIN | MAX |
| 20 | 0.342 (8,69) | 0.358 (9,09) | 0.307 (7,80) | 0.358 (9,09) |
| 28 | 0.442 (11,23) | 0.458 (11,63) | 0.406 (10,31) | 0.458 (11,63) |
| 44 | 0.640 (16,26) | 0.660 (16,76) | 0.495 (12,58) | 0.560 (14,22) |
| 52 | 0.740 (18,78) | 0.761 (19,32) | 0.495 (12,58) | 0.560 (14,22) |
| 68 | 0.938 (23,83) | 0.962 (24,43) | 0.850 (21,6) | 0.858 (21,8) |
| 84 | 1.141 (28,99) | 1.165 (29,59) | 1.047 (26,6) | 1.063 (27,0) |



4040140/D 01/11

- NOTES:
- All linear dimensions are in inches (millimeters).
 - This drawing is subject to change without notice.
 - This package can be hermetically sealed with a metal lid.
 - Falls within JEDEC MS-004

P (R-PDIP-T8)

PLASTIC DUAL-IN-LINE PACKAGE



- NOTES:
- A. All linear dimensions are in inches (millimeters).
 - B. This drawing is subject to change without notice.
 - C. Falls within JEDEC MS-001 variation BA.

N (R-PDIP-T**)

PLASTIC DUAL-IN-LINE PACKAGE

16 PINS SHOWN



- NOTES:
- A. All linear dimensions are in inches (millimeters).
 - B. This drawing is subject to change without notice.
 - Falls within JEDEC MS-001, except 18 and 20 pin minimum body length (Dim A).
 - The 20 pin end lead shoulder width is a vendor option, either half or full width.

D (R-PDSO-G14)

PLASTIC SMALL OUTLINE



- NOTES:
- A. All linear dimensions are in inches (millimeters).
 - B. This drawing is subject to change without notice.
 -  Body length does not include mold flash, protrusions, or gate burrs. Mold flash, protrusions, or gate burrs shall not exceed 0.006 (0,15) each side.
 -  Body width does not include interlead flash. Interlead flash shall not exceed 0.017 (0,43) each side.
 - E. Reference JEDEC MS-012 variation AB.

D (R-PDSO-G14)

PLASTIC SMALL OUTLINE



- NOTES:
- All linear dimensions are in millimeters.
 - This drawing is subject to change without notice.
 - Publication IPC-7351 is recommended for alternate designs.
 - Laser cutting apertures with trapezoidal walls and also rounding corners will offer better paste release. Customers should contact their board assembly site for stencil design recommendations. Refer to IPC-7525 for other stencil recommendations.
 - Customers should contact their board fabrication site for solder mask tolerances between and around signal pads.

PW (R-PDSO-G14)

PLASTIC SMALL OUTLINE



- NOTES:
- A. All linear dimensions are in millimeters.
 - B. This drawing is subject to change without notice.
 - C. Publication IPC-7351 is recommended for alternate designs.
 - D. Laser cutting apertures with trapezoidal walls and also rounding corners will offer better paste release. Customers should contact their board assembly site for stencil design recommendations. Refer to IPC-7525 for other stencil recommendations.
 - E. Customers should contact their board fabrication site for solder mask tolerances between and around signal pads.

D (R-PDSO-G8)

PLASTIC SMALL OUTLINE



D (R-PDSO-G8)

PLASTIC SMALL OUTLINE



- NOTES:
- A. All linear dimensions are in millimeters.
 - B. This drawing is subject to change without notice.
 - C. Publication IPC-7351 is recommended for alternate designs.
 - D. Laser cutting apertures with trapezoidal walls and also rounding corners will offer better paste release. Customers should contact their board assembly site for stencil design recommendations. Refer to IPC-7525 for other stencil recommendations.
 - E. Customers should contact their board fabrication site for solder mask tolerances between and around signal pads.

MECHANICAL DATA

PS (R-PDSO-G8)

PLASTIC SMALL-OUTLINE PACKAGE



- NOTES:
- A. All linear dimensions are in millimeters.
 - B. This drawing is subject to change without notice.
 - C. Body dimensions do not include mold flash or protrusion, not to exceed 0,15.

PS (R-PDSO-G8)

PLASTIC SMALL OUTLINE



- NOTES:
- All linear dimensions are in millimeters.
 - This drawing is subject to change without notice.
 - Publication IPC-7351 is recommended for alternate designs.
 - Laser cutting apertures with trapezoidal walls and also rounding corners will offer better paste release. Customers should contact their board assembly site for stencil design recommendations. Refer to IPC-7525 for other stencil recommendations.
 - Customers should contact their board fabrication site for solder mask tolerances between and around signal pads.

MECHANICAL DATA

NS (R-PDSO-G**)

PLASTIC SMALL-OUTLINE PACKAGE

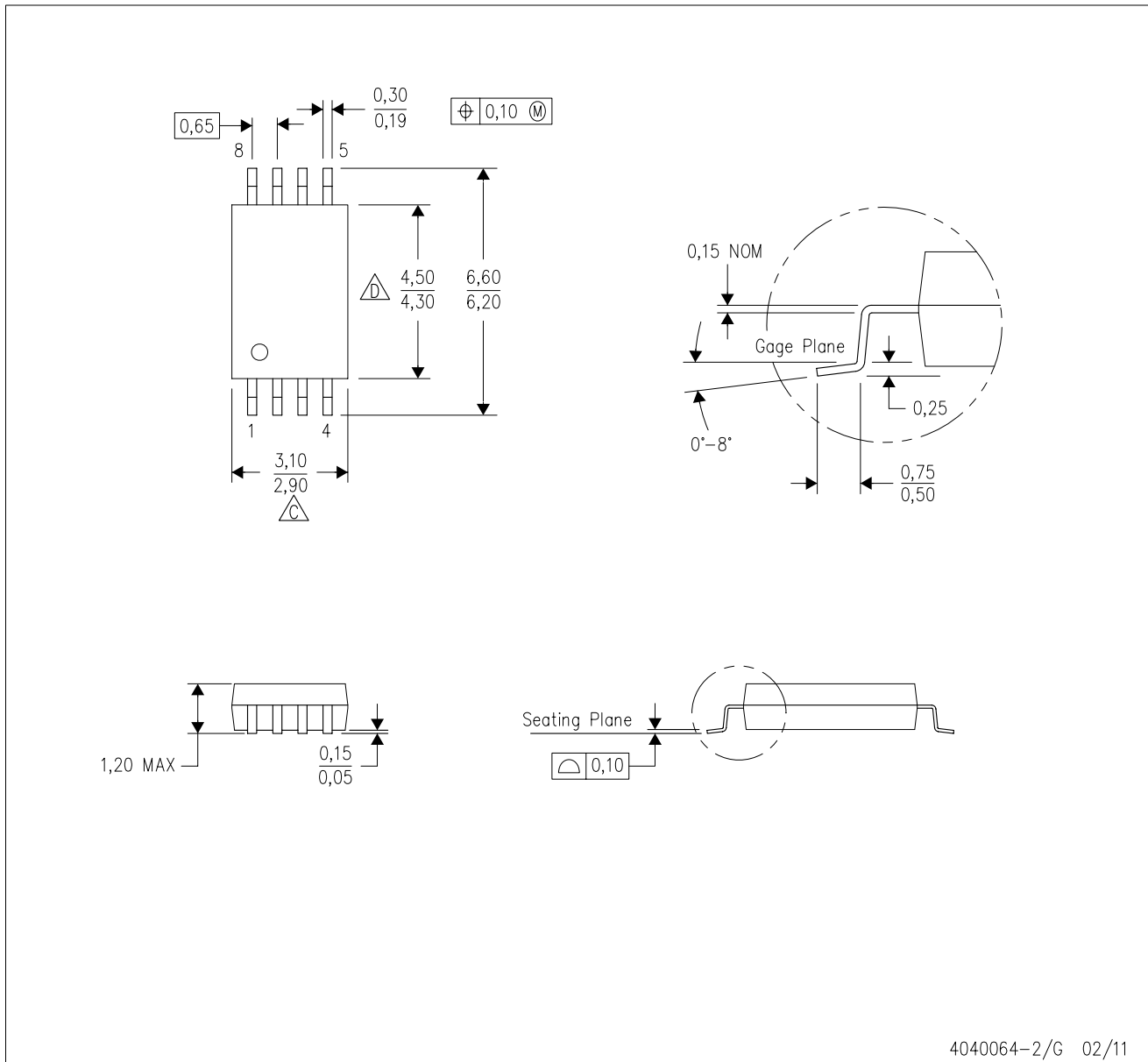
14-PINS SHOWN



- NOTES:
- A. All linear dimensions are in millimeters.
 - B. This drawing is subject to change without notice.
 - C. Body dimensions do not include mold flash or protrusion, not to exceed 0,15.

PW (R-PDSO-G8)

PLASTIC SMALL OUTLINE



- NOTES:
- A. All linear dimensions are in millimeters. Dimensioning and tolerancing per ASME Y14.5M-1994.
 - B. This drawing is subject to change without notice.
 - C. Body length does not include mold flash, protrusions, or gate burrs. Mold flash, protrusions, or gate burrs shall not exceed 0,15 each side.
 - D. Body width does not include interlead flash. Interlead flash shall not exceed 0,25 each side.
 - E. Falls within JEDEC MO-153

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