



LM741 Amplificador Operacional

Traducido por: Ingenieriaelectronica.org

Características:

- Protección de sobrecarga en la entradas y salidas
- No hay Latch-Up Cuando el rango de modo común se supera

Descripción: La serie LM741 son de propósito general operativo.

Este amplificador ofrece ventajas en cuanto a rendimiento frente a otros en el mercado como el LM709. Ellos son directos, plug-in han sido reemplazados para el 709C, LM201, MC1439

748 y en la mayoría de aplicaciones.

Los amplificadores ofrecen muchas características que hacen que su aplicación sea casi infalible: como la protección de sobrecarga en la entrada y salida.

El LM741C es idéntico al LM741 / LM741A

Sin embargo el LM741C tiene un desempeño optimo y asegurado en el rango de 0°C a $+70^{\circ}\text{C}$ de Temperatura.

Mientras que el rango para el LM741 es de -55°C a $+125^{\circ}\text{C}$.

Diagrama de conexión en español

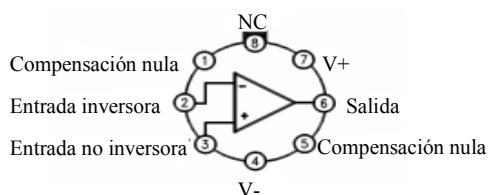


Figura 1. TO-99
Número paquete LMC0008C

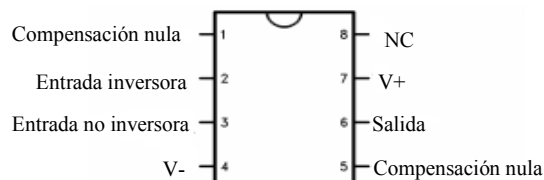


Figura 2. CDIP or PDIP
Número paquete NAB0008A,
P0008E

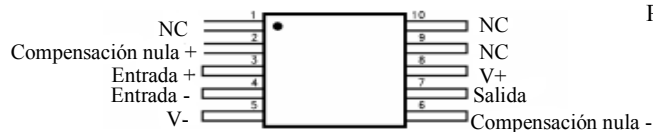


Figura 3. CLGA

Número paquete NAD0010A

Diagrama de conexión original

•

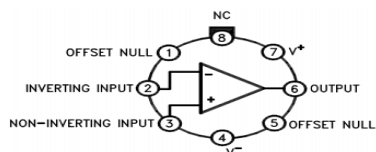


Figure 1. TO-99 Package
See Package Number LMC0008C

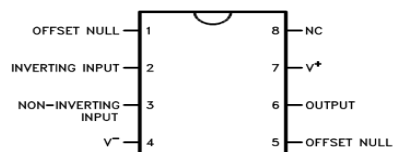


Figure 2. CDIP or PDIP Package
See Package Number NAB0008A, P0008E

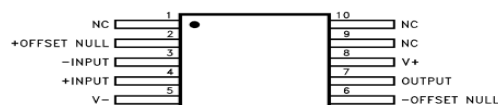


Figure 3. CLGA Package
See Package Number NAD0010A

Aplicación típica

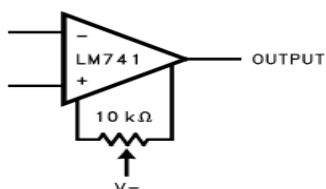


Figura 4. Offset Nulling Circuit

Estos dispositivos han limitado la protección incorporada ESD. Los cables deben ser cortocircuitados durante el almacenamiento o la manipulación para evitar descargas electrostáticas a las puertas MOS.



Clasificaciones Máximas y absolutas

| | LM741A | LM741 | LM741C |
|--|-----------------|-----------------|-----------------|
| Supply Voltage | ±22V | ±22V | ±18V |
| Power Dissipation ⁽⁴⁾ | 500 mW | 500 mW | 500 mW |
| Differential Input Voltage | ±30V | ±30V | ±30V |
| Input Voltage ⁽⁵⁾ | ±15V | ±15V | ±15V |
| Output Short Circuit Duration | Continuous | Continuous | Continuous |
| Operating Temperature Range | -55°C to +125°C | -55°C to +125°C | 0°C to +70°C |
| Storage Temperature Range | -65°C to +150°C | -65°C to +150°C | -65°C to +150°C |
| Junction Temperature | 150°C | 150°C | 100°C |
| Soldering Information | | | |
| P0008E-Package (10 seconds) | 260°C | 260°C | 260°C |
| NAB0008A- or LMC0008C-Package (10 seconds) | 300°C | 300°C | 300°C |
| M-Package | | | |
| Vapor Phase (60 seconds) | 215°C | 215°C | 215°C |
| Infrared (15 seconds) | 215°C | 215°C | 215°C |
| ESD Tolerance ⁽⁶⁾ | 400V | 400V | 400V |

Características eléctricas

| Parameter | Test Conditions | LM741A | | | LM741 | | | LM741C | | | Units |
|------------------------------------|--|--------|-----|-----|-------|-----|-----|--------|-----|-----|------------------------------|
| | | Min | Typ | Max | Min | Typ | Max | Min | Typ | Max | |
| Input Offset Voltage | $T_A = 25^\circ\text{C}$ $R_S \leq 10\text{ k}\Omega$ $R_S \leq 50\Omega$ | | 0.8 | 3.0 | | 1.0 | 5.0 | | 2.0 | 6.0 | mV |
| | $T_{AMIN} \leq T_A \leq T_{AMAX}$ $R_S \leq 50\Omega$ $R_S \leq 10\text{ k}\Omega$ | | | 4.0 | | | 6.0 | | | 7.5 | mV |
| Average Input Offset Voltage Drift | | | | 15 | | | | | | | $\mu\text{V}/^\circ\text{C}$ |



| | | | | | | | | | | | |
|---------------------------------------|--|----------------------|------|-------|----------------------|----------------------|-----|----------------------|----------------------|-----|-------|
| Input Offset Voltage Adjustment Range | $T_A = 25^\circ\text{C}, V_S = \pm 20\text{V}$ | ± 10 | | | | ± 15 | | | ± 15 | | mV |
| Input Offset Current | $T_A = 25^\circ\text{C}$ | | 3.0 | 30 | | 20 | 200 | | 20 | 200 | nA |
| | $T_{\text{AMIN}} \leq T_A \leq T_{\text{AMAX}}$ | | | 70 | | 85 | 500 | | | 300 | |
| Average Input Offset Current Drift | | | | 0.5 | | | | | | | nA/°C |
| Input Bias Current | $T_A = 25^\circ\text{C}$ | | 30 | 80 | | 80 | 500 | | 80 | 500 | nA |
| | $T_{\text{AMIN}} \leq T_A \leq T_{\text{AMAX}}$ | | | 0.210 | | | 1.5 | | | 0.8 | μA |
| Input Resistance | $T_A = 25^\circ\text{C}, V_S = \pm 20\text{V}$ | 1.0 | 6.0 | | 0.3 | 2.0 | | 0.3 | 2.0 | | MΩ |
| | $T_{\text{AMIN}} \leq T_A \leq T_{\text{AMAX}}, V_S = \pm 20\text{V}$ | 0.5 | | | | | | | | | |
| Input Voltage Range | $T_A = 25^\circ\text{C}$ | | | | | | | ± 12 | ± 13 | | V |
| | $T_{\text{AMIN}} \leq T_A \leq T_{\text{AMAX}}$ | | | | ± 12 | ± 13 | | | | | |
| Large Signal Voltage Gain | $T_A = 25^\circ\text{C}, R_L \geq 2\text{ k}\Omega$ $V_S = \pm 20\text{V}, V_O = \pm 15\text{V}$ $V_S = \pm 15\text{V}, V_O = \pm 10\text{V}$ | 50 | | | | | | | | | V/mV |
| | $T_{\text{AMIN}} \leq T_A \leq T_{\text{AMAX}}, R_L \geq 2\text{ k}\Omega$ $V_S = \pm 20\text{V}, V_O = \pm 15\text{V}$ $V_S = \pm 15\text{V}, V_O = \pm 10\text{V}$ | 32 | | | 25 | | | 15 | | | V/mV |
| | $V_S = \pm 15\text{V}, V_O = \pm 10\text{V}$ | 10 | | | | | | | | | |
| | $V_S = \pm 5\text{V}, V_O = \pm 2\text{V}$ | | | | | | | | | | |
| Output Voltage Swing | $V_S = \pm 20\text{V}$ $R_L \geq 10\text{ k}\Omega$ $R_L \geq 2\text{ k}\Omega$ | ± 16 ± 15 | | | | | | | | | V |
| | $V_S = \pm 15\text{V}$ $R_L \geq 10\text{ k}\Omega$ $R_L \geq 2\text{ k}\Omega$ | | | | ± 12 ± 10 | ± 14 ± 13 | | ± 12 ± 10 | ± 14 ± 13 | | V |
| Output Short Circuit Current | $T_A = 25^\circ\text{C}$ | 10 | 25 | 35 | | 25 | | | 25 | | mA |
| | $T_{\text{AMIN}} \leq T_A \leq T_{\text{AMAX}}$ | 10 | | 40 | | | | | | | |
| Common-Mode Rejection Ratio | $T_{\text{AMIN}} \leq T_A \leq T_{\text{AMAX}}$ $R_S \leq 10\text{ k}\Omega, V_{\text{CM}} = \pm 12\text{V}$ | | | | 70 | 90 | | 70 | 90 | | dB |
| | $R_S \leq 50\Omega, V_{\text{CM}} = \pm 12\text{V}$ | 80 | 95 | | | | | | | | |
| Supply Voltage Rejection Ratio | $T_{\text{AMIN}} \leq T_A \leq T_{\text{AMAX}}, V_S = \pm 20\text{V to } \pm 5\text{V}$ $R_S \leq 50\Omega$ | 86 | 96 | | | | | | | | dB |
| | $R_S \leq 10\text{ k}\Omega$ | | | | 77 | 96 | | 77 | 96 | | |
| Transient Response | $T_A = 25^\circ\text{C}, \text{Unity Gain}$ | | | | | | | | | | |
| Rise Time | | | 0.25 | 0.8 | | 0.3 | | | 0.3 | | μs |
| Overshoot | | | 6.0 | 20 | | 5 | | | 5 | | % |



Características eléctricas

| Parameter | Test Conditions | LM741A | | | LM741 | | | LM741C | | | Units |
|-----------|---|--------|-----|------------|-------|----------|-----------|--------|-----|-----|-------|
| | | Min | Typ | Max | Min | Typ | Max | Min | Typ | Max | |
| LM741A | $V_S = \pm 20V$ $T_A = T_{AMIN}$ $T_A = T_{AMAX}$ | | | 165 135 | | | | | | | mW |
| LM741 | $V_S = \pm 15V$ $T_A = T_{AMIN}$ $T_A = T_{AMAX}$ | | | | | 60 45 | 100 75 | | | | mW |

| Thermal Resistance | CDIP (NAB0008A) | PDIP (P0008E) | TO-99 (LMC0008C) | SO-8 (M) |
|-------------------------------------|-----------------|---------------|------------------|----------|
| θ_{JA} (Junction to Ambient) | 100°C/W | 100°C/W | 170°C/W | 195°C/W |
| θ_{JC} (Junction to Case) | N/A | N/A | 25°C/W | N/A |

Diagrama Interno

