UA741

GENERAL PURPOSE
SINGLE OPERATIONAL AMPLIFIER

■ LARGE INPUT VOLTAGE RANGE

■ NO LATCH-UP

■ HIGH GAIN

■ SHORT-CIRCUIT PROTECTION

■ NO FREQUENCY COMPENSATION

■ REQUIRED

■ SAME PIN CONFIGURATION AS THE UA709

DESCRIPTION

The UA741 is a high performance monolithic operational amplifier constructed on a single silicon chip. It is intented for a wide range of analog applications.

■ Summing amplifier

■ Voltage follower

■ Integrator

■ Active filter

■ Function generator

The high gain and wide range of operating voltages provide superior performances in integrator, summing amplifier and general feedback applications. The internal compensation network (6dB/octave) insures stability in closed loop circuits.

N
DIP8
(Plastic Package)

D
SO8
(Plastic Micropackage)

ORDER CODE

Part Number	Temperature Range	Package	
		N	D
UA741C	0°C, +70°C	•	•
UA741I	-40°C, +105°C	•	•
UA741M	-55°C, +125°C	•	•
Example : UA741CN			

N = Dual in Line Package (DIP)
D = Small Outline Package (SO) - also available in Tape & Reel (DT)

PIN CONNECTIONS (top view)
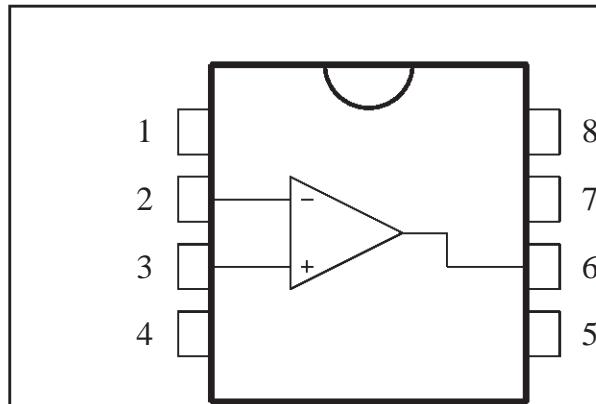
1 - Offset null 1
2 - Inverting input
3 - Non-inverting input
4 - V_{CC}^-
5 - Offset null 2
6 - Output
7 - V_{CC}^+
8 - N.C.

SCHEMATIC DIAGRAM
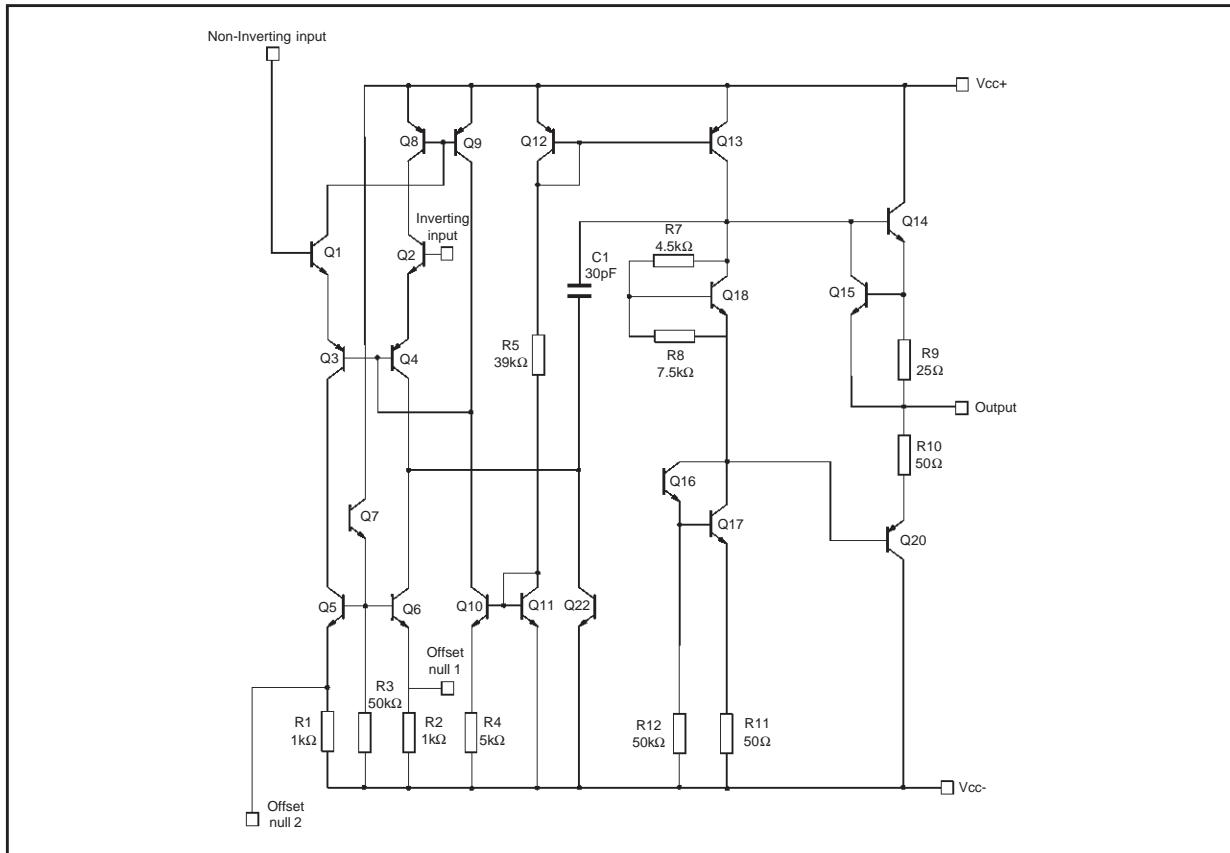
ABSOLUTE MAXIMUM RATINGS

| Symbol	Parameter	UA741M	UA741I	UA741C	Unit
V_{CC}	Supply voltage	±22			V
V_{id}	Differential Input Voltage	±30			V
V_i	Input Voltage	±15			V
P_{tot}	Power Dissipation $^{1)}$	500			mW
	Output Short-circuit Duration	Infinite			
T_{oper}	Operating Free-air Temperature Range	-55 to +125	-40 to +105	0 to +70	°C
T_{stg}	Storage Temperature Range	-65 to +150			°C

1. Power dissipation must be considered to ensure maximum junction temperature (Tj) is not exceeded.

ELECTRICAL CHARACTERISTICS

$V_{CC} = \pm 15V$, $T_{amb} = +25°C$ (unless otherwise specified)

Symbol	Parameter	Min.	Typ.	Max.	Unit

V_{io}	Input Offset Voltage ($R_s \leq 10k\Omega$)
	    $T_{amb} = +25°C$
	    $T_{min} \leq T_{amb} \leq T_{max}$
			1	5
				6
					mV

I_{io}	Input Offset Current
	    $T_{amb} = +25°C$
	    $T_{min} \leq T_{amb} \leq T_{max}$
			2	30
				70
					nA

I_{ib}	Input Bias Current
	    $T_{amb} = +25°C$
	    $T_{min} \leq T_{amb} \leq T_{max}$
			10	100
				200
					nA

A_{vd}	Large Signal Voltage Gain ($V_o = \pm 10V$, $R_L = 2k\Omega$)
	    $T_{amb} = +25°C$
	    $T_{min} \leq T_{amb} \leq T_{max}$
		50
		25
			200		V/mV

SVR	Supply Voltage Rejection Ratio ($R_s \leq 10k\Omega$)
	    $T_{amb} = +25°C$
	    $T_{min} \leq T_{amb} \leq T_{max}$
		77
		77
			90		dB

I_{CC}	Supply Current, no load
	    $T_{amb} = +25°C$
	    $T_{min} \leq T_{amb} \leq T_{max}$
			1.7	2.8
				3.3
					mA

V_{icm}	Input Common Mode Voltage Range
	    $T_{amb} = +25°C$
	    $T_{min} \leq T_{amb} \leq T_{max}$
		± 12
		± 12
					V

CMR	Common Mode Rejection Ratio ($R_S \leq 10k\Omega$)
	    $T_{amb} = +25°C$
	    $T_{min} \leq T_{amb} \leq T_{max}$
		70
		70
			90		dB

I_{OS}	Output short Circuit Current	10	25	40	mA

$\pm V_{opp}$	Output Voltage Swing
	    $T_{amb} = +25°C$ $R_L = 10k\Omega$
	           $R_L = 2k\Omega$
	    $T_{min} \leq T_{amb} \leq T_{max}$ $R_L = 10k\Omega$
	           $R_L = 2k\Omega$
		12
		10
		12
		10
			14
			13
					V

SR	Slew Rate $V_i = \pm 10V$, $R_L = 2k\Omega$, $C_L = 100pF$, unity Gain	0.25	0.5		V/μs
t_r	Rise Time $V_i = \pm 20mV$, $R_L = 2k\Omega$, $C_L = 100pF$, unity Gain		0.3		μs
K_{ov}	Overshoot $V_i = 20mV$, $R_L = 2k\Omega$, $C_L = 100pF$, unity Gain		5		%
R_i	Input Resistance	0.3	2		MΩ
GBP	Gain Bandwith Product $V_i = 10mV$, $R_L = 2k\Omega$, $C_L = 100pF$, f =100kHz	0.7	1		MHz
THD	Total Harmonic Distortion f = 1kHz, $A_V = 20dB$, $R_L = 2k\Omega$, $V_o = 2V_{pp}$, $C_L = 100pF$, $T_{amb} = +25°C$		0.06		%
e_n	Equivalent Input Noise Voltage f = 1kHz, $R_s = 100\Omega$		23		$\frac{nV}{\sqrt{Hz}}$
$\varnothing m$	Phase Margin		50		Degrees

PACKAGE MECHANICAL DATA
8 PINS - PLASTIC DIP
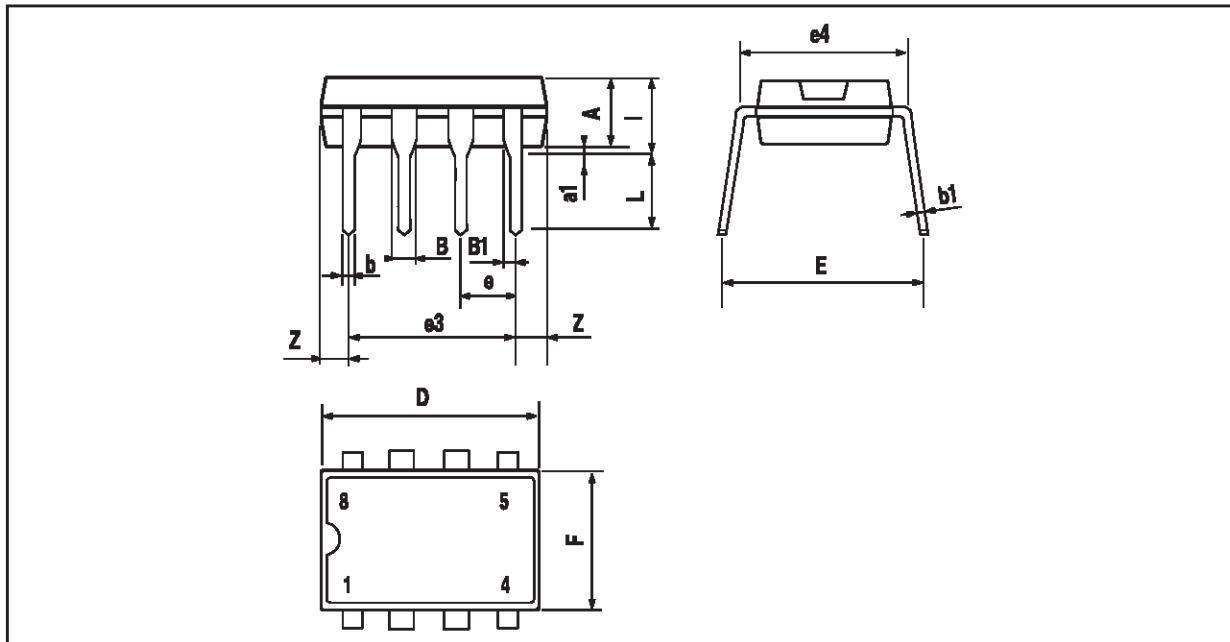
Dim.	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A		3.32			0.131	
a1	0.51			0.020		
B	1.15		1.65	0.045		0.065
b	0.356		0.55	0.014		0.022
b1	0.204		0.304	0.008		0.012
D			10.92			0.430
E	7.95		9.75	0.313		0.384
e		2.54			0.100	
e3		7.62			0.300	
e4		7.62			0.300	
F			6.6			0260
i			5.08			0.200
L	3.18		3.81	0.125		0.150
Z			1.52			0.060

PACKAGE MECHANICAL DATA
8 PINS - PLASTIC MICROPACKAGE (SO)
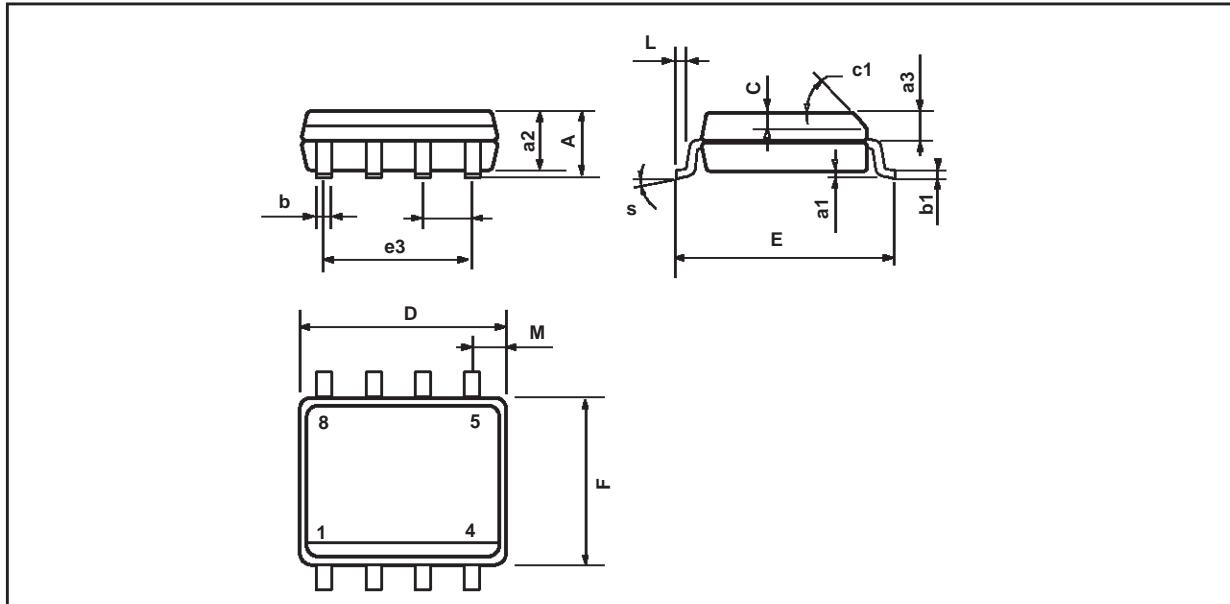
Dim.	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A			1.75			0.069
a1	0.1		0.25	0.004		0.010
a2			1.65			0.065
a3	0.65		0.85	0.026		0.033
b	0.35		0.48	0.014		0.019
b1	0.19		0.25	0.007		0.010
C	0.25		0.5	0.010		0.020
c1	45° (typ.)					
D	4.8		5.0	0.189		0.197
E	5.8		6.2	0.228		0.244
e		1.27			0.050	
e3		3.81			0.150	
F	3.8		4.0	0.150		0.157
L	0.4		1.27	0.016		0.050
M			0.6			0.024
S	8° (max.)					