GENERAL DESCRIPTION

The RM741 and RC741 integrated circuits are high performance, high gain internally compensated monolithic operational amplifiers fabricated on a single silicon chip using the planar epitaxial process.

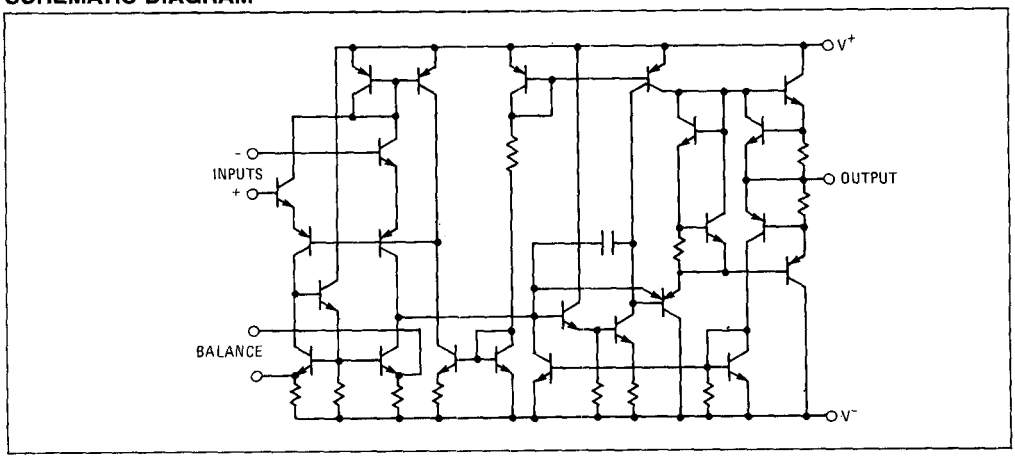
High common-mode voltage range and absence of latch-up tendencies make the RM741 and RC741 ideal for use as a voltage follower. High gain and wide ranges of operating voltages provide superior performance in integrator, summary amplifier and general feedback applications.

Both RM741 and RC741 are pin compatible with the RM709, LM101A and the LM107. The military version, RM741 operates over a temperature range from −55°C to +125°C. The commercial version RC741 operates from 0°C to +70°C.

DESIGN FEATURES

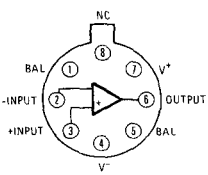
- Supply Voltage ±22V RM741, ±18V RC741
- Offset Voltage Null Capability
- Short-Circuit Protection
- No Frequency Compensation Required
- No Latch-up
- Large Common-Mode and Differential Voltage Ranges
- Low Power Consumption

SCHEMATIC DIAGRAM



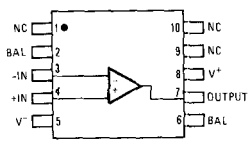
CONNECTION INFORMATION

TE (TO-99)
Metal Can Package
(Top View)



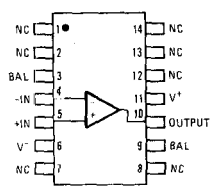
Order Part Nos.:
RM741T, RC741T

CQ
Flat Package
(Top View)



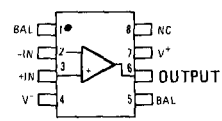
Order Part No.:
RM741CQ

DC
Dual In-line Package
(Top View)



Order Part Nos.:
RM741DC, RC741DC

DE and NB
Dual In-line Package
(Top View)



Order Part No.:
RC741NB, RC741DE,
RV741NB, RV741DE,
RM741DE

RAYTHEON

ABSOLUTE MAXIMUM RATINGS

Supply Voltage	RM741: ±22V RC741: ±18V
Internal Power Dissipation (Note 1)	500mW
Differential Input Voltage	±30V
Input Voltage (Note 2)	±15V
Storage Temperature Range	−65°C to +150°C
Operating Temperature Range	
RM741	−55°C to +125°C
RC741	0°C to +70°C
Lead Temperature (Soldering, 60s)	300°C
Output Short-Circuit Duration (Note 3)	Indefinite

ELECTRICAL CHARACTERISTICS (V_S = ±15V, T_A = 25°C unless otherwise specified)

PARAMETER	CONDITIONS	RM741			RC741			UNITS
		MIN	TYP	MAX	MIN	TYP	MAX	
Input Offset Voltage (Note 4)	$R_S \leq 10k\Omega$		1.0	5.0		2.0	6.0	mV
Input Offset Current			20	200		20	200	nA
Input Bias Current			80	500		80	500	nA
Input Resistance		0.3	2.0		0.3	2.0		MΩ
Large-Signal Voltage Gain	$R_L \geq 2k\Omega$, $V_{out} = \pm 10V$	50,000	200,000		20,000	200,000		
Output Voltage Swing	$R_L \geq 10k\Omega$	±12	±14		±12	±14		V
	$R_L \geq 2k\Omega$	±10	±13		±10	±13		V
Input Voltage Range		±12	±13		±12	±13		V
Common Mode Rejection Ratio	$R_S \leq 10k\Omega$	70	90		70	90		dB
Supply Voltage Rejection Ratio	$R_S \leq 10k\Omega$		30	150		30	150	μV/V
Power Consumption			50	85		50	85	mW
Transient Response (unity gain)	V_{in} = 20mV, R_L = 2kΩ, $C_L \leq 100pF$							
Risetime		–	0.3			0.3		μs
Overshoot			5.0			5.0		%
Slew Rate (unity gain)	$R_L \geq 2k\Omega$		0.5			0.5		V/μs
The following specifications apply for $-55°C \leq T_A \leq +125°C$ for RM741; $0°C \leq T_A \leq +70°C$ for RC741.								
Input Offset Voltage	$R_S \leq 10k\Omega$			6.0			7.5	mV
Input Offset Current	+125°C,+70°C −55°C, 0°C			200			300	nA
Input Bias Current	+125°C,+70°C −55°C, 0°C			500			800	nA
Large-Signal Voltage Gain	$R_L \geq 2k\Omega$, $V_{out} = \pm 10V$	25,000			15,000			
Output Voltage Swing	$R_L \geq 10k$ $R_L \geq 2k\Omega$	±12 ±10			±10			V
Common Mode Rejection Ratio	$R_S \leq 10k\Omega$	70						dB
Supply Voltage Rejection Ratio	$R_S \leq 10k\Omega$			150				μV/V

Supply Current	+125°C			2.5				mA
	−55°C			3.3				mA
Power Consumption	+125°C			75				mW
	−55°C			100				mW

NOTES:

1. Rating applies for case temperatures to +125°C; derate linearly at 6.5 mW/°C for ambient temperatures above +75°C for RM741.
2. For supply voltages less than ±15V, the absolute maximum input voltage is equal to the supply voltage.
3. Short-circuit may be to ground or either supply. Rating applies to +125°C case temperature or +75°C ambient temperature for RM741.
4. Offset voltage may be nulled by connecting a 10kΩ potentiometer accross the balance pins and connecting the wiper pin to V^-.