

# RC4741

## General Purpose Operation Amplifier

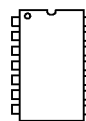
### Features

- Unity gain bandwidth — 3.5 MHz
- High slew rate — 1.6 V/ $\mu$ S
- Low noise voltage — 9 nV/ $\sqrt{\text{Hz}}$
- Input offset voltage — 0.5 mV
- Input bias current — 60 nA
- Indefinite short circuit protection
- No crossover distortion
- Internal compensation
- Wide power supply range —  $\pm 2\text{V}$  to  $\pm 20\text{V}$

### Applications

- Universal active filters
- Audio amplifiers
- Battery powered equipment

### Package



14 pin DIP

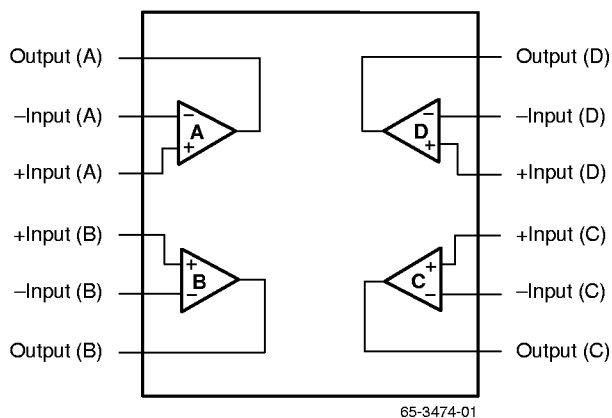
### Description

The RC4741 is a monolithic integrated circuit, consisting of four independent operational amplifiers constructed with the planar epitaxial process.

These amplifiers feature AC and DC performance which exceed that of the 741 type amplifiers. Its superior bandwidth, slew rate and noise characteristics make it an excellent choice for active filter or audio amplifier applications.

A wide range of supply voltages ( $\pm 2\text{V}$  to  $\pm 20\text{V}$ ) can be used to power the RC4741, making it compatible with almost any system including battery powered equipment.

### Block Diagram



## Absolute Maximum Ratings

(beyond which the device may be damaged)<sup>1</sup>

Parameter		Min	Typ	Max	Units
Supply Voltage				±20	V
Input Voltage <sup>2</sup>				±15	V
Differential Input Voltage				30	V
P <sub>DTA</sub> < 50°C	PDIP			468	mW
	CerDIP			1042	
	SOIC			300	
Output Short Circuit Duration <sup>3</sup>		Indefinite			
Junction Temperature	PDIP, SOIC			125	°C
	CerDIP			175	
Storage Temperature		-65		150	°C
Operating Temperature	RM4741	-55		125	°C
	RC4741	0		70	
Lead Soldering Temperature	60 sec, DIP			300	°C
	10 sec, SOIC			260	

### Notes:

- Functional operation under any of these conditions is NOT implied. Performance and reliability are guaranteed only if Operating Conditions are not exceeded.
- For supply voltages less than ±15V, the absolute maximum input voltage is equal to the supply voltage.
- Short circuit to ground on one amplifier only.

## Operating Conditions

Parameter		Min	Typ	Max	Units
θ <sub>JC</sub>	Thermal resistance		60		°C/W
θ <sub>JA</sub>	Thermal resistance		160		°C/W
			120		
			200		
For T <sub>A</sub> > 50°C Derate at	PDIP		6.25		mW/°C
	CerDIP		8.38		
	SOIC		5.0		

## Electrical Characteristics

( $V_S = \pm 15V$  and  $T_A = 25^\circ C$  unless otherwise specified)

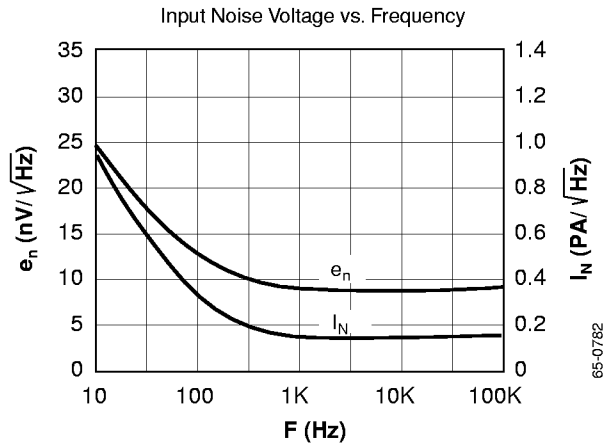
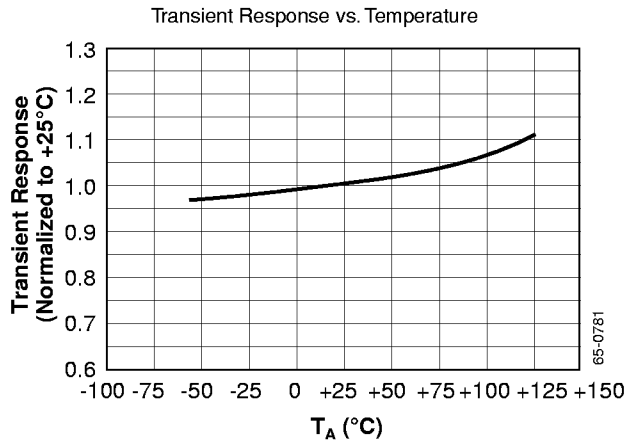
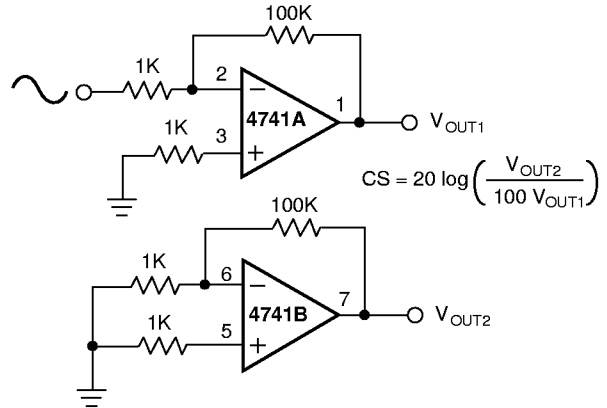
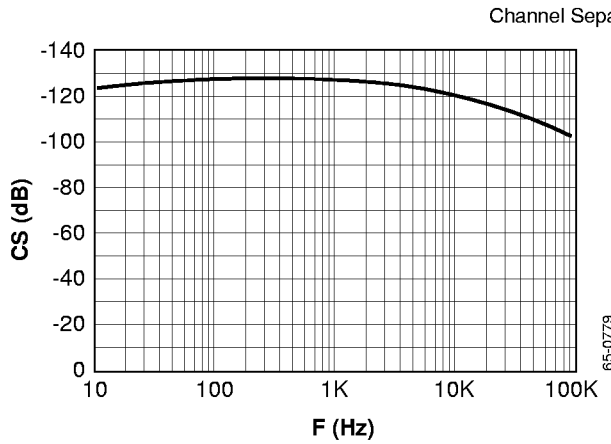
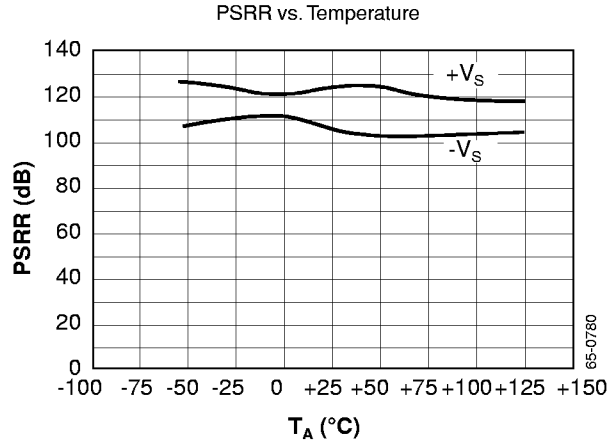
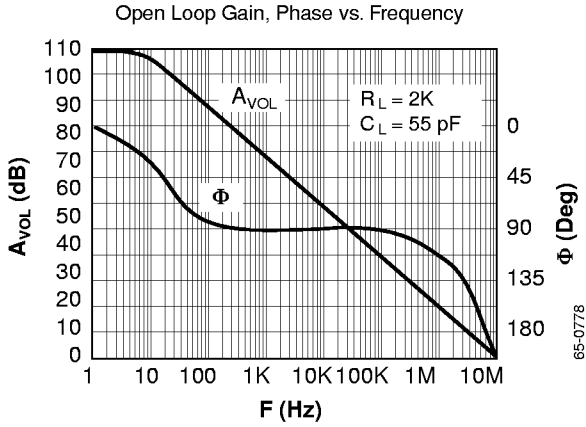
Parameters	Test Conditions	RM4741			RC4741			Units
		Min	Typ	Max	Min	Typ	Max	
Input Offset Voltage	$R_S \leq 10k\Omega$		0.5	3.0		1.0	5.0	mV
Input Offset Current			15	30		30	50	nA
Input Bias Current			60	200		60	300	nA
Input Resistance			0.5			0.5		M $\Omega$
Large Signal Voltage Gain	$R_L \geq 2k\Omega$ , $V_{OUT} \pm 10V$	50	100		25	50		V/mV
Input Voltage Range		$\pm 12$			$\pm 12$			V
Output Resistance			300			300		$\Omega$
Output Current	$V_{OUT} \pm 10V$	$\pm 5$	$\pm 15$		$\pm 5$	$\pm 15$		mA
Common Mode	$R_S \leq 10k\Omega$	80			80			dB
Rejection Ratio	$\Delta V = \pm 5$							
Supply Current (All Amplifiers)			4.5	5.0		5.0	7.0	mA
Transient Response	Rise Time		75			75		nS
	Overshoot		25			25		%
	Slew Rate		1.6			1.6		V/ $\mu$ S
Unity Gain Bandwidth			3.5			3.5		MHz
Power Bandwidth	$V_{OUT} = 20V_{p-p}$ , $R_L = 2k$		25			25		kHz
Input Noise Voltage Density	$F = 1kHz$		9.0			9.0		nV/ $\sqrt{Hz}$
Channel Separation			108			108		dB

## Electrical Characteristics

( $V_S = \pm 15V$ ,  $R_M = -55^\circ C \leq T_A \leq +125^\circ C$ ,  $R_C = 0^\circ C \leq T_A + 70^\circ C$ )

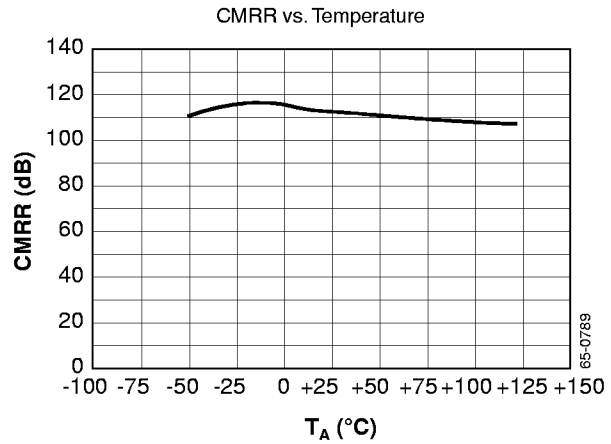
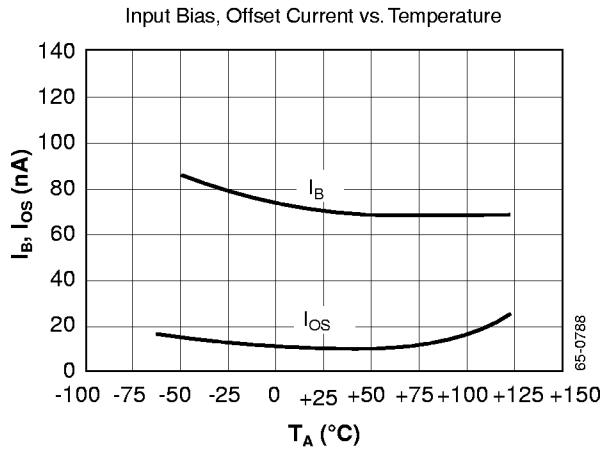
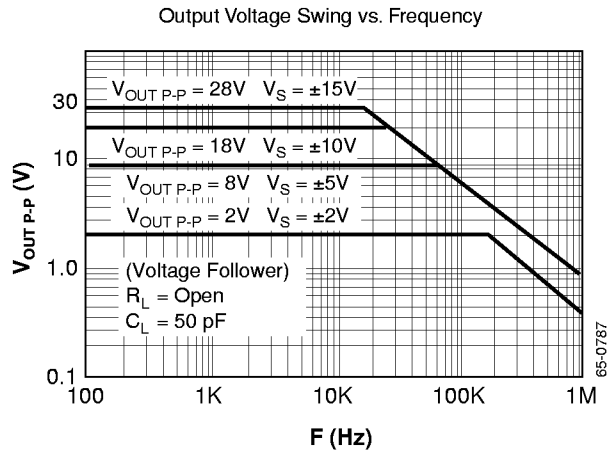
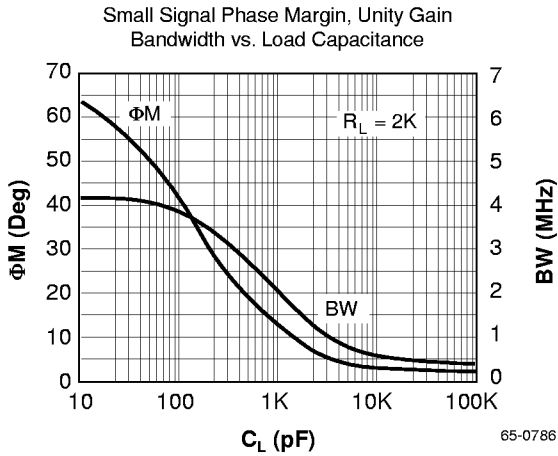
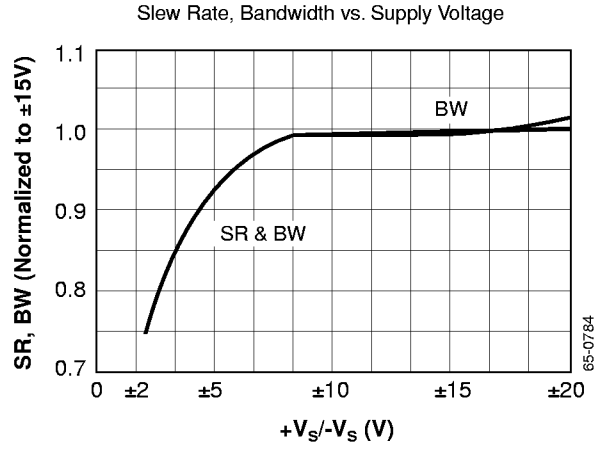
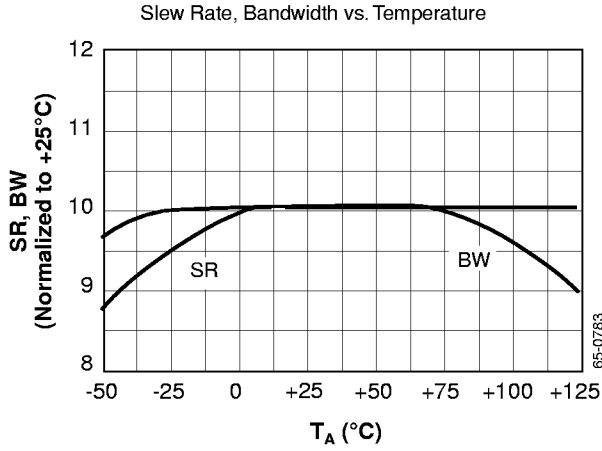
Parameters	Test Conditions	RM4741			RC4741			Units
		Min	Typ	Max	Min	Typ	Max	
Input Offset Voltage	$R_S \leq 10k\Omega$		4.0	5.0		5.0	6.5	mV
Input Offset Current				75			100	nA
Input Bias Current				325			400	nA
Large Signal	$R_L \geq 2k\Omega$	25			15			V/mV
Voltage Gain	$V_{OUT} \pm 10V$							
Output Voltage Swing	$R_L \geq 10k\Omega$	$\pm 12$	$\pm 13.7$		$\pm 12$	$\pm 13.7$		
	$R_L \geq 2k\Omega$	$\pm 10$	$\pm 12.5$		$\pm 10$	$\pm 12.5$		
Supply Current (All Amplifiers)			10			10		mA
Average Input Offset								
Voltage Drift			5.0			5.0		$\mu V/^\circ C$
Common Mode Rejection Ratio	$R_S \leq 10k\Omega$ , $\Delta V \pm 5.0V$	74			74			dB
Power Supply Rejection Ratio	$R_S \leq 10k\Omega$ , $\Delta V \pm 5.0V$	80			80			dB

# Typical Performance Characteristics



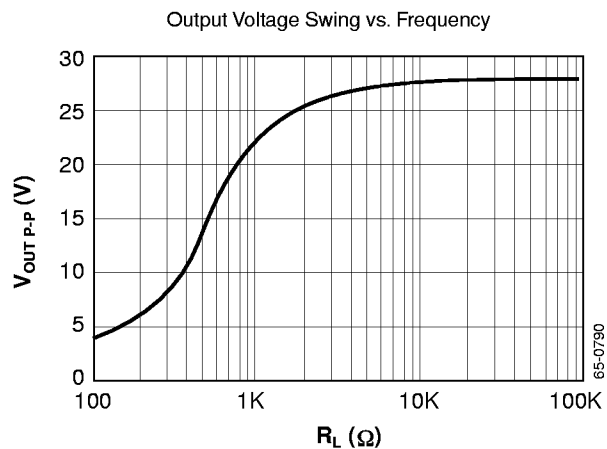
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Typical Performance Characteristics (continued)

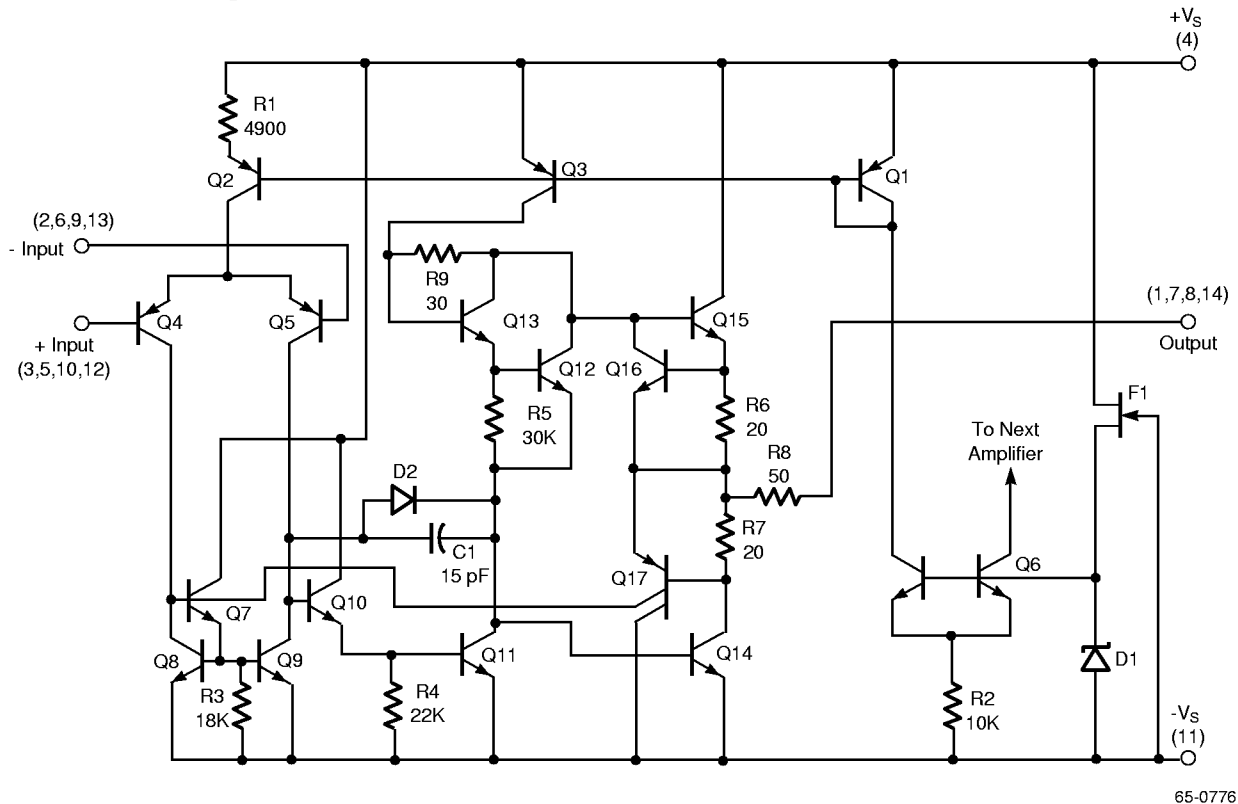


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Typical Performance Characteristics (continued)



Schematic Diagram (1/4 shown)



## Ordering Information

Product Number	Temperature Range	Screening	Package	Package Marking
RC4741M	0°C to +70°C	Commercial	14 pin Small Outline IC	
RC4741N	0°C to +70°C		14 pin Plastic DIP	
RM4741D	-55°C to +125°C		14 pin Ceramic DIP	
RM 4741D/883B	-55°C to +125°C	Military	14 pin Ceramic DIP	

**Note:** /883B suffix denotes Mil-Std-883, Level B processing.

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