Dual High-Gain Operational Amplifiers

GENERAL DESCRIPTION

The RC1437 and RM1537, previously referred to as the 4709, integrated circuits are monolithic dual high gain operational amplifiers. The device is composed of two 709 operational amplifiers fabricated on a single silicon chip. It has all the outstanding features of the 709.

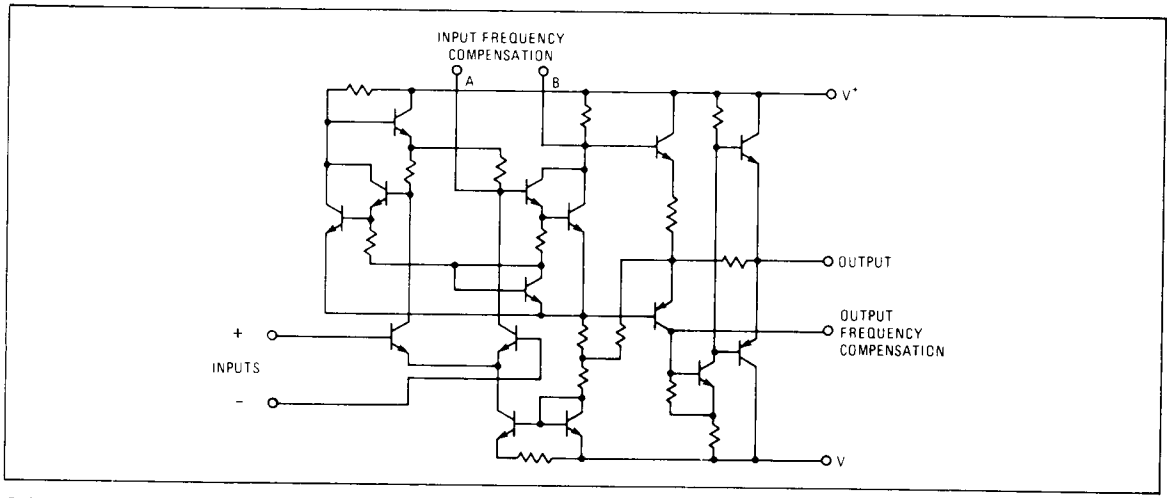
Due to the inherent matching and tracking of parameters, the 1537/1437 has several unique applications: differential in/out amplifiers, non-inverting amplifiers, gain and phase matched channels.

The RM1537 operates over a temperature range of −55°C to +125°C. RC 1437 is the commercial temperature range device for operation from 0°C to +75°C.

DESIGN FEATURES

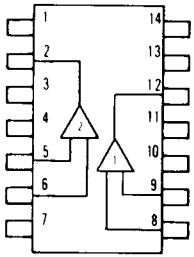
- Gain and Phase Matching Between Amplifiers
- Low Temperature Drift ±3 μV/°C
- Large Output Voltage Swing ±14 V Typical

SCHEMATIC DIAGRAM (1/2 Shown)



CONNECTION INFORMATION

DC and DB
Dual In-line Packages
(Top View)



Order Part Nos.:
RM1537DC, RC1437DC,
RC1437DB

PIN	FUNCTION
1	OUTPUT LAG 2
2	OUTPUT 2
3	INPUT LAG 2
4	INPUT LAG 2
5	-INPUT 2
6	+INPUT 2
7	V^-
8	+INPUT 1
9	-INPUT 1
10	INPUT LAG 1
11	INPUT LAG 1
12	OUTPUT 1
13	OUTPUT LAG 1
14	V^+

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ABSOLUTE MAXIMUM RATINGS

Supply Voltage	±18 V
Differential Mode Input Voltage	±5 V
Common Mode Input Voltage	$\pm V^+v$
Power Dissipation	500 mW
Derate above 75°C	5.0 mW/°C
Operating Temperature Range	RM1537: −55°C to +125°C
	RC1437: 0°C to +75°C
Storage Temperature Range	−65°C to +150°C
Lead Temperature (Soldering, 60s)	300°C
Output Short Circuit Duration (25°C)	5 s

ELECTRICAL CHARACTERISTICS (RM1537: −55°C to +125°C; RC1437: 0°C to +75°C, unless otherwise noted)

PARAMETER	CONDITIONS		RM1537 MIN	RM1537 TYP	RM1537 MAX	RC1437 MIN	RC1437 TYP	RC1437 MAX	UNITS
Input Offset Voltage	$50\Omega \leq R_S \leq 10k\Omega$	T_A = 25°C		1.0	5.0		1.0	7.5	mV
	±9V < V+ < ±15V				6.0			10	
Input Offset Current	±9V < V+ < ±15V	RM1537: +25°C to +125°C RC1437: +25°C to +75°C		50	200		50	500	nA
		RM1537: −55°C RC1437: 0°C			500			750	
Input Bias Current	±9V < V+ < ±15V	RM1537: +25°C to +125°C RC1437: +25°C to +75°C		0.2	0.5		0.4	1.5	µA
		RM1537: −55°C RC1437: 0°C			1.5			2.0	
Input Resistance	±9V < V+ < ±15V		150	400		50	150		kΩ
Output Resistance	±9V < V+ < ±15V			150			150		Ω
Power Consumption	V+ = ±15V, $R_L = \infty$			160	225		160	225	mW
Large Signal Voltage Gain	V+ = ±15V, V_O = ±10V, $R_L \geq 2$ kΩ		25	45	70	15	45		KV/V
Output Voltage Swing	V+ = ±15V	$R_L \geq 10$ kΩ	±12	±14		±12	±14		V
		$R_L \geq 2$ kΩ	±10	±13		±10	±13		
Input Common Mode Voltage	V+ = ±15V		±8	±10		±8	±10		V
Common Mode Rejection Ratio	$R_S \leq 10$ kΩ, ±9V < V+ < ±15V		70	90		65	90		dB
Supply Voltage Rejection Ratio	$R_S \leq 10$ kΩ, ±9V < V+ < ±15V				150			200	µV/V
Transient Response	V+ = ±15V, V_{in} = 20 mV, R_L = 2 kΩ, C_1 = 5 nF, R_1 = 1.5 kΩ, C_2 = 200 pF, R_2 = 50 Ω								
Rise Time				0.3	1.0		0.3	1.0	µs
Overshoot					30			30	%
Average Temperature Coefficient of Input Offset Voltage	±9V < V+ < ±15V	R_S = 50 Ω		1.5			1.5		µV/°C
		R_S = 10 kΩ		3.0			3.0		
Average Temperature Coefficient of Input Offset Current	±9 < V+ < ±15V			0.7			0.7		nA/°C
Channel Separation, f = 10 kHz	±9V < V+ < ±15V			90			90		dB

MATCHING CHARACTERISTICS (T_A = 25°C, ±9V < V+ < ±15V unless otherwise noted)

PARAMETER	RM1537 MIN	RM1537 TYP	RM1537 MAX	RC1437 MIN	RC1437 TYP	RC1437 MAX	UNITS
Voltage Gain		±1.0			±1.0		dB
Input Bias Current		±100			±150		nA
Input Offset Current		±15			±20		nA
Input Offset Voltage		±0.5			±1.0		mV
Average Temperature Coefficient of Input Offset Voltage		±0.5			±0.5		µV/°C
Average Temperature Coefficient of Input Offset Current		±0.2			±0.2		nA/°C