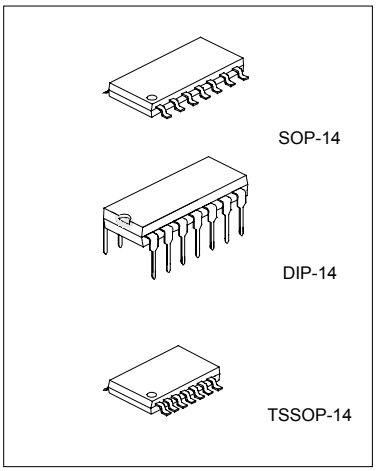
QUAD OPERATIONAL AMPLIFIERS



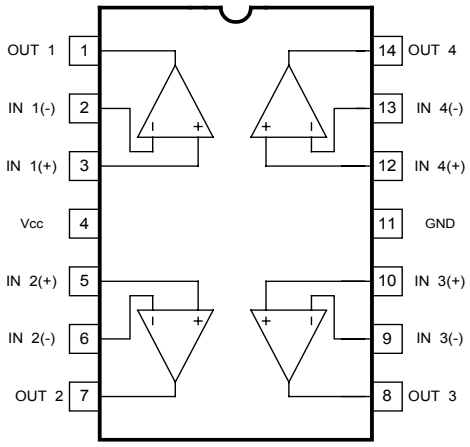
DESCRIPTION

The UTC LM324 consists of four independent, high gain internally frequency compensated operational amplifiers which are designed specifically to operated from a single power supply over a wide voltage range. Operation from split power supplies is also possible. Application areas include transducer amplifier, DC gain blocks and all the conventional OP amp circuits which now can be easily implemented in single power supply system.

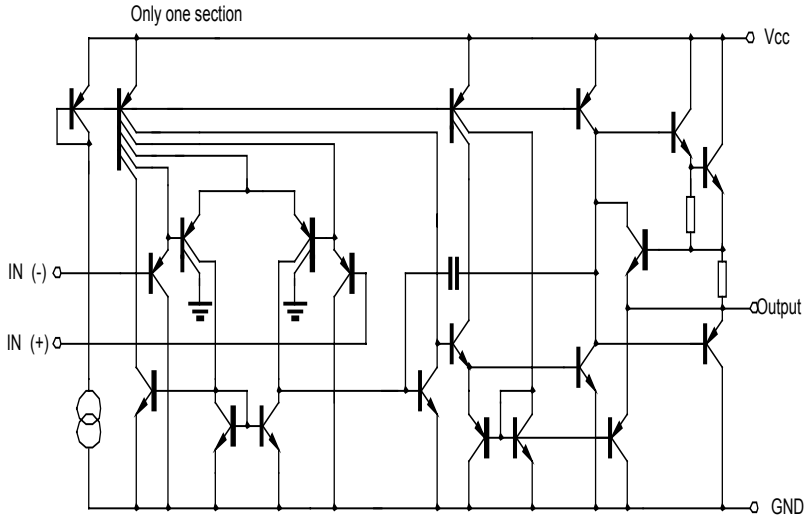
FEATURES

*Internally frequency compensated for unity gain.
*Large DC voltage gain :100dB.
*Wide operating supply range (Vcc=3V~32V).
*Input common-mode voltage includes ground.
*Large output voltage swing: From 0V to Vcc-1.5V.
*Power drain suitable for battery operation.

PIN CONFIGURATIONS



BLOCK DIAGRAM



ABSOLUTE MAXIMUM RATINGS (Ta=25°C)

PARAMETER	SYMBOL	VALUE	UNIT
Supply Voltage	Vcc	+-18	V
Differential Input Voltage	VIDiff)	32	V
Input Voltage	VI	-0.3~32V	V
Power Dissipation	Pd	570	mW
Operating Temperature	Topr	0 to +70	°C
Storage Temperature	Tstg	-65 to 150	°C

ELECTRICAL CHARACTERISTICS (Ta=25°C)

(Vcc=5.0V,All voltage referenced to GND unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP.	MAX	UNIT
Input Offset Voltage	V_{IO}	VCM=0 to Vcc=-1.5 Vo(p)=1.4V,Rs=0			7	mV
Input Offset Current	I_{IO}				50	nA
Input Bias Current	Ib				250	nA
Input Common-Mode Voltage Range	$V_{I(R)}$	Vcc=30V	0	Vcc-1.5		V
Supply Current	Icc	RL=∞,Vcc=30V		1.0	3	mA
		Vcc=5V		0.7	1.2	mA
Large Signal Voltage Gain	G_V	Vcc=15V,R_L>2kΩ Vo(p)=1V to 11V	25	100		V/mV
Output Voltage Swing	$V_{(OH)}$	Vcc=30V,R_L=2kΩ	26			V
		Vcc=30V,R_L=10kΩ	27	28		V
	$V_{(OL)}$	Vcc=5V,R_L>10kΩ		5	20	mV
Common-Mode Rejection Ratio	CMRR		65	75		dB
Power Supply Rejection Ratio	PSRR		65	100		dB
Channel Separation	CS	f=1kHz to 20kHz		120		dB
Short Circuit to GND	Isc			40	60	mA
Output Current	Isource	VI(+)=1V,VI(-)=0 Vcc=15V,Vo(p)=2V	20	40		mA
	Isink	VI(+)=0V,VI(-)=1V Vcc=15V,Vo(p)=2V	10	13		mA
		VI(+)=1V,VI(-)=0 Vcc=15V,Vo(p)=200mV	12	45		μA
Differential Input Voltage	VI(diff)				Vcc	V

TYPICAL PERFORMANCE CHARACTERISTICS

Fig.1 Input Voltage Range

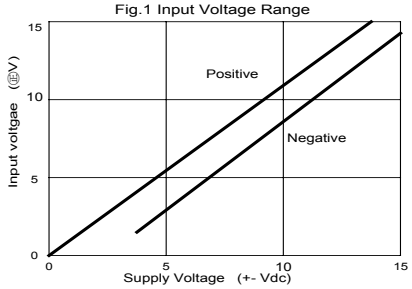


Fig.2 Input Current

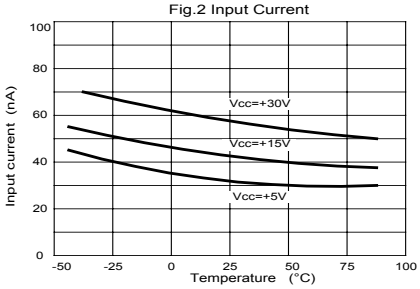


Fig.3 Supply Current

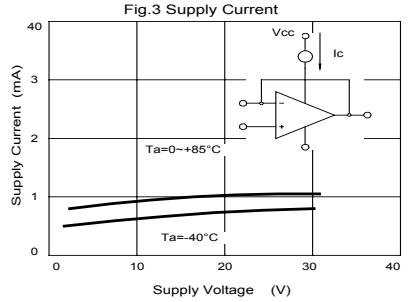


Fig.4 Voltage Gain

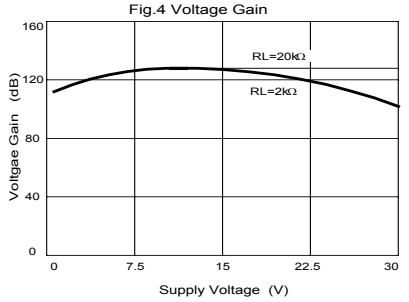


Fig.5 Open Loop Frequency response

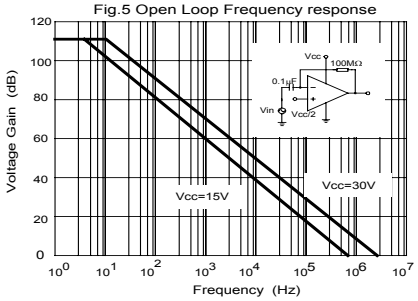


Fig.6 Common-mode rejection Ratio

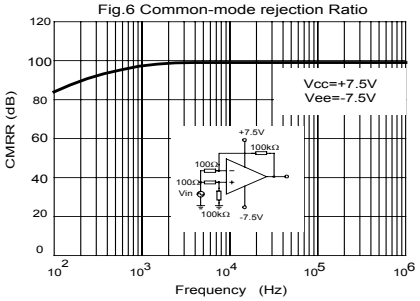


Fig.7

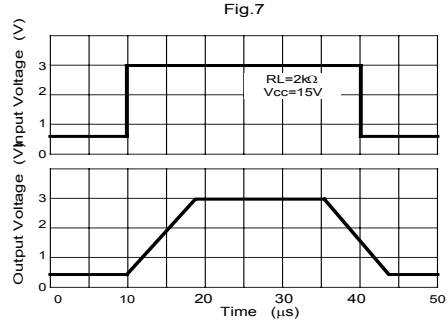


Fig.8 Voltage Follower pulse response (small signal)

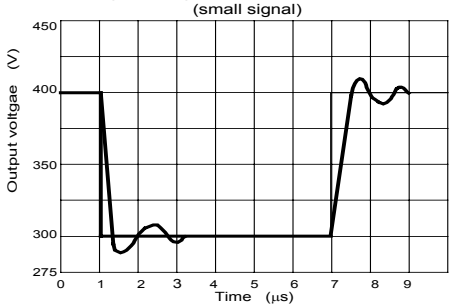


Fig.9 Large signal Frequency Response

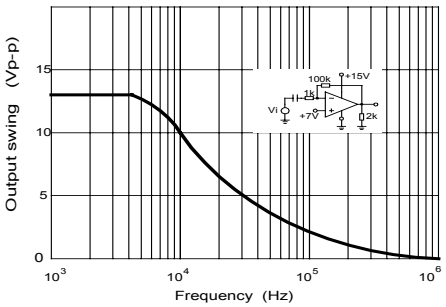


Fig.10 Output Characteristics current sourcing

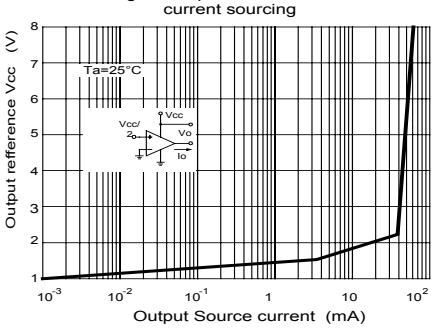


Fig.11 Output Characteristics Current sinking

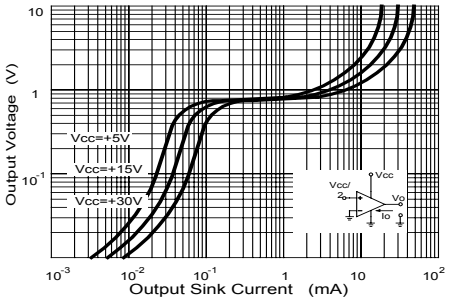


Fig.12 Current Limiting