UNISONIC TECHNOLOGIES CO., LTD

OP07C

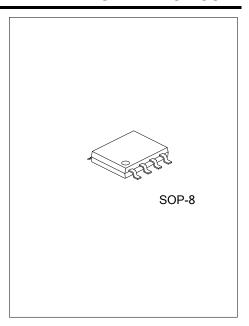
Preliminary

LINEAR INTEGRATED CIRCUIT

VERY LOW OFFSET VOLTAGE SINGLE OPERATIONAL **AMPLIFIER**

DESCRIPTION

The **OP07C** offers low offset and long-term stability by means of a low-noise, chopperless, bipolar-input-transistor amplifier circuit. For most applications, external components are not required for offset nulling and frequency compensation. The true differential input, with a wide input-voltage range and outstanding common-mode rejection, provides maximum flexibility and performance in high-noise environments and in noninverting applications. Low bias currents and extremely high input impedances are maintained over the entire temperature range.

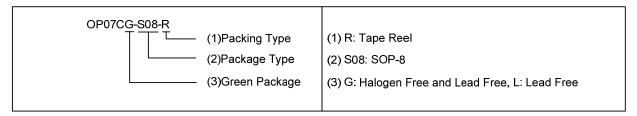


FEATURES

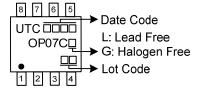
- * Low Noise
- * No External Components Required
- * Replace Chopper Amplifiers at a Lower Cost
- * Wide Input-Voltage Range: 0 to ±14V (Typ.)
- * Wide Supply-Voltage Range: ±3V to ±18V

ORDERING INFORMATION

Ordering	Number	Dookogo	Packing	
Lead Free	Halogen Free	Package		
OP07CL-S08-R	OP07CG-S08-R	SOP-8	Tape Reel	

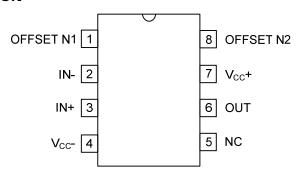


MARKING



www.unisonic.com.tw 1 of 6 QW-R105-062.a

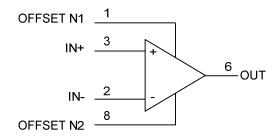
PIN CONFIGURATION



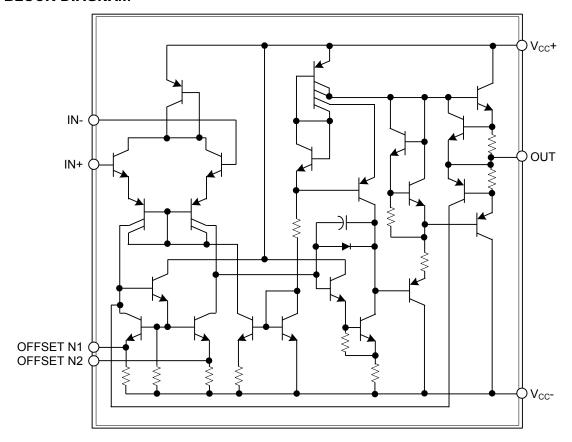
■ PIN DESCRIPTION

PIN NO.	PIN NAME	DESCRIPTION				
1	OFFSET N1	ternal input offset voltage adjustment				
2	IN-	Inverting input				
3	IN+	Noninverting input				
4	V _{CC} -	Negative supply				
5	NC	Do not connect				
6	OUT	Output				
7	V _{CC} +	Positive supply				
8	OFFSET N2	External input offset voltage adjustment				

SIMPLIFIED SCHEMATIC



■ BLOCK DIAGRAM



ABSOLUTE MAXIMUM RATING

(Over operating free-air temperature range unless otherwise specified)

PARAMETER	SYMBOL	RATINGS	UNIT
Cumply Voltage	V _{CC} +	0 ~ 22 (Note 2)	V
Supply Voltage	V _{CC} -	-22 ~ 0 (Note 2)	V
Differential Input Voltage (Note 3)		±30	V
Input Voltage Range (Either Input) (Note 4)	VI	±22	V
Duration of Output Short Circuit (Note 5)		Unlimitde	
Operating Virtual-Junction Temperature	TJ	+150	°C

- Notes: 1. Absolute maximum ratings are those values beyond which the device could be permanently damaged.

 Absolute maximum ratings are stress ratings only and functional device operation is not implied.
 - 2. All voltage values, unless otherwise noted, are with respect to the midpoint between $V_{CC}+$ and $V_{CC}-$.
 - 3. Differential voltages are at IN+ with respect to IN-.
 - 4. The magnitude of the input voltage must never exceed the magnitude of the supply voltage or 15V, whichever is less.
 - 5. The output may be shorted to ground or to either power supply.

■ RECOMMENDED OPERATING CONDITIONS

(Over operating free-air temperature range unless otherwise specified)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V _{CC} +	3 ~ 18	V
Supply Voltage	V _{CC} -	-3 ~ -18	٧
Common-Mode Input Voltage (V _{CC} ±=±15 V)	V _{IC}	-13 ~ 13	V
Operating Free-Air Temperature	T _A	-40 ~ +85	°C

■ ELECTRICAL CHARACTERISTICS

(At specified free-air temperature, V_{CC}±=±15V, unless otherwise specified) (Note 1)

(At specifica free-all temperatur	C, V (() 1 - 1 1	ov, arriess ourierwise specif	ica) (Note 1)				
PARAMETER	SYMBOL	TEST CONDITIONS	T _A (Note 2)	MIN	TYP	MAX	UNIT
Input Offset Voltage	V _{IO}	V _O =0V, R _S =50Ω	25°C		60		μV
			0°C~70°C		85		μV
Long-Term Drift of Input Offset Voltage		(Note 1)			0.4		μV/mo
Offset Adjustment Range		$R_S=20k\Omega$	25°C		±4		mV
Input Offset Current			25°C		0.8		nA
Input Offset Current	I _{IO}		0°C~70°C		1.6		nA
Input Diag Current	1		25°C		±1.8		nA
Input Bias Current	I _{IB}		0°C~70°C		±2.2		nA
Common-Mode Input Voltage	V		25°C	±13	±14		V
Range	V_{ICR}		0°C~70°C	±13	±13.5		V
Peak Output Voltage	V _{OM}	R _L ≥10kΩ		±12	±13		V
		R _L ≥2kΩ	25°C	±11.5	±12.8		V
		R _L ≥1kΩ			±12		V
		R _L ≥2kΩ	0°C~70°C	±11	±12.6		V
Large-Signal Differential Voltage Amplification	A _{VD}	V _{CC} =15V, V _O =1.4V~11.4V, R _L ≥500kΩ	25°C	100	400		V/mV
		$V_O=\pm 10, R_L=2k\Omega$	25°C	120	400		V/mV
			0°C~70°C	100	400		V/mV
Unity-Gain Bandwidth	B ₁		25°C	0.4	0.6		MHz
Input Resistance	r _i		25°C	8	33		ΜΩ
Common-Mode Rejection	CMRR	V_{IC} =±13V, R_S =50 Ω	25°C	100	120		dB
Ratio	CIVILLIA	VIC-113V, IVS-3022	0°C~70°C	97	120		dB
Supply-Voltage Sensitivity	SVRR	V_{CC} +=±3V~±18V, R _S =50 Ω	25°C		7	32	μV/V
$(\Delta V_{IO}/\Delta V_{CC})$	SVINIX		0°C~70°C		10	51	μV/V
Supply Current	Icc	Vo=0, No load	25°C		2.67	5	mA

Notes: 1. Because long-term drift cannot be measured on the individual devices prior to shipment, this specification is not intended to be a warranty. It is an engineering estimate of the averaged trend line of drift versus time over extended periods after the first 30 days of operation.

2. All characteristics are measured with zero common-mode input voltage, unless otherwise specified.

■ OPERATING CHARACTERISTICS

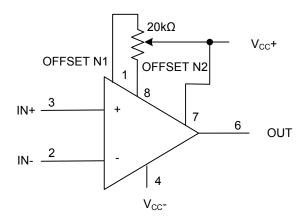
at specified free-air temperature, V_{CC} =5V (unless otherwise noted)

PARAMETER	SYMBOL	TEST CONDITIONS (Note 1)	MIN	TYP	MAX	UNIT
Input Offset Voltage	Vn	f=10Hz f=100Hz		10.5		nV/ √Hz
Peak-to-Peak Equivalent Input Noise Voltage	V _{N(PP)}	f=0.1Hz~10Hz		9.8 0.38		μV
Equivalent Input Noise Current	In	f=10Hz f=100Hz f=1kHz		0.35 0.15 0.13		nV/ √Hz
Peak-to-Peak Equivalent Input Noise Current	I _{N(PP)}	f=0.1Hz~10Hz		15		рА
Slew Rate	SR	R _L ≥2kΩ		0.3		V/µs

Note: All characteristics are measured under open-loop conditions, with zero common-mode input voltage, unless otherwise noted.



■ APPLICATION CIRCUIT



Input Offset-Voltage Null Circuit

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