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RF Communications	

NE/SA577

Unity gain level programmable low power compandor

DESCRIPTION

The NE/SA577 is a unity gain level programmable compandor designed for low power applications. The NE577 is internally configured as an expandor and a compressor to minimize external component count.

The NE577 is available in a 14-pin plastic DIP and SO packages.

FEATURES

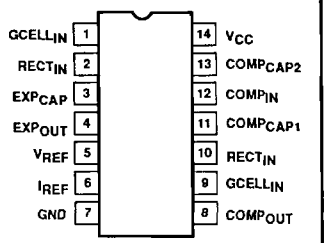
- Operating voltage range: 1.8V to 7V
- Low power consumption (1.4mA @ 3.6V)
- 0dB level programmable ($10mV_{RMS}$ to $1.0V_{RMS}$)
- Over 90dB of dynamic range
- Wide input/output swing capability (rail-to-rail)
- Low external component count
- SA577 meets cellular radio specifications
- ESD hardened

APPLICATIONS

- High performance portable communications
- Cellular radio
- Cordless telephone
- Consumer audio
- Wireless microphones
- Modems
- Electric organs
- Hearing aids
- Automatic level control (ALC)

PIN CONFIGURATION

D and N Packages



ORDERING INFORMATION

DESCRIPTION	TEMPERATURE RANGE	ORDER CODE
14-Pin Plastic DIP	0 to +70°C	NE577N
14-Pin Plastic SO	0 to +70°C	NE577D
14-Pin Plastic DIP	–40 to +85°C	SA577N
14-Pin Plastic SO	–40 to +85°C	SA577D

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ABSOLUTE MAXIMUM RATINGS

SYMBOL	PARAMETER	RATING		UNITS
		NE577	SA577	
V_{CC}	Supply voltage	8	8	V
T_A	Operating ambient temperature range	0 to +70	–40 to +85	°C
T_{STG}	Storage temperature range	–65 to +150	–65 to +150	°C
θ_{JA}	Thermal impedance DIP SO	90 125	90 125	°C/W °C/W

ELECTRICAL CHARACTERISTICS

T_A = 25°C, V_{CC} = 3.6VDC, compandor 0dB level = –20dBV = 100mV_{RMS}, output load R_L = 10kΩ, Freq = 1kHz, unless otherwise specified. R1, R2 and R3 are 1% resistors.

SYMBOL	PARAMETER	TEST CONDITIONS	LIMITS			UNITS
			NE/SA577			
			MIN	TYP	MAX	
V_{CC}	Supply voltage[1]		2	3.6	7	V
I_{CC}	Supply current	No signal R_2 = 100kΩ		1.4	2	mA
V_{REF}	Reference voltage[2]	V_{CC} = 3.6V	1.7	1.8	1.9	V
R_L	Summing amp output load		10			kΩ
THD	Total harmonic distortion	1kHz, 0dB, BW = 3.5kHz		0.1	1.5	%
E_{NO}	Expandor output noise voltage	BW = 20kHz, R_S = 0Ω			25	μV
0dB	Unity gain level	0dB at 1kHz	–1.5		1.5	dB
	Programmable range[3]	R1 = R3 = 18.7kΩ, R2 = 24.3kΩ		0		dBV
		R1 = R3 = 22.6kΩ, R2 = 100kΩ		–10		dBV
		R1 = R3 = 7.15kΩ, R2 = 100kΩ		–20		dBV
		R1 = R3 = 1.33kΩ, R2 = 200kΩ		–40		dBV
V_{OS}	Output voltage offset	No signal	–150		150	mV
	Expandor output DC shift	No signal to 0dB	–100		100	mV
	Tracking error relative to 0dB output		–1.0		1.0	dB
	Crosstalk, COMP to EXP	1kHz, 0dB, C_{REF} = 10μF		–80	–65	dB
V_O	Output swing low			0.2		V
	Output swing high			V_{CC} – 0.2		V

NOTE:
1. Operation down to V_{CC} = 1.8V is possible, see application note AN1762.
2. Reference voltage, V_{REF}, is typically at 1/2 V_{CC}.
3. Unity gain level can be adjusted CONTINUOUSLY between –40dBV = 10mV_{RMS} and 0dBV = 1.0V_{RMS}. For details see application note AN1762.

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BLOCK DIAGRAM and TEST AND APPLICATION CIRCUIT