

# Comparator

# NE570/571/SA571

## DESCRIPTION

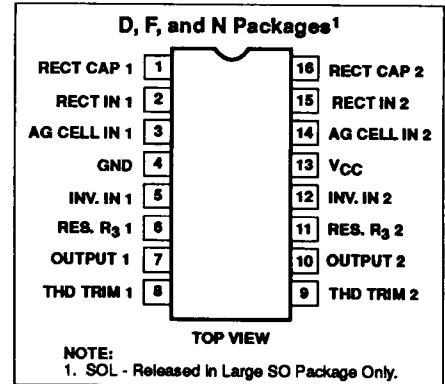
The NE570/571 is a versatile low cost dual gain control circuit in which either channel may be used as a dynamic range compressor or expander. Each channel has a full-wave rectifier to detect the average value of the signal, a linearized temperature-compensated variable gain cell, and an operational amplifier.

The NE570/571 is well suited for use in cellular radio and radio communications systems, modems, telephone, and satellite broadcast/receive audio systems.

## FEATURES

- Complete compressor and expander in one IC chip
- Temperature compensated
- Greater than 110dB dynamic range
- Operates down to 6VDC
- System levels adjustable with external components
- Distortion may be trimmed out
- Dynamic noise reduction systems
- Voltage-controlled amplifier

## PIN CONFIGURATION



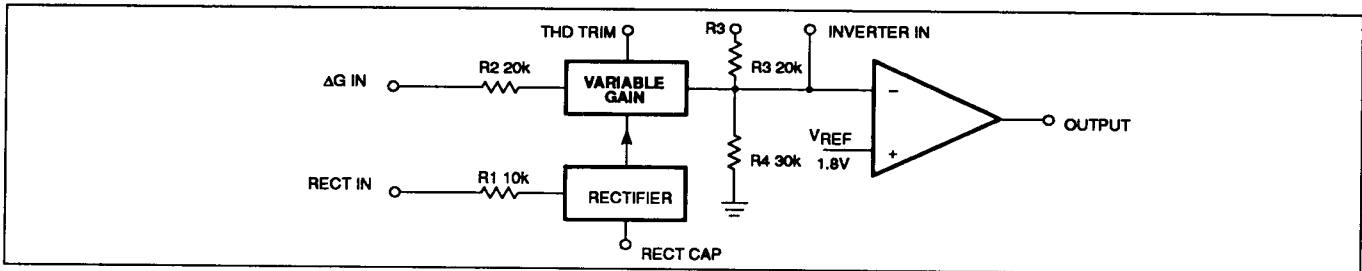
## APPLICATIONS

- Cellular radio
- Telephone trunk compander—570
- Telephone subscriber compander—571
- High level limiter
- Low level expander—noise gate
- Dynamic filters
- CD Player

## ORDERING INFORMATION

DESCRIPTION	TEMPERATURE RANGE	ORDER CODE	DWG #
16-Pin Plastic SOL	0 to +70°C	NE570D	0171
16-Pin Cerdip	0 to +70°C	NE570F	0582
16-Pin Plastic DIP	0 to +70°C	NE570N	0406
16-Pin Plastic SOL	0 to +70°C	NE571D	0171
16-Pin Cerdip	0 to +70°C	NE571F	0582
16-Pin Plastic DIP	0 to +70°C	NE571N	0406
16-Pin Plastic SOL	-40 to +85°C	SA571D	0171
16-Pin Cerdip	-40 to +85°C	SA571F	0582
16-Pin Plastic DIP	-40 to +85°C	SA571N	0406

## BLOCK DIAGRAM



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## ABSOLUTE MAXIMUM RATINGS

SYMBOL	PARAMETER	RATING	UNITS
V <sub>CC</sub>	Maximum operating voltage 570 571	24 18	VDC
T <sub>A</sub>	Operating ambient temperature range NE SA	0 to 70 -40 to +85	°C
P <sub>D</sub>	Power dissipation	400	mW

## AC ELECTRICAL CHARACTERISTICS

V<sub>CC</sub> = +6V, T<sub>A</sub> = 25°C; unless otherwise stated.

SYMBOL	PARAMETER	TEST CONDITIONS	LIMITS			LIMITS			UNITS
			NE570			NE/SA571 <sup>5</sup>			
			MIN	TYP	MAX	MIN	TYP	MAX	
V <sub>CC</sub>	Supply voltage		6		24	6		18	V
I <sub>CC</sub>	Supply current	No signal		3.2	4.8		3.2	4.8	mA
I <sub>OUT</sub>	Output current capability		±20			±20			mA
SR	Output slew rate			±5			±5		V/μs
	Gain cell distortion <sup>2</sup>	Untrimmed Trimmed		0.3 0.05	1.0		0.5 0.1	2.0	%
	Resistor tolerance			±5	±15		±5	±15	%
	Internal reference voltage		1.7	1.8	1.9	1.65	1.8	1.95	V
	Output DC shift <sup>3</sup>	Untrimmed		±20	±100		±30	±150	mV
	Expander output noise	No signal, 15Hz-20kHz <sup>1</sup>		20	45		20	60	μV
	Unity gain level <sup>6</sup>	1kHz	-1	0	+1	-1.5	0	+1.5	dBm
	Gain change <sup>2,4</sup>			±0.1	±0.2		±0.1		dB
	Reference drift <sup>4</sup>			±5	±10		+2, -25	+20, -50	mV
	Resistor drift <sup>4</sup>			+1, -0			+8, -0		%
	Tracking error (measured relative to value at unity gain) equals [V <sub>O</sub> - V <sub>O</sub> (unity gain)] dB - V <sub>2</sub> dBm	Rectifier input, V <sub>2</sub> = +6dBm, V <sub>1</sub> = 0dB V <sub>2</sub> = -30dBm, V <sub>1</sub> = 0dB		+0.2			+0.2		dB
	Channel separation			+0.2	-0.5, +1		+0.2	-1, +1.5	dB
				60			60		dB

## NOTES:

- Input to V<sub>1</sub> and V<sub>2</sub> grounded.
- Measured at 0dBm, 1kHz.
- Expander AC input change from no signal to 0dBm.
- Relative to value at T<sub>A</sub> = 25°C.
- Electrical characteristics for the SA571 only are specified over -40 to +85°C temperature range.
- 0dBm = 775mV<sub>RMS</sub>.