

Signetics

Integrated Circuits -- D/A--A/D Converters

NE5007/5008 -- 8 Bit High Speed Multiplying D/A Converter

GENERAL DESCRIPTION

The 5007/5008 series of 8-bit monolithic multiplying Digital-to-Analog Converters provide very high speed performance coupled with low cost and outstanding applications flexibility.

Advanced circuit design achieves 85ns settling times with very low glitch and at a low power consumption. Monotonic multiplying performance is attained over a wide 40 to 1 reference current range. Matching to within 1 LSB between reference and full scale currents eliminates the need for full scale trimming in most applications. Direct interface to all popular logic families with full noise immunity is provided by the high swing, adjustable threshold logic inputs.

Dual complementary outputs are provided, increasing versatility and enabling differential operation to effectively double the peak-to-peak output swing. True high voltage compliance outputs allow direct output voltage conversion and eliminate output op amps in many applications.

All 5007/5008 series models guarantee full 8-bit monotonicity and linearities as tight as 0.1% over the entire operating temperature range are available. Device performance is essentially unchanged over the $\pm 4.5V$ to $\pm 18V$ power consumption attainable at $\pm 5V$ supplies.

The compact size and low power consumption make the 5007/5008 attractive for portable and military/aerospace applications.

FEATURES

- Fast settling output current--85ns
- Full scale current prematched to ± 1 LSB
- Direct interface to TTL, CMOS, ECL, HTL, PMOS
- Relative accuracy to 0.1% maximum over temperature range
- High output compliance-- $-10V$ to $+18V$
- True and complemented outputs
- Wide range multiplying capability
- Low FS current drift-- $\pm 10ppm/^{\circ}C$
- Wide power supply range-- $\pm 4.5V$ to $\pm 18V$
- Low power consumption--33mW at $\pm 5V$
- SE5008 military qualifications pending

APPLICATIONS

- 8-bit, $1\mu s$ A-to-D converters
- Servo-motor and pen drivers
- Waveform generators
- Audio encoders and attenuators
- Analog meter drivers
- Programmable power supplies
- CRT display drivers
- High speed modems
- Other applications where low cost, high speed and complete input/output versatility are required

RELATIVE ACCURACY	0 to 70°C	-55 to 125°C
0.39% FS	NE5007N NE5007F	
0.19% FS	NE5008N NE5008F	SE5008F

DEFINITION OF TERMS

Accuracy--The maximum deviation of the Dac output relative to an ideal straight line drawn from zero to full scale; 1 LSB for any bit combination.

Differential linearity--The incremental error from an ideal 1 LSB analog output change when the digital input is changed 1 LSB; guaranteed monotonicity requires the differential linearity error be less than 1 LSB and with a tempo of essentially zero.

Full scale tempo--The change in Dac full scale current with change in temperature expressed in ppm/ $^{\circ}C$

Monotonicity--For a 1 LSB increase of input code, the output either increases or remains the same

Output voltage compliance--The range of allowable voltage levels the output pins can assume without a major effect on circuit performance

Power supply sensitivity--The change in Dac output current with changes in power supply voltage

CROSS REFERENCE

The 5007/5008 series are pin and functionally compatible with the monoDAC-08 series of devices.

PMI	SIGNETICS
monoDAC-08A	SE5009
monoDAC-08	SE5008
monoDAC-08E	NE5008
monoDAC-08C	NE5007

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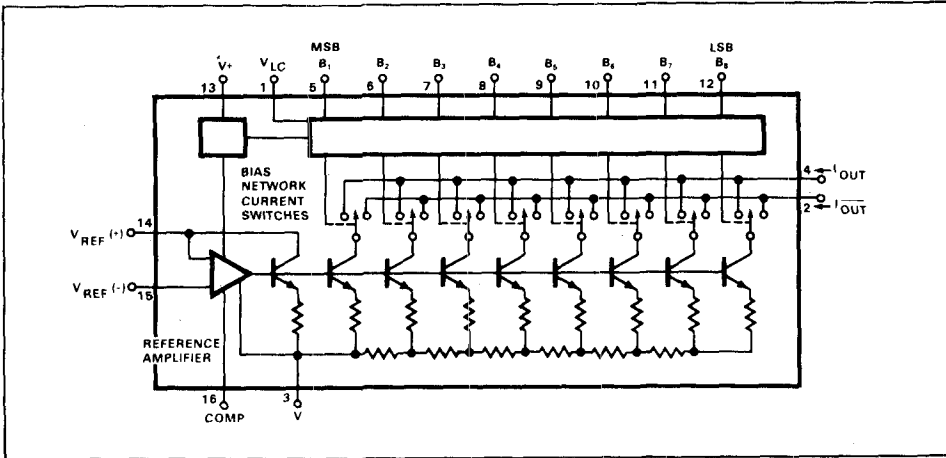
FOR CURRENT PRICES PHONE
HARLOW (0279) 29644

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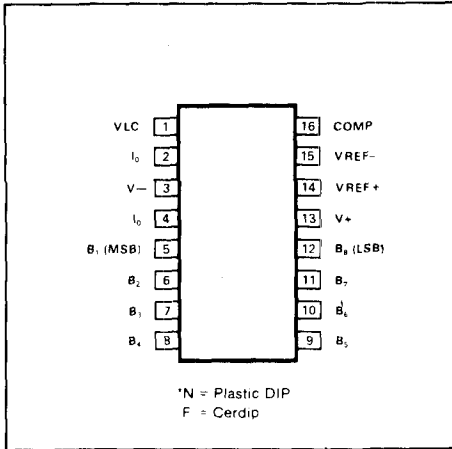
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NE5007/5008 Cont.

BLOCK DIAGRAM



CONNECTION DIAGRAM



MAXIMUM RATINGS $T_A = 25^\circ\text{C}$ unless otherwise noted

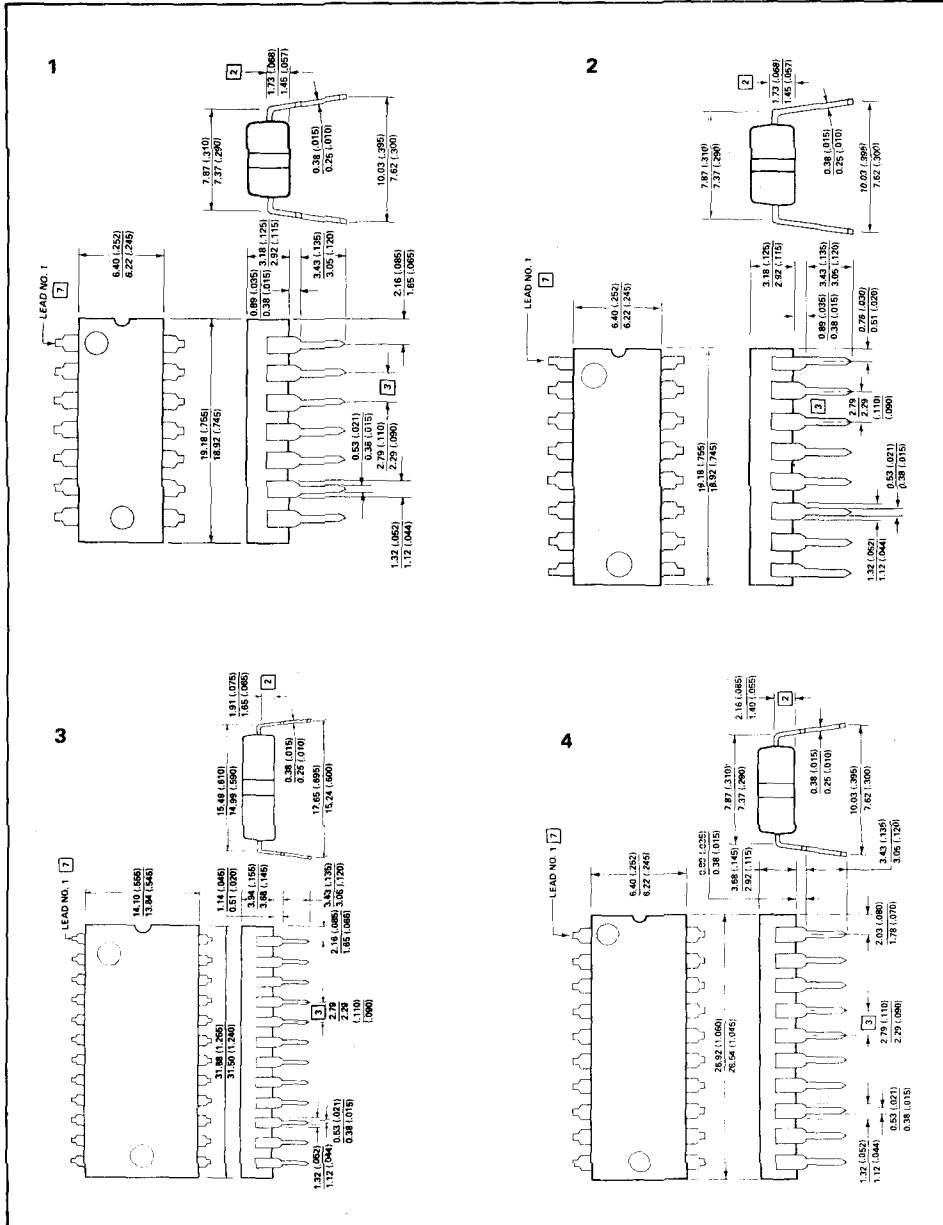
PARAMETER	RATING	UNIT
1A Operating temperature		
SE5008	-55 to +125	$^\circ\text{C}$
NE5007/8	0 to +70	$^\circ\text{C}$
1stg Storage temperature	-65 to +150	$^\circ\text{C}$
PD Power dissipation	500	mW
Lead soldering temperature (60sec)	300	$^\circ\text{C}$
V+ to V-supply	36	V
Logic inputs	V- to V- plus 36V	
VLC Logic threshold control	V- to V+	
Analog current outputs	See output current or output voltage performance curve	
V ₁₄ , V ₁₅ Reference inputs	V- to V+	
V ₁₄ to V ₁₅ Reference input differential voltage	± 18	V
I ₁₄ Reference input current	5.0	mA

REFERENCE TABLE

TYPE NO.	STOCK NO.	OUTLINE DRWG. NO.
NE5007N	56086H	2
NE5008N	56087F	2

PLEASE QUOTE STOCK NO. AND MANUFACTURERS PART NO. WHEN ORDERING



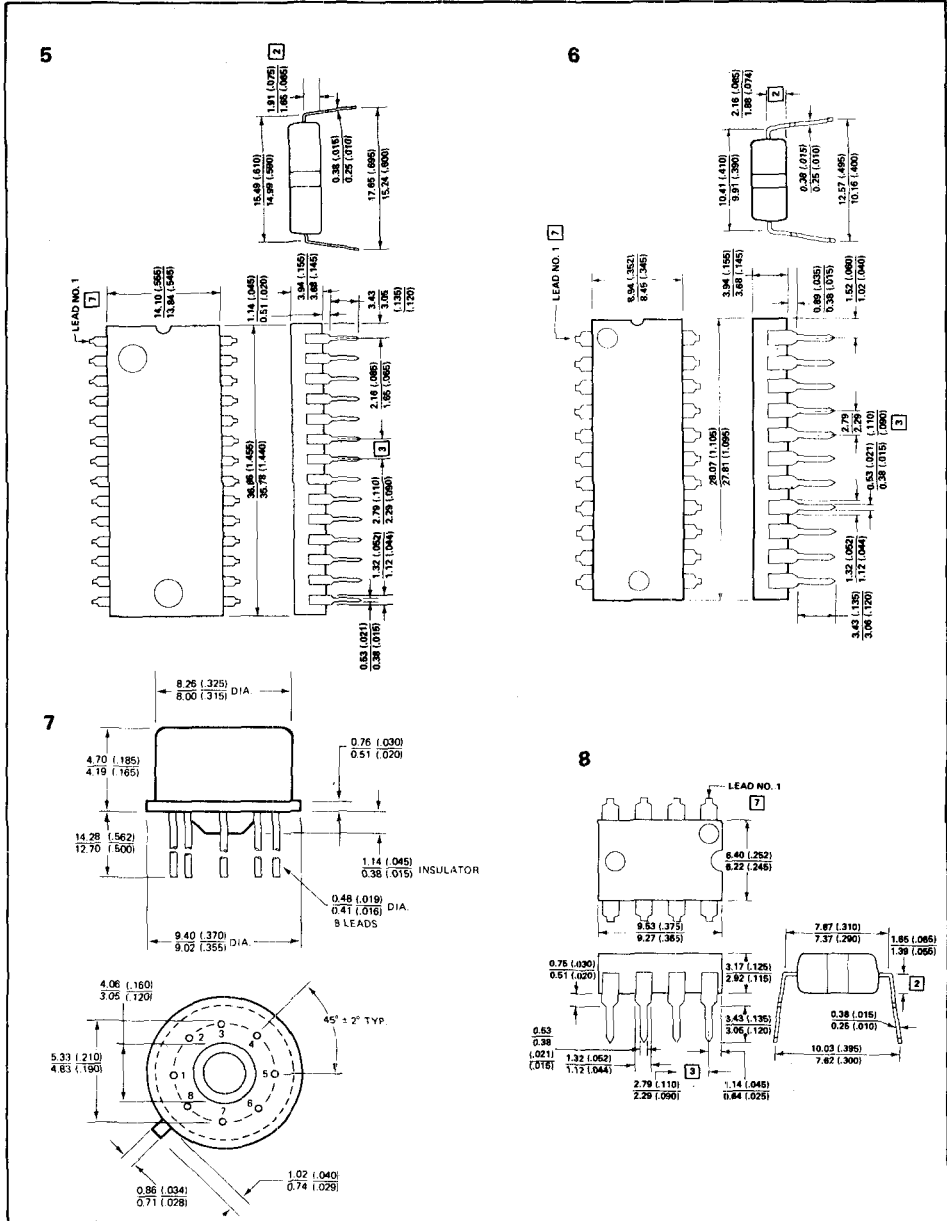


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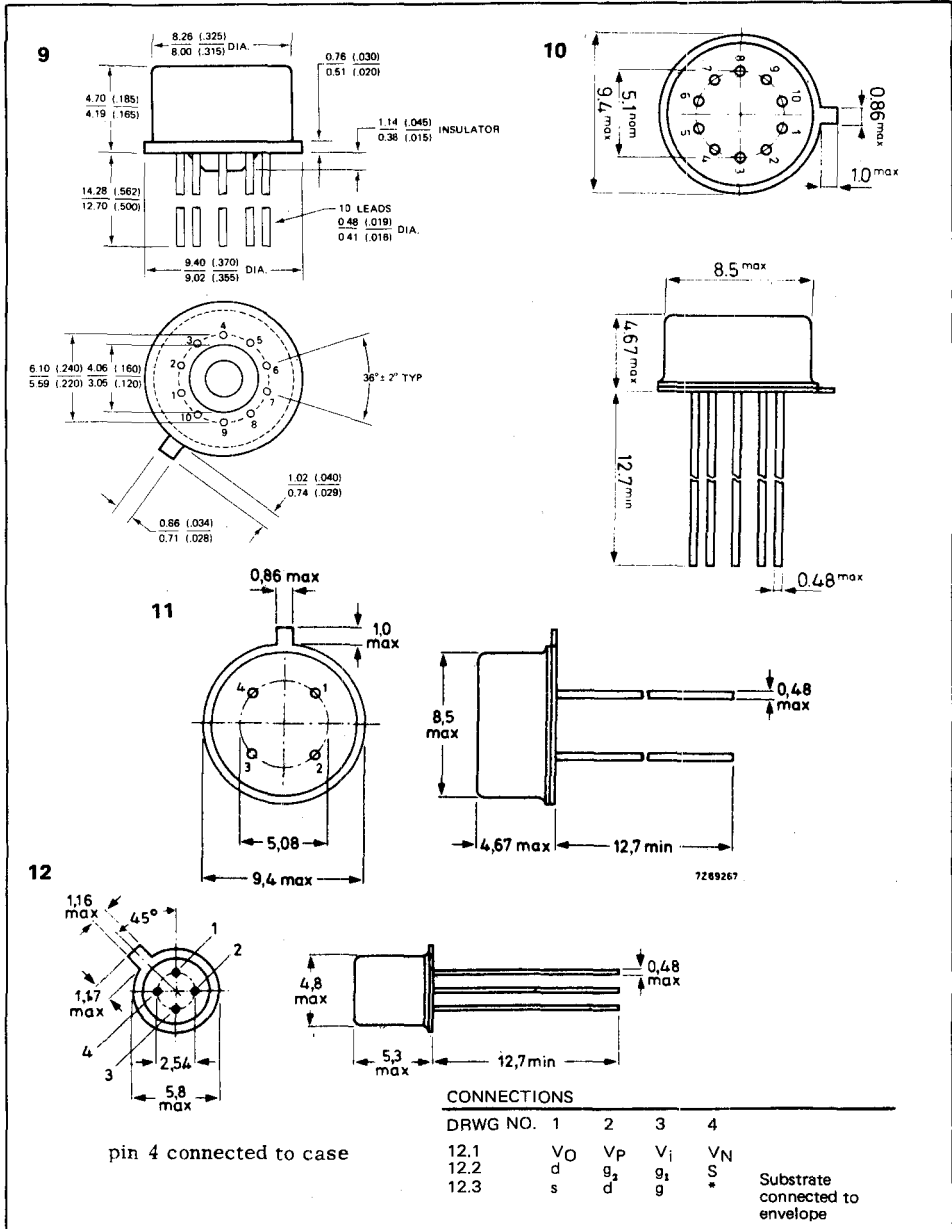
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Outline Drawings



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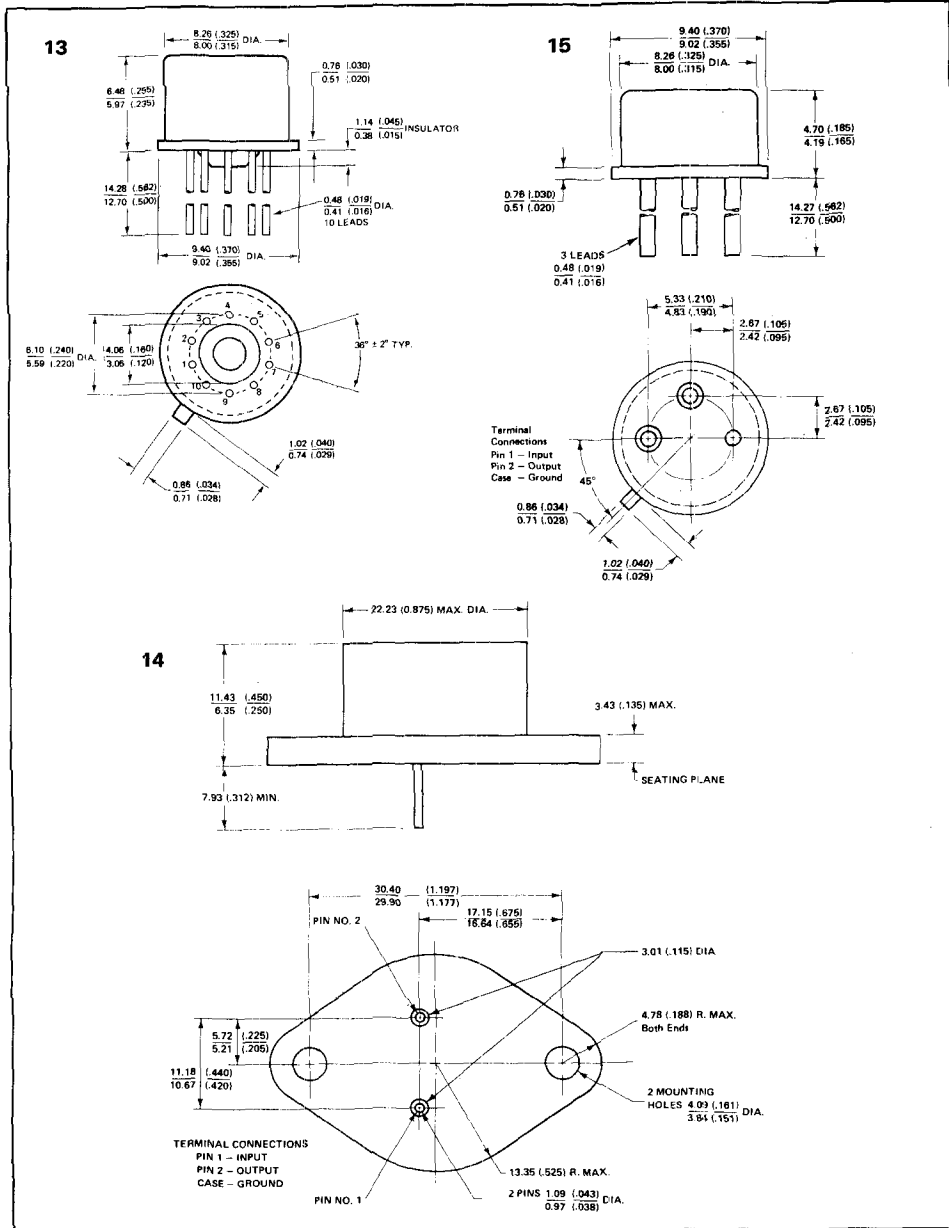


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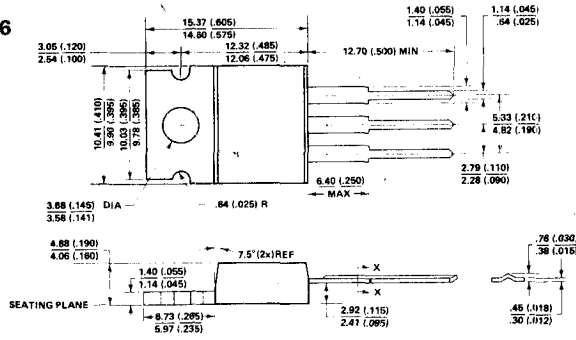
Outline Drawings



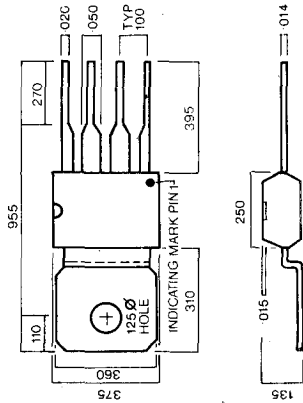
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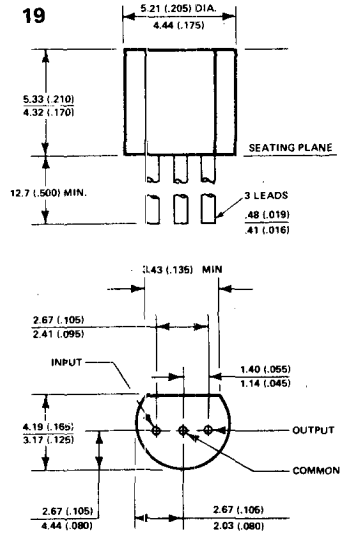
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