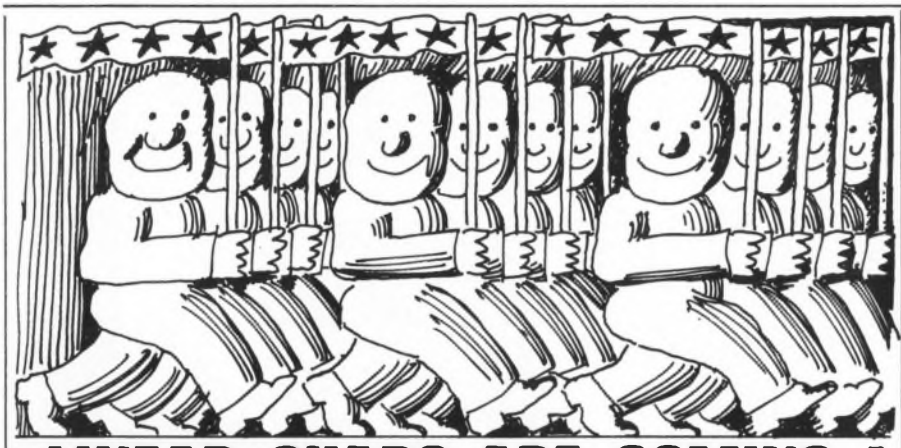
The National Anthem

A review of New Products and Literature — from National Semiconductor



LINEAR QUADS ARE COMING !

For many years now, quad devices have been quite common in the field of digital circuit design, but until recently they were unavailable to the linear designer. However, in the space of little more than a year, the linear quad has come into its own. In fact, the world of linear is rapidly converting to quads. And for very good reasons! When compared with individually purchased linear components, the linear quad is seen to have greater reliability, lower insertion costs, and lower inventory costs; it takes up less board space; and its purchase price (at present about the same as that of individual components) is more likely to go down, as there is more room for improvements in the newer quad technology.

National Semiconductor has the broadest and most widely accepted line of linear quads on the market today and is the acknowledged leader in the field. Among the outstanding linear quads offered by National are

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A new batch of JFET devices from National

National's extensive line of FET devices is growing all the time. One year ago we had only five geometries for all our FETs; today we have 17 geometries to meet all requirements. Several of our latest JFET products are described below.

The 2N5911/2N5912 are the industry's first and only wideband, low-frequency, low-capacitance dual FETs that are monolithic. Offering greater stability than comparable non-monolithic devices, these dual JFETs are ideal as the front end of a wideband oscilloscope or as the input of a high speed op amp. They can be used as a matched switch and can be sold non-packaged for use in custom hybrid circuits. The 2N5911 and 2N5912 differ only in their match and track: the 2N5911 has a match of <10mV and a track of $<20\mu V/^{\circ}C$; the 2N5912 has a match of <15mV and a track of $<40\mu V/^{\circ}C$. *(Continued on page A4)*

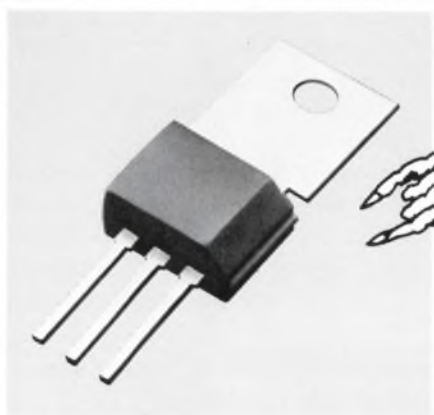
Cool News in the Plastic Power Transistor Market.

DURAWATT.™ Remember that name! It stands for National's entry into the plastic power transistor field. DURAWATT series transistors generate from seven to 12 watts with case temperature held to 25°C. They have the same pin-out and electrical characteristics as Motorola's UNIWATT series MPS-U01-95 and G.E.'s D40 series. They are superior to the Motorola and G.E. devices in the following respects:

- DURAWATT transistors are the only power transistors that are encapsulated in epoxy B, making them unexcelled in reliability.
- DURAWATT transistors have higher free air dissipation.

Applications for DURAWATT series transistors include high-voltage video amplifiers, one-amp NPN and PNP complementary pairs, and one-amp Darlingtons.

The first product available in the DURAWATT line is the SP7056, a high-voltage video amplifier that uses the same highly acclaimed process-48 die that is used in National's metal can transistors. In the DURAWATT package, free air dissipation is increased to 1.75W, allowing the SP7056 to be operated without a metal heat sink. *Circle No.* 180 *on Bingo Card*



Linear Quads

(Continued from page A1)

the LM3900N, the LM339, and the LM324.

The LM3900N, which was introduced about a year ago, is a quad amplifier consisting of four independent, dual-input, internally compensated amplifiers designed specifically to operate off a single power supply voltage and to provide a large output voltage swing.

The LM339, which was brought out more recently, is a low-voltage offset voltage quad comparator designed to interface directly with CMOS logic.

The LM324, a new device that is being offered now for the first time, is a quad operational amplifier with the following unique characteristics:

- In the linear mode, the input common-mode voltage range includes ground and the output voltage can also swing to ground, even though the device is operated from only a single power supply voltage.
- The unity gain cross frequency and the input bias current are temperature compensated.

Circle No. 181 *on Bingo Card*

New JFET Devices

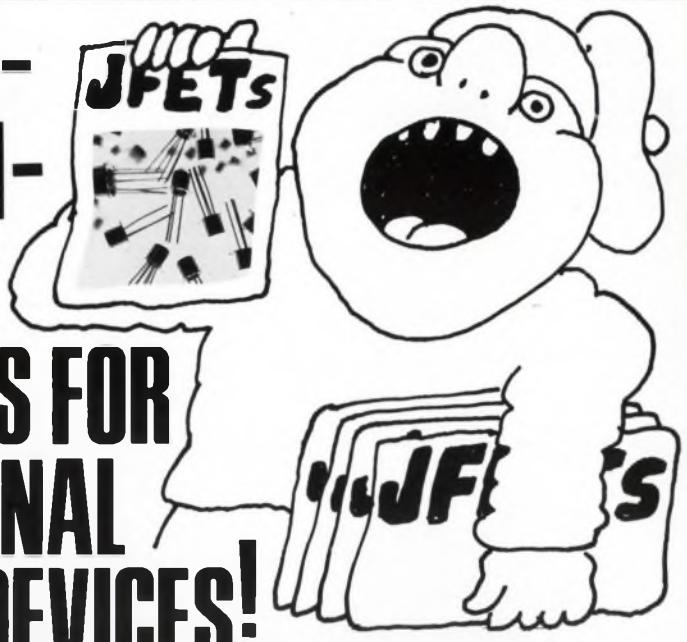
(Continued from page A1)

An N-channel VHF/UHF FET amplifier/oscillator/mixer, the U310 features a typical power gain of 11dB, a typical noise of 3dB at 450MHz common gate, and a typical input impedance of 50 (which optimizes impedance match). The device is easy to use; no neutralization is required.

The 2N5564-66 are monolithic dual JFETs that are used as wideband, low-noise differential amplifiers and commutators. All three devices feature a typical transconductance of 9000$\mu\mho$ at 2mA, a typical noise voltage of 1.5nV/$\sqrt{Hz}$ @ 1kHz, and an R_{DS} that is $<100\Omega$. They differ only in match and track.

The 2N5515-24 are monolithic dual FETS that are designed for 0-100Hz applications. These ten devices differ in match and track and show some differences in electrical characteristics. Several of them can guarantee a noise voltage of $<$15nV/$\sqrt{Hz}$ @ 10Hz and a CMRR of 100dB min. They are all particularly suited for applications that require critical transducers or MΩ input impedances. *Circle* 182 *on Bingo Card*

COMP-REHEN-SIVE GUIDES FOR NATIONAL JFET DEVICES!



The brochure on JFET amplifiers is divided into six categories:

- Ultra-low input current amplifiers (1pA max.)
- Low frequency/low noise amplifiers ($<$10nV/$\sqrt{Hz}$ @ 10Hz)
- VHF/UHF amplifier/mixer/oscillators (400–600MHz)
- RF/VHF amplifiers (200MHz)
- General-purpose N-channel amplifiers listed in ascending order of minimum I_{DSS}, with I_{DSS} range shown pictorially
- General-purpose P-channel amplifiers listed in ascending order of minimum I_{DSS}, with I_{DSS} range shown pictorially

The brochure on dual JFETs is divided into five application areas:

- General-purpose devices
- Low-frequency / low-noise devices ($<$15nV/$\sqrt{Hz}$ @ 10Hz)
- Wideband/low-noise devices for fast slew rate op amps and low-noise oscilloscope displays
- Low leakage/high CMRR/wideband devices -- the ultimate in general-purpose dual JFETs
- Replacement types for the old SU and FM series

The brochure on JFET switches lists the more popular N-channel and P-channel switches in ascending order of "on" resistance.

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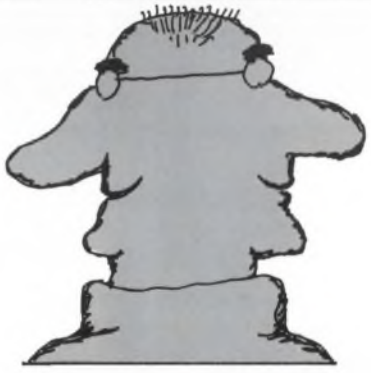

NEW DUAL SENSE AMPS AND LINE RECEIVERS

SANTA CLARA, CA—A new series of dual-function bipolar monolithic integrated circuits from National Semiconductor Corp. offers the systems designer flexibility in implementing digital data transmission and MOS memory sensing circuits.

Called the LM75107A, LM75108A, LM75207, LM75208, LM363, and LM363A, the devices are TTL compatible dual high speed circuits intended for sensing voltages in a broad range of systems applications. While their primary use will be as line receivers or MOS sense amplifiers, any of the new products may be employed as voltage comparators, level translators, or window detectors. As digital line receivers, the devices are intended to be used with the LM75109, LM75110, or the DM7830 line drivers, but they may also be used with other balanced or unbalanced party-line data transmission systems.

Circle No. 192 *on Bingo Card*