



Figure 2. These **Current-Versus-Voltage Characteristics** were obtained from measurements on the FET of Figure 1. The measurements were made at various values of back gate voltage (V_G) representative of the accumulation and depletion modes.

mated to be approximately one hole per 50 two-ring repeat units of polyaniline, consistent with the rather high channel conductivity ($\approx 10^{-3}$ S/cm). Reducing or eliminating the PEO content of the fibers is expected to enhance the properties of future versions of this transistor.

This work was done by Noulie Theofylaktos, Daryl Robinson, and Félix Miranda of Glenn Research Center; Nicholas Pinto of the University of Puerto Rico; Alan Johnson, Jr. and Alan MacDiarmid of the University of Pennsylvania; and Carl Mueller of Analex Corp. Further information is contained in a TSP (see page 1).

Inquiries concerning rights for the commercial use of this invention should be addressed to NASA Glenn Research Center, Innovative Partnerships Office, Attn: Steve Fedor, Mail Stop 4-8, 21000 Brookpark Road, Cleveland, Ohio 44135. Refer to LEW-17933-1.

Miniature Housings for Electronics With Standard Interfaces

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A family of general-purpose miniature housings has been designed to contain diverse sensors, actuators, and drive circuits plus associated digital electronic readout and control circuits. Each housing fits within an envelope having dimensions of about $2\frac{1}{4}$ by $1\frac{3}{4}$ by $\frac{1}{2}$ in. (about 5.7 by 4.4 by 1.3 cm). Each housing can be secured to a mating carrier by use of screws or epoxy; this mounting scheme helps the housings and their contents to withstand severe vibrations and ensures thermal conduction for dissipation of heat generated during operation of the

contained circuitry. The circuits contained in the housings communicate with the external world via standard RS-485 interfaces. Multiple units comprising housings and their contents can easily be electrically connected together in a daisy-chain arrangement, within which individual units are addressable via the RS-485 bus. Hence, a single master computer connected to the bus can program, or read data from, any or all such units. Examples of such units include small motor drives, programmable thermostats, data loggers, and programmable

controllers. There are numerous potential uses for these units in medical equipment, automotive electronics, manufacturing equipment, and robots.

This work was done by David E. Howard, Dennis A. Smith, and Dean C. Alhorn of Marshall Space Flight Center. Further information is contained in a TSP (see page 1).

This invention is owned by NASA, and a patent application has been filed. For further information, contact Sammy Nabors, MSFC Commercialization Assistance Lead, at sammy.a.nabors@nasa.gov. Refer to MFS-32000-1.