

# NASA TECH BRIEF

## Marshall Space Flight Center



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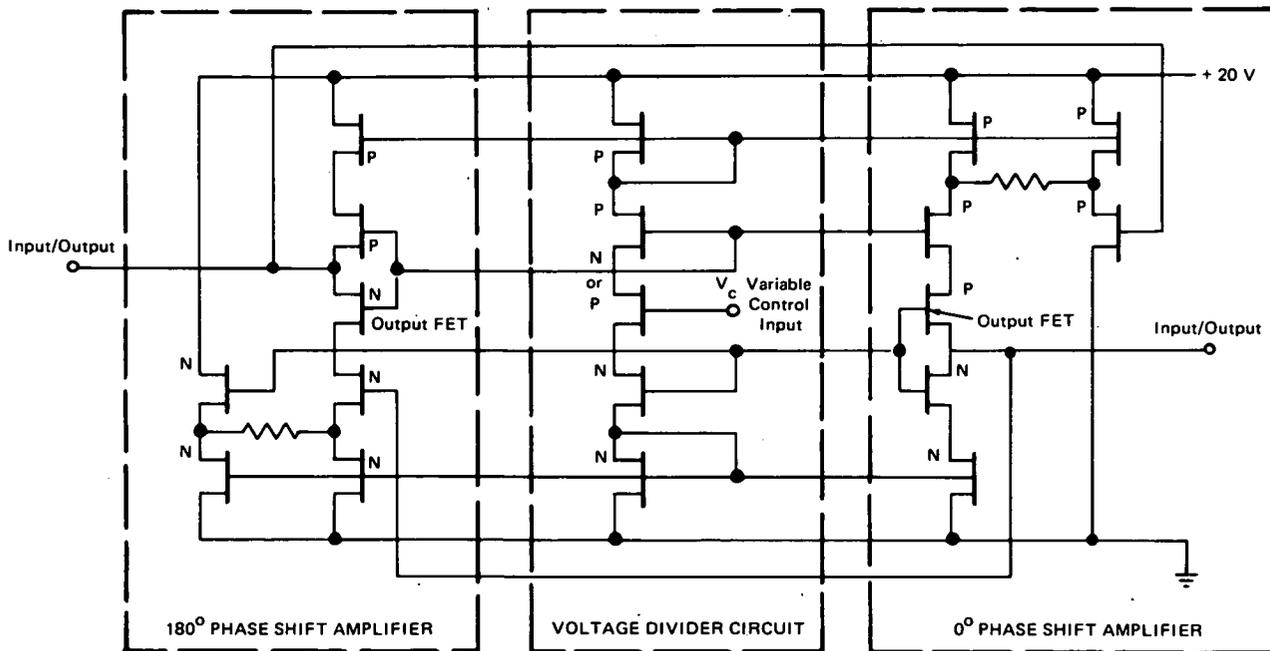
### Gyrator Circuit Using Field Effect Transistors

Gyrator circuits are used to reverse the effective impedance of circuit elements. A new gyrator circuit, employing field-effect transistors (FET's) is especially useful in integrated circuits for such purposes as simulating inductors with capacitors.

The overall configuration of the gyrator circuit is the conventional circular loop with two amplifiers. One amplifier produces a zero phase shift and the other a

$180^\circ$  phase shift. Each amplifier consists of a FET differential amplifier followed by an output FET, followed in turn by two load transistors (see figure). The FET's are all connected in cascade.

A voltage divider circuit is included to control the magnitude of the gyrator output. This string of FET's with a variable-control input varies the reference voltage to the amplifiers.



Gyrator With Field Effect Transistors

(continued overleaf)

This circuit is adaptable to semifloating and full floating configurations. It has an excellent response, has a low power consumption, and a high energy storage capacity, Q.

**Note:**

Requests for further information may be directed to:  
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Reference: B73-10161

**Patent status:**

This invention is owned by NASA, and a patent application has been filed. Inquiries concerning non-exclusive or exclusive license for its commercial development should be addressed to:

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