

AD-A071 740 CORNELL UNIV ITHACA N Y SCHOOL OF ELECTRICAL ENGINEERING F/G 20/12
THE USE OF $Al(x)Ga(1-x)As$ BUFFER LAYERS TO REDUCE PARASITIC SPA--ETC(U)
UNCLASSIFIED JUN 79 L F EASTMAN, D W WOODWARD, A CHANDRA N00014-75-C-0739
NL

| OF |
AD
A071 740

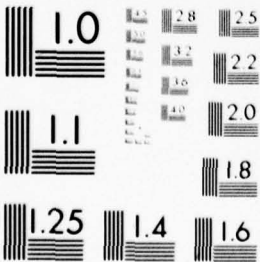


END
DATE
FILMED
8-79
DDC

OF

1

071740



MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

15) N00014-75-

6

The Use of
Space Charge
in FET Str

10
les

ADA071740

DDC FILE COPY

A sim
space char
or buffer.
agreement
obtained c
fabricated
The paras:
strate or
domain th
Including
drain bia
as the sq
root of t
GaAs

SEARCHED	INDEXED
SERIALIZED	FILED
FEB 1975	
FBI - MEMPHIS	
A	

Al_xGa_{1-x}
junction
reduced
devices

RE

0014-75-C-0739

LEVEL II

373045
79
DC

The Use of $Al_xGa_{1-x}As$ Buffer Layers to Reduce Parasitic Space Charge Limited Current Flow Through the Substrate in FET Structures,

12
B.S

10 By L.F. Eastman, D.W. Woodard, ~~A.~~ Chandra and M. Shur
Lester Amitabh

A simple analysis has been made of the parasitic space charge limited current flow in a GaAs substrate or buffer. The computed output conductance is in agreement with experimental values of 600 to 1000 ohms obtained on low noise FET's with 300 ^{micron} gate width fabricated on GaAs buffer layers with low trap density. The parasitic current flows in the semi-insulating substrate or buffer layer, around the thin high field Gunn domain that is present in the active layer of the FET. Including the effects of changing domain length with drain bias, the parasitic current is found to rise as the square root of the drain voltage and as the 4th root of the active channel doping.

11 22 Jun 79

12 1 P.C

GaAs FET's were fabricated with undoped high purity $Al_xGa_{1-x}As$ buffer layers in order to utilize the hetero-junction barrier and reduced saturation velocity to provide reduced parasitic conduction. Output conductance of these devices are in the range of 5000 ohms.

098 850 set

DDC
RECEIVED
JUL 26 1979

79 07 16 155

* see AD-A091739 for source

N00014-75-C-0739 ✓
Date: 22 June 1979

