Contents

1 Introduction

POSTMINI is an interactive graphical postprocessor for de

Default

Motif V1.2, and you continue to see these messages, even though you have set the logicals, see the comments in the “Things to look out for” section.

NOTE! POSTMINI V7.3 and higher no longer examines the logical name `GKS$WS`

Hardcopy is limited to screen dumps of the plot window, due to screen

the function value f(x,y). The X and Y coordinates must be unique and must be specified in increasing order. In version 8.2 and higher, the ASCII file reader has been

dinate goes along the depth direction of the FET, with y increasing with increasing depth. Y=0 is at the oxide/silicon interface. Thus, negative y coordinates are in the oxide; positive y coordinates are in the silicon. For binary files from 3D MINIMOS runs, you have

factor for the ordinate). The scale factor is an integer power of ten tha-d(s˚wi4797 0 Td(ale)Tj be83994 0 2le)T

second color represents all v

map. On all other devices, the surface will be plotted using a hidden line removal technique. On color devices, the “underside”

Barchart - Plot all the data as a bar chart.

Clear - Delete all curves from the plot list. Useful for “starting over”.

Delete - Delete a curve from the plot list.

Integrate - Integrate a quantity vertically or horizontally, and add to plot list. This option applies to 2D data only.

List - List all curves to be plotted, with their labels.

Modify - Modify various aspects of a curve, such as the plot label, curve color, linetype, or symbol. You can also modify the scale factors (AX, AY, MX, MY) that were applied the data, or apply an expression to the data. You can also select whether a curve will be included

by area (cm^2), while those integrated over a line are weighted by length (cm). POSTMINI prints the units of the integrated quantity to remind the user.

Note well: the integration method does not take nonplanar boundaries correctly into account (uses entire area weight,

Attribute	Possible values
Force solid lines on contour plots	Yes/No
Linewidth scale factor	0.0 – 5.0
Hidden line algorithm	Device dependent Horizon function Painter’s algorithm

is completed if you want to save the window. POSTMINI will open a new window for the next plot. Retained windows remain on the screen until you

GLOBAL – The GLOBAL command and its subsequent lines set overall factors,

8 POSTMINI printer support

If you want to make a hardcopy plot file, select the

Markers

Mathmode text

Each item is positioned on the graph using the workstation mouse. The user can also delete any item, or reposition items. The final result is a professional looking graph, especially when plotted to the

10 Expression Evaluator

Postmini V8.3 and higher introduces an expression evaluator code. This allows the user to apply arbitrary expressions to their X or Y axis data, either when read file, or comparison plot. Expressions The operators +, -, *, / and ** (exponentiation) are allowed, parenthesis t

x or y refers to the X or Y data which be transformed. If expression are not used.

primitive, and uses the previous and current x,y values to compute the numerical derivative. Since no previous value is available for the first point, zero is returned.

11 POSTMINI startup file

When11

Postmini default file keywords (cont)		
Key	Values	Description
HIDDEN_LINE_METHOD	painter — horizon	3D hidden line method
LENGTH_UNIT_NAME_ AND_SCALE	<string> <real>	Name of length unit and scale to cm
OXIDE_FILL	YES | NO	Fill regions of oxide with background color if oxide does not have any data associated with it For debugging only, default: YES
PLOT_SCALE_FACTOR	<real>(0.1 to 10.0)	Plot reduction/enlargement factor
PS_FONT_ID	<string>	Selects text font to use for Postscript plots (see section 12)
LINEWIDTH_SCALE	<real>	Linewidth scale factor
SOLID_CONTOUR_LINES	No value	Makes all 2D contour lines solid
TEXT_SCALE	<real>(0.1 to 10.0)	Text reduction/enlargement factor
WRITE_PMIFILE	YES | NO	If YES, writes .PMI file at end of Postmini run (default: YES)
Z_COLORMAP_MINIMUM	<real>	Value of colormap minimum for 3D 04e.1 0 0 -0.1 0 y7o9 0 Td(reduct5298 0

The subkeywords for each main keyword are listed in the following tables.

Note that new(the1lnTd(fol5d(subk)Tj 20.2799 0 Td(e)Tj 4.67996 0 Td(yw)Tj 13.2 0 Td(ords)Tj 23.159910 Td

12.1 Keyword PLOCr45Cr45Cr45Cr45W8Q10 3506.41 125-8.411298.28 684t1014.119.110 /IM

12.3 Keyw

12.4 Keyword AXIS

K

12.6KeywordCONTOUR

12.7 Keyword SURFACE

Keyword SURFACE		
Subkey	Values	Description
CUT_PLANE_AXIS	X | Y | Z	Make plot on this plane (MINIMOS 3D)
CUT_PLANE_COORD	<real>	Make plot at this plane coordinate (MINIMOS 3D)
DATAFILE	<string>	Data file name
DATAFILE_DIMENSION	2 | 3	Spatial dimension (3 for MINIMOS 3D)
DATAFILE_QUANTITY	<string>	Name of data quantity (see later tables)
DATAFILE_TYPE	MINIMOS | PROMIS | SUPREM3S | SUPREM3P | 2DOP | USEOUT | ASCII ψ$EOUT | ASCII || ASCII |	Data file type

12.11 Keyword ANNOTATE MARKER

Keyword ANNOTATE MARKER		
Coordinate range from X=0 to 1.0 and Y=0 to 1.0		
Subkey	Values	Description
MARKER_COLOR	(See list of colors)	Color of marker
MARKER_TYPE	(See list of markers)	Marker type
X_LOC	<real>	X coordinate of lower left center of marker
Y_LOC	<real>	Y coordinate of lower left center of marker

12.12

Text fonts (PostScript output only): Mathmode supports three text fonts: `\Times`, `\Courier` and `\Helvetica`. Note that these keys must be entered with an initial upper case in order to be recognized. You can change the font of a portion of text by enclosing these in curly braces. On devices other than PostScript, these keys have no meaning.

Mathematical symbols — Mathmode can produce the following TEX math symbols:

The hardware fonts on VTxxx terminals are used to increase plotting speed and legibility.

There is a GKS bug in creating color encapsulated PostScript files. A second file with just the GKS PostScript header information is created. On Unix, the file is of the form `filename.eps_2`. You may delete this file. This bug does not appear in when creating regular PostScript files. It appears that this bug was introduced sometime in the GKS V6.0 timeframe. This bug does not seem to occur on VMS under GKS V6.4, so it may have been fixed.

15 List of improvements and bug fixes

15.1 Improvements in version V9.1-000

Multiple 2D plots

The ASCII file reader has been enhanced to support plotting expressions which involve multiple columns of data. For example, if one had three columns of data, one could load column 1 for the X axis, and columns 2 and 3 for the Y axis. One could then apply a y expresion involving column 2 and 3. When more than one Y column is loaded, the Y expression uses variable names of the form ”ynnn”, where ”nnn” is the column number. To continue the previous example, to plot 0pagen

file:

```
$   DEFINE/NOLOG GKS$STROKE_FONT_NEG9
    devprosim$disk:[sled.postmini]VAXGFX$FONT_NEG09_MOD.FNT
$   DEFINE/NOLOG GKS$STROKE_FONT_NEG11 -
    devprosim$disk:[sled.postmini]VAXGFX$FONT_NEG11_MOD.FNT
$   DEFINE/NOLOG GKS$STROKE_FONT_NEG15 -
    devprosim$disk:[sled.postmini]VAXGFX$FONT_NEG15_MOD.FNT
```

On Unix, add these to your .login file:

```
setenv GKSstroke_font_neg9  ~tcad/GKS/font_neg09_mod.fnt
setenv GKSstroke_font_neg11 ~tcad/GKS/font_neg11_mod.fnt
setenv GKSstroke_font_neg15 ~tcad/GKS/font_neg15_mod.fnt
```

One can now load multiple Y columns when reading X-Y data from ASCII files. One can also specify `ALL` to load all the columns in the file (except for the X column). Postmini automatically assumes `SWEEP` mode, so that any retraces are suppressed.

The ASCII file

suppress the

In contour plots, a new mode is available which alters the coordinate plot bounds so that the plot appears in the correct

When Postmini computes the quasi-Fermi potentials from data in a

If you do not specify the `MIN`, `MAX` or `MAJOR_TIC`

Numeric values on the color bar in contour and surface plots are now done in scientific notation using Mathmode, rather than computer “E” notation, so plots conform to IEEE publication standards.

You can

Initial plot attributes for a curve in a comparison plot are now set from a full screena

3D surface plots have an orbit feature, which allows the user to manipulate the bounding box of the plot with the mouse, then replot.

If the axis min/max is changed such that the current axis tic mark parameters

A subroutine interf

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A.1 MINIMOS quantity names

MINIMOS quantity names	
Quantity	Description
POTENTIAL	Electrostatic potential
NET	

A.2 SUPREM3 quantity names

SUPREM3 quantity names
Starred quantities only available from SUPREM structure files

Quantity	Description
B	Active boron concentration
P	Active phosphorous concentration
AS	Active arsenic concentration
SB	Active antimony concentration
NET	

A.4 USEOUT quantity names

USEOUT quantity names	
Quantity	Description
USEOUT	Useout quantity (may represent anything)

A.5 VLSICAP quantity names

A.6 BAMBI quantity names

A.7 2DOP quantity names

2DOP quantity names	
Quantity	Description
DONORS	Donor concentration
ACCEPTORS	Acceptor concentration
NET_DOPING	Net doping
UPPER_OXIDE	Upper oxide shape
LOWER_OXIDE	Lower oxide shape

A.8 PISCES quantity names

PISCES

C Interoperability with PC X displays

Postmini was built using the Compaq GKS layered product, an ANSI/ISO standard for two dimension graphic programs. Compaq's implementation for X displays assumes that you are running a Motif window manager, along with the normal X server. Unfortunately, Compaq's GKS does not always interoperate well with many PC X servers, including Compaq's eXcursion X server software. GKS verion 6.5 has some changes to improve interoperability with PC X servers. It is not perfect, but it

Although it is possible to run X window software on the PC using the phone line

E ASCII output file extensions

F POSTMINI command line arguments and options

POSTMINI takes two optional arguments: the name of a data file to be read, and a datafile name type. If the data file name does not

Datafile extension	Description
`.2dop or .dop`	2D or 3D MINIMOS doping file
`.bin or .bin3d`	MINIMOS 2D or 3D binary file
`.crv`	CURV command file
`.crv2d or .crv3d`	MINIMOS I-V data file (ASCII)
`.pmi`	

POSTMINI takes several command line options:

VMS options Option	Action
`/batch`	Runs Postmini in non-interactive mode
`/output=file`	Specifies output file for hardcopy
`/curv`	Invokes the CURV parser on the input file
`/device=type`	Specifies default plo244.8 617.624S27 90 0ad(plo244.8 617.624S27 90 0ad8 cm BI

Tru64 Unix options	
Option	Action
`-batchT`	

G Papersizes

US sizes (inches)	
Name	Size
A	8.5” x 11”
LEGAL	8.5” x 14”
B	11” x 17”
C	17” x 22”
D	22” x 34”
E	34” x 44”
COMP	11” x 14”
Metric sizes (cm)	
Name	Size
A0	84.1 x 118.9
A1	59.4 x 84.1
A2	42.0 x 59.4
A3	29.7 x 42.0
A4	21.0 x 29.7
A5	14.8 x 21.0
B4	25.7 x 36.4
B5	18.2 x 25.7