

## ICs for Consumer Electronics MEGATEXT

Display Registers

<b>MEGATEXT<sup>®</sup> Display Registers</b>	
<b>Revision History: 10.94</b>	
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Page	Subjects (changes since last revision)

## Data Classification

## Maximum Ratings

Maximum ratings are absolute ratings; exceeding only one of these values may cause irreversible damage to the integrated circuit.

## Characteristics

The listed characteristics are ensured over the operating range of the integrated circuit. Typical characteristics specify mean values expected over the production spread. If not otherwise specified, typical characteristics apply at  $T_A = 25\text{ °C}$  and the given supply voltage.

## Operating Range

In the operating range the functions given in the circuit description are fulfilled.

For detailed technical information about “**Processing Guidelines**” and “**Quality Assurance**” for ICs, see our “**Short Form Catalog**”.

## Edition 10.94

This edition was realized using the software system FrameMaker<sup>®</sup>.

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Contents	Page
1 Introduction . . . . .	4
2 Page Cursor Position Word (PCPW) . . . . .	4
3 Row Attributes (RATT) . . . . .	5
4 Sync Delay Word (SDW) . . . . .	6
5 Display Position Word (DPW) . . . . .	7
6 Page Position Word (PPW) . . . . .	8
7 Graphic Position Word (GPW) . . . . .	9
8 Display Cursor Position Word (DCPW) . . . . .	10
9 Termination Display Word (TDW) . . . . .	11
10 Outer Screen Mask Register (OSMR) . . . . .	12
11 Outer Screen Display Word (OSDW) . . . . .	13
12 Box Mask Register 0 (BOXMR0) . . . . .	14
13 Box Display Word 0 (BOXDW0) . . . . .	15
14 Inner Screen Mask Register 0 (ISMR0) . . . . .	16
15 Inner Screen Display Word 0 (ISDW0) . . . . .	17
16 Box Mask Register 1 (BOXMR1) . . . . .	18
17 Box Display Word 1 (BOXDW1) . . . . .	19
18 Inner Screen Mask Register 1 (ISMR1) . . . . .	20
19 Inner Screen Display Word 1 (ISDW1) . . . . .	21
20 CLUTS . . . . .	22
20.1 CLUT Map . . . . .	22
20.2 Color Word Format . . . . .	24
21 Character Display Word (CDW) . . . . .	25
22 Appendix . . . . .	26

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### 1 Introduction

This manual lists all MEGATEXT display registers with their names and addresses. The function and use of the registers is described in other documents.

### 2 Page Cursor Position Word (PCPW)

Memory location: Block 0, row 0, column 6  
 Default value (hexadecimal): 00 00 00 00 00 00

Bit Name	Bit Position	Function
PCPWC	22:27	Page cursor position (column)
PCPWR	28:32	Page cursor position (row)

### 3 Row Attributes (RATT)

Memory location: Block 0, row 2, columns 0 to 24 and 31

Default value (hexadecimal): 00 00 00 00 00 00

Subregister Designation	Bit Name	Bit Position	Function
Row format register	RLSC0:RLSC1	0:1	Line speed control
	RLCC0:RLCC1	2:3	Lines per character
	RCHC0:RCHC1	4:5	Character height control
	USF	7	Use screen format
Row data register	RUS	8	Underline / separated graphics
	RCO	9	Conceal
	RTRB	10	Transparent background
	RTRF	11	Transparent foreground
	RBX	12	Box mode
	RIC	13	Inverted color
	RFL0:RFL3	14:17	Flash mode
	RBC0:RBC2	18:20	Background color
	RBC3:RBC4	21:22	Background CLUT
	RCOR	23	Contrast reduction
Row mask register	RCHM	24	Character
	RUSM	25	Underline / separated graphics
	RUHM	26	Upper half double height
	RDHM	27	Double height
	RDWM	28	Double width
	RCOM	29	Conceal
	RTRBM	30	Transparent background
	RTRFM	31	Transparent foreground
	RBXM	32	Box mode
	RICM	33	Inverted color
	RFLM	34	Flash mode
	RBCM	35	Background color
	RBCCM	36	Background CLUT
	RFCM	37	Foreground color
	RFCCM	38	Foreground CLUT
	RPMM	39	PCS mode
Screen background	SBC0:SBC2	40:42	Screen background color
	SBC3:SBC4	43:44	Screen background CLUT
Cursor	CC0:CC2	45:47	Cursor color

### 4 Sync Delay Word (SDW)

Memory location: Block 0, row 3, column 0

Default value (hexadecimal): 00 00 00 00 00 00

Bit Name	Bit Position	Function
SDW0 : SDW5	9:14	Sync delay lower bits
SDW6	24	Sync delay MSB

### 5 Display Position Word (DPW)

Memory location: Block 0, row 3, column 1

Default value (hexadecimal): 00 00 18 00 00 00

Bit Name	Bit Position	Function
DPWC	9:14	ISDA position (column)
DPWL	15:18	ISDA position (line)
DPWR	19:23	ISDA position (row)
DWD	24	Double width display
DSC	25	Display speed control
DHD	26	Double height display
LNCL	27	Load new clut
LNSA	28	Load new screen attributes
SAS	29	Screen attribute select

### 6 Page Position Word (PPW)

Memory location: Block 0, row 3, column 2

Default value (hexadecimal): 00 00 00 00 00 00

Bit Name	Bit Position	Function
PPWC	9:14	Page position (column)
PPWL	15:18	Page position (line)
PPWR	19:23	Page position (row)
SOH	24	Scroll out horizontal
SOV	25	Scroll out vertical
SRM0:SRM1	26:27	Screen resolution mode
BES	28	Basic or extended memory select
HR0	29	Hold row 0
HR1	30	Hold row 1
HR23	31	Hold row 23
HR24	32	Hold row 24
DHP	33	Double height page
PLCC0:PLCC1	34:35	Line count control
PCHC0:PCHC1	36:37	Page character height
DWP	38	Double width page
PLSC0:PLSC1	39:40	Line speed control



### 7 Graphic Position Word (GPW)

Memory location: Block 0, row 3, column 3

Default value (hexadecimal): 00 00 00 03 00 00

Bit Name	Bit Position	Function
GPWC	9:14	Graphic position (column)
GPWL	15:18	Graphic position (line)
GPWR	19:23	Graphic position (row)
GRZF0:GRZF1	24:25	Horizontal zoom factor
GRZF2:GRZF3	26:27	Vertical zoom factor
GRSX0:GRSX1	28:29	Horizontal size
GRSY0:GRSY2	30:32	Vertical size
GRSZ0:GRSZ1	33:34	Color planes
GRM0:GRM1	35:36	Graphic mode
GRSP	37	Graphic start point

### 8 Display Cursor Position Word (DCPW)

Memory location: Block 0, row 3, column 4

Default value (hexadecimal): 00 00 00 00 00 00

Bit Name	Bit Position	Function
DCPWP	5:8	Horizontal position (pixel)
DCPWC	9:14	Horizontal position (column)
DCPWL	15:18	Vertical position (line)
DCPWR	19:23	Vertical position (row)
CM0:CM1	24:25	Cursor mode
CF0:CF1	26:27	Cursor format
CS	28	Cursor speed
PCON	29	Page cursor ON / OFF
DCON	30	Display cursor ON / OFF
PCF0:PCF3	31:34	Pixel cursor format

### 9 Termination Display Word (TDW)

Memory location: Block 0, row 3, column 5

Default value (hexadecimal): 00 00 00 00 0C 20

Bit Name	Bit Position	Function
TB0:TB8	0:8	ROM character select
TUS	9	Underline / Separate graphic
TUH	10	Upper half double height
TDH	11	Double height
TDW	12	Double width
TCO	13	Conceal
TTRB	14	Transparent background
TTRF	15	Transparent foreground
TBX	16	Box mode
TBC0:TBC2	17:19	Background color
TFC0:TFC2	20:22	Foreground color
TF0:TF3	23:26	Flash mode
TIC	27	Inverted color
TBC3:TBC4	28:29	Background CLUT
TFC3:TFC4	30:31	Foreground CLUT
TDD0:TDD4	32:36	Multimode bits
TDM0:TDM1	37:38	Display mode
TUC	39	User CLUT select

### 10 Outer Screen Mask Register (OSMR)

Memory location: Block 0, row 3, column 6

Default value (hexadecimal): 00 00 00 00 C0 00

Bit Name	Bit Position	Function
OB0M:OB8M	0:8	ROM character select
OUSM	9	Underline / Separate graphic
OUHM	10	Upper half double height
ODHM	11	Double height
ODWM	12	Double width
OCOM	13	Conceal
OTRBM	14	Transparent background
OTRFM	15	Transparent foreground
OBXM	16	Box mode
OBC0M:OBC2M	17:19	Background color
OFC0M:OFC2M	20:22	Foreground color
OF0M:OF3M	23:26	Flash mode
OICM	27	Inverted color
OBC3M:OBC4M	28:29	Background CLUT
OFC3M:OFC4M	30:31	Foreground CLUT
ODD0M:ODD4M	32:36	Multimode bits
ODM0M:ODM1M	37:38	Display mode
OUCM	39	User CLUT select

### 11 Outer Screen Display Word (OSDW)

Memory location: Block 0, row 3, column 7

Default value (hexadecimal): 00 00 00 00 C0 00

Bit Name	Bit Position	Function
OB0:OB8	0:8	ROM character select
OUS	9	Underline / Separate graphic
OUH	10	Upper half double height
ODH	11	Double height
ODW	12	Double width
OCO	13	Conceal
OTRB	14	Transparent background
OTRF	15	Transparent foreground
OBX	16	Box mode
OBC0:OBC2	17:19	Background color
OFC0:OFC2	20:22	Foreground color
OF0:OF3	23:26	Flash mode
OIC	27	Inverted color
OBC3:OBC4	28:29	Background CLUT
OFC3:OFC4	30:31	Foreground CLUT
ODD0:ODD4	32:36	Multimode bits
ODM0:ODM1	37:38	Display mode
OUC	39	User CLUT select

### 12 Box Mask Register 0 (BOXMR0)

Memory location: Block 0, row 3, column 8

Default value (hexadecimal): 00 00 00 00 00 00

Bit Name	Bit Position	Function
B0B0M:B0B8M	0:8	ROM character select
B0USM	9	Underline / Separate graphic
B0UHM	10	Upper half double height
B0DHM	11	Double height
B0DWM	12	Double width
B0COM	13	Conceal
B0TRBM	14	Transparent background
B0TRFM	15	Transparent foreground
B0BXM	16	Box mode
B0BC0M:B0BC2M	17:19	Background color
B0FC0M:B0FC2M	20:22	Foreground color
B0F0M:B0F3M	23:26	Flash mode
B0ICM	27	Inverted color
B0BC3M:B0BC4M	28:29	Background CLUT
B0FC3M:B0FC4M	30:31	Foreground CLUT
B0DD0M:B0DD4M	32:36	Multimode bits
B0DM0M:B0DM1M	37:38	Display mode
B0UCM	39	User CLUT select

### 13 Box Display Word 0 (BOXDW0)

Memory location: Block 0, row 3, column 9

Default value (hexadecimal): 00 00 00 00 00 00

Bit Name	Bit Position	Function
B0B0:B0B8	0:8	ROM character select
B0US	9	Underline / Separate graphic
B0UH	10	Upper half double height
B0DH	11	Double height
B0DW	12	Double width
B0CO	13	Conceal
B0TRB	14	Transparent background
B0TRF	15	Transparent foreground
B0BX	16	Box mode
B0BC0:B0BC2	17:19	Background color
B0FC0:B0FC2	20:22	Foreground color
B0F0:B0F3	23:26	Flash mode
B0IC	27	Inverted color
B0BC3:B0BC4	28:29	Background CLUT
B0FC3:B0FC4	30:31	Foreground CLUT
B0DD0:B0DD4	32:36	Multimode bits
B0DM0:B0DM1	37:38	Display mode
B0UC	39	User CLUT select

### 14 Inner Screen Mask Register 0 (ISMRO)

Memory location: Block 0, row 3, column 10

Default value (hexadecimal): 00 00 00 00 C0 00

Bit Name	Bit Position	Function
I0B0M:I0B8M	0:8	ROM character select
I0USM	9	Underline / Separate graphic
I0UHM	10	Upper half double height
I0DHM	11	Double height
I0DWM	12	Double width
I0COM	13	Conceal
I0TRBM	14	Transparent background
I0TRFM	15	Transparent foreground
I0BXM	16	Box mode
I0BC0M:I0BC2M	17:19	Background color
I0FC0M:I0FC2M	20:22	Foreground color
I0F0M:I0F3M	23:26	Flash mode
I0ICM	27	Inverted color
I0BC3M:I0BC4M	28:29	Background CLUT
I0FC3M:I0FC4M	30:31	Foreground CLUT
I0DD0M:I0DD4M	32:36	Multimode bits
I0DM0M:I0DM1M	37:38	Display mode
I0UCM	39	User CLUT select



### 15 Inner Screen Display Word 0 (ISDW0)

Memory location: Block 0, row 3, column 11

Default value (hexadecimal): 00 00 00 00 C0 00

Bit Name	Bit Position	Function
I0B0:I0B8	0:8	ROM character select
I0US	9	Underline / Separate graphic
I0UH	10	Upper half double height
I0DH	11	Double height
I0DW	12	Double width
I0CO	13	Conceal
I0TRB	14	Transparent background
I0TRF	15	Transparent foreground
I0BX	16	Box mode
I0BC0:I0BC2	17:19	Background color
I0FC0:I0FC2	20:22	Foreground color
I0F0:I0F3	23:26	Flash mode
I0IC	27	Inverted color
I0BC3:I0BC4	28:29	Background CLUT
I0FC3:I0FC4	30:31	Foreground CLUT
I0DD0:I0DD4	32:36	Multimode bits
I0DM0:I0DM1	37:38	Display mode
I0UC	39	User CLUT select

### 16 Box Mask Register 1 (BOXMR1)

Memory location: Block 0, row 3, column 12

Default value (hexadecimal): 00 00 00 00 00 00

Bit Name	Bit Position	Function
B1B0M:B1B8M	0:8	ROM character select
B1USM	9	Underline / Separate graphic
B1UHM	10	Upper half double height
B1DHM	11	Double height
B1DWM	12	Double width
B1COM	13	Conceal
B1TRBM	14	Transparent background
B1TRFM	15	Transparent foreground
B1BXM	16	Box mode
B1BC0M:B1BC2M	17:19	Background color
B1FC0M:B1FC2M	20:22	Foreground color
B1F0M:B1F3M	23:26	Flash mode
B1ICM	27	Inverted color
B1BC3M:B1BC4M	28:29	Background CLUT
B1FC3M:B1FC4M	30:31	Foreground CLUT
B1DD0M:B1DD4M	32:36	Multimode bits
B1DM0M:B1DM1M	37:38	Display mode
B1UCM	39	User CLUT select

### 17 Box Display Word 1 (BOXDW1)

Memory location: Block 0, row 3, column 13

Default value (hexadecimal): 00 00 00 00 00 00

Bit Name	Bit Position	Function
B1B0:B1B8	0:8	ROM character select
B1US	9	Underline / Separate graphic
B1UH	10	Upper half double height
B1DH	11	Double height
B1DW	12	Double width
B1CO	13	Conceal
B1TRB	14	Transparent background
B1TRF	15	Transparent foreground
B1BX	16	Box mode
B1BC0:B1BC2	17:19	Background color
B1FC0:B1FC2	20:22	Foreground color
B1F0:B1F3	23:26	Flash mode
B1IC	27	Inverted color
B1BC3:B1BC4	28:29	Background CLUT
B1FC3:B1FC4	30:31	Foreground CLUT
B1DD0:B1DD4	32:36	Multimode bits
B1DM0:B1DM1	37:38	Display mode
B1UC	39	User CLUT select

### 18 Inner Screen Mask Register 1 (ISMR1)

Memory location: Block 0, row 3, column 14

Default value (hexadecimal): 00 00 00 00 00 00

Bit Name	Bit Position	Function
I1B0M:I1B8M	0:8	ROM character select
I1USM	9	Underline / Separate graphic
I1UHM	10	Upper half double height
I1DHM	11	Double height
I1DWM	12	Double width
I1COM	13	Conceal
I1TRBM	14	Transparent background
I1TRFM	15	Transparent foreground
I1BXM	16	Box mode
I1BC0M:I1BC2M	17:19	Background color
I1FC0M:I1FC2M	20:22	Foreground color
I1F0M:I1F3M	23:26	Flash mode
I1ICM	27	Inverted color
I1BC3M:I1BC4M	28:29	Background CLUT
I1FC3M:I1FC4M	30:31	Foreground CLUT
I1DD0M:I1DD4M	32:36	Multimode bits
I1DM0M:I1DM1M	37:38	Display mode
I1UCM	39	User CLUT select

### 19 Inner Screen Display Word 1 (ISDW1)

Memory location: Block 0, row 3, column 15

Default value (hexadecimal): 00 00 00 00 00 00

Bit Name	Bit Position	Function
I1B0:I1B8	0:8	ROM character select
I1US	9	Underline / Separate graphic
I1UH	10	Upper half double height
I1DH	11	Double height
I1DW	12	Double width
I1CO	13	Conceal
I1TRB	14	Transparent background
I1TRF	15	Transparent foreground
I1BX	16	Box mode
I1BC0:I1BC2	17:19	Background color
I1FC0:I1FC2	20:22	Foreground color
I1F0:I1F3	23:26	Flash mode
I1IC	27	Inverted color
I1BC3:I1BC4	28:29	Background CLUT
I1FC3:I1FC4	30:31	Foreground CLUT
I1DD0:I1DD4	32:36	Multimode bits
I1DM0:I1DM1	37:38	Display mode
I1UC	39	User CLUT select

### 20 CLUTS

#### 20.1 CLUT Map

Memory location: Block 0, row 3

CLUT No.	Color No.	Memory Address (Column / Bit No.)
0 <sup>2</sup>	0	19 / 23:12
	1	19 / 11:0
	2	16 / 47:36
	3	16 / 35:24
	4	16 / 23:12
	5	16 / 11:0
	6	17 / 47:36
	7	17 / 35:24
1 <sup>2</sup>	8	17 / 23:12
	9	17 / 11:0
	10	18 / 47:36
	11	18 / 35:24
	12	18 / 23:12
	13	18 / 11:0
	14	19 / 47:36
	15	19 / 35:24
2	16	23 / 23:12
	17	23 / 11:0
	18	20 / 47:36
	19	20 / 35:24
	20	20 / 23:12
	21	20 / 11:0
	22	21 / 47:36
	23	21 / 35:24

<sup>1</sup> Values for R, G, B are given in decimal format. Minimum level is 0, maximum level is 15 for each color.

<sup>2</sup> All hard-wired colors are initialized with 0 for each color.

CLUT No.	Color No.	Memory Address (Column / Bit No.)
3	24	21 / 23:12
	25	21 / 11:0
	26	22 / 47:36
	27	22 / 35:24
	28	22 / 23:12
	29	22 / 11:0
	30	23 / 47:36
	31	23 / 35:24
4	32	27 / 23:12
	33	27 / 11:0
	34	24 / 47:36
	35	24 / 35:24
	36	24 / 23:12
	37	24 / 11:0
	38	25 / 47:36
	39	25 / 35:24
5	40	25 / 23:12
	41	25 / 11:0
	42	26 / 47:36
	43	26 / 35:24
	44	26 / 23:12
	45	26 / 11:0
	46	27 / 47:36
	47	27 / 35:24

CLUT No.	Color No.	Memory Address (Column / Bit No.)
6	48	31 / 23:12
	49	31 / 11:0
	50	28 / 47:36
	51	28 / 35:24
	52	28 / 23:12
	53	28 / 11:0
	54	29 / 47:36
	55	29 / 35:24
7	56	29 / 23:12
	57	29 / 11:0
	58	30 / 47:36
	59	30 / 35:24
	60	30 / 23:12
	61	30 / 11:0
	62	31 / 47:36
	63	31 / 35:24

### 20.2 Color Word Format

Format of a color word (12 bits) contained in the CLUTs:

b3	b2	b1	b0	g3	g2	g1	g0	r3	r2	r1	r0
----	----	----	----	----	----	----	----	----	----	----	----

b3:b0      blue  
 g3:g0      green  
 r3:r0      red



### 21 Character Display Word (CDW)

Memory location: Block 2 (3), rows 0 to 25, columns 0 to 39

Default value (hexadecimal): 00 00 00 70 00 20<sup>3</sup>

Bit Name	Bit Position	Function
B0:B8	0:8	ROM character select
US	9	Underline / Separate graphic
UH	10	Upper half double height
DH	11	Double height
DW	12	Double width
CO	13	Conceal
TRB	14	Transparent background
TRF	15	Transparent foreground
BX	16	Box mode
BC0:BC2	17:19	Background color
FC0:FC2	20:22	Foreground color
F0:F3	23:26	Flash mode
IC	27	Invers colors
BC3:BC4	28:29	Background CLUT
FC3:FC4	30:31	Foreground CLUT
DD0:DD4	32:36	Multimode bits
DM0:DM1	37:38	Display mode
UC	39	User CLUT select

### 22 Appendix

**Register Address Table**

Symbol	Register Name	Address		
		Block	Row	Column
PCPW	Page Cursor Position Word	0	0	6
RATT	Row Attribute Register	0	2	0 ... 24, 31
SDW	Sync Delay Word	0	3	0
DPW	Display Position Word	0	3	1
PPW	Page Position Word	0	3	2
GPW	Graphic Position Word	0	3	3
DCPW	Display Cursor Position Word	0	3	4
TDW	Termination Display Word	0	3	5
OSMR	Outer Screen Mask Register	0	3	6
OSDW	Outer Screen Display Word	0	3	7
BOXMR0	Box Mask Register 0	0	3	8
BOXDW0	Box Display Word 0	0	3	9
ISMR0	Inner Screen Mask Register 0	0	3	10
ISDW0	Inner Screen Display Word 0	0	3	11
BOXMR1	Box Mask Register 1	0	3	12
BOXDW1	Box Display Word 1	0	3	13
ISMR1	Inner Screen Mask Register 1	0	3	14
ISDW1	Inner Screen Display Word 1	0	3	15
CLUT	Color Look Up Tables	0	3	16 ... 31
CDW	Character Display Word	2 (3)	0 ... 25	0 ... 39 (23)