

ScanMaster Designer Tray Marking

1 Introduction

This Application Note describes how to create, configure, and edit trays and tray cells in ScanMaster Designer (SMD). It also provides several examples of how to modify single or multiple cells in a tray. The following sections are included in this document:

Introduction Background information Set up the marking pattern Create a tray grid Tray configuration Cell and tray modification examples Referenced Documents Contact Us

Keywords: Cell, Row, Column, Tray, SMD, ScanMaster Designer

2 Background information

Tray Marking is typically used for laser-marking items carried on trays—such as Integrated Circuits (ICs) and electronic components—with repetitive, accurate positioning. The marking may consist of serial numbers, manufacturers' names or logos, barcodes, batch numbers, or date codes. A tray arranges shapes in an array of rows and columns for marking, where the cells are identical and in a fixed geometric position.

ScanMaster[™] Designer allows the marking of very small character sizes while still ensuring the highest quality and repeatability.

3 Set up the marking pattern

Do the following to set up the marking pattern:

- 1. Launch ScanMaster Designer.
- 2. Open a new or existing project in ScanMaster Designer.
- 3. On the Drawing Canvas, add the shapes, text, logos, or barcodes that you would like to use for tray marking.

The figure on the right contains an example of a marking pattern



Figure 1 - A 10mm x 10mm marking pattern



4 Create a tray grid

Left-click the Tray icon in the **Project | Automation** panel of the **Ribbon**. This creates a tray with default values of tray properties. The **Tray Marking Properties** window is displayed as shown in the following figure.

Row Count	7		Row Gan	0	1	Variable Name	Trav2		
Now Count			Now Gap	0	mm	variable ivanie	ilay5		
Column Count	7		Column Gap	0	mm	Call Before Cell Marks	-	Add New Script Function Clear	
Grouping						Call After Cell Marks		Add New Script Function Clear	
Rows per Group	0		Row Gap	0	mm				
Columns per Group	0		Column Gap	0	mm				
Cell properties									
Cell Type	Rectangular								
Cell Height	10	mm							
Cell Width	10	mm							
Tray Details									
Tray Location X	-35	mm	Margin X	0	mm				
Trav Location V	-35	mm	Margin V	0					
Trav Anala			margini						
		degrees							
Marking Direction —									
Starting Cell		0.0.0							
Scan Direction		III							

Figure 2 - The Tray Marking Properties window

5 Tray configuration

This section describes how to configure a tray.

5.1 The Properties tab

The **Properties** tab of the **Tray Marking Properties** window contains all of the properties of the tray grid. Refer to the following subsections for a description of each tray property and instructions on how to change each tray property.

- **General:** The number of rows and columns depends on the Marking Field Size and the Cell Size. For example, if the Marking Field Size is 100 x 100mm, and rectangle cell size is 10 x 10mm, the tray grid can fit 10 rows and 10 columns without any space between the rows and columns. The **General** section of the **Properties** tab specifies the number of rows and columns in a tray grid, as well as the gaps between those rows and columns.
- Script: it used to configure the tray object instance identification name, the pre-execution (Before-cell) script and post-execution (After-cell) script. Scripts are executed to extend the capabilities of the Tray object to fulfil additional automation requirements. Tray can be easily accessible in SMD script programming just by using the default Tray variable given or it can be customized too.
- **Grouping:** it can be used to create groups of cells within a tray grid.



- Cell Properties: it contains the settings for Cell Type, Cell Height and Cell Width.
- **Tray Details:** it contains settings for the location and angle of the tray grid on the Drawing Canvas and settings for the offsets between the tray boundary and the tray grid.

NOTE: The tray location data is in reference to the lower-left corner of the tray. **Margin X** and **Margin Y** are offset from the tray location.

• **Marking Direction:** it used to specify the Starting Cell option and the Scan Direction option for the tray grid. The former is the tray cell from which scanning begins, and the latter is the direction in which scanning proceeds.

e.g.: 10x10mm rectangle cell type with 7x7 row-column has 5mm gap for row and column and tray location is (-50, -50) with 0mm margin and starting cell is lower left and marking direction horizontal bidirectional having default script setting seen *Figure 3 - Tray Configuration* (below)

erties	🗧 General						Script			
Prop	Row Count	7		Row Gap	5	mm	Variable Name	Tray1		
~	Column Count	7		Column Gap	5	mm	Call Before Cell Marks	•	Add New Script Function	<u>Clear</u>
II Viev	• Grouping						Call After Cell Marks	•	Add New Script Function	<u>Clear</u>
ů	Cell properties									
w	Cell Type	Rectangular	•							
ray V	Cell Height	10	mm							
F	Cell Width	10	mm							
	- Tray Details									
	Tray Location X	-50	mm	Margin X	0	mm				
	Tray Location Y	-50	mm	Margin Y	0	mm				
	Tray Angle	0	degrees							
	- Marking Direction									
	Starting Cell									
	Scan Direction		11							

Figure 3 - Tray Configuration

5.2 The Cell View tab

The width and height of the cell, as well as the relative placement of its contents, can be adjusted from this tab. Refer to the following subsections for a description of each setting on the **Cell View** tab.

• **Dimension:** can be used to adjust the dimensions of the cell. This can be useful if the marking detail is larger than cell size. In addition, it allows the user to choose an image if there is more than one image in the Drawing Canvas as seen *Figure 4 - Cell Dimension* (below)

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3	Cell Width 10 mm	1	
l	Cell Height 10 mm		
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Figure 4 - Cell Dimension



• **Recipe:** a drop-down list use to view cell with various image compositions that were defined with the Selected Images property in the Tray. This dropdown list contains all the combinations of the image compositions made in the selected Images property and can be applied to any of the combinations of the cell to view and adjust the cell as seen *Figure 5 - Cell Recipe* (below)





5.3 The Tray View tab

Figure 6 - Tray View



Figure 6 - Tray View

- Tray Details: contains parameters relative to the tray location and angle of the tray grid.
- Selection: contains the Selection Mode dropdown list. The Selection Mode dropdown list allows you to specify an individual cell, or a group of cells, for marking. as seen different selection in *Figure 7 - Selection option* (below)



Figure 7 - Selection option



• Parameters: contains settings that specify cell positioning (offset) and angle with respect to the tray's current location. In addition, the **Parameters** section contains a setting for enabling and disabling marking of the selected cell(s) as in **Figure 8 - Parameter Section**

Parameters		
Horizontal Offset	4	mm
Vertical Offset	4	mm
Cell Angle	15	degrees
📝 Marking Enabled		

Figure 8 - Parameter Section

6 Cell and tray modification examples

While making final tray; it is always necessary to have flexibility modifying the cell or Tray at last moment. Various Selection Modes allow modifying either single cell or single row or single column or Odd/Even row or Column or specific selection of cell. Below are few examples on various modifying technics on a single or multiple cells.

The following subsections contain examples of cell and tray modifications. All of the following examples were created by adjusting settings in the **Tray View** tab.

6.1 Even Column rotation

In the following example, the **Selection Mode** is **Even Columns** and **Cell Angle** is set to 15 degrees. This means that all even columns are rotated 15 degrees as seen *Figure 9 - Rotation* (below)

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Figure 9 - Rotation



6.2 Marking disabled on a specific row

In the following example, the **Selection Mode** is **Specific Row**, the **Row Index** is 3, and the **Marking Enabled** checkbox is deselected. This means that marking is disabled for the third row in the tray grid as seen *Figure* **10 - Disabled marking** (below)

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rties		Adjustments		<<	8-				and a	• 1211	-	
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N	Tray Location X	-50	mm		-	- 12111 ;				• :::::;		•
II Vie	Tray Location Y	-50	mm		25	61730991 534 012545	and the second	Niedal: 81750PS1 Sik: 812348		41710751 311:012945	STORES	Machi: 61730951 5M: 012265
Ŭ	Tray Angle	0	degrees		Ξ	- 2220	-	-	-	-<u></u>	-	
lew	Selection				-	61736991 536: 022545	No. Contraction	61710961 51710961 596:012145		81714991 81714991 89:013945	SLATERS	Minclait: 617369951. 596: 032545
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5	Row Index	3	•		-	Missiek B1734961 Silu R025465	ALCONTONIA CONTRACTOR	41714PR 41714PR 194 41.2945	ET LAND	14.0423 14.0139752 596-04.23465	STATES	Allendadi Altradoria Sala Milliones
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	✓ Image1				1 -							

Figure 10 - Disabled marking

6.3 Multiple image selection

In the following example, the **Selection Mode** is **Odd Rows**, the **Marking Enabled** checkbox is selected, and **Image1** is selected in the **Selected Images** list. This means that all odd rows will mark **Image1** and all even rows will mark **Image2** as seen *Figure 11 - Multiple Image Selection* (below)

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elle		Adjustments		<< 8-	-	· Sattig			• 1225		
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8	Tray Location X	-50	mm		0505	955	950	95 2	95.E	953	95 9
	Tray Location Y	-50	mm	25	343	3.5	5.6	5.6	3 B	3.6	36
5	Tray Angle	0	degrees	Ξ			- territter				-
View	Selection				61736991. Sik: 622545	6171.0931 341: 012345	61731961 90: 012145	677148781 531:032345	61716991 69:012845	91715P53 90: 012243	61736P51 516: 012545
(lay	Selection Mode	Odd Rows	-	-	334	352	9 59	95 2	3 52	1952	952
	Parameters				513	5.6	53	53	545	5.5	56
	Horizontal Offset	0	mm	-			A katalar Medat:				- Katalija Mendala Silikuwa
	Vertical Offset	0	mm	- - -	\$9h 012845	SHL 012346	10k 013346	SH: 022546	SH: 012846	10c 013343	Sik 012205
	Cell Angle	0	degrees	2							
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	✓ Image1				() Marke	ENLIGEZSME	B& 612345	(SN L 1023-165)	CPU: 0125465	SH: CLZ343	34.7336
	Image2										

Figure 11 - Multiple Image Selection

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6.4 Single cell row and column offset

In the following example, the **Selection Mode** is **Single Cell**, the **Row Index** is 5, the **Column Index** is 4, the **Horizontal Offset** is 2 mm, and the **Vertical Offset** is 2 mm. This means that the cell in the 4^{th} column position of Row 5 gets a 2 mm offset in the +X direction and a -2 mm offset in the -Y direction. as seen *Figure 12 - Offset Selection* (below)

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•	Tray Details				Afodek S1730441 361: D122405	Aladen Aladen Bin Olaansa	61750PS1 BR CLIPES	Modek 63754461 391 IC2945	Modelt ALTINISI SPECIALISE	61710P53 814 (12045	Marchale 63736/P51 534: 9120-05
	Tray Location X	-50	mm		350		950	953	9 53	953	32
	Tray Location Y	-50	mm	25	5.6	5.6	3 E	3.6	3.6	3.6	5.6
	Tray Angle	0	degrees	Ξ.	- 2010g	- <u></u>	-		• <u>2:22</u>	-	-
	Selection			-	61736921 514: 612545	81714931 81714931 99:012945	6173:045 5173:045 596:012340		Hodak 61714991 19:012145	61710PS1 90: 612143	Hindait 61730951 591: 612545
	Selection Mode	Single Cell	•				252	1232	1353	952	252
	Row Index	5	•	Ξ.	345	375	343	345	3.15	346	345
	Column Index	4	•	÷	- Katala Macdak 617309-51		Ar Katalas Modul: 83730PS1	Garage Signal			Andul Si75045L
	Parameters				59h 6323465	9%-01294	SPE BEIDHE	SH(r 032546	9%: 01.2346	DC 023943	\$14 012545
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	Selected Images —			<u>=</u>							
	✓ Image1										
	Image2			-12							

Figure 12 - Offset Selection

7 Referenced Documents

This section lists other documents that may be helpful for readers of this Application Note.

NOTE: Unless otherwise noted, the current version of any of the following documents is the applicable one.

Lit. No.	Title
N/A	ScanMaster Designer™ User Guide

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