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Appendix to Bosch-AE Instruction MAT-Label

Requirement for Processed Wafer

based on

Requirements on Marking of Goods and Accompanying Information for Purchased Production Parts

(MAT-Label)

This appendix to the “Bosch-AE Instruction MAT-Label” is based on the specification “Requirements on Marking of Goods and Accompanying Information for Purchased Production Parts (MAT-Label), established in collaboration with Bosch, Siemens, Hella, Continental and Zollner.

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1 MAT-Label for Processed Wafer



This document describes the characteristic of the MAT-Label for the product class Processed Wafer. It refers to the “Bosch-AE Instruction MAT-Label”. All fields having special values are described.

1.1 MAT-Label Layout

A Label sample for Processed Wafer is shown below.

A scheme with the red current numbers (1-23) identifies each field and can be found in the instruction “Bosch-AE Instruction MAT-Label”.

The contents of the following fields differs from this instruction for Processed Wafer: 9, 19, 21. A second Data Matrix Code (DMC), named as Wafer Data DMC, is required to include additional informations about Wafer-IDs and – for measured Wafers – good dies per Wafer. The Wafer Data DMC is explained in section 1.3 with fields 26-28. Please provide enough space for the Wafer Data DMC (see sample label with maximal values in section 1.4). The Wafer Data DMC has to be printed at the bottom.

	Part Name: ProWaf_2019	
	Part No.: 1010101010	21 1. Batch: *ABC123.02
	Man. - Date: 20190903	2. Batch:
	Exp. - Date: 20991231	19 Quantity: 8
Man. Part. No.: SL105C103MAA-S	9 Add. Info: ABC123#U	
Supplier ID: 777	Purchase: 55197828	
Supplier Name: Sample_CO	Index: AA	26-28
Man. Loc.: DEU-DRESDEN	MS-Level: 1	
Shipping Note: 2153698754/85	RoHS	
Supplier Data: Supplierowndata		
Package - ID: S0000ABC12302		

1.2 MAT-Label Data Matrix Code (DMC)

Sample String contents of MAT-Label DMC:

```
[ ]>@06@12S0002@P1010101010@1PSL105C103MAA-S@31PSL105103MAA-S@12V22446688
@10VDEU-DRESDEN@2PAA@20PABC123#U@5D20190903@14D20991231@30PY@Z1@K551
97828@16K2153698754/85@V777@3S0000ABC12302@Q8NAR000@20T1@1T*ABC123.02@
2T@@
```

[]>@06 = Prefix

@ = Separator

nX = Identifier

@@ = Suffix

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Field 4. Ordering Code has not to be printed and is identical with Field 3. Manufacturer Part Number. The contents of fields **9**, **19** and **21** vary for Processed Wafer and are described in the scheme below:

No.	Data Field	Proposals for field description	Definition / Description	Data Identifier	Length	Format N = Numerical, A/N = Alphanumerical, D = day, M = month, Y = year	Example	Data Matrix (Machine Readable)	Printed Text
4.	Ordering Code	Ord. Code	Same value as Field 3. Manufacturer Part Number	31P	Max. 35	A/N	SL105103MAA-S	yes	no
9.	Additional Part Information	Add. Info	Lasered Lot Delimiter # mark for measure U: Unmeasured Wafer M: Measured Wafer	20P	Max. 30	A/N	ABC123#U	yes	yes
19.	Quantity		Quantity of the smallest package unit. unmeasured wafer: qty of wafer Measured wafer: sum of all good dies	Q	Max. 18	12ISO3 to be aligned to the right, see example	44444NAR000 (in DMC) (printed: 44444)	yes	yes
21.	Batch-No. #1	1. Batch No.	Prefix "*" to indicate the additional Wafer Data DMC Supplier Lot ID	1T	Max. 17	A/N	*ABC123.02	yes	yes

1.2.1 Additional Part Information (Scheme Pos. **9**)

This field needs to be filled with the lasered Lot on the Wafer. This part of the lasermarking is unique for all wafers of a lot. Separated by a #-delimiter the kind of the processed Wafer has to be notified:

U: Unmeasured Wafer

M: Measured Wafer

1.2.2 Quantity (Scheme Pos. **19**)

In case of unmeasured wafer this is the quantity of wafer, in case of measured wafer this is the sum of all good dies.

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1.2.3 Batch-No. #1 (Scheme Pos. 21)

With this number the supplier has to be able to retroactively provide information about the batch (e.g. volume, production, delivery). The batch identification should be based on same manufacturing conditions. If a manufacturing condition changes batch number should be changed too.

Important: Use the Prefix “*”

An Asterisk is used to indicate that a second DMC with component Batch information is appended.

1.3 Wafer Data DMC

Processed Wafer need an additional Data Matrix Code, which contains Wafer data. This DMC contains the following information: the Supplier-ID, Package-ID and Wafer-Data. Supplier-ID (Scheme Pos. 26) and Package-ID (Scheme Pos. 27) are identical with Fields 17. and 18. in MAT-Label DMC.

Legend:

No.	Data Field	Proposals for field description	Definition / Description	Data Identifier	Length	Format N = Numerical, A/N = Alphanumerical, D = day, M = month, Y = year	Example(s)	Additional Data Matrix Code (Machine Readable)
26.	Supplier-ID		Same value as Field 17. in MAT-Label DMC	V	Max. 10	A/N	777	yes
27.	Package-ID		Same value as Field 18. in MAT-Label DMC	3S	Max. 30	A/N	S0000ABC12302	yes
28.	Wafer-Data		%L as Lot-identifier Lot-ID %W as Wafer-Identifier Wafer-IDs w/o quantity of good dies, separated by commas Quantity by wafer assigned with #-sign	31T	Max. 297	A/N	Unmeasured wafer: %LABC123.02%W01,02,03,04,05,06,07,08 Measured wafer: %LABC123.02%W01#2300,02#2301@@	yes

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1.3.1 Wafer Data (Scheme Pos. 28)

1.3.1.1 Non-measured Wafer

For non-measured Wafer only the Lot ID and the Wafer ID for each wafer are required. ID of Wafer has always two digits (leading zero if ID lower than ten) and is lower or equal to 25. Lot ID should be identical with value of Field 21. Batch-No. #1 in MAT-Label DMC.

String Sample for non-measured Wafer:

@V777@3SS0000ABC12302@31T%LABC123.02%W01,02,03,04,05,06,07,08@@

@ = Separator nX = Identifier %L = Identifier Lot-ID %W = Identifier Wafer String @@ = Suffix

1.3.1.2 Measured Wafer

If the delivered Wafer are measured, additionally the quantities of good dies per Wafer have to be noted. For each Wafer the quantity of good dies is attached by the #-sign. Each pair of Wafer ID and quantity has to be separated by a comma.

String Sample measured Wafer:

@V777@3SS0000ABC12302@31T%LABC123.02%W01#2300,02#2301@@



@ = Separator nX = Identifier %L = Identifier Lot-ID %W = Identifier Wafer String

= Delimiter for Quantity @@ = Suffix

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1.4 Sample Label with maximal values

Sample Label with maximal Wafer Data DMC, containing 25 Wafer IDs with 7-digits quantities of good dies:

	Part Name: ProWaf_2019		
	Part No.: 1010101010	②①	1. Batch: *ABC123.02
	Man. - Date: 20190903		2. Batch:
	Exp. - Date: 20991231	①⑨	Quantity: 30853425
Man. Part. No.: SL105C103MAA-S	⑨	Add. Info: ABC123#M	
Supplier ID: 777		Purchase: 55197828	②⑥-②⑧
Supplier Name: Sample_CO		Index: AA	
Man. Loc.: DEU-DRESDEN		MS-Level: 1	
Shipping Note: 2153698754/85		RoHS	
Supplier Data: SUPPLIEROWNDATA			
Package - ID: S0000ABC12302			