JEDEC PUBLICATION

PartModel Product Guidelines for Electronic-Device Substrates and Assemblies – XML Requirements

JEP30-PX100

September 2025

JEDEC SOLID STATE TECHNOLOGY ASSOCIATION

NOTICE

JEDEC standards and publications contain material that has been prepared, reviewed, and approved through the JEDEC Board of Directors level and subsequently reviewed and approved by the JEDEC legal counsel.

JEDEC standards and publications are designed to serve the public interest through eliminating misunderstandings between manufacturers and purchasers, facilitating interchangeability and improvement of products, and assisting the purchaser in selecting and obtaining with minimum delay the proper product for use by those other than JEDEC members, whether the standard is to be used either domestically or internationally.

JEDEC standards and publications are adopted without regard to whether or not their adoption may involve patents or articles, materials, or processes. By such action JEDEC does not assume any liability to any patent owner, nor does it assume any obligation whatever to parties adopting the JEDEC standards or publications.

The information included in JEDEC standards and publications represents a sound approach to product specification and application, principally from the solid state device manufacturer viewpoint. Within the JEDEC organization there are procedures whereby a JEDEC standard or publication may be further processed and ultimately become an ANSI standard.

No claims to be in conformance with this standard may be made unless all requirements stated in the standard are met.

All risk and liability relating to the use of JEDEC standards is assumed by the user, who agrees to indemnify and hold JEDEC harmless.

Inquiries, comments, and suggestions relative to the content of this JEDEC standard or publication should be addressed to JEDEC at the address below, or refer to www.jedec.org under Standards and Documents for alternative contact information.

Copyright ©JEDEC Solid State Technology Association 2025. All rights reserved.

JEDEC retains the copyright on this material. By downloading this file the individual agrees not to charge for or resell the resulting material.

.

PRICE: Contact JEDEC

3103 10th Street North, Suite 240S, Arlington, VA 22201

DO NOT VIOLATE
THE
LAW!

This document is copyrighted by JEDEC and may not be reproduced without permission.

For information, contact:

JEDEC Solid State Technology Association
3103 10th Street North
Suite 240S
Arlington, VA 22201
https://www.jedec.org/contact

This page intentionally left blank.

PartModel Generated ECAD - Models Guidelines for Electronic-Device Packages – XML Requirements

Contents

This page intentionally left blank.

PartModel Product Guidelines for Electronic-Device Substrates and Assemblies – XML Requirements

(From JEDEC Board Ballots JCB-25-59, formulated under the cognizance of the JC-11 Committee on Mechanical Standardization.)

1 Scope

The JEP30 document establishes the requirements for exchanging part data between part manufacturers and their customers for electrical and electronic products. The JEP30 documents are part of a series to describe XML data exchange structure and hierarchy. The JEP30 document series will detail data exchange between companies for design at the next level, analysis, and interconnection. The parent JEP30 document specifically focuses on the parental structure, under which several sub-sections are listed, such as electrical, physical, thermal, supply chain, assembly process classification, design kit, generated ECAD models, product substrate and assemblies, and environment including material declaration. This document specifically focuses on the Product substrate and assemblies sub-section of the PartModel.

All releases of the *Product* sub-schema must be under the umbrella of the PartModel Schema to ensure that the PartModel schema is referencing the correct version of the *Product* sub-schema. In addition, this will enable the *Product* sub-schema to connect to the Manufacturer Part Number and the Manufacturer of the Part.

1.1 Purpose

This standard is intended to benefit part manufacturers, substrate fabricators, product assemblers and their customers by providing consistency and efficiency to the transfer of standardized substrate and product assembly design to customers. It establishes standard electronic data exchange formats that will facilitate and improve data transfer along the entire global supply chain, at every stage in the product life cycle. A key aspect therefore is the structure of the content that is contained in this format, which the committee believes should be based on the following two principles:

1) Data that is required to be consumed by software tools, and

2) Data that is not required to be consumed by software tools but is provided for informational purposes.

This standard specifically covers data applicable to the *Substrate* and/or *Assembly* of micro-electronic components onto the assembly that is required to support the design, fabrication and consumption modelling of the device.

2 Applicable Documents

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

2.1 JEDEC (www.jedec.org)

JEP30, *PartModel Guidelines for Electronic-Device Packages – XML Requirements*

JEP30-A100, PartModel Assembly Process Classification Guidelines for Electronic-Device Packages – XML Requirements

***JEP30-E100**, PartModel Electrical Guidelines for Electronic-Device Packages – XML Requirements*

JEP30-P100, PartModel Package Guidelines for Electronic-Device Packages – XML Requirements

JEP30-S100, PartModel SupplyChain Guidelines for Electronic-Device Packages – XML Requirements

JEP30-T100, PartModel Thermal Guidelines for Electronic-Device Packages – XML Requirements

JEP30-K100, PartModel Design Reule Kits Guidelines for Electronic-Device Packages – XML Requirements

JEP30-M100, PartModel Generated ECAD Models - Guidelines for Electronic-Device Packages – XML Requirements

2.1.1 JEDEC PartModel Schema and Sub-Schemas

JEP30-10, PartModel Schema

JEP30-A101, PartModel Assembly Process Classification Schema

JEP30-E101, PartModel Electrical Schema

JEP30-P101, PartModel Package Schema

JEP30-S101, PartModel Supply Chain Schema

JEP30-T101, PartModel Thermal Schema

JEP30-K101, PartModel Design Kit Schema

JEP30-M101, PartModel Generated ECAD – Models Schema

JEP30-D10, *PartModel Schema Types Dictionary* (Required to support the PartModel Schema and each of its sectional sub-schemas.)

3 Requirements

The following terms and definitions are applicable to this XML Schema.

3.1 Terms and Definitions

All definitions and terms associated with the Product data are defined in the relevant standards that govern the definition of those parameters, as listed in the applicable documents section. The Substrate and Assembly details of the part are defined in the *ProductSection* of the XML Schema.

All common Terms and Definitions that are used by more than one sectional sub-schema, such as any of the Assembly Process Classification, Electrical, Environmental, Package, Supply Chain, Thermal, Design Kits, or Generated ECAD Models are defined in the “JEP30-D10 PartModel Schema Types Library”.

All other definitions and terms necessary to define the schema, are defined by this document.
PartModel: A PartModel is a data representation described in an XML file that conforms to the rules and structure of the PartModel XML Schema.

NOTE 1 Companies who use the PartModel XML Files and claim compliance to JEDEC, must ensure that their PartModel XML file conforms to the specific released version of the PartModel XML Schema released by JEDEC.

NOTE 2 Section 4 will define the outline of the structure of the Product XML Schema. Specific components of the XML Schema and their hierarchy are specifically controlled by the JC-11 Standards Committee who retain the expertise for these structures.

NOTE 3 The *ProductSection* of the schema forms part of the PartModel XML Schema and is not intended to act as a standalone schema. In addition, there is a “PartModel Schema Types Library” XML Schema, which is a common set of xml structures shared across the PartModel XML Schema and all of its sub-section schemas.

3.2 XML Schema Key Terms and Definitions

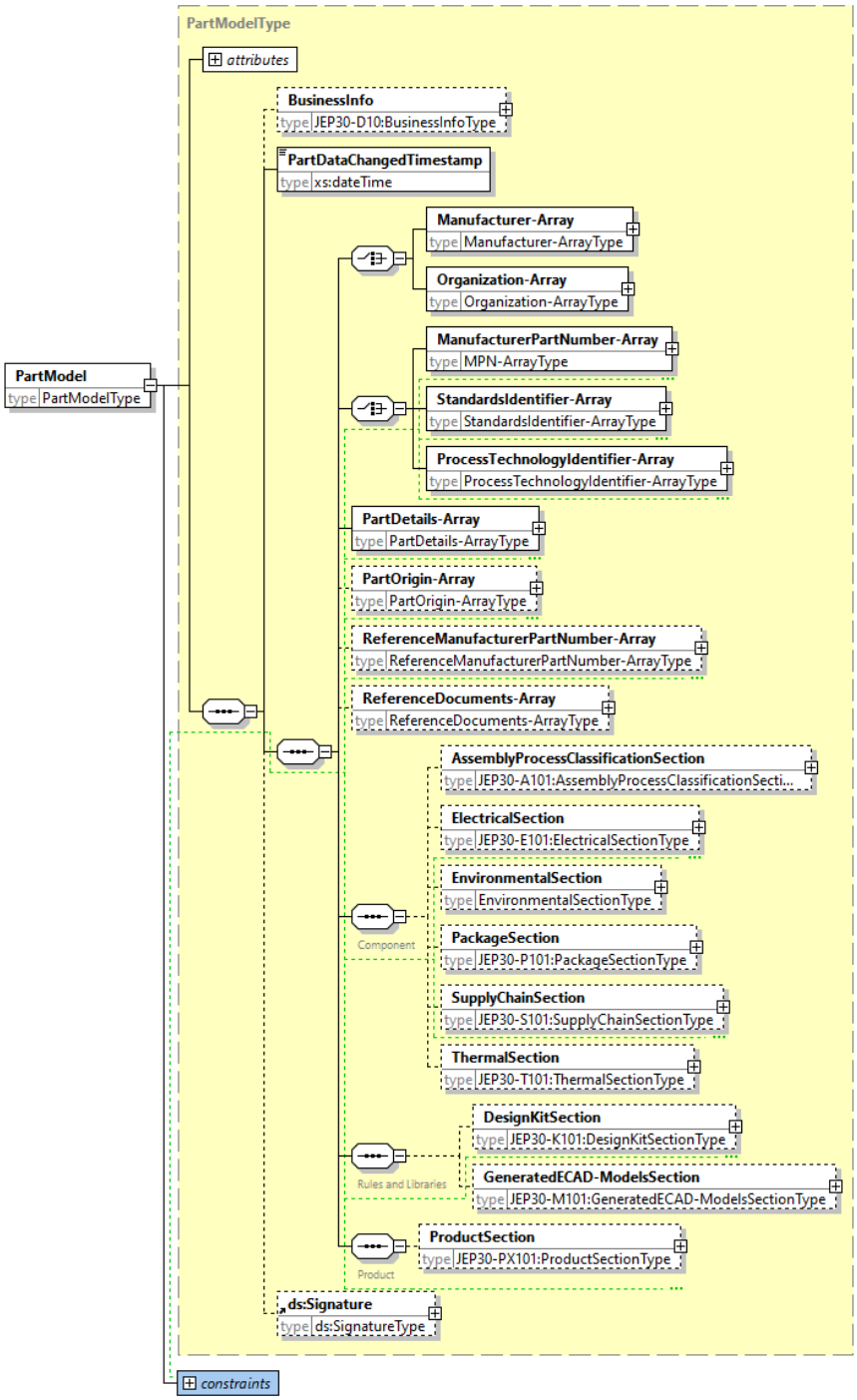
Reference the JEP30 publication for details of the "XML Schema Key Terms and Definitions".

4 PartModel Schema Definition

The following section describes the XML Schema structure.

4.1 PartModel – Product Section

diagram



type **PartModelType -> GeneratedECAD-ModelsSection, ds:SignatureType**

4.1 PartModel – Product Section (cont'd)

The *PartModelType* belongs to the "PartModel XML Schema". The *ProductSection* belongs to the "PartModel Product XML Schema". The primary purpose of the PartModel Schema is to provide the structure for identifying unique parts (Manufacturer and MPN) or unique standards (Organization and Standards Identifier) and the structure to include the sub schemas which define the part details, as outline in the JEP30 - PartModel Guidelines for Electronic-Device Packages – XML Requirements.

This document covers the *ProductSection*, which is referenced from its parent's structure, the *PartModel*. The contents under the *ProductSection* are

1. Tied to the Manufacturer's name and Manufacturer's part number if the Product is applicable to a part or a chiplet, or
2. Tied to a Standards Body and a Standards Model Identifier, if the product data represents a standard for a product substrate or assembly as defined by a specific Standards Body.

All releases of the *ProductSection* sub-schema must be under the umbrella of the PartModel Schema to ensure that the PartModel schema is referencing the correct version of the Product sub-schema. In addition, this will enable the Product sub-schemas to connect to the identity structure as defined in the parent schema JEP30.

The *ComplianceToJEP30-PX101SchemaVersion* indicates the version of the Schema to which the XML file is to be validated against. All new releases to this document or XML Schema are governed by the rules outlined in JEP30, and must be released in sync with the PartModel.

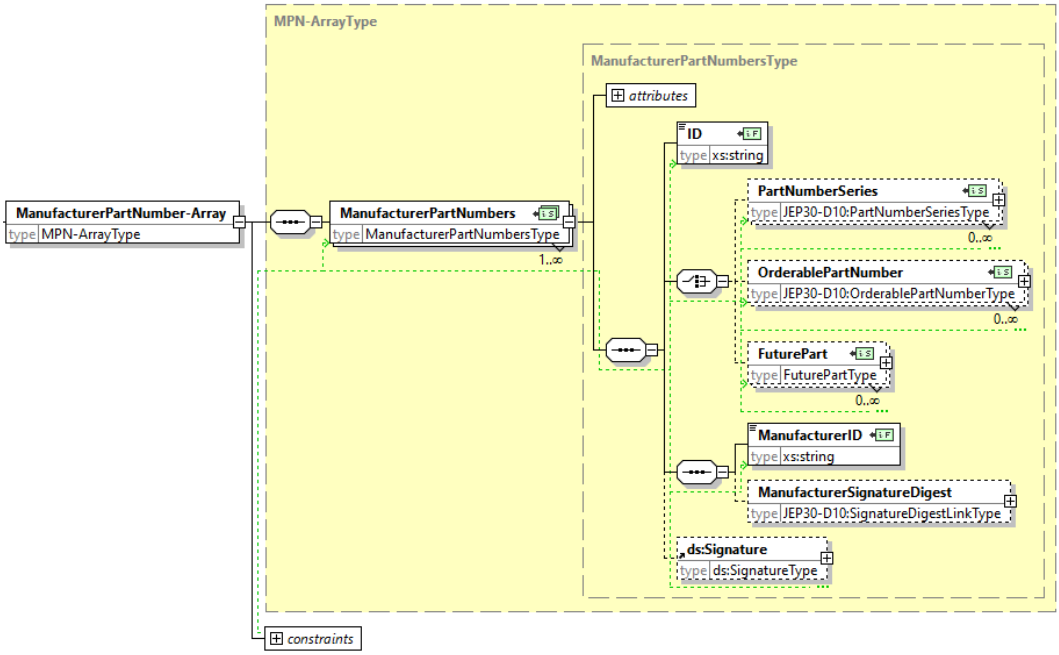
"Each time that a Sub-schema gets updated, then the PartModel version also gets updated in order to release that Sub-schema under the umbrella of the PartModel. This is because the PartModel must now reference the new version of sub-schema, since all subschemas have their own version number. The parent schema includes them by referring to a precise version, so a version bump in the subschema requires a version bump in the parent only at the time of release of the Parent."

The *ProductContentRevision* indicates the revision of the data for the Part that is submitted in the XML file. This enables the Component Manufacturer, the substrate fabricator, the OSAT, or the PartModel generator to provide a new XML file for a Part each time they wish to upgrade a new set of data for a part, in this *ProductSection*.

The PartModelProductSectionStatus attribute is a mandatory attribute that determines the status of the PartModel XML file. It has enumerated values of Pre-Release, Released, Superseded, and Withdrawn.

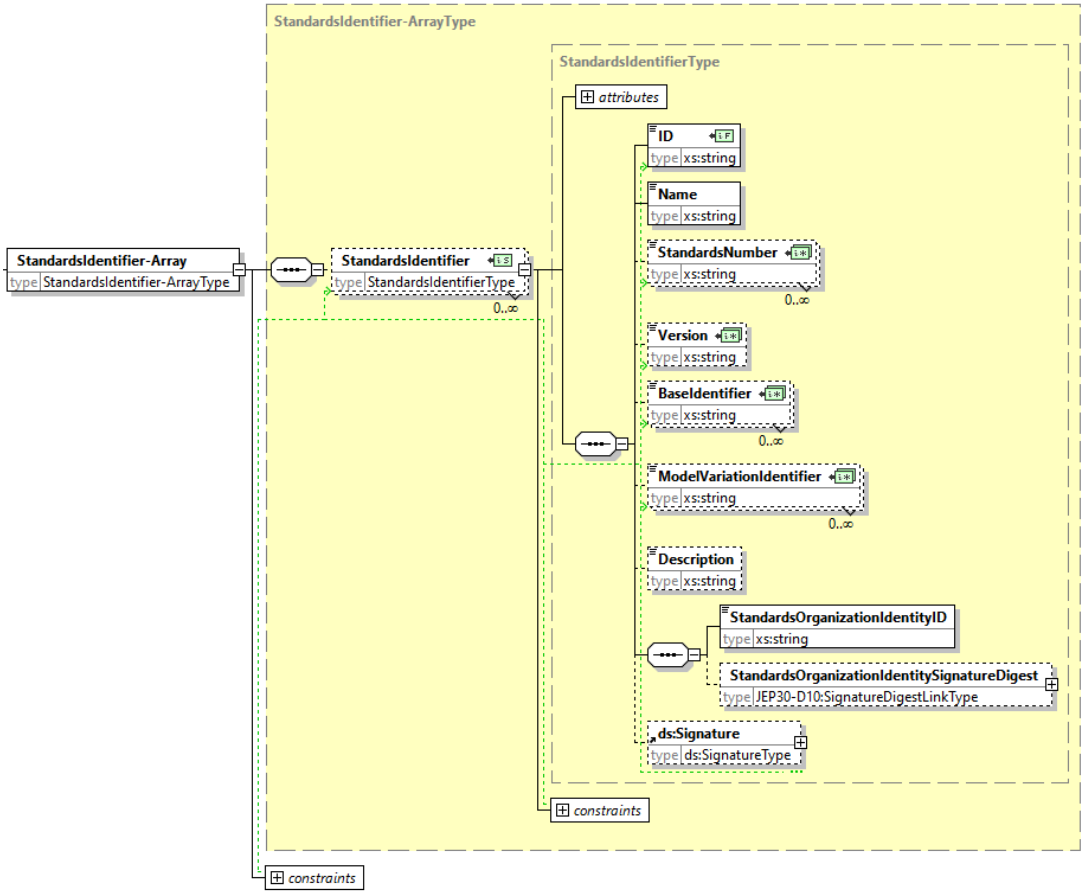
The DocumentID attribute provides a unique ID for the JEP30-P101 document that is being published.

4.2 Manufacturer Part Number-Array

path	**PartModel/ManufacturerPartNumber-Array.**
diagram	
type	**MPN–ArrayType, ManufacturerPartNumbersType, JEP30-D10:PartNumberType, JEP30-D10:OrderablePartNumberType, FuturePartType, JEP30-D10:SignatureDigestLinkType, ds:SignatureType.**

The *ManufacturerPartNumber-Array/ManufacturerPartNumbers* provides the definition of the part number, so that it can be connected to the technical specification details in the *ProductSection* via the *PartDetails-Array* section.

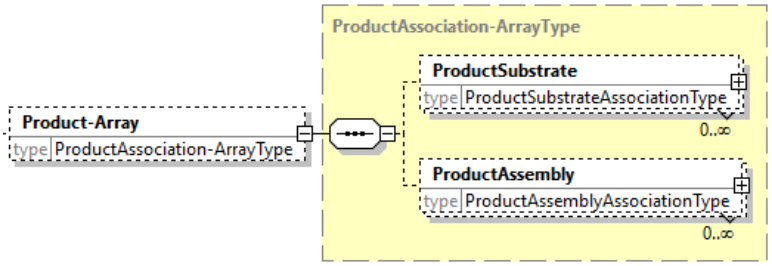
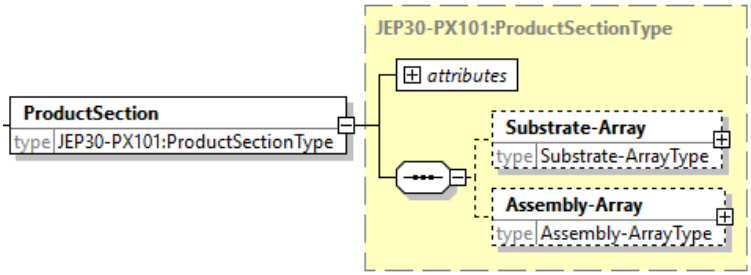
4.3 Standards Identifier - Array

path	**PartModel/StandardsIdentifier-Array.**
diagram	
type	**StandardsIdentifier-ArrayType, StandardsIdentifierType, JEP30-D10:SignatureDigestLinkType, ds:SignatureType.**

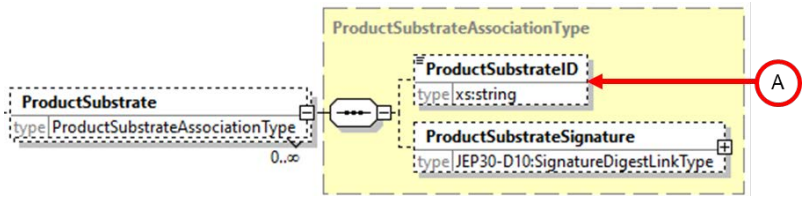
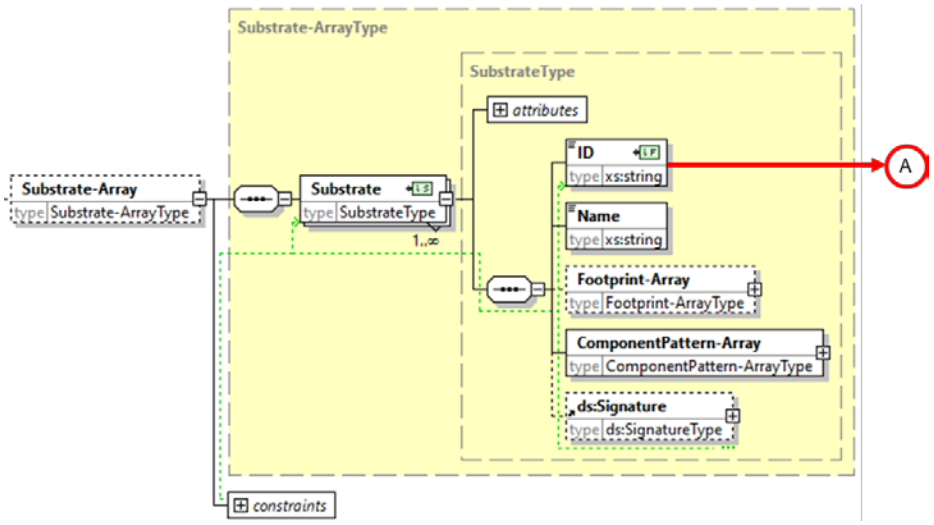
The *StandardsIdentifier-Array/StandardsIdentifier* provides the definition of a specific Standard, so that it can be connected to the technical specification details in the *ProductSection* via the *PartDetails-Array* section.

4.4 Linking the Manufacturing Part Number to a specific Product Data set

The linking of the Parts, or Standards to its technical data is done via the *PartDetails-Array* section as outline in the JEP30 - PartModel Guidelines for Electronic-Device Packages – XML Requirements. This consists of two sections called *PartsSelection-Array* and *Association-Array* which defines the relationship between identifying the specific set of substrates or product assemblies and how they are associated with the Product content. Reference the JEP30 parent document for more details on this association.

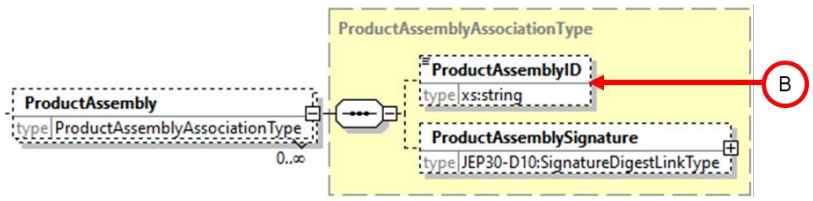
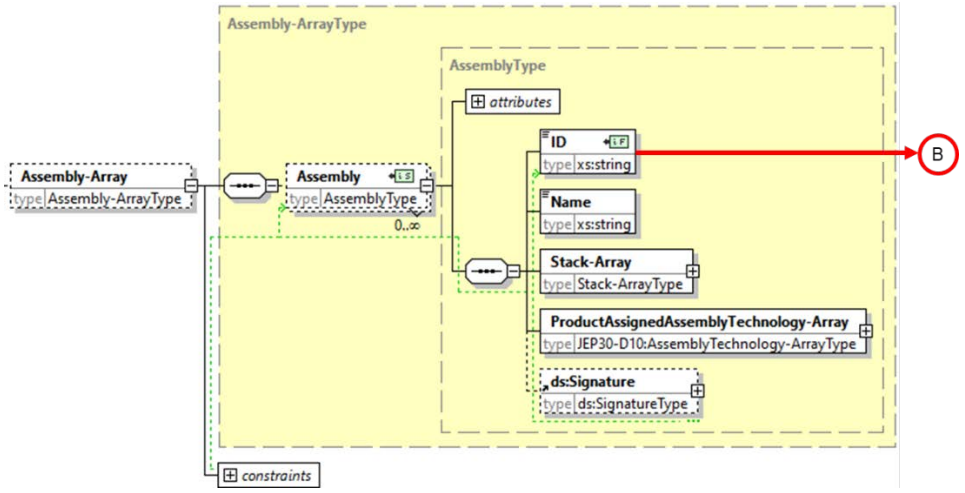
path	**PartModel/PartDetails-Array/PartDetails/Association-Array/Association/GeneratedECAD-Models-Array**
diagram at the Association level	
type	**ProductAssociation-ArrayType, ProductSubstrateAssociationType, ProductAssemblyAssociationType.**
path	**PartModel/GeneratedECAD-ModelsSection**
diagram at the Generated ECAD - Models Section level	
type	**JEP30-PX101:ProductSectionType, Substrate-ArrayType, Assembly-ArrayType.**

4.4.1 Linking the Manufacturing Part Number to Footprint ECAD Model

path	**PartModel/PartDetails-Array/PartDetails/Association-Array/Association/Product-Array/ProductSubstrate**
diagram at the Footprint Generated ECAD Models Association level	
type	**ProductSubstrateAssociationType, JEP30-D10:SignatureDigestLinkType.**
path	**PartModel/ProductSection/Substrate-Array**
diagram at the Footprint Generated ECAD Models level.	
type	**Substrate-ArrayType, SubstrateType, Footprint-ArrayType, ComponentPattern-ArrayType, ds:SignatureType.**

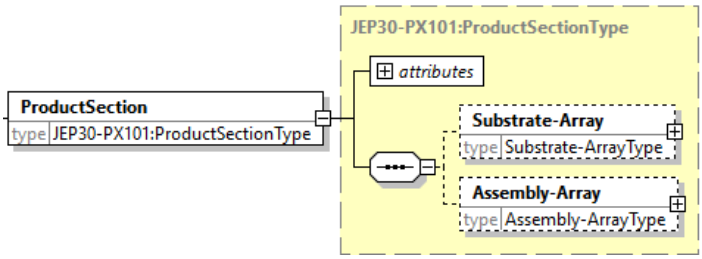
The *ProductSubstrateID* references the *Substrate/ID* under the *Substrate-Array*. This is enforced by the key named as *ProductSubstrateKey* that is assigned to the *Substrate/ID* element, which is referenced by the *ProductSubstrateID* which has a KeyRef that refers to the *JEP30-PX101: ProductSubstrateKey*.

4.4.2 Linking the Manufacturing Part Number to Symbol ECAD Model

path	**PartModel/PartDetails-Array/PartDetails/Association-Array/Association/Product-Array/ProductAssembly**
diagram at the Symbol Generated ECAD Models Association level	
type	**ProductAssemblyAssociationType, JEP30-D10:SignatureDigestLinkType.**
path	**PartModel/ProductSection/Assembly-Array**
diagram at the Symbol Generated ECAD Models level.	
type	**Assembly-ArrayType, AssemblyType, Stack-ArrayType, JEP30-D10:AssemblyTechnology-ArrayType, ds:SignatureType.**

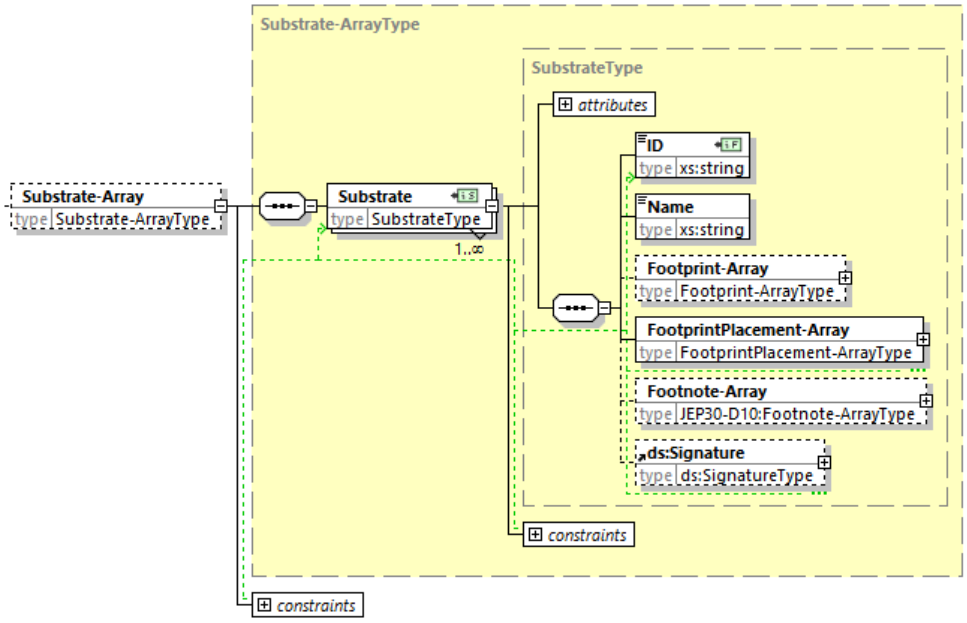
The *ProductAssemblyID* references the *Assembly/ID* under the *Assembly-Array*. This is enforced by the key named as *ProductAssemblyKey* that is assigned to the *Assembly/ID* element, which is referenced by the *ProductAssemblyID* which has a KeyRef that refers to the *JEP30-PX101: ProductAssemblyKey*.

5 Product Section

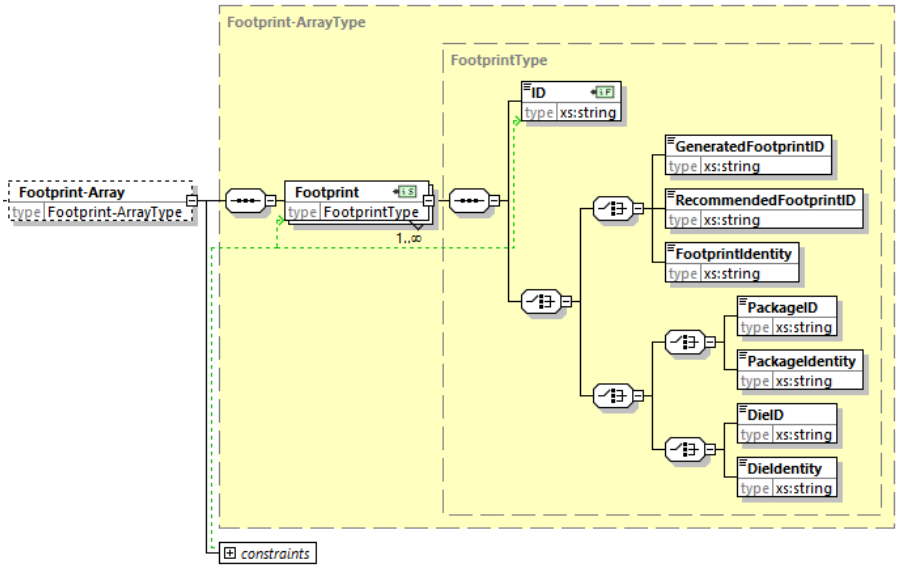
path	**PartModel/ProductSection**
diagram	
type	**JEP30-PX101:ProductSectionType, Substrate-ArrayType, Assembly-ArrayType**

The *ProductSection* consists of two sections as shown above in the diagram. Each of these sections are described in further detail in the sub-sections below.

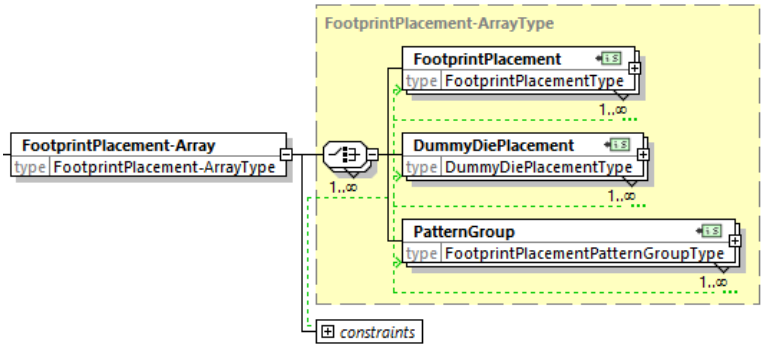
5.1 Substrate - Array

path	**PartModel/ProductSection/Substrate-Array**
diagram	
type	**Substrate-ArrayType, SubstrateType, Footprint-ArrayType, FootprintPlacement-ArrayType, JEP30-D10:Footnote-ArrayType, ds:SignatureType.**

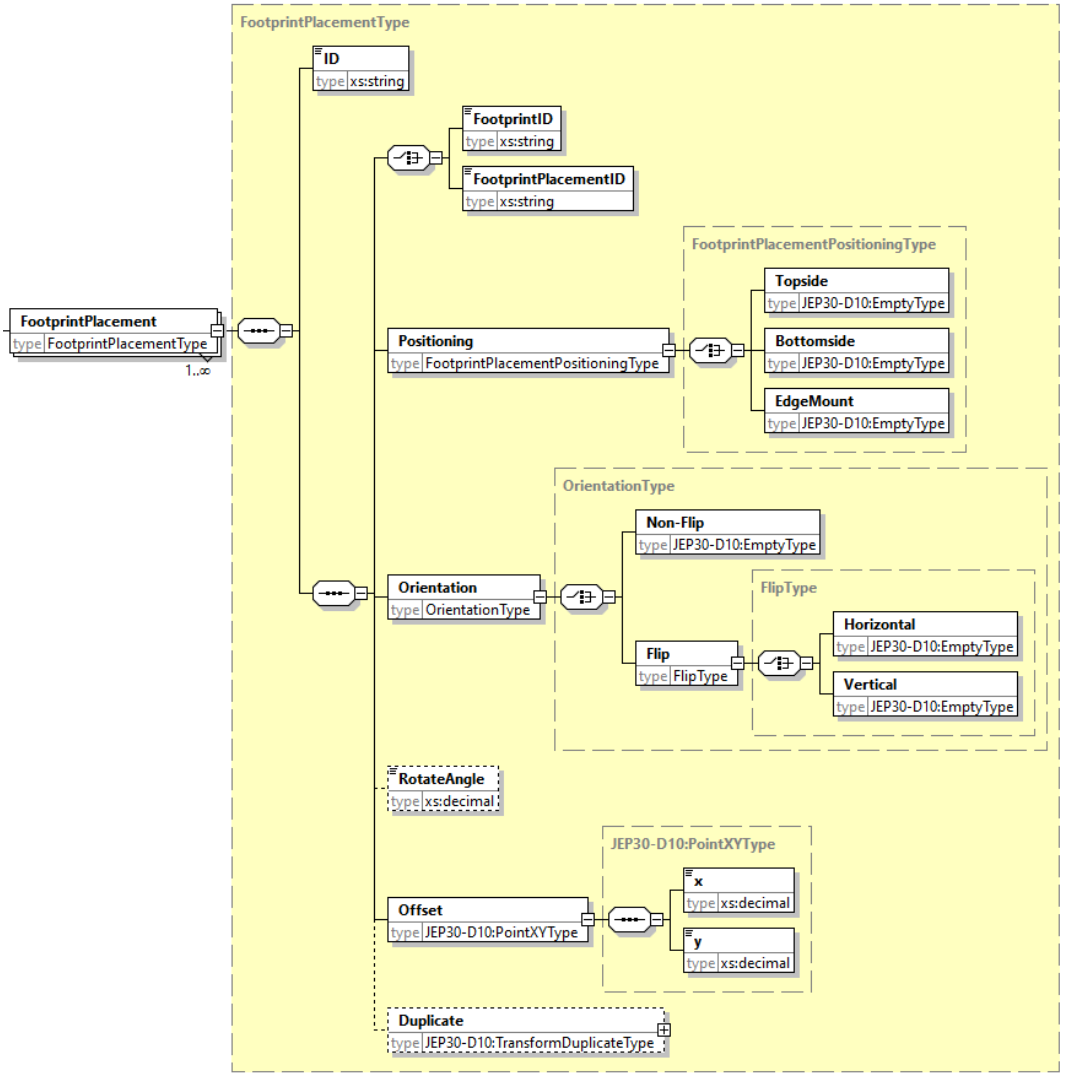
5.1.1 Footprint - Array

path	**PartModel/ProductSection/Substrate-Array/Substrate/Footprint-Array**
diagram	
type	**Footprint-ArrayType, FootprintType.**

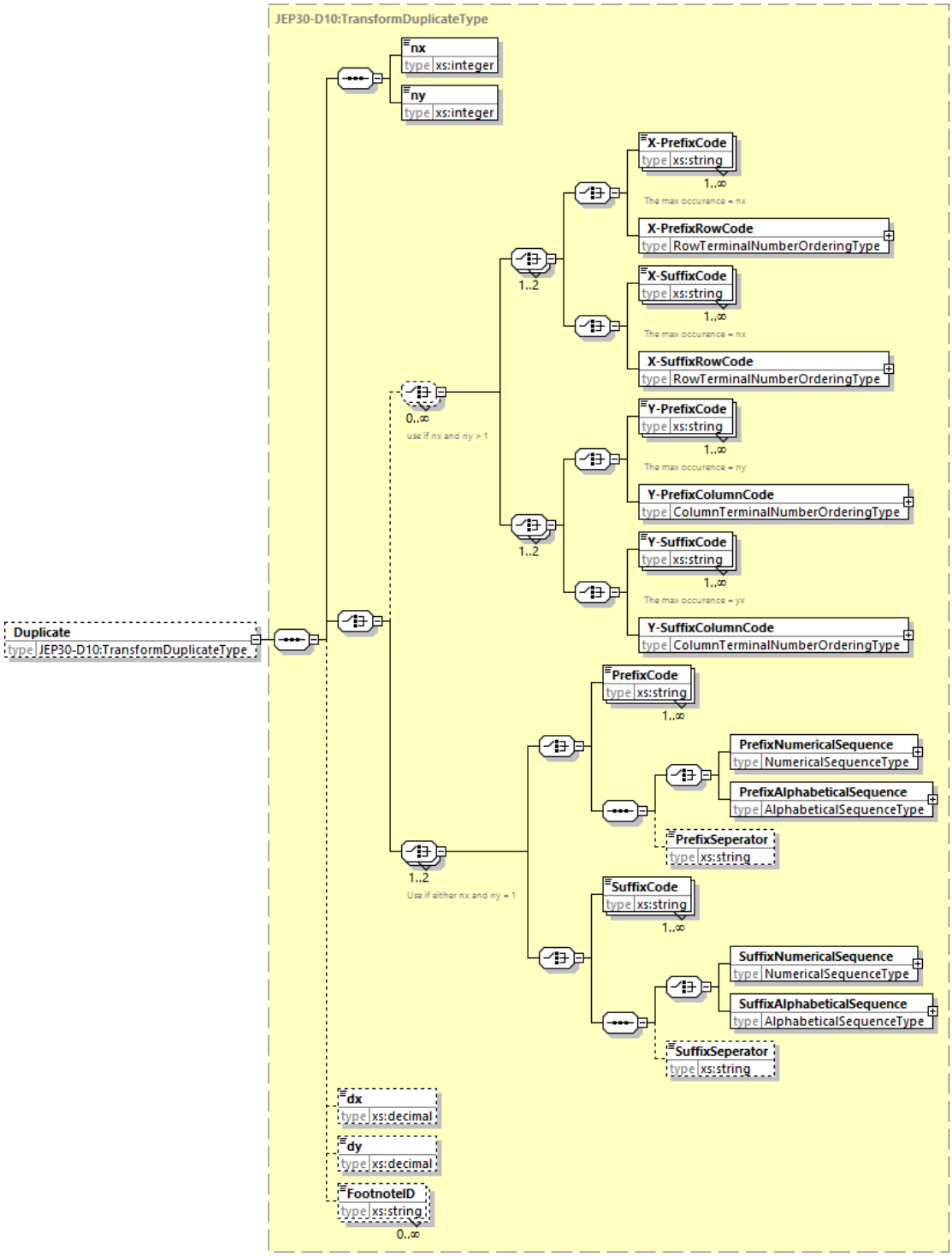
5.1.2 Footprint Placement - Array

path	**PartModel/ProductSection/Substrate-Array/Substrate/FootprintPlacement-Array**
diagram	
type	**FootprintPlacement-ArrayType, FootprintPlacementType, DummyDiePlacementType, FootprintPlacementPatternGroupType.**

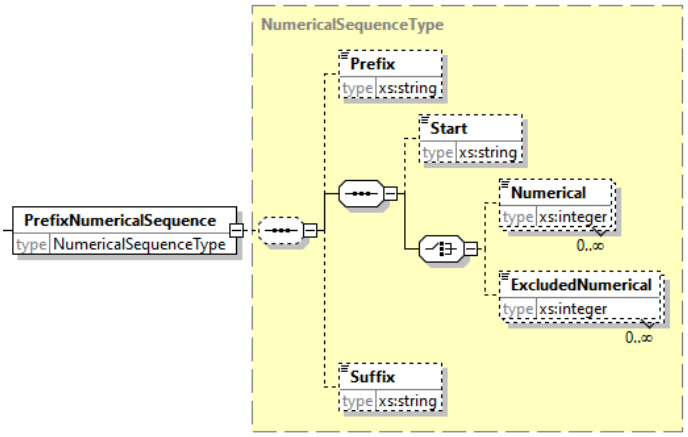
5.1.2.1 Footprint Placement

path	**PartModel/ProductSection/Substrate-Array/Substrate/FootprintPlacement-Array/FootprintPlacement**
diagram	
type	**FootprintPlacementType, FootprintPlacementPositioningType, JEP30-D10:EmptyType, OrientationType, FlipType, JEP30-D10:PointXYType, JEP30-D10:TransformDuplicateType.**

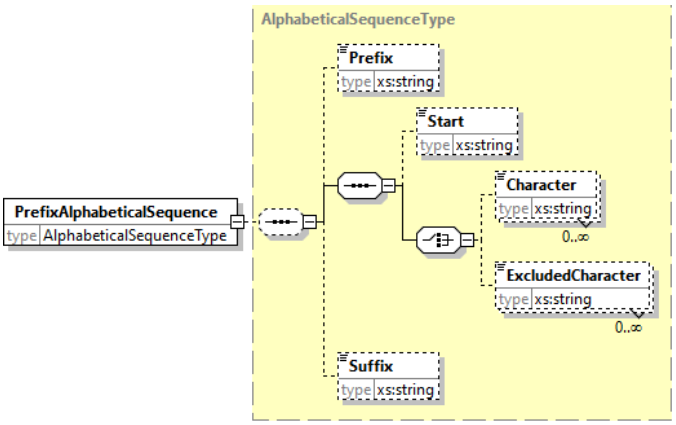
5.1.2.1.1 Duplicate

path	**PartModel/ProductSection/Substrate-Array/Substrate/FootprintPlacement-Array/FootprintPlacement/Duplicate**
diagram	
type	**TransformDuplicateType, RowTerminalNumberOrderingType, ColumnTerminalNumberOrderingType, NumericalSequenceType, AlphabeticalSequenceType.**

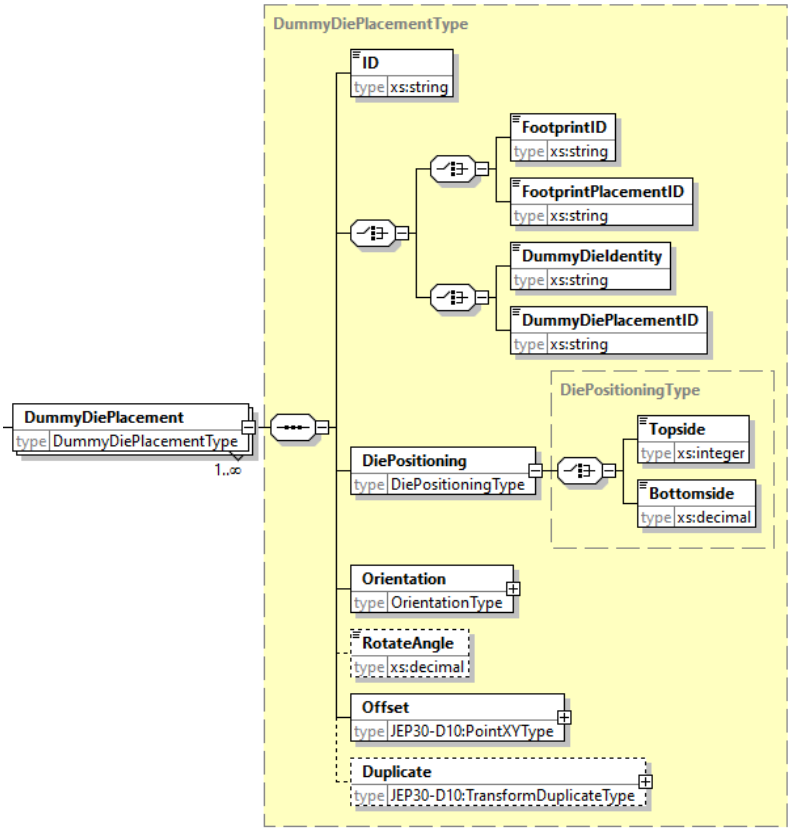
5.1.2.1.1.1 Prefix Numeric Sequence

path	**PartModel/ProductSection/Substrate-Array/Substrate/FootprintPlacement-Array/FootprintPlacement/Duplicate/PrefixNumericalSequence**
diagram	
type	**NumericalSequenceType**

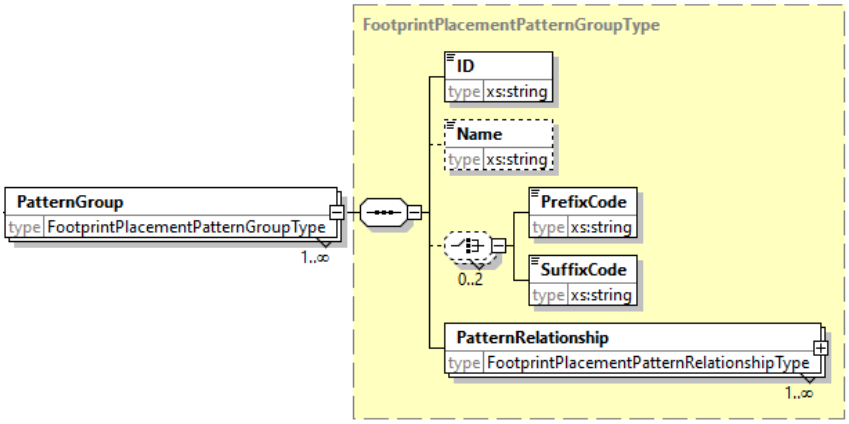
5.1.2.1.1.2 Prefix Alphabetical Sequence

path	**PartModel/ProductSection/Substrate-Array/Substrate/FootprintPlacement-Array/FootprintPlacement/Duplicate/PrefixAlphabeticalSequence**
diagram	
type	**AlphabeticalSequenceType.**

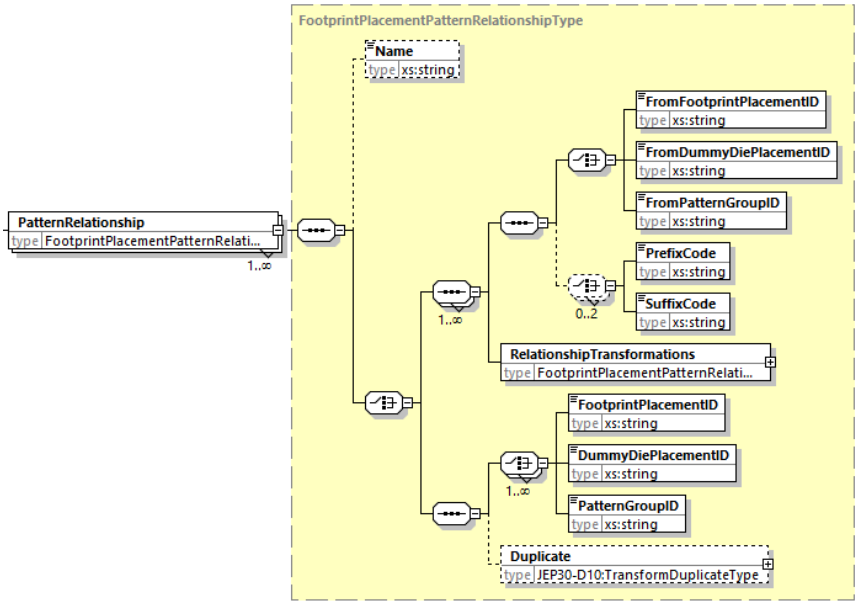
5.1.2.2 Dummy Die Placement

path	**PartModel/ProductSection/Substrate-Array/Substrate/FootprintPlacement-Array/DummyDiePlacement**
diagram	
type	**DummyDiePlacementType, DiePositioningType, OrientationType, JEP30-D10:PointXYType, JEP30-D10:TransformDuplicateType.**

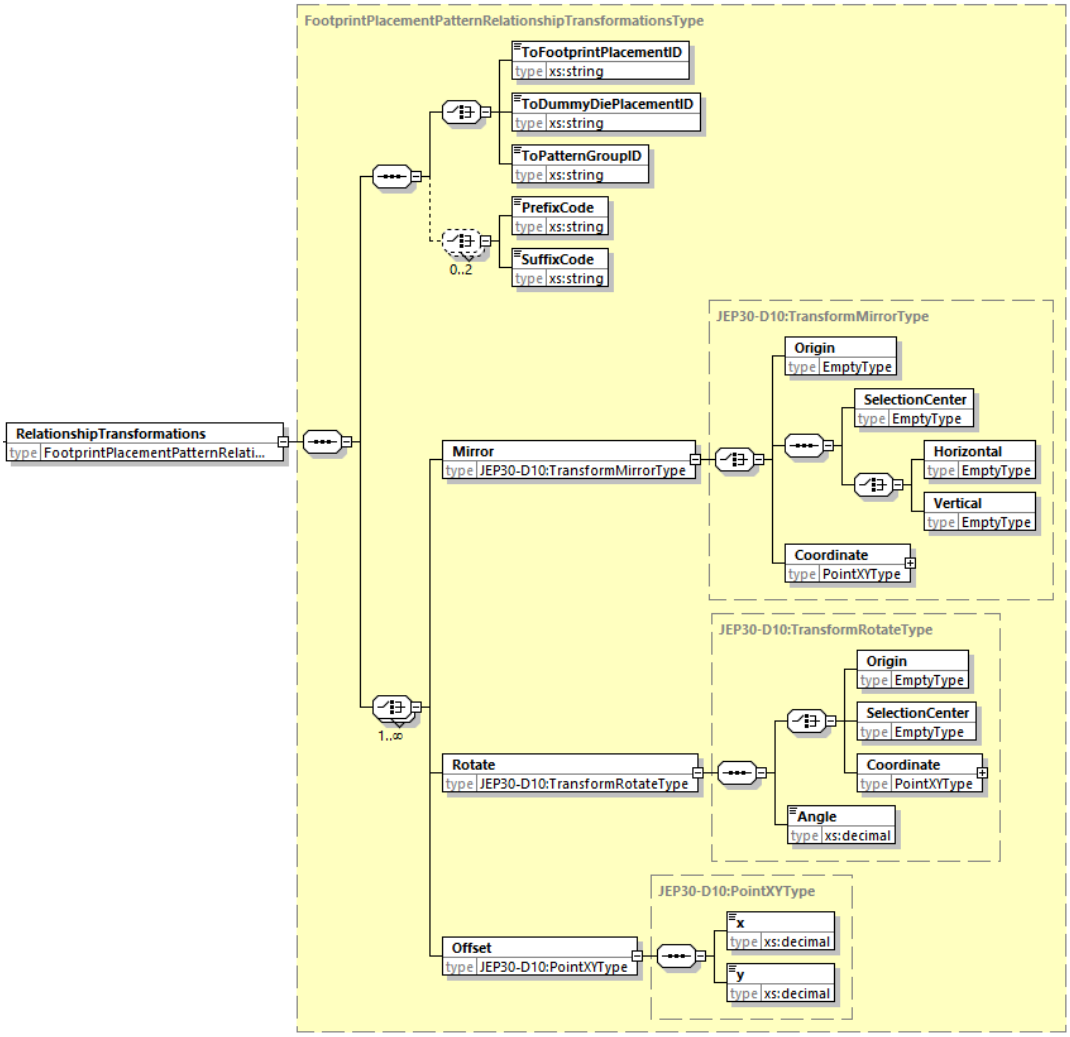
5.1.2.3 Pattern Group

path	**PartModel/ProductSection/Substrate-Array/Substrate/FootprintPlacement-Array/PatternGroup**
diagram	
type	**FootprintPlacementPatternGroupType, FootprintPlacementPatternRelationshipType.**

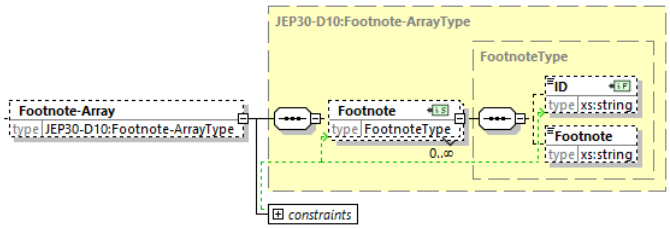
5.1.2.3.1 Pattern Relationship

path	**PartModel/ProductSection/Substrate-Array/Substrate/FootprintPlacement-Array/PatternGroup/PatternRelationship**
diagram	
type	**FootprintPlacementPatternRelationshipType,** **FootprintPlacementPatternRelationshipTransformationsType, JEP30-D10:TransformDuplicateType.**

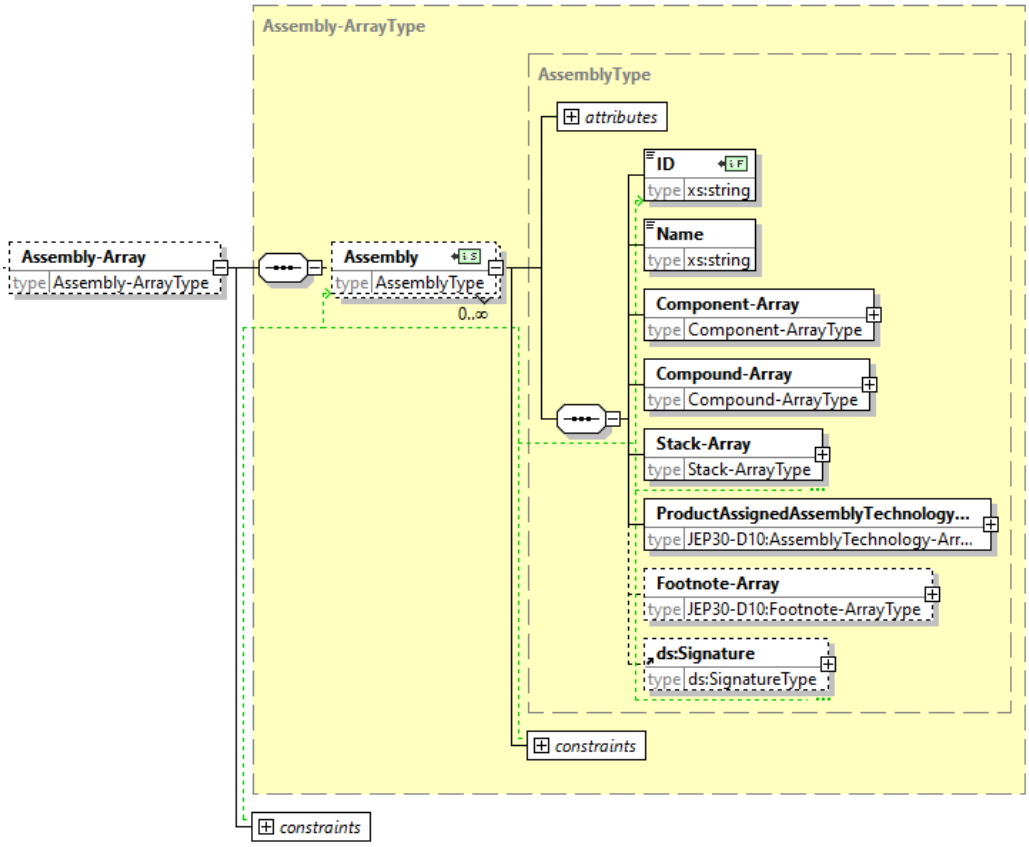
5.1.2.3.1.1 Relationship Transformations

path	**PartModel/ProductSection/Substrate-Array/Substrate/FootprintPlacement-Array/PatternGroup/PatternRelationship/RelationshipTransformations**
diagram	
type	**FootprintPlacementPatternRelationshipTransformationsType, JEP30-D10:TransformMirrorType, JEP30-D10:TransformRotateType, JEP30-D10:PointXYType**

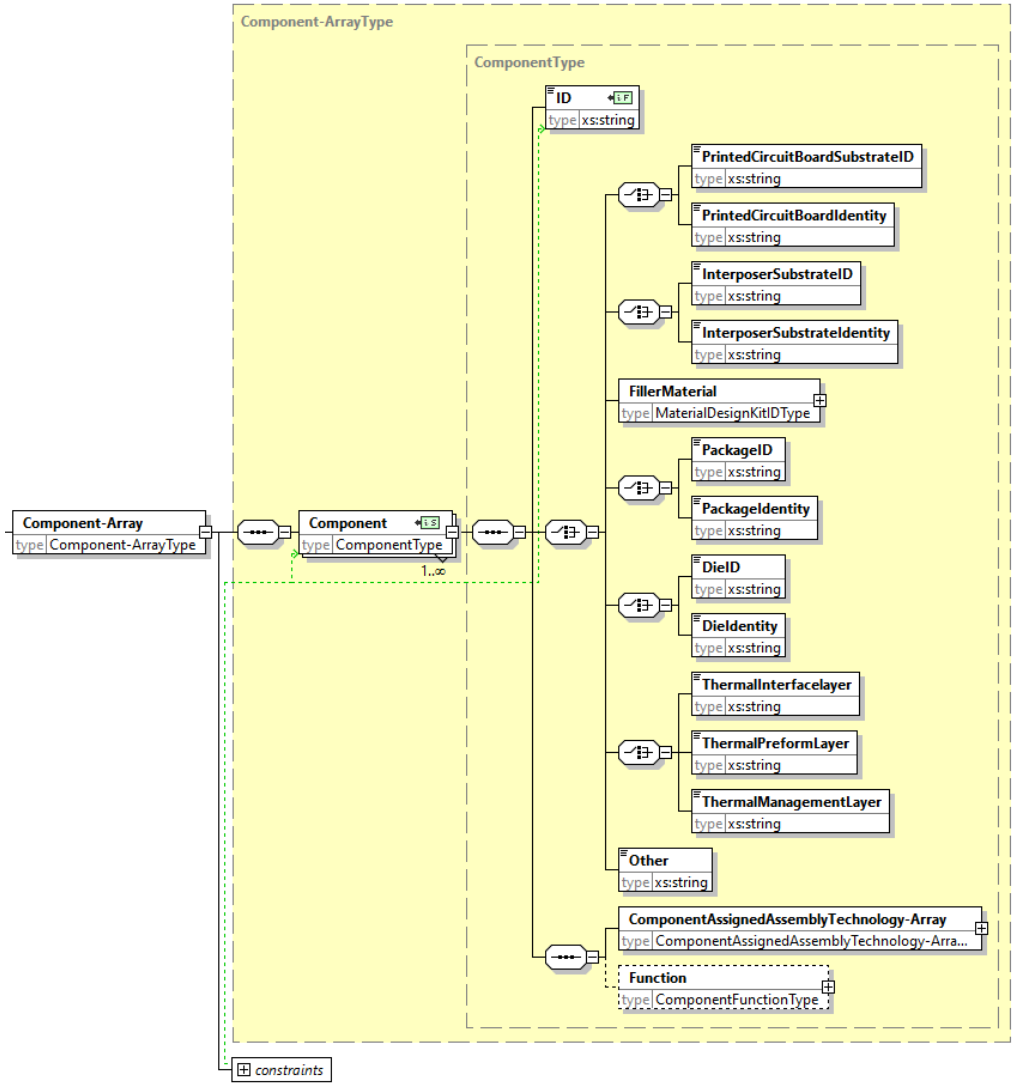
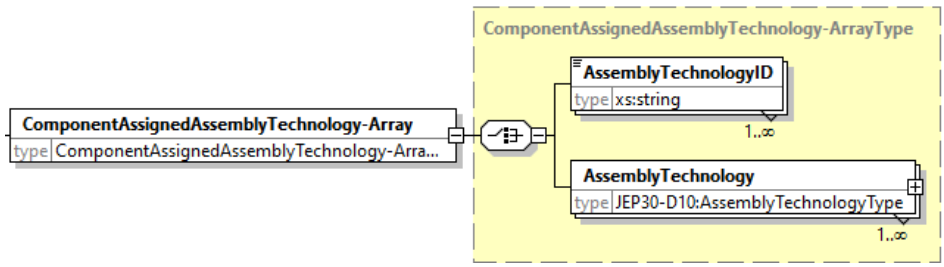
5.1.3 Footnote - Array

path	**PartModel/ProductSection/Substrate-Array/Substrate/Footnote-Array**
diagram	
type	**JEP30-D10:Footnote-ArrayType, FootnoteType.**

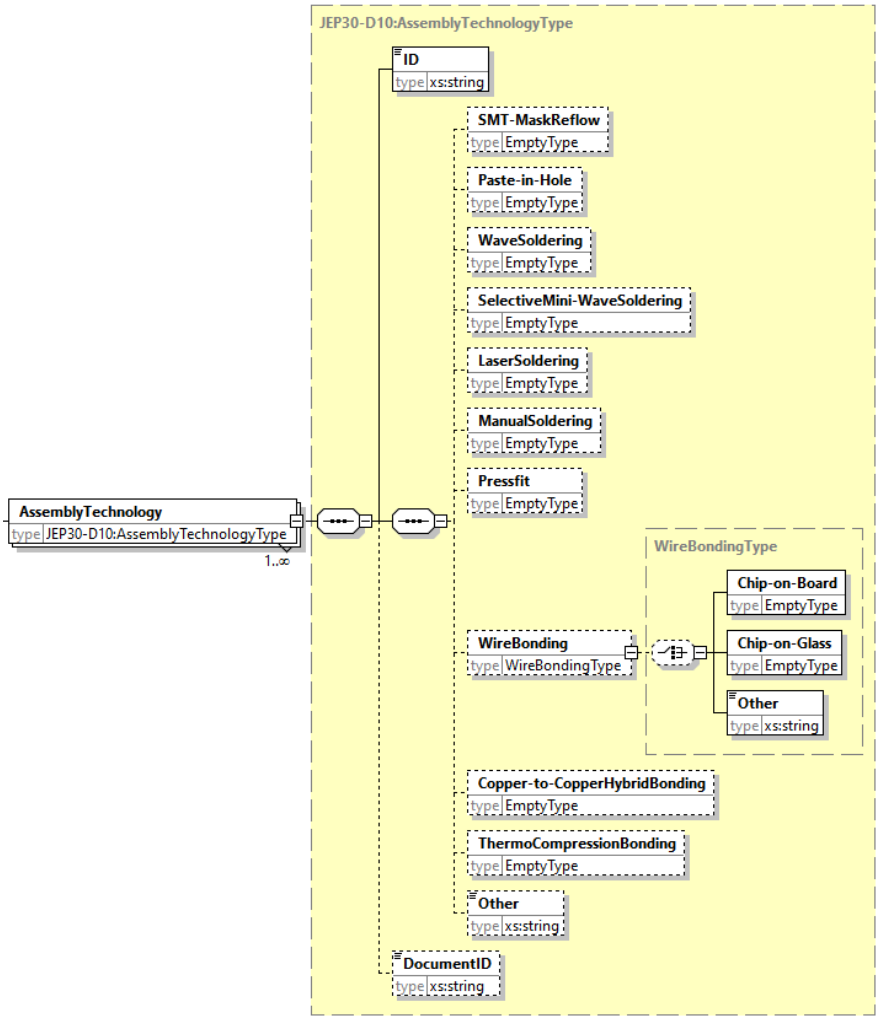
5.2 Assembly - Array

path	**PartModel/ProductSection/Assembly-Array**
diagram	
type	**Assembly-ArrayType, AssemblyType, Component-ArrayType, Compound-ArrayType, Stack-ArrayType, JEP30-D10:AssemblyTechnology-ArrayType, JEP30-D10:Footnote-ArrayType, ds:SignatureType.**

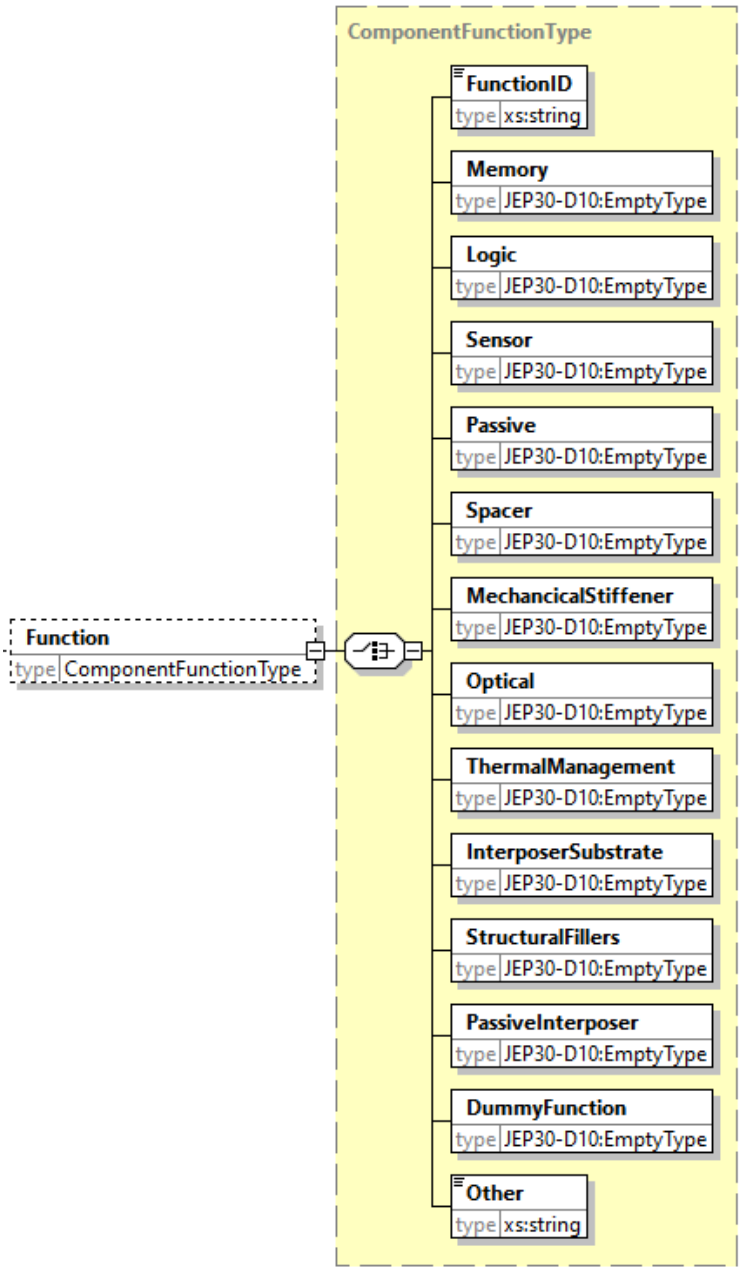
5.2.1 Component - Array

path	**PartModel/ProductSection/Assembly-Array/Component-Array**
diagram 1 of 2	
diagram 2 of 2	
type	**Component-ArrayType, ComponentType, MaterialDesignKitIDType, ComponentAssignedAssemblyTechnology-ArrayType, JEP30-D10:AssemblyTechnologyType, ComponentFunctionType.**

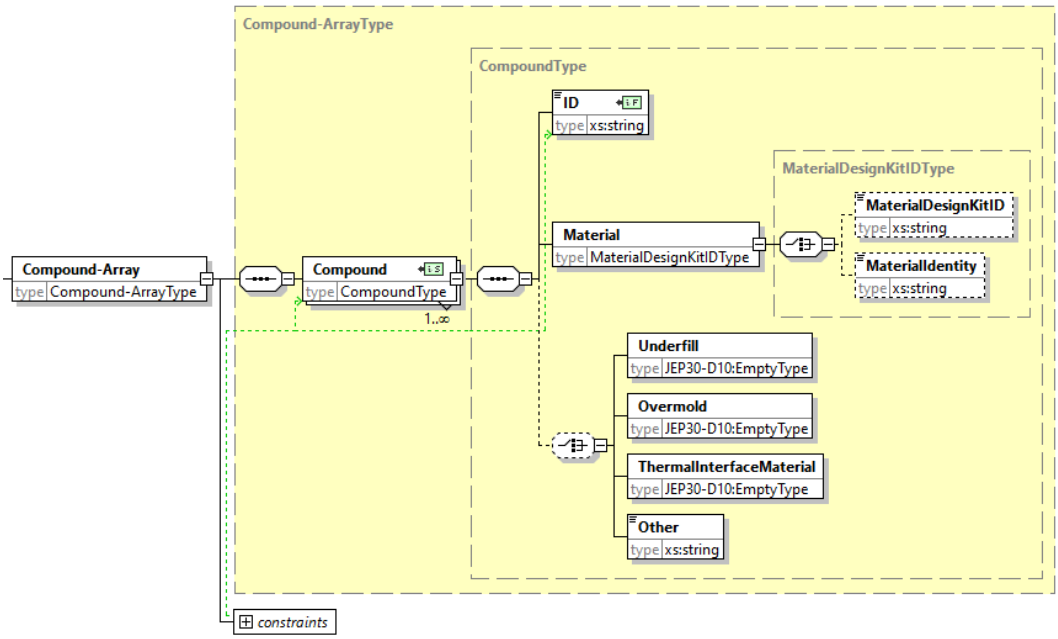
5.2.1.1 Assembly Technology

path	**PartModel/ProductSection/Assembly-Array/Component-Array/Component/ComponentAssignedAssemblyTechnology-Array/AssemblyTechnology**
diagram	
type	**AssemblyTechnologyType, EmptyType, WireBondingType.**

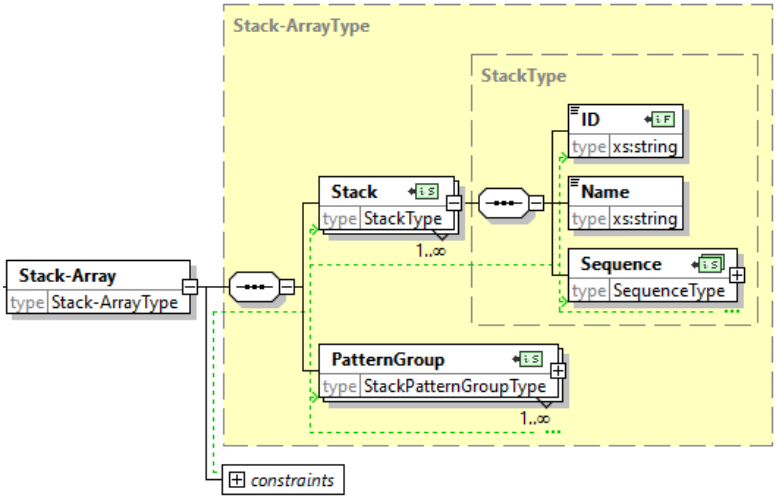
5.2.1.2 Function

path	**PartModel/ProductSection/Assembly-Array/Component-Array/Component/Function**
diagram	
type	**ComponentFunctionType, JEP30-D10:EmptyType.**

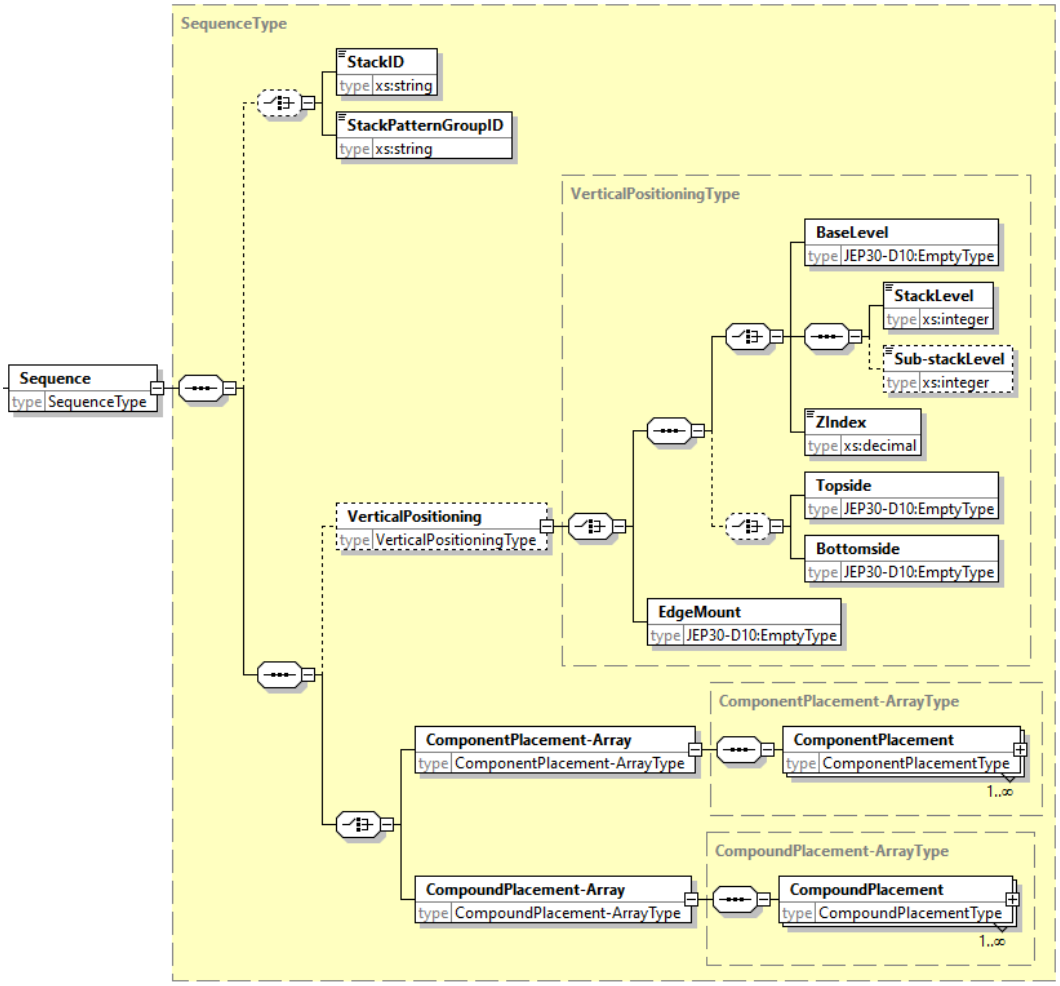
5.2.2 Compound - Array

path	**PartModel/ProductSection/Assembly-Array/Compound-Array**
diagram	
type	**Compound-ArrayType, CompoundType, MaterialDesignKitIDType, JEP30-D10:EmptyType,**

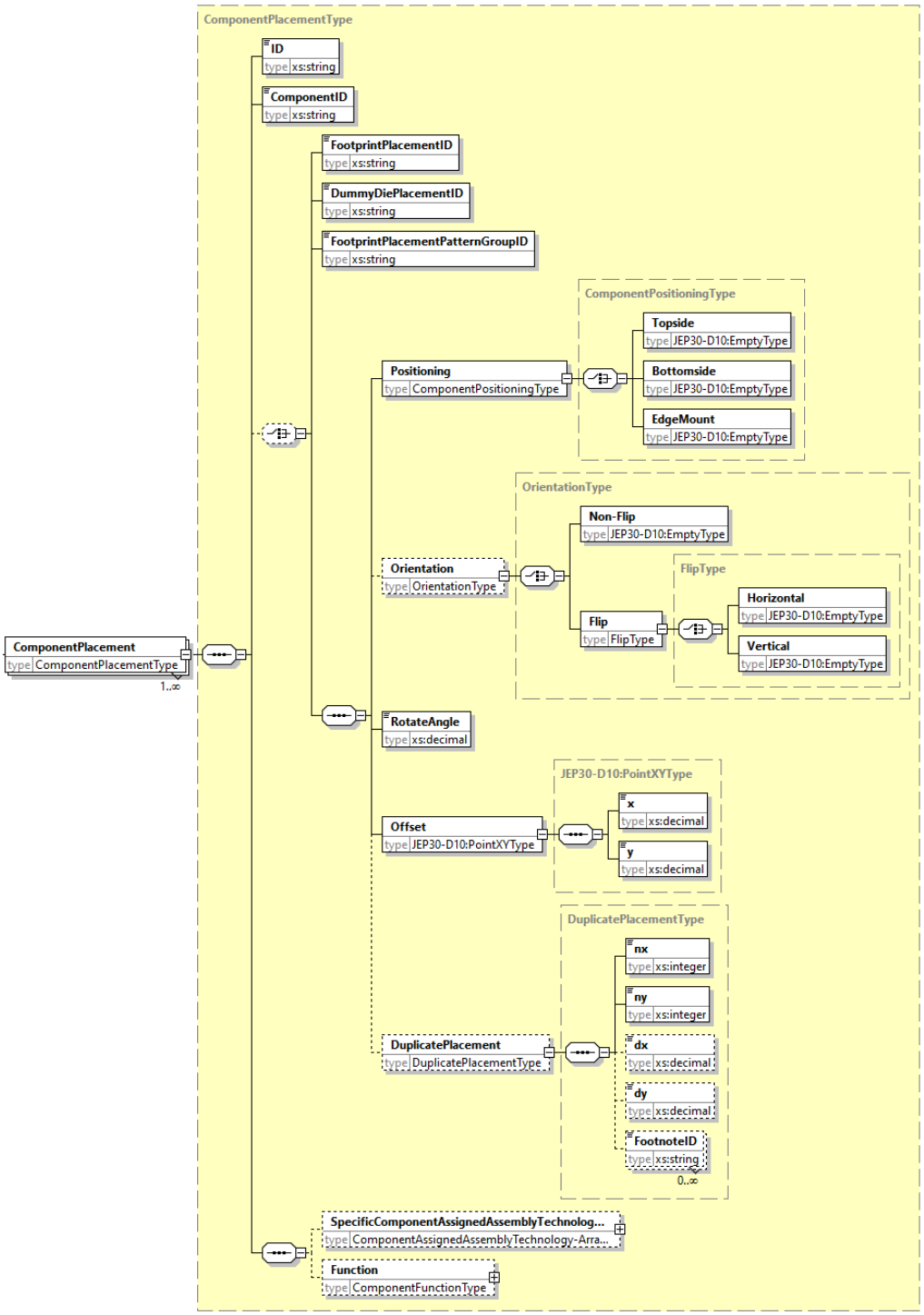
5.2.3 Stack - Array

path	**PartModel/ProductSection/Assembly-Array/Stack-Array**
diagram	
type	**Compound-ArrayType, CompoundType, MaterialDesignKitIDType, JEP30-D10:EmptyType,**

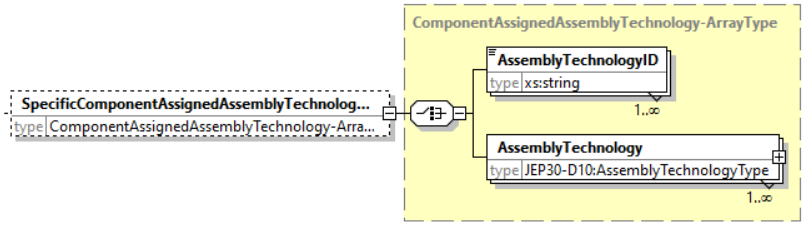
5.2.3.1 Sequence

path	**PartModel/ProductSection/Assembly-Array/Stack-Array/Stack/Sequence**
diagram	
type	**SequenceType, VerticalPositioningType, JEP30-D10:EmptyType, ComponentPlacement-ArrayType, ComponentPlacementType, CompoundPlacement-ArrayType, CompoundPlacementType.**

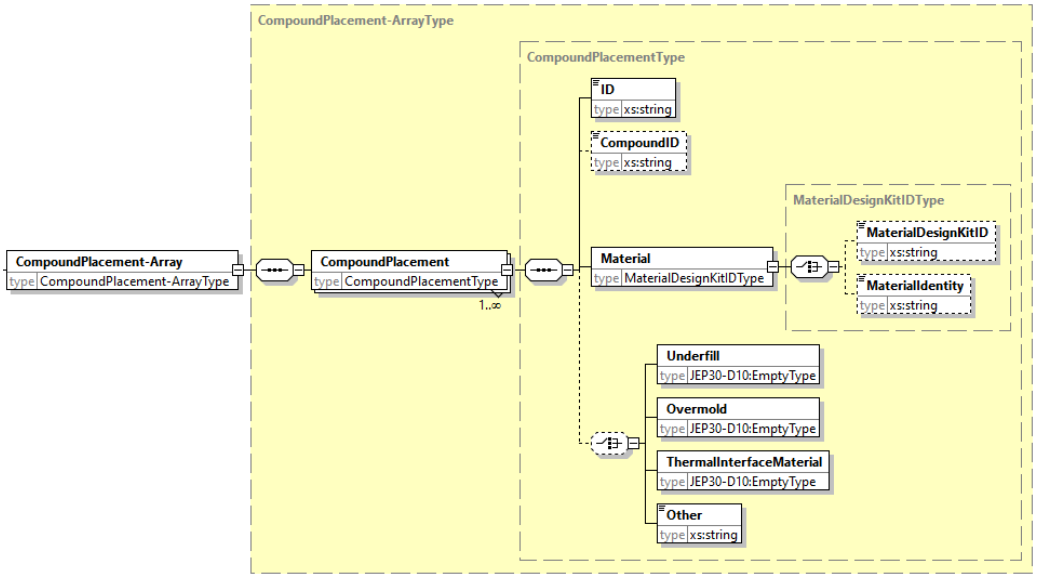
5.2.3.1.1 Component Placement

path	**PartModel/ProductSection/Assembly-Array/Stack-Array/Stack/Sequence/ComponentPlacement-Array/ComponentPlacement**
diagram	
type	**ComponentPlacementType, ComponentPositioningType, OrientationType, JEP30-D10:PointXYType, DuplicatePlacementType, ComponentAssignedAssemblyTechnology-ArrayType, ComponentFunctionType.**

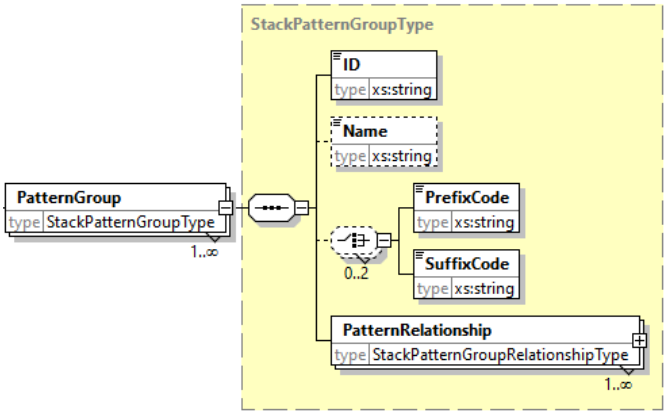
5.2.3.1.1.1 Specific Component Assigned Assembly Technology - Array

path	**PartModel/ProductSection/Assembly-Array/Stack-Array/Stack/Sequence/ComponentPlacement-Array/ComponentPlacement/ SpecificComponentAssignedAssemblyTechnology-Array**
diagram	
type	**ComponentAssignedAssemblyTechnology-ArrayType, JEP30-D10:AssemblyTechnologyType.**

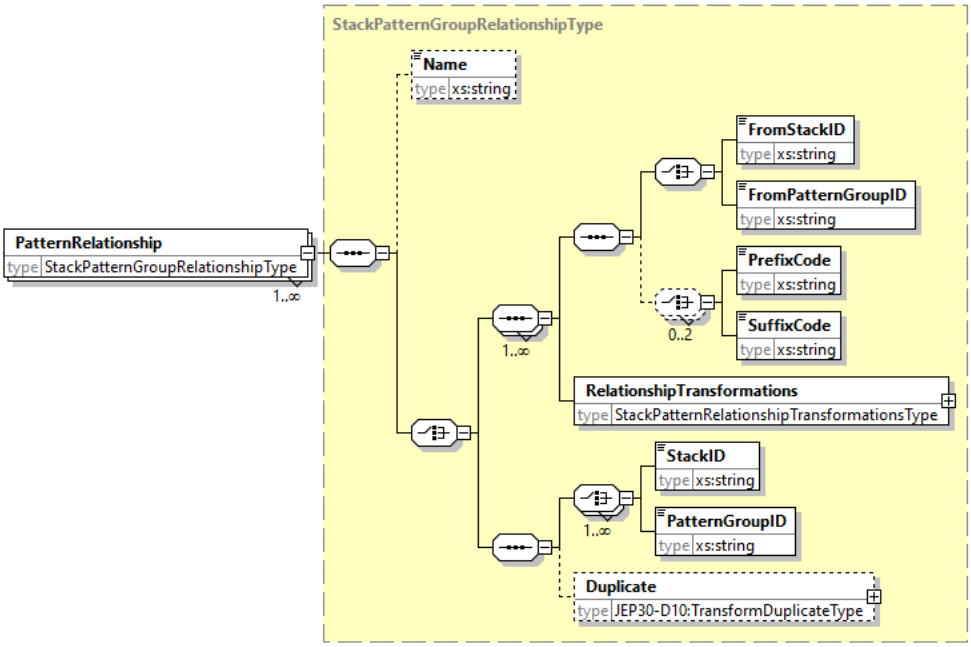
5.2.3.1.2 Compound Placement

path	**PartModel/ProductSection/Assembly-Array/Stack-Array/Stack/Sequence/CompoundPlacement-Array/CompoundPlacement**
diagram	
type	**CompoundPlacement-ArrayType, CompoundPlacementType, MaterialDesignKitIDType, JEP30-D10:EmptyType.**

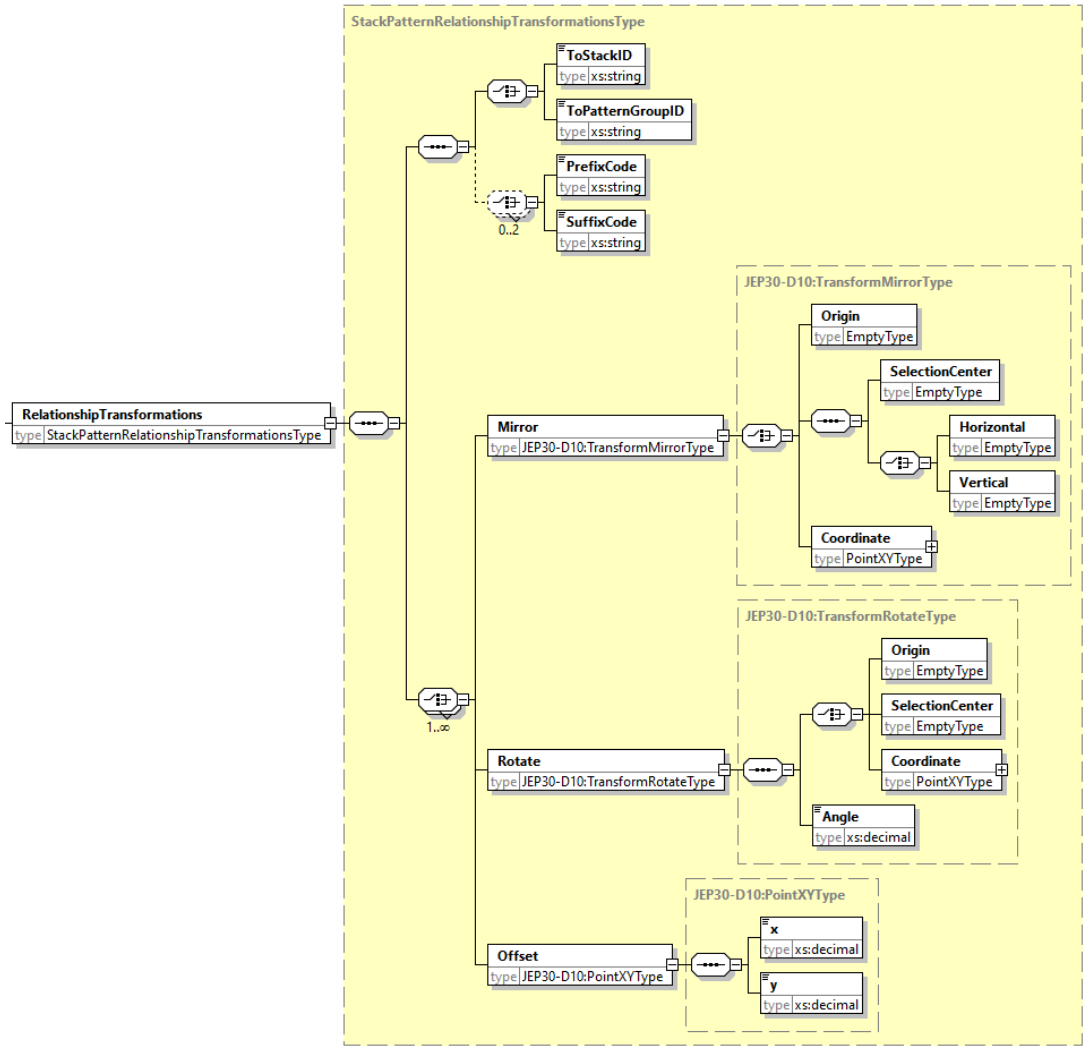
5.2.3.2 Pattern Group

path	**PartModel/ProductSection/Assembly-Array/Stack-Array/PatternGroup**
diagram	
type	**StackPatternGroupType, StackPatternGroupRelationshipType.**

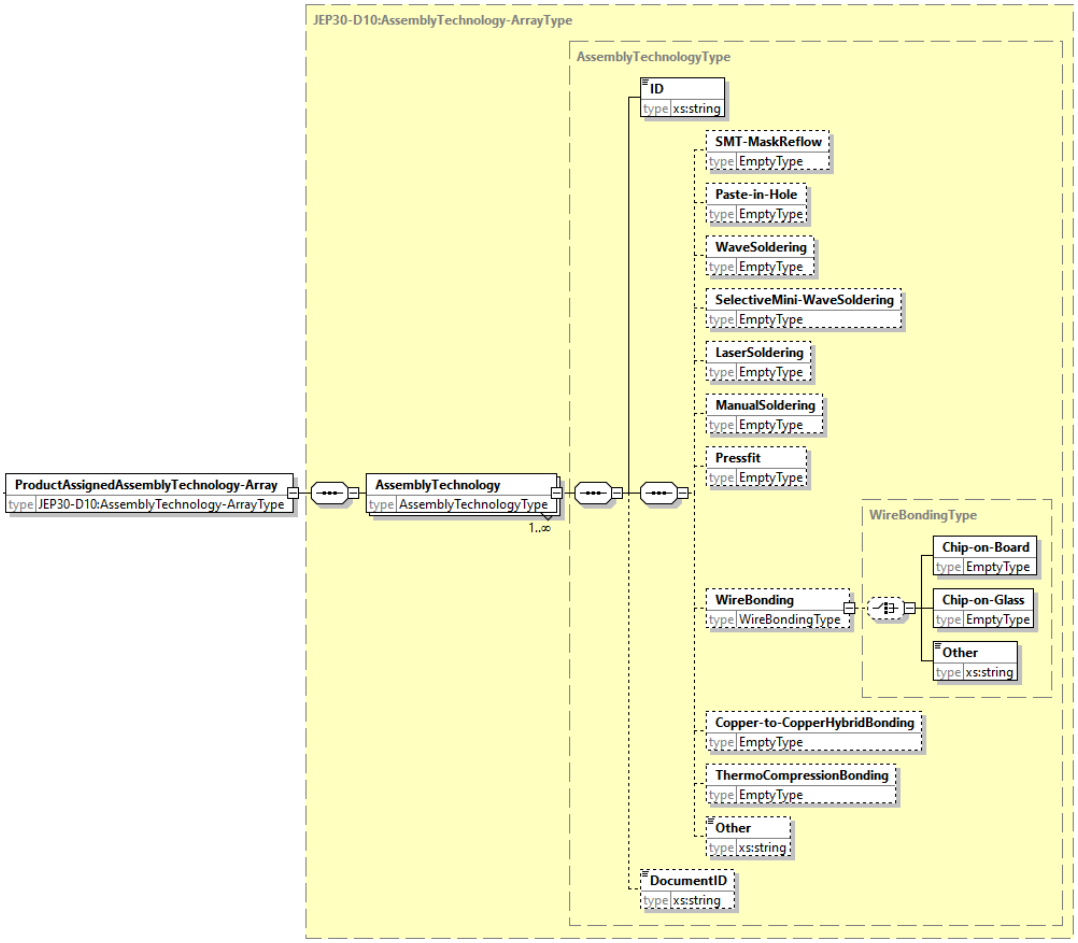
5.2.3.2.1 Pattern Relationship

path	**PartModel/ProductSection/Assembly-Array/Stack-Array/PatternGroup/PatternRelationship**
diagram	
type	**StackPatternGroupRelationshipType, StackPatternRelationshipTransformationsType, JEP30-D10:TransformDuplicateType.**

5.2.3.2.1.1 Relationship Transformation

path	**PartModel/ProductSection/Assembly-Array/Stack-Array/PatternGroup/PatternRelationship/RelationshipTransformation**
diagram	
type	**StackPatternRelationshipTransformationsType, JEP30-D10:TransformMirrorType, EmptyType, JEP30-D10:TransformRotateType, JEP30-D10:PointXYType.**

5.2.4 Product Assigned Assembly Technology - Array

path	**PartModel/ProductSection/Assembly-Array/ProductAssignedAssemblyTechnology-Array**
diagram	
type	**JEP30-D10:AssemblyTechnology-ArrayType, AssemblyTechnologytype, EmptyType, WireBondingType.**

Annex A (informative) Differences between JEP30-PX100 and its predecessors

This table briefly describes most of the changes made to entries that appear in this standard, JEP30-PX100, compared to its predecessor; Punctuation changes may or may not be included.

Initial Issue:	Date: September 2025	Item Number: 11.2-1083

Change Record History

Issue:	Date:	Item Number:
Description of Change		

Standard Improvement Form **JEDEC Standard No._ JEP30-PX100**

The purpose of this form is to provide the Technical Committees of JEDEC with input from the industry regarding usage of the subject standard. Individuals or companies are invited to submit comments to JEDEC. All comments will be collected and dispersed to the appropriate committee(s).

If you can provide input, please complete this form and return to:

JEDEC
Attn: Publications Department
3103 10th Street North
Suite 240S
Arlington, VA 22201

Email: angies@jedec.org

1. I recommend changes to the following:

☐ Requirement, clause number _____

☐ Test method number _____ Clause number _____

The referenced clause number has proven to be:

☐ Unclear ☐ Too Rigid ☐ In Error

☐ Other _____

2. Recommendations for correction:

3. Other suggestions for document improvement:

Submitted by

Name: _____ Phone: _____

Company: _____ E-mail: _____

Address: _____

City/State/Zip: _____ Date _____


JEDEC®