



## Product Information Orchestrated API

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The Product Information Orchestrated API is developed, owned and supported by TI. TI offers this API to provide the latest product information to authorized customers.

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## API Overview

- The Product Information Orchestrated API provides common, parametric and quality data for TI part(s).
- Formatted JSON (JavaScript Object Notation) data can be consumed by a customer in any way that they wish.

## Terminology

- Product - the term product in the scope of this document refers to an Orderable Part Number
- ProductIdentifier - this is the Orderable Part Number
- GenericProductIdentifier - this is the Generic Part Number (the level just above an Orderable Product that groups Orderables with same design)

## Access

1. Use the TI Developer Portal at <https://api-portal.ti.com> to:
  - Login with approved my.ti.com account
  - Create an **App** with the desired **API(s)**
  - After approval by TI, obtain the **Consumer Key** and **Consumer Secret** from the TI Developer Portal
2. Authentication method is **OAuth 2.0** by Client Credentials grant type.
  - The customer application will first make a HTTP POST call to:  
<https://transact.ti.com/v1/oauth> (production)  
<https://transact-pre.ti.com/v1/oauth> (pre-production)

The Content-Type should be application/x-www-form-urlencoded

- Post payload should include:  
grant\_type=client\_credentials  
client\_id=<Consumer Key from step 1c above>  
  
client\_secret=<Consumer Secret from step 1c above>

For example:

POST <https://transact.ti.com/v1/oauth>

Content-Type: application/x-www-form-urlencoded

Accept: \*/\*

Cache-Control: no-cache

Accept-Encoding: gzip, deflate

Content-Length: 110

Connection: keep-alive

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`grant_type=client_credentials&scope=&client_id=unHzU5QJLL8WLAksd3UVp1Nr51pbGSNW&client_secret=uSv8Vuw9dYSPz0GH`

HTTP/1.1 200

Date: Wed, 15 Jan 2020 20:17:35 GMT

Content-Type: application/json

Content-Length: 304

Connection: keep-alive

Pragma: no-cache

Cache-Control: no-store

```
{  
  "access_token": "zCMb3lhIRD3A2Y9ZYgxwTnyUNCPT",  
  "token_type": "bearer",  
  "expires_in": 3599,  
  "scope": "",  
  "application_name": "Standard Order",  
  "developer.email": "xyz@xyz.com",  
  "issued_at": "1579119455022",  
  "client_id": "unHzU5QJLL8WLAksd3UVp1Nr51pbGSNW"  
}
```

- In the response, obtain `access_token`, which is valid for 1 hour (3600 seconds)
- The customer application will then make the actual HTTP GET call to:  
`https://transact.ti.com/v1/products-extended/{ProductIdentifier}` (production)  
`https://transact-pre.ti.com/v1/products-extended/{ProductIdentifier}` (pre-production)

with the `Bearer` token in the HTTP header and `access_token` as its value, and the actual JSON payload in the body as application/json Content-Type.

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For example:

GET /v1/products HTTP/1.1

Content-Type: application/json

Authorization: **Bearer** zCmb3lhlRD3A2Y9ZYgxwTnyUNCPT

Accept: \*/\*

Cache-Control: no-cache

Content-Length: 768

Connection: keep-alive

[

... JSON PAYLOAD ...

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## API Definitions

Http method	Url path	Path/Query parameters	Response body schema	Response codes	Description
GET	/products-extended/{ProductIdentifier}	<b>ProductIdentifier</b> – <i>path (required)</i> - the unique id for the product. This value must be URL encoded, as there may be special characters, particularly slashes ("/") and spaces (" ") that must be encoded.	Combination of all schemas	200 401 403 404 500	Get a single product by ProductIdentifier

## API Examples

### GET/products-extended/{ProductIdentifier}

#### GET/products-extended/AFE7799IABJ

```
{
  "Product": {
    "Identifier": "AFE7799IABJ",
    "Description": "Quad-channel RF transceiver with dual feedback paths",
    "GenericProductIdentifier": "AFE7799",
    "Url": "https://www.ti.com/product/AFE7799",
    "ProductFamilyDescription": "RF-sampling transceivers",
    "DatasheetUrl": "https://www.ti.com/lit/gpn/AFE7799",
    "LifeCycleStatus": "ACTIVE",
    "Price": {
      "Value": 650.05,
      "Quantity": 1000
    },
  },
  "LeadTimeWeeks": "12",
  "InventoryStatus": "Contact TI",
  "FullBoxQty": 900,
  "MinOrderQty": 90,
  "NextIncrementQty": 90,
  "StandardPackQty": 90,
  "OkayToOrder": true,
  "StopShip": false,
  "Obsolete": false,
  "LifetimeBuy": false,
  "ChangeOrderWindow": "STD",
  "ExtendedShelfLife": false,
```

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```
"ExportControlClassificationNumber": "5A991B",
"HtsCode": "8542390001",
"MilitaryGoods": false,
"Pin": 400,
"PackageType": "ABJ",
"PackageGroup": "FCBGA",
"IndustryPackageType": "FCBGA",
"JedecCode": "S-PBGA-N",
"PackageCarrier": "JEDEC TRAY (10+1)",
"Width": 17,
"Length": 17,
"Thickness": 2.48,
"Pitch": 0.8,
"MaxHeight": 2.65,
"QualityEstimatorUrl": "https://www.ti.com/quality/docs/estimator.tsp?OPN=AFE7799IABJ&partNumber=AFE7799IABJ&partType=tiPartNumber",
"MaterialContentUrl": "https://www.ti.com/materialcontent/en/search?partNumber=AFE7799IABJ&partType=tiPartNumber"
},
"Quality": {
  "AutomotiveQualification": false,
  "CommodityGroup": "S",
  "DieSize": "00009270.0 x 00008190.0",
  "ProcessTechnology": [
    "C28.P"
  ]
},
"Parametric": {
  "Operating temperature range": {
    "Type": "Operating temperature range",
```

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```
"Value": "-40 to 85",
"Unit": "C"
},
"Package size: mm2:W x L (PKG)": {
  "Type": "Package size: mm2:W x L (PKG)",
  "Value": "400FCBGA: 289 mm2: 17 x 17 (FCBGA | 400)",
  "Description": "Package Size",
  "UnitDescription": "mm2=WxL"
},
"Data rate": {
  "Type": "Data rate",
  "Value": "737",
  "Unit": "MSPS"
},
"# of TX/RX": {
  "Type": "# of TX/RX",
  "Value": "4T4R2F"
},
"Approx. price": {
  "Type": "Approx. price",
  "Value": "572.04 | 1ku",
  "Unit": "US$"
},
"Package Group": {
  "Type": "Package Group",
  "Value": "FCBGA | 400"
}
}
}
```



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## Schema Definitions

### Price

Property	Description	Example
Value	The price in dollars per unit	1.00
Quantity	The unit quantity for which the price value is determined	1000

### Product

Property	Description	Example
Identifier	The unique identifier of the product (a.k.a. Orderable Part Id)	"AFE7799IABJ"
Description	The description of the product	"Quad-channel RF transceiver with dual feedback paths"
GenericProductIdentifier	The unique identifier of the generic part number (a.k.a. Generic Part Identifier). Sometimes referred to as the base part number.	"AFE7799"
Url	The url of the product folder for this product	"https://www.ti.com/product/AFE7799"
ProductFamilyDescription	The description of the product family to which this product belongs	"RF-sampling transceivers"
DataSheetUrl	Url for the datasheet for the orderable part number	"https://www.ti.com/lit/gpn/AFE7799 "
LifeCycleStatus	The lifecycle status of the product	"ACTIVE"

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Price	The price for the product	<Price>
LeadTimeWeeks	The product lead time in weeks	"16"
FullBoxQty	The product quantity for a full box	126
MinOrderQty	The minimum order quantity (MOQ) of this product	630
NextIncrementQty	Incremental quantity for orders of this product	126
StandardPackQty	The standard package quantity (SPQ) of this product	126
OkayToOrder	Whether or not this product is okay to order	true
StopShip	Whether or not shipment is currently stopped for this product	false
Obsolete	Whether or not this product is flagged as obsolete	false
LifetimeBuy	Whether or not this product is flagged for lifetime buy	false
InventoryStatus	The inventory status of this product. Will either show "In stock" or "Contact TI"	"In stock"
ChangeOrderWindow	Window to change order	"STD"

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ExtendedShelfLife	Whether or not the product has extended shelf life	true
ExportControlClassificationNumber	The Export Control Classification Number (ECCN) for this product	"EAR99"
HtsCode	The 10-digit Harmonized Tariff Schedule Code for this product - used for customs purposes	"8542390001"
MilitaryGoods	Whether or not this product is used for military goods	true
Pin	The pin count for the product	289
PackageType	The supplier package type of the product	"ZBV"
PackageGroup	The TI package group for this product	""
IndustryPackageType	The industry standard package type of the product	"NFBGA"
JedecCode	The JEDEC code assigned to this product	"S-PBGA-N"
PackageCarrier	The carrier for the package	"JEDEC TRAY (10+1)"
Width	The width (mm) of the product	15
Length	The length (mm) of the product	15

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Thickness	The thickness (mm) of the product	1.25
Pitch	The pitch (mm) of the product	0.8
MaxHeight	The max height (mm) of the product	1.8
QualityEstimatorUrl	The URL to the quality estimator site for this product. The page found at this URL will provide quality related information like Defective Parts Per Million (DPPM), Mean Time Between Fails (MTBF), and Failures in Time (FIT) information for this product.	" <a href="https://www.ti.com/quality/docs/estimator.tsp?OPN=AFE7799IABJ&amp;partNumber=AFE7799IABJ&amp;partType=tiPartNumber">https://www.ti.com/quality/docs/estimator.tsp?OPN=AFE7799IABJ&amp;partNumber=AFE7799IABJ&amp;partType=tiPartNumber</a> "
MaterialContentUrl	The URL to the material content site for this product. The page found at this URL will provide quality related information like RoHS, Reach, and IEC 62474 Compliance, as well as a breakdown of the material composition for the product with various standard formats supported.	" <a href="https://www.ti.com/materialcontent/en/search?partNumber=AFE7799IABJ&amp;partType=tiPartNumber">https://www.ti.com/materialcontent/en/search?partNumber=AFE7799IABJ&amp;partType=tiPartNumber</a> "

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### Range

Property	Description	Example
Min	The minimum value for the range (if it exists)	"-40"
Max	The maximum value for the range (if it exists)	"85"

### Parametric

Property	Description	Example
Value	The value for the parametric. In the event that the parametric is defined by a range, this property will not be populated.	"-40 to 85"
Description	The description of the parametric. Typically provides a brief description of what the parametric measures.	"Operating temperature range"
Unit	The unit that applies to the value for this parametric	"C"
UnitDescription	The description of the unit for the the parametric	"Celsius"
Range	Some parametrics are setup to provide a range rather than a specific value. This attribute will provide the values for min/max for the parameter if they are set. Note that either Min, Max, or both can be set for a given parameter	<Range>

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### ProductQuality

Property	Description	Example
AutomotiveQualification	Indicator for the AEC Q10x qualification status of this product	true
CommodityGroup	The commodity group of the of the product	"M"
DieSize	The dimension of the die (mm x mm)	"10 x 10 UM"
DefectivePartsPerMillion	Defective parts per million (early life failure rate)	16
FailuresInTime	Failures in time (FIT) rate.	0.2
MeanTimeBetweenFailures	Mean time between failures (MTBF)	5390000000
ProcessTechnology	The process technologies applicable to the product	["50HPA07"]

## API responses

**Scenario 1. A product Orchestrated query with a valid product identifier is successful.**

**Given** an incoming request that contains a valid product identifier.

**When** the request is received by the API.

**And** the backend service returns a success response.

**Then** a 200 Success response is returned that contains an Orchestrated object.

**Scenario 2. A product Orchestrated query with an invalid product identifier is not found.**

**Given** an incoming request that contains an invalid product identifier.

**When** the request is received by the API.

**And** the backend service returns a not found response.

**Then** a 404 Not Found response is returned that contains an Error Response object.

**Then** A 200 response is returned that contains "Status pending" message.

**Scenario 3. A product Orchestrated query with an internal server error, (Customer/TI handles errors)**

**Given** An incoming request when a backend service is down

**When** the request is received by the API

**And** backend service is unavailable

**Then** A 500 error message is returned.

**\*Invalid input** – Which does not meet minimum input validation clause

**\*Minimum input validation** –The Product Information Orchestrated API will perform minimum input validation to ensure required fields are entered.