

Enhanced Plastic Portfolio
Questions & Answers

Enhanced Plastic website: <http://www.ti.com/sc/ep>

Product Information Center (PIC): 1-800-477-8924 or
http://www-k.ext.ti.com/sc/technical_support/product-information-centers.htm

Distributor Information:

<http://focus.ti.com/docs/military/common/productscategory.jhtml?templateId=5602&navSection=distributors>

Q & A Categories

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- Product and Technical Support

General Information

What does "enhanced plastic" mean?

Enhanced Plastic (EP) devices are catalog products released with an extended temperature range and additional qualification and characterization.

How are EP products different than commercial products?

Enhanced Plastic devices are catalog products released with an extended temperature range and additional qualification and characterization.

Why is TI doing this now?

TI is responding to the needs of our customers.

Does this lessen TI's commitment to the military market? Will the release of this product family reduce the availability of new military hermetic device types or cause TI to discontinue existing military grade parts?

No. EP parts are an addition to our broad product offering which will continue to include existing and new ceramic products.

I thought the TI's position was that plastic parts are not suited for military applications?

The customer has the responsibility to determine if plastic parts are suitable in their application. TI cannot make that determination.

Are these satellite-grade products?

The end-use environment must be qualified by the end customer.

Advantages Over Standard Commercial-Off-The-Shelf Products

I am currently using COTS parts. What is the advantage in switching to enhanced plastic?

- Controlled baseline (one assembly/test site, one wafer fabrication site)
- Enhanced product change notification
- Extended temperature performance (specific temperature ranges are stated on the datasheets and may be as great as -55°C to 125°C)
- Qualification pedigree
- Customer notification of major changes: process, materials, electrical performance, lead finish, mold compound and manufacturing location.
- Assurance from TI that the device will perform to datasheet electrical specifications in environments that require extended temperatures.
- Nickel-Palladium-Gold or Tin-Lead lead finishes are standard.

Is the package enhanced or better than COTS?

The package is characterized for its inherent properties over the temperature range of the device to assure that the package can handle the temperature. In most cases, the package is not changed.

I am not a military or aerospace OEM. Would using these parts benefit me?

Yes, if you value extended temp and baseline control. Examples of applications that may benefit from use of EP parts include telecom base stations and critical communication systems for fire fighting and law enforcement.

Why can't I just buy TI automotive grade parts and get the same thing?

Catalog automotive products are just one form of off-the-shelf devices. To ensure change notification and extended baseline support, automotive OEMs procure to specific customer specifications. The typically OEM user of an EP product does not order sufficient quantities of any one device type to support this business model. However, when considered in aggregate as a single "virtual" EP customer, these users are afforded most of the benefits general reserved for large volume automotive OEMs.

Aren't all TI plastic parts the same (die and package)?

In many cases, the mold compounds or die may be different depending on where wafer fabrication or assembly/test is being performed. Devices may be built in as many as three wafer fabrication facilities and three assembly/test sites at any given time. Enhanced Plastic is baselined to a single wafer fabrication facility and assembly test site.

Aren't you just upscreening in-house?

No. Third party test houses do not have adequate insight into the design rules or necessary testing knowledge of complex devices. TI does. There are many areas of device design including the package materials which must be taken into account prior to offering extended temperature.

How does EP save me money over in-house or third party upscreening or uprating?

In most cases, the purchase of EP product allows the customer to avoid the charges incurred with upscreening. TI is best able to provide the lowest total cost of ownership.

What makes your testing and qualification better than that of a third party?

For EP products, testing is warranted to meet the TI EP data sheet over the specified temperature range. Device characterization and statistical process controls are used to ensure performance over the specified temperature range. Assembly, test and qualification changes require approval of the TI Technical Review Board (TRB).

I am having issues with lead-free finishes. Will enhanced plastic solve this problem? What lead finishes will you offer?

Enhanced plastic will help with this issue. The standard lead finishes offered will be either Nickel-Palladium-Gold or Tin-Lead.

There have been industry issues reported with some "green" mold compounds. How will you ensure this does not affect the EP products?

EP products are qualified with issues such as this in mind.

Samples, Pricing and Availability

How do I get samples of EP devices?

Our sample request form is located at
<http://www.ti.com/sc/docs/general/military/samples.htm?templated=5602&navSection=samples>

Where do I buy devices? Can I order direct? Are they stocked at the distributor?

Orders are handled either through our authorized distribution network or direct. Distributors can be located at

<http://focus.ti.com/docs/military/common/productscategory.jhtml?templated=5602&navSection=distributors>

What is the lead-time?

Standard lead-time will be in line with the commercial offering for released products. There will be additional qualification lead-time for unreleased products.

What temperature range is available?

Parts will be available to the highest temperature range allowable based on package design and electrical performance. This may be as great as -55°C to 125°C .

Will all TI part types be available in enhanced plastic?

The EP product portfolio will be customer driven.

How do I get enhanced plastic versions of device not on your current product list?

Fill out the feedback form at <http://www.ti.com/sc/docs/general/military/feedback.htm> or contact the PIC.

What is the cost compared to COTS?

It depends on the product. For commodity products, the difference is approximately 1.5 to 2X. Differentiated products could be higher.

We know hermetic packaging is required in some applications. How do I request a new part type in a hermetic package?

Use the feedback form or contact the PIC.

Will you supply EP products to customer prints?

At this time, the only way to make these parts feasible is to offer a catalog part that can be used by multiple customers.

Is there a minimum order quantity?

Minimum order quantities are based on the standard pack quantity for a given device. For devices which are tape and reel packed, this is typically 2ku.

How are the parts marked? How would I order?

In most cases, parts are marked with the standard TI part number with "EP" at the end to designate Enhanced Plastic.

Where can I find out up-to-date information on all released/planned EP products?

At the EP website located at www.ti.com/sc/ep

Processing Standards/Quality and Reliability

What is the process and test flow?

Testing and screening of EP products is performed in accordance with the TI data sheet for that device. Configuration control is performed by Texas Instruments. TI processes EP products per "best commercial practices" to the TI internal baseline flow. Processing and screening is documented in the TI Quality System Manual and is in compliance with ISO9001.

What is "qualification pedigree"?

Qualification pedigree is verification that the products received extended testing and rigorous qualification/characterization from Texas Instruments – Military Semiconductor Products.

What do you do to qualify these parts and what type of reliability monitors do you perform?

EP devices are qualified in accordance with TI Quality System Standards. Reliability monitors are performed on a regular basis and include EFR/IFR (life test), temperature cycle, and Biased Humidity (or HAST). TI Quality System Standards are based upon accepted JEDEC and EIA standards for the test methods used. In the event a monitor discloses a device quality or reliability issue, notification and corrective action will be issued.

How do you ensure a package is reliable over extended temperatures?

Package qualification is performed at the extended temperatures with knowledge of the package element concerns such as glass transition temperature, thermal expansion coefficients, etc. taken into account.

Are these DSCC approved?

EP parts are qualified to TI-Military Semiconductor Products standards and supplied to a stand-alone data sheet.

Are these qualified and approved for all military applications?

The decision to use plastic components in applications where hermetic devices were traditionally used is at the sole discretion of the end user

Are these parts built in the same factory as the COTS version?

These parts will be manufactured in the facility that is most appropriate to the product line. This may or may not be the same factory as the COTS version.

How do I get quality and reliability data?

Contact the Product Information Center. The PIC will contact our quality organization.

Do I need to run my own qualification?

All parts should be qualified for their end-use environment.

Do I need to qualify or perform lot acceptance of future shipments?

Buying warranted EP parts with enhanced PCN may allow customers to reduce or eliminate incoming or inline acceptance processing.

Will you perform custom qualification, processing or special testing for me?

EP parts are a catalog offering with EP qualification requirements. This allows TI to pass cost savings on to customers.

Do I get a Certificate of Conformance (C of C)? What will you issue a C of C against?

Yes. The C of C is to the "EP" TI datasheet.

Product and Technical Support

How will you handle change notification and obsolescence issues?

For EP devices, TI will provide change notification via the TI electronic PCN system if a change has the potential to affect form, fit, function, or reliability. In other words, changes to the baseline will be communicated prior to implementation. Distributors will be independently notified to facilitate notification of their customers.

In the event a proposed change does affect form, fit, function, or reliability, TI will take steps to minimize the impact on the customer. This may include continuing production of the established baseline after commercial production has changed, establishing a wafer bank of the current die revision, and/or offering a lifetime buy on the configuration in question.

Please note that change notification does not imply change approval on the part of the end customer.

You can subscribe to the TI electronic PCN System on the TI website. Please be sure to include "Military" when you specify the product family during sign-up.

<https://mist.ext.ti.com/pcn/pcnsub.nsf/subscriber>

How do I get design-in support? Application support? Failure analysis?

You can contact the PIC, and they will refer you to the appropriate factory contact, or you can send an email to epsupport@list.ti.com, and the appropriate person within the EP Product Team will respond to you as soon as possible.

Can I get characterization data for the parts?

Characterization data beyond what is provided in the data sheet is considered proprietary.