



## Public Products List

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**PCN Title** : ULA resin- TPM VFQFPN32 – Package upgrade to support

**PCN Reference** : MDG/22/13417

**Subject** : Public Products List

Dear Customer,

Please find below the Standard Public Products List impacted by the change.

ST33HTPH2X32AHD8	ST33HTPH2E32AHC2	ST33HTPH2X32AHD4
ST33HTPH2E32AHD0	ST33HTPH2X32AHD5	ST33HTPH2032AHC3
ST33HTPH2032AHD1		



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# PRODUCT CHANGE NOTIFICATION

## PCN MDG/SMD

### TPM VFQFPN32 – Package upgrade to support

#### ULA resin

#### VFQFPN32 – Package upgrade for ST33TPHF20, ST33TPHF2E, ST33TPHF2X to support Ultra Low Alpha molding resin to improve Soft Error Rate.

**Warning:** This PCN replaces **PCN 13025** - Molding resin change for ST33TPHF20, ST33TPHF2E, ST33TPHF2X to Ultra Low Alpha molding resin to improve Soft Error Rate. The scope of the changes is no more limited to molding resin. The list of changes is updated in this PCN.

#### Scope

Electronic devices may be exposed to various types of radiations (electrons, protons, neutrons and ions). The radiation may produce effects in the electronics ranging from temporary data loss to more important failure. A soft error occurs when a radiation event causes enough of a charge disturbance to reverse or flip the data state of a memory cell, register, latch or flip-flop. The error is “soft” because the circuit/device itself is not permanently damaged by the radiation.

Usually, the soft-error rate (SER) is measured in FIT units (failure in time), where 1 FIT denotes one failure per billion devices hours.

The exposition to alpha radiation can be drastically reduced with the selection of specific materials in the package manufacturing and specific package manufacturing process.

In order to meet reliability requirements for industrial and communication equipments, the resin used in the VFQFPN32 package for product lines ST33TPHF20, ST33TPHF2E, ST33TPHF2X will be modified to include a ULA resin. An Ultra-Low-Alpha resin supports an alpha particle control of maximum 0.002 cph/cm<sup>2</sup> (count/hour-cm<sup>2</sup>).

In order to support ULA resin, the package bill of material will be also modified for the lead frame finishing type.

#### What are the changes?

	<b>Current VFQFPN32</b>	<b>New VFQFPN32</b>
Package description	VFQFPN32	No change
Assembly plant	Amkor ATP3	No change
Die attachment material	DEXTER 1234	No change
Type (Glue/film)	Glue	No change
Supplier	DEXTER	No change
Lead frame material	Cu alloy C19400FH	No change
L/F finishing type	Nickel/Palladium/Gold	Matte Sn
Die paddle size	3.6 mm x 3.6 mm	No change
Wire bonding	GOLD	No change
Diameter	1 mil	No change
Molding compound	CEL 9220 HF13	EME-G700SY
Type/Supplier	Green resin/ Hitachi	ULA/ Sumitomo
Package moisture sensitivity level (JEDEC J-STD020D)	MSL1	No change
Second level interconnect	e4	e3

**Why?**

The FIT (failure in time) related to alpha particle will be decreased by a factor 10 with the ULA resin.

**When?**

The change will be implemented by **Jan/23**.

**How will the change be qualified?**

The package with the new resin will be qualified by **Nov/22**.

## What is the impact of the change?

- **Form:** impact
  - o Marking: second level interconnect modification (“e4” changed by “e3”)
  - o surface finish: Matte Sn finishing instead of Nickel/Palladium/Gold
- **Fit:** no impact (no change for external dimensions and tolerances)
- **Function:** no impact (no change for electrical, environmental, mechanical, thermal performance characteristics)

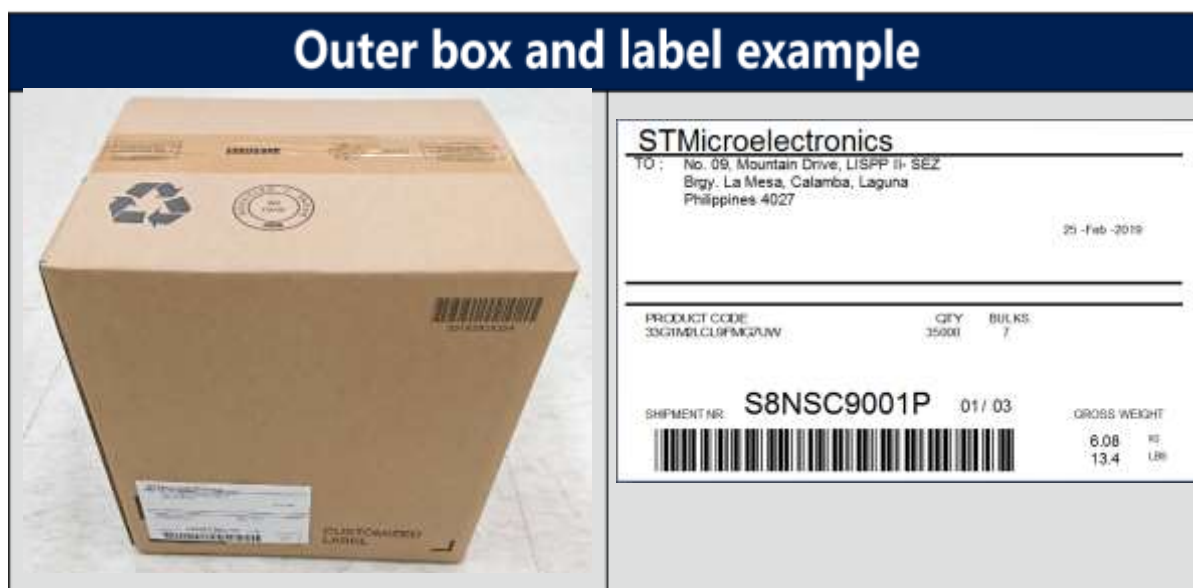
## How can the change be seen?

For each Commercial Product impacted by the change, a new Finished Good codification will be created. This Finished Good codification is present on the label.

The following Commercial products will be impacted. The table below provides the list of current Finished Good codifications with standard resin and future codifications with ULA resin

Commercial Product	Finished Good BOM with standard resin	Finished Good BOM with ULA resin
ST33HTPH2E32AHA5	33HTPH2E32CHB2CT	33HTPH2E32CHB2CU
ST33HTPH2032AAF3	33HTPH2032CHA3CT	33HTPH2032CHA3CU
ST33HTPH2032GAF3	OIMMY8K42P00875	TBD
ST33HTPH2E32AHB4	33HTPH2E32CHB4CT	33HTPH2E32CHB4CU
ST33HTPH2E32AHC2	33HTPH32CHD2CT	33HTPH32CHD2CU
ST33HTPH2032AHC3	33HTPH32CHD3CT	33HTPH32CHD3CU
ST33HTPH2E32AHD0	33HTPH32CHD0CT	33HTPH32CHD0CU
ST33HTPH2032AHD1	33HTPH32CHD1CT	33HTPH32CHD1CU
ST33HTPH2X32AHD4	33HTPH32CHD4CT	33HTPH32CHD4CU
ST33HTPH2X32AHD5	33HTPH32CHD5CT	33HTPH32CHD5CU
ST33HTPH2E32AHD6	33HTPH32CHD6CT	33HTPH32CHD6CU
ST33HTPH2032AHD7	33HTPH32CHD7CT	33HTPH32CHD7CU
ST33HTPH2X32AHD8	33HTPH32CHD8CT	33HTPH32CHD8CU
ST33HTPH2X32AHE0	33HTPH32CHE0CT	33HTPH32CHE0CU
ST33HTPH2X32AHE1	33HTPH32CHE1CT	33HTPH32CHE1CU
ST33HTPH2X32AHE4	33HTPH32CHE4CT	33HTPH32CHE4CU

The Finished Good is provided on the labels of the packing  
 Example of the outer box with PRODUCT CODE providing the Finished Good codification.



Field	Field Type
To	Customer address
<b>Product code</b>	<b>Finished good codification</b>
QTY	Total good dice quantity
Bulk	inner box quantity
Shipment NR.	Shipping number
BAR CODE	Bar code area

**Appendix A- Product Change Notification**

<p><b>Product family / Commercial products:</b></p>	<p>ST33TPHF2ESPI</p> <ul style="list-style-type: none"> <li>• ST33HTPH2E32AHA5</li> <li>• ST33HTPH2E32AHB4</li> <li>• ST33HTPH2E32AHD0</li> <li>• ST33HTPH2E32AHD6</li> </ul> <p>ST33TPHF2EI2C</p> <ul style="list-style-type: none"> <li>• ST33HTPH2E32AHC2</li> </ul> <p>ST33TPHF20SPI</p> <ul style="list-style-type: none"> <li>• ST33HTPH2032AAF3</li> <li>• ST33HTPH2032AHD1</li> <li>• ST33HTPH2032AHD7</li> </ul> <p>ST33TPHF20I2C</p> <ul style="list-style-type: none"> <li>• ST33HTPH2032AHC3</li> </ul> <p>ST33TPHF2XSPI</p> <ul style="list-style-type: none"> <li>• ST33HTPH2X32AHD4</li> <li>• ST33HTPH2X32AHD8</li> <li>• ST33HTPH2X32AHE0</li> <li>• ST33HTPH2X32AHE4</li> </ul> <p>ST33TPHF2XI2C</p> <ul style="list-style-type: none"> <li>• ST33HTPH2X32AHD5</li> <li>• ST33HTPH2X32AHE1</li> </ul> <p>ST33TPHF20SPI-G1</p> <ul style="list-style-type: none"> <li>• ST33HTPH2032GAF3</li> </ul>
<p><b>Type of change:</b></p>	<p>Package bill of material change</p>
<p><b>Reason for the change:</b></p>	<p>Soft Error Rate improvement due to alpha radiations</p>
<p><b>Description of the change:</b></p>	<p>Resin model and plating change</p>
<p><b>Date of notification to the customer:</b></p>	<p>Apr/22</p>
<p><b>Forecast date of Qualification samples availability for customer(s):</b></p>	<p>Jul/22</p>
<p><b>Forecast date for the internal STMicroelectronics change, Qualification Report availability:</b></p>	<p>Nov/22</p>
<p><b>Description of the qualification program</b></p>	<p>Package qualification over 3 lots. New reliability report release by Nov/22.</p>
<p><b>Manufacturing location:</b></p>	<p>Amkor ATP3</p>
<p><b>Estimated date of first shipment:</b></p>	<p>Jan/23</p>

## Document Revision History

Date	Rev.	Description of the Revision
27/Apr/2022	1.0	First official release