Product Change Notice (PCN)

Subject: Add New Substrate Supplier Daeduck for FCBGA-345
Publication Date: 8/1/2022
Effective Date: 11/1/2022

Revision Description:
Initial Release

Description of Change:
Renesas is adding Daeduck, Korea as an alternate substrate supplier in addition to the current UMTC, Taiwan. Daeduck has decades of experience and expertise in Flip Chip BGA/CSP substrates and is ranked among the top 10 worldwide substrate suppliers in terms of revenue.

There will be no changes to the substrate design, physical dimensions and electrical performance. Daeduck will be exactly the same as UMTC substrate in terms of form, fit and function. Daeduck uses mainstream HVM core and build-up materials for better 'future availability'. These have equivalent performance as the current materials used by UMTC substrate. Daeduck's ENEPIG surface finish provides the same protection against corrosion as the immersion Sn to ensure the same level of solder joint quality and reliability.

Refer to appendix for comparison between the current substrate suppliers versus the newly added substrate supplier.

Affected Product List: 89HT0832PZCBLG, 89HT0832PZCBLG8, 89HT0832PZCBLGI, 89HT0832PZCBLGI8.

Reason for Change:
To avoid supply shortages by ABF material and manufacturing capacity limitations.

Impact on Fit, Form, Function, Quality & Reliability:
The change will have no impact on the product form, fit, function, quality, reliability and environmental compliance of the products.

Product Identification:
Assembly Lot# traceable to the substrate material supplier

Qualification Status: Completed. Refer Appendix A
Sample Availability Date: 9/30/2022
Material Declaration: Available on request

Note:

1. Acknowledgement must be received by Renesas within 30 days or Renesas will consider the change as approved.
2. If timely acknowledgement is provided by Customer, then Customer shall have 90 days

from the date of receipt of this PCN to make any objections to this PCN. If Customer fails to make objections to this PCN within 90 days of the receipt of the PCN then Renesas will consider the PCN changes as approved.

3. If customer cannot accept the PCN then customer must provide Renesas with a last time buy demand and purchase order.

For additional information regarding this notice, please contact idt-pcn@lm.renesas.com

Appendix A – Comparison of Substrate Design and Materials

Feature	BLG345	
Supplier	UMTC	DAEDUCK
Bump Pad Pitch (mm)	0.18	0.18
Bump Pad Opening (mm)	0.09	0.09
Bump Pad Metal Size (mm)	0.12	0.12
Ball Pad Opening (mm)	0.400±0.050	0.400±0.050
Ball Pad Metal Size (mm)	0.500±0.050	0.500±0.050
Core Thickness (mm)	0.410±0.060	0.400±0.060
Build-up	3-2-3	3-2-3
Hole Fill	Taiyo PHP-900 IR6	Taiyo PHP-900 IR6P
Core Material*	Hitachi E700GR	R1515W
Build-up Material	ABF GX13	ABF GX92
Solder Mask	Taiyo PSR 4000 AUS703	Taiyo PSR 4000 AUS703
Surface Finish (Bump)	SAC305 SOP	SAC305 SOP
Surface Finish (Fiducials and External)	Immersion Sn (1 um min)	ENEPIG (Ni 6.6±3.4 um, Pd & Au 0.09±0.06 um)

Appendix A – Comparison of Process Control

Substrate Process		QC Item	Process control	
			UMTC	DAEDUCK
Core Layer	Mechanical Drill	Hole size	Yes	Yes
	Cu plating	Cu thickness	Yes	Yes
	Lithography	Trace width	Yes	Yes
Build up Layer	ABF lamination	ABF thickness	Yes	Yes
	Laser drill	Via diameter	Yes	Yes
	Cu plating	Cu thickness	Yes	Yes
	Lithography	Trace width	Yes	Yes
	Lithography	Trace space	Yes	Yes
Solder Mask Layer	SM lithography	SM thickness - top	Yes	Yes
	SM lithography	SM thickness - bottom	Yes	Yes
	SM lithography	SRO - top	Yes	Yes
	SM lithography	SRO - bottom	Yes	Yes
Surface Finish	Immersion Tin	IT thickness	Yes	NA
	ENEPIG	Ni, Au, Pd thickness	Yes	Yes
Backend	Pre-solder	Bump height	Yes	Yes
	Pre-solder	Bump diameter	Yes	Yes
	Pre-solder	Bump coplanarity	Yes	Yes
	Routing	Body size X	Yes	Yes
	Routing	Body size Y	Yes	Yes
	FVI	Warpage	Yes	Yes

Appendix A - Qualification Results

Affected Packages: FCBGA-345
Qual Vehicle: FCBGA-345
Qual Plan & Results: Tests are in accordance with JEDEC47 recommended tests.

Test Descriptions	Test Method	Test Results (Rej/SS)		
		Lot 1	Lot 2	Lot 3
* Temperature Cycling (-55°C to 125°C, 700 cycles)	JESD22-A104	0/25	0/25	0/25
* HAST - unbiased (130°C/85% RH, 96 Hrs)	JESD22-A118	0/25	0/25	0/25
* Temperature Humidity Bias (85°C/85% RH, 1000 Hrs)	JESD22-A101	0/25	0/25	-
High Temperature Storage Bake (150°C, 1000 Hrs)	JESD22-A103	0/25	0/25	0/25
Solder Ball Shear Test	JESD22-B117	0/5	0/5	0/5
Physical Dimensions	JESD22-B100	0/30	0/30	0/30
Moisture Sensitivity Level, MSL	J-STD-20 / MSL 4, 245°C	0/25	0/25	-

**Tests were subjected to Preconditioning per JESD22-A113 prior to stress test*