2610 Orchard Parkway
San Jose, CA 95070
September 15, 2021

TAEC Sales and Distributors

Subject: Toshiba TCD1304DG(8Z,AW) EOL and Replacement Notification

To Whomever It May Concern

This document is to serve as an EOL notification of Toshiba's TCD1304DG(8Z,AW). In its place, part number TCD1304DG(8Z,K) will serve as its replacement. TCD1304(8Z,K) will have the same form, fit and function as TCD1304DG(8Z,AW). Moreover, TCD1304DG(8Z,K) will continue to follow the current TCD1304DG datasheet and no datasheet updates are anticipated related to this part number change.

TCD1304DG(8Z,K) will begin production by October, 2021. TCD1304DG(8Z,AW) will cease to be available after October 2021. Please note that current lead times are 26 weeks. Products started in October 2021 will not be expected to be available until April 2022.

For additional details of this part number change, please refer to the attached PCN.

Thank you for your attention,

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TOSHIBA

Assembly material and production machine change of linear image sensor

PCN # :20CN-007

Date :July 29, 2020

Toshiba Electronic Devices & Storage Corporation
System Devices Quality & Reliability Engineering Dept.
System Devices Customer Quality group, Iwate Office

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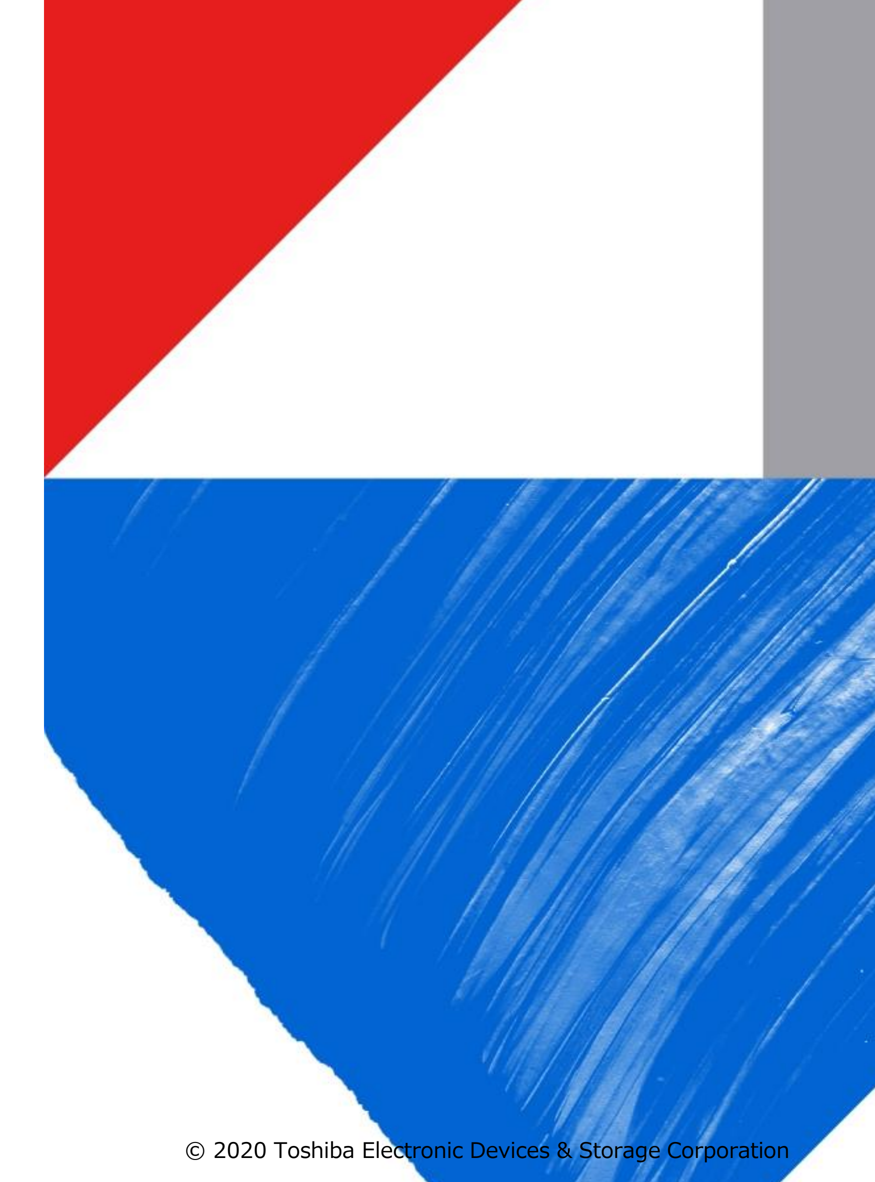

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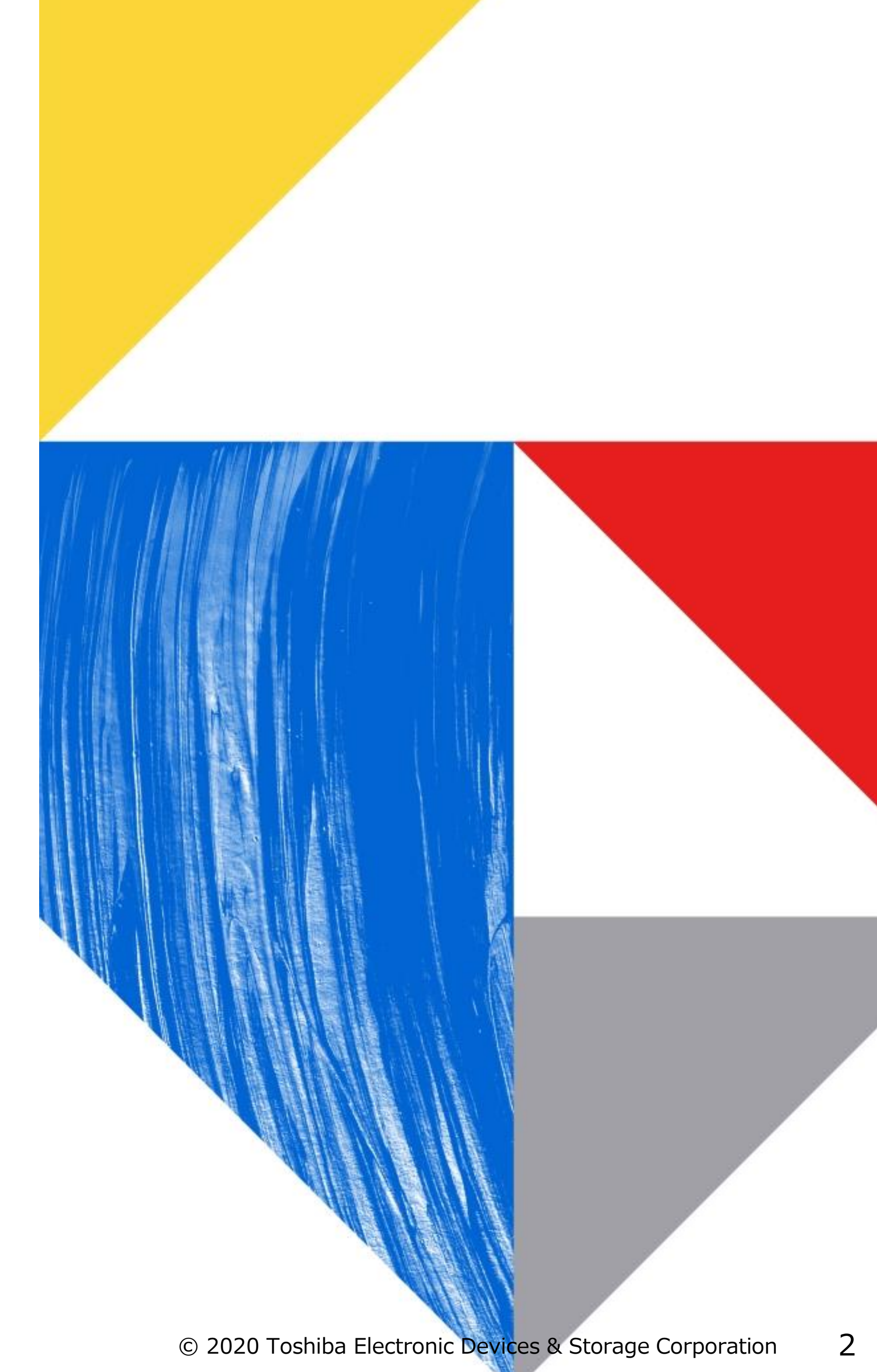
01

Change overview



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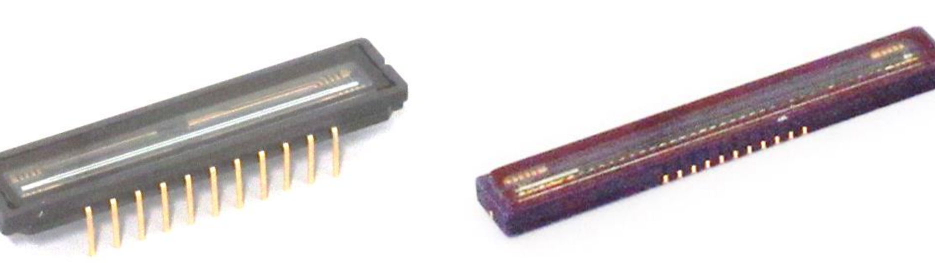
Change overview

We have gotten the notice from maker which mentioned to discontinue the ceramics package. In order to keep continuous supply to our valuable customers, we need to change to the alternative materials. And, for stable product supply, we will add machine B to current machine A for production.

Applicable products : 4 packages 12 products

Package	Product quantity
WDIP20-G-400-2.54(B)	1 product
WDIP22-G-400-2.54A	4 products
WQFN22-C-R240-1.27C	2 products
WQFN32-C-R300-1.27B	5 products

Example：WDIP22　Example：WQFN22



Contents of change point：Material and machine change by ceramics maker change

item			Target packages of change	<Current>	<New>
Material	Package	Ceramics	All 4 packages	Ceramics (Type A)	Ceramics (Type B)
		Package adhesive	Only WDIP20 and 22	Epoxy (Type A)	Epoxy (Type B)
		Lead plating thickness	Only WQFN22	Ni/Au (Au plating thickness 0.7μm Min)	Ni/Au (Au plating thickness 0.3μm Min)
Machine	Die bonder		Only WDIP22	Machine A(Multiple nozzles)	Machine A(Multiple nozzles) Machine B(Single nozzle)

※Regarding the package adhesive, lead plating thickness and die bonder machine, the packages that are not subject to change will be the current production.
There are no changes to the items described in Technical data. Change material is used with other CCD products.

Reason of the change：Continuous production
Scheduled：We would like to change the production from Oct.2021.
Product identification：Product code, Weekly code

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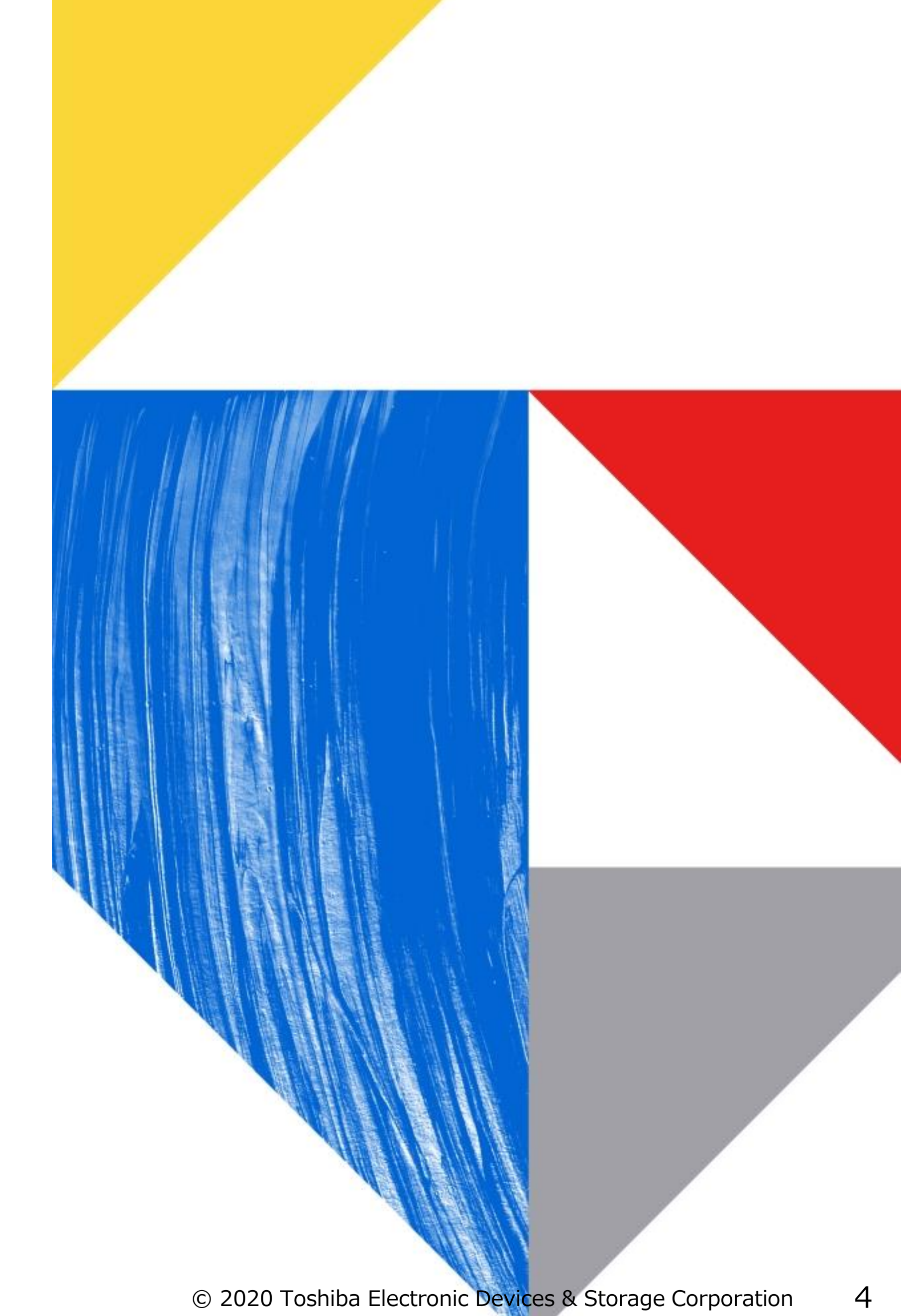
Changed points(5M1E)
Risk analysis and valuation planning



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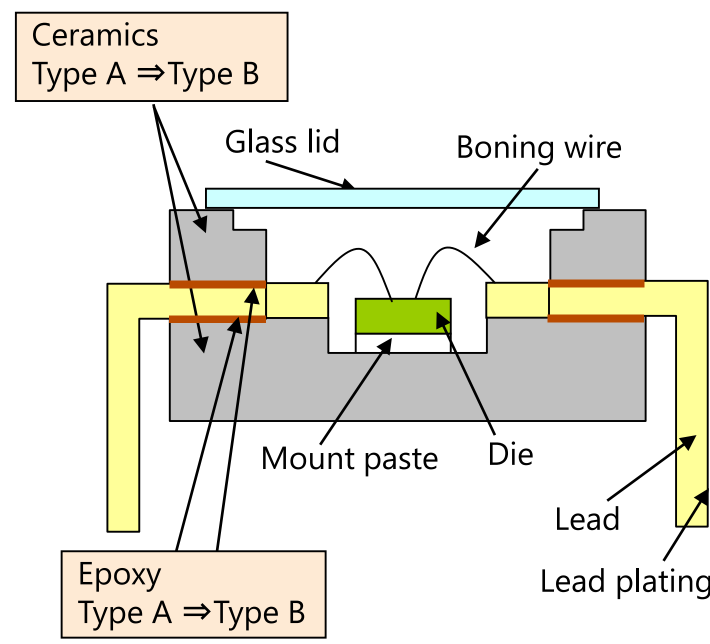
WDIP20 package change point

【WDIP20 package change point (5M1E)】

5M	item		Current	New
Material	Package	Ceramics	Ceramics (Type-A)	Ceramics (Type-B)
		Package adhesive	Epoxy (Type-A)	Epoxy (Type-B)
		Lead	42Alloy	
		Lead plating	Ni/Au	
	Die		Si	
	Mount paste		Ag paste	
	Bonding wire		Au	
	Glass Lid		Glass	
Man			No change	
Machine			No change	
Method			No change	
Measurement			No change	
Environment			No change	

【Cross section】



※ There are no changes to the items described in Technical data.
Change material is used with other CCD products.

Change of material is perform about the ceramics and the adhesives of a package.

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Risk analysis and evaluation planning (WDIP 20pin)

【Risk analysis】

Change item		Process function (Requirements)	Potential failure mode	Potential Cause/Mechanism of failure	Potential effect of failure at customer line or market	What kind of design did we have to exclude concern
Material	Ceramics	Protection inside a package Package heat dissipation	Package dimension failure	Ceramics shrinkage	Assembly failure	Package dimension
			Heat dissipation variation	Thermal expansion coefficient variation of ceramics	Function failure	Thermal expansion coefficient of ceramics Electrical test
	Package adhesive	Adhesion between ceramics and lead	Delamination between ceramics and lead	Deterioration of package adhesive strength	Reliability failure	Temperature cycling test
			Cloudy in a glass	Moisture absorption of package adhesive	Reliability failure	High Temperature Humidity Storage test

【Evaluation summary】

Change item	Potential effect	Evaluation
Ceramics	Assembly failure	Package dimension
	Function failure	Thermal expansion coefficient of ceramics Electrical test
Package adhesive	Reliability failure	Temperature cycling test High Temperature Humidity Storage test

We perform risk confirmation for the extracted change risk evaluation items.

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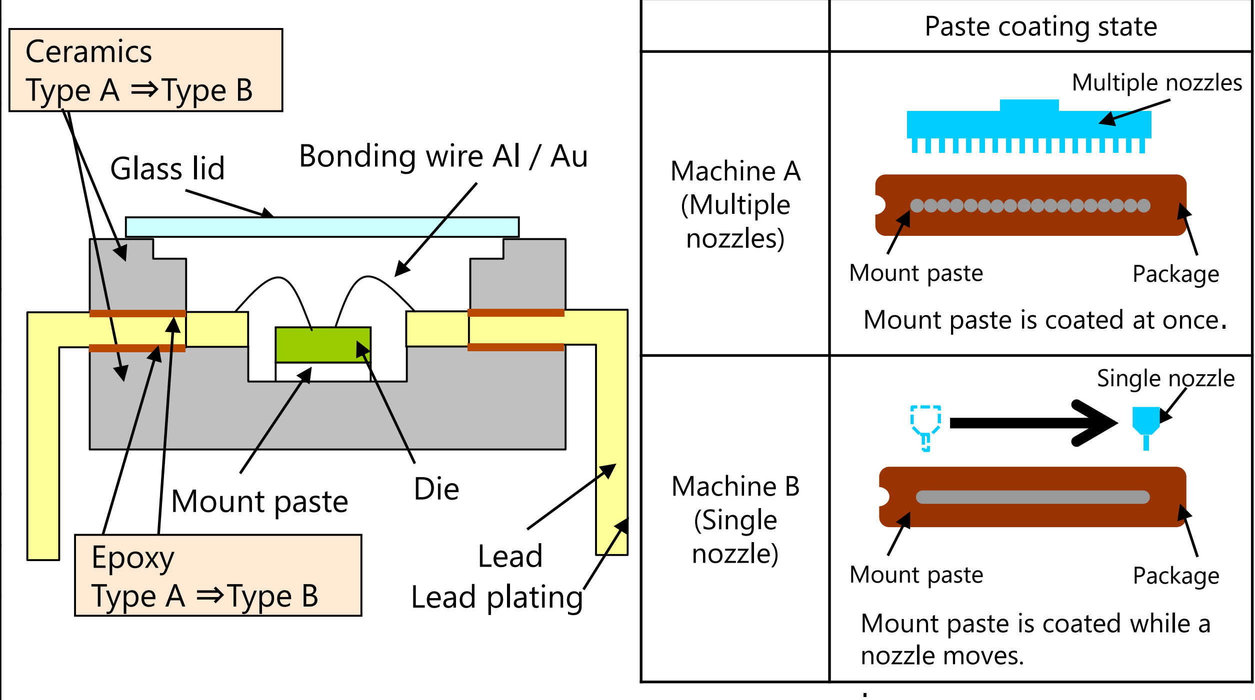
WDIP22 package change point

【WDIP22 package change point (5M1E)】

5M	item		Current	New
Material	Package	Ceramics	Ceramics (Type-A)	Ceramics (Type-B)
		Package adhesive	Epoxy (Type-A)	Epoxy (Type-B)
		Lead	42Alloy	
		Lead plating	Ni/Au	
	Die		Si	
	Mount paste		Ag paste	
	Bonding wire	TCD1205/1209	Al (Φ30um)	
		TCD1304/1305	Au (Φ23um)	
	Glass Lid		Glass	
Man			No change	
Machine	Die bonder		Machine A (Multiple nozzles)	Machine A (Multiple nozzles) Machine B (Single nozzle)
Method			No change	
Measurement			No change	
Environment			No change	



※ There are no changes to the items described in Technical data.
Change material is used with other CCD products.

Change of material is perform about the ceramics and the adhesives of a package.
And, add die bonder machine B(Single nozzle).

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Risk analysis and evaluation planning (WDIP 22pin)

【Risk analysis】

Change item		Process function (Requirements)	Potential failure mode	Potential Cause/Mechanism of failure	Potential effect of failure at customer line or market	What kind of design did we have to exclude concern
Material	Ceramics	Protection inside a package Package heat dissipation	Package dimension failure	Ceramics shrinkage	Assembly failure	Package dimension
			Heat dissipation variation	Thermal expansion coefficient variation of ceramics	Function failure	Thermal expansion coefficient of ceramics Electrical test
	Package adhesive	Adhesion between ceramics and lead	Delamination between ceramics and lead	Deterioration of package adhesive strength	Reliability failure	Temperature cycling test
			Cloudy in a glass	Moisture absorption of package adhesive	Reliability failure	High Temperature Humidity Storage test
Machine	Die bonder	Adhesion between die and package	Die delamination	Improper die bond condition	Function failure	Die bond strength

【Evaluation summary】

Change item	Potential effect	Evaluation
Ceramics	Assembly failure	Package dimension
	Function failure	Thermal expansion coefficient of ceramics, Electrical test
Package adhesive	Reliability failure	Temperature cycling test, High Temperature Humidity Storage test
Die bonder machine	Function failure	Die bond strength

We perform risk confirmation for the extracted change risk evaluation items.

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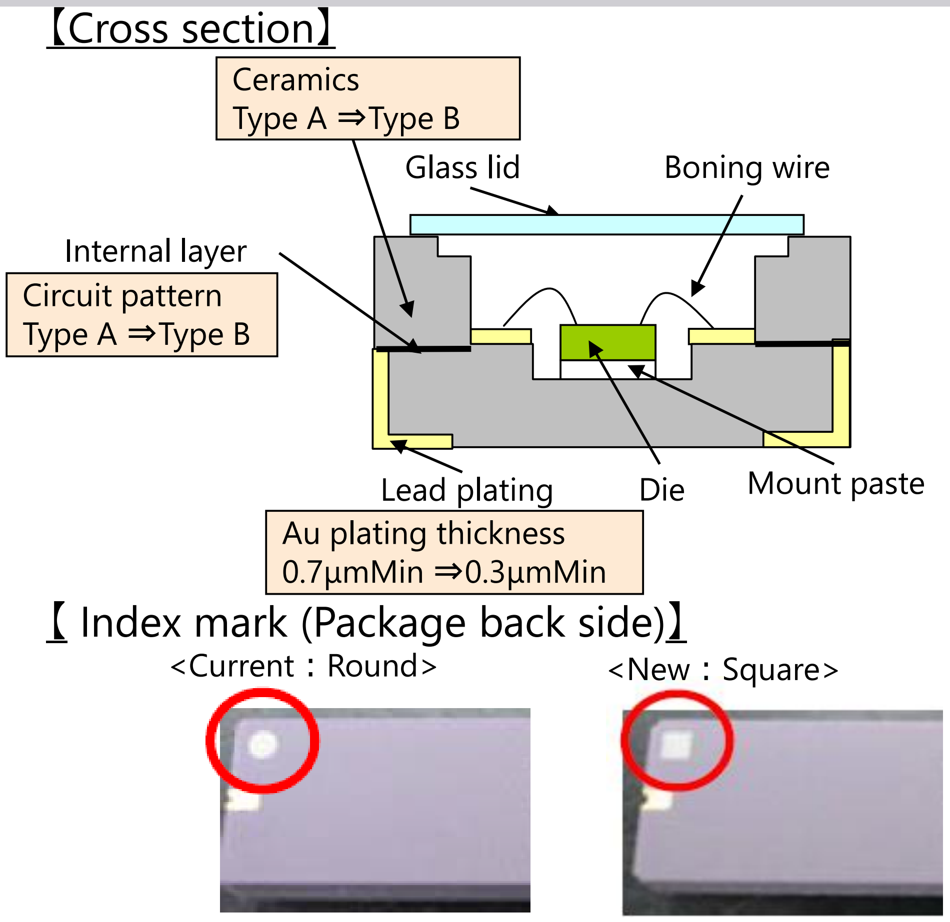
WQFN22 package change point

【WQFN22 package change point (5M1E)】

5M	item		Current	New
Material	Package	Ceramics	Ceramics (Type-A)	Ceramics (Type-B)
		Internal layer	W Circuit pattern Type-A	W Circuit pattern Type-B
		Lead plating	Ni/Au Au plating thickness 0.7µmMin	Ni/Au Au plating thickness 0.3µmMin
	Die		Si	
	Mount paste		Ag paste	
	Bonding wire		Au	
	Glass Lid		Glass	
Man			No change	
Machine			No change	
Method			No change	
Measurement			No change	
Environment			No change	
Package visual	Index mark (Back side)		Round	Square



※ There are no changes to the items described in Technical data.
Change material is used with other CCD products.

Change of material is perform about the ceramics, lead plating thickness and the index mark is changed on the package back side.

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Risk analysis and evaluation planning (WQFN22)

【Risk analysis】

Change item		Process function (Requirements)	Potential failure mode	Potential Cause/Mechanism of failure	Potential effect of failure at customer line or market	What kind of design did we have to exclude concern
Material	Ceramics	Protection inside a package Package heat dissipation	Package dimension failure	Ceramics shrinkage	Assembly failure	Package dimension
			Heat dissipation variation	Thermal expansion coefficient variation of ceramics	Function failure	Thermal expansion coefficient of ceramics Electrical test
	Circuit pattern in the internal layer	The electrical connection between pad and lead	Electrical characteristic variation	Characteristic variation by a different ceramics package	Function failure	Electrical test
	Au plating thickness	Connection electrically between bonding wire	Electrical characteristic variation	Bonding condition insufficiency	Function failure	Bonding strength
		Improved lead plating wetting balance	Electrical characteristic variation	Lack of lead plating ability	Assembly failure	Lead plating wetting balance

【Evaluation summary】

Change item	Potential effect	Evaluation
Ceramics	Assembly failure	Package dimension
	Function failure	Thermal expansion coefficient of ceramics Electrical test
Circuit pattern in the internal layer	Function failure	Electrical test
Au plating thickness	Function failure	Bonding strength
	Assembly failure	Lead plating wetting balance

We perform risk confirmation for the extracted change risk evaluation items.

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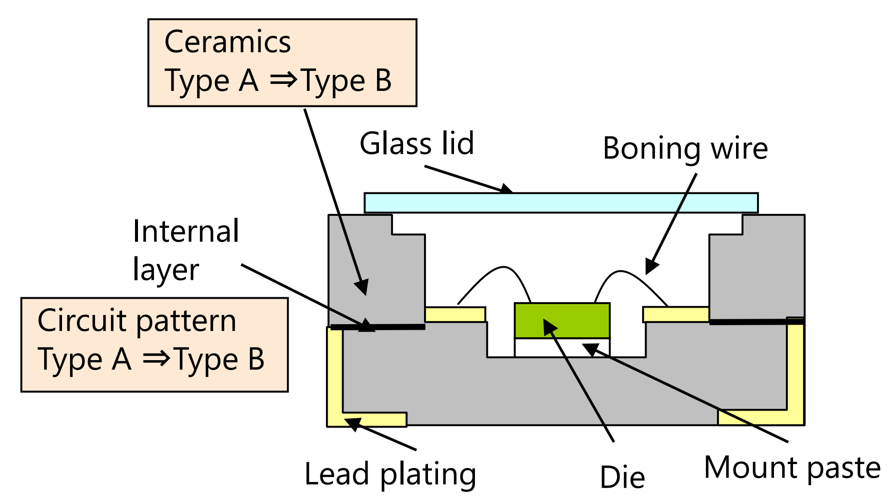
WQFN32 package change point

【WQFN32 package change point (5M1E)】

5M	item		Current	New
Material	Package	Ceramics	Ceramics (Type-A)	Ceramics (Type-B)
		Internal layer	W Circuit pattern Type-A	W Circuit pattern Type-B
		Lead plating	Ni/Au	
	Die		Si	
	Mount paste		Ag paste	
	Bonding wire		Au	
	Glass Lid		Glass	
Man			No change	
Machine			No change	
Method			No change	
Measurement			No change	
Environment			No change	

【Cross section】



※ There are no changes to the items described in Technical data.
Change material is used with other CCD products.

Change of material is perform about the ceramics of a package.

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Risk analysis and evaluation planning (WQFN32)

【Risk analysis】

Change item		Process function (Requirements)	Potential failure mode	Potential Cause/Mechanism of failure	Potential effect of failure at customer line or market	What kind of design did we have to exclude concern
Material	Ceramics	Protection inside a package Package heat dissipation	Package dimension failure	Ceramics shrinkage	Assembly failure	Package dimension
			Heat dissipation variation	Thermal expansion coefficient variation of ceramics	Function failure	Thermal expansion coefficient of ceramics Electrical test
	Circuit pattern in the internal layer	The electrical connection between pad and lead	Electrical characteristic variation	Characteristic variation by a different ceramics package	Function failure	Electrical test

【Evaluation summary】

Change item	Potential effect	Evaluation
Ceramics	Assembly failure	Package dimension
	Function failure	Thermal expansion coefficient of ceramics Electrical test
Circuit pattern in the internal layer	Function failure	Electrical test

We perform risk confirmation for the extracted change risk evaluation items.

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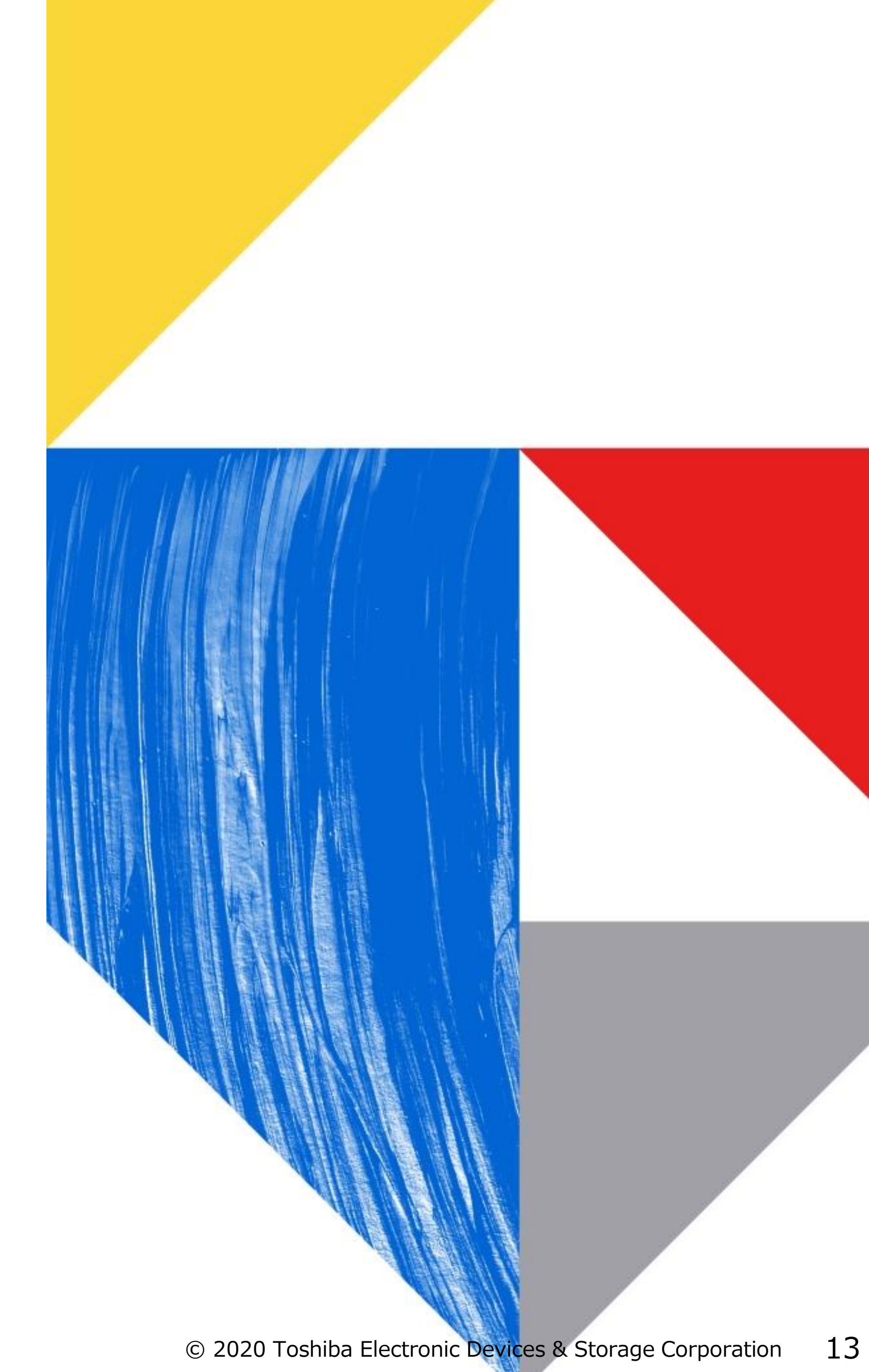
Product identification



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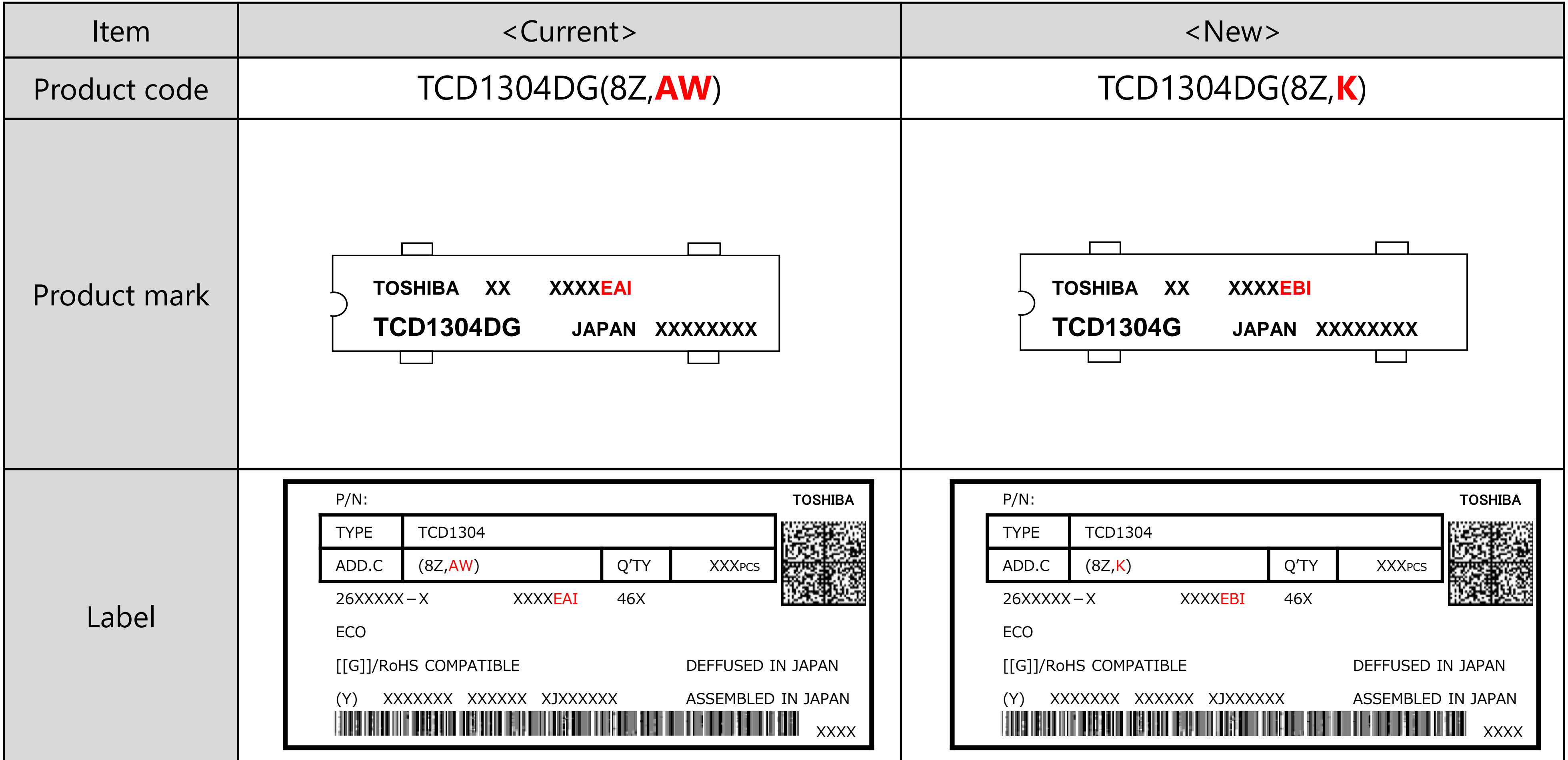
Product identification (by Weekly Code)



The final letter of the product code will be changed from “AW” to “K”.
The weekly code of product mark and label will be changed from “EAI” to “EBI”.

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Change schedule

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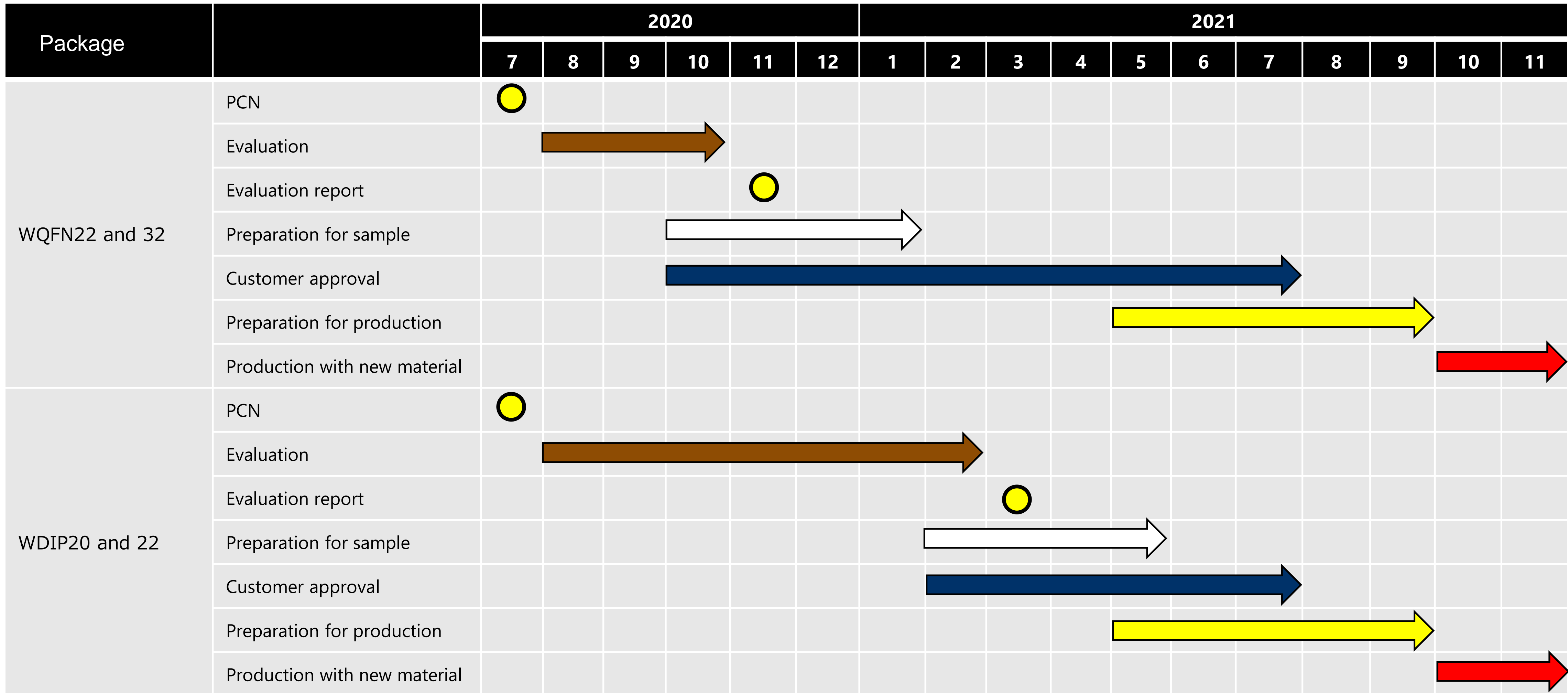
Change schedule



Since the current material production will be finished in Sep. 2021,
we hope to get customer approval for the new material by Jul. 2021.

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Our Semiconductor and Storage products will always be a driving force to change the world

Toshiba Electronic Devices and Storage, together with our customers, will accelerate our future journey.

We aim to be a company that will be chosen for our pioneering technology and spirit embedded in our products.

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