

<b>PCN Number:</b>	20191212001.2B	<b>PCN Date:</b>	April 27, 2020
<b>Title:</b>	New Tray for Select Devices		
<b>Customer Contact:</b>	<a href="#">PCN Manager</a>	<b>Dept:</b>	Quality Services
<b>Proposed 1<sup>st</sup> Ship Date:</b>	July 14, 2020		
<b>Change Type:</b>			
<input type="checkbox"/>	Assembly Site	<input type="checkbox"/>	Assembly Process
<input type="checkbox"/>	Design	<input type="checkbox"/>	Assembly Materials
<input type="checkbox"/>	Test Site	<input checked="" type="checkbox"/>	Electrical Specification
<input type="checkbox"/>	Wafer Bump Site	<input type="checkbox"/>	Mechanical Specification
<input type="checkbox"/>	Wafer Fab Site	<input type="checkbox"/>	Test Process
<input type="checkbox"/>		<input type="checkbox"/>	Wafer Bump Material
<input type="checkbox"/>		<input type="checkbox"/>	Wafer Bump Process
<input type="checkbox"/>		<input type="checkbox"/>	Wafer Fab Materials
<input type="checkbox"/>		<input type="checkbox"/>	Wafer Fab Process
<input type="checkbox"/>		<input type="checkbox"/>	Part number change

### PCN Details

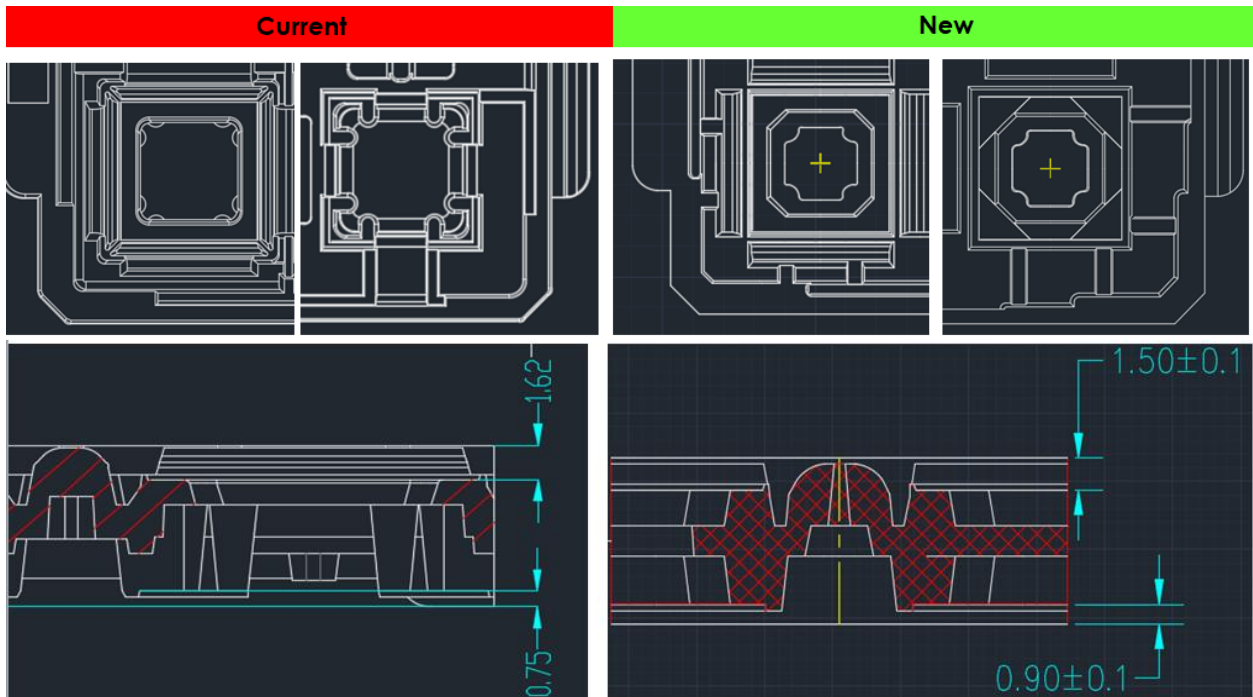
#### Description of Change:

**Revision B is to correct the revision history:** update/correct 1) the seating height for the current tray in Group 1 description of change and 2) the cavity size (X) dimensions in the current tray group 3 dimension table located below in the description of change section.

Texas Instruments is pleased to announce the qualification of a new tray for the devices listed below. A comparison summary of the tray differences as follows:


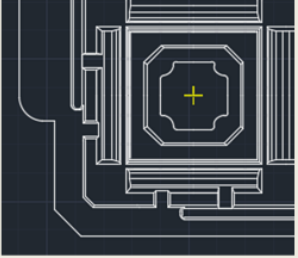
#### Group 1 Change Description - 14 x 14 TQFP Tray Change:

Tray Comparison Tables:



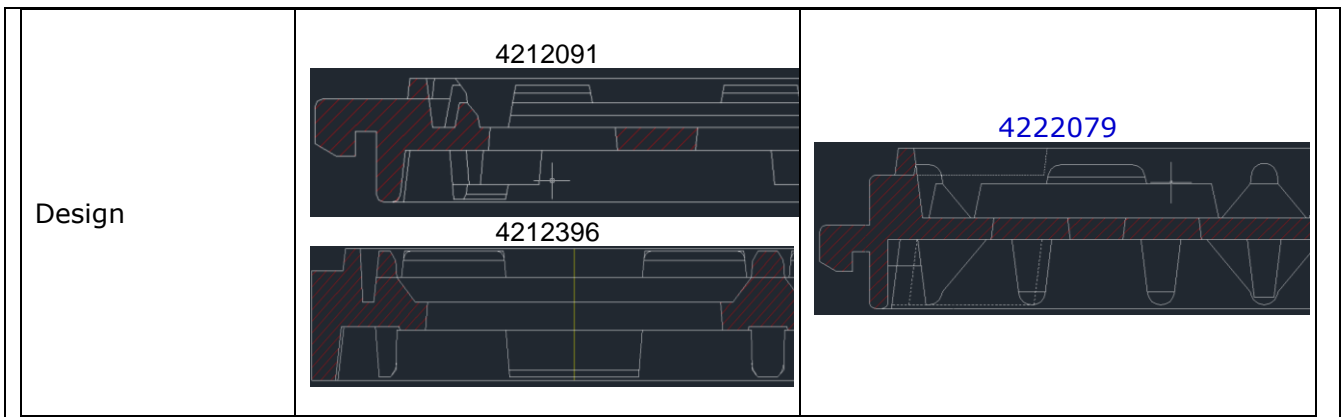
	4223432-0001	4224972-0001
Supplier	UBOT	Peak
Floor design	Circular square	Octagon
Cavity size	16.55 +/- 0.08	16.10 +/- 0.08
Seating ht	1.62 mm (top) 0.75 mm (bottom)	1.5 mm (top) 0.9 mm (bottom)

## Engineering Validation Results – Attribute Comparison

	EXISTING	PROPOSED	COMMENT
	<b>4223432-0001</b>	<b>4224972-0001</b>	CHANGE
* Supplier Part Number :	UQ1414 1.0 0615XB	ND 1414 1.0 0615 13 REV.G	CHANGE
* Gram Weight:	155	157	CHANGE
* Surface Resistivity :	10 <sup>4</sup> - 10 <sup>10</sup> ohm/sq	10 <sup>4</sup> - 10 <sup>10</sup> ohm/sq	UNCHANGE
* Package Size :	14x14x1.0	14x14x1.0	UNCHANGE
* Package Type :	TQFP	TQFP	UNCHANGE
Temperature Rating :	150C	150C	UNCHANGE
Matrix (Column X Rows) :	06x15	06x15	UNCHANGE
Fence design	Fillet	Fillet	UNCHANGE
Raw Material :	Carbon Fiber	Carbon Fiber	UNCHANGE
Color :	BLACK	BLACK	UNCHANGE
FLOOR DESIGN			CHANGE

### Group 2 Change Description – 23 X 23 BGA Tray Change:

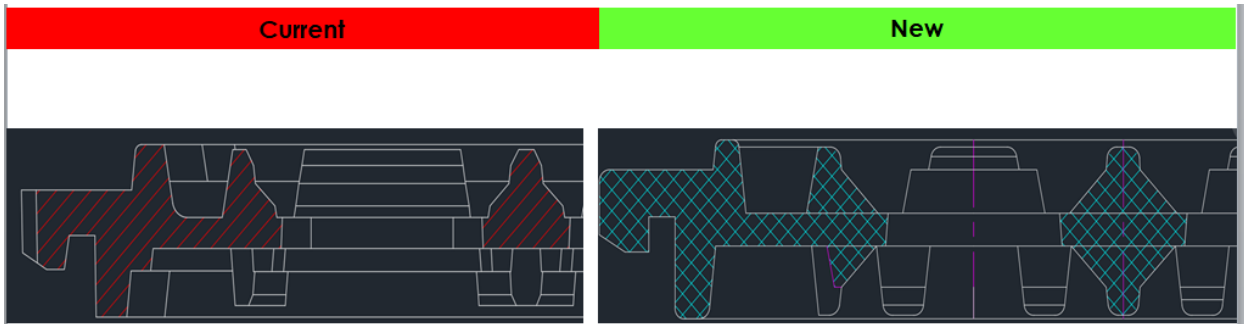
What	From	To
Stock #/Supplier	4212091/Daewan, 4212396/Kostat	4222079/Daewon
Weight	100/104 grams	169 grams
Thickness	7.62mm	12.19mm
Floor Design	"X", Square	"X"
Pocket Design	"X", Square	"X"



## DIMENSIONAL COMPARISON

ITEM DESCRIPTION	CURRENT TRAY : 4212091-0001			CURRENT TRAY :4212396-0001			PROPOSED: 4222079-0001			COMMENT
	DIM	Upper Limits	Lower Limits	DIM	Upper Limits	Lower Limits	DIM	Upper Limits	Lower Limits	
Overall Length	322.6	322.85	322.35	322.6	322.85	322.35	322.6	322.85	322.35	NO CHANGE
Layout Length	315.0	315.25	314.75	315.0	315.25	314.75	315.0	315.25	314.75	NO CHANGE
Layout Width	135.9	136.15	135.65	135.9	136.15	135.65	135.9	136.15	135.65	NO CHANGE
Layout Length on Top Stack frame	311.15	311.40	311.02	311.15	311.40	311.02	311.15	311.40	311.02	NO CHANGE
Layout Width on Top Stack frame	132.08	132.33	131.95	132.08	132.33	131.95	132.08	132.33	131.95	NO CHANGE
Layout Length on Bottom Stack frame	311.66	311.91	311.53	311.66	311.91	311.53	311.66	311.91	311.53	NO CHANGE
Layout Width on Bottom Stack frame	132.59	132.84	132.46	132.59	132.84	132.46	132.59	132.84	132.46	NO CHANGE
End Tab Length	92.1	92.35	91.85	92.1	92.35	91.85	92.1	92.35	91.85	NO CHANGE
Overall Height	7.62	7.75	7.49	7.62	7.75	7.49	12.19	12.32	12.06	CHANGE
Stack Height	1.27	1.40	1.14	1.27	1.40	1.14	2.03	2.16	1.90	CHANGE
Tray Matrix No.	5x12			5x12			5x12			NO CHANGE
Pitch M	16.95	17.08	16.82	16.95	17.08	16.82	16.95	17.08	16.82	NO CHANGE
Pitch M3	25.50	25.63	25.37	25.50	25.63	25.37	25.50	25.63	25.37	NO CHANGE
Pitch M1	17.25	17.38	17.12	17.25	17.38	17.12	17.25	17.38	17.12	NO CHANGE
Pitch M2	25.50	25.63	25.37	25.50	25.63	25.37	25.50	25.63	25.37	NO CHANGE
Distance of tray singulation from corner of tray	34.3	34.43	34.17	34.3	34.43	34.17	34.3	34.43	34.17	NO CHANGE
Tray singulation width	25.4	25.65	25.15	25.4	25.65	25.15	25.4	25.65	25.15	NO CHANGE
Tray Lifting surface height	2.54	2.67	2.41	2.54	2.67	2.41	2.54	2.67	2.41	CHANGE
Cavity Size	23.3	23.38	23.22	23.3	23.38	23.22	23.3	23.38	23.22	NO CHANGE
Pedestal Design	Slope design			Slope design			Slope design with corner relief			CHANGE
Package seating height (Top)	1.52	1.62	1.42	1.66	1.79	1.53	2.7	2.8	2.6	CHANGE
Package seating height (Bottom)	1.1	1.2	1	0.60	0.73	0.47	1.3	1.4	1.2	CHANGE

**Group 3 Change Description - 13 x 13 BGA Tray Change:**



	4212436-0001	4224857-0001
Supplier	UBOT	Peak
Tray Fence	Chamfered	Fillet
Cavity size (LSL)	13.20 + 0.08 13.20 - 0.04	13.30 + 0.08 13.30 - 0.08
Seating ht	1.64 mm (top) 2.00 mm (bottom)	1.27 mm (top) 1.37 mm (bottom)

MATERIAL DESCRIPTION	EXISTING	PROPOSED	COMMENT
		4212436-0001	4224857-0001
* Supplier Name :	UBOT	Peak	CHANGE
* Supplier Part Number :	UB13131.40820XB	NX BG1313 1.74 0820 13	CHANGE
* Gram Weight:	110	132.5	CHANGE
* Surface Resistivity :	1 exp5 - 1 exp11	1 exp5 - 1 exp11	NO CHANGE
* Package Size :	13x13	13x13	NO CHANGE
* Package Type :	BGA	BGA	NO CHANGE
Temperature Rating :	150C	150C	NO CHANGE
Matrix (Column X Rows) :	8x20	8x20	NO CHANGE
Raw Material :	Carbon fiber	Carbon fiber	NO CHANGE
Thickness :	7.62 mm	7.62	NO CHANGE
Color :	BLACK	BLACK	NO CHANGE
Floor Design	Yes	Yes	NO CHANGE

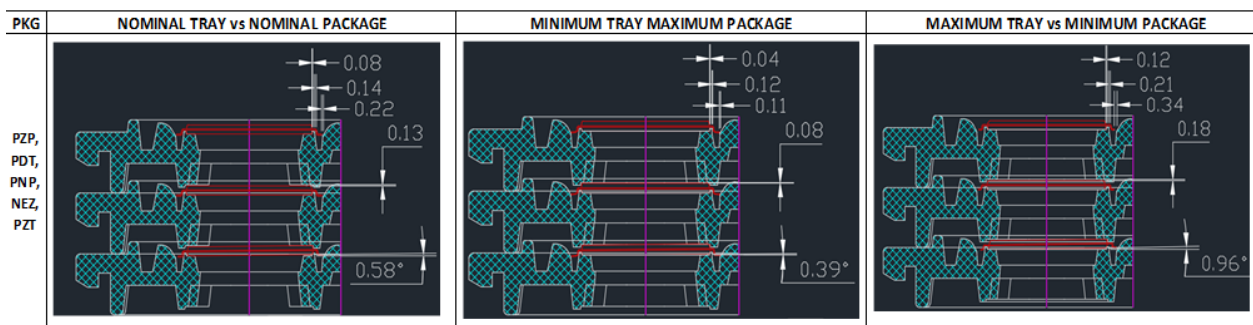
ITEM DESCRIPTION	4212436-0001 UB13131.40820XB			4224857-0001 NX BG1313 1.74 0820 13			COMMENT
	DIM	Upper Limits	Lower Limits	DIM	Upper Limits	Lower Limits	
	Overall Length	322.6	322.85	322.35	322.6	322.85	
Layout Length	315.0	315.25	314.75	315.0	315.25	314.75	NO CHANGE
Layout Width	135.9	136.15	135.65	135.9	136.15	135.65	NO CHANGE
Layout Length on Top Stack frame	311.15	311.40	311.02	311.15	311.40	311.02	NO CHANGE
Layout Width on Top Stack frame	132.08	132.33	131.95	132.08	132.33	131.95	NO CHANGE
Layout Length on Bottom Stack frame	311.66	311.91	311.53	311.66	311.91	311.53	NO CHANGE
Layout Width on Bottom Stack frame	132.59	132.84	132.46	132.59	132.84	132.46	NO CHANGE
End Tab Length	92.1	92.35	91.85	92.1	92.35	91.85	NO CHANGE
Overall Height	7.62	7.75	7.49	7.62	7.75	7.49	NO CHANGE
Stack Height	1.27	1.40	1.14	1.27	1.40	1.14	NO CHANGE
Tray Matrix No.	08x20			08x20			NO CHANGE
Pitch M	15.45	15.58	15.32	15.45	15.58	15.32	NO CHANGE
Pitch M3	15.00	15.13	14.87	15.00	15.13	14.87	NO CHANGE
Pitch M1	15.00	15.13	14.87	15.00	15.13	14.87	NO CHANGE
Pitch M2	15.00	15.13	14.87	15.00	15.13	14.87	NO CHANGE
Distance of tray singulation from corner of tray	34.30	34.55	34.05	34.30	34.55	34.05	NO CHANGE
Tray singulation width	25.40	25.53	25.27	25.40	25.53	25.27	NO CHANGE
Tray Lifting surface height	2.54	2.67	2.41	2.54	2.67	2.41	NO CHANGE
Cavity Size (X)	13.20	13.28	13.16	13.30	13.38	13.22	CHANGE
Cavity Size (Y)	13.20	13.28	13.16	13.30	13.38	13.22	CHANGE
Pedestal Design	SLOPE			SLOPE			NO CHANGE
Package seating height (Top)	1.64	1.71	1.57	1.27	1.37	1.17	CHANGE
Package seating height (Bottom)	2.00	2.05	1.92	1.35	1.45	1.25	CHANGE

**Reason for Change:**

New tray offers improved centering of device in tray pocket
<b>Anticipated impact on Fit, Form, Function, Quality or Reliability (positive / negative):</b>
None

<b>Changes to product identification resulting from this PCN:</b>																				
New tray																				
<b>Product Affected:</b>																				
<b>Group 1 Device list:</b>																				
<table border="1"> <tr> <td>PCOBCG904NBPNP</td> <td>PTPS99000ACPZP</td> <td>TMS320F28069FPZPQ</td> <td>TMS320F28377SPZPQ</td> </tr> <tr> <td>PCOBRCG904PNPR</td> <td>TMS320F28062PZPQ</td> <td>TMS320F28069MPZPQ</td> <td>TPS9900TPZPQ1</td> </tr> <tr> <td>PCOBRCG904PNQ</td> <td>TMS320F28065PZPQ</td> <td>TMS320F28069PZPQ</td> <td>TPS9901TPZPQ1</td> </tr> <tr> <td>PTPS99000AAPZP</td> <td>TMS320F28066PZPQ</td> <td>TMS320F28075PZPQ</td> <td>TVP5158IPNPQ1</td> </tr> <tr> <td>PTPS99000ABPZP</td> <td>TMS320F28067PZPQ</td> <td>TMS320F28375SPZPQ</td> <td></td> </tr> </table>	PCOBCG904NBPNP	PTPS99000ACPZP	TMS320F28069FPZPQ	TMS320F28377SPZPQ	PCOBRCG904PNPR	TMS320F28062PZPQ	TMS320F28069MPZPQ	TPS9900TPZPQ1	PCOBRCG904PNQ	TMS320F28065PZPQ	TMS320F28069PZPQ	TPS9901TPZPQ1	PTPS99000AAPZP	TMS320F28066PZPQ	TMS320F28075PZPQ	TVP5158IPNPQ1	PTPS99000ABPZP	TMS320F28067PZPQ	TMS320F28375SPZPQ	
PCOBCG904NBPNP	PTPS99000ACPZP	TMS320F28069FPZPQ	TMS320F28377SPZPQ																	
PCOBRCG904PNPR	TMS320F28062PZPQ	TMS320F28069MPZPQ	TPS9900TPZPQ1																	
PCOBRCG904PNQ	TMS320F28065PZPQ	TMS320F28069PZPQ	TPS9901TPZPQ1																	
PTPS99000AAPZP	TMS320F28066PZPQ	TMS320F28075PZPQ	TVP5158IPNPQ1																	
PTPS99000ABPZP	TMS320F28067PZPQ	TMS320F28375SPZPQ																		
<b>Group 2 Device list:</b>																				
<table border="1"> <tr> <td>TDA2HFBTQABCQ1</td> <td>XDRA726BXDEABC</td> <td>XDRA726BXGABC</td> <td>XDRA726BXGABCH</td> </tr> <tr> <td>TDA2SABRQABCQ1</td> <td></td> <td></td> <td></td> </tr> </table>	TDA2HFBTQABCQ1	XDRA726BXDEABC	XDRA726BXGABC	XDRA726BXGABCH	TDA2SABRQABCQ1															
TDA2HFBTQABCQ1	XDRA726BXDEABC	XDRA726BXGABC	XDRA726BXGABCH																	
TDA2SABRQABCQ1																				
<b>Group 3 Device list:</b>																				
<table border="1"> <tr> <td>OMAPL138EZCEQ4</td> </tr> </table>	OMAPL138EZCEQ4																			
OMAPL138EZCEQ4																				

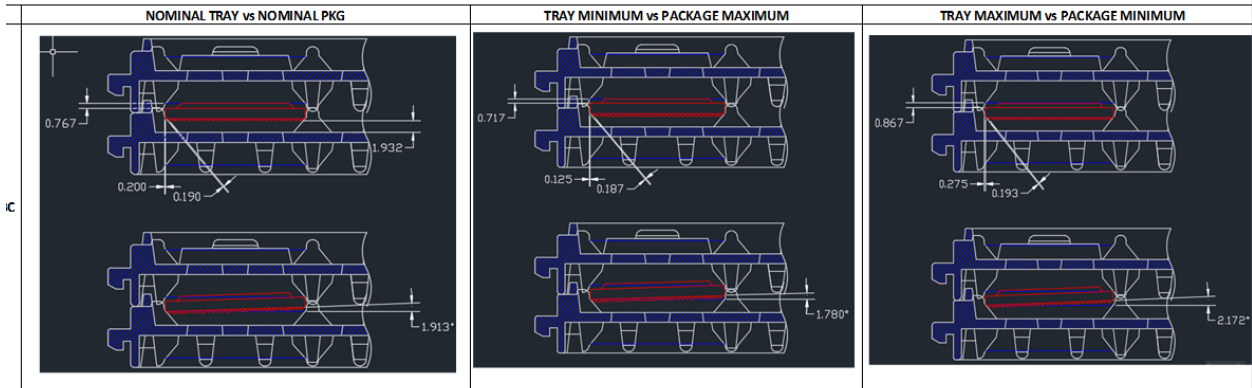
**Group 1 Device Fit Analysis:**  
FIT ANALYSIS



- X and Y clearance is not greater than 0.5 mm
- Rotation angle is less than 10 degrees

**Group 2 Device Fit Analysis:**

# FIT ANALYSIS



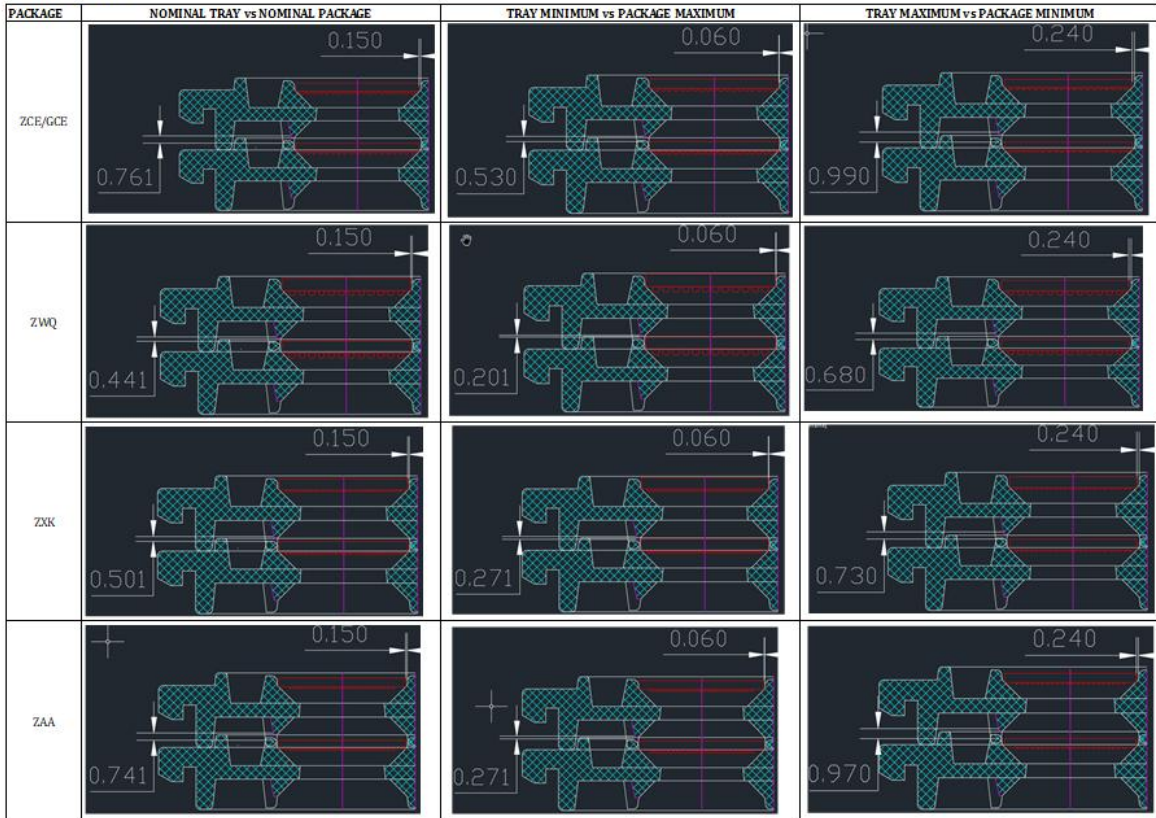
## REMARKS:

- ❖ X and Y clearance is less than 0.5mm
- ❖ Rotation angle is less than 10 degrees

## Group 3 Device Fit Analysis:



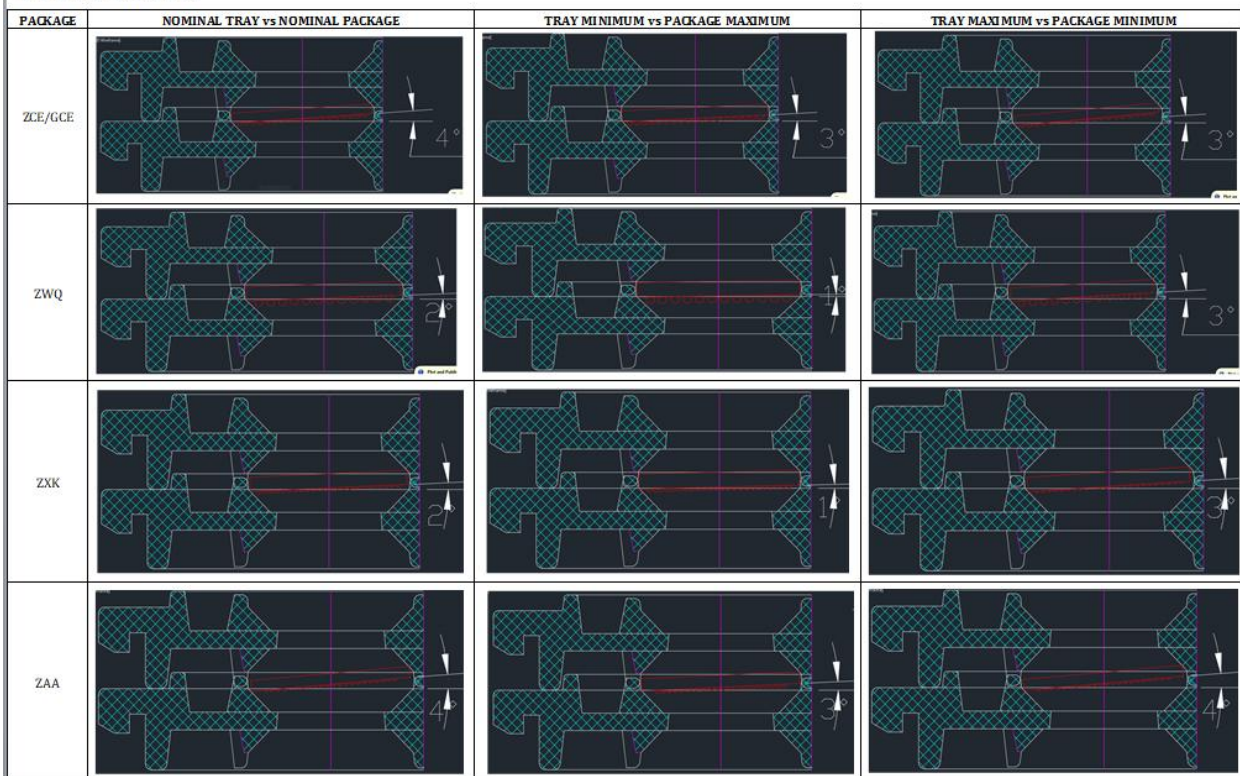
## FIT ANALYSIS



- X and Y clearance is not greater than 5 mm

7

## FIT ANALYSIS



- Angle is less than 10degrees

8



For questions regarding this notice, e-mails can be sent to the contacts shown below or your local Field Sales Representative.

<b>Location</b>	<b>E-Mail</b>
USA	<a href="mailto:PCNAmericasContact@list.ti.com">PCNAmericasContact@list.ti.com</a>
Europe	<a href="mailto:PCNEuropeContact@list.ti.com">PCNEuropeContact@list.ti.com</a>
Asia Pacific	<a href="mailto:PCNAsiaContact@list.ti.com">PCNAsiaContact@list.ti.com</a>
WW PCN Team	<a href="mailto:PCN_ww_admin_team@list.ti.com">PCN_ww_admin_team@list.ti.com</a>

### **IMPORTANT NOTICE AND DISCLAIMER**

TI PROVIDES TECHNICAL AND RELIABILITY DATA (INCLUDING DATASHEETS), DESIGN RESOURCES (INCLUDING REFERENCE DESIGNS), APPLICATION OR OTHER DESIGN ADVICE, WEB TOOLS, SAFETY INFORMATION, AND OTHER RESOURCES “AS IS” AND WITH ALL FAULTS, AND DISCLAIMS ALL WARRANTIES, EXPRESS AND IMPLIED, INCLUDING WITHOUT LIMITATION ANY IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR NON-INFRINGEMENT OF THIRD PARTY INTELLECTUAL PROPERTY RIGHTS.

These resources are intended for skilled developers designing with TI products. You are solely responsible for (1) selecting the appropriate TI products for your application, (2) designing, validating and testing your application, and (3) ensuring your application meets applicable standards, and any other safety, security, or other requirements. These resources are subject to change without notice. TI grants you permission to use these resources only for development of an application that uses the TI products described in the resource. Other reproduction and display of these resources is prohibited. No license is granted to any other TI intellectual property right or to any third party intellectual property right. TI disclaims responsibility for, and you will fully indemnify TI and its representatives against, any claims, damages, costs, losses, and liabilities arising out of your use of these resources.

TI’s products are provided subject to TI’s Terms of Sale ([www.ti.com/legal/termsofsale.html](http://www.ti.com/legal/termsofsale.html)) or other applicable terms available either on ti.com or provided in conjunction with such TI products. TI’s provision of these resources does not expand or otherwise alter TI’s applicable warranties or warranty disclaimers for TI products.