

PDN Number:	20201014000.3	PDN Date:	Oct 15, 2020
Title:	(Addendum for PDN 20200623000.3) Discontinuance of select MicroStar BGA & MicroStar BGA Jr. devices		
Customer Contact:	PCN Manager	Dept:	Quality Services
Last date to order:	March 24, 2021	Original Last date to ship:	March 24, 2022
Limited Inventory Last date to order:	March 24, 2022	Last date to ship:	Sept 24, 2022
Change Type:	Product Discontinuance - End Of Life		

Product Discontinuance Notification Details

Description of Discontinuance:

The purpose of this addendum for PDN 20200623000.3 is to extend the Last Date and Last date to ship as noted above. Please refer to the changes highlighted and **bolded** above. TI will be able to support last time buy orders placed by March 24, 2021 (the original date from PCN 20200623000.3). Additionally, there is limited inventory available to support last time buy orders placed between March 24, 2021 and March 24, 2022). Once this limited inventory is exhausted, the last time buy period will be closed. Part numbers affected by these new dates are shown in the Product Affected section below. Recommended replacements are being offered as shown in the Product Affected Section.

For the other remaining devices (not shown here) in PDN 20200623000.3, there is no change in the original Last date to Order/Last date to ship as communicated in that notification.

Texas Instruments, Incorporated (TI) is announcing the discontinuance of select MicroStar BGA & MicroStar BGA Jr. package devices. A non-cancelable, non-refundable last time buy is being offered per the date shown above. Part numbers are shown in the Product Affected section below. Recommended replacements are being offered on some devices as shown in the Product Affected Section.

Group 1 Devices: Products in the Microstar BGA package were redesigned using a laminate BGA package (nFBGA). These products have Pb-Free Package Balls.

Group 2 Devices: Products in the Microstar BGA package were redesigned using a laminate BGA package (nFBGA). These Products being Discontinued currently have SnPb Package Balls. Some customers may wish to stay with SnPb package balls in the nFBGA package; some may wish to move to Pb-free nFBGA package balls. Both replacement part numbers are provided.

The devices in the MicroStar BGA package were redesigned using a laminate BGA package (nFBGA). nFBGA provides the same X and Y dimensions as MicroStar BGA, and provides pin-to-pin and footprint compatibility. However the nFBGA PCB land pattern and stencil recommendations have been updated to achieve better soldering results after extensive testing and evaluation. For more details, please refer to this [nFBGA application note](#).

BOM for new nFBGA Package:

	Assembly Site nFBGA
Assembly Site	TI Philippines
Mount Compound	film/epoxy
Mold compound	4205283 / 4208515
Wire Type	Cu
Substrate	Laminate

NOTE: There are no samples offered for withdrawn/obsolete products. For samples of any replacement products, please contact your local sales representative or visit the TI store at <https://www.ti.com/store>.

Reason for Withdrawal/Discontinuance:

Due to an equipment End-Of-Life notice from our substrate supplier, we are phasing out certain MicroStar BGA & MicroStar BGAJr package devices and offering a last time buy.

Product Affected: Group 1 Products with Pb-Free Package Balls

Product Being Discontinued (Pb-Free Package Balls)	RECOMMENDED REPLACEMENT PRODUCTS (nFBGA Package) (Pb-Free Package Balls)	REPLACEMENT CODES
D36155ZGU160	D36155ZWS160	Q
DVC5416ZGU160IDWLD	TMS320VC5416ZWS160	Q
OMAP5912ZZG	OMAP5912ZVL	Q
OMAP5912ZZGR	OMAP5912ZVLR	Q
TMS320DA150ZGU160	TMS320DA150ZWS160	Q
TMS320VC5416ZGU120	TMS320VC5416ZWS120	Q
TMS320VC5416ZGU160	TMS320VC5416ZWS160	Q

Product Affected – Group 2 Products being Discontinued currently with SnPb Package Balls

Product Being Discontinued (SnPb Package Balls)	RECOMMENDED REPLACEMENT PRODUCTS (nFBGA Package) (Pb-Free Package Balls)	RECOMMENDED REPLACEMENT PRODUCTS (nFBGA Package) (SnPb Package Balls)	REPLACEMENT CODES
TMS320VC5416GGU120	TMS320VC5416ZWS120	TMS320VC5416GWS120	Q
TMS320VC5416GGU160	TMS320VC5416ZWS160	TMS320VC5416GWS160	Q

Replacement Notes:

- F = Similar functionality but not equivalent.
- P = Same functionality but not pin-for-pin equivalent and may not be parametrically equivalent.
- Q = Same functionality and PIN-OUT as the compared device but is NOT an exact equivalent.
- S = EXACT equivalent in functionality and parametrically to the compared device.

**Qualification Report (nFBGA)
Approve Date 20-Jan-2020**

Qualification Results

Data Displayed as: Number of lots / Total sample size / Total failed

yp e	Test Name / Condition	Durati on	Qua l Device: <u>OM AP5 912 ZV L</u>	QBS Packag e Reference: <u>AM351 7ZCN</u>	QBS Packag e Reference: <u>CODM IOZW CR</u>	QBS Packag e Reference: <u>LMK0 4616Z CRR</u>	QBS Packag e Reference: <u>MSP43 0FG43 9IZCA</u>	QBS Packag e Reference: <u>MSP43 0FR59 94IZV W</u>	QBS Packag e Reference: <u>PCD32 15C00 AZBH R, PCD32 15C00 BZBH R</u>	QBS Packag e Reference: <u>TMP5 70LS3 137BZ WTO Q1</u>	QBS Packag e Reference: <u>TMS32 0DM64 46ZW T</u>	QBS Packag e Reference: <u>TPS65 9038T ZWSR Q1</u>	QBS Packag e Reference: <u>TS3DD R4000 ZBAR</u>
A C	Autoclav e 121C	96 Hours	-	-	-	-	-	3/231/0	-	-	-	-	-
BL R	Board Level Reliabilit y, Temp	1000 Cycles	-	1/32/0	1/32/0	-	-	-	-	1/32/0	-	-	-

Type	Test Name / Condition	Duration	Qual Device: <u>OM912</u> <u>ZV</u> <u>L</u>	QBS Package Reference: <u>AM351</u> <u>7ZCN</u>	QBS Package Reference: <u>CODM</u> <u>IOZW</u> <u>CR</u>	QBS Package Reference: <u>LMK0</u> <u>4616Z</u> <u>CRR</u>	QBS Package Reference: <u>MSP43</u> <u>0FG43</u> <u>9IZCA</u>	QBS Package Reference: <u>MSP43</u> <u>0FR59</u> <u>94IZV</u> <u>W</u>	QBS Package Reference: <u>PCD32</u> <u>15C00</u> <u>AZBH</u> <u>R</u> <u>PCD32</u> <u>15C00</u> <u>BZBH</u> <u>R</u>	QBS Package Reference: <u>TMP5</u> <u>70LS3</u> <u>137BZ</u> <u>WTO</u> <u>Q1</u>	QBS Package Reference: <u>TMS32</u> <u>0DM64</u> <u>46ZW</u> <u>T</u>	QBS Package Reference: <u>TPS65</u> <u>9038T</u> <u>ZWSR</u> <u>Q1</u>	QBS Package Reference: <u>TS3DD</u> <u>R4000</u> <u>ZBAR</u>
	Cycle, -40/125C												
BLR	Board Level Reliability, Temp Cycle, -40/85C	1000 Cycles	-	-	-	-	-	-	1/32/0	-	-	-	-
CDM	ESD - CDM	250 V	1/3/0	-	-	-	2/6/0	1/3/0	-	-	-	-	-
CDM	ESD - CDM	500 V	1/3/0	-	-	-	-	-	-	1/3/0	1/3/0	1/3/0	-
CDM	ESD - CDM	750 V	-	-	-	-	-	-	-	1/3/0	1/3/0	1/3/0	-
CDM	ESD - CDM	1000 V	-	-	-	-	-	-	-	-	1/3/0	-	1/3/0
CDM	ESD - CDM	1500 V	-	-	-	1/3/0	-	-	6/18/0	-	-	-	-
ED	Electrical Characterization, side by side	Per Datash eet Parameters	Pass	-	-	-	-	-	-	-	-	-	-
ED	Electrical Characterization	Per Datash eet Parameters	-	-	Pass	-	-	Pass	Pass	Pass	Pass	Pass	Pass
FLAM	Flammability (IEC 695-2-2)	-	-	-	-	-	-	-	3/15/0	-	-	-	3/15/0
FLAM	Flammability (UL 94V-0)	-	-	-	-	-	-	-	3/15/0	-	-	-	3/15/0
FLAM	Flammability (UL-1694)	-	-	-	-	-	-	-	3/15/0	-	-	-	3/15/0
HAST	Biased HAST, 110C/85%RH	264 Hours	-	3/231/0	-	3/231/0	-	3/231/0	3/231/0	-	-	-	1/77/0
HBM	ESD - HBM	1000 V	-	-	-	-	2/6/0	1/3/0	-	-	1/3/0	-	-
HBM	ESD - HBM	2000 V	-	-	-	-	2/6/0	-	6/18/0	1/3/0	1/3/0	1/3/0	-
HBM	ESD - HBM	3000 V	-	-	-	-	-	-	-	-	-	-	1/3/0
HBM	ESD - HBM	4000 V	-	-	-	1/3/0	-	-	-	-	-	-	-
HTOL	Life Test, 90C	2000 Hours	-	-	-	-	-	-	-	-	3/387/0	-	-
HTOL	Life Test, 125C	1000 Hours	-	-	-	-	-	-	6/462/0	3/231/0	-	3/231/0	-

Type	Test Name / Condition	Duration	Qual Device: <u>OM</u> <u>AP5</u> <u>912</u> <u>ZV</u> <u>L</u>	QBS Package Reference: <u>AM351</u> <u>7ZCN</u>	QBS Package Reference: <u>CODM</u> <u>IOZW</u> <u>CR</u>	QBS Package Reference: <u>LMK0</u> <u>4616Z</u> <u>CRR</u>	QBS Package Reference: <u>MSP43</u> <u>0FG43</u> <u>9IZCA</u>	QBS Package Reference: <u>MSP43</u> <u>0FR59</u> <u>94IZV</u> <u>W</u>	QBS Package Reference: <u>PCD32</u> <u>15C00</u> <u>AZBH</u> <u>R</u> <u>PCD32</u> <u>15C00</u> <u>BZBH</u> <u>R</u>	QBS Package Reference: <u>TMP5</u> <u>70LS3</u> <u>137BZ</u> <u>WTO</u> <u>Q1</u>	QBS Package Reference: <u>TMS32</u> <u>0DM64</u> <u>46ZW</u> <u>T</u>	QBS Package Reference: <u>TPS65</u> <u>9038T</u> <u>ZWSR</u> <u>Q1</u>	QBS Package Reference: <u>TS3DD</u> <u>R4000</u> <u>ZBAR</u>
HT OL	Life Test, 115C	1000 Hours	-	-	-	1/77/0	-	-	-	-	-	-	-
HT OL	Life Test, 140C	480 hours	-	-	-	-	-	-	-	-	-	-	1/77/0
HT SL	High Temp Storage Bake 150C	1000 Hours	3/23 1/0	3/45/0	-	1/77/0	3/231/0	3/231/0	3/231/0	1/45/0	3/231/0	-	-
HT SL	High Temp Storage Bake 150C	500 Hours	-	-	-	-	-	-	-	-	-	2/90/0	-
HT SL	High Temp Storage Bake 170C	420 hours	-	-	-	-	-	-	-	-	-	-	3/231/0
M Q	Manufacturability (Assembly)	(per mfg. Site specification)	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass
M SL	Moisture Sensitivity, JEDEC	Level 3-260C	3/36 /0	-	-	-	3/36/0	3/36/0	3/36/0	3/36/0	3/36/0	3/36/0	3/36/0
PD	Physical Dimensions	(per mechanical drawing)	3/15 /0	-	-	-	1/5/0	-	3/15/0	-	-	3/30/0	3/15/0
SB S	Ball Shear	Balls	3/90 /0	3/150/0	-	3/240/0	3/60/0	3/60/0	3/540/0	1/50/0	-	3/150/0	3/60/0
SD	Solderability	PB-Free Solder	3/66 /0	-	-	-	1/12/0	-	3/66/0	-	-	-	3/66/0
TC	Temperature Cycle, -55/125C	1000 Cycles	-	3/231/0	-	-	-	-	-	3/231/0	3/231/0	3/231/0	-
TC	Temperature Cycle, -55/125C	700 Cycles	3/23 1/0	-	-	3/231/0	3/231/0	3/231/0	3/231/0	-	-	-	3/231/0
TH B	Biased Temperature and Humidity, 85C/85% RH	1000 Hours	-	-	-	-	-	-	-	3/230/0	3/231/0	3/231/0	-
U H A S T	Unbiased HAST 110C/85%RH	264 Hours	3/23 1/0	-	-	3/231/0	3/231/0	-	3/231/0	3/231/0	3/231/0	3/231/0	-
U H A S T	Unbiased HAST 130C/85%RH	96 Hours	-	3/231/0	-	-	-	-	-	-	-	-	3/231/0
W	Wire Pull	Wires	1/76	3/228/0	-	3/228/0	3/228/0	3/228/0	3/228/0	3/300/0	3/228/0	3/300/0	3/228/0

yp e	Test Name / Condition	Durati on	Qual Device: <u>OM</u> <u>AP5</u> <u>912</u> <u>ZV</u> <u>L</u>	QBS Package Reference: <u>AM351</u> <u>7ZCN</u>	QBS Package Reference: <u>CODM</u> <u>IOZW</u> <u>CR</u>	QBS Package Reference: <u>LMK0</u> <u>4616Z</u> <u>CRR</u>	QBS Package Reference: <u>MSP43</u> <u>0FG43</u> <u>9IZCA</u>	QBS Package Reference: <u>MSP43</u> <u>0FR59</u> <u>94IZV</u> <u>W</u>	QBS Package Reference: <u>PCD32</u> <u>15C00</u> <u>AZBH</u> <u>R</u> <u>PCD32</u> <u>15C00</u> <u>BZBH</u> <u>R</u>	QBS Package Reference: <u>TMP5</u> <u>70LS3</u> <u>137BZ</u> <u>WTO</u> <u>Q1</u>	QBS Package Reference: <u>TMS32</u> <u>0DM64</u> <u>46ZW</u> <u>T</u>	QBS Package Reference: <u>TPS65</u> <u>9038T</u> <u>ZWSR</u> <u>Q1</u>	QBS Package Reference: <u>TS3DD</u> <u>R4000</u> <u>ZBAR</u>
BP			/0										
WBS	Ball Bond Shear	Wires	1/76 /0	3/228/0	-	3/228/0	3/228/0	3/228/0	3/228/0	3/300/0	3/228/0	3/300/0	3/228/0

- QBS: Qual By Similarity*

- Qual Device OMAP5912ZVL is qualified at LEVEL3-260CG

- Preconditioning was performed for Autoclave, Unbiased HAST, THB/Biased HAST, Temperature Cycle, Thermal Shock, and HTSL, as applicable

- The following are equivalent HTOL options based on an activation energy of 0.7eV : 125C/1k Hours, 140C/480 Hours, 150C/300 Hours, and 155C/240 Hours

- The following are equivalent HTSL options based on an activation energy of 0.7eV : 150C/1k Hours, and 170C/420 Hours

- The following are equivalent Temp Cycle options per JESD47 : -55C/125C/700 Cycles and -65C/150C/500 Cycles

Quality and Environmental data is available at TI's external Web site: <http://www.ti.com/>

Green/Pb-free Status:

Qualified Pb-Free(SMT) and Green

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