ON Semiconductor®

Product Bulletin

Document #:PB23633Z
Issue Date:20 Oct 2020

Title of Change:	Change package substrate vendor from TDK to ASEK R3.
Effective date:	20 Oct 2020
Contact information:	Contact your local ON Semiconductor Sales Office or Sonya.Yip@onsemi.com
Type of notification:	This Product Bulletin is for notification purposes only. ON Semiconductor will proceed with implementation of this change upon publication of this Product Bulletin.
Change Category:	Assembly Change
Change Sub-Category(s):	Alternative supplier for package substrates

Sites Affected:

ON Semiconductor Sites	**External Foundry/Subcon Sites**
None	Kingpak, Taiwan

Description and Purpose:

ON Semiconductor Intelligent Sensing Group is replacing a package substrate source from TDK to ASEK (R3).

This substrate is identical in design to the existing substrate while the core material is changing from Panasonic R1515B to Panasonic R1515E due to supply disruption.

ASEK R3 is an approved supplier of substrates to ON Semiconductor and is also a qualified supplier for automotive market.

The change does not influence the integrity of the final product and has passed qualification per AEC Q100 requirement.

Appendix

Package Substrate Supplier Change

Purpose of change:

ON Semiconductor assembles imager products at our supplier ASEM in Malaysia. Current BGA substrate supplier ASEK R3 (Taiwan) is being qualified to replace the existing supplier TDK (Japan). ASEK (R3) was jointly owned by ASE and TDK. TDK transferred all embedded SBT production to ASEK R3.

Impact of Changes:

Ensure supply continuity.

No change to Form/Fit/Function/Quality/Reliability/Assembly site and process

Products Involved:

ON SEMI PART #	DESCRIPTION	PB Number	PB Date
AS0140AT*	1/4" 1.0 MEGAPIXE IMAGE SENSOR	PB23633Z	10/2/2020

Categorization of Changes Using ZVEI

Change	ZVEI Change option	ZVEI Change Description	Reason for using this change option	Reason for not using other possibly applicable options	Change acceptance criteria per ZVEI for used change option
Substrate Supplier change from TDK to ASEK (R3).	SEM-PA-16	Change of suppliers for direct materials used in assembly process.	Description fits the proposed change. There is no change in substrate design, material composition, Form, Fit or Function. The only change is the supplier for substrate.	Other possible change category is SEM-PA-09. This change includes change in substrate design and/or routing; both of which are not changing.	No specific test required for SEM-PA-16 (see attached document)

Acceptance Criteria for Change

Changes	ZVEI Change option	ZVEI Change Description	Change acceptance criteria per ZVEI	Additional acceptance criteria applied by ON Semiconductor	Comments
Substrate Supplier change from TDK to ASEK (R3).	SEM-PA-16	Change of suppliers for direct materials used in assembly process.	No specific test required for SEM-PA-16.	Unbiased HAST, Temp Cycling, HTSL, HTOL, TC, TC-PC, SAT, CDPQ-WP, WP, BPS, SP, SDBS, SD, Physical Dimensions, Electrical Distribution.	Tests chosen to ensure comparable reliability to current substrate.

There is no change to the part numbers documented below for the products involved in this change or to ON Semiconductor's specification.

ON SEMI PART #	DESCRIPTION	PB Number	PB Date
AS0140*	1/4" 1.0 MEGAPIXEL IMAGE SENSOR	PB23633Z	10/2/2020

Qualification Report

Test	Name	Test Conditions	End Point Req's	Test Results	(rej/ ss)	(rej/ ss)	(rej/ ss)	(rej/ ss)
				Read Point	Lot A Qual	Lot B Qual	Lot C Qual	842ONBHE Control
Prep	Sample preparation and initial part testing	various	Room, cold, hot	Initial Electrical	0/240	0/240	0/319	0/315
HTSL	High Temp Storage Life	150°C for 504 hours	c = 0, Room, hot	Initial	N/A	N/A	0/80	0/79
				504 hrs	N/A	N/A	0/80	0/79
				1008 hrs	N/A	N/A	0/80	0/79
PC	MSL3 Preconditioning	3 IR @ 260 deg C						
TC-PC	Temp Cycle + Preconditioning	-55/+125 C	c = 0, Room, hot	Post PC Electrical	0/80	0/80	0/80	0/80
				500 cyc	0/80	0/80	0/80	0/80
				1000 cyc	0/80	0/80	0/80	0/80
UHAST-PC	Unbiased Highly Accelerated Stress Test + Preconditioning	Temp= +130°C RH=85% p = 18.8 psig unbiased	c = 0, Room	Post PC Electrical	0/80	0/80	0/80	0/80
				96 hrs	0/80	0/80	0/80	0/80
SAT	Scanning Acoustic Tomography	Compare for Delamination before and after PC	Compare to existing data	Results	0/10	0/10	0/10	N/A
CDPA WP	Custom Destructive Physical Analysis – Wire Pull	Following PC + TC	Min Cpk 1.67 Min. spec 6 g	Results	3.8	2.23	4.44	4.61
WP	Wire Pull		Min Cpk 1.67 Min. spec 6 g	Results	3.53	3.69	8.93	4.67
BPS	Bond Pull Strength	Cond C	Min Cpk 1.67 Min. spec 4 g	Results	4.51	4.74	3.03	3.48
SP	Stitch Pull strength		Min Cpk 1.67 Min. spec 4 g(after decap)	Results	4.25	4.17	7.20	4.63
SDBS	Solder ball Shear Strength		Min Cpk 1.67 Min spec 400g	Results	2.21	2.03	2.74	2.5
SD	Solderability	TA= 245 C	n/a	Results	Per data on family device AS0143 qualification with ASEK R3 substrate			
				Read Point	Lot D Qual	Lot E Qual	Lot F Qual	007ONCN Control
Prep	Sample preparation and initial part testing	various	Room, cold, hot	Initial Electrical	0/80	0/80	0/80	0/80
HTOL	High Temp Op Life	TA = 105°C for 1008 hours	c = 0, Room, cold, hot	Initial	0/80	0/80	0/80	0/80
				1008 hrs	0/80	0/80	0/80	0/80

List of Affected Standard Parts:

***Note**: Only the standard (off the shelf) part numbers are listed in the parts list. Any custom parts affected by this PCN are shown in the customer specific PCN addendum in the PCN email notification, or on the **PCN Customized Portal**.*

AS0140AT2C00XUSM0-TPBR	AS0140AT2C00XUSM0-DRBR	AS0140AT2C00XUSM0-TRBR
AS0140AT2C00XUSM0-DPBR		