Product Change Notification

PI Material Improved Definition Process Change

DESCRIPTION OF CHANGE: Change of Polyimide material from DUR 116A to LTC 9320 using a photo defined process. There will be no change in performance or reliability.

REASON FOR CHANGE: Capacity Expansion

EXPECTED INFLUENCE ON QUALITY/RELIABILTY/PERFORMANCE: None

PART NUMBERS/SERIES/FAMILIES AFFECTED: Please see materials list on the succeeding page.

VISHAY BRAND(s): Vishay Siliconix

TIME SCHEDULE:

Start Shipment Date: Mon Oct 3, 2022

SAMPLE AVAILABILITY: Production using this new process starting in October 2022

PRODUCT IDENTIFICATION: There will be no change to part numbering

QUALIFICATION DATA: For detailed information, refer to the PowerPoint presentation provided with this PCN

This PCN is considered approved, without further notification, unless we receive specific customer concerns before Thu Sep 1, 2022 or as specified by contract.

ISSUED BY: Lance Gurrola, business-americas@vishay.com

For further information, please contact your regional Vishay office.

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Product Change Notification

SQ7414CENW-T1_GE3	SQJ459EP-T1_BE3	SQJ459EP-T1_GE3	SQJ459EP-T2_BE3	SQJ459EP-T2_GE3
SQJ459EP-T2_TE3	SQJ431EP-T1_GE3	SQJ431EP-T2_GE3	SQJ422EP-T1_BE3	SQJ422EP-T1_GE3
SQJ422EP-T2_GE3	SQD50P04-13L_GE3	SQD50P04-13L_T4GE3	SQD50P04-13L_T4SE3	SQD50P04-09L_GE3
SQD50P04-09L_T4GE3	SQD90P04_9M4LT4GE3	SQD90P04-9M4L_GE3	SQM50P04-09L_GE3	SQJ479EP-T1_BE3
SQJ479EP-T1_GE3	SQD50P06-15L_GE3	SQD50P06-15L_T4GE3	SQD50P06-15L_T4SE3	SQM50P06-15L_GE3
SQJB40EP-T1_BE3	SQJB40EP-T1_GE3	SQJ420EP-T1_BE3	SQJ420EP-T1_GE3	SQJ912AEP-T1-GE3-J
SQJ500AEP-T1_BE3	SQJ500AEP-T1_GE3			

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Photosensitive PI

Material and process comparison

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Overview

- Volume has increased in Q1 for parts with PI coating
- Reached capacity limit for this process
  - Partially due to processing TSSA wafers in VSIG for this process step
- We have qualified a new process intended to improve the definition of the PI material
  - motivation to develop the new process is to improve the metal coverage and be able to reduce the scribe width by increasing the slope at the edge of the PI layer
- With the increase of volume plan is to release this new process to increase capacity.
- Plan is to eventually switch fully over to new process

- Difference
  - Photo sensitive material process
  - Existing material DUR 116A
  - New material LTC 9320

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Material comparison

Characterization (Datasheet)		POR material Dur 116A	preferred new material LTC 9320	Dur 8320
		non-photosensitive	Photosensitive Low temp curing possible	Photosensitive
		Cure 1hr@350°C	Cure 1hr@350°C	Cure 1hr@350°C
Tensile strength (Mpa)	MPa	260	210	210
Tensile Elongation (%)	%	80%	85%	100%
Modulus (Gpa)	GPa	3,3	3,8	2,4
Tg (°C)	DMA tanδ	371°C	265°C	294°C
Decomposition Temp (°C)		597°C	595°C	604°C
Dielectric const (0-50%RH)	1MHz	3,1-3,5	3,1-3,5	3,1-3,5
Voltage breakthrough (V/µm)	RT/50%RH	345	345	345
Softbake Film Thickness (µm)		14,5	16	16
Film Thickness after Cure (µm)		8,5	8,5	8,5
Resolution		-	7 µm	7 µm
Development		TMAH	HTRD2/RER600	HTRD2/RER600
Exposure Dose (8,5 µm CFT)		555mJ/cm²	200-800 mJ/cm²	200-800 mJ/cm²
		additional Photoresist necessary	negativ	negativ
Moisture absorption		1,7%	1,2%	1,2%
		with NMP/ NEP	NMP/ NEP free	NMP/ NEP free

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Lithography Process flow

Non-photosensitive- PI-Process
POR (material: Dur 116A)

- Substrate Preparation
  3 min @ 200°C
- Polyamide Coating
- 2x Softbake 3min @ 105°C / 125°C
- Photoresist Coating *
- Exposure @ 550 mJ/cm²
- Development and PA-Etch
- Resist Strip on Coater *
- Microscope inspection

** additional process steps necessary for non-photosensitive PI*

Photosensitive- PI-Process
(material: LTC 9320)

- Substrate Preparation
  2 min @ 150°C
- Polyamide Coating
- 1x Softbake 4min @ 100°C
- Exposure @ 350 mJ/cm²
- Post Exposure Delay
- Development
- Microscope inspection

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