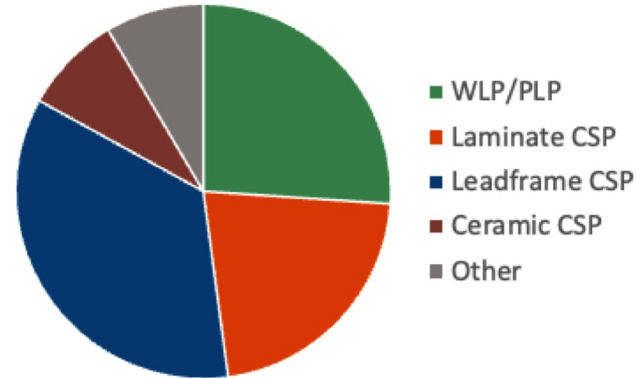


Xiaomi 14

Teardown from TechSearch International, Inc.



165 Packages Examined



Contents and Highlights

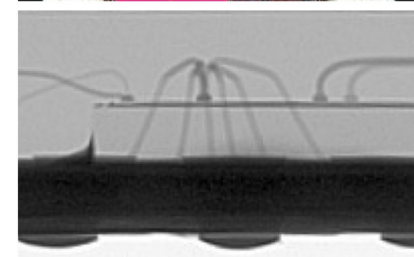
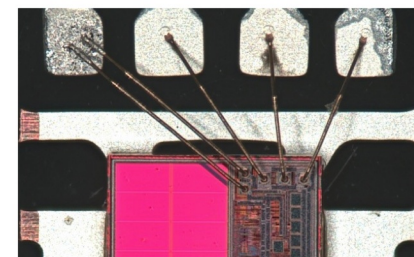
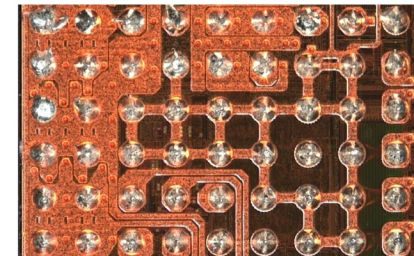
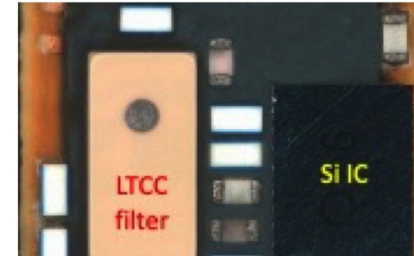
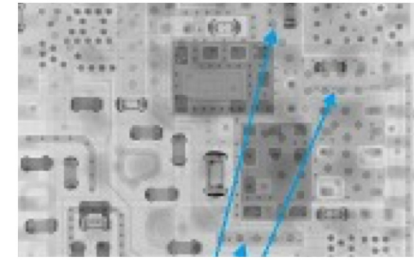
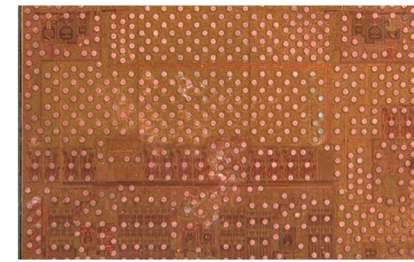
- 215-page report with package quantity summaries, high-resolution photos and x-rays, package dimensions, part numbers and descriptions, thermal management analysis
- 21 additional slides with extra details including main board design and surface area, package-on-package (PoP) with Snapdragon 8 Gen 3 and SK Hynix LPDDR5X, characteristics of die from Snapdragon package and Qualcomm SDR753 RF transceiver, decapsulation of Qualcomm QPM6477 UHB RF PAM, examination of NuVolta NU1652 wireless power receiver and transmitter, Xiaomi Surge P2 fast charging IC and Surge G1 battery management IC, and more
- Teardown includes the Navitas NV6134A GaN power IC, Xiaomi USB-C PD controller, and other chips from the 90W charger power supply that ships with the phone

Teardowns backed by 36 years serving as the industry's trusted source for semiconductor packaging trend analysis

- Examination of all chips with emphasis on assembly and packaging technologies
- Superb quality photographs and x-ray images
- Both the packages and the die within are identified and characterized
- Detailed construction analysis of key chips and packages



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Sample pages from the report and slides

Xiaomi 14

23127PN0CC
category Smartphone (high-end)
released Nov 2023



Package quantities (by package type)

WLP/PLP	
Laminate CSP	
Leadframe CSP	
MIS CSP	
Ceramic CSP	
Other	
TOTAL	165

Total area (mm²)

Bare die solutions included	
Bare die solutions excluded	
Package area	

Package - Any device that has completed final packaging steps. Includes all other packaged devices as well as finished packages mounted on other packages/modules. Covers modules not covered by packages or other packages/modules. Bare die solutions - Finished devices received directly on boards or flex circuits (e.g., chip on board, chip on flex, chip on substrate, etc.).

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Disassembly Images

Interior and thermal management materials (1 of 2)

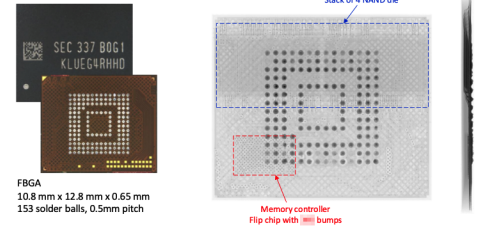


Display Frame - Front side Frame - Back side

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Samsung 256GB UFS 4.0 NAND



Stack of 4 NAND die

Memory controller
Flip chip with wire bonds

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- This particular phone had 256 GB of flash memory storage
- Samsung KLUG4RHH0-B0G1
- Package was not underfilled

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PACKAGE QUANTITY DETAILS

Xiaomi 14

Board-level assembled packages	Board-level	Package-level
WLP/PLP		
Laminate CSP		
Leadframe CSP		
MIS CSP		
Ceramic CSP		
Bare die on board/flex		
Other		
TOTAL	158	

Package-level assembled packages	Package-level	Chip Type
WLP/PLP		
Laminate CSP		
Leadframe CSP		
MIS CSP		
Ceramic CSP		
Other		
TOTAL	7	

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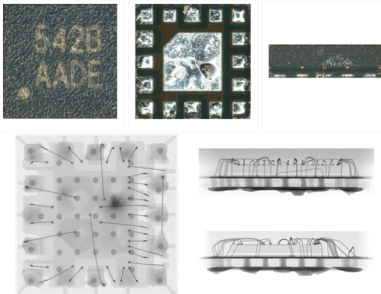
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ASSEMBLY 1 — Main board side 1 (1 of 2)

Xiaomi 14

REF	QTY	COMPONENT	DESCRIPTION	SIZE	THICKNESS	CONTACT COUNT & PITCH	FEATURES	CHIP TYPE
1-6	1	Maxxend	Antenna switch	1.97 mm x 1.97 mm	0.56 mm	0.544 mm	16, 0.4 mm	Wire bond

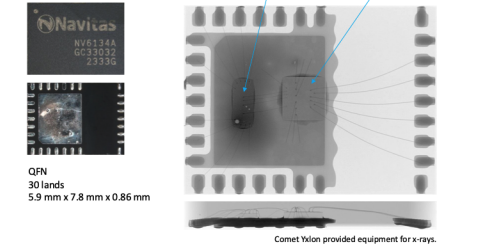
FLGA (Laminate CSP)



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Navitas GaN FET with Integrated Driver



Gate driver IC GaN FET

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- NV6134A GaNFast™ power IC with GaNSense™ technology, which enables real-time sensing of voltage, current, and temperature
- Found in 90W charger power supply that ships with phone
- Chips interconnected with wire bonds

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PACKAGES BY SUPPLIER LOCATION

Xiaomi 14

Supplier HQ	Chip Type
China	Analog/Mixed-signal
Europe	RF analog
Japan	Logic
Korea	Memory
N America	Sensor-Actuator
SE Asia	Image sensor
Taiwan	Discrete
Other	RF Passive
unknown	IPD
unknown	unknown
TOTAL	165

Geographic quantities based on headquarters location of chip suppliers; includes bare die solutions.

Measured width x length; includes bare die solutions.

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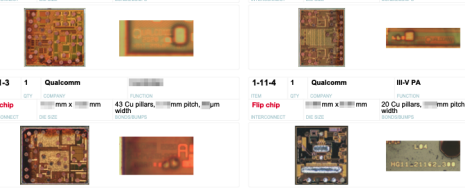
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ASSEMBLY 1 — Main board side 1 (1 of 2)

Xiaomi 14

Component Details Die count: 4

REF	QTY	COMPONENT	DESCRIPTION	SIZE	THICKNESS	CONTACT COUNT & PITCH	FEATURES	CHIP TYPE
1-11-1	1	Qualcomm	Switch	1.08 mm x 1.12 mm	40 Cu pillars	0.15 mm pitch, 0.15 mm width		Flip chip
1-11-2	1	Qualcomm	Switch	1.08 mm x 1.12 mm	28 Cu pillars	0.15 mm pitch, 0.15 mm width		Flip chip
1-11-3	1	Qualcomm	Switch	1.08 mm x 1.12 mm	43 Cu pillars	0.15 mm pitch, 0.15 mm width		Flip chip
1-11-4	1	Qualcomm	Switch	1.08 mm x 1.12 mm	20 Cu pillars	0.15 mm pitch, 0.15 mm width		Flip chip



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List of Packages

REF	QTY	COMPONENT	DESCRIPTION	SIZE	THICKNESS	CONTACT COUNT & PITCH	FEATURES	CHIP TYPE
1.1	1	Qualcomm	SM8550-AB Snapdragon 8 Gen 3 AP with X75 modem	LiPak	FBGA	22.47 x 14.08 x 0.96	4	Flip chip
1.2	1	SK Hynix	H9G466K0H-256GB LPDDR5 DRAM	Memory	FBGA	22.47 x 14.08 x 0.96	4	Flip chip, Stacked die
1.3	1	Samsung Semiconductor	KLUG4RHH0-256GB UFS 4.0 NAND	Memory	FBGA	10.8 x 12.8 x 0.65	153	Flip chip, Wire bond, Stacked die
1.4	1	Qualcomm	PM7350 RF PMIC	Analog/Mix-Sig	WLP			
1.5	1	Qualcomm	QET7100A Envelope tracker	Analog/Mix-Sig	FO-WLP			
1.6	1	Maxxend	MXD8542X Antenna switch	RF Analog	FLGA			
1.7	1	Govio	GM77042 FusedQ™ RF PA (MB-8)	RF Analog	FLGA			
1.8	1	Qualcomm	SDR753 RF Transceiver	RF Analog	FLGA			
1.9	1	AXM	A05919C 3-axis electronic compass	Sensor-Actuator	WLP	0.76 x 0.76 x 0.51	4	Flip chip
1.10	1	Qualcomm	QDM4303 Diversity inductor module	RF Analog	FLGA			
1.11	1	Qualcomm	QPM477 RF PA (SG LNB)	RF Analog	FLGA			
1.12	1	Semtech	RC1amp331ZC ESD protection diode	Discrete	mWLP			
1.13	1	Yanzhip	VC1624 RF switch	RF Analog	FLGA			
1.14	2	Govio	GM1310AC Antenna switch (SP4T)	RF Analog	FLGA			
1.15	1	Qualcomm	WCR7651 FastConnect™ 7800 Series Wi-Fi/Bluetooth SOC	RF Analog	FBGA			
1.16	2	Qualcomm	QXM1083 2.4GHz Wi-Fi/FEM	RF Analog	FLGA			
1.17	2	Qualcomm	QXM1085 5GHz Wi-Fi/FEM	RF Analog	FLGA			
1.18	1	Qualcomm	WCD9395 AptX™ Audio CODEC	Analog/Mix-Sig	FO-WLP			
1.19	1	ETEK Microelectronics	ET460 SPST analog switch	Analog/Mix-Sig	WLP			
1.20	1	Cinea Logic	CS3L418 Smart audio amplifier	Analog/Mix-Sig	WLP			

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