Datasheet CD-ROM

Ver 1.23, July 1999

Bay of Islands, New Zealand

Attention Please!

OKI
People to People Technology

1. Regarding Operation

• This is NOT a music CD. Please do not play it on an ordinary music CD player. It may cause damage to your ears and loudspeakers.

• This CD-ROM is NOT designed for Windows 3.1® and is NOT tested on Windows 98®.

• For best performance, please close all unneeded applications, such as a screen saver.

• Please do not install the Acrobat Reader® provided on this CD-ROM, if your version is newer.

2. Regarding Data

• This CD-ROM contains approximately 270MB data. Please do not attempt to modify any data herein.
All data is copyright OKI and protected by national and international laws.

• Product support and availability may differ by sales area. Please consult your nearest OKI office.

• This CD-ROM is correct as of July 1, 1999. For updated information, please visit our website at
http://www.oki.co.jp/semi/

Dear Customer

People to People Technology

With this product, we offer you a data sheet CD-ROM which contains PDF files in units of data sheets. We are pleased to know that most users considered our previous issues an extremely useful tool and are making efforts at further improvements. Please be so kind as to feed back your findings, criticism, comments or suggestions at your convenience.

If you cannot find a datasheet of interest please check our websites in Japan, USA, Europe or Taiwan as listed below. Though our Company tends to the supply of data in electronic form (CD-ROM or website), we and our overseas affiliates still provide conventional databooks and data sheets upon request by ‘snail mail’.

Thank you and kind regards from your

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Our semiconductor websites are:

in Japan http://www.oki.co.jp/semi/
in North America http://www.okisemi.com/
in Europe http://www.oki-europe.de/
in Taiwan http://www.ost.oki.co.jp/

About this CD-ROM

People to People Technology

Version 1.23, July 1999

This CD-ROM uses the fine software technique and Portable Document File format (PDF) of Adobe Systems Incorporated to present our product datasheets for viewing and printing. It contains no search engine and is therefore easy to use and you may appreciate that no program or data files need to be transferred to your hard disk, except the Acrobat Reader software unless already installed. Your Oki datasheet CD-ROM will run both on Macintosh® and Windows 95® platforms.

If you do not have the Acrobat Reader installed on your hard disk, (then you couldn't see this, but anyway), you can install it from this CD. Please do not install if your version is newer than the one that is on this CD-ROM. If in doubt, please visit Adobe at

http://www.adobe.com/acrobat/

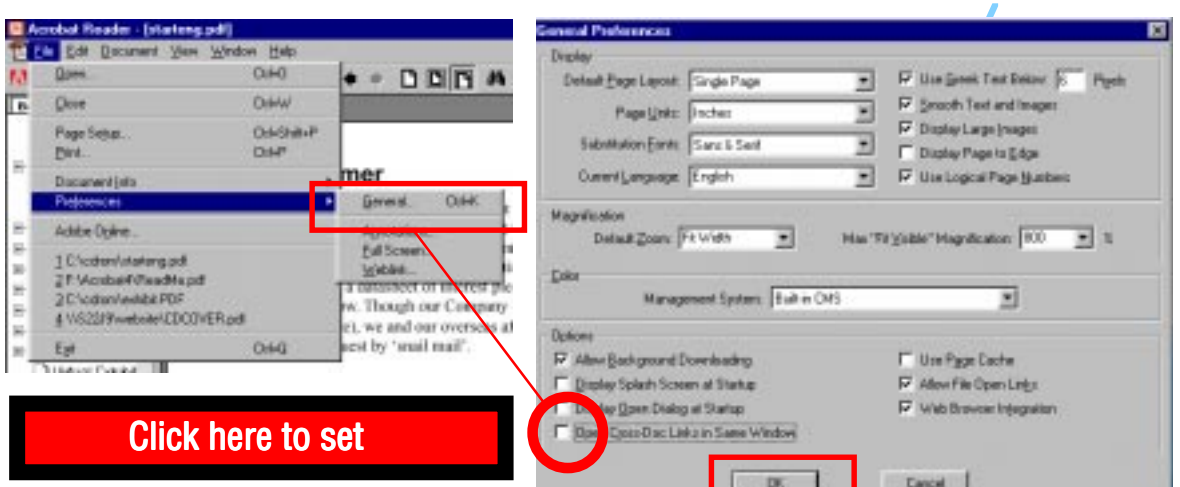
Get Acrobat® Reader

and look for the latest version to download.

Useful Tip

When browsing through several data sheets it is useful to set the Acrobat Reader as follows:

From 'File' select 'Preferences' and then 'General'. In the 'General Preferences' Window uncheck the check box labelled 'Open Cross-Document Links in Same Window'. Click on the 'OK' button to set the preference.



If this preference were selected (box checked) every time you view a data sheet the bookmark tree will close after you return to the root file. If unchecked as recommended the bookmark tree will remain as it was at selection of a data sheet. That makes life easier. To optimise speed and memory usage, we recommend to close all documents which you do not currently refer to.

Changes versus the previous CD-ROM

People to People Technology

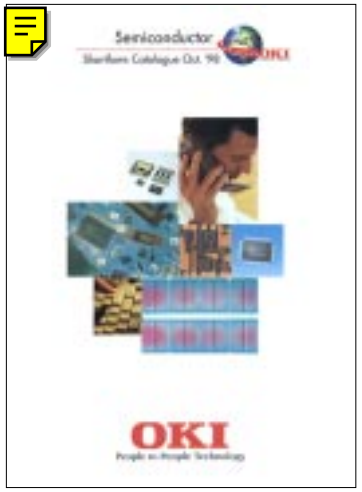
Version History

July 1999	Robert Brenner	Updated, added and modified data sheets.
March 1999	Robert Brenner	Updated, added and modified data sheets.
October 1998	Robert Brenner	Updated and enhanced Data, E only.
July 1998	Robert Brenner with OBK	Data Sheet Files, Updated, E/J.
January 1998	Robert Brenner with OBK	Updated Databook Files, E/J.
September 1997	Robert Brenner with OBK	First Version, Databook Files, E/J.

Related Documents

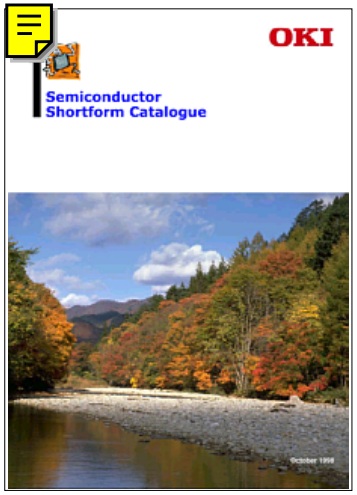
OKI
People to People Technology

From Europe for clients in Europe:

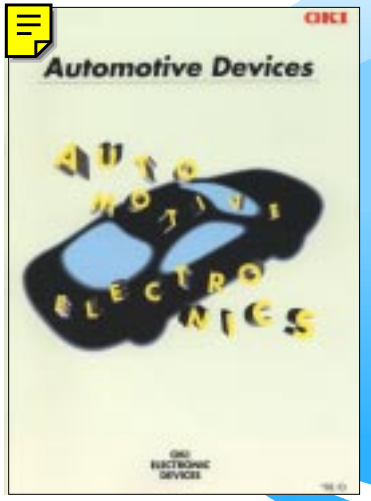


From America for clients in the US and Canada:

From Japan for clients in Asia:



for all clients:



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Legal Information

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· OKI semiconductor products have high impedance inputs therefore including protection circuits to prevent damage caused by static charges. Nevertheless, OKI recommends that adequate precautions are undertaken to avoid voltages beyond the values as specified in the absolute maximum ratings section in the relevant data sheet for each product.

· Application diagrams are only intended to outline the typical circuit layout without necessarily including all information required to construct a working system.

· The products described in this CD-ROM are intended for use in general electronics equipment for commercial applications (e.g., office automation, communication equipment, measurement equipment, consumer electronics, etc.). These products are not authorised for use in any system or application that requires special or enhanced quality and reliability characteristics nor in any system or application where the failure of such system or application may result in the loss or damage of property, or death or injury to humans. Such applications include, but are not limited to, traffic and automotive equipment, safety devices, aerospace equipment, nuclear power control, medical equipment, and life-support systems.

· Certain products may need governmental approval before they can be exported to certain countries. The purchaser assumes the responsibility of determining the legality of export of these parts and will take appropriate and necessary steps, at their own expense, for export to another country.

· Sales and support of given products and product groups may be restricted to certain sales areas. Even though such data sheets are contained in this CD-ROM, they do not neccessarily commit to commercial availability.

· OKI Electric reserves the right to change specifications for the sake of product improvements.

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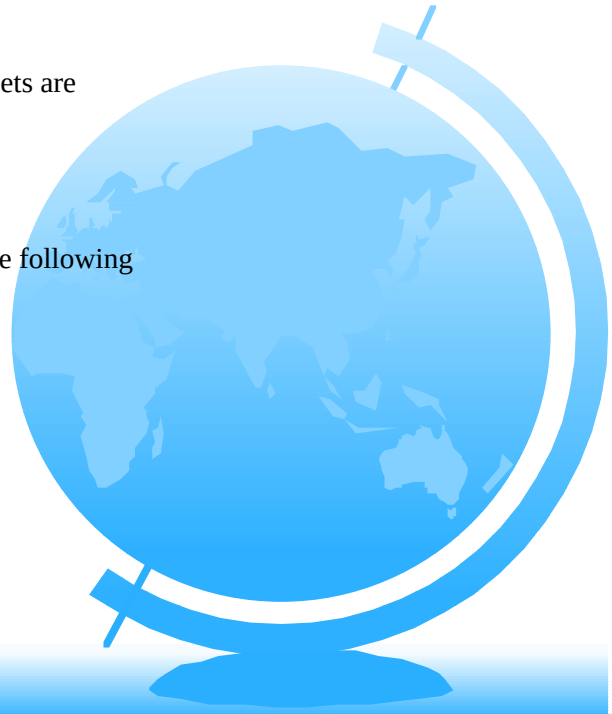

Sound Sample 1

OkiADPCM Speech Playback Simulation

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A selection of three pre-sampled sound files will give you an idea of how the quality of speech varies with the sampling frequency. These 16-bit wave audio files were resolved from 4-bit Oki ADPCM which are representative of the same quality at the same given sampling frequency. Conversion to WAV format naturally entails loss of redundancy.

6.4 KHz High Frequency Audio Sample - 4.47 seconds duration

8.0 KHz High Frequency Audio Sample - 3.78 seconds duration

16.0 KHz High Frequency Audio Sample - 4 seconds duration

Please note that the sound impression will differ by the LSI used for the playback and the quality of the external hardware and audio components.

Sound Sample 2

Noise Canceller MSM7731-01

Datasheet

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This is a performance demonstration of the MSM7731-01 Noise Canceller LSI with human speech recorded in a moving vehicle with opened window. The recorded sound with and without noise cancellation has been converted to two (8kHz, 16-Bit, monoaural) WAV files with different input level conditions that can be selected by software in register CR10 of the MSM7731-01.

	Sound Sample 1	Sound Sample 2
Input level to acoustic echo canceller block:	-12dB	-6dB
Input level to noise canceller block:	+18dB	+18dB
Input level into the line out through the line echo and codec at line side:	-6dB	-12dB

OFF 17dB 13.5dB 11dB 8dB

OFF 17dB 13.5dB 11dB 8dB

Each of the two sound sample files is split into five 20 second-segments with a different cancellation level. Noise Canceller OFF, 17dB, 13.5dB, 11dB and 8dB. Voice cancellation level and audio fidelity are in a current trade-off relationship, in that the optimum setting for a given application should be found perceptively.

Please appreciate the loss in redundancy as a result of conversion to WAV data. and that the sound impression will differ with the quality of the external hardware and audio components used for the reproduction. Please click on the waveforms to play back.

Sound Sample 3

Text-to-Speech Processor MSM7630

Datasheet

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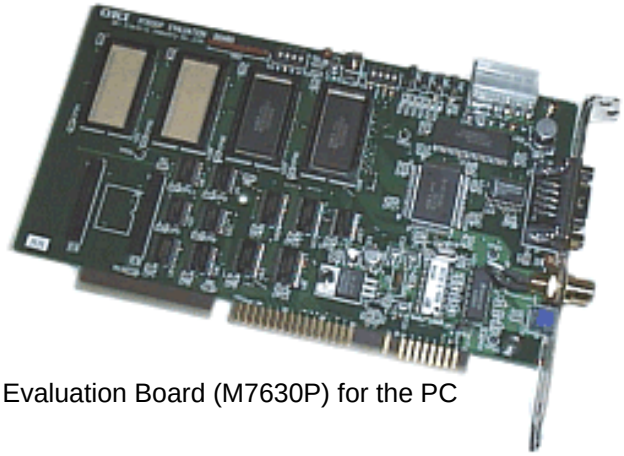
This is a demonstration of the synthesised voice as produced by the OKI MSM7630 Text-to-Speech Processor. For this demonstration the audio output has been recorded into a WAV file which naturally entails loss of redundancy, but still providing a good means of demonstration for this CD-ROM. Click on a flag to listen.

Language	Speaker	Output Sampling	WAV File Data	Literature
	Male	11kHz	11.025kHz/16-Bit/Mono	English Language Manual
	Female	11kHz	11.025kHz/16-Bit/Mono	French Language Manual
	Male	16kHz	22.050kHz/16-Bit/Mono	German Language Manual
	Male	11kHz	11.025kHz/16-Bit/Mono	Spanish Language Manual

Please note that the sound impression will differ with the quality of the external hardware and audio components.



Evaluation Board (M7630P) for the PC

For hands-on evaluation, OKI provides an 8-bit ISA bus compatible plug-in card (182 x 100 mm) and Windows 95® software which allows text input and conversion to speech. A loudspeaker can be connected directly to an RCA outlet. In addition, user dictionary data can be downloaded and control codes be entered to evaluate conversion parameters, such as voice gender, speed, pitch, volume, voice, etc. On-board dictionary OTPs are socketed allowing for replacement with other language version OTPs. By default, two 32MBit OTPs are mounted while two more sockets are free. The M7630P evaluation board provides a jack for an internal PC power cable and a serial port for alternative external control.

Product Selection Guide
Logic and Memory LSIs

OKI Semiconductor

· Specification contained in his selection guide do not replace or substitute the product data sheet.
· For coming products which are not yet in mass production, this CD-ROM may not contain a datasheet.
· If a datasheet for a given product herein is not available on this CD-ROM, please ask for the printed datasheet.

4-Bit Low Power Series

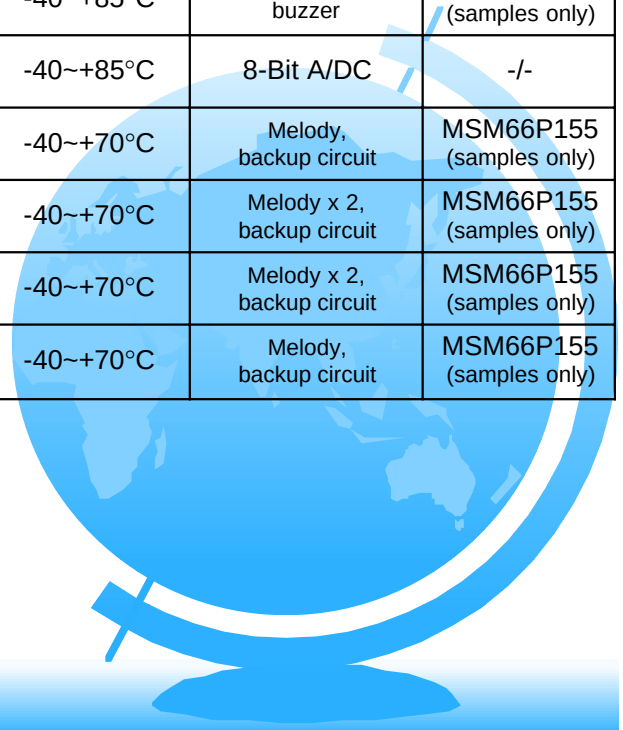
Part Number	Packages	ROM (x17 Bit)	RAM (nibbles)	Ports	LCD Out	Clock [kHz]	Min. Cycle	Supply Voltage	Typ. Current	Operating Temperature	Notes
MSM6545	44-QFP, Chip	4096	256	32	-/-	32.768	61µs	+0.9 / 3.5V	3µA	-20~+70°C	Melody, BCD counter, serial I/O
MSM6546	100-QFP, Chip	4096	256	32	4 x 50/ 3 x 51	32.768	61µs	+0.9 / 3.5V	3µA	-20~+70°C	Melody, BCD counter, serial I/O
MSM6575	44-QFP, Chip	2048	128	32	-/-	32.768	61µs	+0.9 / 3.5V	3µA	-20~+70°C	Melody, BCD counter, serial I/O
MSM6576	44-QFP, Chip	2048	64	29	-/-	32.768	61µs	+0.9 / 1.75V	3µA	-20~+70°C	Melody, level detector, comparator, serial I/O
MSM6577	56S-QFP, Chip	1536	128	12	3 x 25/ 2 x 26	32.768	61µs	+0.9 / 3.5V	3µA	-20~+70°C	Melody, HALT release timer, serial I/O
MSM6641	24-SOP	4096	64	18	-/-	0.9~1.1MHz	16µs	+1.2~3.5V	300µA	-20~+70°C	Remote control, WDT
MSM6641E	24-SOP	4096	64	18	-/-	0.9~1.1MHz	16µs	+2.0~3.5V	1mA	-20~+70°C	Remote control, WDT

4-Bit OLMS63K Series

Part Number	Packages	ROM (words)	RAM (bits)	Ports	LCD Out	Clock [kHz]	Min. Cycle	Supply Voltage	Typ. Current	Operating Temperature	Notes	OTP-Version
ML63193	128-QFP, 128-pad Chip	64k	2048 x 4	24	64 x 16	32.768 / 2000	61 / 1µs	+0.9 ~ 2.7V/ +1.8 ~ 5.5V	700	-20~+70°C	Melody, level detector, serial I/O, 30 ~ 80kHz RC oscillator	ML63Q193
ML63293	176-LQFP, 149-pad Chip				68 x 32							ML63Q293
ML63512	48-TQFP, 64-TQFP	4096	128 x 4	32/36	-/-	32.768 / 1000	61 / 2µs	+0.9 ~ 2.7V/ +1.8 ~ 3.5V	400µA	-20~+70°C	Melody, level detector, serial I/O, 30 ~ 80kHz RC oscillator	-/-
ML63514		8160	256 x 4									
MSM63182	128-QFP, 107-pad Chip	4064	384 x 4	36	8/16 x 32	32.768 / 2000	61 / 1µs	+0.9 ~ 5.5V	6µA	-20~+70°C	Buzzer, battery monitor	MSM63P180
MSM63184B	128-QFP, 123-pad Chip	8160	640 x 4	44	8/16 x 40	32.768 / 2000	61 / 1µs	+0.9 ~ 5.5V	6µA	-20~+70°C	Buzzer, battery monitor, serial I/O	MSM63P180
ML63187	100-TQFP, 100-QFP, Chip	16352	1024 x 4	8	1~16 x 45	32.768 / 2000	61 / 1µs	+0.9 ~ 5.5V	6µA	-20~+70°C	Melody, battery monitor, 412 instructions	-/-
MSM63188	176-LQFP, 159-pad Chip	16352	3584 x 4	56	8/16 x 64	32.768 / 2000	61 / 1µs	+0.9 ~ 5.5V	6µA	-20~+70°C	Melody, battery monitor, mul/div, serial I/O	MSM63P180
ML63189	128-QFP, Chip	32768	1536 x 4	20	1~16 x 64	32.768 / 2000	61 / 1µs	+0.9 ~ 5.5V	6µA	-20~+70°C	Melody, battery monitor, 412 instructions	-/-
MSM63P180	176-LQFP	16352 (PROM)	3584 x 4	64	8/16 x 64	32.768 / 2000	61 / 1µs	+1.45 ~ 5.5V	20µA	0~+65°C	Melody, battery monitor, mul/div, serial I/O	-/-
MSM63238	80-QFP 159-pad Chip	16384	1024 x 4	50	-/-	32.768 / 2000	61 / 1µs	+0.9 ~ 5.5V	2mA	-20~+70°C	POCSAG, melody, battery monitor, serial I/O, 38.4/76.8kHz oscillator	MSM63P238
ML63326	176-LQFP, Chip	24K	1536	42	1~16 x 64	32.768 / 2000	61 / 1µs	+2.0 ~ 5.5V	TBA	-20~+70°C	Battery monitor, speech synthesis, 1MBit int. speech ROM	-/-

4-Bit OLMS64K Series

Part Number	Packages	ROM (bytes)	RAM (bits)	Ports	LCD Out	Clock [kHz]	Min. Cycle	Supply Voltage	Typ. Current	Operating Temperature	Notes	OTP-Version
MSM64162A	64-QFP, 80-QFP, Chip	2016	128 x 4	24	2/3/4 x 20	32.768 / 400	91.6 / 7.5µs	+1.25 ~ 1.7V/ +2.0 ~ 3.5V	5µA	-40~+85°C	CR oscillator, buzzer, battery monitor	MSM66P164 (samples only)
MSM64162D	64-QFP, 80-QFP, Chip	2016	128 x 4	24	2/3/4 x 22/21/20	32.768	91.6 / 7.5µs	+1.25 ~1.7V/ +2.0 ~ 3.5V	5µA	-40~+85°C	CR oscillator, buzzer, battery monitor	MSM66P164 (samples only)
MSM64164C	80-QFP, Chip	4064	256 x 4	28	2/3/4 x 32/3130	32.768 / 400	91.6 / 7.5µs	+1.25 ~ 1.7V/ +2.0 ~ 3.5V	5µA	-40~+85°C	CR oscillator, buzzer, 5V I/F	MSM66P164 (samples only)
MSM64167	80-QFP, Chip	4064	256 x 4	20	2/3/4 x 29/28/27	32.768 / 700	91.5 / 4.3µs	+2.6 ~ 3.6V	5µA	-40~+85°C	Dual slope, buzzer, 5V I/F	-/-
ML64168	80-QFP	8160	512 x 4	20	2/3/4 x 120/93/64	32.768 / 700	91.6 / 4.3µs	+1.25 ~ 1.7V/ +2.0 ~ 3.5V	5µA	-40~+85°C	2-ch CR oscillator, buzzer	MSM66P168 (samples only)
MSM64431	24-DIP, 24-SOP	1024	64 x 4	12	-/-	4200	0.714µs	+4.5 ~ 5.5V	3mA	-40~+85°C	8-Bit A/DC	-/-
MSM64152A MSM64152AL	60-QFP, Chip	1504	128 x 4	12	3/4 x 26	32.768	91.6µs	+1.25 ~ 1.7V (A) +2.5 ~ 3.5V (AL)	3µA	-40~+70°C	Melody, backup circuit	MSM66P155 (samples only)
MSM64153A MSM64153AL	80-QFP, Chip	3040	160 x 4	14	3/4 x 36	32.768	91.6µs	+1.25 ~ 1.7V (A) +2.5 ~ 3.5V (AL)	3µA	-40~+70°C	Melody x 2, backup circuit	MSM66P155 (samples only)
MSM64155A MSM64155AL	100-QFP, Chip	4064	256 x 4	18	3/4 x 60	32.768	91.6µs	+1.25 ~ 1.7V (A) +2.5 ~ 3.5V (AL)	3µA	-40~+70°C	Melody x 2, backup circuit	MSM66P155 (samples only)
MSM64158A MSM64158AL	64-QFP, Chip	2528	128 x 4	10	3/4 x 36	32.768	91.6µs	+1.25 ~ 1.7V (A) +2.5 ~ 3.5V (AL)	3µA	-40~+70°C	Melody, backup circuit	MSM66P155 (samples only)

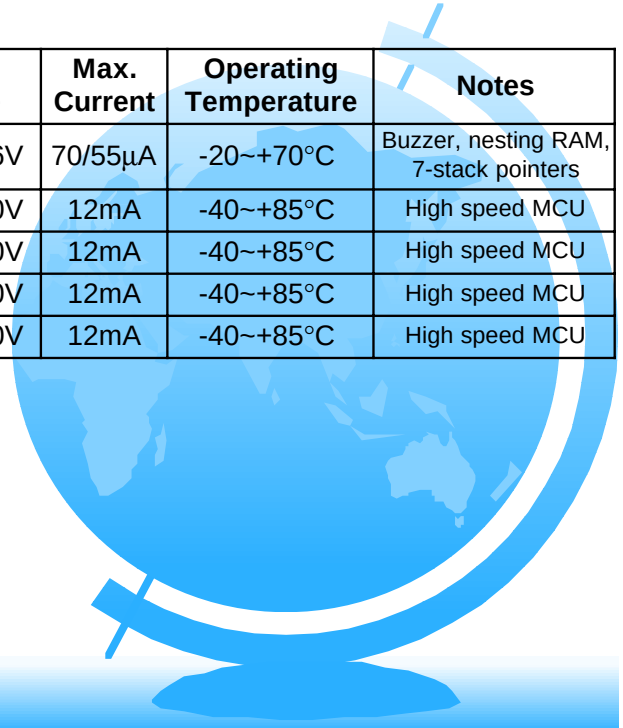


4-Bit OLMS6052/OLMS64 Series

Part Number	Packages	ROM (Bit)	RAM (Bit)	Ports	LCD Out	Clock [kHz]	Min. Cycle	Supply Voltage	Typ. Current	Operating Temperature	Notes
MSM5052	56-QFP, 80-QFP, Chip	1280x14	62x4	16	2 x 26	32.768	122.1µs	-1.65 ~ -1.25V	100µA	-20~+75°C	Thermistor I/F, buzzer, 4x4 key matrix
MSM6051	Chip	2560x14	120x4	13	3 x 63	32.768	91.5µs	-1.65 ~ -1.25V	3µA	-20~+75°C	Melody output
MSM6351	100-QFP, Chip	4096x14	1024x4	20	3/4 x 63	32.768	61µs	-1.75 ~ -1.25V -3.5 ~ -2.6V	3µA	-20~+70°C	WDT, melody, 8-or 5-bit serial port
MSM6352	28/40-DIP, 42-SDIP, 44-QFP	2048x14	640x4	28	-/-	3580	17.9µs	+2.0 ~ 5.5V	6.8mA	-20~+75°C	DTMF, WDT, 5-level stack
MSM6353	42-SDIP, 44-QFP	4096x14	1024x4	20	-/-	32.768	61µs	-1.75 ~ -1.25V -3.5 ~ -2.2V	3µA	-20~+70°C	WDT, 8-or 5-bit serial port

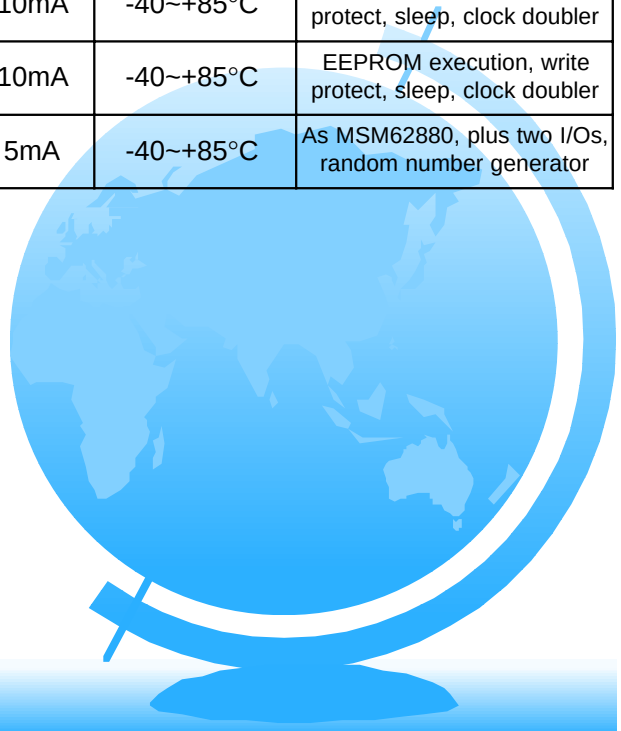
4-Bit OLMS50/60/63 Series

Part Number	Packages	ROM (Bytes)	RAM (Bit)	Ports	LCD Out	Clock [MHz]	Min. Cycle	Supply Voltage	Max. Current	Operating Temperature	Notes
MSM6502B/12	56S-QFP	2000	128 x 4	12	4 x 27	32.768kHz	91.5µs	+2.4 ~ 3.6V	70/55µA	-20~+70°C	Buzzer, nesting RAM, 7-stack pointers
MSM6404A	42-DIP, 44-QFP, Chip	4000	256 x 4	36	-/-	4.2	0.952µs	+3.0 ~ 6.0V	12mA	-40~+85°C	High speed MCU
MSM6408	42-DIP, 44-QFP, Chip	8096	256 x 4	36	-/-	4.0	1µs	+3.0 ~ 6.0V	12mA	-40~+85°C	High speed MCU
MSM6411A	16-DIP, 24-SOP, Chip	1024	32 x 4	11	-/-	4.2	0.952µs	+3.0 ~ 6.0V	12mA	-40~+85°C	High speed MCU
MSM6422	24-DIP, 24-SOP, Chip	2048	64 x 4	19	-/-	4.2	0.952µs	+3.0 ~ 6.0V	12mA	-40~+85°C	High speed MCU



IC Card Controller

Part Number	Packages	EEPROM (bytes)	ROM (bytes)	RAM (bytes)	Page Write (bytes)	Instruc-tions	Cycle Time	Supply Voltage	Max. Current	Operating Temperature	Notes
MSM62705	Chip/COB	0.5K	2K	64	-/-	100	800ns @5MHz	+4.5~5.5V	10mA	0~+70°C	-/-
MSM62715	Chip/COB	1K	6K	128	8	116	800ns @5MHz	+4.5~5.5V	16mA	0~+70°C	EEPROM execution, write protect
MSM62720	Chip/COB	2K	3K	128	-/-	100	800ns @5MHz	+4.5~5.5V	10mA	0~+70°C	-/-
MSM62725	Chip/COB	2K	8K	192	16	114	800ns @5MHz	+4.5~5.5V	16mA	0~+70°C	EEPROM execution, write protect
MSM62745	Chip/COB	4K	8K	192	32	116	800ns @5MHz	+4.5~5.5V	16mA	0~+70°C	-/-
MSM62785	Chip/COB	8K	8K	192	32	114	800ns @5MHz	+4.5~5.5V	16mA	0~+70°C	-/-
MSM62840	Chip/COB	4K	10K	316	32	294	800ns @5MHz 400ns @10MHz	+2.7~5.5V	10mA	-40~+85°C	EEPROM execution, write protect, sleep, clock doubler
MSM62880	Chip/COB	8K	12K	380	32	294	800ns @5MHz 400ns @10MHz	+2.7~5.5V	10mA	-40~+85°C	EEPROM execution, write protect, sleep, clock doubler
MSM62881	Chip/COB	8K	16K	424	32	294	800ns @5MHz 400ns @10MHz	+2.7~5.5V	5mA	-40~+85°C	As MSM62880, plus two I/Os, random number generator



8-Bit Intel-Type Controller

Part Number	Packages	ROM (bytes)	RAM (bytes)	Ports	Instruc-tions	Cycle Time	Supply Voltage	Max. Current	Operating Temperature	ROM-less
MSM83C154S	40-DIP, 44-QFP, 44-TQFP, 44-QFJ	16K	256	32 and SIO, UART	111	500ns @24MHz	+2.2~6.0V	35mA	-40~+85°C -40~+125°C	MSM80C154S Piggyback: MSM80C154H

MSM83C154S operating margins

Within Ta = -40 ~ +85°C:

1 ~ 3MHz (V_{CC} = +2.2 ~ 6.0V)

1 ~ 12MHz (V_{CC} = +3.0 ~ 6.0V)

1 ~ 24MHz (V_{CC} = +4.5 ~ 6.0V)

Within Ta = -40 ~ +125°C:

1 ~ 16MHz (V_{CC} = +4.0 ~ 6.0V)

1 ~ 20MHz (V_{CC} = +4.5 ~ 6.0V)

(With external clock from DC to maximum clock frequency)

8-Bit OLMS65K Series

Part Number	Packages	ROM (bytes)	RAM (bytes)	Ports	LCD Out	Clock	Cycle Time	Supply Voltage	Max. Current	Operating Temperature	Notes	OTP-Version
MSM65X227	100-TQFP	4K EEPROM	1024	48	-/-	DC ~ 6MHz	667ns	+4.5~5.5V	40mA	-40~+85°C	UART, TBC 8-bit/4-ch ADC, 8-bit ART x 2, WDT	-/-
MSM65512A	44-DIP, 44-QFP, 44-QFJ	8K	256	32	-/-	DC ~ 10MHz	400ns	+2.7~5.5V	40mA	-40~+85°C	Serial I/O, UART WDT, ART, TBC, FRC	MSM65P512A
MSM65516A	64-SDIP, 64-QFP, 68-QFJ	32K	640	56	-/-	DC ~ 10MHz	400ns	+2.7~5.5V	15mA	-40~+85°C	Serial I/O, UART WDT, ART, TBC, FRC	MSM65P516
MSM65518	64-SDIP, 64-QFP	32K	384 + 12KB SRAM	56	-/-	DC ~ 10MHz	400ns	+2.7~5.5V	20mA	-40~+85°C	Serial I/O, UART WDT, ART, TBC, FRC	-/-
MSM65522	40-DIP, 42-SDIP, 44-QFP, 44-QFJ	8K	384	36	-/-	DC ~ 10MHz	400ns	+2.7~5.5V	15mA	-40~+85°C	Serial I/O, 8-bit/8-ch ADC, WDT, ART, TBC, FRC	MSM65P524A
MSM65524A	64-SDIP, 64-QFP, 68-QFJ	16K	384	52	-/-	DC ~ 10MHz	400ns	+2.7~5.5V	40mA	-40~+85°C	Serial I/O, 8-bit/8-ch ADC, PWM, WDT, ART x 4, TBC	MSM65P522
MSM65344A	80-QFP	12K	384	48	16 seg / 4 com	DC ~ 10MHz	400ns	+2.7~5.5V	10mA	-20~+70°C	Serial I/O, 8-bit/6-ch ADC, PWM, buzzer, ART, TBC	MSM65P344A (sample only)
MSM65353A	100-QFP	16K	384	50	32 seg / 4 com	DC ~ 10MHz/ 32.768kHz	400ns/ 122µs	+2.7~5.5V	16mA	-20~+70°C	Serial I/O, 8-bit/8-ch ADC, ART, TBC, WTC, remote control, buzzer	MSM65P354 (sample only)
MSM65354	100-QFP	24K	640	50	32 seg / 4 com	DC ~ 10MHz/ 32.768kHz	400ns/ 122µs	+2.7~5.5V	16mA	-20~+70°C		
MSM65355	100-QFP	16K	384	65	16 seg / 4 com	DC ~ 10MHz/ 32.768kHz	400ns/ 122µs	+2.7~5.5V	50mA	-20~+70°C	Serial I/O, 8-bit/8-ch ADC, PWM, remote control, buzzer, WDT, ART, TBC, WTC	MSM65P355

16-Bit OLMS66K Series

Part Number	Packages	ROM (bytes)	RAM (bytes)	Ports	ADC	Clock	Cycle Time	Supply Voltage	Max. Current	Operating Temperature	Notes	OTP-Version
MSM66201A	64-SDIP, 64-QFP, 68-QFJ	16K	512	48	10-bit/ 8-ch	DC ~ 10MHz	400ns	+4.5~5.5V	40mA	-40~+85°C	Serial I/O, WDT, Multifunc Timer, PWM	MSM66P201
MSM66207A		32K	1K									MSM66P207
MSM66507A	84-QFJ	48K	1.5K	69	10-bit/ 10-ch	DC ~ 24MHz	167ns	+4.5~5.5V	130mA	-40~+85°C	Serial I/O, WDT, RTO, FRC	MSM66P507
MSM66509	128-QFP	64K	2K	108	10-bit/ 16-ch	DC ~ 32MHz	125ns	+4.5~5.5V	140mA	-40~+85°C	Serial I/O, WDT, RTO, FRC	MSM66P509
MSM66589	128-QFP	96K	4K	110	10-bit/ 16-ch	DC ~ 20MHz	100ns	+4.5~5.5V	140mA	-40~+85°C	Serial I/O, WDT, RTO, FRC	MSM66P589 Flash: MSM66Q589
ML66514	64-SDIP (64-QFP)	32K	1K	50	10-bit/ 8-ch	1 ~ 25MHz	80ns	+4.5~5.5V	TBA	-40~+85°C	Serial I/O, WDT, RTO, FRC, PWM. 3-PHASE PWM (6 outputs)	Flash: MSM66Q515
ML66517	80-QFP	64K	2K	64								Flash MSM66Q517
MSM66573	100-TQFP	64K	4K	83	10-bit/ 8-ch	DC ~ 30MHz	67ns	+4.5~5.5V	TBA	-30~+70°C	UART,Serial I/O, WDT, ART, FRC, 8-Bit DAC x 2	MSM66P573 Flash: MSM66Q573
MSM66577	100-TQFP	128K	4K	82		DC ~ 30MHz	67ns	+4.5~5.5V				Flash: MSM66Q577
MSM66579L			12K			DC ~ 28MHz	71ns	+2.4~3.6V				Flash: MSM66Q579
MSM66587A	100-TQFP	64K	2K	80	8-bit/ 4-ch	DC ~ 20MHz	100ns	+2.7~5.5V	70mA	-30~+70°C	Serial I/O, FRC, RTO, ART	MSM66P587 Flash: MSM66Q587

Microcontroller

OKI Semiconductor

32-Bit ARM7TMDI™ Core RISC MCU

Part Number	Packages	ROM (KB)	RAM (KB)	Ports	ADC	Clock [MHz]	Min. Cycle	Interrupts ext/int/levels	Supply Voltage	Operating Temperature	Notes
ML670100	144-LQFP	128	4	72	8-bit x 8	25	25ns	9 / 19 / 8	+3.0 ~ 3.6V	-40~+85°C	General Purpose MCU, 16-bit x 6 timer, ARLT, PWM, WDT, Memory Controller, Serial port
ML671000	128-QFP	-/-	4	72	-/-	24	25ns	9 /12 / 9	+3.0 ~ 3.6V	-30~+70°C	as ML670100, plus full speed USB Device Controller, 16550A UART, DMA Controller

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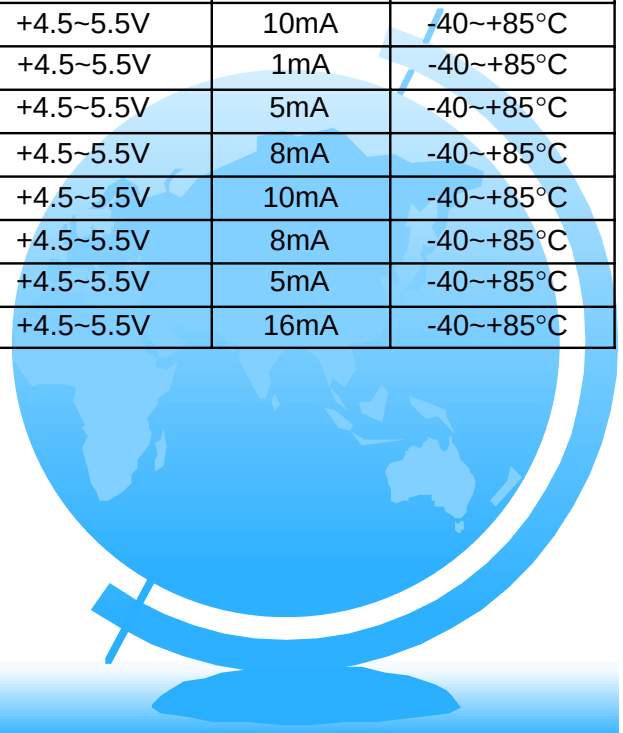
8-Bit Intel-Type CPU

Part Number	Packages	CPU	Clock	Supply Voltage	Max. Current	Operating Temperature
MSM80C85AH	40-DIP, 44-QFP, 44-QFJ	8-Bit	5MHz	+4.5~5.5V	22mA	-40~+85°C
MSM80C86A-10	40-DIP, 56L-QFP, 44-QFJ	16-Bit	10MHz	+4.75~5.25V	100mA	-40~+85°C
MSM80C88A-10	40-DIP, 56L-QFP, 44-QFJ	8-Bit	10MHz	+4.75~5.25V	100mA	-40~+85°C

Intel-Type I/Os

Part Number	Packages	Function	Supply Voltage	Max. Current	Operating Temperature
MSM81C55-5	40-DIP, 44-QFP, 44-QFJ	2048 bit SRAM with I/O and timer	+4.5~5.5V	5mA	-40~+85°C
MSM82C37B-5	40-DIP, 44-QFP, 44-QFJ	Programmable DMA controller	+4.5~5.5V	10mA	-40~+85°C
MSM82C43	24-DIP, 24-SOP	I/O port expander	+4.5~5.5V	1mA	-40~+85°C
MSM82C51A-2	28-DIP, 32-SSOP, 28-QFJ	Programmable communications interface	+4.5~5.5V	5mA	-40~+85°C
MSM82C53-2	24-DIP, 32-SSOP, 28-QFJ	Programmable interval timer	+4.5~5.5V	8mA	-40~+85°C
MSM82C54-2	24-DIP, 32-SSOP, 28-QFJ	Programmable counter	+4.5~5.5V	10mA	-40~+85°C
MSM82C55A-2	40-DIP, 44-QFP, 44-QFJ	Programmable peripheral interface	+4.5~5.5V	8mA	-40~+85°C
MSM82C59A-2	28-DIP, 32-SSOP, 28-QFJ	Programmable interrupt controller	+4.5~5.5V	5mA	-40~+85°C
MSM82C84A-2	18-DIP, 24-SOP, 20-QFJ	Clock generator (8MHz) and driver	+4.5~5.5V	16mA	-40~+85°C



Real-Time Clocks

Part Number	Packages	Function	Supply Voltage	Max. Current	Operating Temperature
MSM58321	16-DIP	8/16-Bit RTC	+2.2~6.0V	500µA	-30~+85°C
MSM6242	18-DIP, 24-SOP	8/16-Bit RTC, calendar	+2.2~6.0V	30µA	-40~+85°C
MSM62X42B	18-DIP, 24-SOP	8/16-Bit RTC, calendar, internal crystal	+2.2~5.5V	30µA	-40~+85°C
MSM6542-1 MSM6542-2 MSM6542-3	18-DIP, 20-SOP,24-DIP, 24-SOP	8/16-Bit RTCs, calendar with periodic and alarm output	+2.2~6.0V	30µA	-40~+85°C
MSM6782-01	8-DIP, 8-SOP	Serial RTC, calendar	+2.2~5.5V	20µA	-40~+85°C
MSM9070-02	18-DIP, 24-SOP	4-bit parallel RTC, calendar	+2.7~5.5V	20µA	-40~+85°C
MSM9070-03	16-DIP, 16-SOP	4-bit parallel RTC, calendar (no ALE pin)	+2.7~5.5V	20µA	-40~+85°C

ADPCM Codecs

Part Number	Packages	ITU-T	Coding	Analog Output	Clock [MHz]	Supply Voltage	Max. Current	Operating Temperature	Notes
MSM7540	28-SOP	G.711, G.726	A-Law, linear	2.226Vp-p, 350Ω +120nF	10.368	+4.5~5.5V	24mA	-25~+70°C	-/-
MSM7540L	28-SOP	G.711, G.726	A-Law, linear	1.3Vp-p, 350Ω +120nF	10.368	+2.7~3.6V	12mA	-25~+70°C	Low power
MSM7560	28-SOP	G.711, G.726	A-Law, linear	2.226Vp-p, 350Ω +120nF	10.368	+4.5~5.5V	24mA	-25~+70°C	-/-
MSM7560L	28-SOP	G.711, G.726	A-Law, linear	1.3Vp-p, 350Ω +120nF	10.368	+2.7~3.6V	12mA	-25~+70°C	Low power
MSM7570	32-TSOP I	G.711, G.726	µ-Law, A-Law	2.226Vp-p, 350Ω +120nF	19.2/12.288	+4.5~5.5V	28mA	-25~+70°C	DTMF
MSM7570L-01 MSM7570L-02	32-TSOP I	G.711, G.726	µ-Law, A-Law	1.3Vp-p, 350Ω +120nF	19.2/12.288	+2.7~3.6V	14mA	-25~+70°C	Low power, DTMF, 01/02 differ in ringing tone frequencies
MSM7590L-01	32-TSOP I	G.711, G.726	µ-Law, A-Law	1.3Vp-p, 350Ω +120nF	10.368	+2.7~3.6V	14mA	-25~+70°C	Low power, DTMF
MSM7708-02	64-TQFP	G.711, G.721	µ-Law, A-Law	1.3Vp-p, 350Ω +120nF	19.2	+2.7~3.6V	11mA	-25~+70°C	Low power, Memory I/F, DTMF, VOX
MSM7718-01	100-QFP	G.726	µ-Law, A-Law	1.3Vp-p, 350Ω +120nF	9.6/19.2	+2.7~3.6V	22mA	-25~+70°C	Low power, 23ms echo canceller, DTMF, VOX

ADPCM Transcoder

Part Number	Packages	ITU-T	Interface	Analog Output	Clock	Supply Voltage	Max. Current	Operating Temperature	Notes
MSM7580	28-SOP	G.726	PCM	-/-	-/-	+4.5~5.5V	10mA	-30~+80°C	2-channel transcoder
MSM7581	100-TQFP	G.726	PCM	-/-	-/-	+2.7~5.5V	8mA	-30~+80°C	4-channel transcoder

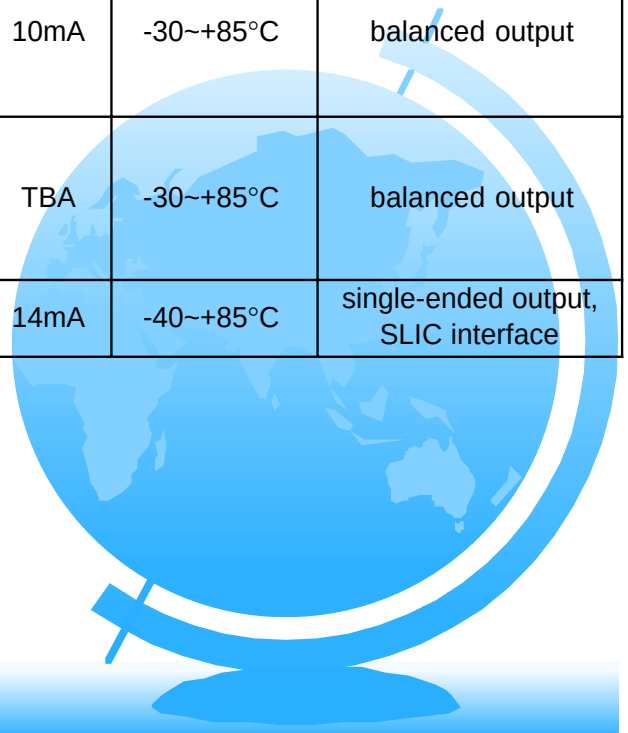
PCM Voice Codecs

Part Number	Packages	ITU-T	Coding	Analog Output	Paths	Supply Voltage	Max. Current	Operating Temperature	Notes
MSM7507-01	24-SOP, 20-SOP	G.711	μ-Law/A-Law	1.3Vp-p, 600Ω	1	+4.75~5.25V	10mA	-30~+85°C	balanced output
MSM7507-02			μ-Law						
MSM7507-03			A-Law						
MSM7533V	20-DIP, 24-SOP	G.711	μ-Law/A-Law	3.4Vp-p, 600Ω	2	+4.75~5.25V	14mA	-30~+85°C	balanced output
MSM7533H			μ-Law						
MSM7534			A-Law						
MSM7578V	16-DIP, 24-SOP, 20-SSOP	G.711	μ-Law/A-Law	2.4Vp-p, 600Ω	1	+4.75~5.25V	9mA	-30~+85°C	single-ended output
MSM7578H			μ-Law						
MSM7579			A-Law						
MSM7702-01	20-SSOP	G.711	μ-Law/A-Law	2.0Vp-p, 1.2kΩ	1	+2.7~3.8V	9mA	-30~+85°C	balanced output
MSM7702-02			μ-Law						
MSM7702-03			A-Law						
MSM7704-01	20-DIP, 24-SOP	G.711	μ-Law/A-Law	2.0Vp-p, 1.2kΩ	2	+2.7~3.8V	14mA	-30~+85°C	single-ended output
MSM7704-02			μ-Law						
MSM7704-03			A-Law						

Continued on next page.

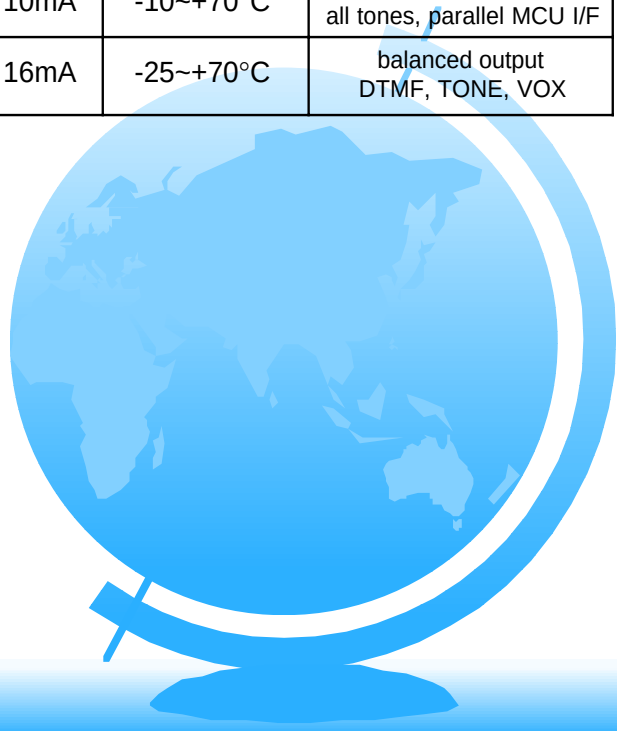
PCM Voice Codecs, cont'd

Part Number	Packages	ITU-T	Coding	Analog Output	Paths	Supply Voltage	Max. Current	Operating Temperature	Notes
MSM7705-01	44-QFP	G.711	µ-Law/A-Law	3.4Vp-p, 600Ω	4	+4.75~5.25V	28mA	-30~+85°C	single-ended output
MSM7705-02			µ-Law						
MSM7705-03			A-Law						
MSM7717-01	20-SSOP	G.711	µ-Law/A-Law	2.0Vp-p, 1.2kΩ	1	+2.7~3.8V	14mA	-30~+85°C	balanced output
MSM7717-02			µ-Law						
MSM7717-03			A-Law						
ML7000-01	20-SSOP, 24-SOP	G.714	µ-Law/A-Law	1.3Vp-p, 1.2kΩ	1	+4.75~5.25V	10mA	-30~+85°C	balanced output
ML7000-02			µ-Law						
ML7000-03			A-Law						
ML7001-01	20-SSOP, 24-SOP	G.714	µ-Law/A-Law	TBA	1	+2.7~3.6V	TBA	-30~+85°C	balanced output
ML7001-02			µ-Law						
ML7001-03			A-Law						
ML7019	24-SOP	G.714	µ-Law/A-Law	3.4Vp-p/600Ω	2	+4.75~5.25V	14mA	-40~+85°C	single-ended output, SLIC interface



Linear & Multi-function Codecs

Part Number	Packages	ITU-T	Coding	Analog Output	Paths	Supply Voltage	Max. Current	Operating Temperature	Notes
MSM7716	30-SSOP, 32-TSOP I	G.714 @8kHz	14-bit linear, 2's complement	2.0Vp-p / 1.0kΩ	1	+2.7~3.6V	14mA	-30~+85°C	balanced output
MSM7728	30-SSOP	G.714 @8kHz	14-bit linear, 2's complement	2.2Vp-p / 1.0kΩ	1	+2.5~3.6V	14mA	-30~+85°C	balanced output, earphone output (600Ω , 1mW)
MSM7732	30-SSOP	-/-	μ-Law, A-Law, 14-bit linear, 2's complement	1.3Vp-p / (32Ω/20kΩ)	1	+2.4~3.3V	11mA	-40~+85°C	Audio Codec, balanced, DTMF generator, direct earphone connection
MSM6895 MSM6896	80-QFP	G.711	MSM6895: μ-Law MSM6896: A-Law	2.4Vp-p / 20kΩ	1	+4.75~5.25V	10mA	-10~+70°C	balanced output DTMF, TONE
MSM7502	80-QFP	G.711	μ-Law, A-Law	2.4Vp-p / 20kΩ	1	+4.75~5.25V	10mA	-10~+70°C	balanced output all tones, parallel MCU I/F
MSM7575	64-QFP	G.711	μ-Law, A-Law	1.3Vp-p / 120nF+350Ω	1	+2.7~3.6V	16mA	-25~+70°C	balanced output DTMF, TONE, VOX

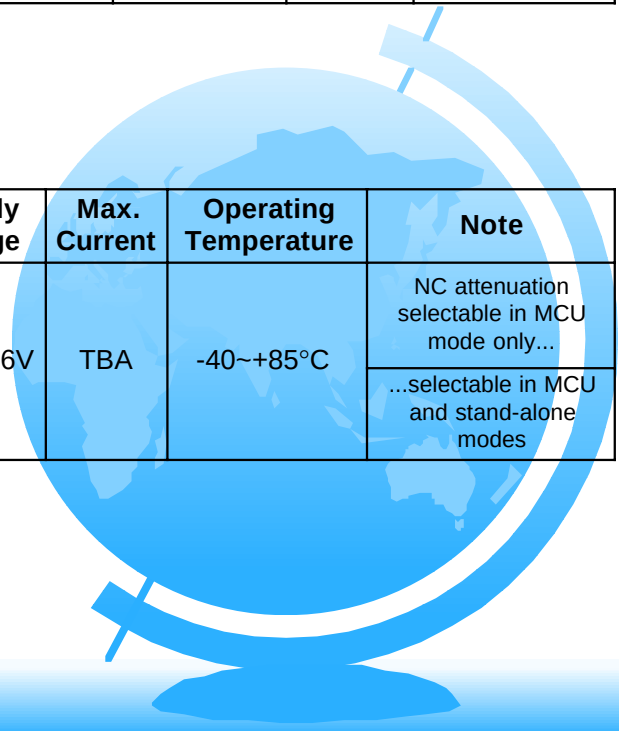


Echo Cancellers

Part Number	Packages	Function	Cancellation Time	Input I/F	Echo Type	Clock [MHz]	Supply Voltage	Max. Current	Operating Temperature
MSM7602-001	28-SSOP	Single EC	27ms	µ-Law	Line + Acoustic	19.2	+2.7~5.5V	45mA	-40~+85°C
MSM7602-011	56S-QFP	Single EC (cascadable)	27ms master 31ms slave (x6 max.)	µ-Law	Line + Acoustic	19.2	+2.7~5.5V	45mA	-40~+85°C
MSM7620-001	32-SSOP	Single EC	27ms	µ-Law	Line + Acoustic	18	+4.5~5.5V	40mA	-40~+85°C
MSM7620-011	64-QFP	Single EC (cascadable)	27ms master 31ms slave (x6 max.)	µ-Law	Line + Acoustic	18	+4.5~5.5V	40mA	-40~+85°C
MSM7603-003	28-SSOP	Single EC	55ms	µ-Law	Line + Acoustic	19.2	+2.7~5.5V	70mA	-40~+85°C
MSM7603B-003	28-SSOP	Single EC	55ms	µ-Law/A-Law	Line + Acoustic	19.2	+2.7~5.5V	70mA	-40~+85°C
MSM7617-001	64-QFP	Dual EC	55ms/channel	µ-Law	Line + Acoustic	17.5 ~ 20	+4.5~5.5V	130mA	-40~+85°C
MSM7622	100-QFP	Quad EC	55ms/channel	µ-Law/A-Law	Line	17.5 ~ 20	+3.0~3.6V	TBA	-40~+85°C

Combined Echo and Noise Cancellers

Part Number	Packages	Function	Cancellation Time	Input I/F	Echo Type	Clock [MHz]	Supply Voltage	Max. Current	Operating Temperature	Note
MSM7731-01	64-QFP	Single EC/NC, dual Codec, slope filter	Echo: 59ms Noise: 6-17dB	µ-Law	Acoustic/Line	19.2	+2.7~3.6V	TBA	-40~+85°C	NC attenuation selectable in MCU mode only...
MSM7731-02										...selectable in MCU and stand-alone modes

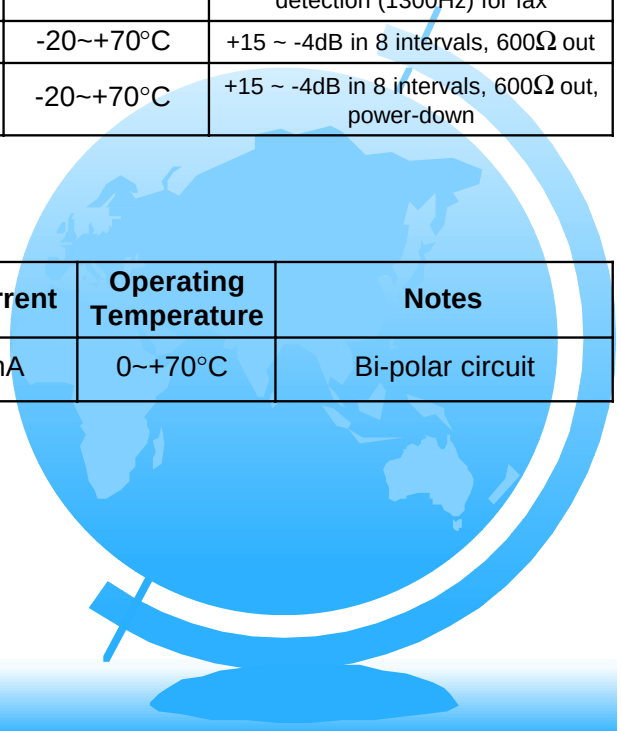


Telephone Circuits

Part Number	Packages	Function	Clock [MHz]	Supply Voltage	Max. Current	Operating Temperature	Notes
ML7005	32-SSOP	DTMF Transceiver	3.58	+2.7~5.5V	9mA	-30~+85°C	40dB dyn range, CPT 360~440Hz, DTMF high-speed detect mode
MSM6234	16-DIP	DTMF tone dialer	3.58	+2.5~8.5V	25mA	-30~+70°C	Single/dual tone out, MK5089 compatible
MSM6920	24-DIP, 44-QFP	PABX DTMF decoder	3.58	VD = +4.75~5.25V VA = +5.0~12.0V	14mA	-30~+70°C	Rx signal level -5 ~ -32dB
MSM6945B	24-DIP, 44-QFP	Terminal DTMF decoder	3.58	VD = +4.75~5.25V VA = +5.0~12.0V	14mA	-30~+70°C	Rx signal level -5 ~ -48dB
MSM6842	24-DIP, 44-QFP	PABX DTMF decoder	3.58	VD = +4.75~5.25V VA = +5.0~12.0V	14mA	-30~+70°C	Rx signal level -5 ~ -45dB
MSM7524	32-SSOP	DTMF Transceiver	3.58	+4.5~5.5V	11mA	-25~+85°C	40dB dyn. range, CPT, no-ringing detection (1300Hz) for fax
MSM7547	16-SOP	Voice attenuator	-/-	+4.75~5.25V	6mA	-20~+70°C	+15 ~ -4dB in 8 intervals, 600Ω out
MSM7577	16-SOP	Voice attenuator	-/-	+2.7~5.25V	20mA	-20~+70°C	+15 ~ -4dB in 8 intervals, 600Ω out, power-down

SLIC Circuits

Part Number	Packages	Function	Supply Voltage	Max. Current	Operating Temperature	Notes
MSA4709	30-SDIP	Subscriber Line Interface Circuit	V_{BB}: -24 or -48V, V_{CC}: +4.75~5.25V	I_{CC} 34mA	0~+70°C	Bi-polar circuit



Modem/Wireless/Telemetry Circuits

Part Number	Packages	Function	Modul-ation	Standard	Clock [MHz]	Supply Voltage	Max. Current	Operating Temperature	Notes
MSM6946	28-DIP, 44-QFP	300bps, FDX modem	FSK	Bell 103	3.58	+4.75~5.25V +10.8~13.2V	15mA	0~+70°C	Two supply voltages
MSM6947	28-DIP, 44-QFP	1200bps, HDX modem	FSK	Bell 202	3.58	+4.75~5.25V +10.8~13.2V	15mA	0~+70°C	Two supply voltages
MSM7510	16-DIP, 24-SOP	300bps, FDX modem	FSK	ITU-T V.21	3.58	+2.7~5.5V	10mA	-40~+85°C	Single-rail line hybrid
MSM7512B	16-DIP, 24-SOP	1200bps, HDX modem	FSK	ITU-T V.23	3.58	+2.7~5.5V	10mA	-40~+85°C	Single-rail line hybrid, 75bps back channel
MSM7564	144-QFP, 84-QFJ	14400bps data/fax modem	FSK/ PSK/ QAM/ TCM	Data: ITU-T V.32bis, V.32, V.22bis, V.22, V.21, Bell103 & 212A Fax: ITU-T V.17, V.29, V.27ter, V.21 ch2	3.888	+4.75~5.25V	100mA	-20~+70°C	echo/jitter canceller, DTMF
MSM6889	42-DIP, 56L-QFP	1200bps, FDX modem, telemeter	FSK	ITU-T V.21	3.58	+4.5~5.5V	12mA	-40~+85°C	DTMF transceiver, COPT
MSM7715	44-QFP	1200bps, FDX modem, telemeter	FSK	ITU-T V.21	3.58	+2.5~3.6V	6mA	-40~+85°C	DTMF transceiver, COPT
MSM6882-3	22-DIP, 24-SOP	1200~2400bps modem, baseband filter	MSK	CCIR Rec.623	3.6864 / 7.3728	+3.0~4.0V	8mA	-25~+70°C	COS or SIN FFSK, SC filter
MSM6882-5	22-DIP, 24-SOP	1200~2400bps modem, baseband filter	MSK	CCIR Rec.623	3.6864 / 7.3728	+4.5~5.5V	11mA	-25~+70°C	COS or SIN FFSK, SC filter
MSM6948-3	18-DIP, 24-SOP	1200bps modem	MSK	-/-	3.6864	+3.0~5.0V	10mA	-30~+70°C	SC filter, master clock output
MSM6948	18-DIP, 24-SOP	1200bps modem	MSK	-/-	3.6864	+4.75~5.25V	6mA	-25~+70°C	SC filter, master clock output
MSM7546/56	32-SSOP	1200bps modem/filter	MSK	-/-	3.6864	+2.8~5.5V	24mA	-30~+70°C	Ciphering, voice filters
MSM7557	56S-QFP	1200~2400bps modem, baseband filter	MSK	-/-	3.6864	+2.7~5.5V	24mA	-30~+70°C	Compander, high-pass, limiter, splatter, de-emphasis
MSM7555	56S-QFP	1200~2400bps modem, baseband filter	MSK	-/-	3.6864	+1.9~5.5V	24mA	-30~+70°C	Compander, high-pass, limiter, splatter, de-emphasis
MSM7532	56S-QFP	1200~2400bps modem, baseband filter	MSK	-/-	3.6864	+1.8~5.5V	33mA	-30~+70°C	Compander, high-pass, limiter, splatter, de-emphasis
MSM7514	42-DIP, 56L-QFP	1200~2400bps modem, DTMF transceiver	FSK	ITU-T V.23	3.58	+4.5~5.5V	12mA	-40~+85°C	2.5V~VDD MCU I/F, 400Hz tone detector
MSM7515	42-DIP, 56L-QFP	1200~2400bps modem, DTMF transceiver	FSK	ITU-T V.23	3.58	+4.5~5.5V	10mA	-40~+85°C	2.5V~VDD MCU I/F, 2080Hz tone detector
MSM7545	16-SOP	Voice scrambler/ descrambler	-/-	-/-	3.6864	+2.8~5.5V	14mA	-30~+70°C	Voice filters

Speech Playback Circuits

Part Number	Packages	Function	Sampling [kHz]	Internal Memory	Play Time [sec]	Int DAC/LPF	Supply Voltage	Max. Current	Operating Temperature
MSM9810	64-QFP	ADPCM 8 channel mixer, 128MBit ext. ROM	4~32	-/-	variable	14-bit/digital	+4.5~5.5V	16mA	-40~+85°C
ML2252	32-SOP	ADPCM 4 channel mixer, stereo, volume control	4~32	1MBit	64	14-bit/digital	+2.4~5.5V	TBA	-40~+85°C
MSM6585	18-DIP, 24-SOP, Chip	ADPCM decoder peripheral	4~32	-/-	variable	12-bit/-40dB	+4.5~5.5V	10mA	-40~+85°C
MSM6652A/53A/ 54A/55A/56A Series	18-DIP, 24-SOP, Chip	ADPCM/PCM, 2-ch, echo, melody, beep, random play, fading, Phrase Control Table	4~32	288K/544K/1M/1.5M /2M/4MBit ROM	16.9/31.2/63.8/ 96.5/129.1/ 260	12-bit/-40dB	+2.4~5.5V	10mA	-40~+85°C
MSM6650	64-SDIP, 64-QFP, Chip	Eva-chip of MSM6652A~58A series 64KByte ext. ROM	4~32	-/-	4200	12-bit/-40dB	+2.4~5.5V	10mA	-40~+85°C
MSM66P54	20-DIP, 24-SOP	OTP of MSM6654	4~32	1MBit OTP	63.8	12-bit/-40dB	+3.5~5.5V	20mA	-10~+70°C
MSM66P56	20-DIP, 24-SOP	OTP of MSM6656	4~32	2MBit OTP	129.1	12-bit/-40dB	+3.5~5.5V	20mA	-10~+70°C
MSM9802/03/05 Series	18-DIP, 24-SOP, 30-SSOP	Non-linear or straight PCM, Phrase Control Table	4~16	512K/1M/2MBit ROM	16/32.4/65.1 (@32kbps)	10-bit/-40dB	+2.7~5.5V	16mA	-40~+85°C
MSM98P05	20-DIP, 24-SOP	OTP of MSM9805	4~16	2MBit OTP	32.4 (@32kbps)	10-bit/-40dB	+2.7~5.5V	20mA	-10~+70°C
MSM9831	8-SOP	Downsized MSM9802	4~16	384KBit ROM	11 (@32kbps)	10-bit/-40dB	+2.0~5.5V	8mA	-40~+85°C
MSM9836	24-SOP	Non-linear or straight PCM, Phrase Control Table	4~16	3MBit ROM	98 (@32kbps)	10-bit/-40dB	+2.0~5.5V	16mA	-40~+85°C
MSM9842	56S-QFP	ADPCM, int. FIFO buffer, stereo	6.4~32	1024 Bit FIFO	32ms buffering (@8kHz sampling)	14-bit x2/ digital	+4.5~5.5V	10mA	-40~+85°C
MSM9844	56S-QFP	ADPCM, int. FIFO buffer, stereo	4~44.1	1024 Bit FIFO	32ms buffering (@8kHz sampling)	14-bit x2/ digital	+4.5~5.5V	15mA	-40~+85°C
ML2215	20-SSOP	ADPCM/PCM with Melody Circuit	4~16	3MBit ROM	180	12-Bit/-40dB	+2.2~5.5V	TBA	-40~+85°C
ML2213	14-SSOP	ADPCM/PCM with Melody Circuit	4~16	1.5MBit ROM	90	12-Bit/-40dB	+2.2~5.5V	TBA	-40~+85°C

Unless otherwise specified, playback times are based on the lowest bit-rate, typically 16kbps and the devices' own memory address range without expansions. A Phrase Control Table allows the presetting of words to form sentences. Speech code development systems for the PC and demonstration boards available.

Speech Recording Circuits

Part Number	Packages	Function	ADC/DAC	Sampling [kHz]	External Memory	Rec Time	Int LPF	Supply Voltage	Max. Current	Operating Temperature
ML2500	32-TSOP I	Analog storage recorder, 1M Flash	-/-	4~8	-/-	256 sec	-40dB/oct.	+2.7~3.3V	45mA	-10~+70°C
ML2502	30-SSOP	Analog storage recorder, 128K Flash	-/-	4~6.4	-/-	32 sec	-40dB/oct.	+2.7~3.3V	TBA	-10~+70°C
ML2516	32-TSOP I	Analog storage recorder, 2M Flash	-/-	4~6.4	-/-	8.7 min	-40dB/oct.	+2.7~3.3V	45mA	-10~+70°C
ML2517	32-SOP	Analog storage recorder, 4M Flash	-/-	4~6.4	-/-	17 min	-40dB/oct.	+2.7~3.3V	45mA	-10~+70°C
MSM6588	44-QFP	ADPCM recorder	12-Bit/12-Bit	4~16	up to 4-MBit Serial Register	4.3 min	-40dB/oct.	+4.5~5.5V	15mA	-40~+85°C
MSM6588L	44-QFP, 44-TQFP	ADPCM recorder	12-Bit/12-Bit	4~16	up to 4-MBit Serial Register	4.3 min	-40dB/oct.	+2.7~3.6V	15mA	-40~+85°C
MSM6688	56S-QFP	ADPCM recorder	12-Bit/12-Bit	4~16	up to 32-MBit Serial Register	34 min	-40dB/oct.	+4.5~5.5V	15mA	-30~+70°C
MSM6688L	56S-QFP, 64-TQFP	ADPCM recorder	12-Bit/12-Bit	4~16	up to 32-MBit Serial Register	34 min	-40dB/oct.	+2.7~3.6V	15mA	-30~+70°C
MSM9888L	30-SSOP	ADPCM recorder	12-Bit/12-Bit	2~8	2 or 4 or 8-MBit Serial Voice Flash	8.5 min	-40dB/oct.	+2.7~3.6V	15mA	-40~+85°C
MS87V1021	32-TSOP I	ADPCM recorder Int 2Mbit DRAM & 512KBit ROM	12-Bit/12-Bit	2~8	-/-	80 sec (@6.4kHz)	-40dB/oct.	+2.7~3.6V	25mA	-10~+70°C
MSM9841	56S-QFP	ADPCM recorder, 1024 Bit FIFO, stereo	12-Bit/ 14-Bit x 2	6.4~32	CD-ROM, other mass media	32ms buffer @8kHz	digital	+4.5~5.5V	10mA	-40~+85°C

Unless otherwise specified, recording and playback times are based on the lowest bit-rate, typically 16kbps and the devices' own memory address range without expansions. Speech code development systems for the PC and demonstration boards available.

Serial Voice Memories

Part Number	Packages	Function	Capacity	Supply Voltage	Max. Current	Operating Temperature	Target LSIs
MSM6389C	18-QFJ	Serial Voice Register	1Mbit	+3.5~5.5V	5mA	-40~+85°C	MSM6588
MSM63V89C	26(20)-TSOP II	Serial Voice Register	1Mbit	+2.7~3.6V	3mA	-40~+85°C	MSM6588L
MSM6684B	26(20)-SOJ	Serial Voice Register	4Mbit	+3.5~5.5V	20mA	-30~+70°C	MSM6688
MSM66V84B	26(20)-SOJ	Serial Voice Register	4Mbit	+2.7~3.6V	10mA	-30~+70°C	MSM6688L
MSM6685	26(20)-SOJ	Serial Voice Register	8Mbit	+2.7~3.6V	20mA	-30~+70°C	MSM6688
MSM6595A/96A	18-QFJ, 24-SOP, 30-SSOP	Serial Voice ROM	1M/2MBit	+3.5~5.5V	15mA	-40~+85°C	MSM6588/L, MSM6688/L
MSM6597A	24-SOP, 30-SSOP	Serial Voice ROM	3MBit	+3.5~5.5V	20mA	-40~+85°C	MSM6588/L, MSM6688/L
MSM9892L/MSM9892PL	28-TSOP I	Serial Voice Flash	2MBit	+2.7~3.6V	35mA	-10~+70°C -40~+85°C (PL)	MSM9888L, MSM9889L
MSM9893L/MSM9893PL	28-TSOP I, 30-SSOP	Serial Voice Flash	4MBit	+2.7~3.6V	35mA	-10~+70°C -40~+85°C (PL)	MSM9888L, MSM9889L
MSM9894L/MSM9894PL	32-TSOP I	Serial Voice Flash	8MBit	+2.7~3.6V	35mA	-10~+70°C -40~+85°C (PL)	MSM9888L, MSM9889L

Amplifiers

Part Number	Packages	Output Power	Supply Voltage	Typ/Max. Current	Operating Temperature	Notes
MSA180	8-DIP, 8-SOP, Chip	0.4W	+2.0~6.0V	4.2 / 80mA	-40~+85°C	Piezo driver, adjustable gain
MSC1157	8-DIP, 8-SOP, Chip	0.3W	+2.0~6.0V	1.5 / 70mA	-20~+70°C	Speaker driver, adjustable gain

Voice Pitch Controller

Part Number	Packages	Function	ADC/DAC	Sampling [kHz]	External Memory	Rec Time	Int LPF	Supply Voltage	Max. Current	Operating Temperature
MSM6722	24-SOP	Voice pitch changer	8-Bit/9-Bit	8 input, 4~16 output	-/-	-/-	-24dB/oct.	+4.5~5.5V	12mA	-10~+70°C

Speech Processing LSIs

OKI Semiconductor

Voice Recognition Processor

Part Number	Packages	Mode	Interface	Sampling [kHz]	Memory	Clock	Supply Voltage	Max. Current	Operating Temperature	Notes
MSM6679A-110	100-TQFP	SI/SD	serial x 1	10	int. ROM, ext. RAM, ext. Flash	32MHz	+4.5~5.5V	75mA	-40~+85°C	Speech IC control, sounds, speech recording
MSM6679AL-110						14.3182MHz	+2.7~5.5V	TBA	-30~+70°C	
MSM6679A-120	100-TQFP	SI/SD	serial x 1	8	ext. Flash	32MHz	+4.5~5.5V	TBA	-40~+85°C	
MSM6679A-2XX	100-TQFP	SI	serial x 1	8	ext. Flash (option)					Speech IC control, SD with ext Flash

SI = Speaker-independent ; SD = Speaker-dependent. Standard vocabularies are available for telephone dialing applications in US-English, German and Japanese (10K sampling versions). SI recognition rate is typically >90% (10K-versions) and >80% (8K-versions), SD recognition rate largely depends on training effort. External RAM and Flash capacities up to 1MB each. MSM6679A-2XX is prepared for a SI custom mask.

Text-to-Speech Processor

Part Number	Packages	Machine Power	Ext. Bus	Converter	Output Sampling	Clock	Supply Voltage	Max. Current	Operating Temperature	Notes
MSM7576	100-TQFP	7 (VAX Mips), 32 x 32 MFU	16-bit	12-Bit DAC	12kHz	10MHz	+4.5~5.5V	80mA	-40~+85°C	Selectable male/female voice, pitch, attenuation, accentuation, volume.
MSM7630	100-TQFP	16~26 (VAX Mips), 16 x 16 MFU	16-bit	12-Bit DAC	16kHz	20~40MHz	+3.0~3.6V	60~120mA	-40~+85°C	Selectable male/female voice, pitch, attenuation, accentuation, volume.
MSM7631	144-LQFP	~62 (VAX Mips), 32 x 32 MFU	32-bit	12-Bit DAC 12-Bit ADC x 2	22.05kHz	20~50MHz	+3.0~3.6V	70~160mA	-40~+85°C	Selectable male/female voice, pitch, attenuation, accentuation, volume, Japanese speaker-independent recognition function.

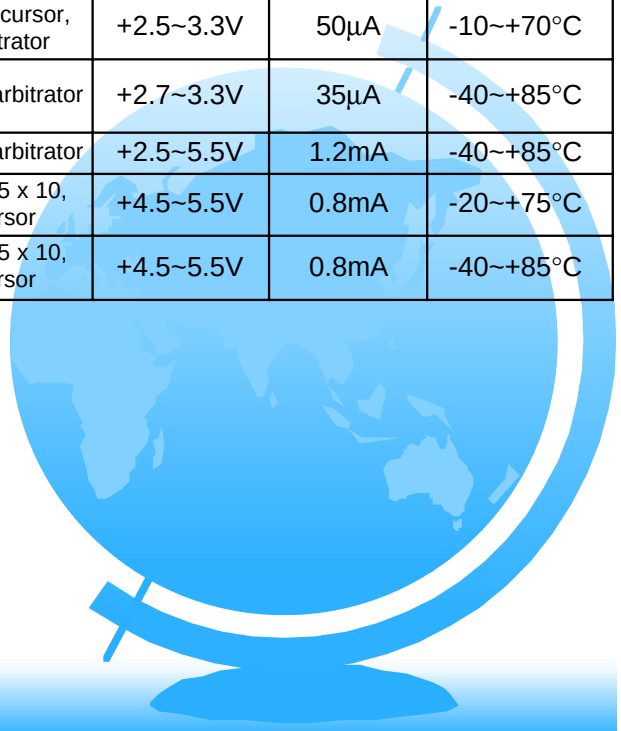
Also supplied by OKI, ROMs for dictionary middleware which are connected externally. Currently provided languages include Japanese, US-English, British English, French, German and Spanish. The dictionaries come from ELAN Informatique, France.

Dashboard Panel Controller

Part Number	Packages	Duty	Display Voltage	Data in	Driver Outputs	Data Clock [Hz]	Logic Supply Voltage	Max. Logic Current	Operating Temperature	Notes
MSC5301B-01	100-QFP	1/16	+6 ~ 16V	1	16 Com, 64 Seg	0.5M	+4.5~5.5V	6.5mA	-40~+85°C	16 x 64 bit RAM, 4 x cascadable
MSC5301B-02	100-QFP	1/8	+6 ~ 16V	1	8 Com, 64 Seg	0.5M	+4.5~5.5V	6.5mA	-40~+85°C	8 x 64 bit RAM, 4 x cascadable
MSM6794	Chip	1/33, 1/41, 1/44, 1/48	+5.0 ~ 12V	1/8	48 Com, 128 Seg	0.5M ser 3.0M par	+2.7~5.5V	0.7mA	-25~+85°C	6144 bit RAM serial/parallel in, 2 x cascadable
ML9050	Bump chip, TCP	1/65	+4.5 ~ 18V	1/8	65 Com, 132 Seg	5M	+1.8 ~ 5.5V	TBA	-40~+85°C	65 x 132bit RAM
ML9051		1/49			49 Com, 132 Seg					65 x 132bit RAM
ML9052		1/97			97 Com, 132 Seg					97 x 132bit RAM
ML9090-01	128-QFP	1/8, 1/9, 1/10	+6 ~ 16V	1	10 Com, 80 Seg	1M	+2.7~5.5V	TBA	-40~+85°C	80x10 Bit RAM, 5x5 keyscan
ML9090-02		1/16. 1/17, 1/18			18 Com, 80 Seg					80x18 Bit RAM, 5x5 keyscan
MSM5265	100-QFP	1/1, 1/2	+3 ~ 6V	1	2 Com/80 Seg	1M	+3.0~6.0V	0.5mA	-40~+85°C	cascadable
MSM6544	56S-QFP	1/2	+3 ~ 6V	1	42 Seg	4M	+3.0~6.0V	0.5mA	-40~+85°C	-/-
MSM6606	64-QFP	1/2	+4.5~5.5	1	40 Seg	2M	+4.5~5.5V	0.5mA	-40~+85°C	LED, 5x6 keyscan
MSM6660-01/02/03	80-QFP	1/2, 1/3	+4 ~ 6V	1	62 Seg	2M	+4.0~6.0V	1mA	-40~+85°C	-/-
MSM6775	100-TQFP	1/3, 1/4, 1/5	+3.5 ~ 5.5V	1	80 Seg	4M	+2.7~5.5V	0.5mA	-40~+85°C	-/-
MSM6786	56S-QFP	1/3, 1/4	+4.5 ~ 5.5	1	4 Com, 29 Seg	2M	+4.5~5.5V	0.4mA	-40~+85°C	LED, 5x6 keyscan
MSM9004-01/02	64-QFP	1/3, 1/4	+3.7 ~ 5.5V	1	4 Com, 49 Seg	2M	+4.5~5.5V	0.65/1.0mA	-40~+85°C	Com Signal Osc (-02)
MSM9004-03/04	64-QFP	1/4	+3.7 ~ 5.5V	1	4 Com, 50 Seg	2M	+4.5~5.5V	0.65/1.0mA	-40~+85°C	Com Signal Osc (-04)
MSM9006-01	64-QFP	1/3	+4.5 ~ 5.5V	1	3 Com, 41 Seg	2M	+4.5~5.5V	0.45mA	-40~+85°C	5x5 keyscan, 6 LED
MSM9006-02	64-QFP	1/4	+4.5 ~ 5.5V	1	4 Com, 41 Seg	2M	+4.5~5.5V	0.45mA	-40~+85°C	5x5 keyscan, 6 LED
ML9060	Bump chip	1/1, 1/2	+4.5 ~ 16V	1	2 Com, 160 Seg	1M	+2.7~5.5V	TBA	-40~+85°C	cascadable

Character Controller

Part Number	Packages	Duty	Display Voltage	Data in	Driver Outputs	Character ROM / RAM	Display Type	Logic Supply Voltage	Max. Logic Current	Operating Temperature
MSM6222B-01	80-QFP	1/8, 1/11, 1/16	+3 ~ 8V	8	16 Com, 40 Seg	192 Chr / 12 Chr	5 x 7/5 x 10, cursor	+4.5~5.5V	0.8mA	-20~+75°C
MSM6562B-XX	Chip	1/8, 1/11, 1/16	+3 ~ 5.5V	4/8	16 Com, 100 Seg	192 Chr / 12 Chr	5 x 7/5 x 10, cursor	+4.5~5.5V	1mA	-30~+85°C
MSM6262-XX	80-QFP	1/16, 1/24, 1/32, 1/48	+3 ~ 11V	8	48 Com	256 Chr / 6 Chr	5x7/5x11/5x12, cursor	+4.5~5.5V	1.5mA	-20~+75°C
MSM6665-XX	128-QFP	1/9, 1/17	+3 ~ 6V	1	17 Com, 80 Seg	256 Chr / no RAM	5 x 7, cursor, arbitrator	+2.5~5.5V	1.1mA	-40~+85°C
MSM6665C-XX	128-QFP, Chip	1/9, 1/17	+3 ~ 8V	1	17 Com, 80 Seg	256 Chr / no RAM	5 x 7, cursor, arbitrator	+2.5~5.5V	1.3mA	-40~+85°C
MSM6555B-XX	Bump chip	1/9, 1/17	+3.8~ 4.2V	1	17 Com, 80 Seg	256 Chr / no RAM	5 x 7, cursor, arbitrator	+2.5~3.3V	50µA	-10~+70°C
MSM9000B-XX	TCP, Chip	1/9, 1/16	+3 ~ 5.5V	1	16 Com, 60 Seg	256 Chr / no RAM	5 x 7, arbitrator	+2.7~3.3V	35µA	-40~+85°C
MSM9005-XX	100-QFP	1/8	+4 ~ 8V	1	8 Com, 65 Seg	256 Chr / no RAM	5 x 7, arbitrator	+2.5~5.5V	1.2mA	-40~+85°C
ML9040-XXX	80-QFP	1/8, 1/11, 1/16	+3 ~ 8V	4/8	16 Com, 40 Seg	192 Chr / 12 Chr	5 x 7/5 x 10, cursor	+4.5~5.5V	0.8mA	-20~+75°C
ML9041-XX	Bump chip	1/9, 1/12, 1/17	+3 ~ 7V	1/4/8	17 Com, 100 Seg	192 Chr / 12 Chr	5 x 7/5 x 10, cursor	+4.5~5.5V	0.8mA	-40~+85°C

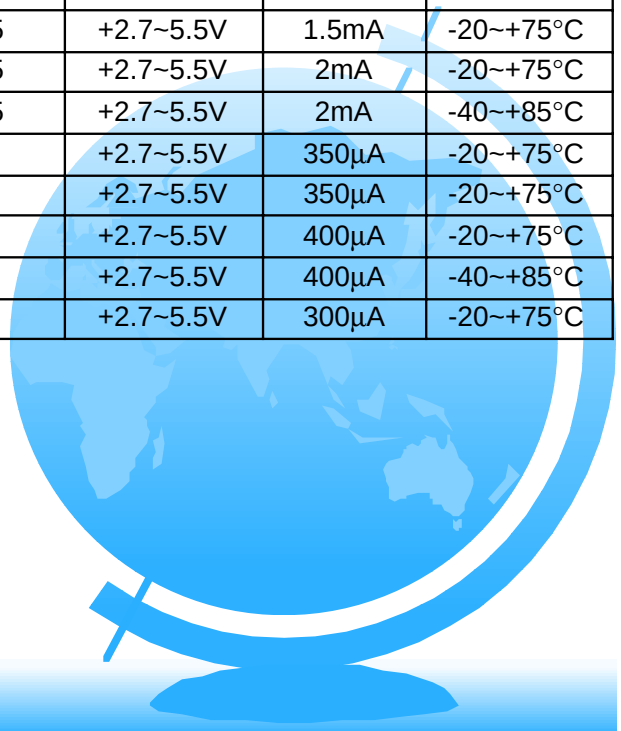


LC-Display Driver

OKI Semiconductor

Common & Segment Drivers

Part Number	Packages	Duty	Display Voltage	Data in	Shift Register	Driver Outputs	Ron [kΩ max]	Data Clock [MHz]	Logic Supply Voltage	Max. Logic Current	Operating Temperature
MSM5238	44-QFP	1/32~1/64	+3 ~ 16V	1	unidir	32 Com	3.2	0.4	+3.0~7.0V	1mA	-40~+85°C
MSM5259	56S-QFP	1/8~1/16	+2.5 ~ 6V	1	unidir	40 Seg	10	1	+2.5~6.0V	0.5mA	-30~+85°C
MSM5260	100-QFP	1/32~1/64	+8 ~ 18V	1	unidir	80 Com/Seg	2	3.3	+4.5~5.5V	100µA	-20~+85°C
MSM5298A	80-QFP	1/64~1/256	+8 ~ 28V	1	bidir	68 Com	3	1	+4.5~5.5V	100µA	-20~+85°C
MSM5299A	100-QFP	1/64~1/256	+8 ~ 28V	4	bidir	80 Seg	4	3.4	+4.5~5.5V	3mA	-20~+75°C
MSM5299C	100-QFP	1/64~1/256	+8 ~ 28V	4	bidir	80 Seg	4	3.4	+4.5~5.5V	3mA	-20~+75°C
MSM5839B	56S-QFP	1/16~1/128	+8 ~ 18V	1	unidir	40 Seg	7	3.3	+4.5~5.5V	100µA	-20~+85°C
MSM5839C	56S-QFP	1/3~1/64	+4 ~ 11V	1	unidir	40 Seg	10	2.0	+4.5~5.5V	100µA	-20~+85°C
MSM6599B	100-QFP	1/64~1/256	+18 ~ 28V	4	bidir	80 Seg	3	6.5	+4.5~5.5V	1.5mA	-20~+75°C
MSM6669	TCP	1/64~1/256	+14 ~ 28V	4	bidir	80 Seg	3	6.5	+2.7~5.5V	1.5mA	-20~+75°C
MSM6779	TCP	1/64~1/256	+14 ~ 28V	4	bidir	160 Seg	3	6.5	+2.7~5.5V	2mA	-20~+75°C
MSM6779B	TCP	1/64~1/256	+14 ~ 28V	4	bidir	160 Seg	3	6.5	+2.7~5.5V	2mA	-40~+85°C
MSM6648	TCP	1/200~1/240	+18 ~ 28V	1	bidir	100 Com	2	1	+2.7~5.5V	350µA	-20~+75°C
MSM6698	100-QFP	1/200~1/240	+18 ~ 28V	1	bidir	80 Com	2	1	+2.7~5.5V	350µA	-20~+75°C
MSM6778	TCP	1/100~1/240	+18 ~ 28V	1	bidir	120 Com	2	1	+2.7~5.5V	400µA	-20~+75°C
MSM6778B	TCP	1/100~1/240	+18 ~ 28V	1	bidir	120 Com	2	1	+2.7~5.5V	400µA	-40~+85°C
MSM6568A	TCP	1/200~1/256	+14 ~ 28V	1	bidir	160 Com	2	1	+2.7~5.5V	300µA	-20~+75°C



TFT Source and Gate Drivers

Part Number	Packages	Driver Function	Panel Size	Display Voltage	Gradations	Data Rate	Driver Outputs	Logic Supply Voltage	Max. Logic Current	Operating Temperature	Notes
ML9111 (VS3284 compatible)	Slim TCP	Source with γ correction	XGA, SXGA	6.5 ~ 10.5V	256	65MHz	384	+2.25 ~ 3.6V	TBA	0~+70°C	Power down, 2-port interface, low power charger conversion
ML9120 (VS3584 compatible)											
ML9112 (VS1284 compatible)											2-port interface, high drivability
MSM6666	TCP Au bump chip	Gate	VGA/XGA	20 ~ 40V	NA	0.1MHz	200/192	+3.0~ 5.5V	0.4mA	-20~+75°C	bi-dir S/R, Pos-neg LCD
MSM6696			VGA				120		0.65mA		
ML9030			XGA				256		TBA		

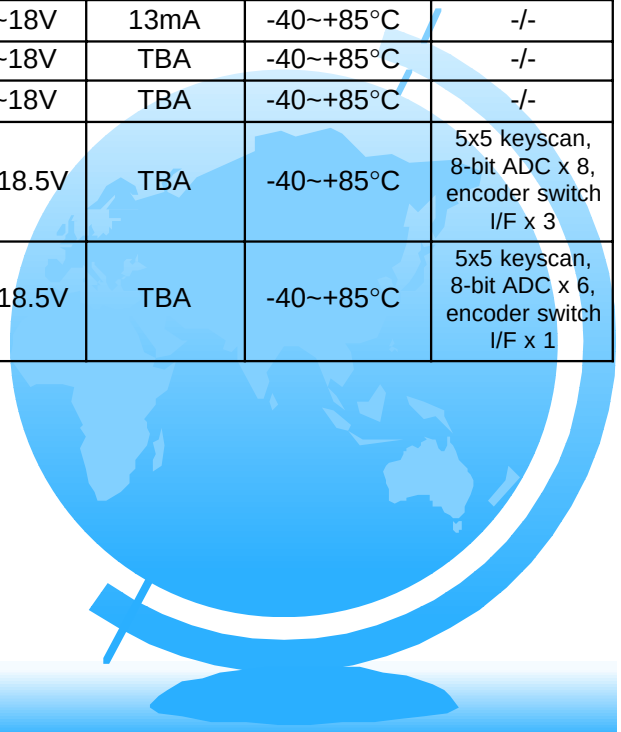
Customers outside Japan are kindly requested to contact Vivid Semiconductor Inc. for TFT Source driver products at:
7400 West Detroit Street, Suite 100,
Chandler, Arizona 85226, USA
http://www.vividsemi.com/

VF-Display Driver

OKI Semiconductor

Front Panel Controller

Part Number	Packages	Duty	Data Clock [Hz]	Anode Driver	Grid Driver	Dimming	PLA	Supply Voltage	Max. Current	Operating Temperature	Notes
MSC1200-XX MSC1200V-XX	56S-QFP	1/2	250K	30	Ext.	52 step analog, 11-bit digital	On-chip	+8.0~18V	20mA	-40~+85°C	5x6 keyscan
MSC1201-XX	44-QFP	1/2	250K	30	Int.	64 step PWM, 11-bit digital	On-chip	+8.0~18V	20mA	-40~+85°C	-/-
MSC1205	42-DIP, 44-QFP	1/2	1M	32	Ext.	10-bit digital	-/-	+8.0~18V	20mA	-40~+85°C	-/-
MSC1208	42-SDIP	1/2	1.3M	23	Ext.	10-bit digital	-/-	+8.0~18V	20mA	-40~+85°C	4x7 keyscan
MSC1209	56S-QFP	1/2	1M	42	Ext.	10-bit digital	-/-	+8.0~18V	20mA	-40~+85°C	-/-
MSC1215-XX	42-DIP	1/2	250K	17	Ext.	42 step analog, 64 step PWM	On-chip	+8.0~18V	20mA	-40~+85°C	3x4 keyscan, 6-bit/6-ch ADC
MSC1218	32-SSOP	1/3	250K	21	Int.	10-bit digital	-/-	+8.0~18V	10mA	-40~+85°C	-/-
MSC1230	56S-QFP	1/3, 2/3	250K	37	Int.	10-bit digital	-/-	+8.0~18V	13mA	-40~+85°C	-/-
MSM9210	56S-QFP	1/2, 1/3	1M	32	Ext.	10-bit digital	-/-	+8.0~18V	TBA	-40~+85°C	-/-
ML9211	80-SSOP	1/2, 1/3	1M	56	Ext.	10-bit digital	-/-	+8.0~18V	TBA	-40~+85°C	-/-
ML9222	80-QFP	1/2, 1/3	1M	32	Ext.	10-bit digital	-/-	+8.0~18.5V	TBA	-40~+85°C	5x5 keyscan, 8-bit ADC x 8, encoder switch I/F x 3
MSM9223	64-QFP	1/2, 1/3	1M	27	Ext.	10-bit digital	-/-	+8.0~18.5V	TBA	-40~+85°C	5x5 keyscan, 8-bit ADC x 6, encoder switch I/F x 1



VF-Display Driver

OKI Semiconductor

Grid & Anode Drivers

Part Number	Packages	Type	Data Clock [Hz]	Outputs	Sink Current	Source Current	Display Voltage	Logic Supply	Max. Logic Current	Operating Temperature	Notes
MSC1212-01	64-QFP	Grid/Anode	0.5M	48	+1mA	-6mA	+8 ~ +18V	+4.5 ~ 5.5V	6mA	-40~+105°C	-/-
MSC1162A	60-SOP	Grid/Anode	4M	40	+1mA	-40mA	+10 ~ +65V	+4.5 ~ 5.5V	6.65mA	-40~+85°C	Bi-dir S/R
MSC1164	32-SSOP, 30-SDIP	Grid/Anode	4M	20	+2mA	-40mA	+10 ~ +65V	+4.5 ~ 5.5V	3.4mA	-40~+85°C	-/-
MSC1163	60-SOP	Anode	4M	40	+2mA	-2mA	+10 ~ +65V	+4.5 ~ 5.5V	6.65mA	-40~+85°C	Bi-dir S/R
MSC7165	24-SOP	Grid	-/-	16	+1mA	-40mA	-60 ~ -5V	+4.5 ~ 5.5V	6mA	-40~+85°C	4-to-16 decoder, 4-bit I/F
MSC7166	24-SOP	Grid	-/-	16	+1mA	-40mA	-20 ~ -60V	+4.5 ~ 5.5V	5mA	-40~+85°C	
MSC7171	24-SOP	Grid	1M	12	+1mA	-50mA	+8 ~ +65V	+4.5 ~ 5.5V	0.5mA	-40~+85°C	brightness control

Controller with Drivers

Part Number	Packages	Display Type	Digits x Lines	Grid Driver	Anode Driver	CG ROM/RAM	Data Clock	Driver Voltage	Logic Supply	Max. Logic Current	Operating Temperature	Notes
MSC7110-01	42-SDIP, 44-QFP	7-Segment	1~16 x 1	16	12	32/16 Chr	0.1MHz	-20 ~ -40V	+4.5 ~ 5.5V	15mA	-20~+75°C	4-bit dimming, 5 LED out
MSC7112-01	42-SDIP, 44-QFP	14/16 Seg	1~12 x 1	12	16	32/16 Chr	0.1MHz	-20 ~ -40V	+4.5 ~ 5.5V	15mA	-20~+75°C	
MSC7128-XX	64-SDIP, 64-QFP	5 x 7 Dot	1~16 x 1	16	36	128/ - Chr	0.5MHz	-5 ~ -55V	+4.5 ~ 5.5V	15mA	-20~+75°C	4-bit dimming
MSC7170-XX	100-QFP	5 x 7 Dot	1~16 x 2	0	72	256/ - Chr	2MHz	+7 ~ +60V	+4.5 ~ 5.5V	15mA	-40~+85°C	10-bit dimming, 5x6 keyscan
MSM9201	80-QFP	5 x 7 Dot	9~24 x 1	24	39	240/16 Chr	1MHz	-20 ~ -60V	+3.0 ~ 5.5V	4mA (5V)	-40~+85°C	3.3/5V, 4 ports, 3-bit dimming
MSM9202	64-QFP, 64-SSOP	5 x 7 Dot	9~16 x 1	16	37	248/8 Chr	1MHz	-20 ~ -60V	+3.0 ~ 5.5V	4mA (5V)	-40~+85°C	3.3/5V, 2 ports, 3-bit dimming
ML9203	100-QFP	5 x 7 Dot	1~16 x 2	16	72	240/16 Chr	1MHz	+20 ~ +60V	+3.0 ~ 5.5V	4mA (5V)	-40~+85°C	3.3/5V 10-bit dimming
MSM9205	80-QFP	5 x 7 Dot	1~16 x 2	24	39	240/16 Chr	1MHz	-20 ~ -60V	+3.0 ~ 5.5V	4mA (5V)	-40~+85°C	3.3/5V, 4 ports, 3-bit dimming

Imaging Application Devices

Part Number	Packages	Function	Supply Voltage	Max. Current	Operating Temperature
MSM7650	80-QFP	NTSC/PAL digital encoder, 3-ch-9-Bit DAC	+2.7~5.5V	150mA	0~+70°C
MSM7652	56S-QFP	NTSC/PAL digital encoder, 3-ch-10-Bit DAC	+2.7~3.6V	140mA	0~+70°C
MSM7653	56S-QFP	NTSC/PAL digital encoder, 3-ch-10-Bit DAC, Copy Protection	+2.7~3.6V	140mA	0~+70°C
MSM7654	64-QFP	NTSC/PAL digital encoder, 3-ch-10-Bit DAC	+2.7~3.6V	140mA	0~+70°C
MSM7661B	64-QFP	NTSC/PAL digital decoder, auto-recognition, AGC/ACC	+2.7~3.6V	180mA	0~+70°C
MSM7662	100-TQFP	NTSC/PAL digital decoder, auto-recognition, AGC/ACC, int ADC	+2.7~3.6V	180mA	0~+70°C
MSM5238	8-DIP	NTSC/PAL synchronous signal generator	+3.0~7.0V	1mA	-40~+85°C

Wireless Data Application

Part Number	Packages	Function	Supply Voltage	Max. Current	Operating Temperature
MSM7712	144-TQFP	Wireless LAN baseband controller, 1Mbps, IEEE 802.11	+2.7~5.5V	100mA	-40~+85°C
MSM7730	144-TQFP	Wireless LAN baseband controller, 2Mbps, IEEE 802.11	+2.7~5.5V	100mA	-40~+85°C
MSM9405	30-SSOP	IrDA 1.0/1.1 serial protocol controller, 2400bps~4Mbps	+2.7~3.6V	20mA	-20~+70°C
MSM9600	24-SOP	POCSAG decoder, 512/1200/2400bps	+0.9~3.5V	0.05mA	-20~+70°C
MSM9552	44-QFP	FM multiplex demodulator, BPF, frames A.B.C	+4.5~5.5V	32mA	-40~+85°C
MSM9560	44-QFP	Shrink MSM9552	+4.5~5.5V	28mA	
MSM9553	44-QFP	FM multiplex demodulator, BPF, frames A.B.C	+2.7~3.3V	22mA	-20~+75°C
MSM9562	44-QFP	FM multiplex demodulator, BPF, frames A.B.C, frame memory, dGPS reception possible	+4.5~5.5V	34mA	-40~+85°C
MSM9563			+2.7~3.3V	28mA	
MSM9554	44-QFP	FM multiplex demodulator, BPF, frames A.B.C, VICS descrambler, dGPS reception possible	+4.5~5.5V	34mA	-40~+85°C
MSM9564					
MSM9555			+2.7~3.3V	23mA	-20~+75°C
MSM9565			+1.8~3.3V	28mA	-40~+85°C

Interface & Protocol Controller

Part Number	Packages	Function	Supply Voltage	Max. Current	Operating Temperature
ML54051	144-LQFP	File Controller for PCMCIA ATA Flash cards (for ~16 flash devices, 16~64 with ext. addr. decoder)	+3.0 ~ 3.6V	TBA	-40~+85°C
ML54053	120-TQFP	File Controller for ATA CompactFlash® cards (for ~4 flash devices)	+3.0 ~ 3.6V	TBA	-40~+85°C
MSM60801	100-TQFP	PCMCIA card interface	+4.5 ~ 5.5V	0.5mA	-40~+85°C
MSM60804	208-QFP	PCMCIA host interface	+2.7 ~ 5.5V	15mA	0~+85°C
MSM6636	18-DIP, 24-SOP, 18-QFJ	SAE J1850 automotive LAN controller, serial I/F	+4.5 ~ 5.5V	10mA	-40~+125°C
MSM6636B	24-SOP	SAE J1850 automotive LAN controller, parallel I/F	+4.5 ~ 5.5V	10mA	-40~+85°C
MSM9225	44-QFP	Full CAN V2.0b (by Bosch) protocol controller	+4.5 ~ 5.5V	TBA	-40~+115°C
MSM6307	28-DIP, 32-SOP	D2B bus transceiver	+4.75 ~ 5.25V	20mA	-40~+85°C
MSM10T0175	42-DIP, 44-QFJ	Dual ISO smart card interface	+4.5 ~ 5.5V	10mA	-40~+85°C
MSM69204	64-QFP	IC card intelligent interface device (3ID-1)	+4.5 ~ 5.5V	25mA	-40~+85°C
MSM60851	44-QFP	USB printer device controller	+2.7 ~ 3.6V	TBA	-40~+85°C
ML53101	352-BGA	Fast 8-port Ethernet controller, 100BASE-TX and 10BASE-T	+2.7 ~ 3.6V	TBA	0~+70°C
ML53001	100-TQFP	Fast Ethernet protocol transceiver, 100BASE-TX and 10BASE-T	+4.75 ~ 5.25V	TBA	0~+70°C
ML53812-2TC	176-LQFP	H.100/H.110 CT Bus™ Interface LSI	+3.0 ~ 3.6V	TBA	0~+70°C

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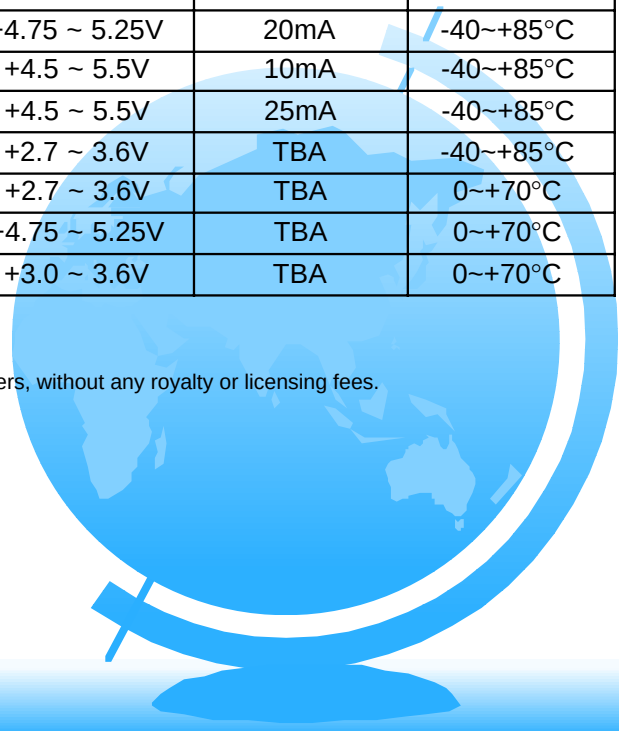


GaAs RF Signal Amplifier

Part Number	Function	Packages	Voltage (typ)	Current (max)	Gain (min)	Power Out (min)	NF/ISO (max)	Labelled Frequency
KGF1145	2-Stage limiting amplifier	4-SOP (SOT-143)	5V	4mA	-/-	2dBm	40dB Iso	850MHz
KGF1146	2-Stage limiting amplifier	4-SOP (SOT-143)	5V	2.5mA	-/-	1.5dBm	40dB Iso	850MHz
KGF1155B	Dual gate receiver/mixer amplifier	4-SOP (SOT-143)	5V	2.5mA	12dB	3dBm	3dB NF	850MHz
KGF1165	50Ω matched feedback amplifier	4-SOP (SOT-143)	5V	25mA	7dB	7dBm	4dB NF	850MHz
KGF1175B	Low noise, high gain front end amplifier	4-SOP (SOT-143)	5V	2.5mA	12dB	3dBm	2dB NF	850MHz
KGF1181B	50Ω matched 2-stage feedback amplifier	4-SOP (SOT-143)	5.2V	40mA	20dB	11.5dBm	-18dB return loss	850MHz
KGF1183	50Ω matched 2-stage feedback amplifier	4-SOP (SOT-143)	5.4V	80mA	20dB	17dBm	-9dB return loss	850MHz
KGF1191	Broadband buffer amplifier	4-SOP (SOT-143)	3V	5mA	18dB	0dBm	5dB NF	1.9GHz
KGF1203	Balanced mixer amplifier	4-SOP (SOT-143)	5V	15mA	Gc 4dB	-/-	-8dB LO-RF Iso	850MHz
KGF1254B	Self-bias driver amplifier	4-SOP (SOT-143)	5.2V	80mA	14dB	20dBm	2.5dB NF	850MHz
KGF1256B	Self-bias driver amplifier	4-SOP (SOT-143)	5V	40mA	14dB	16dBm	2.5dB NF	850MHz
KGF1256D	Self-bias driver amplifier	4-SOP (SOT-143)	3V	35mA	11dB	11.5dBm	2.5dB NF	1.5GHz
KGF1256H	Self-bias driver amplifier	4-SOP (SOT-143)	3V	35mA	14dB	12dBm	2.5dB NF	850MHz
KGF1521	Low distortion amplifier	4-SOP (SOT-143)	3V	2.5mA	11dB	-3dBm	2.5dB NF	1.9GHz
KGF1522	Low distortion amplifier	4-SOP (SOT-143)	3V	5mA	11dB	2dBm	2.0dB NF	1.9GHz
KGF1531	Low distortion dual gate mixer amplifier	4-SOP (SOT-143)	3V	8mA	Gc 10dB	0dBm	-/-	1.9GHz
KGF1262	Self-bias driver amplifier	4-SOP (SOT-143)	5V	70mA	15dB	18dBm	-/-	1.9GHz
KGF1265	Self-bias driver amplifier	4-SOP (SOT-143)	3V	18mA	13dB	11dBm	-/-	900MHz
KGF2511	Low-distortion, high gain driver amplifier	6-SOP (SOT-23)	2.8V	28mA	27dB	8dBm	-/-	950MHz
KGF2512	Low-distortion, high gain driver amplifier	6-SOP (SOT-23)	2.8V	32mA	27dB	10dBm	-/-	1441MHz

GaAs Driver and Power FETs

Part Number	Function	Packages	Voltage (typ)	Current (max)	Gain (min)	Power Output (min)	Typ. Drain Efficiency	Rth (typ) [°C/W]	Labelled Frequency
KGF1283	Driver FET	3-Pin (SOT-89)	5.8V	70mA	17dB	26.5dBm	60%	43	850MHz
KGF1284	Driver FET	3-Pin (SOT-89)	3.4V	70mA	12dB	21.5dBm	60%	43	850MHz
KGF1305T	Power FET	3-Pin ceramic	5.4V	150mA	12dB	31.5dBm	70%	10	850MHz
KGF1312	Power FET	3-Pin (SOT-89)	5.8V	150mA	16dB	31.5dBm	70%	23	850MHz
KGF1313	Power FET	3-Pin (SOT-89)	3.4V	200mA	9.5dB	27dBm	50%	23	850MHz
KGF1321S	Power FET	3-Pin ceramic SMD	5.8V	175mA	16dB	31.5dBm	>70%	18	850MHz
KGF1322	Power FET	3-Pin ceramic	5.8V	240mA	15dB	33dBm	>60%	10	850MHz
KGF1322S	Power FET	3-Pin ceramic SMD	5.8V	240mA	15dB	33dBm	>60%	18	1.9GHz
KGF1323	Power FET	3-Pin (SOT-89)	5.8V	240mA	15dB	33dBm	70%	23	850MHz
KGF1631	Power FET	3-Pin (SOT-89)	3.4V	60mA	21dB	24dBm	50%	60	1.5GHz
KGF1633	Power FET	3-Pin (SOT-89)	3.4V	120mA	19dB	27dBm	70%	30	850MHz
KGF2236	Driver/Power FET	16-Pin SSOP	3.5V	200mA	25dB	31.5dBm	>55%	20 max.	835MHz

GaAs Wide Band Amplifiers

Part Number	Function	Packages	Voltage (typ)	Current (max)	Gain (min)	Power Output (min)	Noise Figure	Labelled Frequency
KGF2701	Wide band amplifier with AGC, 0.8~4GHz	8-Cer	5.0V	90mA	16dB	14dBm	4.5dB typ.	2.5GHz
KGF2702	Wide band amplifier with AGC, 0.8~4GHz	8-SOP	5.0V	90mA	15.5dB	14dBm	5dB typ.	2.5GHz
KGF2441	Wide dynamic range IF amplifier with AGC	8-SOP	5.0V	10mA	12dB	-/-	10dB max.	70~130MHz
KGF2431	Wide dynamic range IF amplifier with AGC	8-SOP	3.0V	10mA	16dB	-/-	10dB max.	70~130MHz

Single Supply MMICs

Part Number	Function	Packages	Voltage (typ)	Input Power (min)	Output Power (typ)	Power Added Efficiency
KGF2811	GSM 900, 2-stage MMIC	16-SSOP	3.6V	7dBm	35dBm	55%
KGF2811X	GSM 900, 3-stage MMIC	16-SSOP	3.6V	3dBm	35dBm	50%
KGF2821	GSM 1800/1900, 2-stage MMIC	16-SSOP	3.6V	10dBm	33dBm	50%
KGF2821X	GSM 1800/1900, 3-stage MMIC	16-SSOP	3.6V	3dBm	33dBm	TBA
KGF2822	GSM 1800/1900, 2-stage MMIC, APC	16-SSOP	3.6V	10dBm	33dBm	50%
KGF2822X	GSM 1800/1900, 3-stage MMIC, APC	16-SSOP	3.6V	5dBm	33dBm	TBA

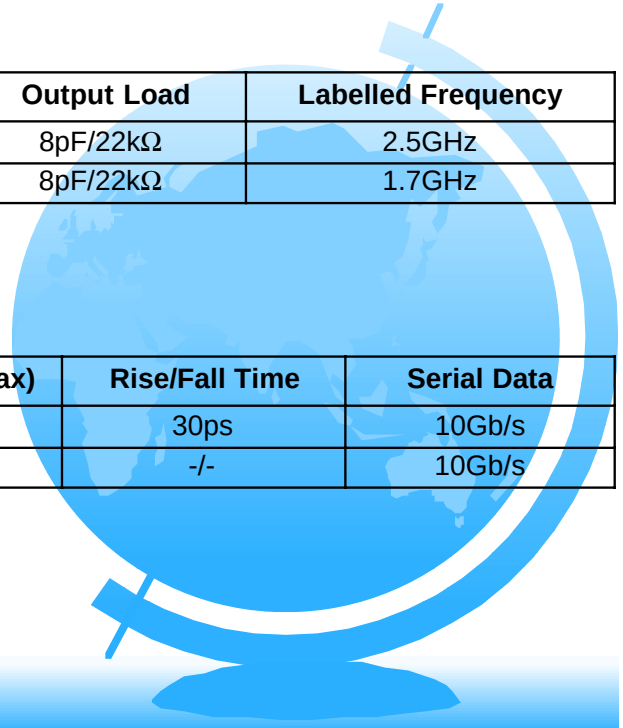
APC: Automatic Power Control

GaAs Prescalers

Part Number	Function	Packages	Voltage (typ)	Current (max)	Output Load	Labelled Frequency
KGL2132	2 modulus prescaler 1/64, 1/65	8-SOP	3.0V	5mA	8pF/22kΩ	2.5GHz
KGL2135	2 modulus prescaler 1/128, 1/130	8-SOP	3.0V	5mA	8pF/22kΩ	1.7GHz

Mux/Demux

Part Number	Function	Packages	Voltage (typ)	Current (max)	Rise/Fall Time	Serial Data
KGL4201	8:1 Multiplexer	40-QFP (cer)	2.0V	1500mA	30ps	10Gb/s
KGL4202	1:8 Demultiplexer	40-QFP (cer)	2.0V	2000mA	-/-	10Gb/s



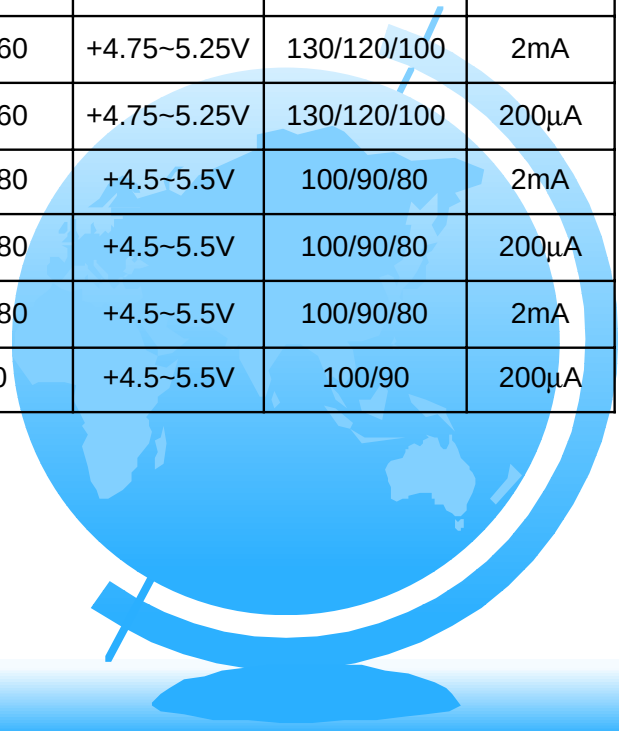
SAW Filters

Part Number	Function	Packages	Typical Application	Insertion Loss max	Center [MHz]	Pass [MHz]	Stop [MHz]	Outband Attenuation [dB min]	Operating Temperature
MBF9317	Transmit Filter	6-pad LCC	AMPS/CDMA/TDMA	3.5dB	836.5 ±12.5	824~849	869~894	30	-30~+85°C
MBF9311	Receive Filter	6-pad LCC	AMPS/CDMA/TDMA	3.0dB	881.5 ±12.5	869~894	824~849	35	-30~+85°C
MBF9316C	Transmit Filter	6-pad LCC	AMPS/CDMA/TDMA	4.0dB	836.5 ±12.5	824~849	869~894	30	-30~+85°C
MBF9319C	Receive Filter	6-pad LCC	AMPS/CDMA/TDMA	3.5dB	881.5 ±12.5	869~894	824~849	35	-30~+85°C
MBF9411B	Transmit Filter	6-pad LCC	AMPS/CDMA/TDMA	3.5dB	836.5 ±12.5	824~849	869~894	30	-30~+85°C
MBF9412B	Receive Filter	6-pad LCC	AMPS/CDMA/TDMA	3.5dB	881.5 ±12.5	869~894	824~849	30	-30~+85°C

MBF9411B and MBF9412B are 3.0 x 3.0mm sized packages while the other parts come in 3.8 x 3.8mm packages.

1 Megabit DRAMs

Part Number	Packages	Configuration	Mode	Refresh	Access [ns]	Supply Voltage	Max. Current [mA]	Max. Standby
MSM511000C	20-ZIP, 26(20)-SOJ	1M x 1	Fast Page	512cyc/8ms	45/50/60/70	+4.5~5.5V	85/8070/60	2mA
MSM511000CL	20-ZIP, 26(20)-SOJ	1M x 1	Fast Page	512cyc/64ms	45/50/60/70	+4.5~5.5V	85/8070/60	200µA
MSM51V1000A	20-ZIP, 26(20)-SOJ	1M x 1	Fast Page	512cyc/8ms	70/80/100	+3.0~3.6V	50/45/40	2mA
MSM514256C	20-DIP, 20-ZIP, 26(20)-SOJ	256K x 4	Fast Page	512cyc/8ms	45/50/60/70	+4.5~5.5V	85/8070/60	2mA
MSM514256CL	20-DIP, 20-ZIP, 26(20)-SOJ	256K x 4	Fast Page	512cyc/64ms	45/50/60/70	+4.5~5.5V	85/8070/60	200µA
MSM51V4256A	20-DIP, 20-ZIP, 26(20)-SOJ	256K x 4	Fast Page	512cyc/8ms	70/80/100	+3.0~3.6V	45/40/35	2mA
MSM518126	26(24)-SOJ, 26(24)-TSOP II	128K x 8	Fast Page (8R/9C)	512cyc/8ms	45/50/60	+4.75~5.25V	130/120/100	2mA
MSM518126L	26(24)-SOJ, 26(24)-TSOP II	128K x 8	Fast Page (8R/9C)	512cyc/64ms	45/50/60	+4.75~5.25V	130/120/100	200µA
MSM518128	26(24)-SOJ	128K x 8	Fast Page (9R/8C)	512cyc/8ms	45/50/60	+4.75~5.25V	130/120/100	2mA
MSM518128L	26(24)-SOJ	128K x 8	Fast Page (9R/8C)	512cyc/64ms	45/50/60	+4.75~5.25V	130/120/100	200µA
MSM511664C	40-SOJ, 44(40)-TSOP II	64K x 16	Fast Page Byte Write	256cyc/4ms	60/70/80	+4.5~5.5V	100/90/80	2mA
MSM511664CL	40-SOJ, 44(40)-TSOP II	64K x 16	Fast Page Byte Write	256cyc/32ms	60/70/80	+4.5~5.5V	100/90/80	200µA
MSM511666C	40-SOJ, 44(40)-TSOP II	64K x 16	Fast Page Byte Write	256cyc/4ms	60/70/80	+4.5~5.5V	100/90/80	2mA
MSM511666CL	40-SOJ, 44(40)-TSOP II	64K x 16	EDO Byte Write	256cyc/32ms	60/70	+4.5~5.5V	100/90	200µA



2 Megabit DRAMs

Part Number	Packages	Configuration	Mode	Refresh	Access [ns]	Supply Voltage	Max. Current [mA]	Max. Standby
MSM512100	26(20)-SOJ	2M x 1	Fast Page	1024cyc/16ms	60/70/80	+4.5~5.5V	80/70/60	2mA
MSM512100L	26(20)-SOJ	2M x 1	Fast Page	1024cyc/128ms	60/70/80	+4.5~5.5V	80/70/60	100µA
MSM512200	26(20)-SOJ, 26(20)-TSOP II	1M x 2	Fast Page	1024cyc/16ms	60/70/80	+4.5~5.5V	80/70/60	2mA
MSM512200L	26(20)-SOJ, 26(20)-TSOP II	1M x 2	Fast Page	1024cyc/128ms	60/70/80	+4.5~5.5V	80/70/60	100µA
MSM512800C	26(24)-SOJ, 26(24)-TSOP II	256K x 8	Fast Page	512cyc/8ms	40/45/50	+4.5~5.5V	130/120/110	2mA
MSM512805C	26(24)-SOJ, 26(24)-TSOP II	256K x 8	EDO	512cyc/8ms	40/45/50	+4.5~5.5V	140/130/120	2mA

4 Megabit DRAMs

Part Number	Packages	Configuration	Mode	Refresh	Access [ns]	Supply Voltage	Max. Current [mA]	Max. Standby
MSM514100D	20-ZIP, 26(20)-SOJ, 26(20)-TSOP II	4M x 1	Fast Page	1024cyc/16ms	50/60/70	+4.5~5.5V	100/90/80	2mA
MSM514100DL	20-ZIP, 26(20)-SOJ, 26(20)-TSOP II	4M x 1	Fast Page	1024cyc/128ms	50/60/70	+4.5~5.5V	100/90/80	200µA
MSM514400D	20-ZIP, 26(20)-SOJ, 26(20)-TSOP II	1M x 4	Fast Page	1024cyc/16ms	50/60/70	+4.5~5.5V	100/90/80	2mA
MSM514400DL	20-ZIP, 26(20)-SOJ, 26(20)-TSOP II	1M x 4	Fast Page	1024cyc/128ms	50/60/70	+4.5~5.5V	100/90/80	200µA
MSM51V4400D	26(20)-SOJ, 26(20)-TSOP II	1M x 4	Fast Page	1024cyc/16ms	60/70/80/100	+3.0~3.6V	70/65/60/55	2mA
MSM51V4400DL	26(20)-SOJ, 26(20)-TSOP II	1M x 4	Fast Page	1024cyc/128ms	60/70/80/100	+3.0~3.6V	100/90/80/770	150µA
MSM514800C	28-SOJ, 28-TSOP II (both 400mil)	512K x 8	Fast Page	1024cyc/16ms	60/70/80	+4.5~5.5V	120/110/100	2mA
MSM514800CSL	28-SOJ, 28-TSOP II (both 400mil)	512K x 8	Fast Page	1024cyc/128ms	60/70/80	+4.5~5.5V	120/110/100	200µA
MSM514900C	28-SOJ, 28-TSOP II (both 400mil)	512K x 9	Fast Page	1024cyc/16ms	60/70/80	+4.5~5.5V	140/130/120	2mA
MSM514900CSL	28-SOJ, 28-TSOP II (both 400mil)	512K x 9	Fast Page	1024cyc/128ms	60/70/80	+4.5~5.5V	140/130/120	200µA
MSM514260C	40-SOJ, 44(40)-TSOP II	256K x 16	Fast Page	512cyc/8ms	50/60/70	+4.5~5.5V	170/150/140	2mA
MSM514260CSL	40-SOJ, 44(40)-TSOP II	256K x 16	Fast Page	512cyc/128ms	50/60/70	+4.5~5.5V	170/150/140	200µA
MSM514265C	40-SOJ, 44(40)-TSOP II	256K x 16	Fast Page	512cyc/8ms	50/60/70	+4.5~5.5V	170/150/140	2mA
MSM514265CSL	40-SOJ, 44(40)-TSOP II	256K x 16	EDO	512cyc/128ms	50/60/70	+4.5~5.5V	170/150/140	200µA

8 Megabit DRAMs

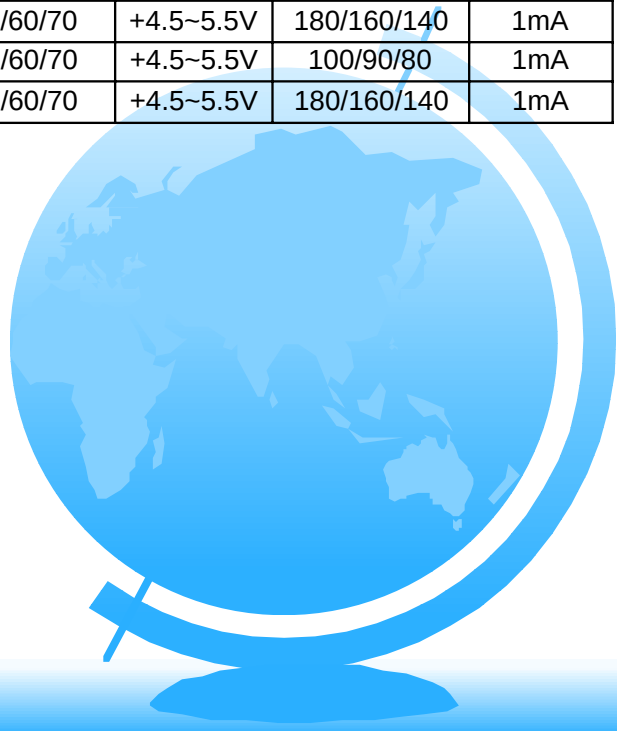
Part Number	Packages	Configuration	Mode	Refresh	Access [ns]	Supply Voltage	Max. Current [mA]	Max. Standby
MSM518200	26(24)-SOJ, 26(24)-TSOP II	4M x 2	Fast Page	4096cyc/64ms	60/70/80	+4.5~5.5V	70/65/60	2mA
MSM519200	26(24)-SOJ, 26(24)-TSOP II	4M x 2	Fast Page	2048cyc/32ms	60/70/80	+4.5~5.5V	80/75/70	2mA
MSM518200	26(24)-SOJ, 26(24)-TSOP II	4M x 2	EDO	4096cyc/64ms	60/70/80	+4.5~5.5V	70/65/60	2mA
MSM519200	26(24)-SOJ, 26(24)-TSOP II	4M x 2	EDO	2048cyc/32ms	60/70/80	+4.5~5.5V	80/75/70	2mA

16 Megabit DRAMs

Part Number	Packages	Configuration	Mode	Refresh	Access [ns]	Supply Voltage	Max. Current [mA]	Max. Standby
MSM51V16400D	26-SOJ, 26-TSOP II (both 300mil)	4M x 4	Fast Page	4096cyc/64ms	50/60/70	+3.0~3.6V	75/70/65	500µA
MSM51V16400DSL	26-SOJ, 26-TSOP II (both 300mil)	4M x 4	Fast Page	4096cyc/128ms	50/60/70	+3.0~3.6V	75/70/65	200µA
MSM5116400C	26-SOJ, 26-TSOP II (both 300mil)	4M x 4	Fast Page	4096cyc/64ms	50/60/70	+4.5~5.5V	100/90/80	1mA
MSM51V16405D	26-SOJ, 26-TSOP II (both 300mil)	4M x 4	EDO	4096cyc/64ms	50/60/70	+3.0~3.6V	110/90/80	500µA
MSM51V16405DSL	26-SOJ, 26-TSOP II (both 300mil)	4M x 4	EDO	4096cyc/128ms	50/60/70	+3.0~3.6V	110/90/80	200µA
MSM5116405C	26-SOJ, 26-TSOP II (both 300mil)	4M x 4	EDO	4096cyc/64ms	50/60/70	+4.5~5.5V	100/90/80	1mA
MSM51V17400D	26-SOJ, 26-TSOP II (both 300mil)	4M x 4	Fast Page	2048cyc/32ms	50/60/70	+3.0~3.6V	100/90/80	500µA
MSM51V17400DSL	26-SOJ, 26-TSOP II (both 300mil)	4M x 4	Fast Page	2048cyc/128ms	50/60/70	+3.0~3.6V	100/90/80	200µA
MSM5117400C	26-SOJ, 26-TSOP II (both 300mil)	4M x 4	Fast Page	2048cyc/32ms	50/60/70	+4.5~5.5V	120/110/100	1mA
MSM51V17405D	26-SOJ, 26-TSOP II (both 300mil)	4M x 4	EDO	2048cyc/32ms	50/60/70	+3.0~3.6V	100/90/80	500µA
MSM51V17405DSL	26-SOJ, 26-TSOP II (both 300mil)	4M x 4	EDO	2048cyc/128ms	50/60/70	+3.0~3.6V	100/90/80	200µA
MSM5117405C	26-SOJ, 26-TSOP II (both 300mil)	4M x 4	EDO	2048cyc/32ms	50/60/70	+4.5~5.5V	120/110/100	1mA
MSM51V16800D	28-SOJ, 28-TSOP II (both 400mil)	2M x 8	Fast Page	4096cyc/32ms	50/60/70	+3.0~3.6V	75/70/65	500µA
MSM51V16800DSL	28-SOJ, 28-TSOP II (both 400mil)	2M x 8	Fast Page	4096cyc/128ms	50/60/70	+3.0~3.6V	75/70/65	200µA
MSM5116800C	28-SOJ, 28-TSOP II (both 400mil)	2M x 8	Fast Page	4096cyc/32ms	50/60/70	+4.5~5.5V	100/90/80	1mA
MSM51V16805D	28-SOJ, 28-TSOP II (both 400mil)	2M x 8	EDO	4096cyc/32ms	50/60/70	+3.0~3.6V	110/90/80	500µA
MSM51V16805DSL	28-SOJ, 28-TSOP II (both 400mil)	2M x 8	EDO	4096cyc/128ms	50/60/70	+3.0~3.6V	110/90/80	200µA
MSM5116805C	28-SOJ, 28-TSOP II (both 400mil)	2M x 8	EDO	4096cyc/32ms	50/60/70	+4.5~5.5V	100/90/80	1mA
MSM51V17800D	28-SOJ, 28-TSOP II (both 400mil)	2M x 8	Fast Page	2048cyc/32ms	50/60/70	+3.0~3.6V	100/90/80	500µA
MSM51V17800DSL	28-SOJ, 28-TSOP II (both 400mil)	2M x 8	Fast Page	2048cyc/128ms	50/60/70	+3.0~3.6V	100/90/80	200µA
MSM5117800C	28-SOJ, 28-TSOP II (both 400mil)	2M x 8	Fast Page	2048cyc/32ms	50/60/70	+4.5~5.5V	150/130/110	1mA
MSM51V17805D	28-SOJ, 28-TSOP II (both 400mil)	2M x 8	EDO	2048cyc/32ms	50/60/70	+3.0~3.6V	100/90/80	500µA
MSM51V17805DSL	28-SOJ, 28-TSOP II (both 400mil)	2M x 8	EDO	2048cyc/128ms	50/60/70	+3.0~3.6V	100/90/80	200µA
MSM5117805C	28-SOJ, 28-TSOP II (both 400mil)	2M x 8	EDO	2048cyc/32ms	50/60/70	+4.5~5.5V	150/130/110	1mA

16 Megabit DRAMs, cont'd

Part Number	Packages	Configuration	Mode	Refresh	Access [ns]	Supply Voltage	Max. Current [mA]	Max. Standby
MSM51V16160D	42-SOJ, 50-TSOP II (both 400mil)	1M x 16	Fast Page	4096cyc/64ms	50/60/70	+3.0~3.6V	75/70/60	500µA
MSM51V16160DSL	42-SOJ, 50-TSOP II (both 400mil)	1M x 16	Fast Page	4096cyc/128ms	50/60/70	+3.0~3.6V	75/70/60	200µA
MSM51V16165D	42-SOJ, 50-TSOP II (both 400mil)	1M x 16	EDO	4096cyc/64ms	50/60/70	+3.0~3.6V	100/90/80	500µA
MSM51V16165DSL	42-SOJ, 50-TSOP II (both 400mil)	1M x 16	EDO	4096cyc/128ms	50/60/70	+3.0~3.6V	100/90/80	200µA
MSM51V18160D	42-SOJ, 50-TSOP II (both 400mil)	1M x 16	Fast Page	1024cyc/16ms	50/60/70	+3.0~3.6V	125/115/105	500µA
MSM51V18160DSL	42-SOJ, 50-TSOP II (both 400mil)	1M x 16	Fast Page	1024cyc/128ms	50/60/70	+3.0~3.6V	125/115/105	200µA
MSM51V18165D	42-SOJ, 50-TSOP II (both 400mil)	1M x 16	EDO	1024cyc/16ms	50/60/70	+3.0~3.6V	125/115/105	500µA
MSM51V18165DSL	42-SOJ, 50-TSOP II (both 400mil)	1M x 16	EDO	1024cyc/128ms	50/60/70	+3.0~3.6V	125/115/105	200µA
MSM5116160B	42-SOJ, 50-TSOP II (both 400mil)	1M x 16	Fast Page	4096cyc/64ms	50/60/70	+4.5~5.5V	100/90/80	1mA
MSM5118160B	42-SOJ, 50-TSOP II (both 400mil)	1M x 16	Fast Page	1024cyc/16ms	50/60/70	+4.5~5.5V	180/160/140	1mA
MSM5116165B	42-SOJ, 50-TSOP II (both 400mil)	1M x 16	EDO	4096cyc/64ms	50/60/70	+4.5~5.5V	100/90/80	1mA
MSM5118165B	42-SOJ, 50-TSOP II (both 400mil)	1M x 16	EDO	1024cyc/16ms	50/60/70	+4.5~5.5V	180/160/140	1mA



Synchronous Dynamic Memories

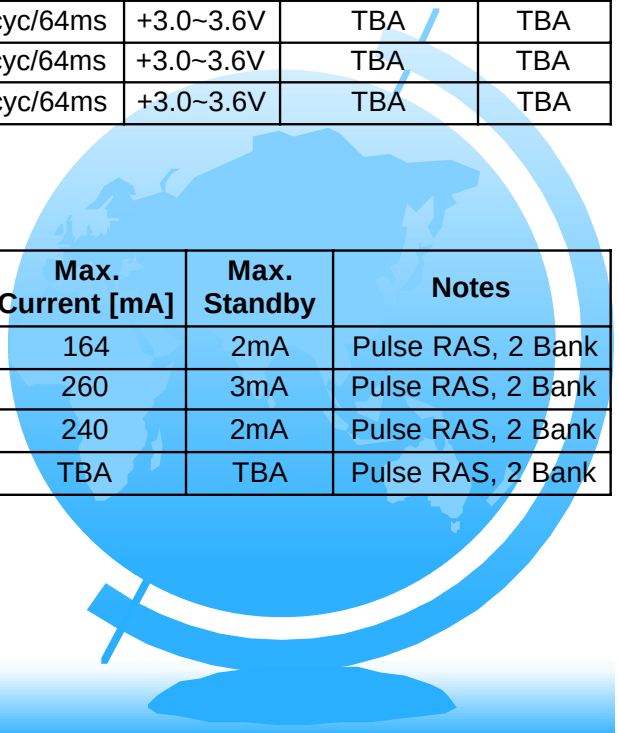
OKI Semiconductor

Synchronous DRAMs

Part Number	Packages	Configuration	Frequency [MHz]	Access Time [ns]	Cycle Time [ns]	Refresh	Supply Voltage	Max. Current [mA]	Max. Standby
MSM56V16400D/DH	44-TSOP II	2M x 4 x 2 Bank	100/83/66	9/10/9(DH)	10/12/15	4096cyc/64ms	+3.0~3.6V	130/135/140	2mA
MSM56V16800D/DH	44-TSOP II	1M x 8 x 2 Bank	100/83/66	9/10/9(DH)	10/12/15	4096cyc/64ms	+3.0~3.6V	130/135/140	2mA
MSM56V16400E	44-TSOP II	2M x 4 x 2 Bank	100/83	6/9	8/10	4096cyc/64ms	+3.0~3.6V	TBA	2mA
MSM56V16800E	44-TSOP II	1M x 8 x 2 Bank	100/83	6/9	8/10	4096cyc/64ms	+3.0~3.6V	TBA	2mA
MSM56V16160D/DH	50-TSOP II	512K x 16 x 2 Bank	100/83/66	9/10/9(DH)	10/12/15	4096cyc/64ms	+3.0~3.6V	130/150/180	2mA
MD56V62400	54-TSOP II	4M x 4 x 4 Bank	100/83/66	9/10/13	10/12/15	4096cyc/64ms	+3.0~3.6V	TBA	TBA
MD56V62800	54-TSOP II	2M x 8 x 4 Bank	100/83/66	9/10/13	10/12/15	4096cyc/64ms	+3.0~3.6V	TBA	TBA
MD56V62160	54-TSOP II	1M x 16 x 4 Bank	100/83/66	9/10/13	10/12/15	4096cyc/64ms	+3.0~3.6V	TBA	TBA
MD56V62400A	54-TSOP II	4M x 4 x 4 Bank	100/83	6/9	8/10	4096cyc/64ms	+3.0~3.6V	TBA	TBA
MD56V62800A	54-TSOP II	2M x 8 x 4 Bank	100/83	6/9	8/10	4096cyc/64ms	+3.0~3.6V	TBA	TBA
MD56V62160A	54-TSOP II	1M x 16 x 4 Bank	100/83	6/9	8/10	4096cyc/64ms	+3.0~3.6V	TBA	TBA
MD56V62230	86-TSOP II	512K x 32 x 4 Bank	100/83/66	9/10/13	10/12/15	4096cyc/64ms	+3.0~3.6V	TBA	TBA

Synchronous Graphics DRAMs

Part Number	Packages	Configuration	Total	Refresh	Access [ns]	Supply Voltage	Max. Current [mA]	Max. Standby	Notes
MSM54V24616	50-TSOP II	128K x 16 x 2 banks	4M	1024cyc/16ms	7	+2.97~3.63V	164	2mA	Pulse RAS, 2 Bank
MSM54V25632A	100-QFP	128K x 32 x 2 banks	8M	1024cyc/16ms	9	+3.0~3.6V	260	3mA	Pulse RAS, 2 Bank
MSM54V24632A	100-QFP	128K x 32 x 2 banks	8M	1024cyc/16ms	9	+3.0~3.6V	240	2mA	Pulse RAS, 2 Bank
MS82V16520	100-QFP	256K x 32 x 2 banks	16M	1024cyc/16ms	6.5	+3.0~3.6V	TBA	TBA	Pulse RAS, 2 Bank



Other Dynamic Memories

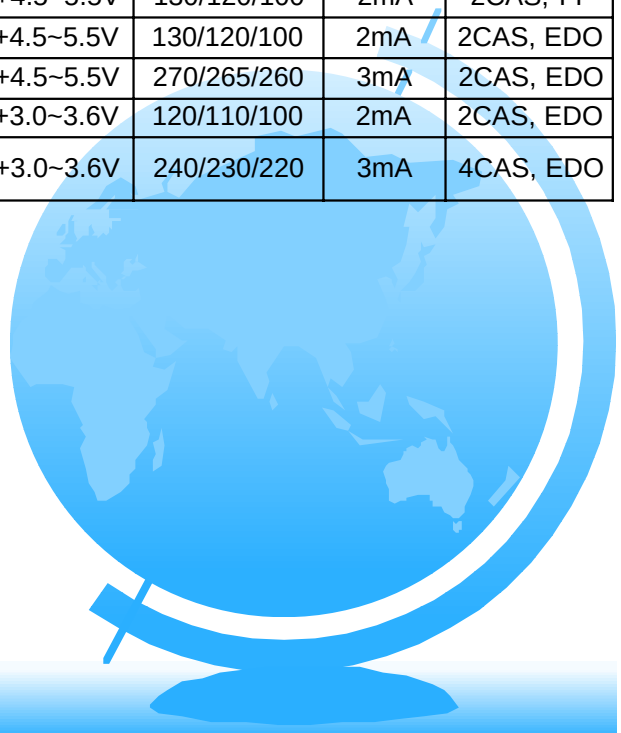
OKI Semiconductor

Graphic DRAMs

Part Number	Packages	Configuration	Mode	Refresh	Access [ns]	Supply Voltage	Max. Current [mA]	Max. Standby	Notes
MSM5432126A	64-SSOP	128K x 32	EDO	512cyc/8ms	40/45/50	+4.5~5.5V	200/190/180	2mA	Byte R/W, 4CAS
MSM54V32126A	64-SSOP, 70(64)-TSOP	128K x 32	EDO	512cyc/8ms	45/50/60	+3.0~3.6V	150/140/135	850µA	Byte R/W, 4CAS

Small System Buffers

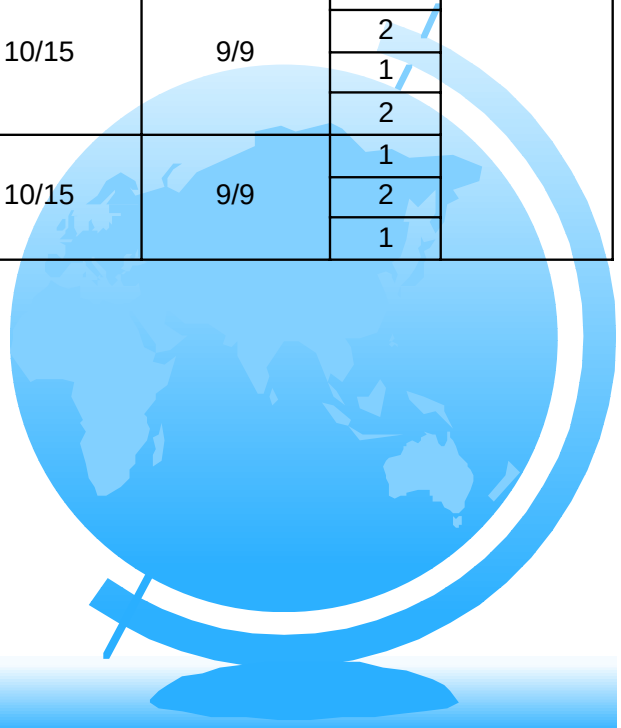
Part Number	Packages	Configuration	Total	Mode	Refresh	Access [ns]	Supply Voltage	Max. Current [mA]	Max. Standby	Notes
MSM54864	26-SOJ	64K x 8	512K	Fast Page	512cyc/8ms	70/80	+4.5~5.5V	85	5mA	-/-
MSM5416125A	40-SOJ, 44(40)-TSOP II	128K x 16	2M	Fast Page	512cyc/8ms	45/50/60	+4.5~5.5V	130/120/100	2mA	2CAS, FP
MSM5416126A	40-SOJ, 44(40)-TSOP II	128K x 16	2M	EDO	512cyc/8ms	45/50/60	+4.5~5.5V	130/120/100	2mA	2CAS, EDO
MSM5416258B	40-SOJ	256K x 16	4M	EDO	512cyc/8ms	28/30/35	+4.5~5.5V	270/265/260	3mA	2CAS, EDO
MSM54V16258BSL	40-SOJ, 44(40)-TSOP II	256K x 16	4M	EDO	512cyc/8ms	40/45/50	+3.0~3.6V	120/110/100	2mA	2CAS, EDO
MSM54V32256L	64-SSOP, 70(64)-TSOP II, 100-QFP	256K x 32	8M	EDO	1024cyc/16ms	40/45/50	+3.0~3.6V	240/230/220	3mA	4CAS, EDO



OKI Semiconductor

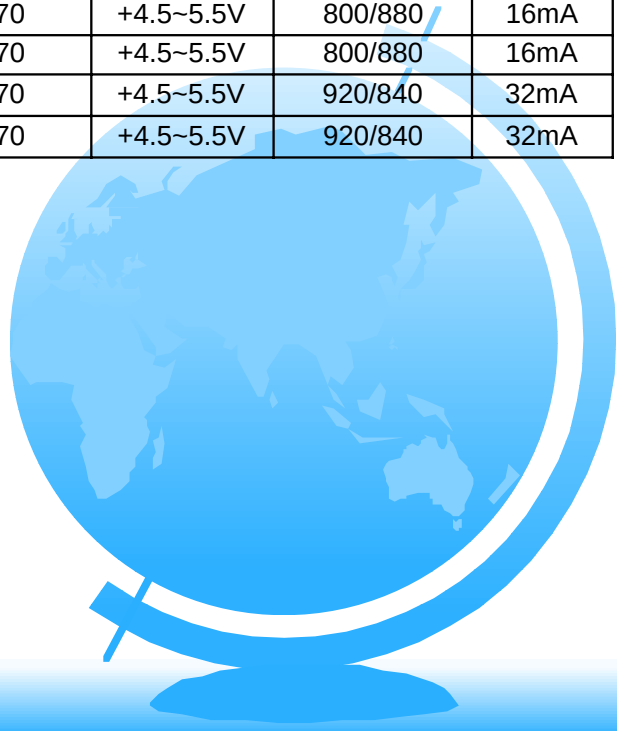
Synchronous Memory Modules

Package	Part Number	Configuration	Mounted SDRAMs	Refresh	DIMM Height [mm]	Clock Cycle [$t_{CC2/CC3}$ ns]	Access [$t_{AC2/AC3}$ ns]	Banks	Supply Voltage
168-pin, 8-byte DIMM	MSC23S2640E-8BS8	2M x 64	8M x 8 x 8	4096cyc/ 64ms	1.25	12/8	10/6	1	+3.0~3.6V
	MSC23S4641E-8BS16	4M x 64	8M x 8 x 16					2	
	MSC23S2720E-8BS9	2M x 72	8M x 8 x 9					1	
	MSC23S4721E-8BS18	4M x 72	8M x 8 x 18					2	
	MK31VT864A-8YC	8M x 64	8M x 8 x 8		1.38			1	
	MK32VT1664A-8YC	16M x 64	8M x 8 x 16					2	
	MK31VT872A-8YC	8M x 72	8M x 8 x 9					1	
	MK32VT1672A-8YC	17M x 72	8M x 8 x 18					2	
100-pin, 4 byte DIMM	MK31VT432-10YC	4M x 32	4M x 16 x 2		1.00	10/15	9/9	1	
	MK32VT832-10YC	8M x 32	4M x 16 x 4					2	
	MK31VT832-10YC		8M x 8 x 4		1.25			1	
	MK32VT1632-10YC	16M x 32	8M x 8 x 8					2	
144-pin, S/O DIMM	MK31VT464-10YE	4M x 64	4M x 16 x 4		1.15	10/15	9/9	1	
	MK32VT864-10YE	8M x 64	4M x 16 x 8					2	
	MK31VT864-10YE		8M x 8 x 8		1.25			1	



32-Bit 72-SIMM Modules (SOJ mounted), Gold Pads (BS), Tin Pads (DS)

Part Number	Capacity	Configuration	Mode	Refresh	Mounting	Access [ns]	Supply Voltage	Max. Current [mA]	Max. Standby
MSC23132D-XXBS8/DS8	4MB	1M x 32	Fast Page	1024cyc/16ms	Single	60/70	+4.5~5.5V	720/640	16mA
MSC23132DL-XXBS8/DS8	4MB	1M x 32	Fast Page	1024cyc/128ms	Single	60/70	+4.5~5.5V	720/640	1.6mA
MSC23B1321D-XXBS2/DS2	4MB	1M x 32	Fast Page	1024cyc/16ms	Single	60/70	+4.5~5.5V	250/230	4mA
MSC2313258D-XXBS2/DS2	4MB	1M x 32	EDO	1024cyc/16ms	Single	60/70	+4.5~5.5V	250/230	4mA
MSC23232D-XXBS16/DS16	8MB	2M x 32	Fast Page	1024cyc/16ms	Double	60/70	+4.5~5.5V	760/680	32mA
MSC23232DL-XXBS16/DS16	8MB	2M x 32	Fast Page	1024cyc/128ms	Double	60/70	+4.5~5.5V	760/680	3.2mA
MSC23B2321D-XXBS4/DS4	8MB	2M x 32	Fast Page	1024cyc/16ms	Double	60/70	+4.5~5.5V	260/240	8mA
MSC2323258D-XXBS4/DS4	8MB	2M x 32	EDO	1024cyc/16ms	Double	60/70	+4.5~5.5V	260/240	8mA
MSC2323267D-XXBS4/DS4	8MB	2M x 32	EDO	1024cyc/16ms	Single	60/70	+4.5~5.5V	440/400	8mA
MSC23432D-XXBS8/DS8	16 MB	4M x 32	Fast Page	2048cyc/32ms	Single	60/70	+4.5~5.5V	800/880	16mA
MSC2343257D-XXBS8/DS8	16 MB	4M x 32	EDO	2048cyc/32ms	Single	60/70	+4.5~5.5V	800/880	16mA
MSC23832D-XXBS16/DS16	32 MB	8M x 32	Fast Page	2048cyc/32ms	Double	60/70	+4.5~5.5V	920/840	32mA
MSC2383257D-XXBS16/DS16	32 MB	8M x 32	EDO	2048cyc/32ms	Double	60/70	+4.5~5.5V	920/840	32mA



36-Bit 72-SIMM Modules (SOJ mounted), Gold Pads (BS), Tin Pads (DS)

Part Number	Capacity	Configuration	Mode	Refresh	Mounting	Access [ns]	Supply Voltage	Max. Current [mA]	Max. Standby
MSC23136D-XXBS10/DS10	4 MB	1M x 36	Fast Page	1024cyc/16ms	Single	60/70	+4.5~5.5V	880/780	20mA
MSC23136DL-XXBS10/DS10	4 MB	1M x 36	Fast Page	1024cyc/128ms	Single	60/70	+4.5~5.5V	880/780	1.8mA
MSC23B136D-XXBS4/DS4	4 MB	1M x 36	Fast Page	1024cyc/16ms	Single	60/70	+4.5~5.5V	410/370	8mA
MSC23137D-XXBS9/DS9	4 MB	1M x 36	Fast Page	1024cyc/16ms	Single	60/70	+4.5~5.5V	810/720	18mA
MSC23236D-XXBS20/DS20	8 MB	2M x 36	Fast Page	1024cyc/16ms	Double	60/70	+4.5~5.5V	930/830	40mA
MSC23236DL-XXBS20/DS20	8 MB	2M x 36	Fast Page	1024cyc/128ms	Double	60/70	+4.5~5.5V	930/830	3.6mA
MSC23B236D-XXBS8/DS8	8 MB	2M x 36	Fast Page	1024cyc/16ms	Double	60/70	+4.5~5.5V	430/390	16mA
MSC23237D-XXBS18/DS18	8 MB	2M x 36	Fast Page	1024cyc/16ms	Double	60/70	+4.5~5.5V	855/765	36mA
MSC23436D-XXBS10/DS10	16 MB	4M x 36	Fast Page	2048cyc/32ms	Single	60/70	+4.5~5.5V	1040/950	20mA
MSC2343657D-XXBS10/DS10	16 MB	4M x 36	EDO	2048cyc/32ms	Single	60/70	+4.5~5.5V	1040/950	20mA
MSC23437D-XXBS9/DS9	16 MB	4M x 36	Fast Page	4096cyc/64ms	Single	60/70	+4.5~5.5V	810/720	18mA
MSC23836D-XXBS20/DS20	32 MB	8M x 36	Fast Page	2048cyc/32ms	Double	60/70	+4.5~5.5V	1090/1000	40mA
MSC2383657D-XXBS20/DS20	32 MB	8M x 36	EDO	2048cyc/32ms	Double	60/70	+4.5~5.5V	1090/1000	40mA
MSC23837D-XXBS18/DS18	32 MB	8M x 36	Fast Page	4096cyc/64ms	Double	60/70	+4.5~5.5V	855/765	36mA

40-Bit 72-SIMM Modules (SOJ mounted), Gold Pads (BS), Tin Pads (DS)

Part Number	Capacity	Configuration	Mode	Refresh	Mounting	Access [ns]	Supply Voltage	Max. Current [mA]	Max. Standby
MSC23140D-XXBS10/DS10	4 MB	1M x 40	Fast Page	1024cyc/16ms	Single	60/70	+4.5~5.5V	900/800	20mA
MSC23240D-XXBS20/DS20	8 MB	2M x 40	Fast Page	1024cyc/16ms	Double	60/70	+4.5~5.5V	950/850	40mA
MSC23440D-XXBS10/DS10	16 MB	4M x 40	Fast Page	2048cyc/32ms	Single	60/70	+4.5~5.5V	1100/1000	20mA
MSC23441D-XXBS10/DS10	16 MB	4M x 40	Fast Page	4096cyc/64ms	Single	60/70	+4.5~5.5V	900/800	20mA
MSC23840D-XXBS20/DS20	32 MB	8M x 40	Fast Page	2048cyc/32ms	Double	60/70	+4.5~5.5V	1150/1050	40mA
MSC23841D-XXBS20/DS20	32 MB	8M x 40	Fast Page	4096cyc/64ms	Double	60/70	+4.5~5.5V	950/850	40mA

Memory Modules

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32-Bit Small Outline 72-SIMM Modules (TSOP mounted), Gold Pads

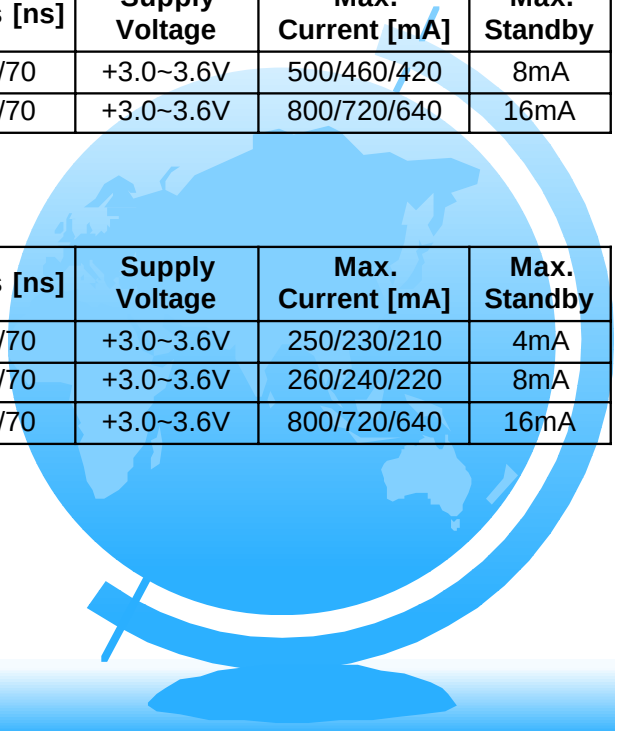
Part Number	Capacity	Configuration	Mode	Refresh	Mounting	Access [ns]	Supply Voltage	Max. Current [mA]	Max. Standby
MSC23CV232D-XXBS4	8 MB	2M x 32	Fast Page	2048cyc/32ms	Single	60/70	+3.0~3.6V	360/320	8mA
MSC23CV23257D-XXBS4	8 MB	2M x 32	EDO	2048cyc/32ms	Single	60/70	+3.0~3.6V	360/320	8mA
MSC23CV23218D-XXBS4	8 MB	2M x 32	Fast Page	1024cyc/16ms	Double	60/70	+3.0~3.6V	240/220	8mA
MSC23CV23268D-XXBS4	8 MB	2M x 32	EDO	1024cyc/16ms	Double	60/70	+3.0~3.6V	240/220	8mA
MSC23CV432D-XXBS8	16 MB	4M x 32	Fast Page	2048cyc/32ms	Double	60/70	+3.0~3.6V	720/640	16mA
MSC23CV43257D-XXBS8	16 MB	4M x 32	EDO	2048cyc/32ms	Double	60/70	+3.0~3.6V	720/640	16mA

64-Bit Small Outline 144-DIMM Modules (TSOP mounted), Gold Pads

Part Number	Capacity	Configuration	Mode	Refresh	Mounting	Access [ns]	Supply Voltage	Max. Current [mA]	Max. Standby
MSC23CV16458D-XXBS4	8 MB	1M x 64	EDO	1024cyc/16ms	Single	50/60/70	+3.0~3.6V	500/460/420	8mA
MSC23CV26457D-XXBS8	16 MB	2M x 64	EDO	2048cyc/32ms	Double	50/60/70	+3.0~3.6V	800/720/640	16mA

32-Bit 100-DIMM Modules (TSOP mounted), Gold Pads

Part Number	Capacity	Configuration	Mode	Refresh	Mounting	Access [ns]	Supply Voltage	Max. Current [mA]	Max. Standby
MSC23V13258D-XXBS2	4 MB	1M x 32	EDO	1024cyc/16ms	Single	50/60/70	+3.0~3.6V	250/230/210	4mA
MSC23V23258D-XXBS4	8 MB	2M x 32	EDO	1024cyc/16ms	Double	50/60/70	+3.0~3.6V	260/240/220	8mA
MSC23V43257D-XXBS8	16 MB	4M x 32	EDO	2048cyc/32ms	Double	50/60/70	+3.0~3.6V	800/720/640	16mA



64/72-Bit 168-DIMM Modules, unbuffered, (TSOP mounted), Gold Pads

Part Number	Capacity	Configuration	Mode	Refresh	Mounting	Access [ns]	Supply Voltage	Max. Current [mA]	Max. Standby
MSC23V26407TD-XXBS8	16 MB	2M x 64	Fast Page	2048cyc/32ms	Single	50/60/70	+3.0~3.6V	800/720/640	16mA
MSC23V26418TD-XXBS8	16 MB	2M x 64	Fast Page	1024cyc/16ms	Double	50/60/70	+3.0~3.6V	520/480/440	16mA
MSC23V26457TD-XXBS8	16 MB	2M x 64	EDO	2048cyc/32ms	Single	50/60/70	+3.0~3.6V	800/720/640	16mA
MSC23V26468TD-XXBS8	16 MB	2M x 64	EDO	1024cyc/16ms	Double	50/60/70	+3.0~3.6V	520/480/440	16mA
MSC23V27207TD-XXBS9	16 MB	2M x 72	Fast Page	2048cyc/32ms	Single	50/60/70	+3.0~3.6V	900/810/720	18mA
MSC23V27257TD-XXBS9	16 MB	2M x 72	EDO	2048cyc/32ms	Single	50/60/70	+3.0~3.6V	900/810/720	18mA
MSC23V46407TD-XXBS16	32 MB	4M x 64	Fast Page	2048cyc/32ms	Double	50/60/70	+3.0~3.6V	1600/1440/1280	32mA
MSC23V46457TD-XXBS16	32 MB	4M x 64	EDO	2048cyc/32ms	Double	50/60/70	+3.0~3.6V	1600/1440/1280	32mA
MSC23V47207TD-XXBS9	16 MB	2M x 72	Fast Page	2048cyc/32ms	Single	50/60/70	+3.0~3.6V	1800/1620/1440	36mA
MSC23V47257TD-XXBS9	16 MB	2M x 72	EDO	2048cyc/32ms	Single	50/60/70	+3.0~3.6V	900/810/720	36mA

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Video (Multiport) Memories

Part Number	Packages	Capacity	RAM Port	SAM Port	Refresh	Access [ns]	Supply Voltage	Max. Current [mA]	Max. Standby	Notes
MSM54C864	40-ZIP, 40-SOJ	512 KBit	256 x 256 x 8	256 x 8	256cyc/4ms	70/80/100	+4.5~5.5V	120/110/100	8mA	Basic functions
MSM514252A	28-ZIP, 28-SOJ	1 MBit	512 x 256 x 8	512 x 4	512cyc/8ms	70/80/100	+4.5~5.5V	120/110/100	8mA	Basic functions
MSM514262	28-ZIP, 28-SOJ	1 MBit	512 x 256 x 8	512 x 4	512cyc/8ms	70/80/100	+4.5~5.5V	120/110/100	8mA	Extended
MSM518121A	40-ZIP, 40-SOJ	1 MBit	512 x 256 x 8	256 x 8	512cyc/8ms	70/80/100	+4.5~5.5V	120/110/100	8mA	Basic functions
MSM518122	40-ZIP, 40-SOJ	1 MBit	512 x 256 x 8	256 x 8	512cyc/8ms	70/80/100	+4.5~5.5V	120/110/100	8mA	Extended
MSM518262	40-ZIP, 44(40)-TSOP	2 MBit	512 x 512 x 8	512 x 8	512cyc/8ms	60/70/80	+4.5~5.5V	140/130/120	8mA	Basic functions
MSM518263	40-ZIP, 44(40)-TSOP	2 MBit	512 x 512 x 8	512 x 8	512cyc/8ms	60/70/80	+4.5~5.5V	140/130/120	8mA	Extended
MSM5116262	64-SSOP	4 MBit	512 x 512 x 16	512 x 16	512cyc/8ms	50/60/70	+4.5~5.5V	180/170/160	9mA	Extended
MSM5116263	64-SSOP	4 MBit	512 x 512 x 16	512 x 16	512cyc/8ms	50/60/70	+4.5~5.5V	180/170/160	9mA	Extended 1
MSM5416272	64-SSOP	4 MBit	512 x 512 x 16	512 x 16	512cyc/8ms	50/60/70	+4.5~5.5V	200/190/180	8mA	2CAS, Extended
MSM5416273	64-SSOP	4 MBit	512 x 512 x 16	512 x 16	512cyc/8ms	50/60/70	+4.5~5.5V	200/190/180	8mA	Ext. page mode 2CAS, Extended 1
MSM54V16272	64-SSOP, 70(64)-TSOP II	4 MBit	512 x 512 x 16	512 x 16	512cyc/8ms	60/70	+3.0~3.6V	170/160	8mA	2CAS, Extended
MSM54V16273	64-SSOP, 70(64)-TSOP II	4 MBit	512 x 512 x 16	512 x 16	512cyc/8ms	60/70	+3.0~3.6V	170/160	8mA	Ext. page mode 2CAS, Extended 1
MSM5416282	64-SSOP	4 MBit	512 x 512 x 16	512 x 16	512cyc/8ms	50/60/70	+4.5~5.5V	200/190/180	8mA	2WE, Extended
MSM5416283	64-SSOP	4 MBit	512 x 512 x 16	512 x 16	512cyc/8ms	50/60/70	+4.5~5.5V	200/190/180	8mA	Ext. page mode 2WE, Extended 1
MSM54V16282	64-SSOP, 70(64)-TSOP II	4 MBit	512 x 512 x 16	512 x 16	512cyc/8ms	60/70	+3.0~3.6V	170/160	8mA	2WE, Extended
MSM54V16283	64-SSOP, 70(64)-TSOP II	4 MBit	512 x 512 x 16	512 x 16	512cyc/8ms	60/70	+3.0~3.6V	170/160	8mA	Ext. page mode 2WE, Extended 1

Extended functions typically include: write per bit, masked flash write, masked block write, split transfer, masked write transfer. Extended 1 adds persistent write per bit. Available functions depend on the device.

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Field Memories (FIFO-Type)

Part Number	Packages	Capacity	Configuration	Access [ns]	Supply Voltage	Max. Current [mA]	Max. Standby	Notes
MSM514212	28-ZIP	-/-	5048 x 8	28/34/50	+4.5~5.5V	42/36/31	-/-	Serial line memory
MSM514221C	16-DIP, 26(20)-SOJ, 20-ZIP	1 Mbit	512R x 512C x 4	25/30/50	+4.5~5.5V	50/45/35	10mA	FIFO type
MSM514222C	16-DIP, 26(20)-SOJ, 20-ZIP, 28-SOP	1 Mbit	512R x 512C x 4	25/30/50	+4.5~5.5V	50/45/35	10mA	FIFO type, cascadable
MSM514223C	18-DIP	1 Mbit	512R x 512C x 4	25/30/50	+4.5~5.5V	50/45/35	10mA	FIFO type, cascadable, write mask, data skip
MSM51V4221C	16-DIP, 26(20)-SOJ, 20-ZIP	1 Mbit	512R x 512C x 4	30	+3.0~3.6V	30	5mA	FIFO type
MSM51V4222C	16-DIP, 26(20)-SOJ, 20-ZIP, 28-SOP	1 Mbit	512R x 512C x 4	30	+3.0~3.6V	30	5mA	FIFO type, cascadable
MSM51V4223C	18-DIP	1 Mbit	512R x 512C x 4	30	+3.0~3.6V	30	5mA	FIFO type, cascadable, write mask, data skip
MSM518221A	28-ZIP, 28-SOJ, 28-SOP	2 MBit	512R x 512C x 8	25/30	+4.5~5.5V	60/50	5mA	FIFO type, write mask, data skip
MSM51V8221A	28-ZIP, 28-SOJ, 28-SOP	2 MBit	512R x 512C x 8	30	+3.0~3.6V	35	3mA	FIFO type, write mask, data skip
MSM518222A	28-ZIP, 28-SOJ, 28-SOP	2 MBit	512R x 512C x 8	25/30	+4.5~5.5V	60/50	5mA	FIFO type, cascadable, write mask, data skip
MSM51V8222A	28-ZIP, 28-SOJ, 28-SOP	2 MBit	512R x 512C x 8	30	+3.0~3.6V	35	3mA	FIFO type, cascadable, write mask, data skip
MSM5412222A	40-SOJ, 44-TSOP II	3 MBit	512R x 512C x 12	23	+4.5~5.5V	50	10mA	FIFO type, cascadable, write mask, data skip
MSM54V12222A	40-SOJ, 44-TSOP II	3 MBit	512R x 512C x 12	30	+3.0~3.6V	35	3mA	FIFO type, cascadable, write mask, data skip
MS8104160	100-TQFP	4 MBit	256 x 8 x 2	25/30	+4.5~5.5V	TBA	TBA	FIFO type
MS81V04160	100-TQFP	4 MBit	256 x 8 x 2	20/25	+3.0~3.6V	TBA	TBA	FIFO type
MS81V04166	100-TQFP	4 MBit	256 x 8 x 2	30/40	+3.0~3.6V	TBA	TBA	FIFO type
MS81V06160	70-TSOP II	6 MBit	392 x 16	66/83MHz	+3.0~3.6V	TBA	TBA	FIFO type

All Field memories feature self-refresh function.

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Field Memories (Line-by-Line Type)

Part Number	Packages	Capacity	Configuration	Access [ns]	Supply Voltage	Max. Current [mA]	Max. Standby	Notes
MSM548331	44-TSOP II	2.7 MBit	768C x 290L x 12	60	+3.0~3.6V	50	10mA	LINE type, cascadable, write mask, data skip
MSM548332	44-TSOP II	3.3 MBit	960C x 290L x 12	30/40	+3.0~3.6V	75/50	10mA	LINE type, cascadable, write mask, data skip
MSM548333	100-TQFP	2.9 MBit	768C x 313L x 8 (Y) 768C x 313L x 4 (C)	50	+3.0~3.6V	50	10mA	LINE type, cascadable, write mask, triple port
MSM548333A	100-TQFP	2.9 MBit	768C x 313L x 8 (Y) 768C x 313L x 4 (C)	50	+3.0~3.6V	TBA	TBA	Shrink version of MSM548333
MSM5412450	104-BGA	4.7 MBit	1024C x 384L x 12	FIFO mode: 50 DRAM mode: 80	+3.0~3.6V	90	5mA	Async. serial acces, data skip, write mask, DRAM mode (2CAS, EDO)
MSM5424331	70-TSOP II	5.4 MBit	768C x 290L x 24	60	+3.0~3.6V	85	5mA	LINE type, cascadable, write mask, block access, triple port

All Field memories feature self-refresh function.

High-Speed 1 to 64 Megabit OTPs

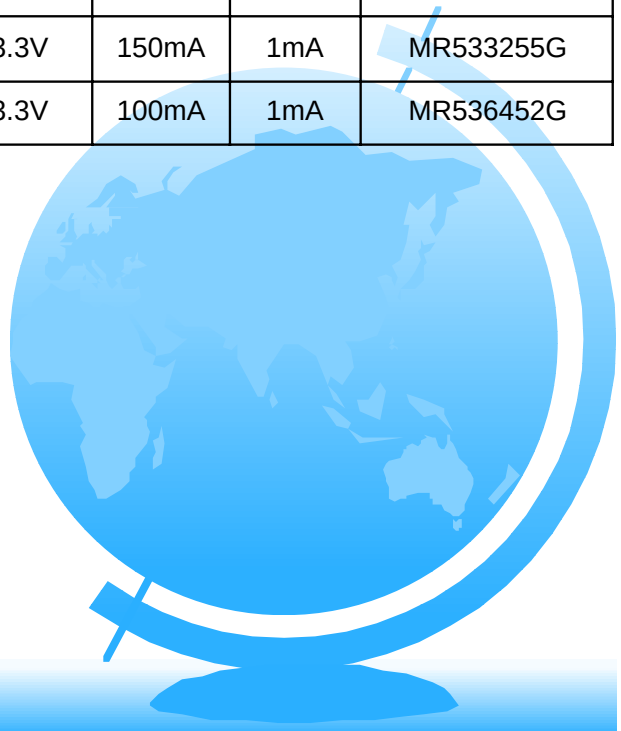
Total Capacity	Part Number	Packages	Organisation	Access [ns]	Supply Voltage	Max. Current	Max. Standby	OKI Mask ROM Compatibility
1 MBit	MSM27C101ZB	32-DIP, 32-SOP, 32-TSOP I	128K x 8	100	+4.5~5.5V	35mA	500µA	MSM531001B
1 MBit	MSM27C121ZB	32-DIP, 32-SOP, 32-TSOP I	128K x 8	70	+4.5~5.5V	40mA	500µA	MSM531021B
1 MBit	MSM27C131ZB	32-DIP, 32-SOP, 32-TSOP I	128K x 8	150/120/100	+2.7~5.5V (3V/3.3V/5V)	20/2035mA	500µA	MSM531031B (3V/3.3V) MSM531001B (5V)
2 MBit	MSM27C201CZ	32-DIP, 32-SOP, 32-TSOP I	256K x 8	80	+5V	35mA	500µA	MSM532021B
4 MBit	MSM27C401CZ	32-DIP, 32-SOP, 32-TSOP I	512K x 8	150/120/80	+2.7~5.5V (3V/3.3V/5V)	35/40/70mA	500µA	MSM534031E (3V/3.3V) MSM534001E (5V)
4 MBit	MSM27V401D	32-DIP, 32-SOP, 32-TSOP I	512K x 8	100/80	+2.7~3.6V (3V/3.3V)	30/35mA	500µA	MSM534031E (3V) MSM534031E (3.3V)
4 MBit	MSM27C402CZ	40-DIP, 40-SOP, 44-SOP	256K x 16/ 512K x 8	80	+5V	70mA	500µA	MSM534002E
4 MBit	MR27V402D	40-DIP, 40-SOP, 44-SOP	256K x 16/ 512K x 8	100/70	+3.0~5.5V (3V/3.3V/5V)	40/45mA	500µA	MSM534032E (3.3V) MSM534032E (5V)
8 MBit	MR27V801D	32-DIP, 32-SOP, 32-TSOP I	1M x 8	100/80	+2.7~3.6V (3V/3.3V)	30/35mA	500µA	MSM538031E (3V) MSM538031E (3.3V)
8 MBit	MSM27C802CZ	42-DIP, 44-SOP, 44-TSOP II	512K x 16/ 1M x8	80	+5V	80mA	500µA	MSM538002E
8 MBit	MR27V802D	42-DIP, 44-SOP, 44-TSOP II	512K x 16/ 1M x8	100/80	+2.7~3.6V (3V/3.3V)	40/45mA	500µA	MR538032 (3V) MR538032 (3.3V)
16 MBit	MSM27C1602CZ	42-DIP, 44-SOP, 48-TSOP II	1M x 16/ 2M x8	80	+5V	70mA	500µA	MSM531602E
16 MBit	MR27V1602D	42-DIP, 44-SOP, 44-TSOP II	1M x 16/ 2M x8	100/80	+2.7~3.6V (3V/3.3V)	40/45mA	500µA	MR531632G (3V) MR531632G (3.3V)
32 MBit	MSM27C3202CZ	44-SOP, 48-TSOP II	2M x 16/ 4M x8	100	+5V	70mA	500µA	MSM533202E
32 MBit	MR27V3202D	44-SOP, 48-TSOP II	2M x 16/ 4M x8	150/120	+2.7~3.6V (3V/3.3V)	40/45mA	500µA	MR533232G (3V) MR533232G (3.3V)
64 MBit	MR27V6402D	44-SOP	4M x 16/ 8M x8	150/120	+2.7~3.6V (3V/3.3V)	40/45mA	500µA	MR536432G (3V) MR536432G (3.3V)

5V Page Mode 4 to 32 Megabit OTPs

Total Capacity	Part Number	Packages	Organisation	Page	Access [ns]	Supply Voltage	Max. Current	Max. Standby	OKI Mask ROM Compatibility
4 MBit	MSM27C452CZ	40-DIP, 40-SOP, 44-TSOP II	256K x 16/ 512K x 8	8w	80 (random) 50 (page)	+4.5~5.5V	100mA	500µA	MSM534052E
8 MBit	MSM27C852CZ	42-DIP, 44-SOP, 44-TSOP II	512K x 16/ 1 M x 8	8w	100 (random) 50 (page)	+4.5~5.5V	100mA	500µA	MSM538052E
16 MBit	MSM27C1652CZ	42-DIP, 44-SOP, 48-TSOP II	1 M x 16/ 2 M x 8	8w	100 (random) 50 (page)	+4.5~5.5V	100mA	1mA	MSM531652E
16 MBit	MSM27C1655CZ	70-SSOP, 70-TSOP II	512K x 32/ 1 M x 16	4dw	100 (random) 30 (page)	+4.5~5.5V	120mA	1mA	MSM531655E
32 MBit	MSM27C3252CZ	44-SOP, 48-TSOP II	2 M x 16/ 4 M x 8	8w	100 (random) 50 (page)	+4.5~5.5V	100mA	1mA	-/-
32 MBit	MSM27C3255CZ	70-SSOP	1 M x 32/ 2 M x 16	4dw	100 (random) 30 (page)	+4.5~5.5V	120mA	1mA	-/-

3.3V Page Mode 4 to 64 Megabit OTPs

Total Capacity	Part Number	Packages	Organisation	Page	Access [ns]	Supply Voltage	Max. Current	Max. Standby	OKI Mask ROM Compatibility
4 MBit	MR27V452D	40-DIP, 40-SOP, 44-TSOP II	256K x 16/ 512K x 8	8w	80 (random) 40 (page)	+3.3V	100mA	500µA	-/-
8 MBit	MR27V852D	42-DIP, 44-SOP, 44-TSOP II	512K x 16/ 1 M x 8	8w	80 (random) 40 (page)	+3.3V	100mA	500µA	MR538052G
16 MBit	MR27V1652D	42-DIP, 44-SOP, 48-TSOP II	1 M x 16/ 2 M x 8	8w	80 (random) 40 (page)	+3.3V	100mA	1mA	MR531652G
16 MBit	MSM27V1655CZ	70-SSOP, 70-TSOP II	512K x 32/ 1 M x 16	4dw	100 (random) 30 (page)	+3.3V	100mA	1mA	MSM53V1655F
32 MBit	MR27V3252D	44-SOP, 48-TSOP II	2 M x 16/ 4 M x 8	8w	120 (random) 40 (page)	+3.3V	100mA	1mA	MR533252G
32 MBit	MSM27V3255CZ	70-SSOP	1 M x 32/ 2 M x 16	4dw	100 (random) 30 (page)	+3.3V	100mA	1mA	MR533255G
32 MBit	MR27V3255D	70-SSOP, 70-TSOP II	1 M x 32/ 2 M x 16	8dw	70 (random) 25 (page)	+3.3V	150mA	1mA	MR533255G
64 MBit	MR27V6452D	44-SOP	4 M x 16/ 8 M x 8	8w	120 (random) 40 (page)	+3.3V	100mA	1mA	MR536452G



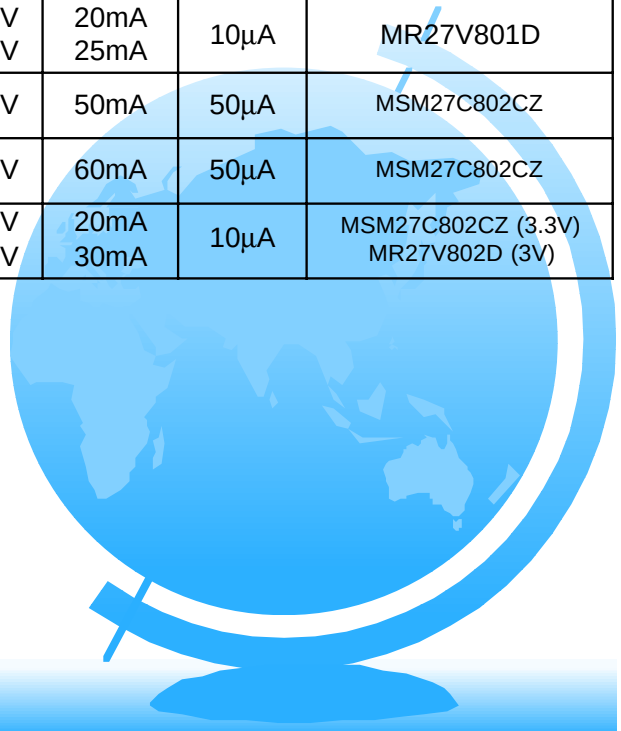
3.3V Synchronous OTPs

Total Capacity	Part Number	Packages	Organisation	Burst Length	Max Frequency	CAS Latency	Supply Voltage	Max. Current	Max. Standby	OKI Mask ROM Compatibility
32 MBit	MR27V3266D	86-TSOP II	1M x 32/ 2M x 16	4, 8	66 MHz	4, 5	+3.3V	150mA	1mA	-/-

OKI Semiconductor

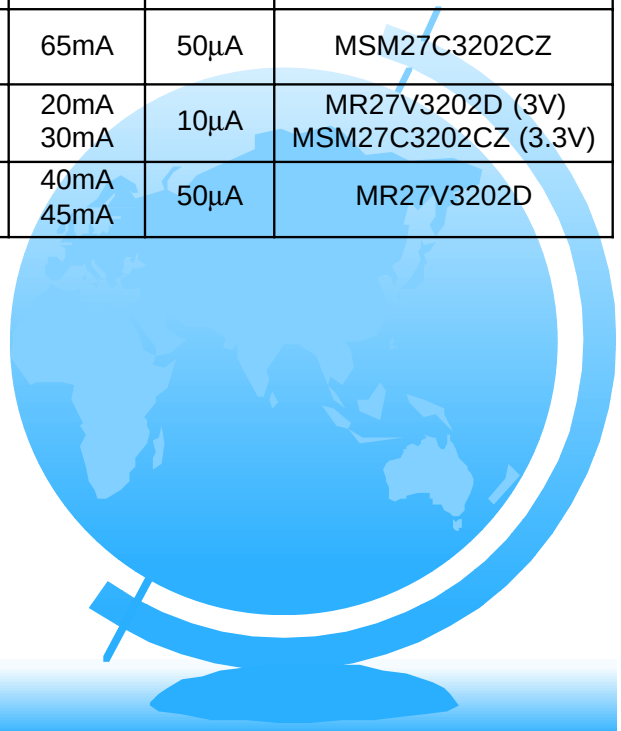
4 and 8 Megabit MROMs

Capacity	Part Number	Packages	Organisation	Access [ns]	Supply Voltage	Max. Current	Max. Standby	OKI OTP Compatibility/Notes
4 MBit	MSM534001E	32-DIP, 32-SOP, 32-TSOP I	512K x 8	80	+4.5~5.5V	35mA	50µA	MR27C401CZ
4 MBit	MSM534031E	32-DIP, 32-SOP, 32-TSOP I	512K x 8	150 120	+2.7~3.3V +3.0~3.6V	15mA 20mA	10µA	MSM27C401CZ
4 MBit	MSM534002E	40-DIP, 40-SOP, 44-TSOP II	256K x 16/ 512K x 8	100	+4.5~5.5V	45mA	50µA	MSM27C402CZ
4 MBit	MSM534022E	40-DIP, 40-SOP, 44-TSOP II	256K x 16/ 512K x 8	80	+4.5~5.5V	50mA	50µA	MSM27C402CZ
4 MBit	MSM534032E	40-DIP, 40-SOP, 44-TSOP II	256K x 16/ 512K x 8	150 120	+2.7~3.3V +3.0~3.6V	20mA 30mA	10µA	MR27V402D (3V) MSM27C402CZ (3.3V)
8 MBit	MSM538001E	32-DIP, 32-SOP, 32-TSOP I	1M x 8	100	+4.5~5.5V	40mA	50µA	MR27V801D
8 MBit	MSM538031E	32-DIP, 32-SOP, 32-TSOP I	1M x 8	150 120	+2.7~3.3V +3.0~3.6V	20mA 25mA	10µA	MR27V801D
8 MBit	MSM538002E	42-DIP, 44-SOP, 44-TSOP II	512K x 16/ 1M x 8	100	+4.5~5.5V	50mA	50µA	MSM27C802CZ
8 MBit	MSM538022E	42-DIP, 44-SOP, 44-TSOP II	512K x 16/ 1M x 8	80	+4.5~5.5V	60mA	50µA	MSM27C802CZ
8 MBit	MSM538032E	42-DIP, 44-SOP, 44-TSOP II	512K x 16/ 1M x 8	150 120	+2.7~3.3V +3.0~3.6V	20mA 30mA	10µA	MSM27C802CZ (3.3V) MR27V802D (3V)



16 and 32 Megabit MROMs

Capacity	Part Number	Packages	Organisation	Access [ns]	Supply Voltage	Max. Current	Max. Standby	OKI OTP Compatibility/Notes
16 MBit	MSM531602F	42-DIP, 44-SOP, 48-TSOP II	1M x 16/ 2M x 8	100	+4.5~5.5V	60mA	50µA	MSM27C1602CZ
16 MBit	MSM531622F	42-DIP, 44-SOP, 48-TSOP II	1M x 16/ 2M x 8	90	+4.5~5.5V	70mA	50µA	MSM27C1602CZ
16 MBit	MSM531632F	42-DIP, 44-SOP, 48-TSOP II	1M x 16/ 2M x 8	150 120	+2.7~3.3V +3.0~3.6V	20mA 30mA	10µA	MSM27C1602CZ
16 MBit	MR531602G	42-DIP, 44-SOP, 44-TSOP II	1M x 16/ 2M x 8	120 100	+2.7~3.3V +3.0~3.6V	35mA 40mA	10µA	MR27V1602D
32 MBit	MSM533202E	44-SOP, 48-TSOP II	2M x 16/ 4M x 8	120	+4.5~5.5V	60mA	50µA	MSM27C3202CZ
32 MBit	MSM533222E	44-SOP, 48-TSOP II	2M x 16/ 4M x 8	100	+4.5~5.5V	65mA	50µA	MSM27C3202CZ
32 MBit	MSM533232E	44-SOP, 48-TSOP II	2M x 16/ 4M x 8	200 150	+2.7~3.3V +3.0~3.6V	20mA 30mA	10µA	MR27V3202D (3V) MSM27C3202CZ (3.3V)
32 MBit	MR533202G	44-SOP, 48-TSOP II	2M x 16/ 4M x 8	120 100	+2.7~3.3V +3.0~3.6V	40mA 45mA	50µA	MR27V3202D

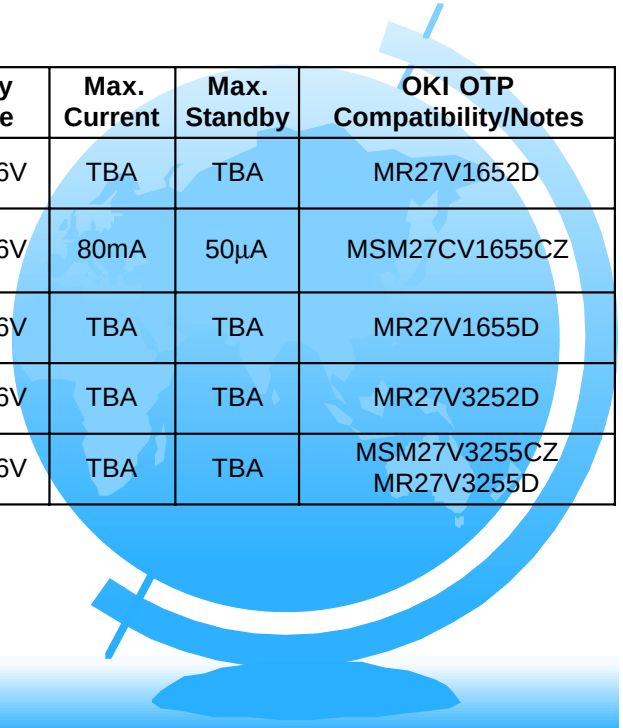


5V Page Mode 4 to 16 Megabit MROMs

Capacity	Part Number	Packages	Organisation	Page	Access [ns]	Supply Voltage	Max. Current	Max. Standby	OKI OTP Compatibility/Notes
4 MBit	MSM534052E	40-DIP, 40-SOP, 44-TSOP II	256K x 16/ 512K x 8	8w	80	+4.5~5.5V	80mA	50µA	MSM27C452CZ
8 MBit	MSM538052E	42-DIP, 44-SOP, 44-TSOP II	512K x 16/ 1M x 8	8w	100	+4.5~5.5V	80mA	50µA	MSM27C852CZ
16 MBit	MSM531652E	42-DIP, 44-SOP, 48-TSOP II	1M x 16/ 2M x 8	16w	100	+4.5~5.5V	100mA	50µA	MSM27C1652CZ
16 MBit	MR531655E	70-SOP, 70-TSOP II	512K x 32/ 1M x 16	8dw	100	+4.5~5.5V	120mA	50µA	MSM27C1655CZ

3.3V Page Mode 16 and 32 Megabit MROMs

Capacity	Part Number	Packages	Organisation	Page	Access [ns]	Supply Voltage	Max. Current	Max. Standby	OKI OTP Compatibility/Notes
16 MBit	MR53V1652J	42-DIP, 44-SOP, 44-TSOP II	1M x 16/ 2M x 8	8w	100 (random) 40 (page)	+3.0~3.6V	TBA	TBA	MR27V1652D
16 MBit	MSM53V1655F	70-SSOP, 70-TSOP II	512K x 32/ 1M x 16	4dw	100 (random) 30 (page)	+3.0~3.6V	80mA	50µA	MSM27CV1655CZ
16 MBit	MR53V1655J	70-SSOP, 70-TSOP II	512K x 32/ 1M x 16	8dw	100 (random) 25 (page)	+3.0~3.6V	TBA	TBA	MR27V1655D
32 MBit	MR53V3252J	44-SOP, 48-TSOP II	2M x 16/ 4M x 8	8w	120 (random) 40 (page)	+3.0~3.6V	TBA	TBA	MR27V3252D
32 MBit	MR53V3255J	70-SSOP	1M x 32/ 2M x 16	8dw	100 (random) 30 (page)	+3.0~3.6V	TBA	TBA	MSM27V3255CZ MR27V3255D



Package Overview I

OKI Semiconductor

Type	Typical Sample	Pin Counts	Pitches [mm]	OKI Suffix	Remarks
DIP (Dual-in-line Package)		8, 14, 16, 18, 20, 22, 24, 28, 32, 36, 40, 42, 48	2.54	RA	100mil pitch type
SDIP (Shrink Dual-in-line Package)		30, 42, 64	1.778	RC	70mil pitch type
ZIP (Zig-Zag In-line Package)		20, 24, 28, 40	1.27	RD	50mil pitch type
SOP (Small Outline Package)		8, 16, 24, 28, 32, 40, 44	1.27	MA	heat resistant
SSOP (Shrink Small Outline Package)		20, 30, 32, 60, 64, 70	0.65, 0.80, 0.95, 1.00	MB	under 50mil pitch
TSOP I (Thin Small Outline Package Type I)		32	0.50	TA	Leads on short side

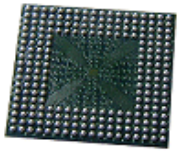
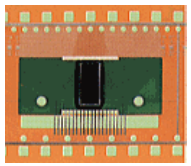
Package Overview II

OKI Semiconductor

Type	Typical Sample	Pin Counts	Pitches [mm]	OKI Suffix	Remarks
TSOP II (Thin Small Outline Package Type II)		26(20), 26(24), 28, 28(24), 40, 44, 48, 50, 50(44), 54, 66, 70(64), 86	0.65, 0.80, 1.27	TA	Leads on long side
QFP (Quad Flat Package)		44, 56, 64, 80, 100, 128, 136, 144, 160, 176, 208, 240, 272, 304	0.50, 0.65, 0.80, 1.00	GA	Highly heat resistant
TQFP (Thin Quad Flat Package)		44, 48, 64, 80, 100, 120	0.50, 0.65, 0.80	TB	1.20mm or 1.27mm body thickness
SOJ (Small Outline J-lead)		26(20), 26(24), 28, 28(24), 32, 36, 40, 42, 50	0.80, 1.27	JA	Two J-lead rows
QFJ (Quad Flat J-lead)		18, 20, 22, 28, 32, 44, 68, 84	1.27	JB	Four J-lead rows, formerly known as PLCC, 50mil pitch type.
BGA (Ball Grid Array)		104, 144, 256, 352, 420, 560	1.27	LA	Epoxy package, SnPb ball contacts

Package Overview III

OKI Semiconductor

Type	Typical Sample	Pin Counts	Pitches [mm]	OKI Suffix	Remarks
LFBGA (Low Fine Ball Grid Array)		104, 144, 224	1.00, 1.27	LA	Epoxy package, SnPb balls
FLGA (Fine Land Grid Array)		48, 49, 56, 84	0.80	LB	Epoxy package, Au-plated lands
TCP (Tape Carrier Package)		up to 544	various inner and outer lead bonding pitches	VA	Width types: 35, 48 and 70mm

Package Identifiers

OKI Semiconductor

A full device number always includes an identifier for its package. For example, MLML63152TB is an LSI moulded into a TQFP. The package identifiers are unique to OKI.

Mount Type	Abbreviation	Full Name	Identifier
Through-Hole	Standard DIP	Dual-in-Line Package	RA
	Shrink DIP		RB
	Skinny DIP		RC
	ZIP	Zig-Zag-in-Line Package	RD
Surface Mount	SOP	Small Outline Package	MA
	SSOP	Shrink Small Outline Package	MB
	TSOP(I)	Thin Small Outline Package	TA
	TSOP(II)		
	QFP	Quad Flat Package	GA
	TQFP	Thin Quad Flat Package	TB
	LQFP	Low Profile Quad Flat Package	TC
	SOJ	Small Outline J-leaded	JA
	QFJ (PLCC)	Quad Flat J-leaded	JB
	BGA	Ball Grid Array	LA
	SHP	Surface Horizontal Package	MC
Special	COB	Chip on Board	KA
	TCP	Tape Carrier Package	VA
	SIMM (Au pad)	Single-in-Line Memory Module	YA
	SIMM (SnPb pad)		YB
	DIMM (Au pad)	Dual-in-Line Memory Module	YC
	S/O SIMM (Au pad)	Small Outline SIMM	YD
	S/O SIMM (Au pad)		YE

Packing and Handling of SMD

OKI Semiconductor

The table above can only show a rough guideline.
Therefore, please be so kind as to contact OKI if you need detailed parameters for a specific IC product.

Every SMD product has a different thermal behaviour, depending on its chip size, die pad size, package material, etc. With this vary storage and soldering conditions. OKI categorises this heat resistance in basically six ranks:

<table>
<tr><th rowspan="3">OKI Rank</th><th colspan="6">Packing Method</th><th colspan="3">Handling Method</th></tr>
<tr><th rowspan="2">Packing</th><th colspan="5">Packing Material</th><th rowspan="2">Usage Limitations (if dry pack after opening)</th><th colspan="2">Storage Condition</th><th rowspan="2">Reflow Condition</th></tr>
<tr><th>Bag</th><th>Tray</th><th>Tube/ Reel</th><th>Desiccant</th><th>Moisture Indicator</th><th>Sealed</th><th>Unsealed</th></tr>
<tr><td>1</td><td>Normal</td><td>-</td><td rowspan="2">not heat-proof</td><td rowspan="6">not heat-proof</td><td>no</td><td>no</td><td>2Y</td><td colspan="2"><40°C / <85%RH</td><td rowspan="5">240°C max!
If over 235°C far infrared reflow (IR) within 10 sec, twice (*2)</td></tr>
<tr><td>2</td><td>Simple Dry pack</td><td rowspan="5">Aluminum laminated moisture protection bag (dry pack), sealed with N_2 gas</td><td rowspan="4">yes</td><td>yes</td><td>1Y</td><td rowspan="4"><40°C / <85%RH</td><td rowspan="4">5-30°C / 30-60%RH on daily average.</td></tr>
<tr><td>3</td><td rowspan="3">Dry pack</td><td rowspan="3">heat-proof</td><td rowspan="3">  </td><td>168H</td></tr>
<tr><td>4</td><td>72H</td></tr>
<tr><td>5</td><td>24H</td></tr>
<tr><td>6</td><td>Bake xH (*1)</td><td>as above, but once</td></tr>
</table>

(*1) Duration and temperature for this baking (drying) process depends on the IC product, please contact OKI with the part number.
(*2) Provided that opened dry packs did not exceed storage limitations.
OKI does not recommend near infrared radiation reflow, since this method subjects packages to intolerable stress limits. OKI recommends far infrared temperatures up to 240°C maximum, while JEDEC specifies up to 220°C.

Shipping Quantities DIP, ZIP

OKI Semiconductor

Products in magazine tubes, part 1/3

Category	EIAJ Code	Inner Box							Outer Box					
		Units/ Magazine	Normal Packing			Dry Pack			Normal Packing			Dry Pack		
			Parts Count	Size	Weight [kg]	Parts Count	Size	Weight [kg]	Parts Count	Size	Weight [kg]	Parts Count	Size	Weight [kg]
300mil DIP	DIP8-P-300-2.54	50	2000	a	1.9				16000	A	16			
	DIP14-P-300-2.54	25	1000	a	1.9				8000	A	16			
	DIP16-P-300-2.54	25	1000	a	1.9				8000	A	16			
	DIP18-P-300-2.54	20	800	a	2.0				6400	A	17			
	DIP20-P-300-2.54-W1	19	760	a	2.0				6080	A	17			
	DIP20-P-300-2.54-S1	17	680	a	2.0				5440	A	17			
	DIP22-P-300-2.54-S1	17	680	a	2.0				5440	A	17			
400mil DIP	DIP22-P-400-2.54	17	1190	b	2.1				4760	B	18			
	SDIP30-P-400-1.778	17	1190	b	2.1				4760	B	18			
600mil DIP	DIP24-P-600-2.54	15	750	b	4.6				3000	B	19			
	DIP28-P-600-2.54	13	650	b	4.6				2600	B	19			
	DIP32-P-600-2.54	11	550	b	4.2				2200	B	17			
	DIP36-P-600-2.54	10	500	b	4.6				2000	B	19			
	DIP40-P-600-2.54	9	450	b	4.6				1800	B	19			
	DIP42-P-600-2.54	9	450	b	4.6				1800	B	19			
	DIP48-P-600-2.54	8	400	b	4.6				1600	B	19			
	SDIP42-P-600-1.778	12	600	b	4.6				2400	B	19			
750mil DIP	SDIP64-P-750-1.778	8	256	b	4.7				1024	A	19			
ZIP	ZIP20-P-400-1.27/W1	18	1260	a	3.3				10080	A	27			
	ZIP24-P-400-1.27	15	1050	a	3.1				8400	A	26			
	ZIP28-P-400-1.27	13	910	a	3.1				7280	A	26			
	ZIP24-P-475-1.27	15	900	a	3.1				7200	A	26			
	ZIP40-P-475-1.27	9	540	a	3.1				4320	A	26			

Inner box a: 530(L) x 125(W) x 65(H)mm, b: 530(L) x 220(W) x 65(H)mm, c: 540(L) x 125(W) x 65(H)mm
Outer box A: 540(L) x 275(W) x 280(H)mm, B: 540(L) x 245(W) x 280(H)mm, C: 560(L) x 310(W) x 320(H)mm

Shipping Quantities: SOP, SOJ

OKI Semiconductor

Products in magazine tubes, part 2/3

Category	EIAJ Code	Inner Box							Outer Box					
		Units/ Magazine	Normal Packing			Dry Pack			Normal Packing			Dry Pack		
			Parts Count	Size	Weight [kg]	Parts Count	Size	Weight [kg]	Parts Count	Size	Weight [kg]	Parts Count	Size	Weight [kg]
SOP	SOP8-P-250-1.27-K	100	14300	c	3.8				114400	C	31			
	SOP16-P-300-1.27-K	45	6075	a	3.2				48600	A	26			
	SOP24-P-430-1.27-K	30	3000	b	4.0	900	a	1.4	12000	B	17	7200	A	12
	SOP28-P-430-1.27-K	25	2500	b	5.3	750	a	1.8	10000	B	22	6000	A	15
	SOP32-P-525-1.27-K	23	2300	b	5.8	690	a	1.9	9200	B	24	5520	A	16
	SOP40-P-525-1.27-K	18	1800	b	5.3	540	a	1,8	7200	B	22	4320	A	15
	SOP44-P-600-1.27-K	17	1700	b	7.0	510	a	2.3	6800	B	29	4080	A	19
	SSOP20-P-250-0.95-K	50	7150	c	3.6	2500	c	1.4	57200	C	30	20000	C	12
	SSOP32-P-430-1.00-K	30	3000	b	4.0	900	a	1.4	12000	B	17	7200	A	12
	SSOP64-P-525-0.80-K	18	1800	b	5.1	540	a	1.7	7200	B	21	4320	A	14
	SSOP70-P-500-0.80-K	16	1600	b	7.0	480	a	2.3	6400	B	29	3840	A	19
SOJ	SOJ26/20-P-300-1.27	27	2160	a	3.1	1890	a	2.8	17280	A	26	15120	A	23
	SOJ26/24-P-300-1.27	27	2160	a	3.1	1890	a	2.8	17280	A	26	15120	A	23
	SOJ28-P-300-1.27	26	2080	a	3.1	1820	a	2.8	16640	A	26	14560	A	23
	SOJ26/20-P-350-1.27	27	1701	a	-	1512	a	-	13608	A	-	12096	A	-
	SOJ28/24-P-400-1.27	25	1800	a	3.6	1225	a	2.6	14400	A	30	9800	A	21
	SOJ28-P-400-1.27	25	1800	a	3.6	1225	a	2.6	14400	A	30	9800	A	21
	SOJ32-P-400-1.27	22	1584	a	3.6	1078	a	2.6	12672	A	30	8624	A	21
	SOJ36-P-400-1.27	19	1368	a	3.6	931	a	2.6	10944	A	30	7448	A	21
	SOJ40-P-400-1.27	18	1296	a	3.6	882	a	2.6	10368	A	30	7056	A	21
	SOJ42-P-400-1.27	17	1224	a	3.6	833	a	2.6	9792	A	30	6664	A	21
	SOJ50-P-400-0.80	22	1584	a	3.6	1078	a	2.6	12672	A	30	8624	A	21

Inner box a: 530(L) x 125(W) x 65(H)mm, b: 530(L) x 220(W) x 65(H)mm, c: 540(L) x 125(W) x 65(H)mm
Outer box A: 540(L) x 275(W) x 280(H)mm, B: 540(L) x 245(W) x 280(H)mm, C: 560(L) x 310(W) x 320(H)mm

Shipping Quantities: QFJ

OKI Semiconductor

Products in magazine tubes. part 3/3

Category	EIAJ Code	Inner Box							Outer Box					
		Units/ Magazine	Normal Packing			Dry Pack			Normal Packing			Dry Pack		
			Parts Count	Size	Weight [kg]	Parts Count	Size	Weight [kg]	Parts Count	Size	Weight [kg]	Parts Count	Size	Weight [kg]
QFJ	QFJ18-P-R290-1.27	35	2800	a	2.7	2450	a	2.5	22400	A	22	19600	A	21
	QFJ20-P-S350-1.27	35	2800	a	3.0	2450	a	1.9	22400	A	25	19600	A	16
	QFJ22-P-R290-1.27	48	2688	a	2.7	1536	a	2.5	21504	A	22	12288	A	21
	QFJ28-P-S450-1.27	38	1330	a	2.7	950	a	2.0	10640	A	22	7600	A	17
	QFJ32-P-R450-1.27	32	1120	a	2.3	960	a	2.1	8960	A	19	7680	A	17
	QFJ44-P-S650-1.27	26	1820	b	6.2	650	a	2.4	7280	B	26	5200	A	20
	QFJ68-P-S950-1.27	18	882	b	6.2	270	a	2.4	3528	B	26	2160	A	20
	QFJ84-P-S115-1.27	15	630	b	6.2	225	a	2.4	2520	B	26	1800	A	20

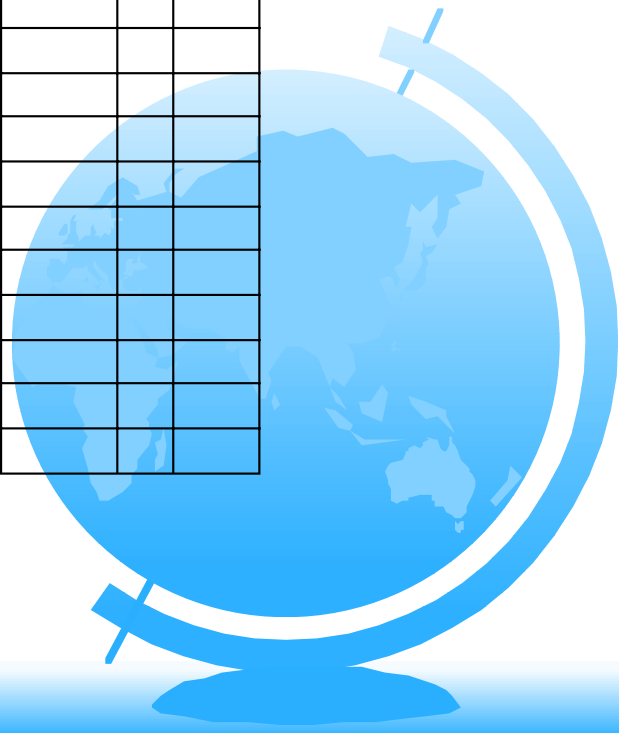
Inner box a: 530(L) x 125(W) x 65(H)mm, b: 530(L) x 220(W) x 65(H)mm, c: 540(L) x 125(W) x 65(H)mm
Outer box A: 540(L) x 275(W) x 280(H)mm, B: 540(L) x 245(W) x 280(H)mm, C: 560(L) x 310(W) x 320(H)mm

Shipping Quantities: QFP

OKI Semiconductor

Products in trays, part 1/4

Category	EIAJ Code	Inner Box							Outer Box					
		Units/ Tray	Normal Packing			Dry Pack			Normal Packing			Dry Pack		
			Parts Count	Size	Weight [kg]	Parts Count	Size	Weight [kg]	Parts Count	Size	Weight [kg]	Parts Count	Size	Weight [kg]
QFP	QFP44-P-910-0.80-2K	50	750	d	1.9				6000	D	16			
	QFP56-P-910-0.56-2K	50	750	d	1.9				6000	D	16			
	QFP64-P-1414-0.80-BK	50	750	d	2.2				6000	D	18			
		84	1260	f	3.3				5040	F	14			
	QFP64-P-1420-1.00-BK	28	420	d	2.2				3360	D	18			
		66	990	f	3.7				3960	F	16			
	QFP80-P-1420-0.80-BK	28	420	d	2.2				3360	D	18			
		66	990	f	3.7				3960	F	16			
	QFP80-P-1414-0.65-K	50	750	d	2.2				6000	D	18			
		84	1260	f	3.3				5040	F	14			
	QFP100-P-1420-0.65BK/BK4	28	420	d	2.2				3360	D	18			
		66	990	f	3.7				3960	F	16			
	QFP128-P-1420-0.50-K	28	420	d	2.2				3360	D	18			
	QFP128-P-2828-0.80-BK/DK	24	360	f	4.2				1440	F	17			
	QFP160-P-2828-0.65-BK/BK4	24	360	f	4.2				1440	F	17			
	QFP208-P-2828-0.50-BK4/CK4/EK4	24	360	f	4.2				1440	F	17			
	QFP240-P-3232-0.50-BK4	24	360	f	5				1440	F	21			
	QFP272-P-3636-0.50-BK4	21	315	f	5.3				1260	F	22			
	QFP304-P-4040-0.50-BK4	12	180	f	4.4				720	F	18			



Inner box d: 300(L) x 170(W) x 160(H)mm, f: 380(L) x 190(W) x 150(H)mm
Outer box D: 730(L) x 320(W) x 350(H)mm, F: 410(L) x 400(W) x 330(H)mm

Shipping Quantities: BGA, SOP, SHP, QFJ

OKI Semiconductor

Products in trays, part 2/4

Category	EIAJ Code	Inner Box							Outer Box					
		Units/ Tray	Normal Packing			Dry Pack			Normal Packing			Dry Pack		
			Parts Count	Size	Weight [kg]	Parts Count	Size	Weight [kg]	Parts Count	Size	Weight [kg]	Parts Count	Size	Weight [kg]
BGA	P-BGA256-2727-1.27	40	400	f	3.5				1600	F	14			
	P-BGA352-3535-1.27	24	240	f	3.6				960	F	15			
	P-BGA420-3535-1.27	24	240	f	3.6				960	F	15			
	P-BGA560-3535-1.27	24	240	f	3.6				960	F	15			
	P-LFBGA104-1313-0.80	160	1600	f	3.5				6400	F	14			
	P-LFBGA144-1313-0.80	160	1600	f	3.5				6400	F	14			
LGA	P-TFLGA48-0707-0.80	416	4160	f	3.5				16640	F	14			
SOP	SOP44-P-600-1.27-K	40	600	f	3.5				2400	F	15			
	SSOP30-P-56-0.65-K	200	3000	f	2.8				12000	F	12			
	SSOP32-P-640-0.80-K	50	750	d	2.5				6000	D	21			
	SSOP60-P-700-0.65-K/L/BK	28	420	d	2.1				3360	D	18			
SHP	SHP32-P-1125-0.65-K	80	1200	f	-				4800	F	-			
QFJ	QFJ28-P-S450-1.27	50	750	f	3.0				3000	F	13			
	QFJ44-P-S650-1.27	50	750	f	3.7				3000	F	16			
	QFJ68-P-S950-1.27	36	540	f	4.7				2160	F	20			
	QFJ84-P-S115-1.27	24	360	f	4.5				1440	F	19			

Inner box d: 300(L) x 170(W) x 160(H)mm, f: 380(L) x 190(W) x 150(H)mm
Outer box D: 730(L) x 320(W) x 350(H)mm, F: 410(L) x 400(W) x 330(H)mm

Shipping Quantities: TSOP I, TSOP II

OKI Semiconductor

Products in trays, part 3/4

Category	EIAJ Code	Inner Box							Outer Box					
		Units/ Tray	Normal Packing			Dry Pack			Normal Packing			Dry Pack		
			Parts Count	Size	Weight [kg]	Parts Count	Size	Weight [kg]	Parts Count	Size	Weight [kg]	Parts Count	Size	Weight [kg]
TSOP	TSOPI32-P-814-0.50-1K/1L	80	1200	f	2.6				4800	F	11			
	TSOPI32-P-820-0.50	80	1200	f	2.6				4800	F	11			
	TSOPII26/20-P-300-1.27-K,-L	80	1200	f	2.6				4800	F	11			
	TSOPII26/24-P-300-1.27-K, 3K	80	1200	f	2.6				4800	F	11			
	TSOPII28/24-P-400-1.27-K, -L	80	1200	f	2.9				4800	F	12			
	TSOPII28-P-400-1.27-K	80	1200	f	2.9				4800	F	12			
	TSOPII44-P-400-0.80-K	80	1200	f	2.9				4800	F	12			
	TSOPII44-P-400-0.80-1K	80	1200	f	2.9				4800	F	12			
	TSOPII44/40-P-400-0.80-K	80	1200	f	2.9				4800	F	12			
	TSOPII48-P-550-0.80-K	50	750	f	2.8				3000	F	12			
	TSOPII50/44-P-400-0.80-K	80	1200	f	2.9				4800	F	12			
	TSOPII50-P-400-0.80-K, -1K	80	1200	f	2.9				4800	F	12			
	TSOPII70/64-P-400-0.65-K	80	1200	f	2.9				4800	F	12			
	TSOPII70-P-400-0.65-K	80	1200	f	2.9				4800	F	12			

Inner box d: 300(L) x 170(W) x 160(H)mm, f: 380(L) x 190(W) x 150(H)mm
Outer box D: 730(L) x 320(W) x 350(H)mm, F: 410(L) x 400(W) x 330(H)mm

Shipping Quantities: TQFP, LQFP

OKI Semiconductor

Products in trays, part 4/4

Category	EIAJ Code	Inner Box							Outer Box					
		Units/ Tray	Normal Packing			Dry Pack			Normal Packing			Dry Pack		
			Parts Count	Size	Weight [kg]	Parts Count	Size	Weight [kg]	Parts Count	Size	Weight [kg]	Parts Count	Size	Weight [kg]
TQFP	TQFP44-P-1010-0.80-K	50	750	d	1.7				6000	D	15			
		160	2400	f	2.8				9600	F	12			
	TQFP48-P-0707-0.50-K	240	3600	f	2.9				14400	F	12			
		250	3750	f	2.9				15000	F	12			
	TQFP64-P-1010-0.50-K	50	750	d	1.7				6000	D	15			
		160	2400	f	2.8				9600	F	12			
	TQFP80-P-1212-0.50-K	50	750	d	1.8				6000	D	15			
		119	1785	f	2.9				7140	F	12			
	TQFP100-P-1414-0.50-K	50	750	d	1.9				6000	D	16			
		90	1350	f	2.9				5400	F	12			
	TQFP120-P-1414-0.50-K	50	750	d	1.9				6000	D	16			
		90	1350	f	2.9				5400	F	12			
LQFP	LQFP144-P-2020-0.50-K	60	900	f	3.4				3600	F	14			
	LQFP176-P-2424-0.50-BK	40	600	f	3.3				2400	F	14			
	LQFP208-P-2828-0.50-K	36	540	f	3.5				2160	F	15			

Inner box d: 300(L) x 170(W) x 160(H)mm, f: 380(L) x 190(W) x 150(H)mm
Outer box D: 730(L) x 320(W) x 350(H)mm, F: 410(L) x 400(W) x 330(H)mm

Shipping Quantities: SOP, SSOP, QFP TQFP, BGA

OKI Semiconductor

Products on tape reels, part 1/2

Category	EIAJ Code	Inner Box							Outer Box					
		Units/ Reel	Normal Packing			Reel in Dry Pack			Normal Packing			Reel in Dry Pack		
			Parts Count	Size	Weight [kg]	Parts Count	Size	Weight [kg]	Parts Count	Size	Weight [kg]	Parts Count	Size	Weight [kg]
SOP	SOP8-P-250-1.27-K	1000	1000	g	0.9	-	-	-	10000	G	10	-	-	-
	SOP8-P-250-1.27-K	2000	2000	g	0.9	-	-	-	20000	G	10	-	-	-
	SOP16-P-300-1.27-K	1000	1000	g	0.9	1000	g	-	10000	G	10	10000	G	-
	SOP24-P-430-1.27-K	1000	1000	g	1.3	1000	g	1.4	10000	G	14	10000	G	15
	SOP28-P-430-1.27-K	1000	1000	g	1.5	1000	g	1.6	10000	G	16	10000	G	17
	SOP32-P-525-1.27-K	1000	1000	g	2.1	1000	h	2.2	10000	G	22	8000	G	19
	SOP40-P-525-1.27-K	800	800	g	1.9	800	h	2.0	8000	G	20	6400	G	17
	SOP44-P-600-1.27-K	600	600	g	2.1	600	h	2.2	6000	G	22	4800	G	19
SSOP	SSOP20-P-250-0.95-K	2000	2000	g	1.1	2000	g	1.2	20000	G	12	20000	G	13
	SSOP30-P-56-0.65-K	1000	1000	g	0.9	1000	g	1.0	10000	G	10	10000	G	11
	SSOP60-P-700-0.65-BK	600	600	g	1.6	600	h	1.7	6000	G	16	4800	G	14
	SSOP32-P-430-1.00-K	1000	1000	g	1.3	1000	g	1.4	10000	G	14	10000	G	15
	SSOP64-P-525-0.80-K	800	800	g	1.9	800	h	2.0	8000	G	20	6400	G	17
	SSOP70-P-500-0.80-K	600	600	g	2.1	600	h	2.2	6000	G	22	4800	G	19
QFP	QFP44-P-910-0.80-2K	1000	1000	g	1.2	1000	g	1.3	10000	G	13	10000	G	14
	QFP56-P-910-0.56-2K	1000	1000	g	1.2	1000	g	1.3	10000	G	13	10000	G	14
	QFP64-P-1414-0.80-BK	500	500	g	1.6	500	g	1.7	5000	G	16	5000	G	14
	QFP64-P-1420-1.00-BK	600	600	g	1.6	600	h	1.7	6000	G	16	4800	G	14
	QFP80-P-1414-0.65-K	500	500	g	1.2	500	g	1.3	5000	G	13	5000	G	14
TQFP	TQFP44-P-1010-0.80-K	1000	1000	g	1.0	1000	h	1.1	10000	G	11	10000	G	12
	TQFP64-P-1010-0.50-K	1000	1000	g	1.0	1000	h	1.1	10000	G	11	10000	G	12
BGA	P-LFBGA104-1313-0.80	1000	1000	g	0.9	1000	h	1.0	10000	G	10	10000	G	11
	P-LFBGA144-1313-0.80	1000	1000	g	0.9	1000	h	1.0	10000	G	10	10000	G	11

Inner box g: 360(L) x 360(W) x 50(H)mm, h: 360(L) x 360(W) x 65(H)mm
Outer box G: 550(L) x 370(W) x 380(H)mm

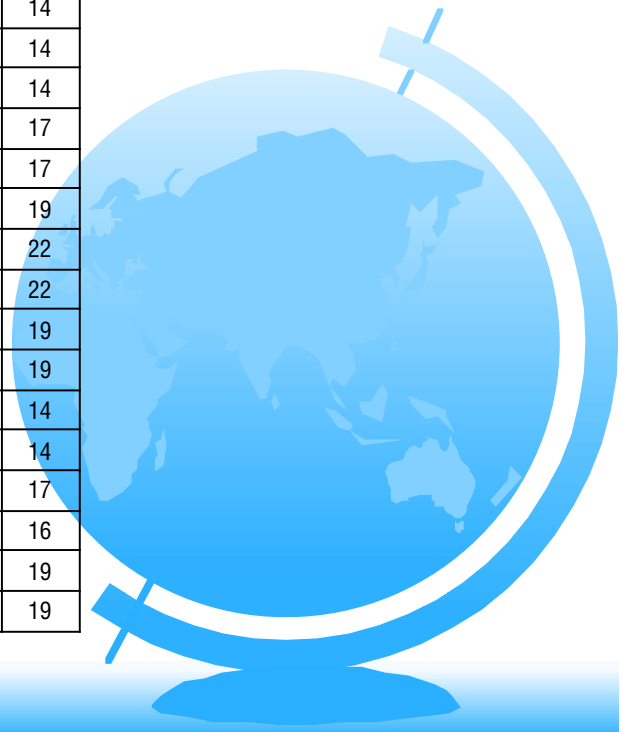
Shipping Quantities: TSOP, SOJ, QFJ

OKI Semiconductor

Products on tape reels, part 2/2

Category	EIAJ Code	Inner Box							Outer Box					
		Units/ Reel	Normal Packing			Reel in Dry Pack			Normal Packing			Reel in Dry Pack		
			Parts Count	Size	Weight [kg]	Parts Count	Size	Weight [kg]	Parts Count	Size	Weight [kg]	Parts Count	Size	Weight [kg]
TSOP	TSOPI32-P-814-0.50-1K/1L	1000	1000	g	1.0	1000	g	1.1	10000	G	11	10000	G	12
	TSOPII26/20-P-300-1.27-K,-L	1000	1000	g	1.1	1000	g	1.2	10000	G	12	10000	G	13
	TSOPII26/24-P-300-1.27-K, 3K	1000	1000	g	1.1	1000	g	1.2	10000	G	12	10000	G	13
	TSOPII28/24-P-400-1.27-K, -L	1000	1000	g	1.3	1000	h	1.4	10000	G	14	8000	G	12
	TSOPII28-P-400-K	1000	1000	g	1.3	1000	h	1.4	10000	G	14	8000	G	12
	TSOPII44/40-P-400-0.80-K	1000	1000	g	1.3	1000	h	1.4	10000	G	14	8000	G	12
	TSOPII44-P-400-0.80-K	1000	1000	g	1.3	1000	h	1.4	10000	G	14	8000	G	12
	TSOPII48-P-550-0.80-K	1000	1000	g	1.5	1000	h	1.6	10000	G	16	8000	G	14
	TSOPII50/44-P-400-0.80-K	1000	1000	g	1.5	1000	h	1.6	10000	G	16	8000	G	14
	TSOPII50-P-400-0.80-K, -1K	1000	1000	g	1.5	1000	h	1.6	10000	G	16	8000	G	14
	TSOPII54-P-400-0.80-K	1000	1000	g	1.5	1000	h	1.6	10000	G	16	8000	G	14
	TSOPII70-P-400-0.65-K	1000	1000	g	1.5	1000	h	1.6	10000	G	16	8000	G	14
SOJ	SOJ26/20-P-300-1.27	1000	1000	g	1.5	1000	g	1.6	10000	G	16	10000	G	17
	SOJ26/24-P-300-1.27	1000	1000	g	1.5	1000	g	1.6	10000	G	16	10000	G	17
	SOJ26/20-P-350-1.27	1000	1000	g	1.7	1000	g	1.8	10000	G	18	10000	G	19
	SOJ28/24-P-400-1.27	1000	1000	g	2.0	1000	g	2.1	10000	G	21	10000	G	22
	SOJ28-P-400-1.27	1000	1000	g	2.0	1000	g	2.1	10000	G	21	10000	G	22
	SOJ40-P-400-1.27	800	800	g	2.2	800	h	2.3	8000	G	23	6400	G	19
	SOJ42-P-400-1.27	800	800	g	2.2	800	h	2.3	8000	G	23	6400	G	19
QFJ	QFJ18-P-R290-1.27	1000	1000	g	1.2	1000	g	1.3	10000	G	13	10000	G	14
	QFJ22-P-R290-1.27	1000	1000	g	1.2	1000	g	1.3	10000	G	13	10000	G	14
	QFJ28-P-S450-1.27	1000	1000	g	1.5	1000	g	1.6	10000	G	16	10000	G	17
	QFJ44-P-S650-1.27	500	500	g	1.8	500	h	1.9	5000	G	19	4000	G	16
	QFJ68-P-S950-1.27	300	300	g	2.2	300	h	2.3	3000	G	23	2400	G	19
	QFJ84-P-S115-1.27	200	200	g	2.1	200	h	2.2	2000	G	22	1600	G	19

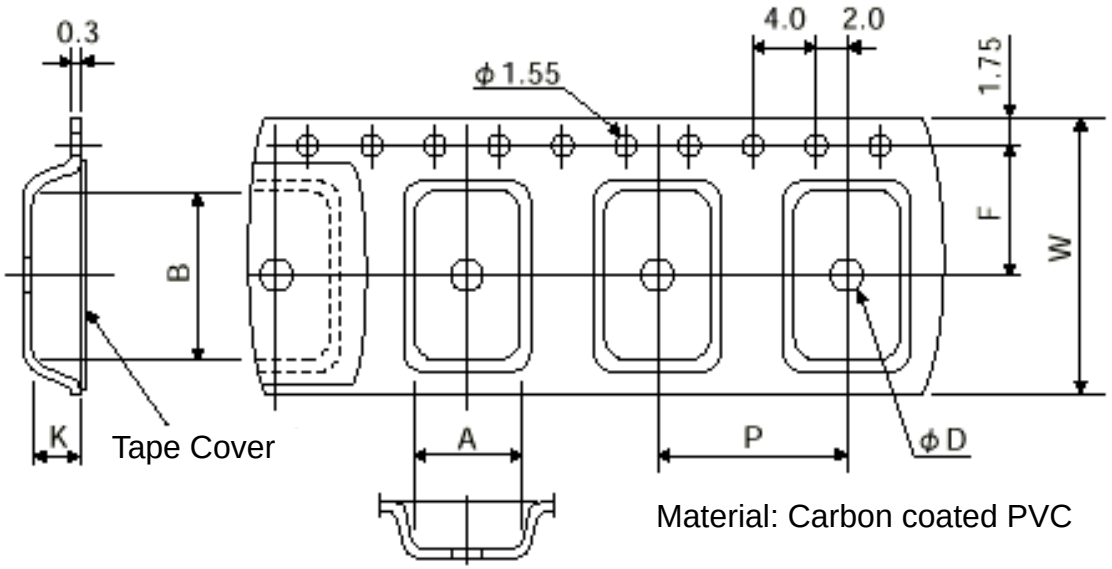
Inner box g: 360(L) x 360(W) x 50(H)mm, h: 360(L) x 360(W) x 65(H)mm
Outer box G: 550(L) x 370(W) x 380(H)mm



Tape Reel, Part 1

Dimensions (16 and 24mm Type)

EIAJ Code	Tape Dimensions (mm)							Units
	W	P	A	B	K	F	D	
SOP8-P-250-1.27-K (R1/R2*)	16	12	7.2	5.5	2.3	7.5	1.6	2000
SOP8-P-250-1.27-K (R3/R4*)	16	8	5.4	7.2	2.05	7.5	1.6	2000
SOP16-P-300-1.27-K	24	12	9.1	11.5	2.1	11.5	1.55	1000
SOP28-P-430-1.27-K	24	16	12.8	19.3	2.7	11.5	2.0	1000
SOP24-P-430-1.27-K	24	16	13	17	2.7	11.5	1.55	1000
SSOP32-P-430-1.00-K	24	16	13	17	2.7	11.5	1.55	1000
SSOP20-P-250-0.95-K	16	12	8.1	10.4	2.3	7.5	1.55	2000
SSOP30-P-56-0.65-K	16	12	8.1	10.1	1.9	7.5	1.55	1000
QFP44-P-910-0.80-2K	24	16	14.5	15.5	2.6	11.5	2.0	1000
QFP56-P-910-0.56-2K	24	16	14.5	15.5	2.6	11.5	2.0	1000
QFP64-P-1414-0.80-BK	24	24	17.7	17.7	2.8	11.5	2.0	500
QFP80-P-1414-0.65-K	24	24	17.7	17.7	2.8	11.5	2.0	500
TSOPI32-P-814-0.50-1K/1L	24	12	8.6	14.4	1.7	11.5	2.0	1000
TSOPII26/20-P-300-1.27-K,-L	24	12	9.6	17.8	1.35	11.5	2.0	1000
TSOPII26/24-P-300-1.27-K, 3K	24	12	9.6	17.8	1.35	11.5	2.0	1000
TQFP48-P-0707-0.50-K	16	12	9.5	9.5	2.0	7.5	1.6	1000
TQFP44-P-1010-0.80-K	24	16	12.5	12.5	1.5	11.5	2.0	1000
TQFP64-P-1010-0.50-K	24	16	12.5	12.5	1.5	11.5	2.0	1000
SOJ26/20-P-300-1.27	24	12	8.8	17.8	3.7	11.5	2.0	1000
SOJ26/24-P-300-1.27	24	12	8.8	17.8	3.7	11.5	2.0	1000
SOJ26/20-P-350-1.27	24	12	10.4	17.8	3.9	11.5	2.0	1000
SOJ28/24-P-400-1.27	24	16	11.6	19.0	4.2	11.5	2.0	1000
SOJ28-P-400-1.27	24	16	11.6	19.0	4.2	11.5	2.0	1000
QFJ18-P-R290-1.27	24	12	8.5	13.8	3.6	11.5	1.5	1000
QFJ22-P-R290-1.27	24	12	8.5	13.8	3.6	11.5	1.5	1000
QFJ28-P-S450-1.27	24	16	13	13.0	4.9	11.5	1.5	800
P-LFBGA104-1313-0.80	24	16	13.3	13.3	1.5	11.5	1.5	1000
P-LFBGA144-1313-0.80	24	16	13.3	13.3	1.5	11.5	1.5	1000
* Depends on product alignment in cavity.								



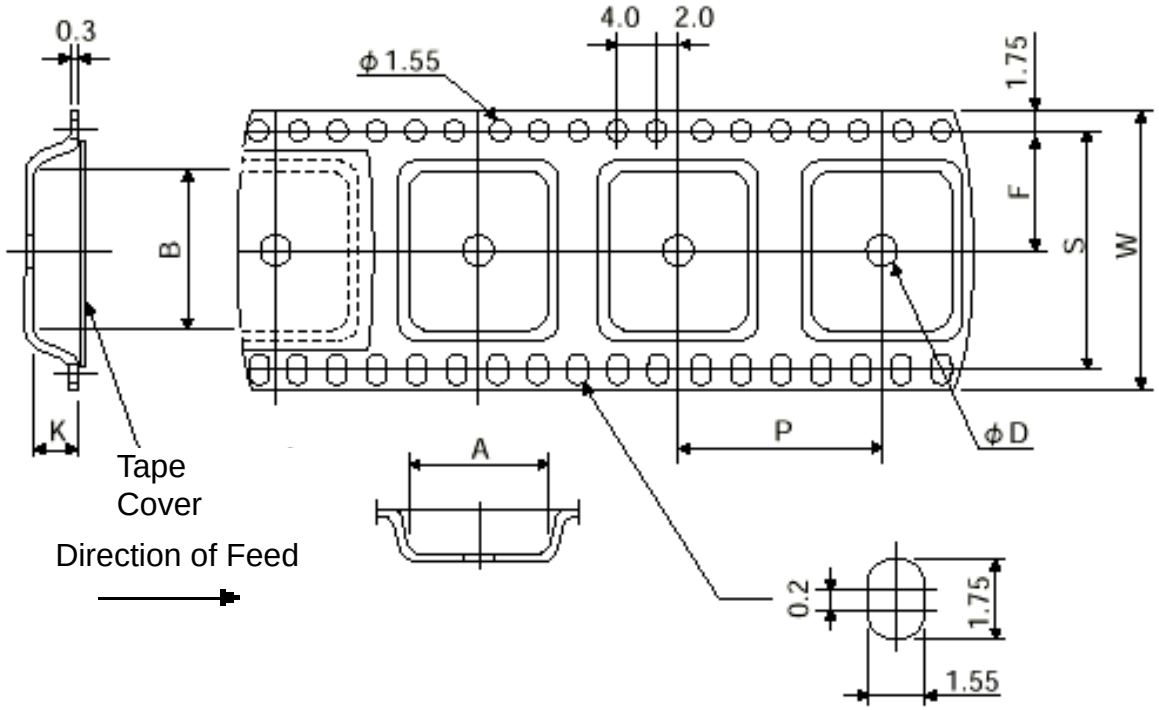
Material: Carbon coated PVC

Direction of Feed

Tape Reel, Part 2

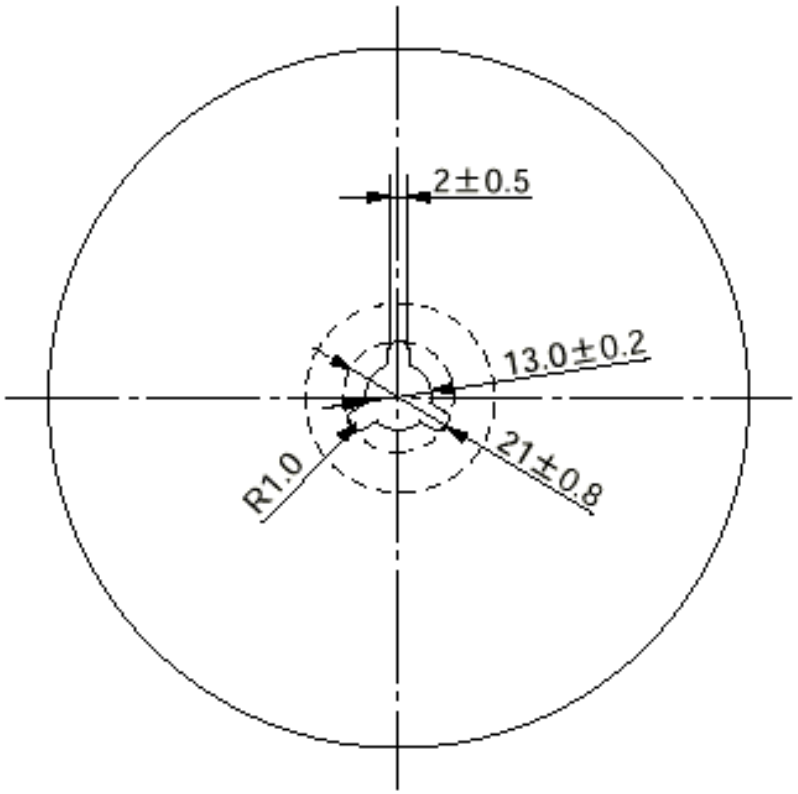
Dimensions (32 and 44mm Type)

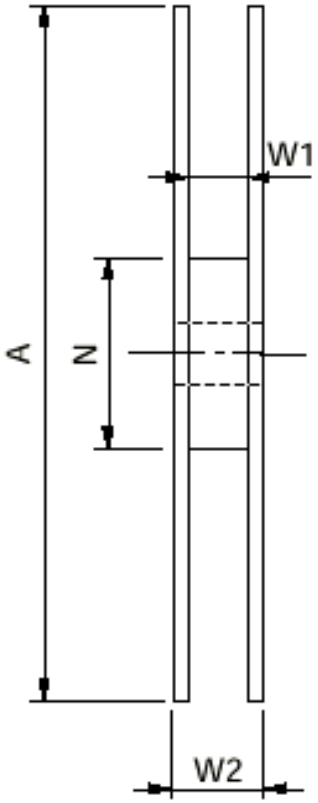
EIAJ Code	Tape Dimensions (mm)								Units
	W	P	A	B	K	F	S	D	
SOP32-P-525-1.27-K	32	16	14.5	21.5	3.3	14.2	28.4	2	1000
SOP40-P-525-1.27-K	44	24	14.7	26.3	3.2	20.2	40.4	2	800
SSOP64-P-525-0.80-K	44	24	14.7	26.3	3.2	20.2	40.4	2	800
SOP44-P-600-1.27-K	44	24	16.6	28.8	3.7	20.2	40.4	2	600
SSOP70-P-500-0.80-K	44	24	16.4	29.2	3.5	20.2	40.4	2	600
QFP64-P-1420-1.00-BK	44	24	20	26	3	20.2	40.4	2	600
SSOP60-P-700-0.65-BK	44	24	20	26	3	20.2	40.4	2	600
TSOPII28/24-P-400-1.27-K, -L	32	16	12.2	19	1.6	14.2	28.4	2	1000
TSOPII28-P-400-K	32	16	12.2	19	1.6	14.2	28.4	2	1000
TSOPII44/40-P-400-0.80-K	32	16	12.2	19	1.6	14.2	28.4	2	1000
TSOPII44-P-400-0.80-K	32	16	12.2	19	1.6	14.2	28.4	2	1000
TSOPII48-P-550-0.80-K	32	24	16	20.2	1.9	14.2	28.4	2.1	1000
TSOPII50/44-P-400-0.80-K, -1K	32	16	12.3	21.4	1.7	14.2	28.4	2	1000
TSOPII50-P-400-0.80-K, -1K	32	16	12.3	21.4	1.7	14.2	28.4	2	1000
TSOPII54-P-400-0.80-K	44	16	12.2	22.8	2.0	20.2	40.4	2.0	1000
TSOPII70-P-400-0.65-K	44	16	12.2	24.1	2.0	20.2	40.4	2.0	1000
SOJ40-P-400-1.27	44	16	11.5	26.7	4.1	20.2	40.4	2	800
SOJ42-P-400-1.27	44	16	11.7	27.8	4.1	20.2	40.4	2	800
QFJ44-P-S650-1.27	32	24	17.9	17.9	5	14.2	28.4	2	500
QFJ68-P-S950-1.27	44	32	25.5	25.5	5	20.2	40.4	2	300
QFJ84-P-S115-1.27	44	36	30.5	30.5	5	20.2	40.4	2	200



Tape Reel, Part 3

Reel Dimensions



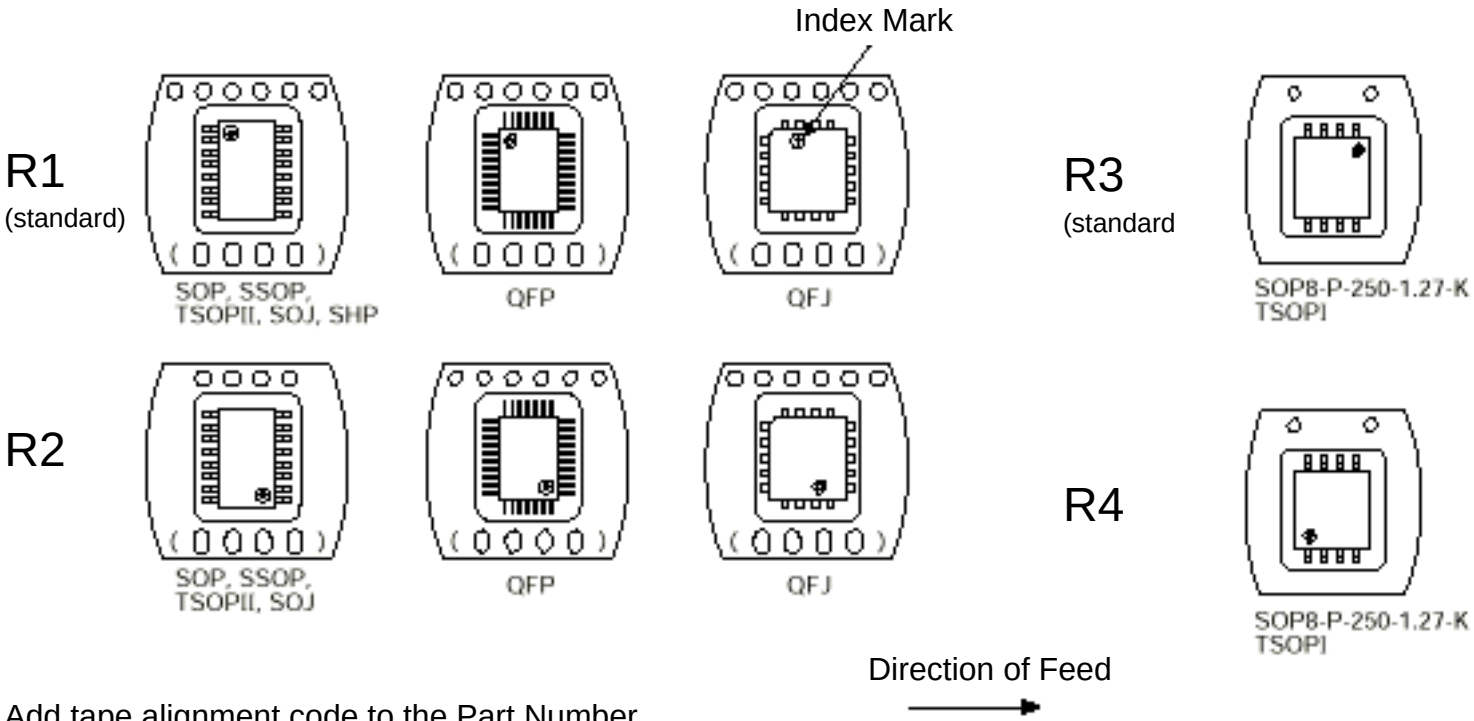


Tape Width (mm)	Reel Dimensions (mm)				Material
	A	N	W1 +2.0 0	W2 (MAX)	
12	330	100	12.4	18.4	conductive PS
16			16.4	22.4	
24			24.4	30.4	
32			32.4	38.4	
44			44.4	50.4	

Tape Reel, Part 4

Device Alignment

OKI Semiconductor



Add tape alignment code to the Part Number,

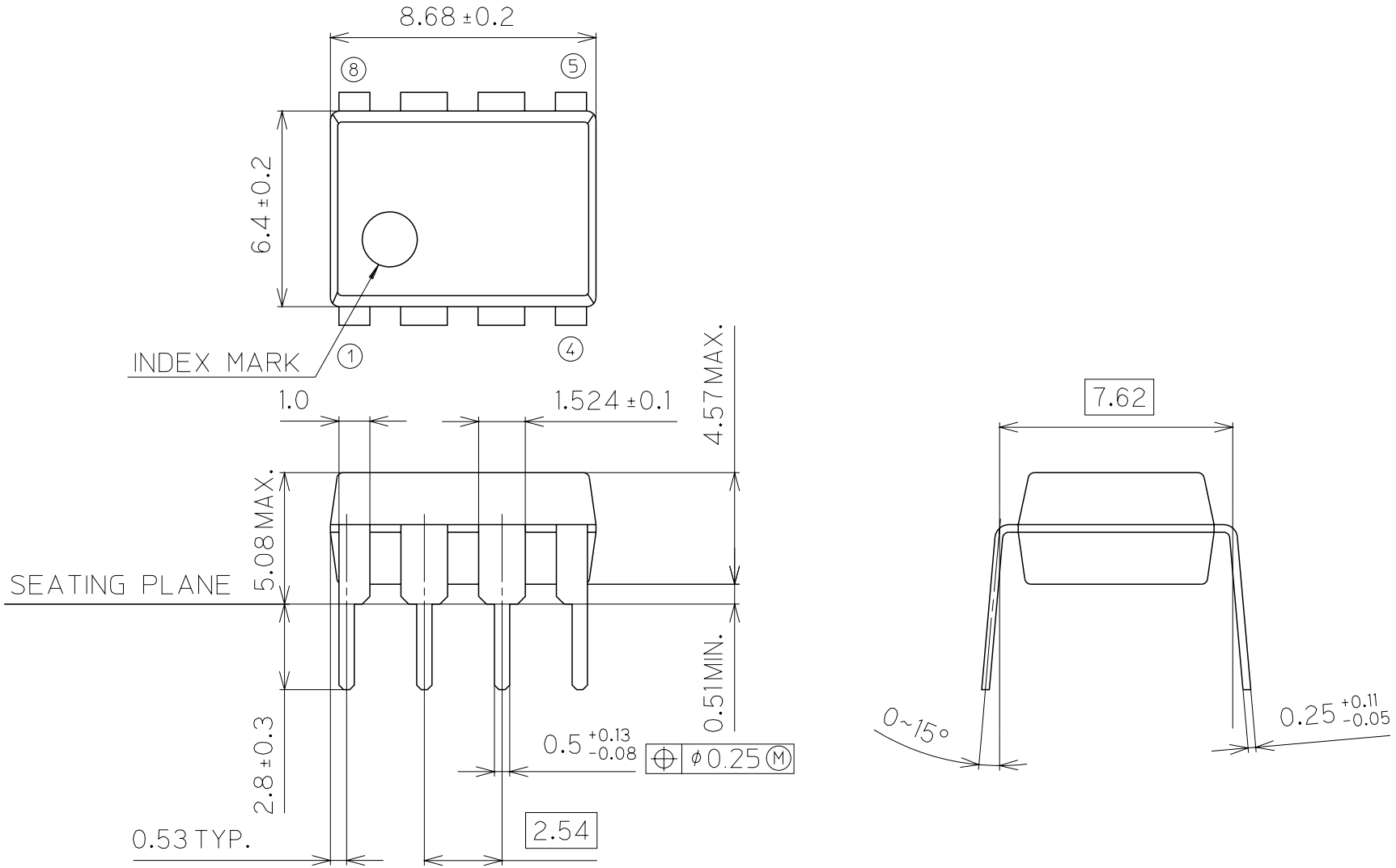
e.g.:

ML2213MB-R1

DIP8-P-300-2.54

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor

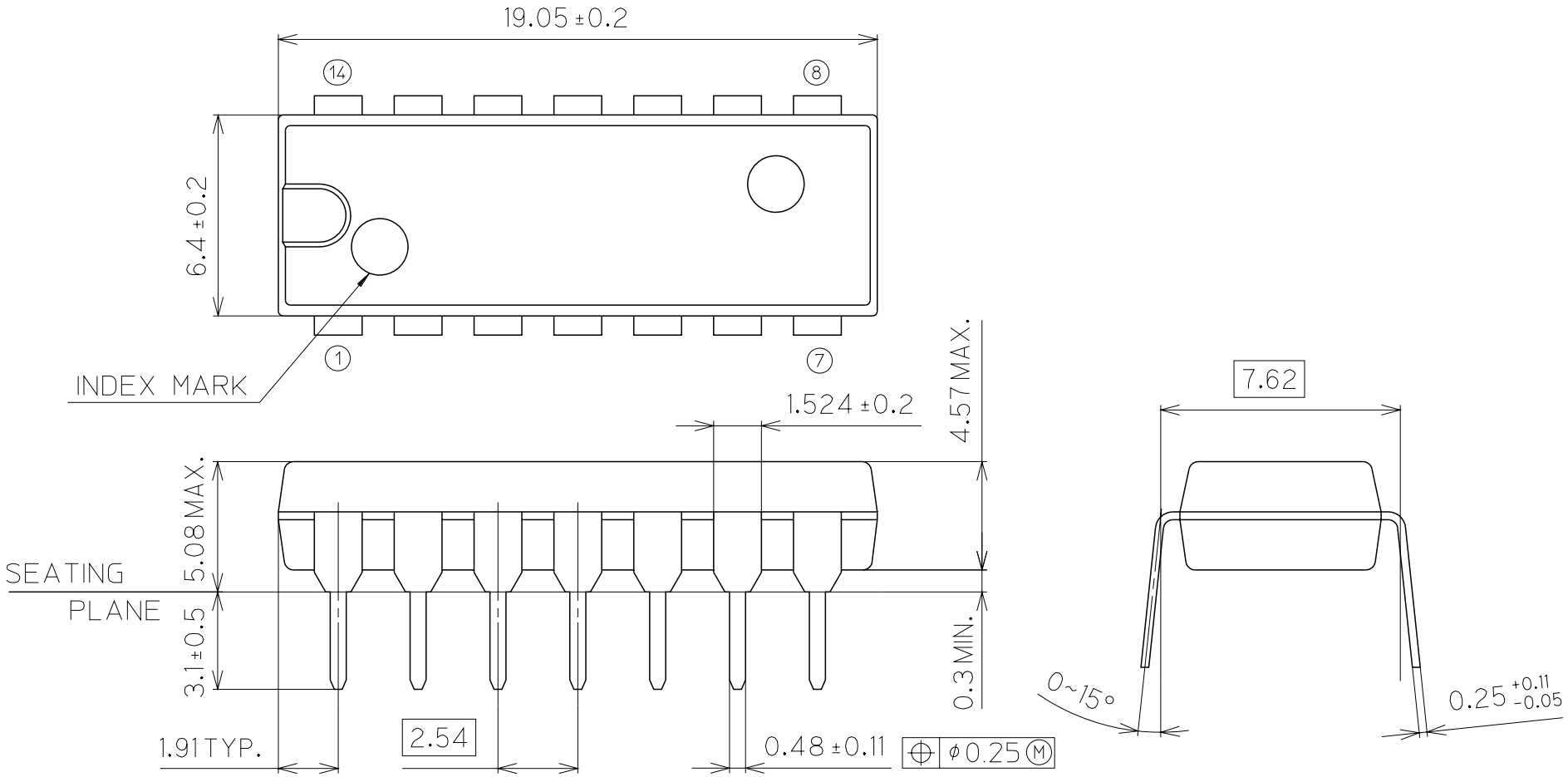


Please consult OKI for soldering, assembly and storage recommendations.

DIP14-P-300-2.54

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor

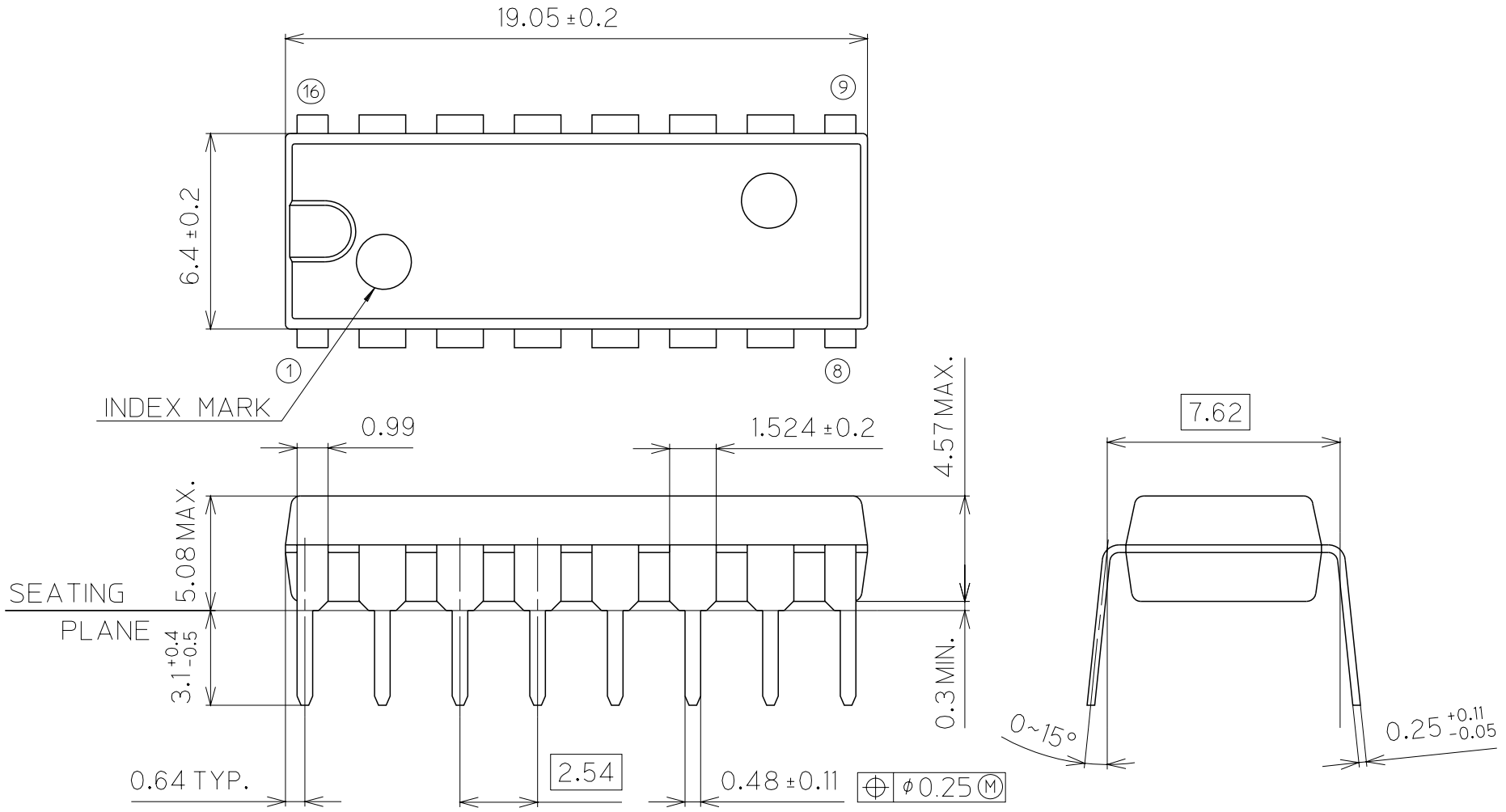


Please consult OKI for soldering, assembly and storage recommendations.

DIP16-P-300-2.54

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor

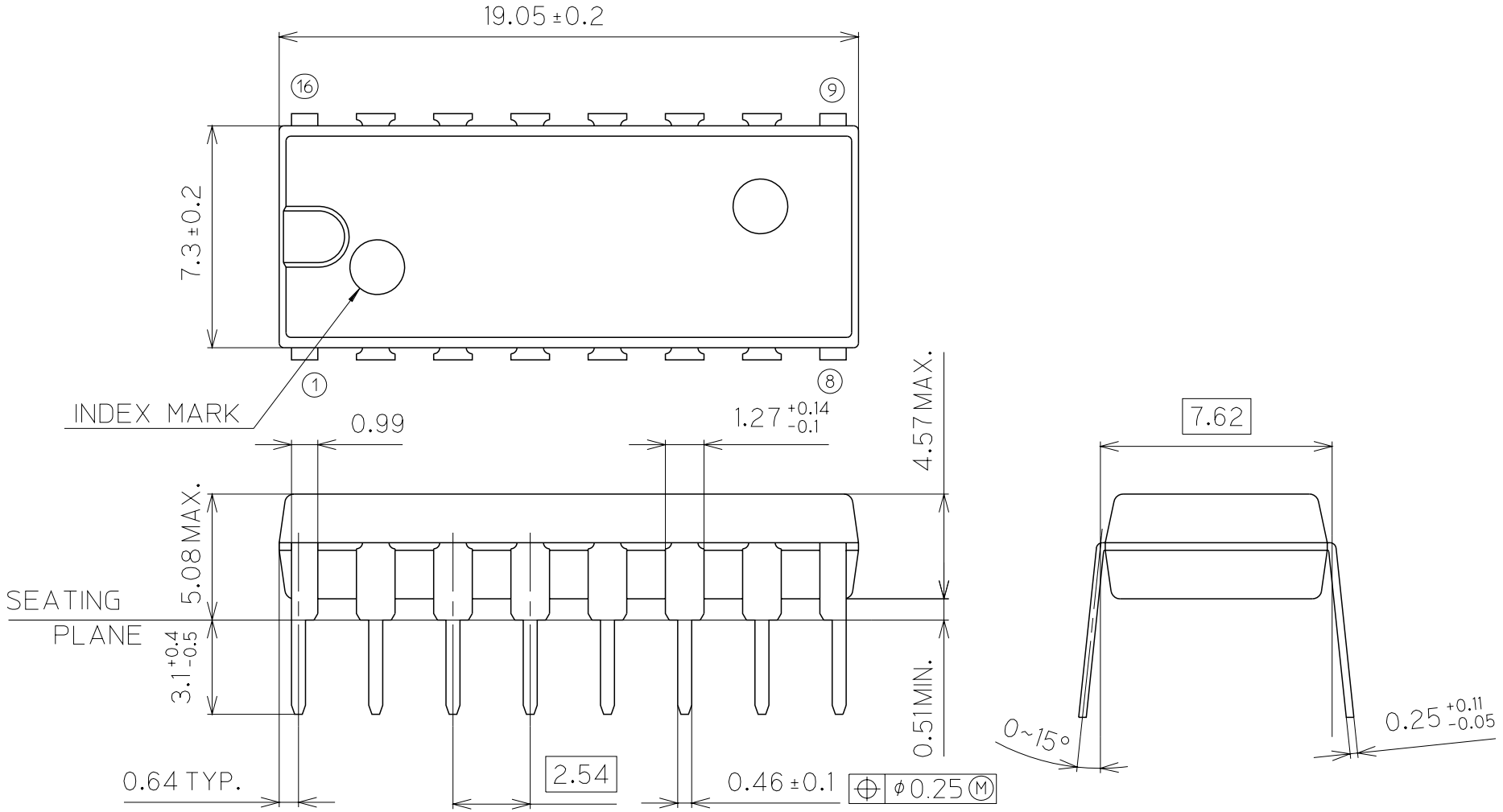


Please consult OKI for soldering, assembly and storage recommendations.

DIP16-P-300-2.54-W1

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor

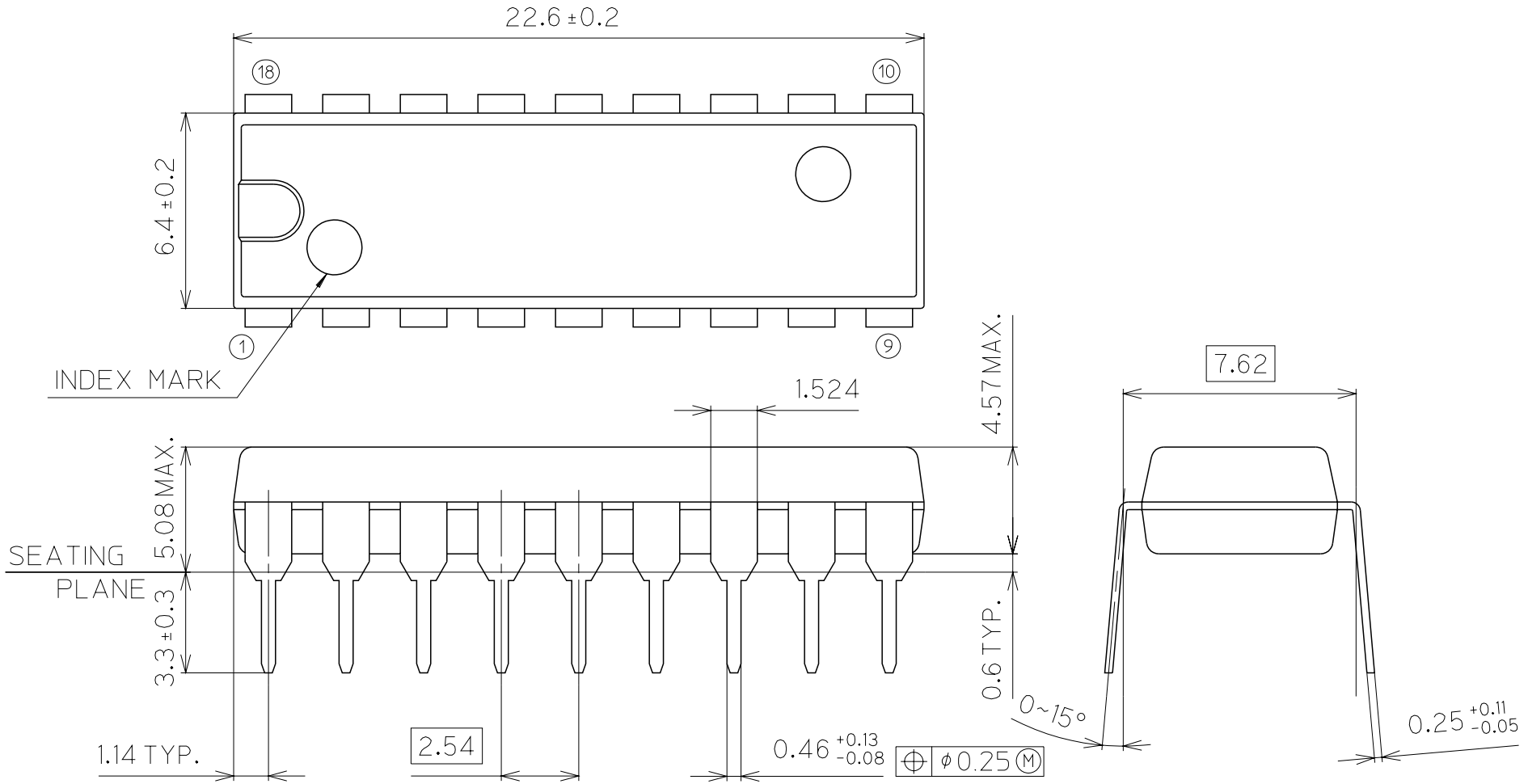


Please consult OKI for soldering, assembly and storage recommendations.

DIP18-P-300-2.54

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor

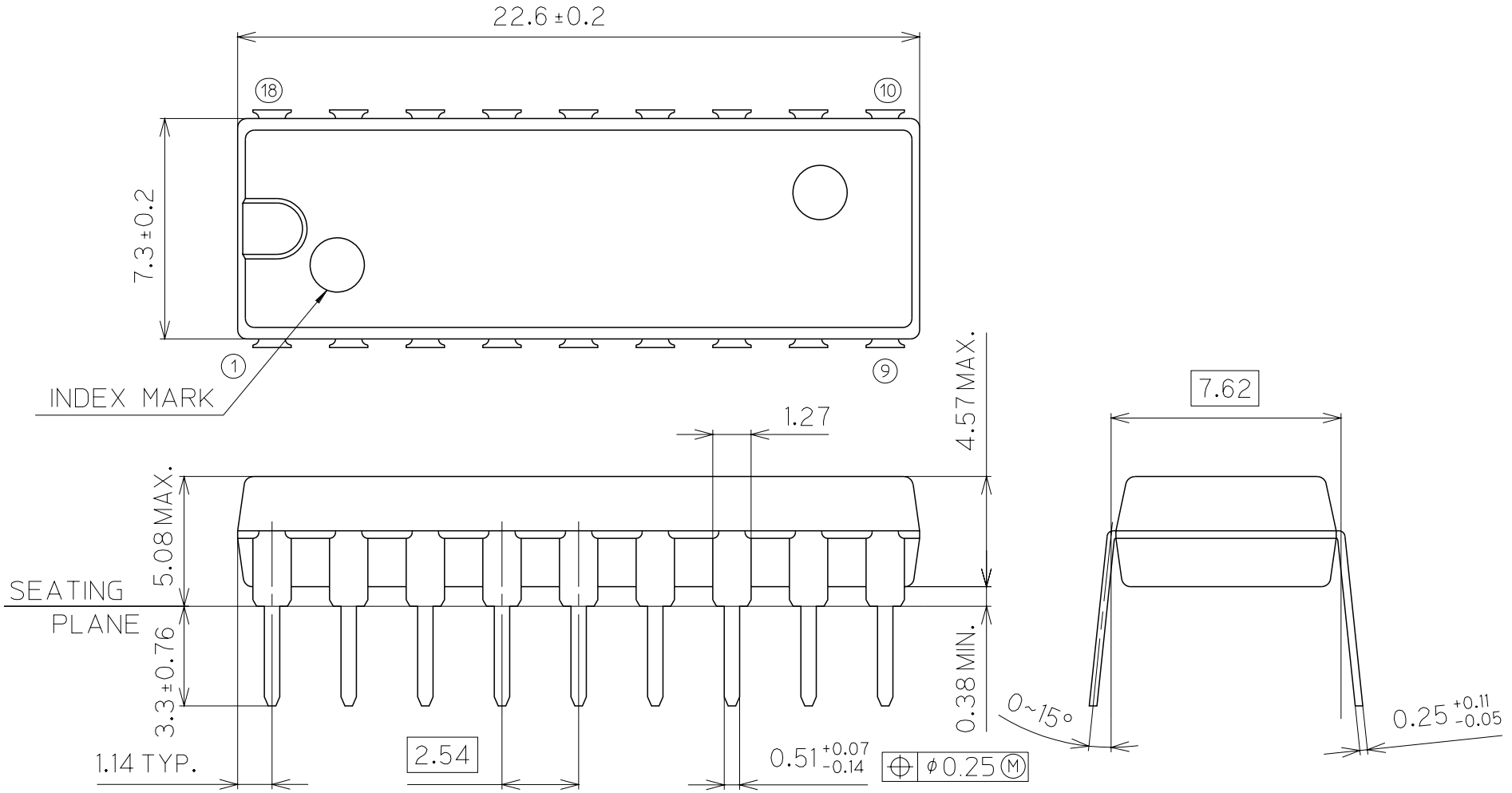


Please consult OKI for soldering, assembly and storage recommendations.

DIP18-P-300-2.54-W1

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor

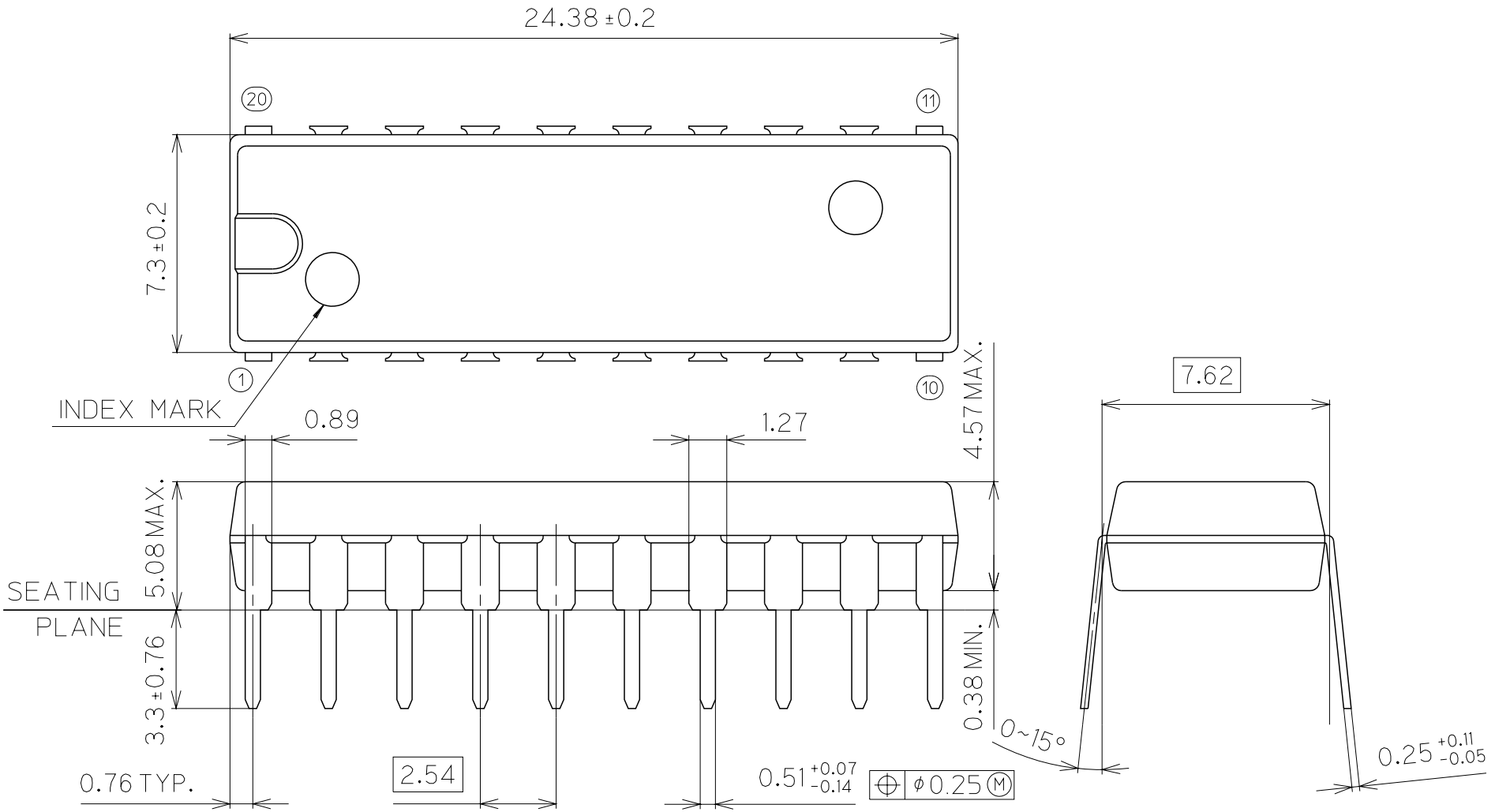


Please consult OKI for soldering, assembly and storage recommendations.

DIP20-P-300-2.54-W1

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor

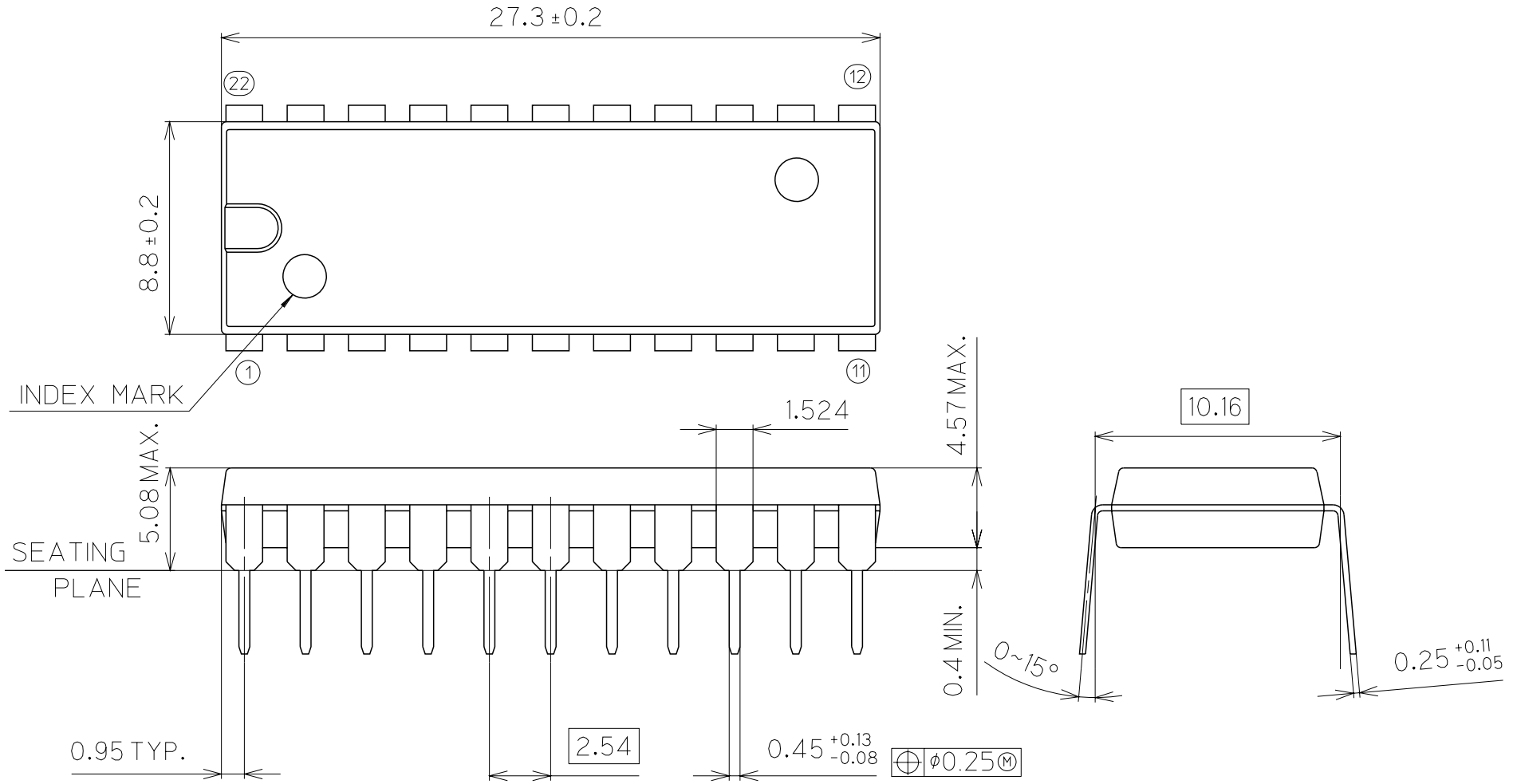


Please consult OKI for soldering, assembly and storage recommendations.

DIP22-P-400-2.54

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor

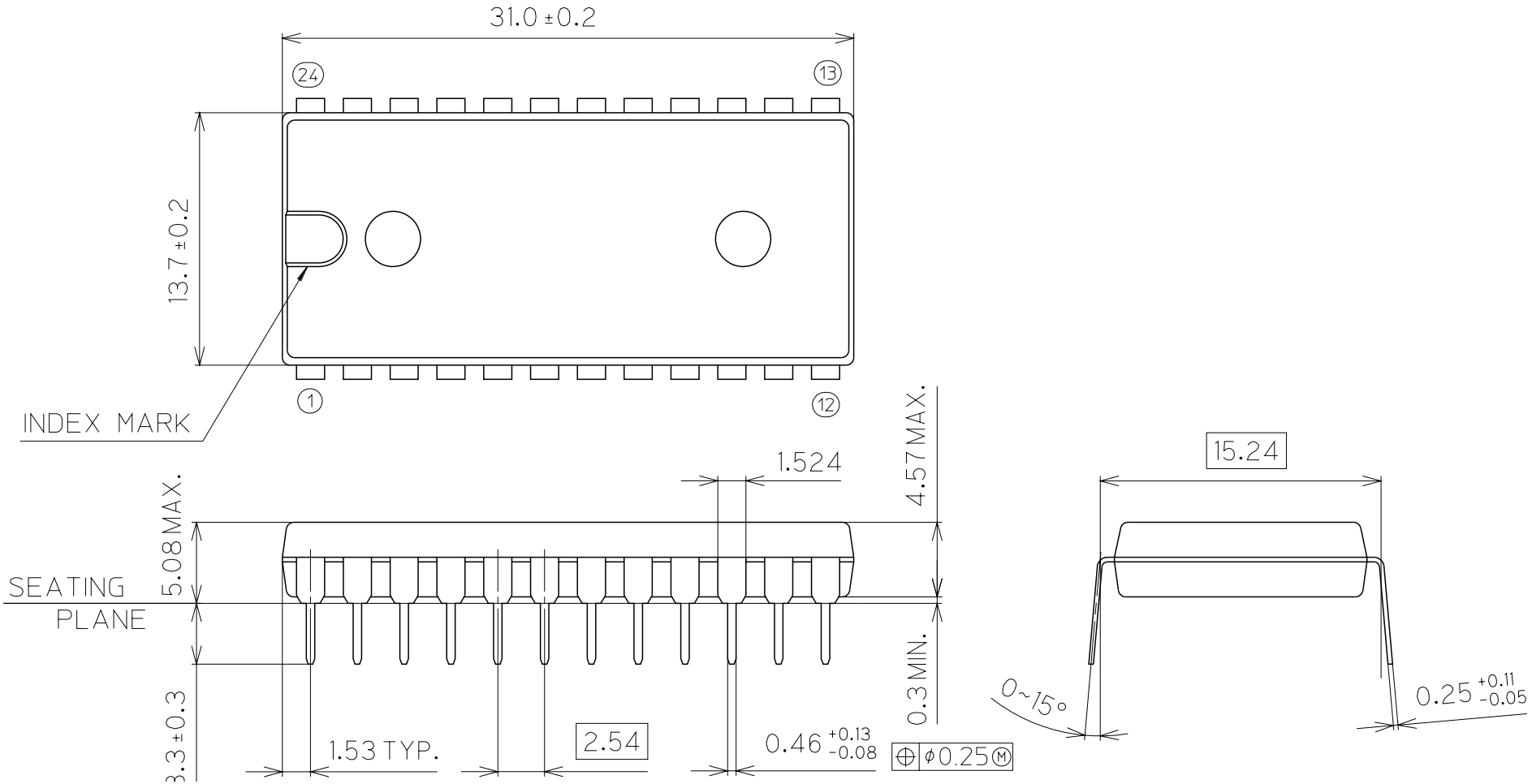


Please consult OKI for soldering, assembly and storage recommendations.

DIP24-P-600-2.54

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor

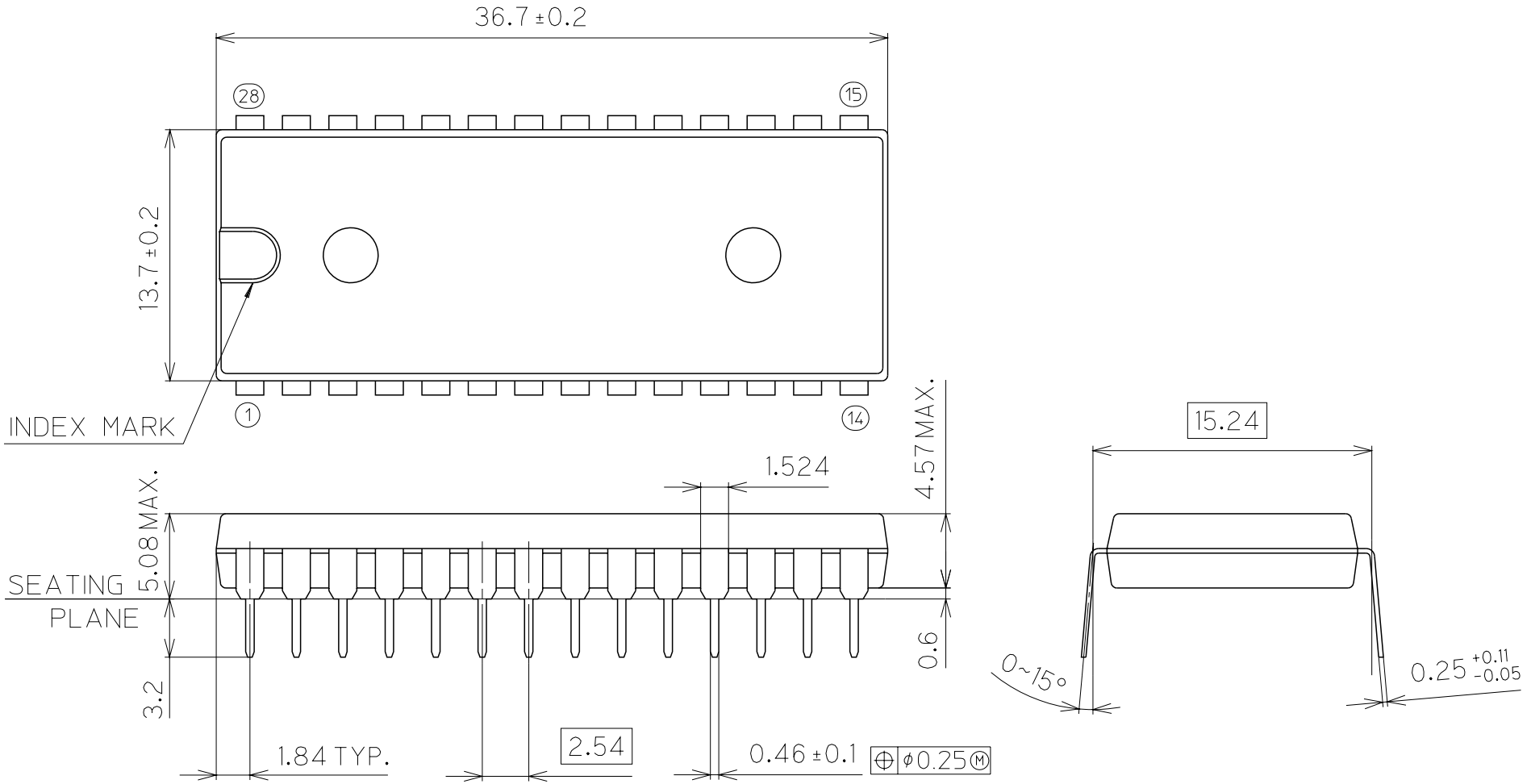


Please consult OKI for soldering, assembly and storage recommendations.

DIP28-P-600-2.54

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor

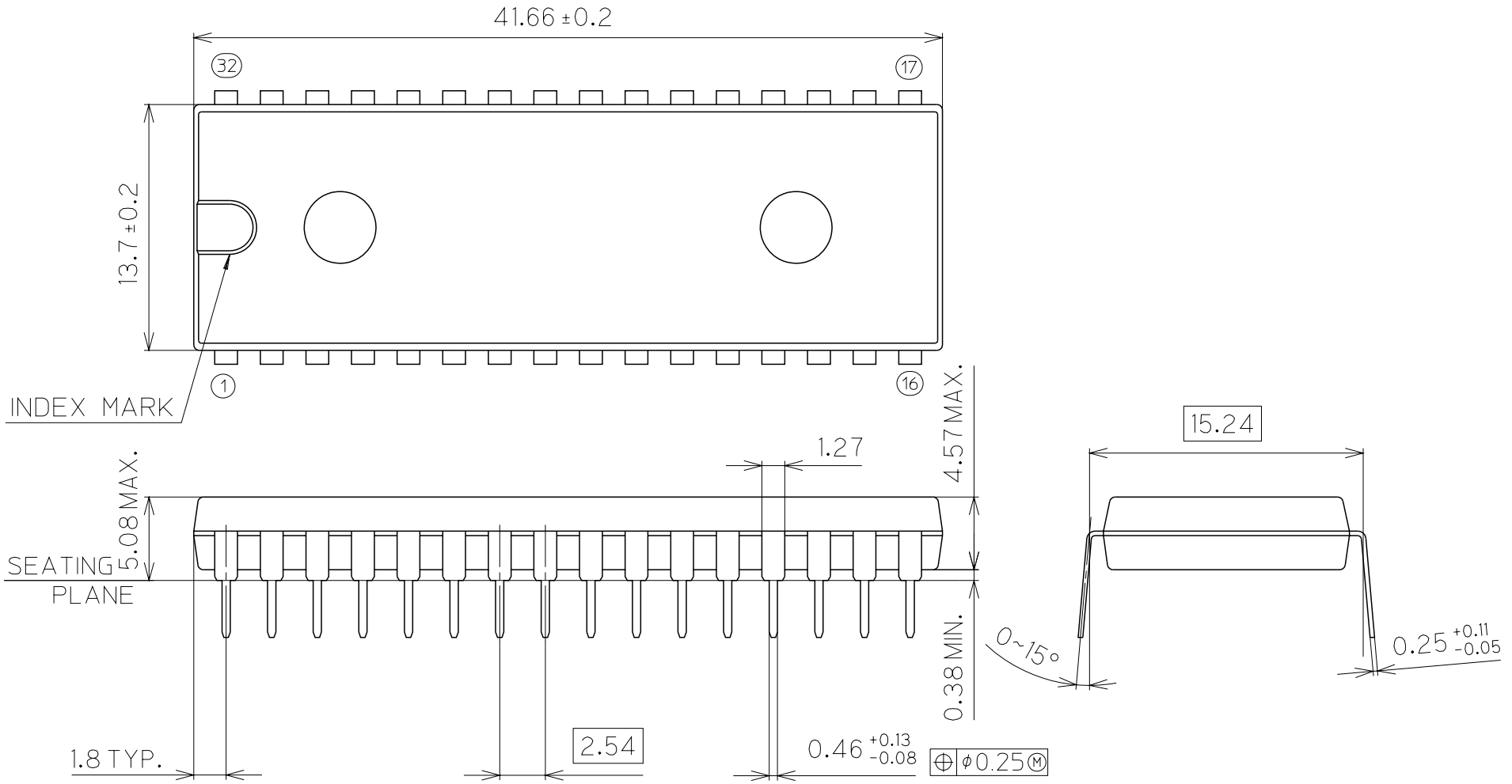


Please consult OKI for soldering, assembly and storage recommendations.

DIP32-P-600-2.54

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor

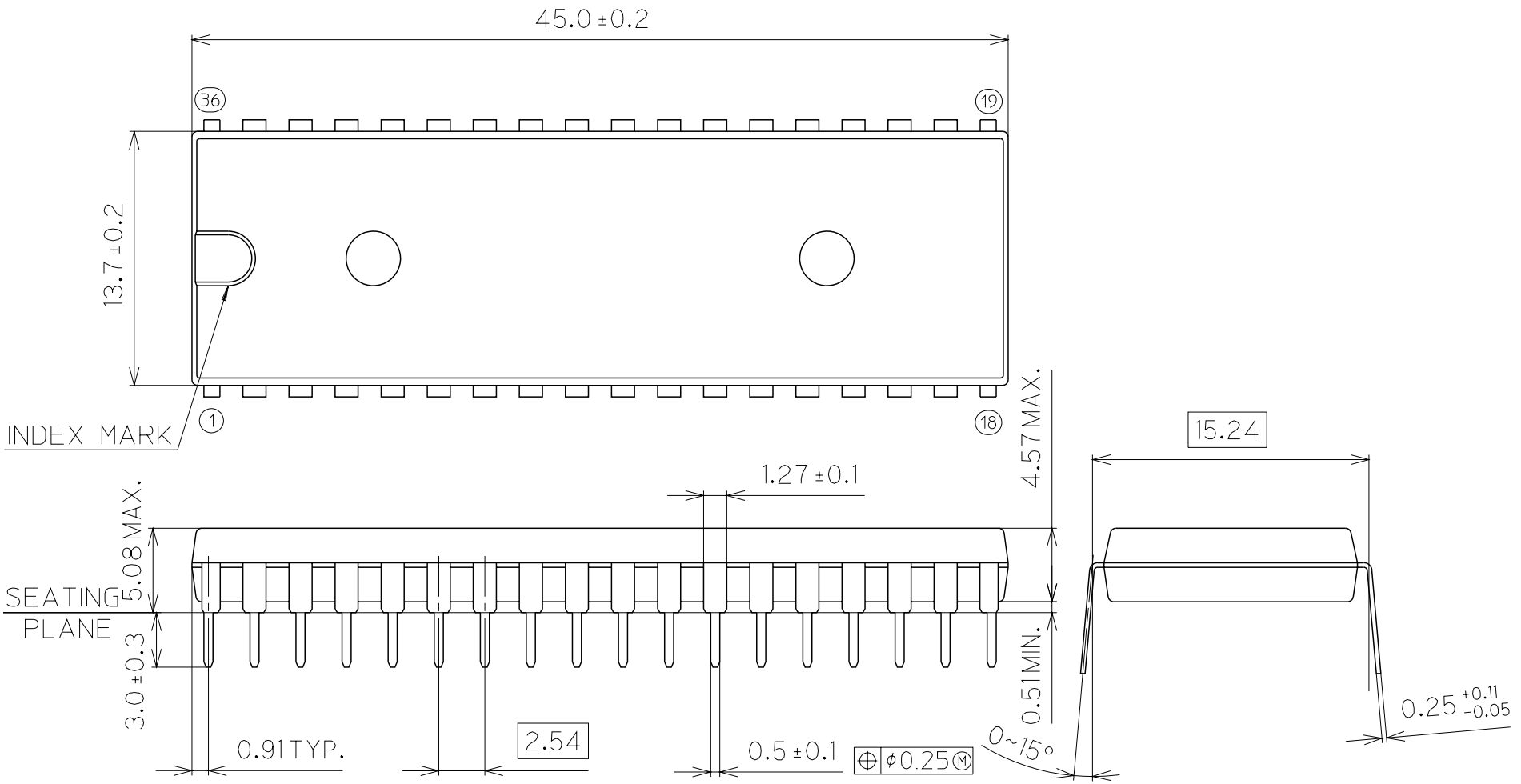


Please consult OKI for soldering, assembly and storage recommendations.

DIP36-P-600-2.54

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor

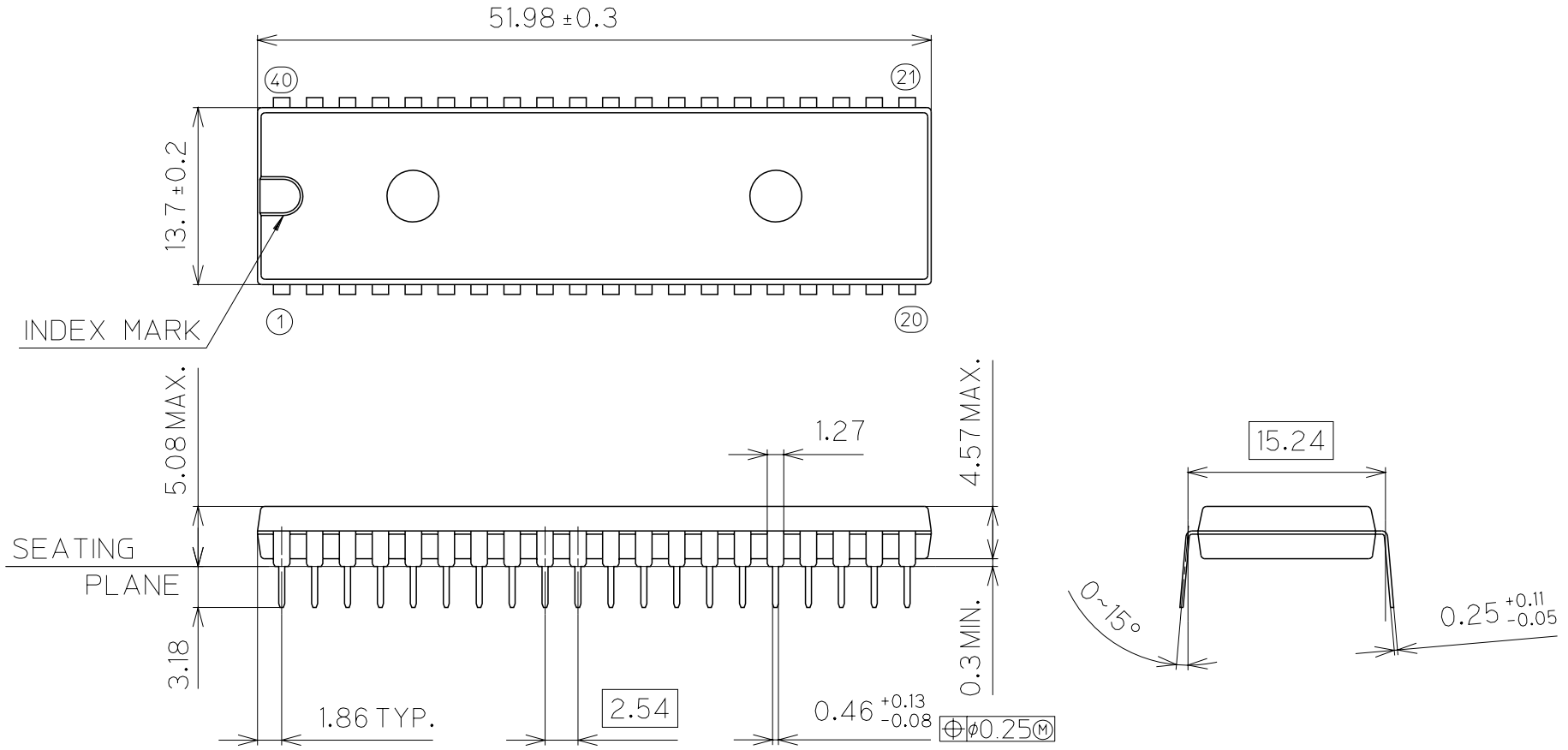


Please consult OKI for soldering, assembly and storage recommendations.

DIP40-P-600-2.54

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor

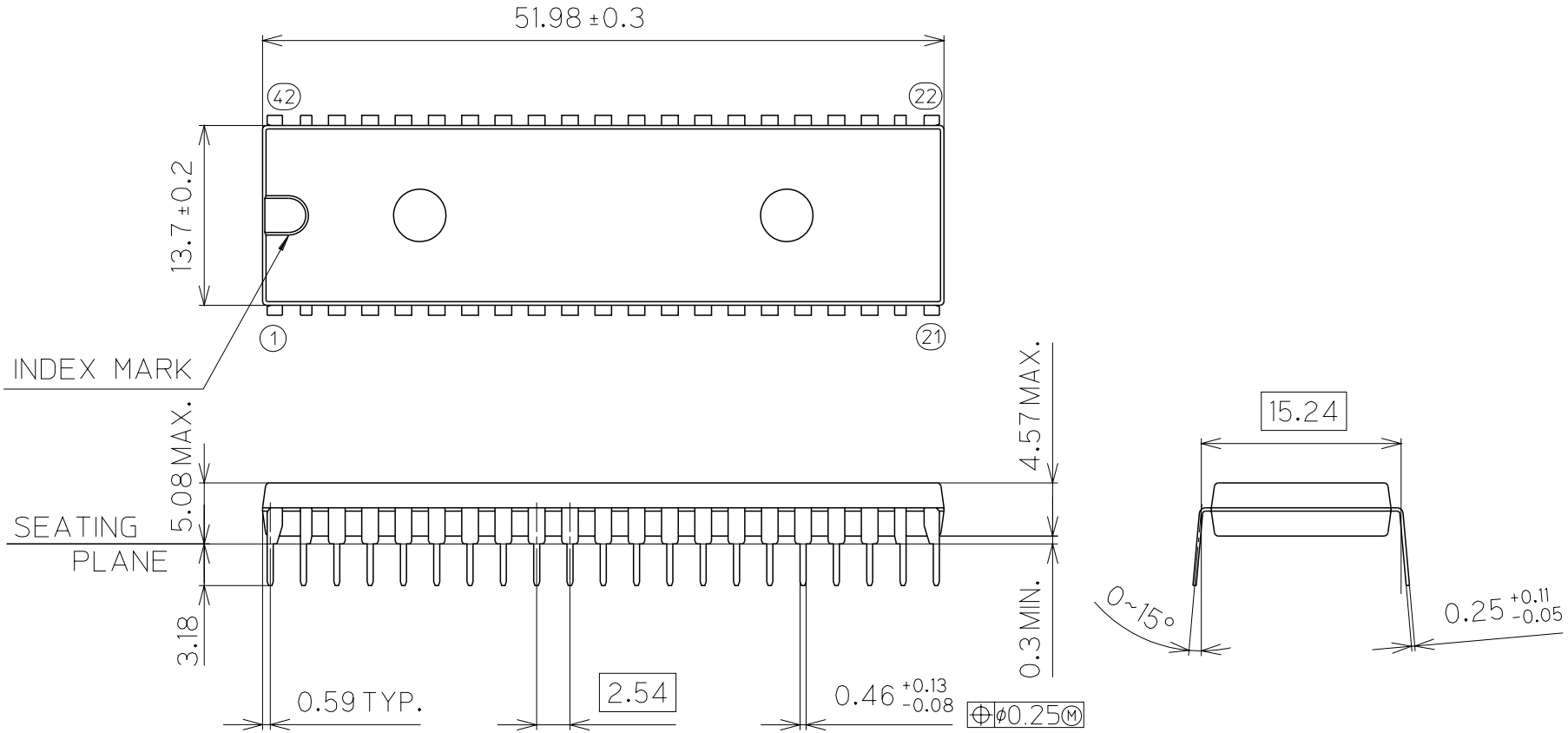


Please consult OKI for soldering, assembly and storage recommendations.

DIP42-P-600-2.54

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor

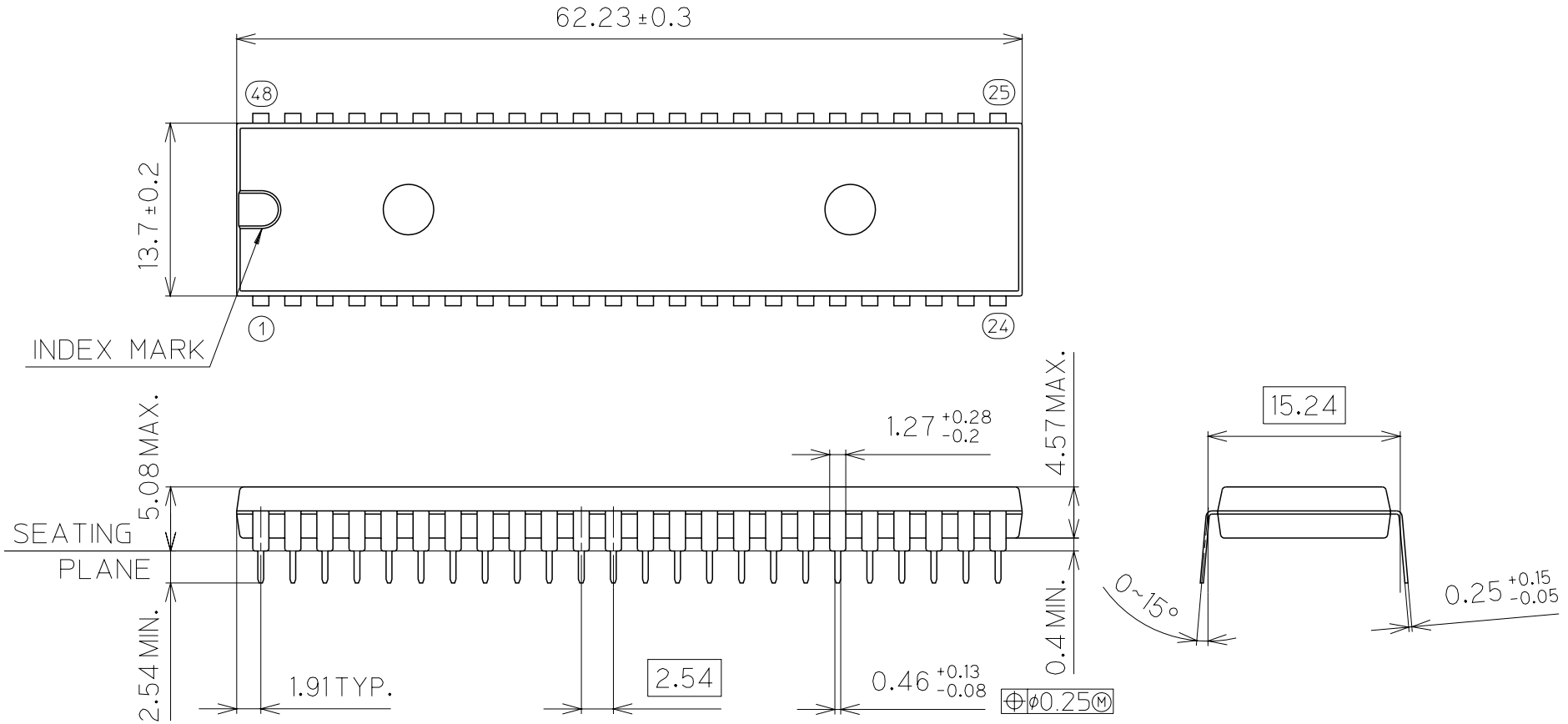


Please consult OKI for soldering, assembly and storage recommendations.

DIP48-P-600-2.54

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor

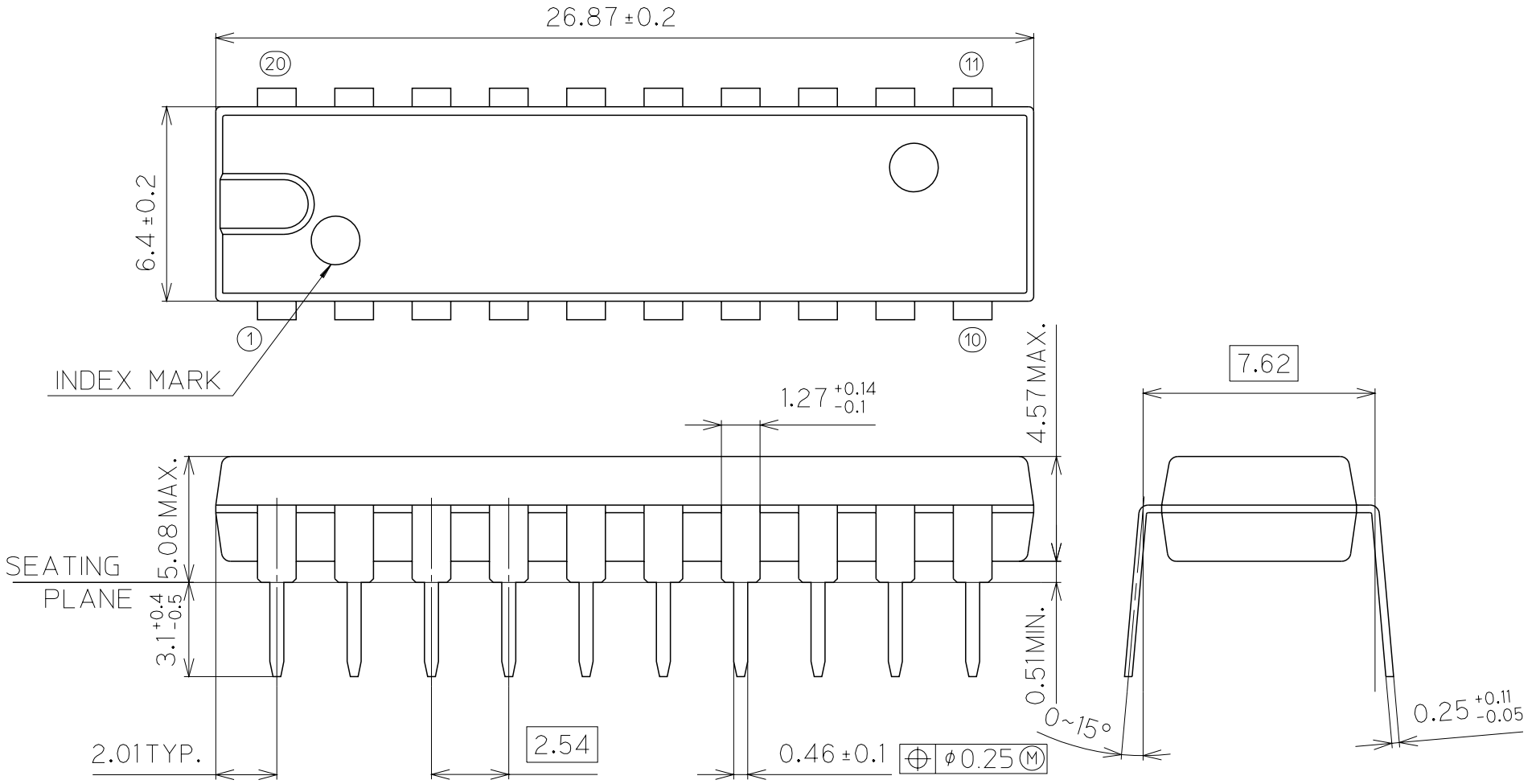


Please consult OKI for soldering, assembly and storage recommendations.

DIP20-P-300-2.54-S1

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor

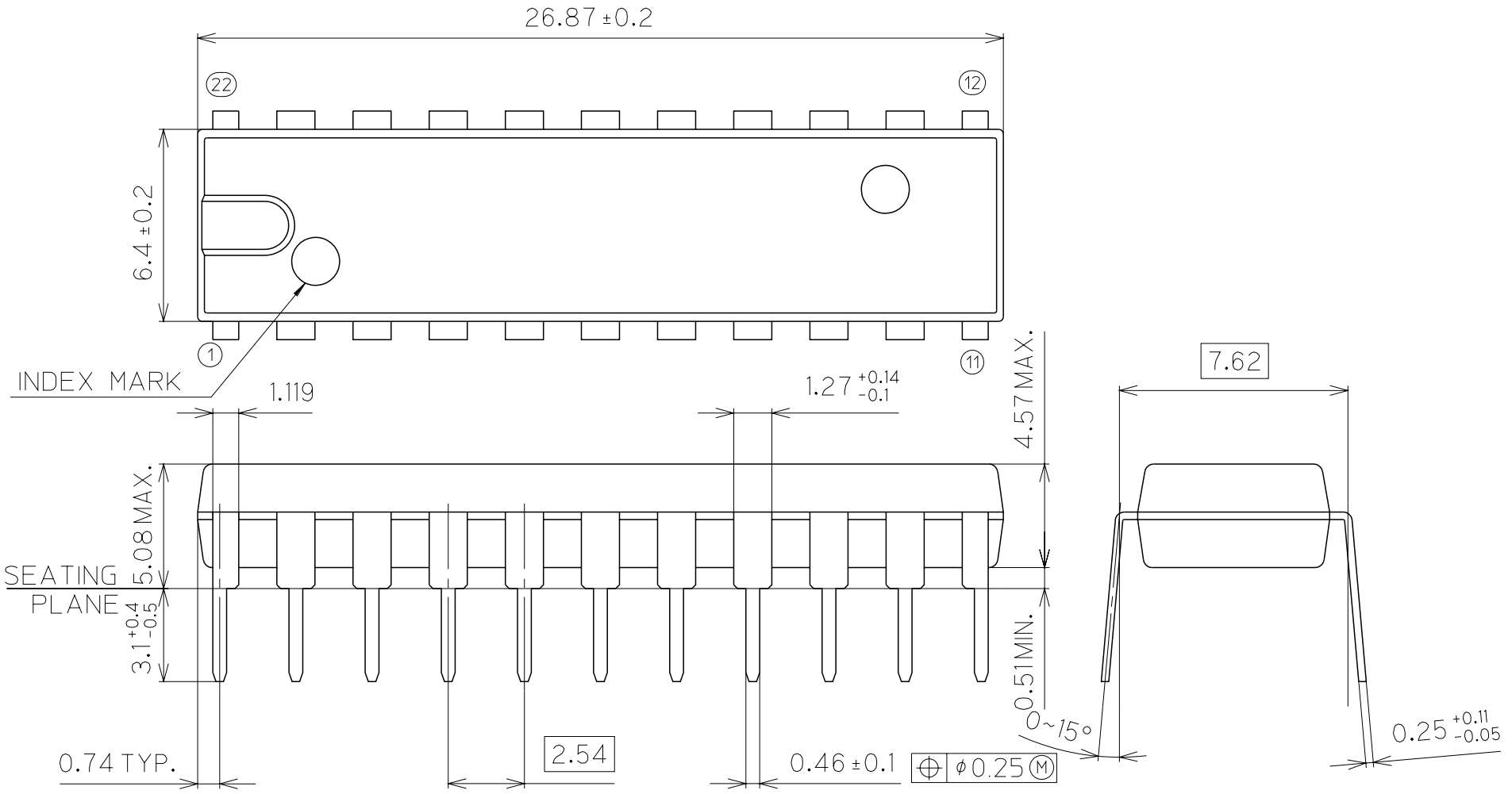


Please consult OKI for soldering, assembly and storage recommendations.

DIP22-P-300-2.54-S1

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor

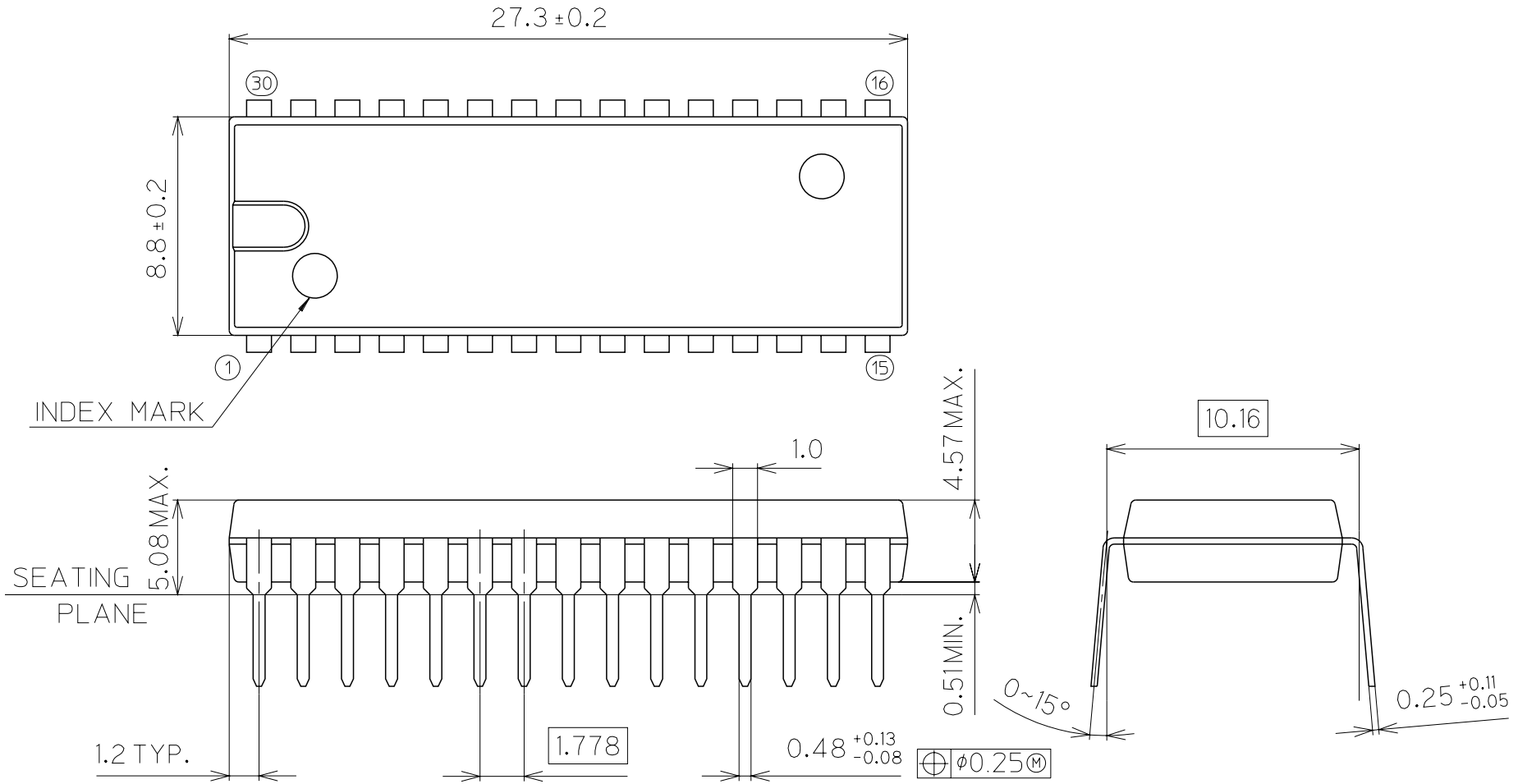


Please consult OKI for soldering, assembly and storage recommendations.

SDIP30-P-400-1.778

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor

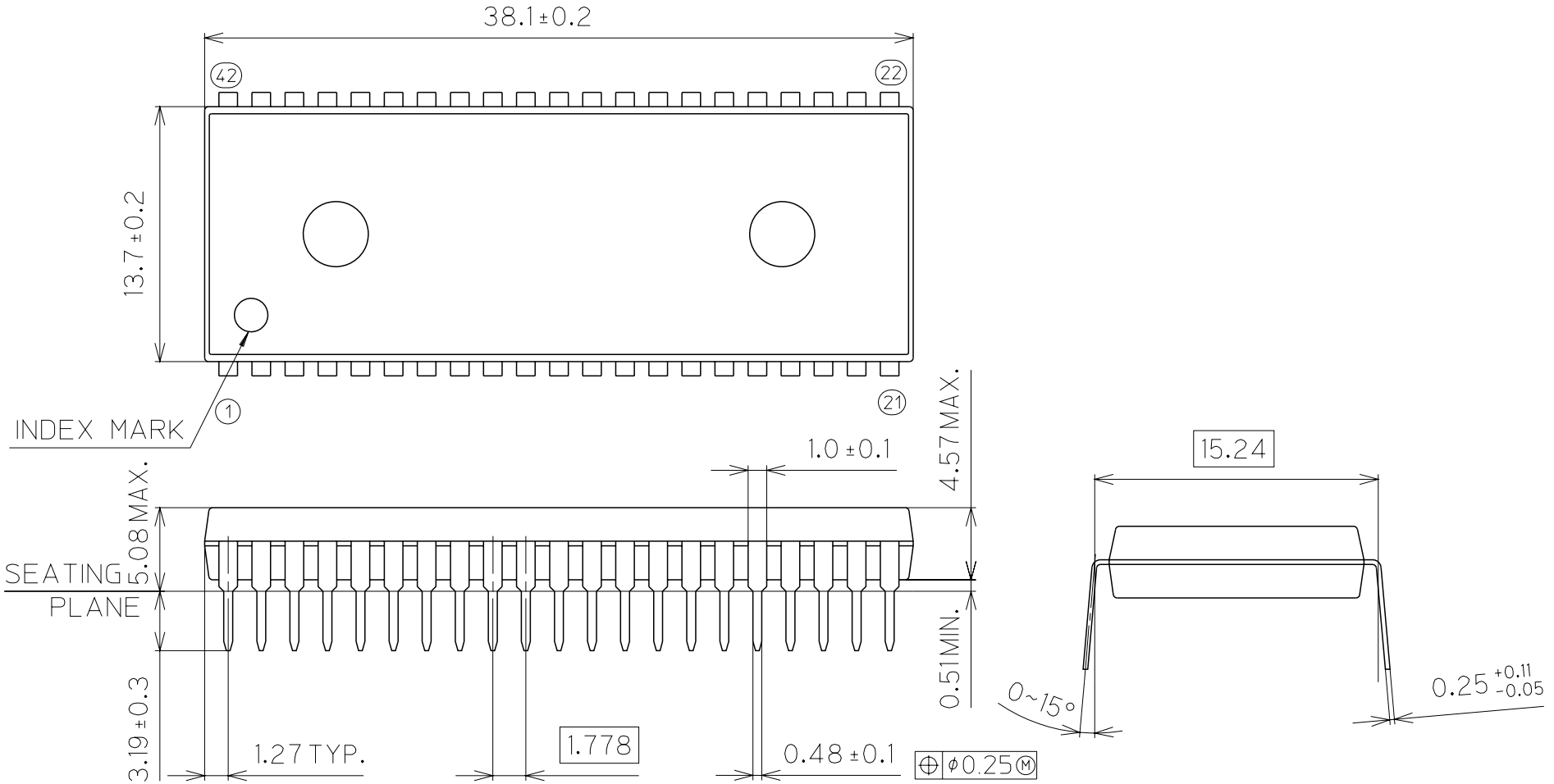


Please consult OKI for soldering, assembly and storage recommendations.

SDIP42-P-600-1.778

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor

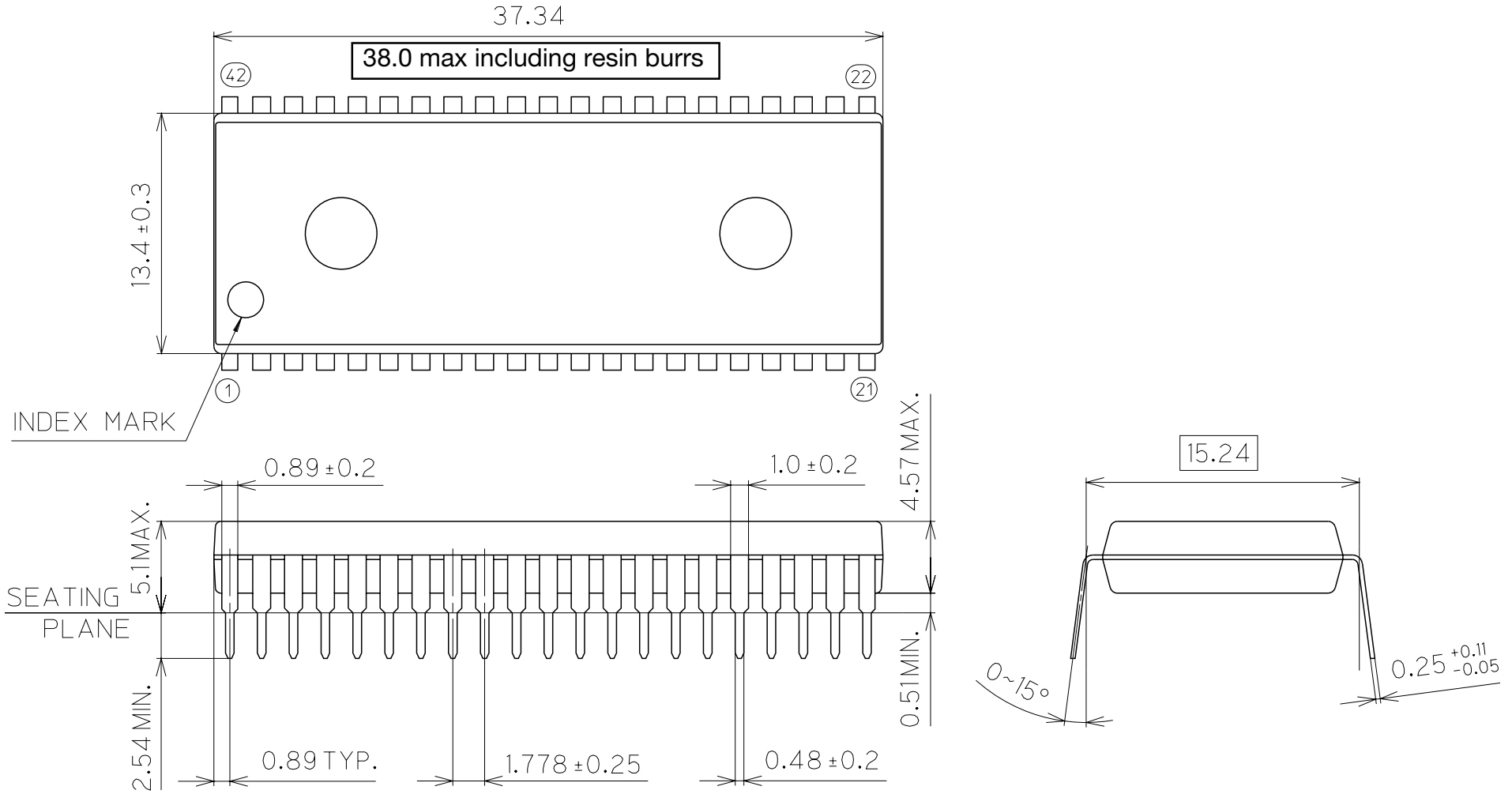


Please consult OKI for soldering, assembly and storage recommendations.

SDIP42-P-600-1.778-1

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor

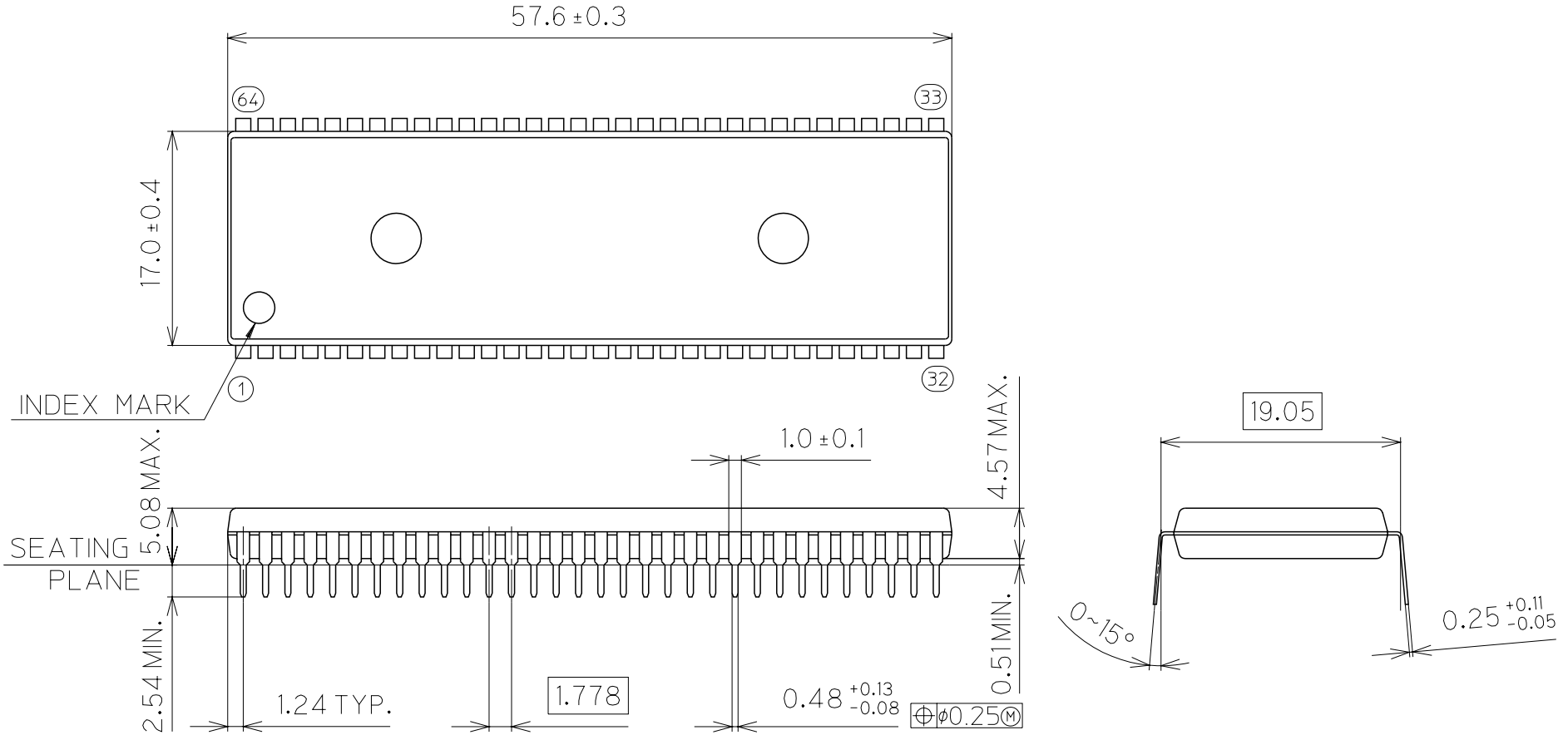


Please consult OKI for soldering, assembly and storage recommendations.

SDIP64-P-750-1.778

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor

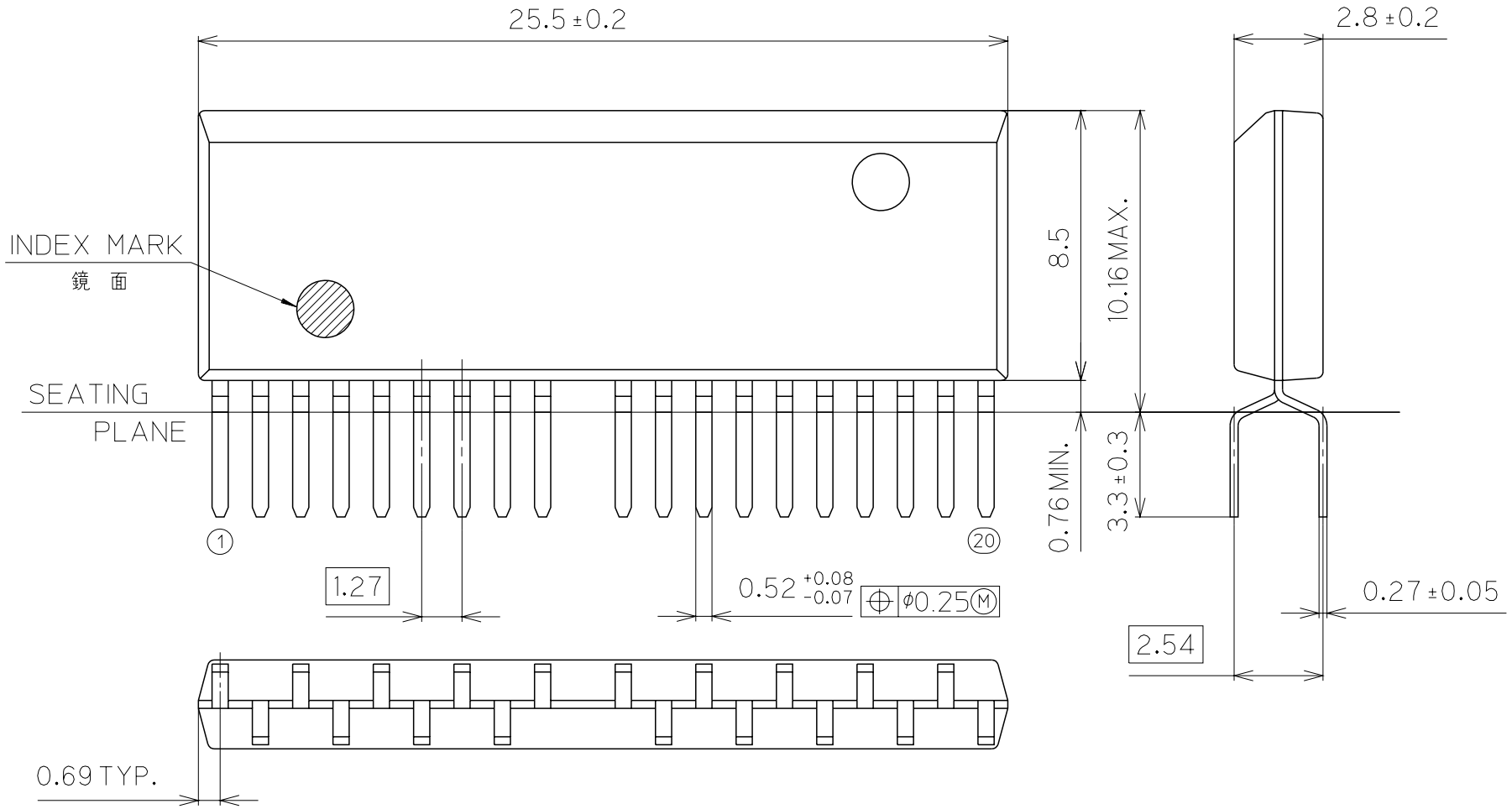


Please consult OKI for soldering, assembly and storage recommendations.

ZIP20-P-400-1.27

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor

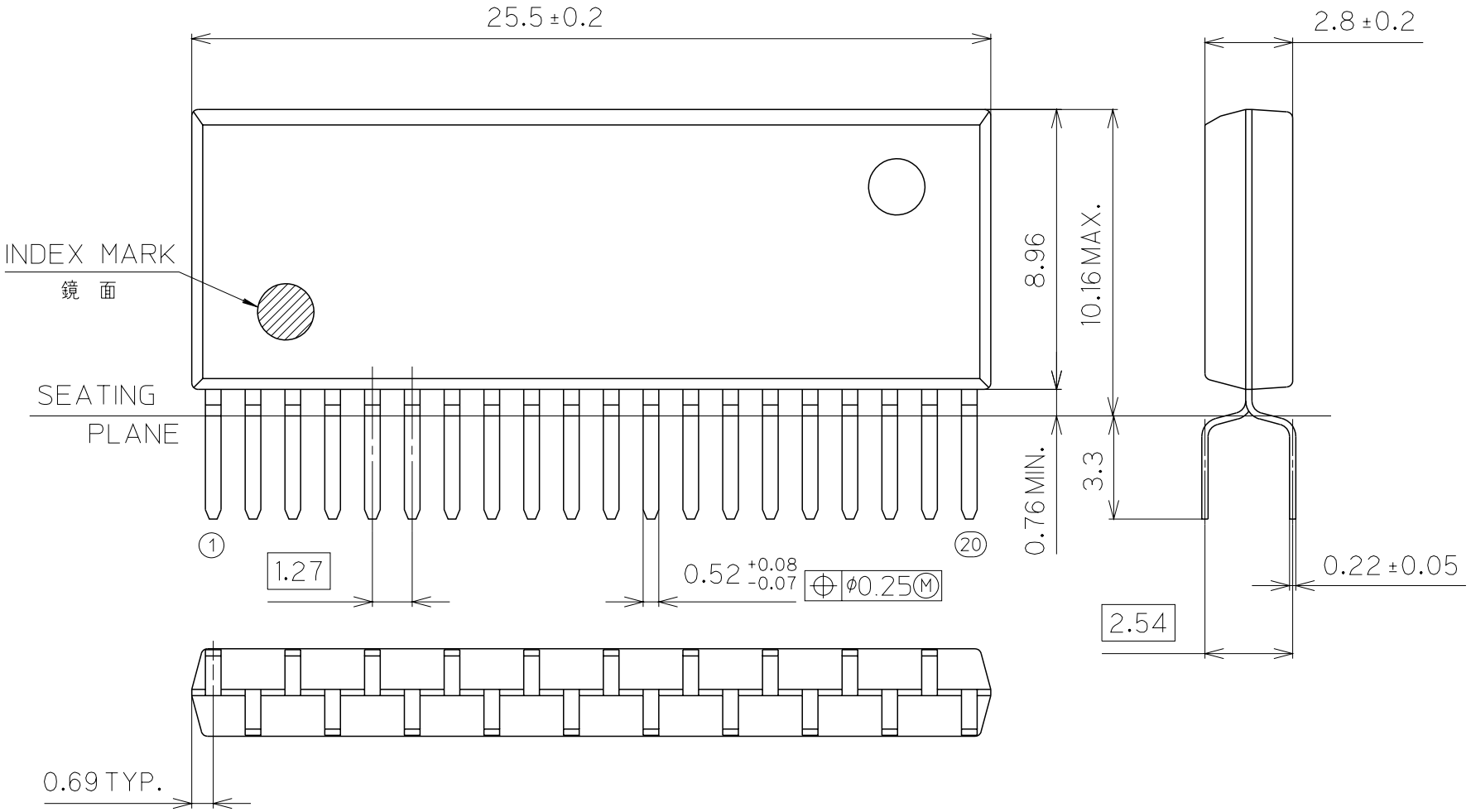


Please consult OKI for soldering, assembly and storage recommendations.

ZIP20-P-400-1.27-W1

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor

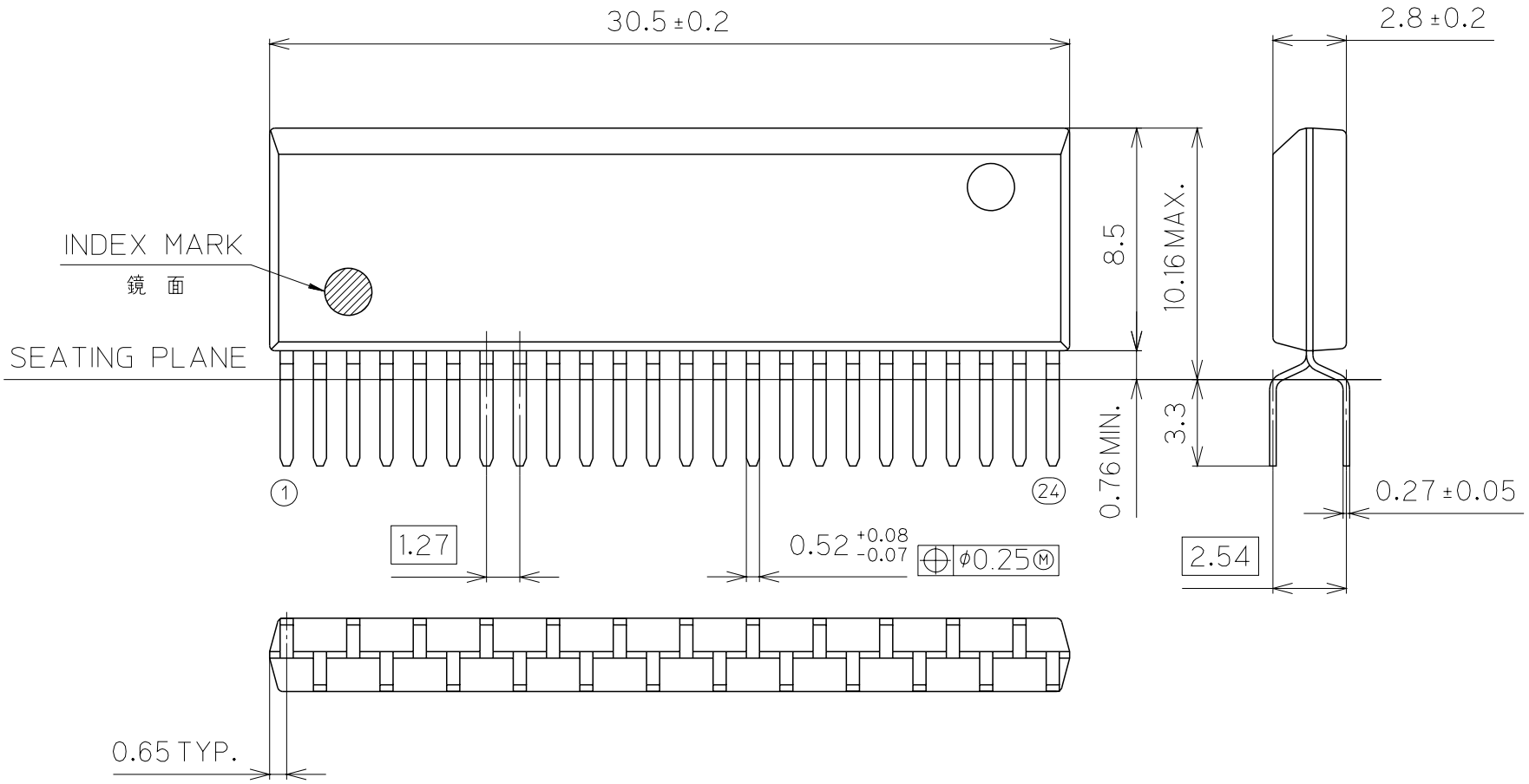


Please consult OKI for soldering, assembly and storage recommendations.

ZIP24-P-400-1.27

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor

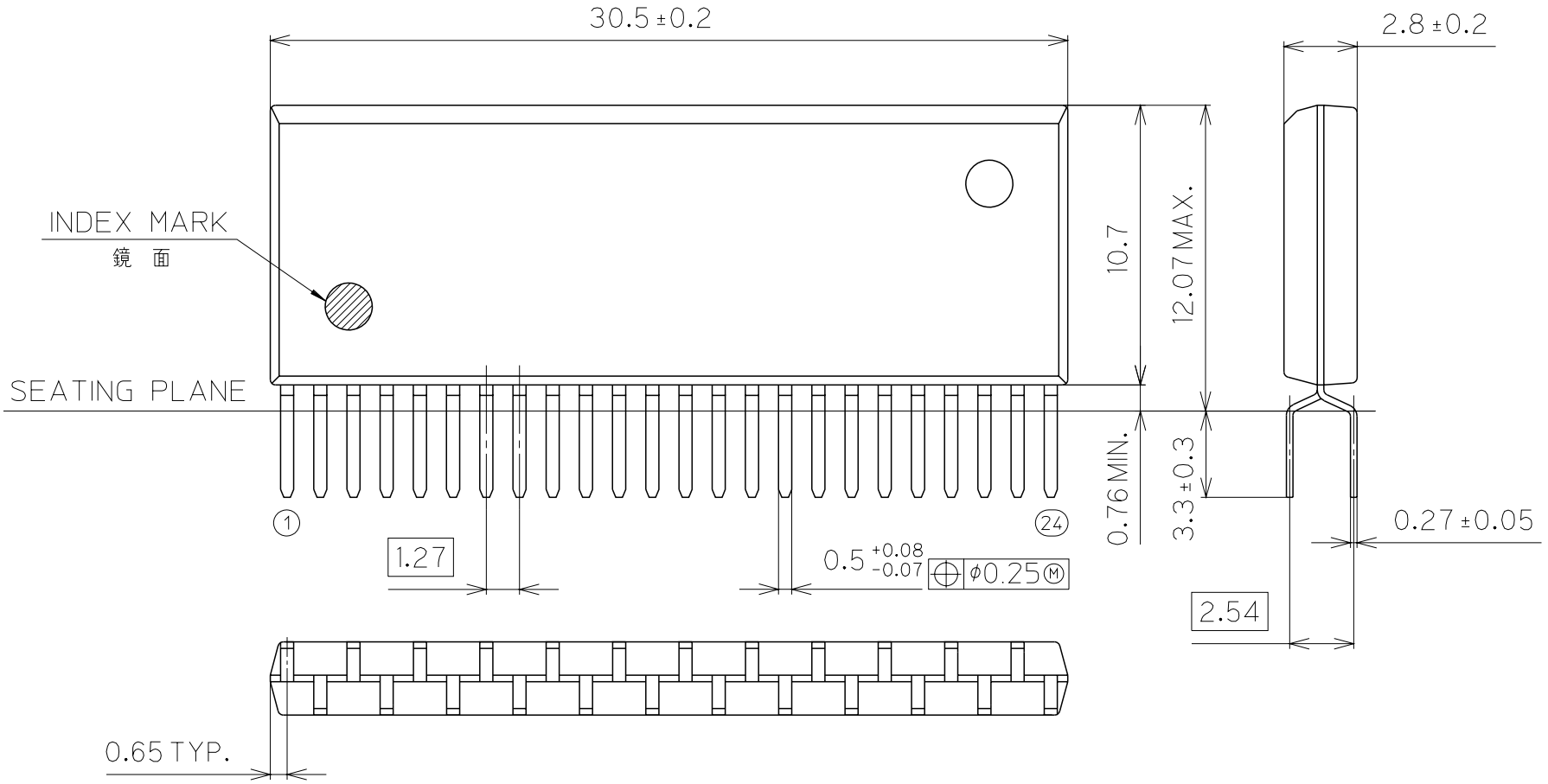


Please consult OKI for soldering, assembly and storage recommendations.

ZIP24-P-475-1.27

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor

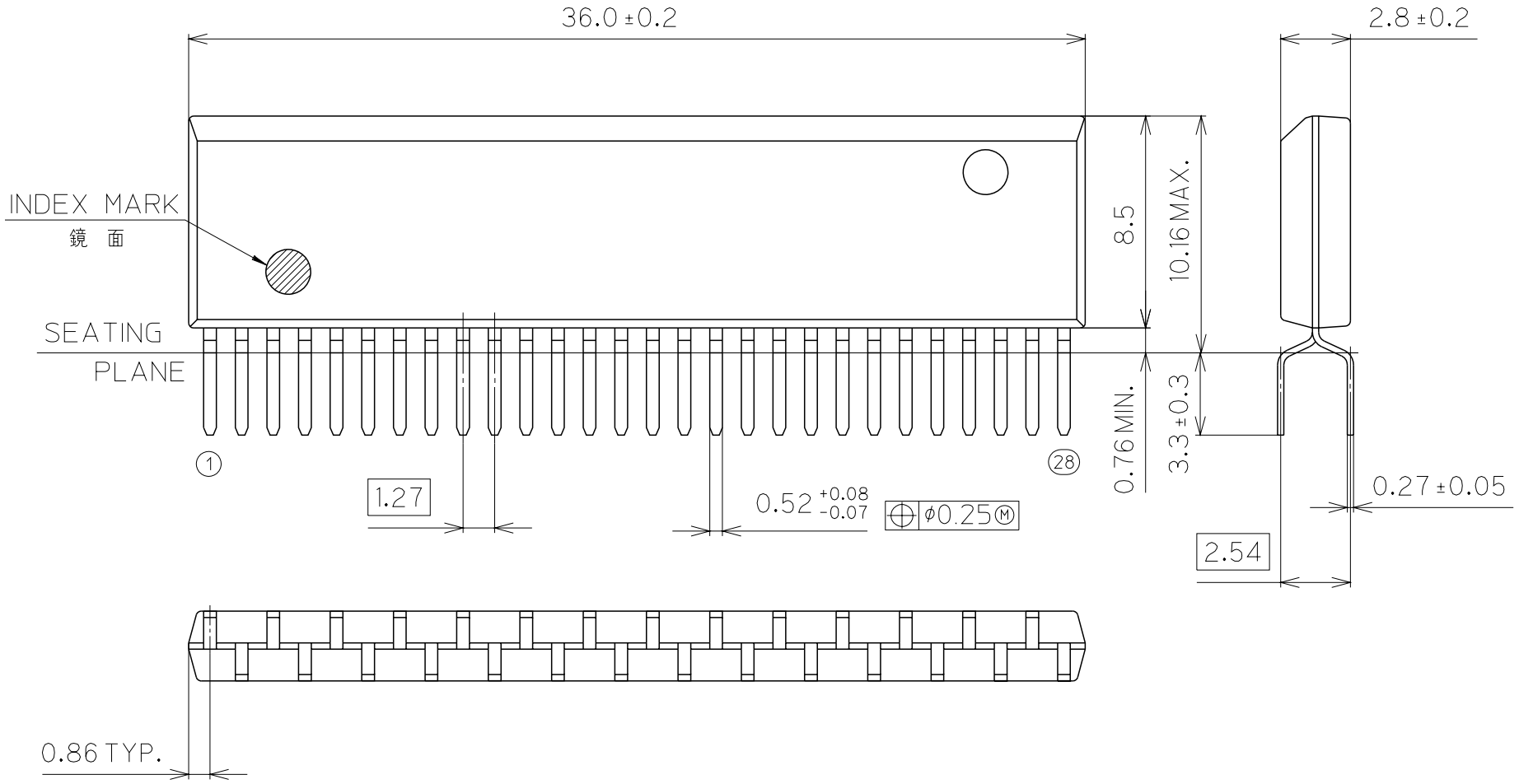


Please consult OKI for soldering, assembly and storage recommendations.

ZIP28-P-400-1.27

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor

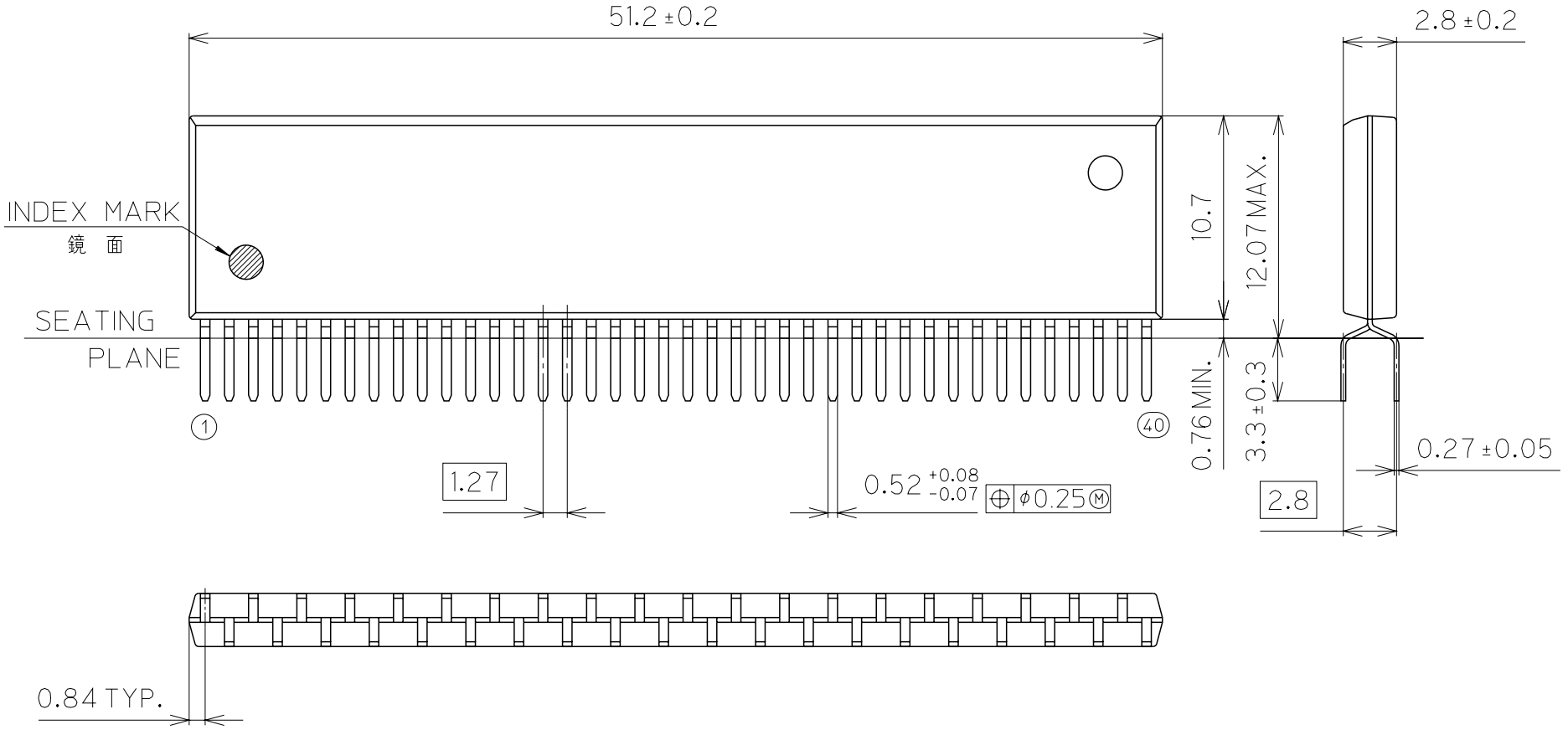


Please consult OKI for soldering, assembly and storage recommendations.

ZIP40-P-475-1.27

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor

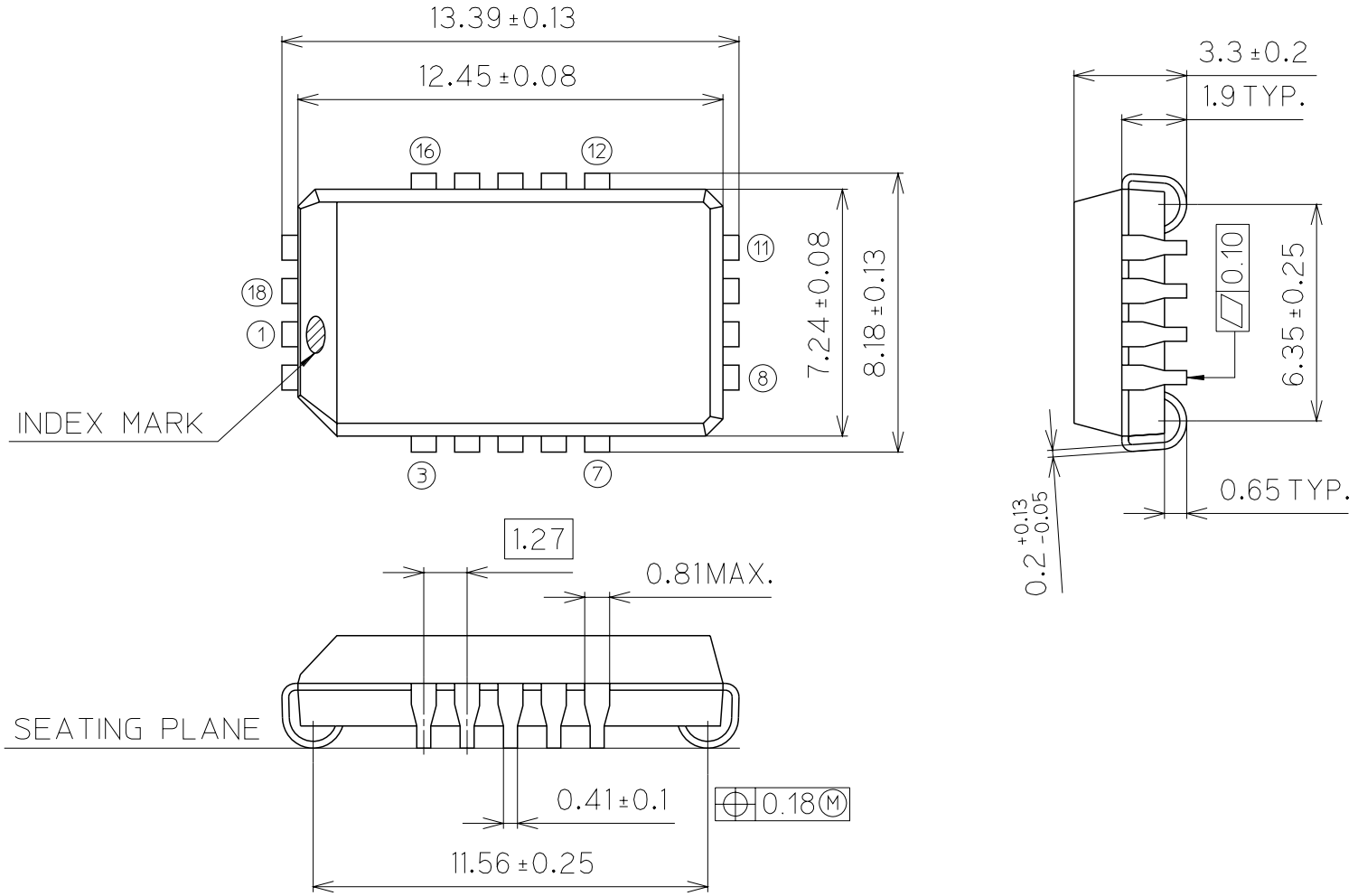


Please consult OKI for soldering, assembly and storage recommendations.

QFJ18-P-R290-1.27

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor

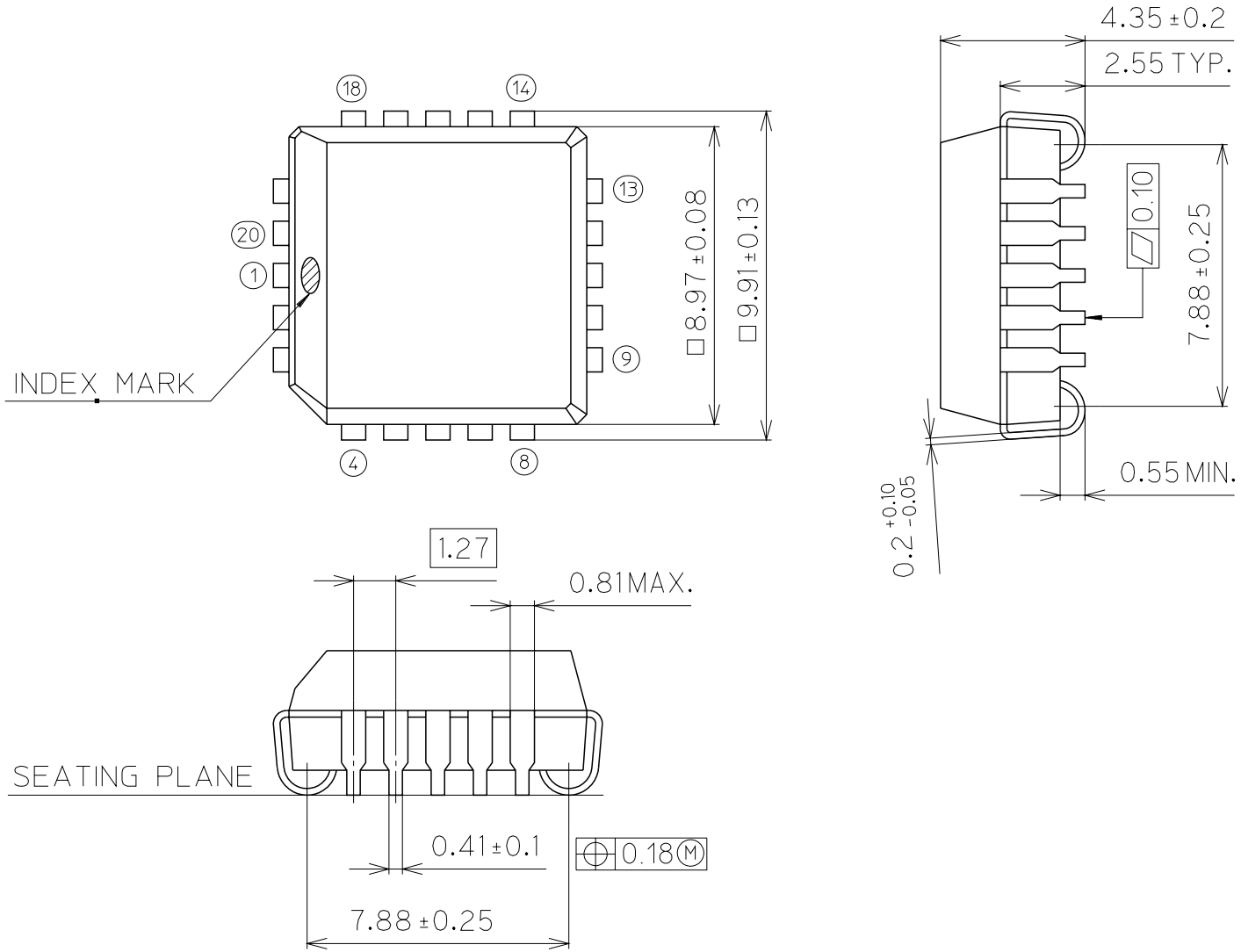


Please consult OKI for soldering, assembly and storage recommendations.

QFJ20-P-S350-1.27

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor

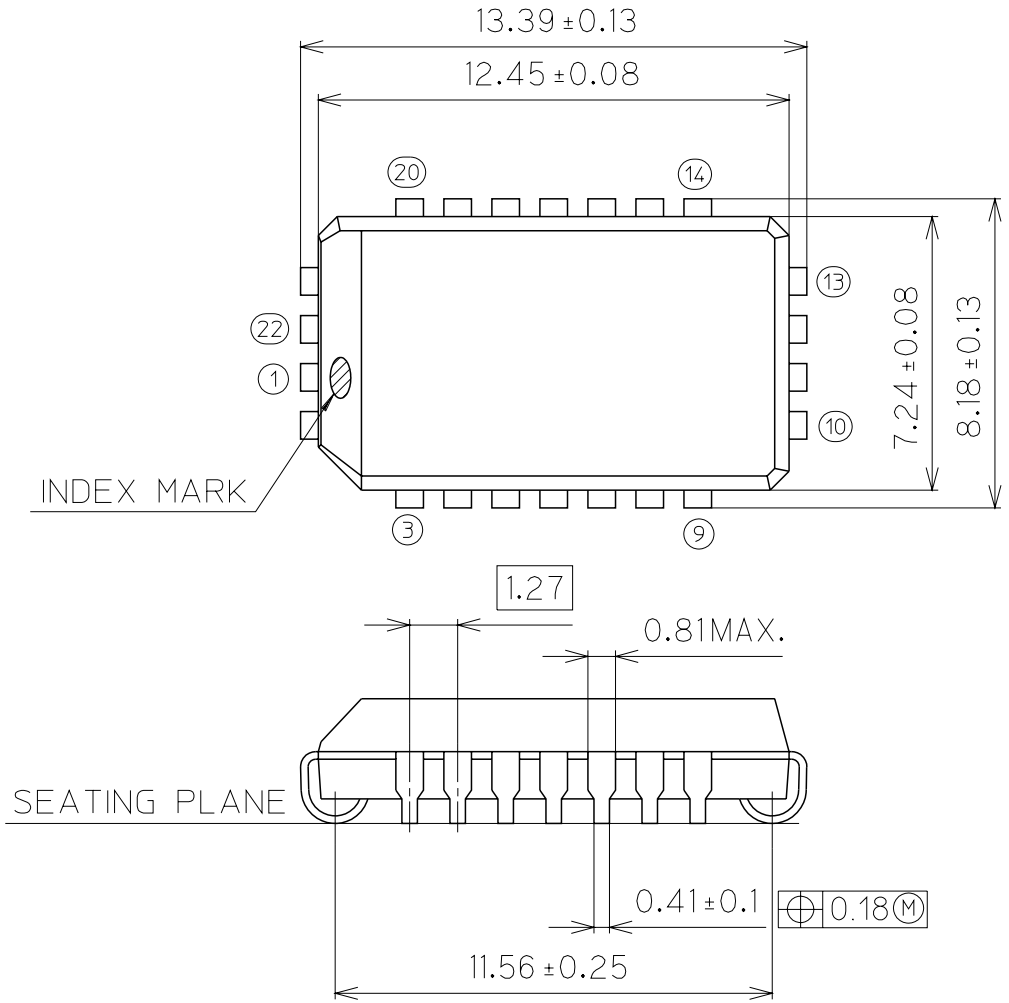


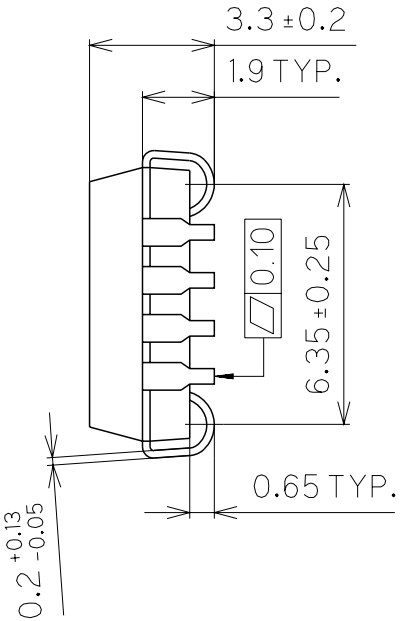
Please consult OKI for soldering, assembly and storage recommendations.

QFJ22-P-R290-1.27

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor



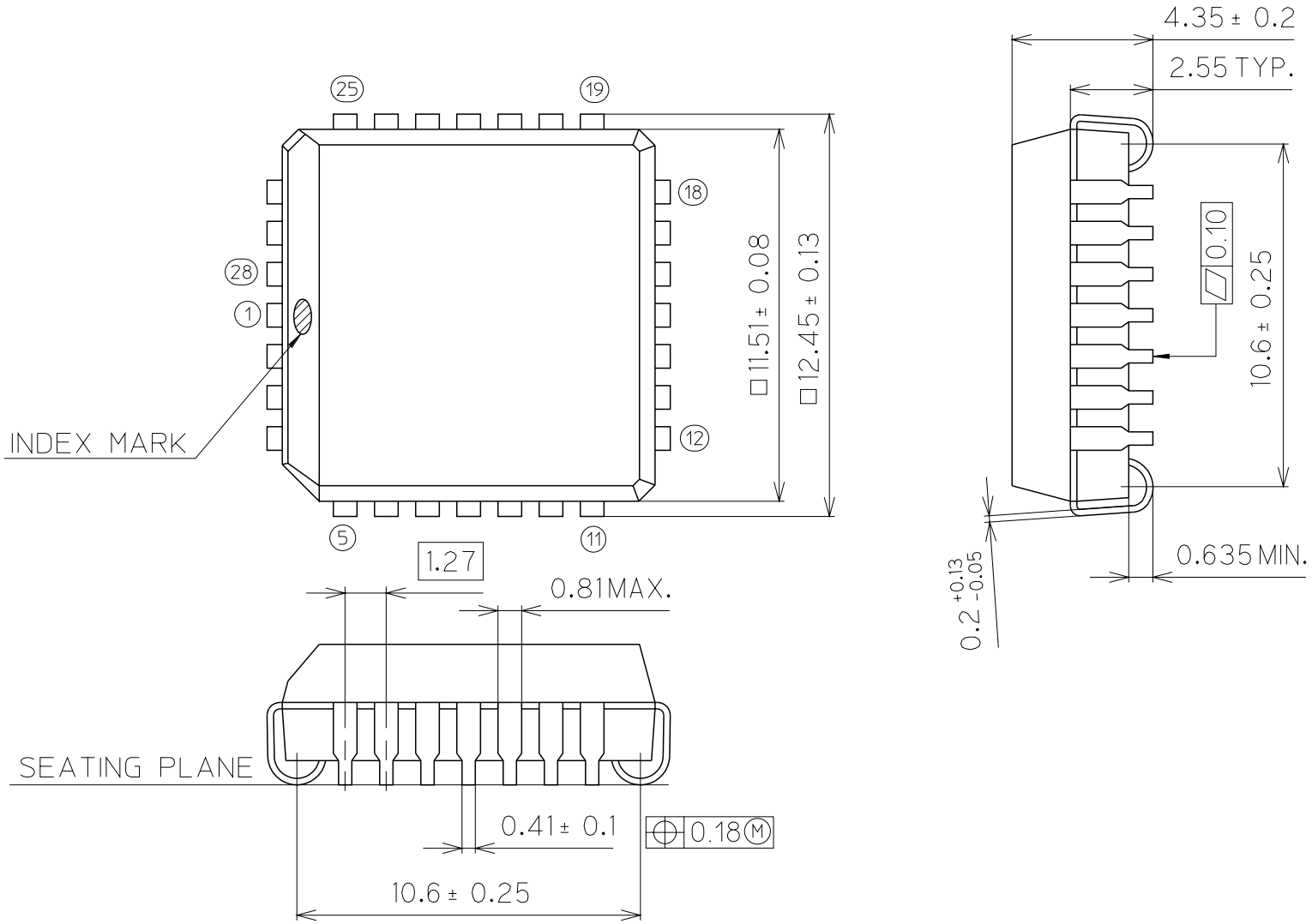


Please consult OKI for soldering, assembly and storage recommendations.

QFJ28-P-S450-1.27

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor

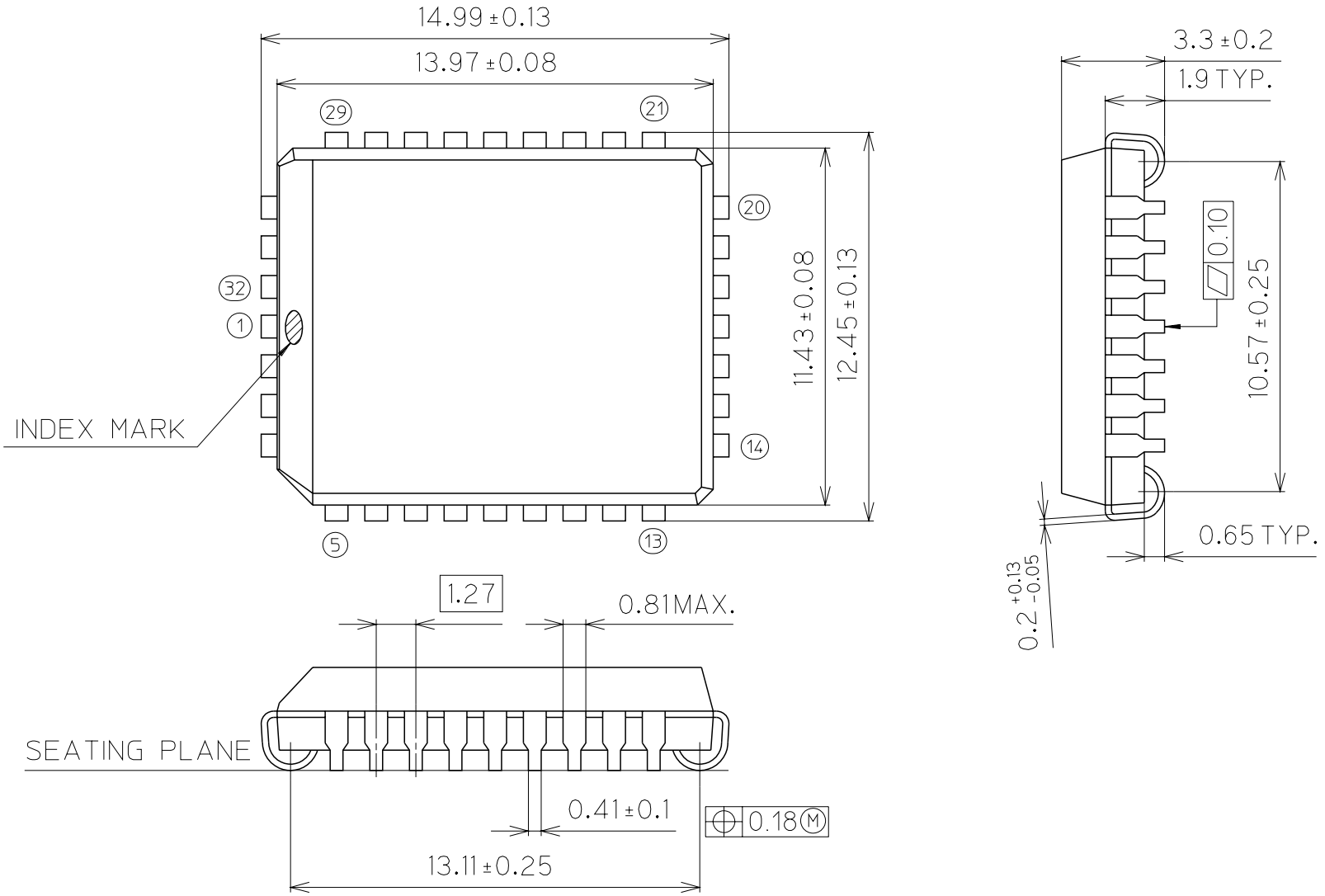


Please consult OKI for soldering, assembly and storage recommendations.

QFJ32-P-R450-1.27

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor

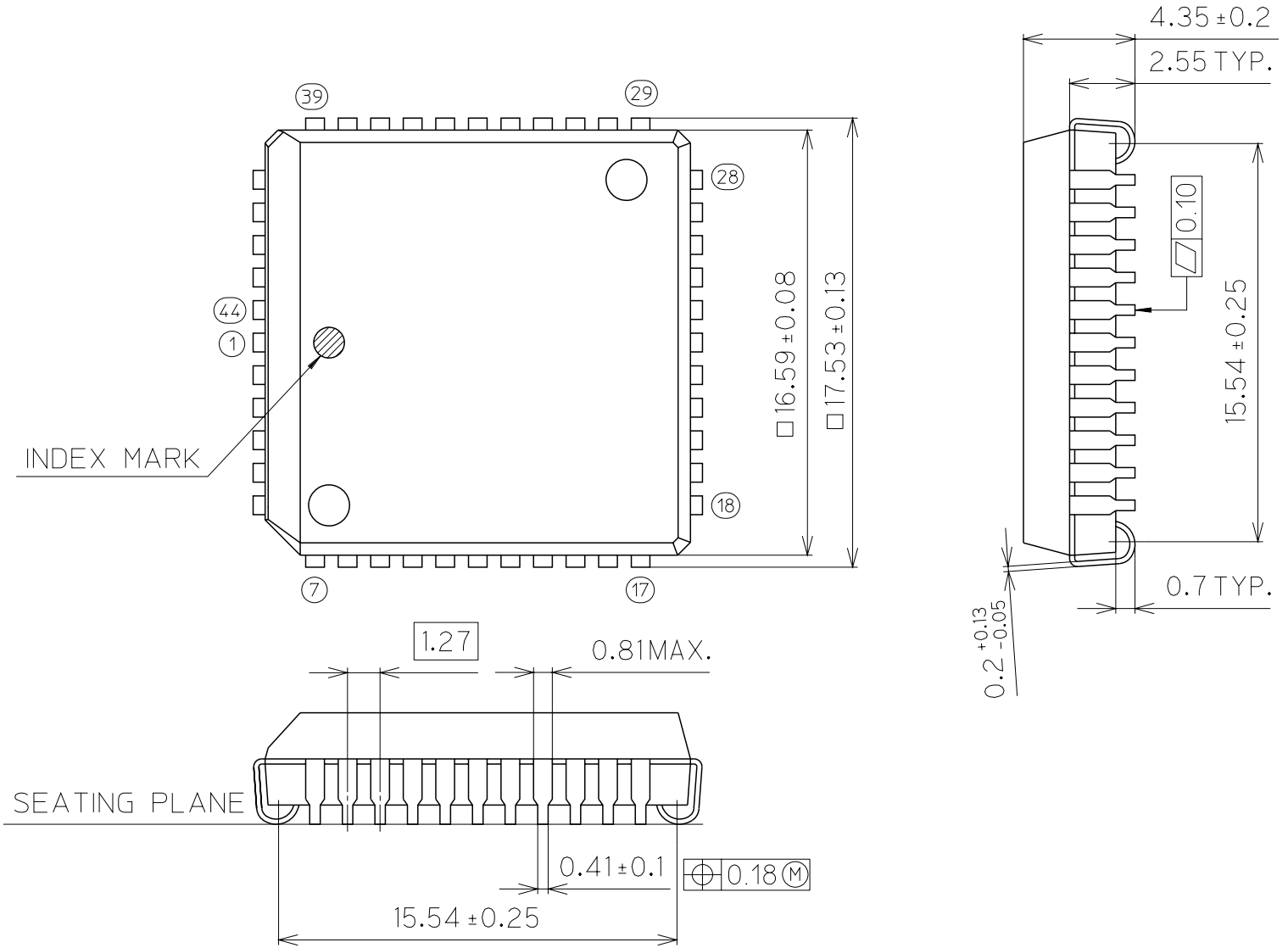


Please consult OKI for soldering, assembly and storage recommendations.

QFJ44-P-S650-1.27

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor

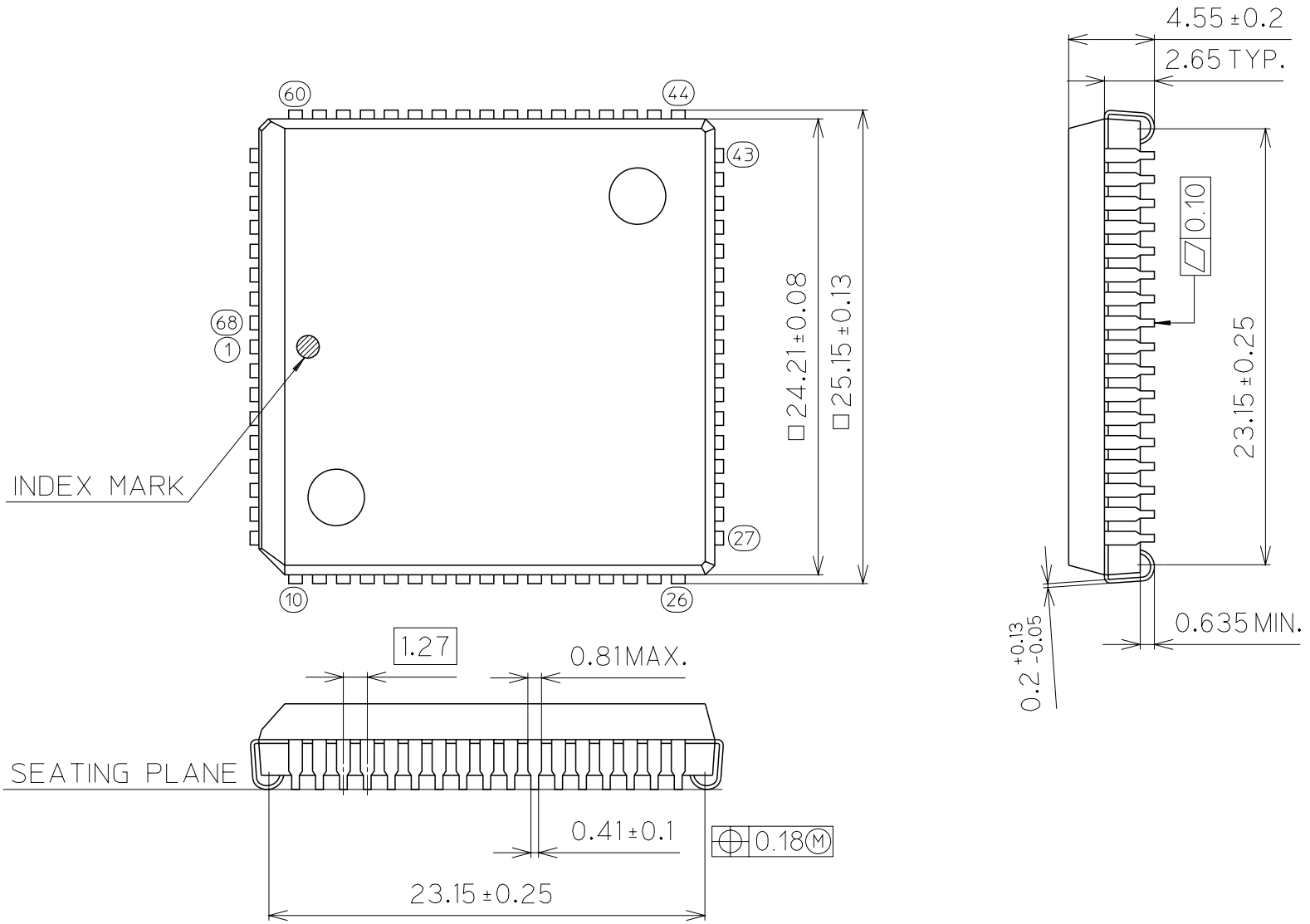


Please consult OKI for soldering, assembly and storage recommendations.

QFJ68-P-S950-1.27

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor

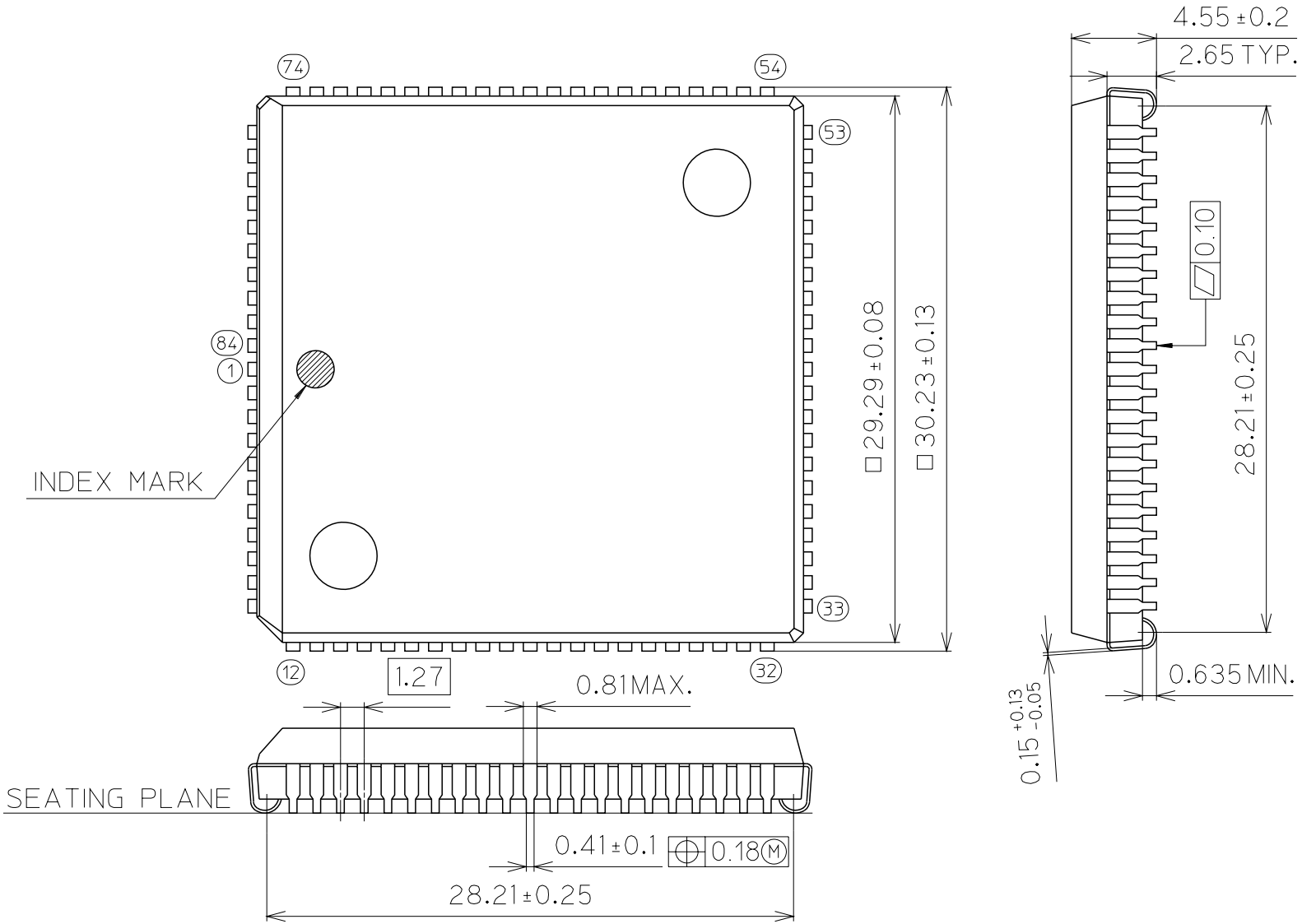


Please consult OKI for soldering, assembly and storage recommendations.

QFJ84-P-S115-1.27

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor

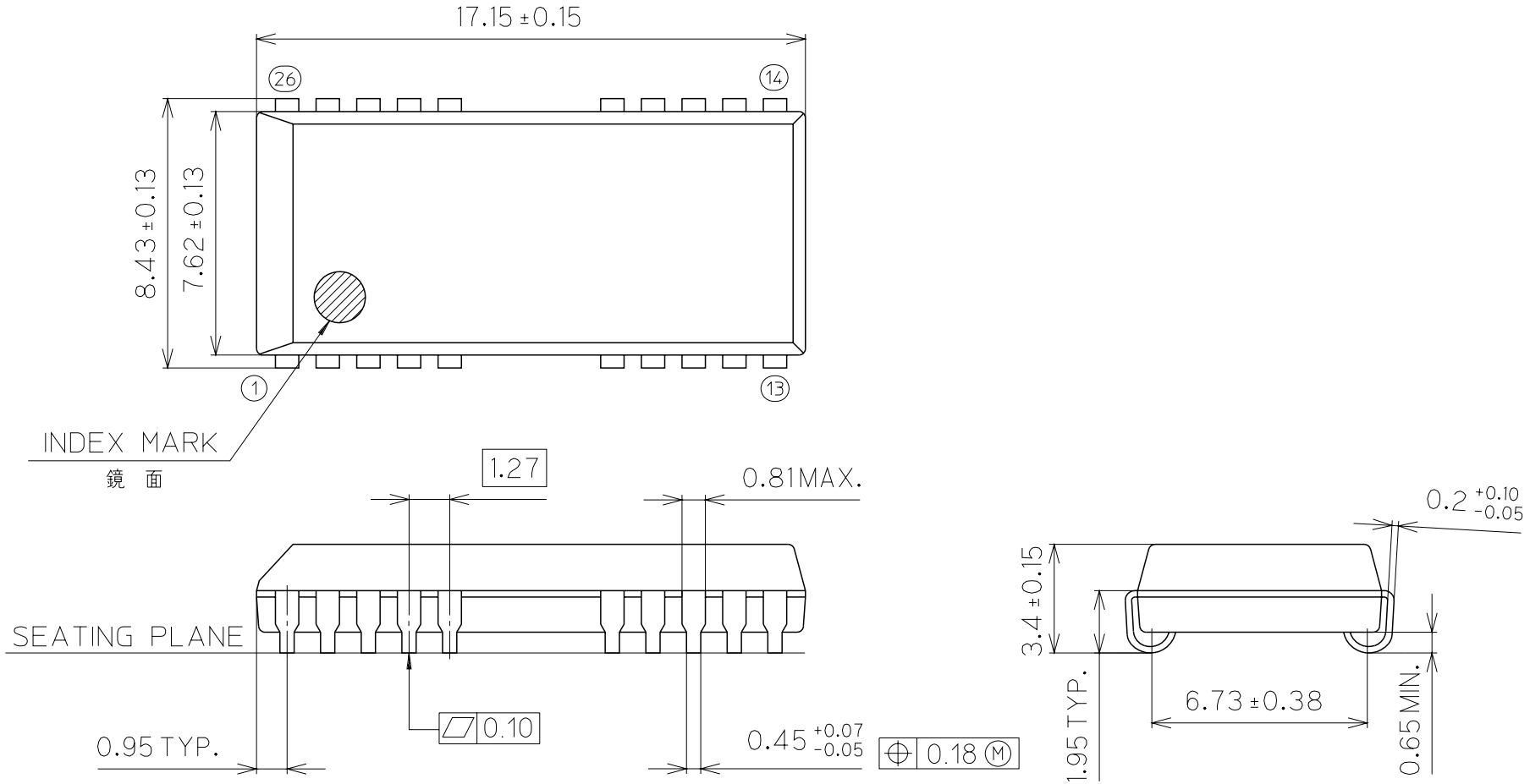


Please consult OKI for soldering, assembly and storage recommendations.

SOJ26/20-P-300-1.27

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor

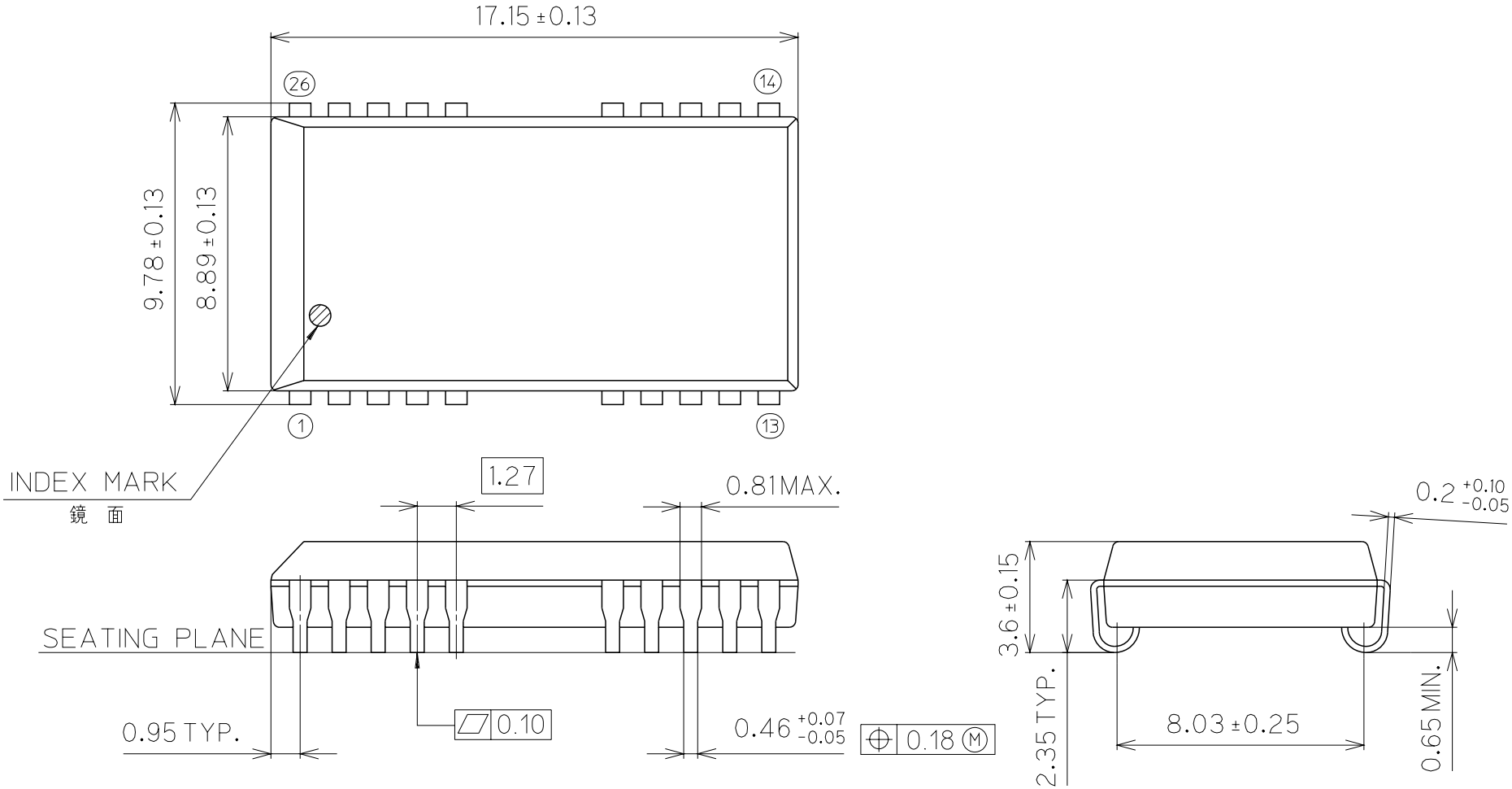


Please consult OKI for soldering, assembly and storage recommendations.

SOJ26/20-P-350-1.27

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor

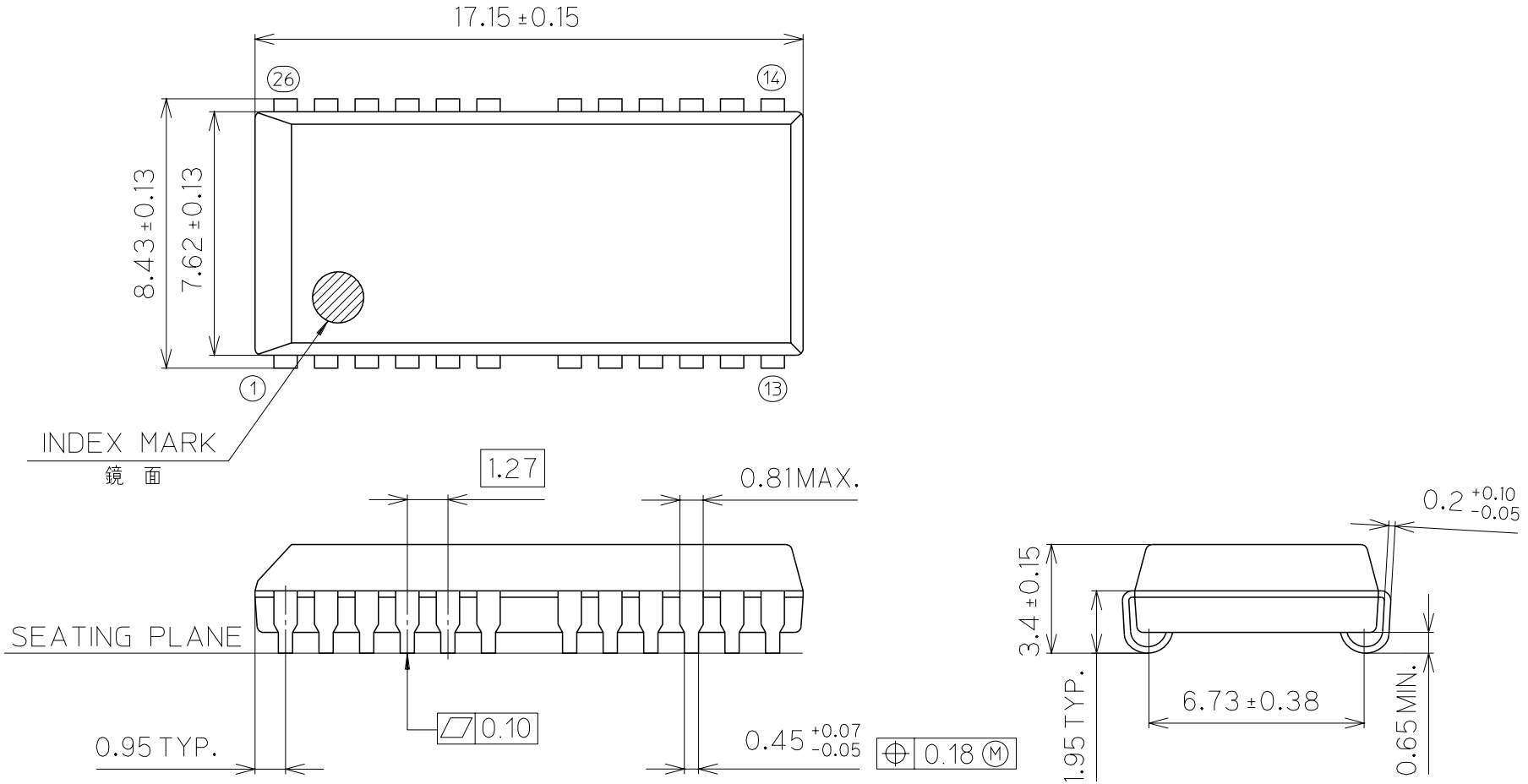


Please consult OKI for soldering, assembly and storage recommendations.

SOJ26/24-P-300-1.27

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor

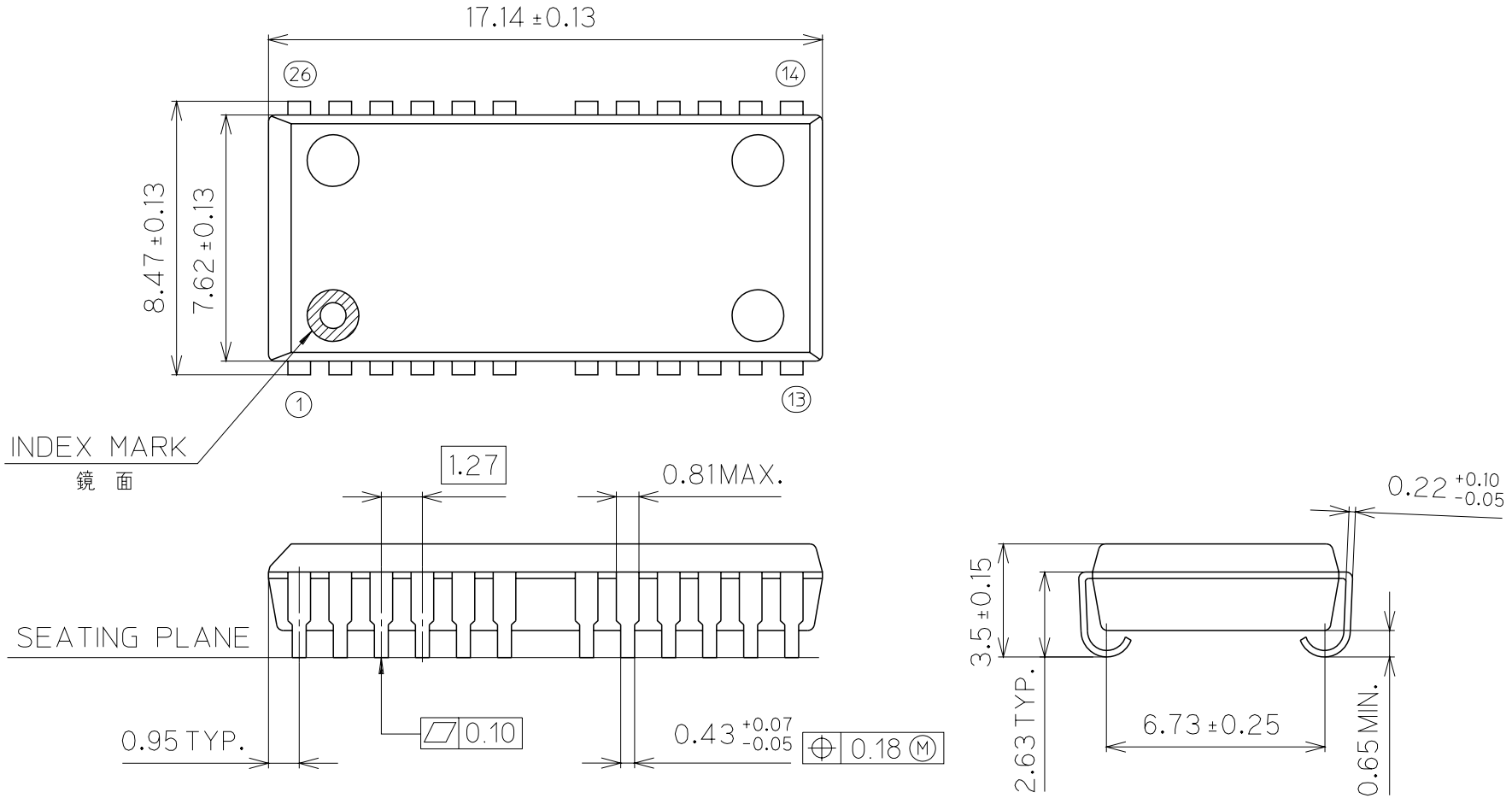


Please consult OKI for soldering, assembly and storage recommendations.

SOJ26/24-P-300-1.27-3

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor

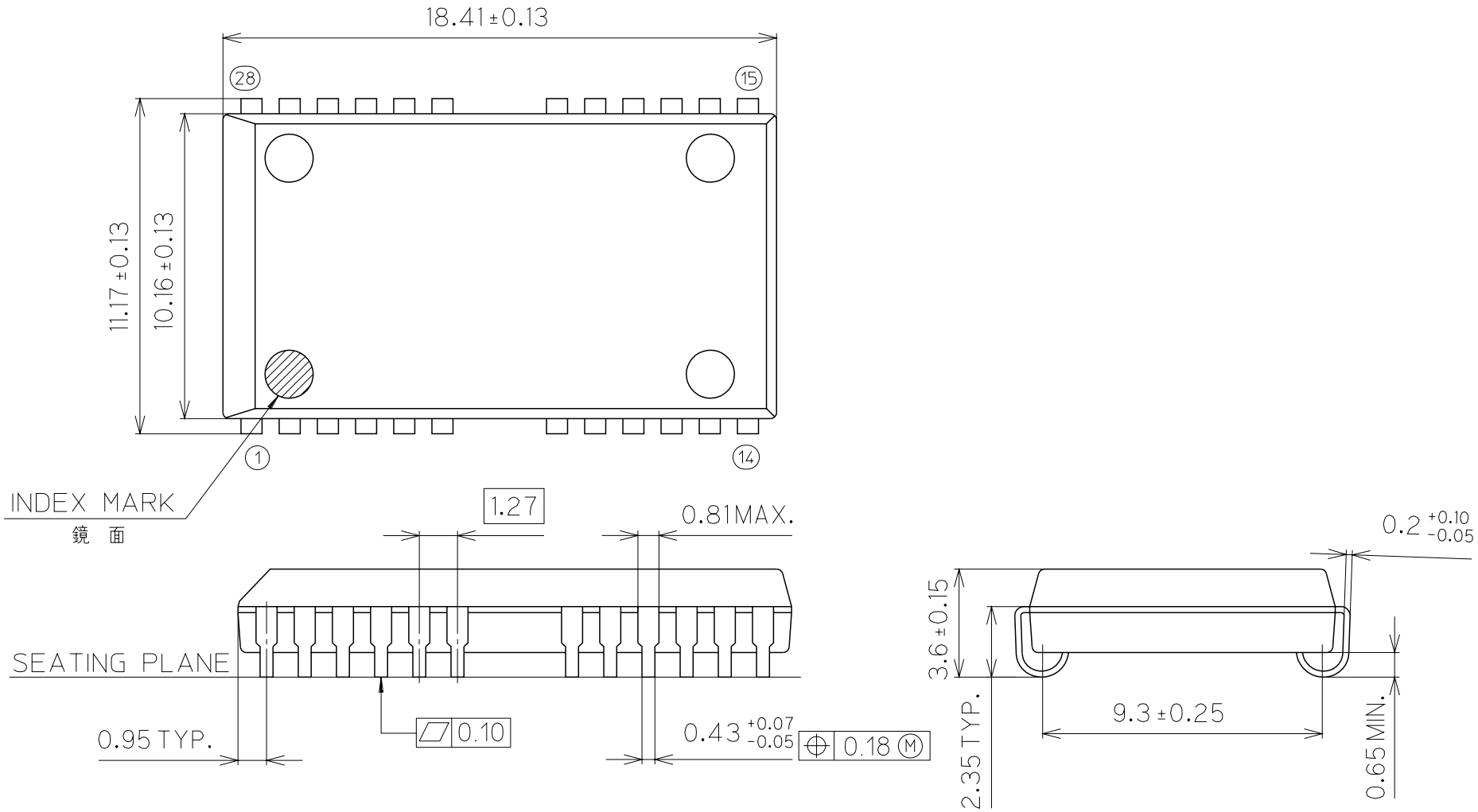


Please consult OKI for soldering, assembly and storage recommendations.

SOJ28/24-P-400-1.27

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor

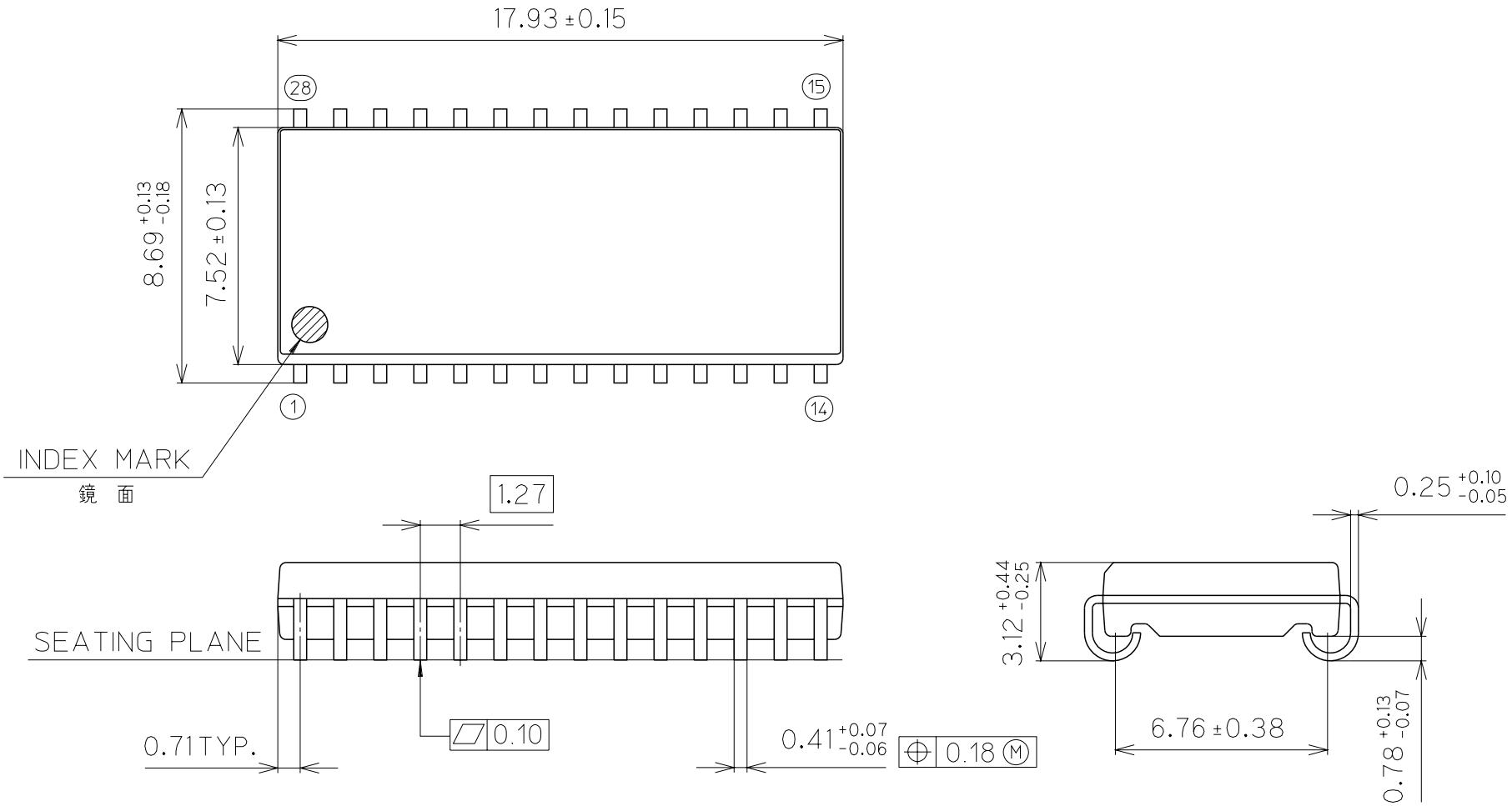


Please consult OKI for soldering, assembly and storage recommendations.

SOJ28-P-300-1.27

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor

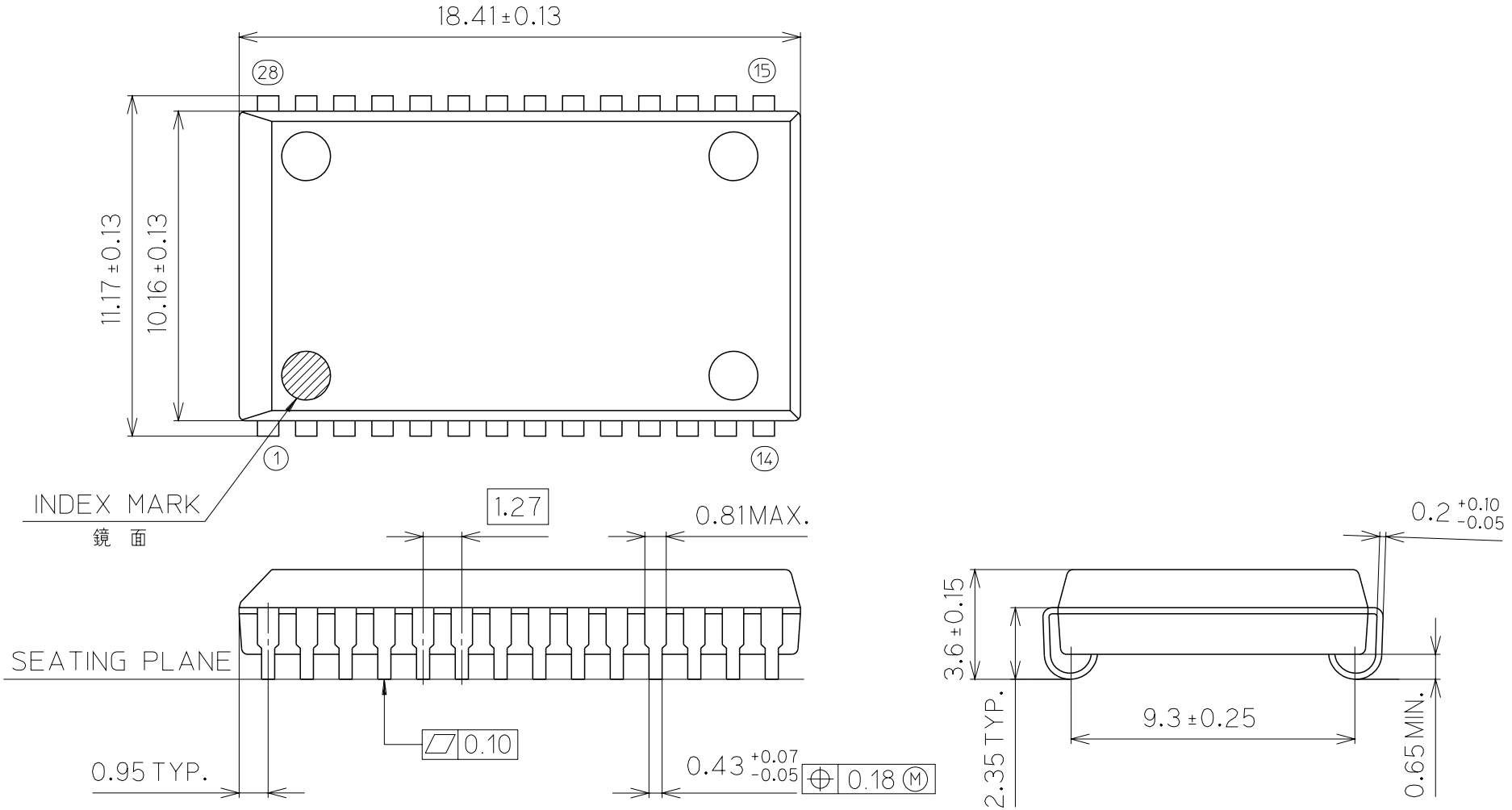


Please consult OKI for soldering, assembly and storage recommendations.

SOJ28-P-400-1.27

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor

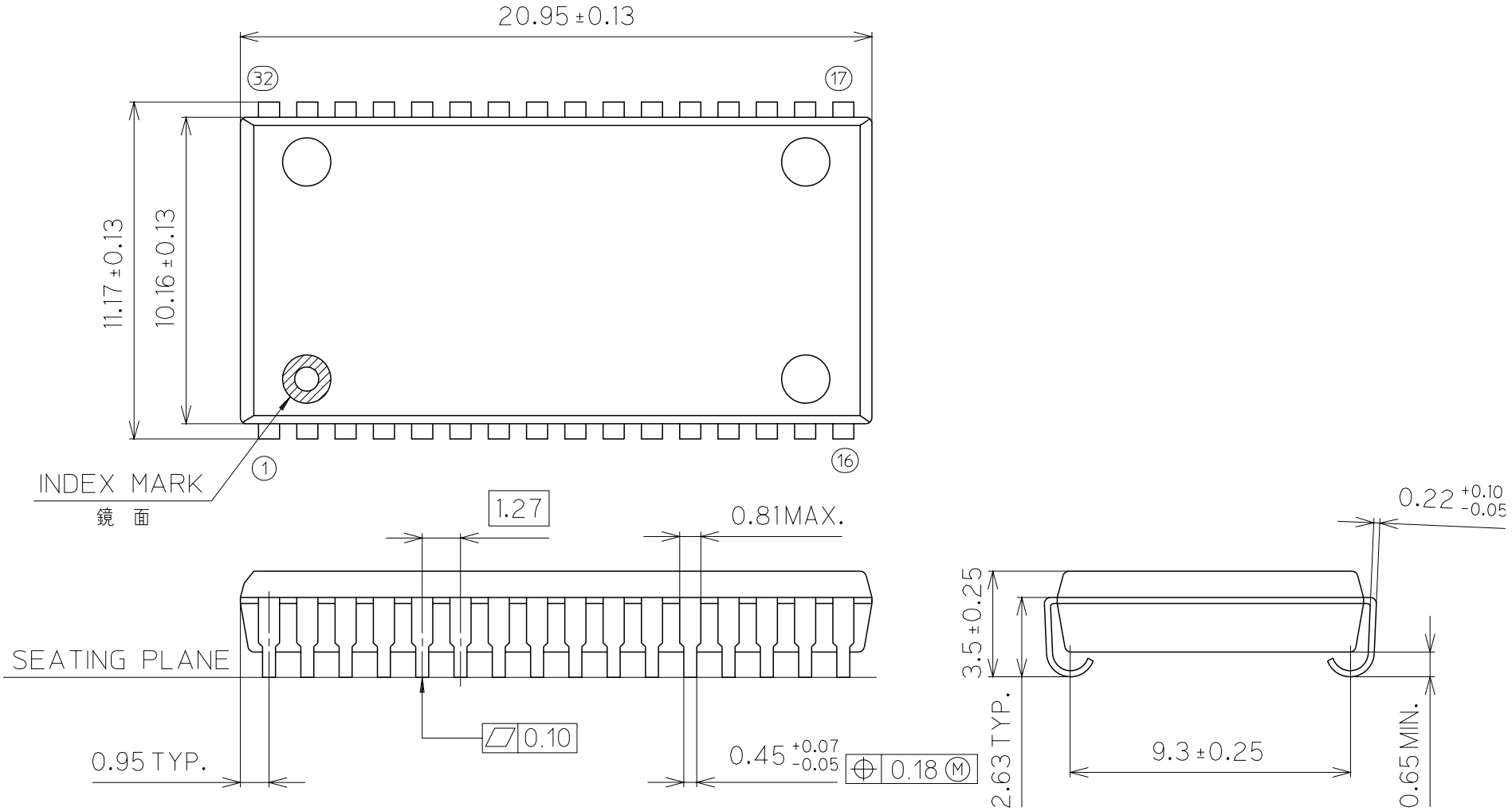


Please consult OKI for soldering, assembly and storage recommendations.

SOJ32-P-400-1.27-1

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor

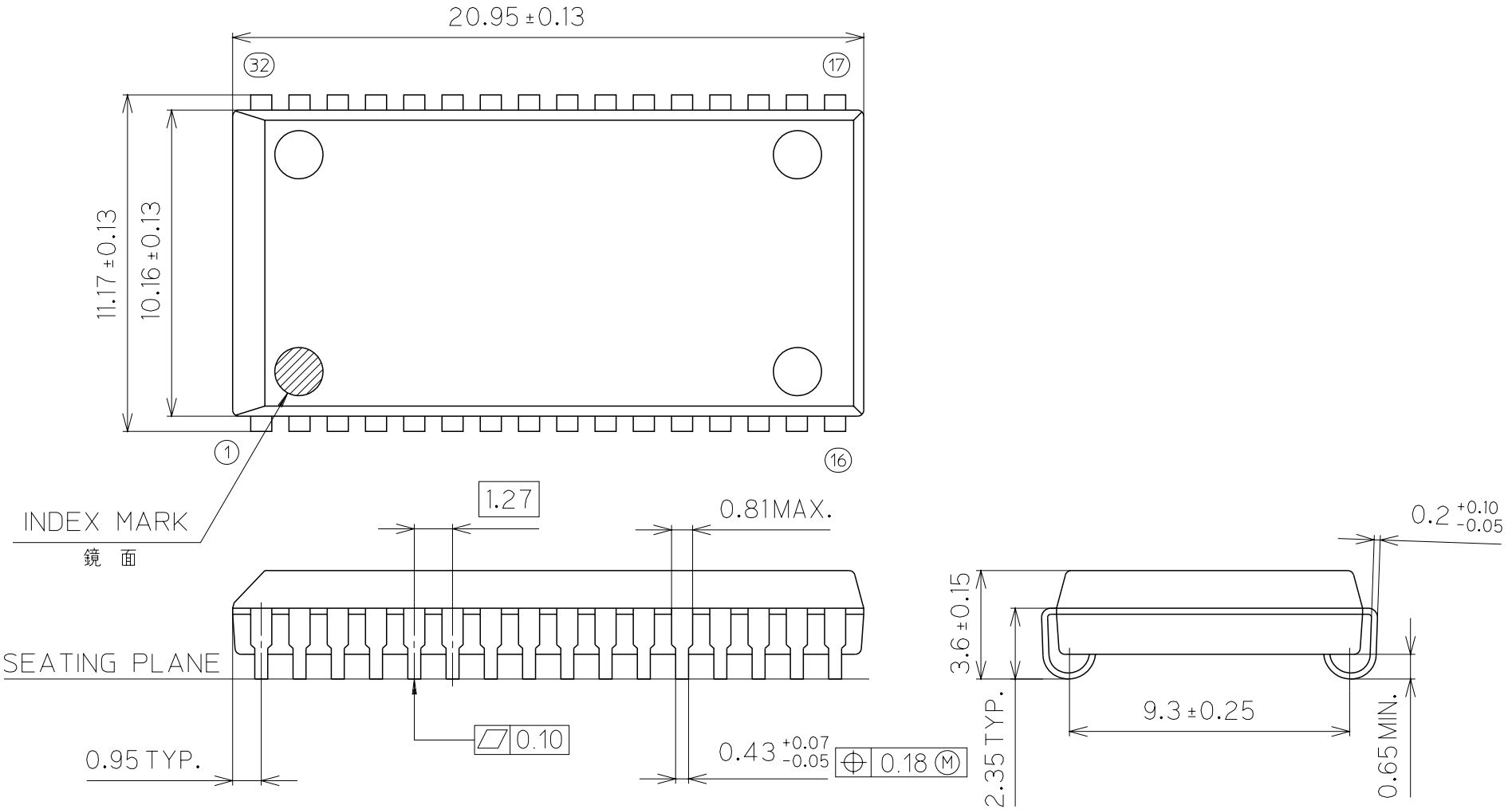


Please consult OKI for soldering, assembly and storage recommendations.

SOJ32-P-400-1.27

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor

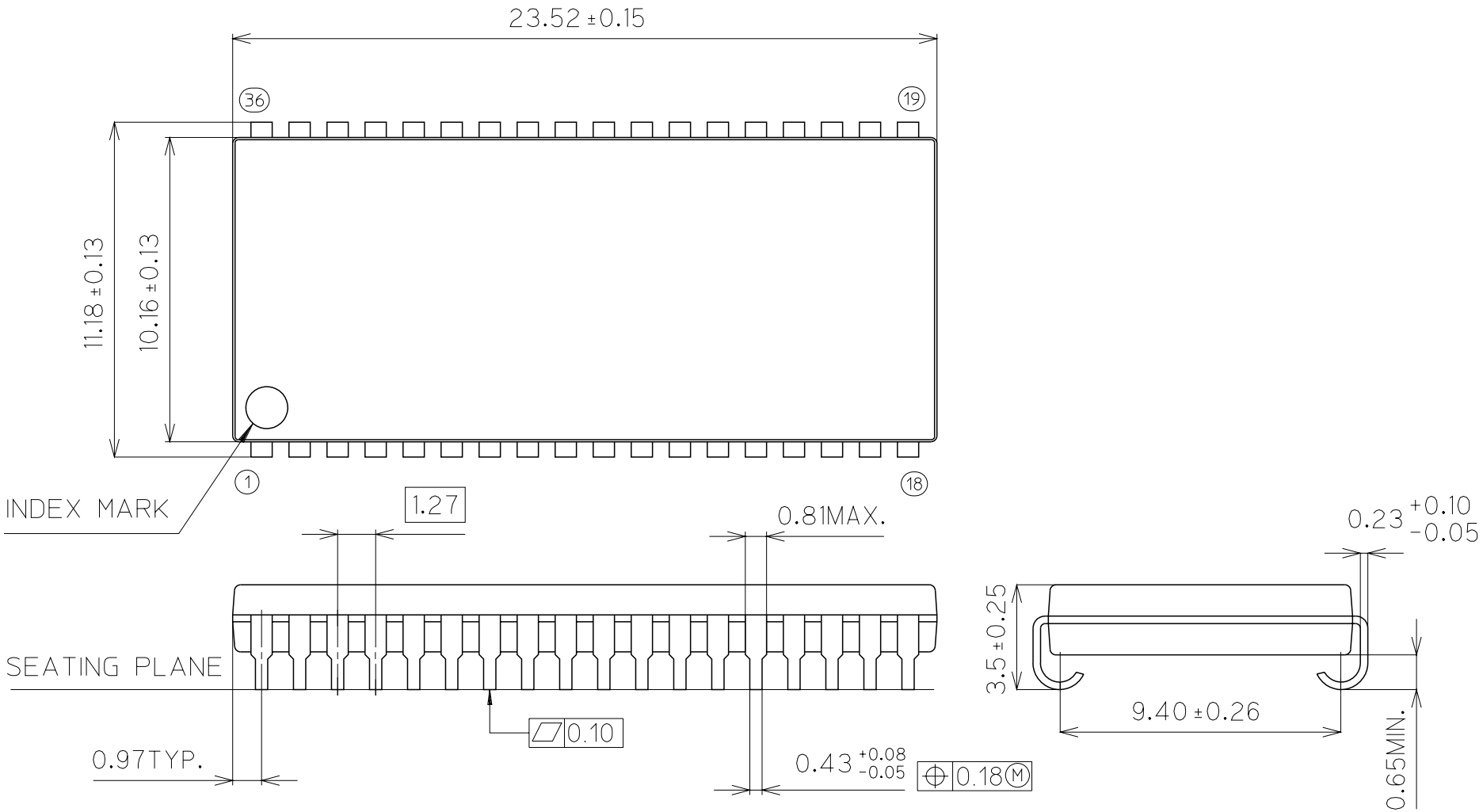


Please consult OKI for soldering, assembly and storage recommendations.

SOJ36-P-400-1.27

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor

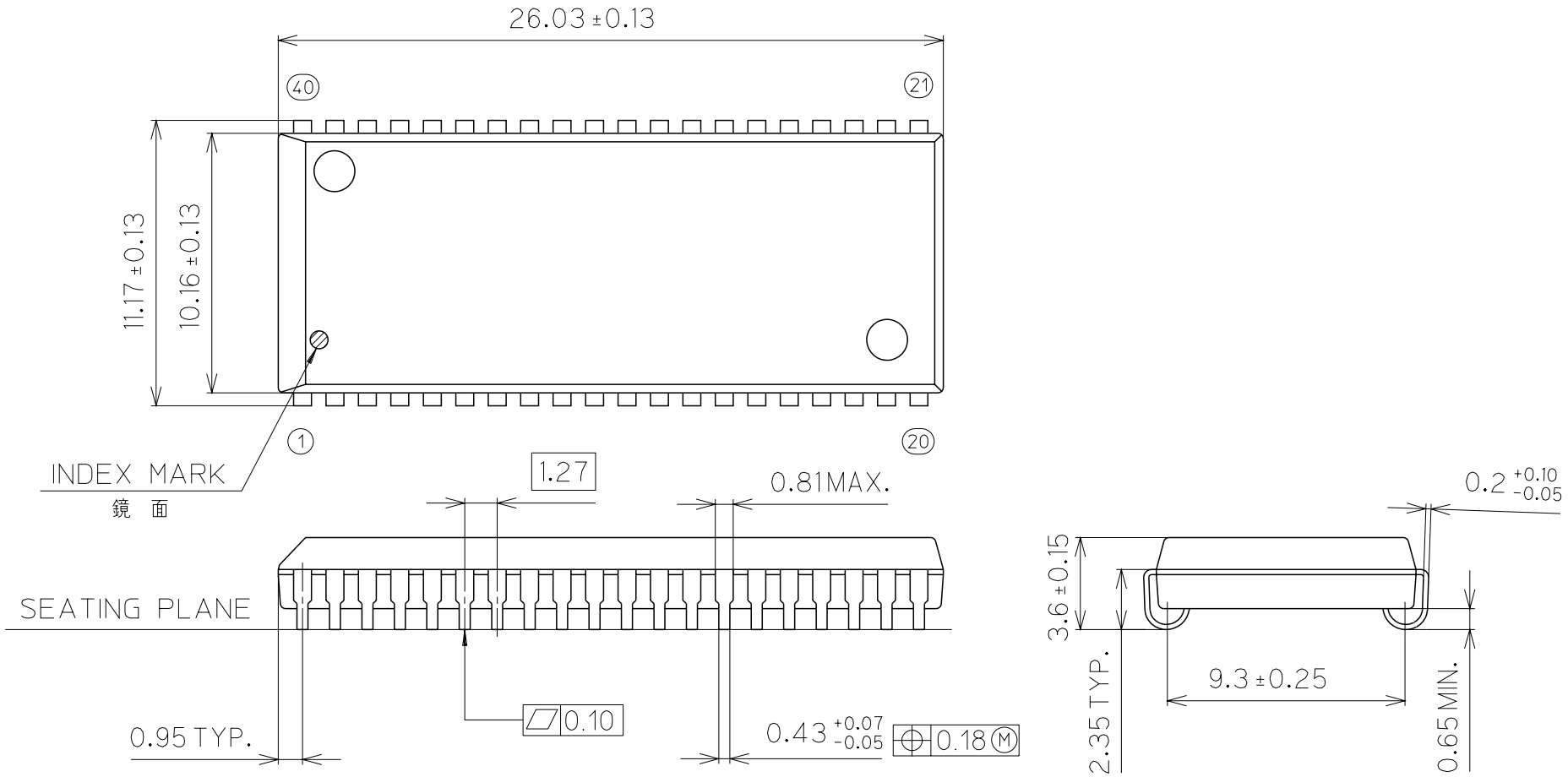


Please consult OKI for soldering, assembly and storage recommendations.

SOJ40-P-400-1.27

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor

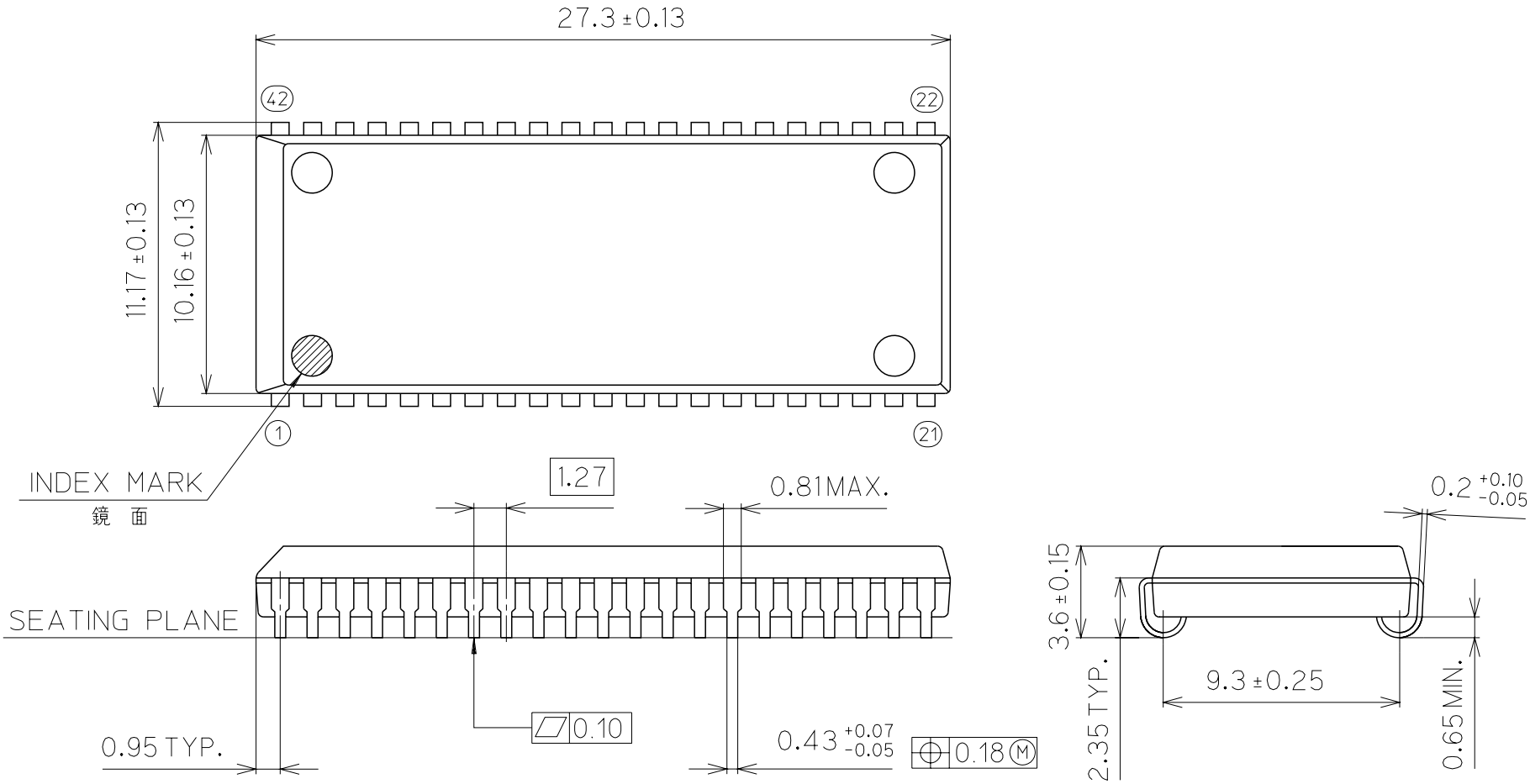


Please consult OKI for soldering, assembly and storage recommendations.

SOJ42-P-400-1.27

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor

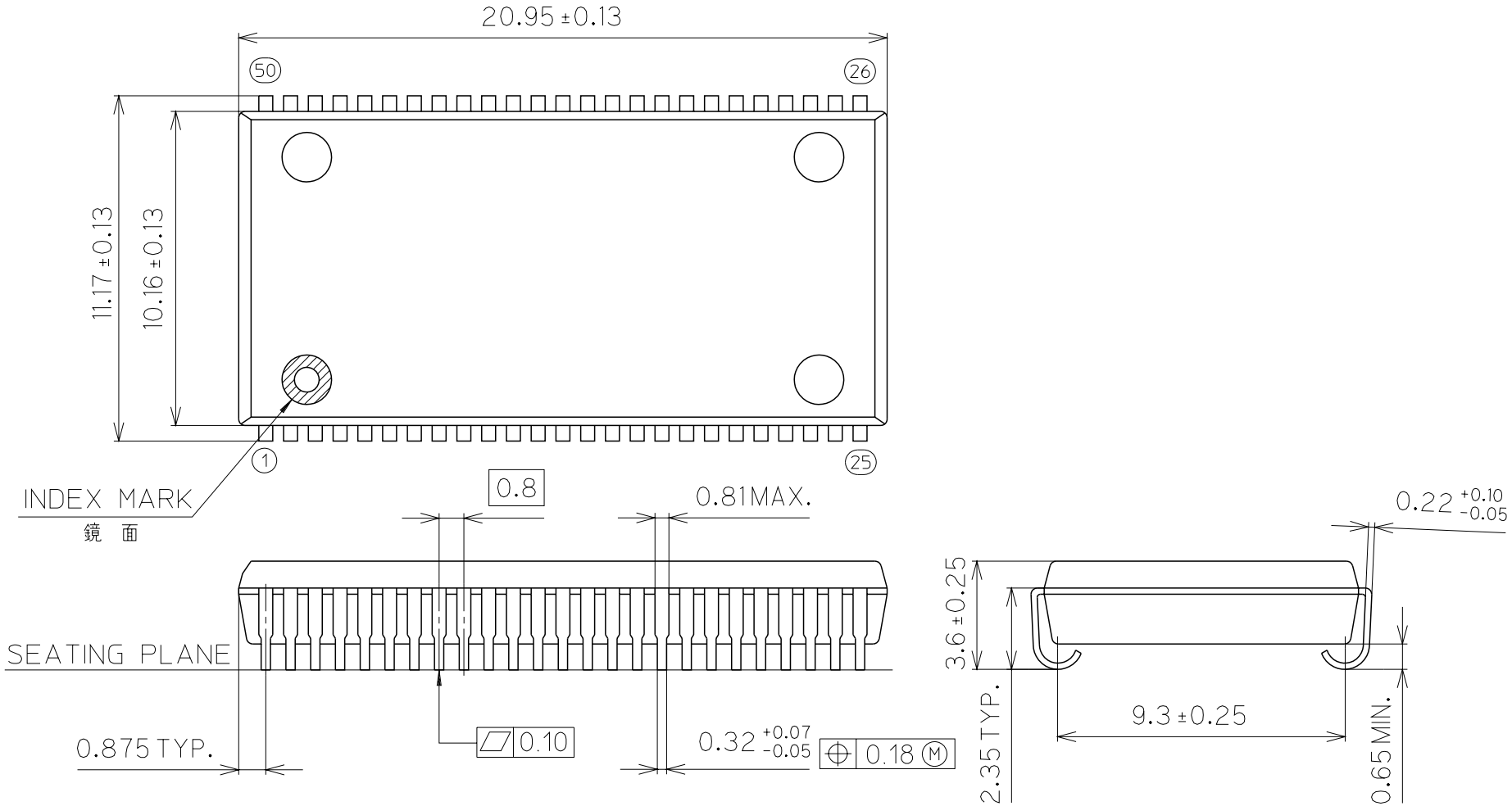


Please consult OKI for soldering, assembly and storage recommendations.

SOJ50-P-400-0.80

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor

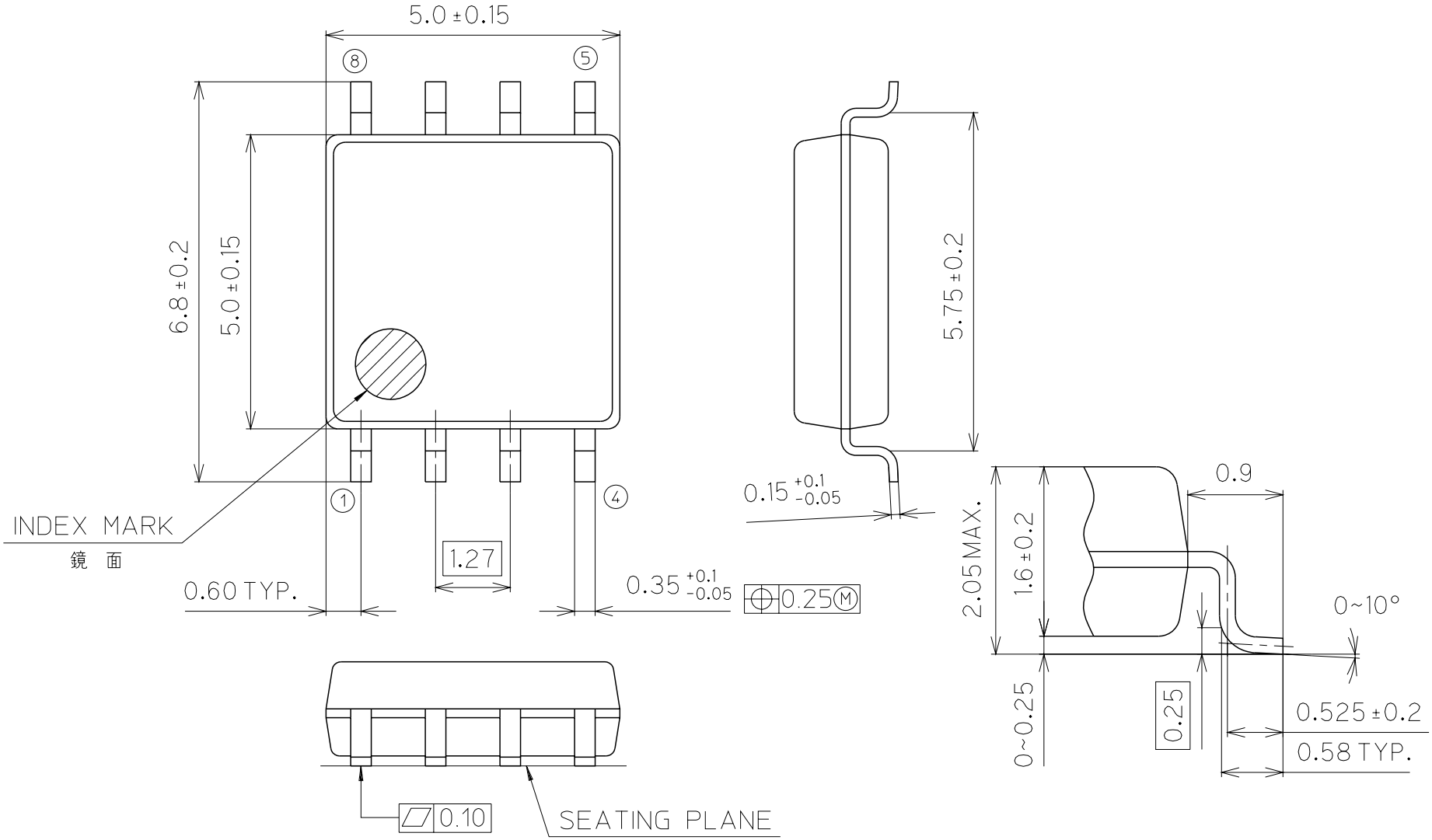


Please consult OKI for soldering, assembly and storage recommendations.

SOP8-P-250-1.27-K

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor

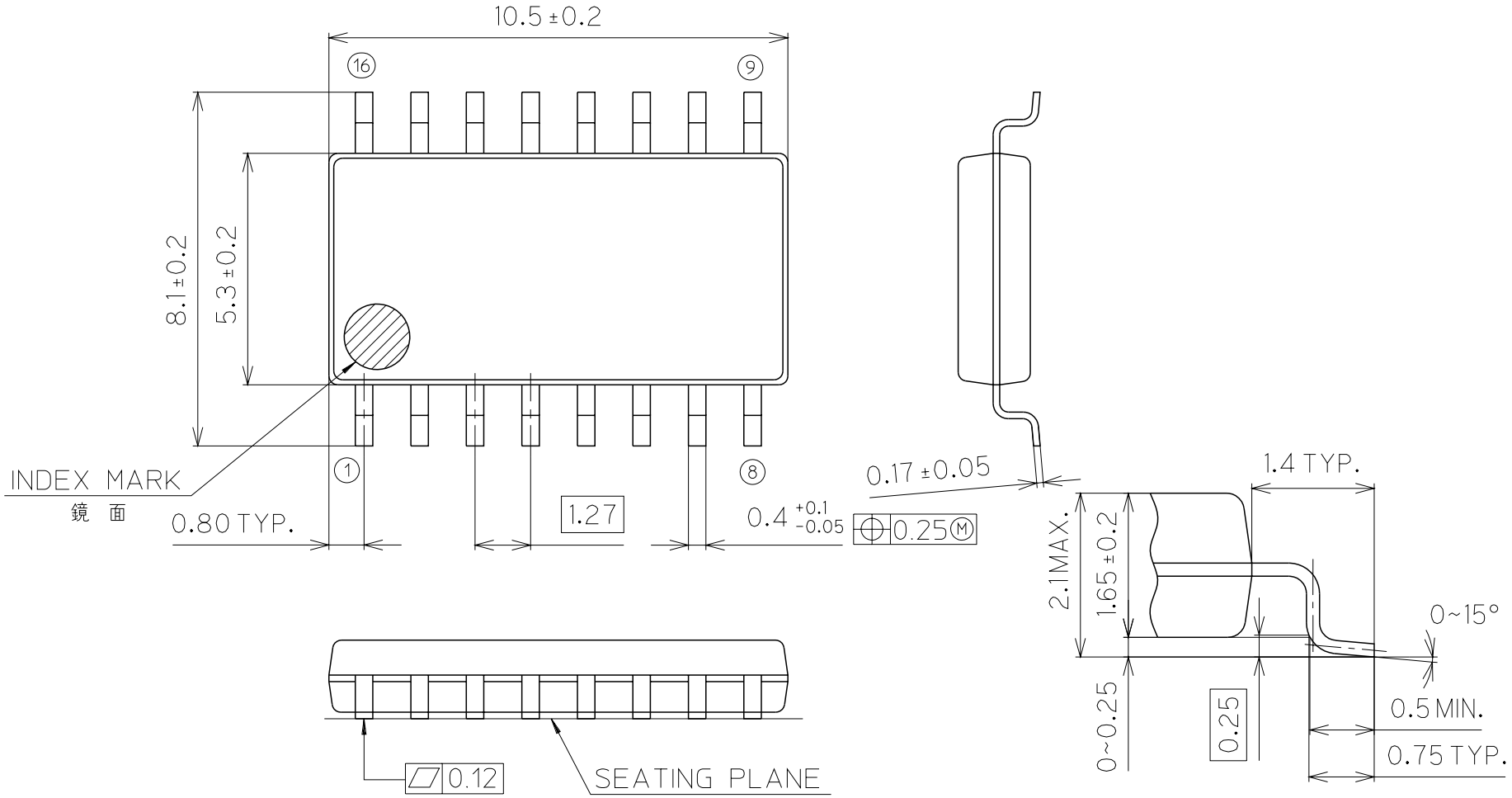


Please consult OKI for soldering, assembly and storage recommendations.

SOP16-P-300-1.27-K

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor

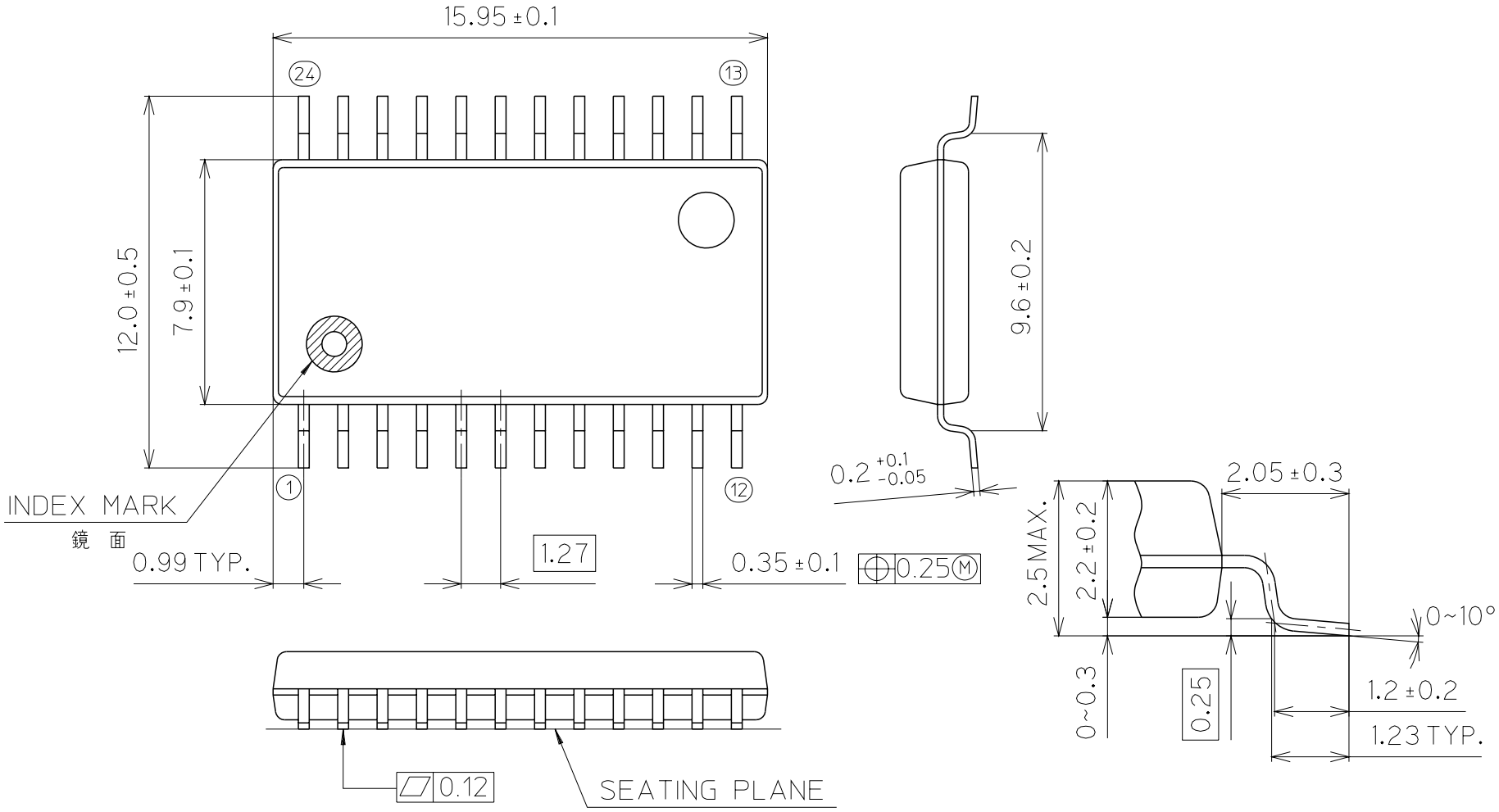


Please consult OKI for soldering, assembly and storage recommendations.

SOP24-P-430-1.27-K

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor

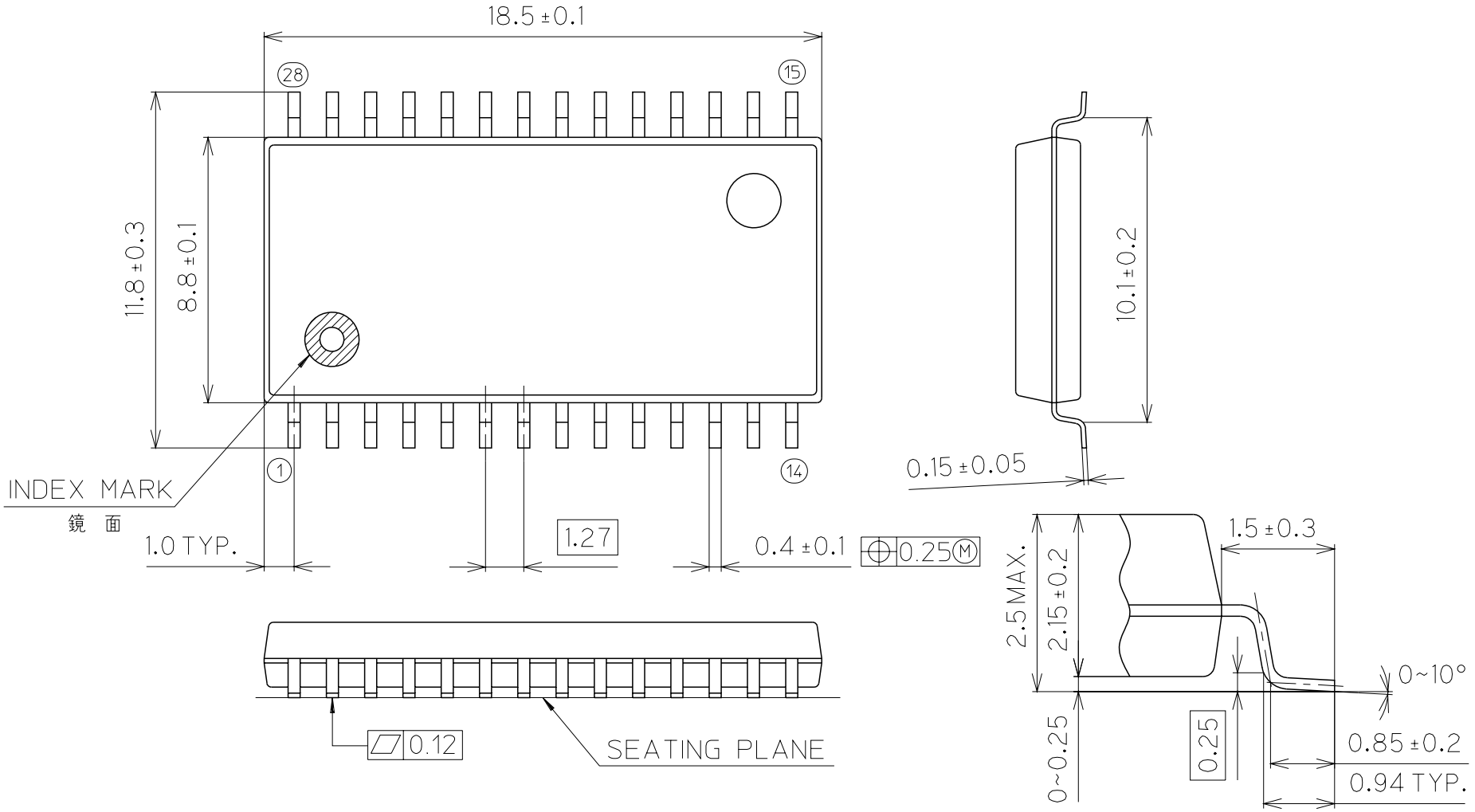


Please consult OKI for soldering, assembly and storage recommendations.

SOP28-P-430-1.27-K

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor

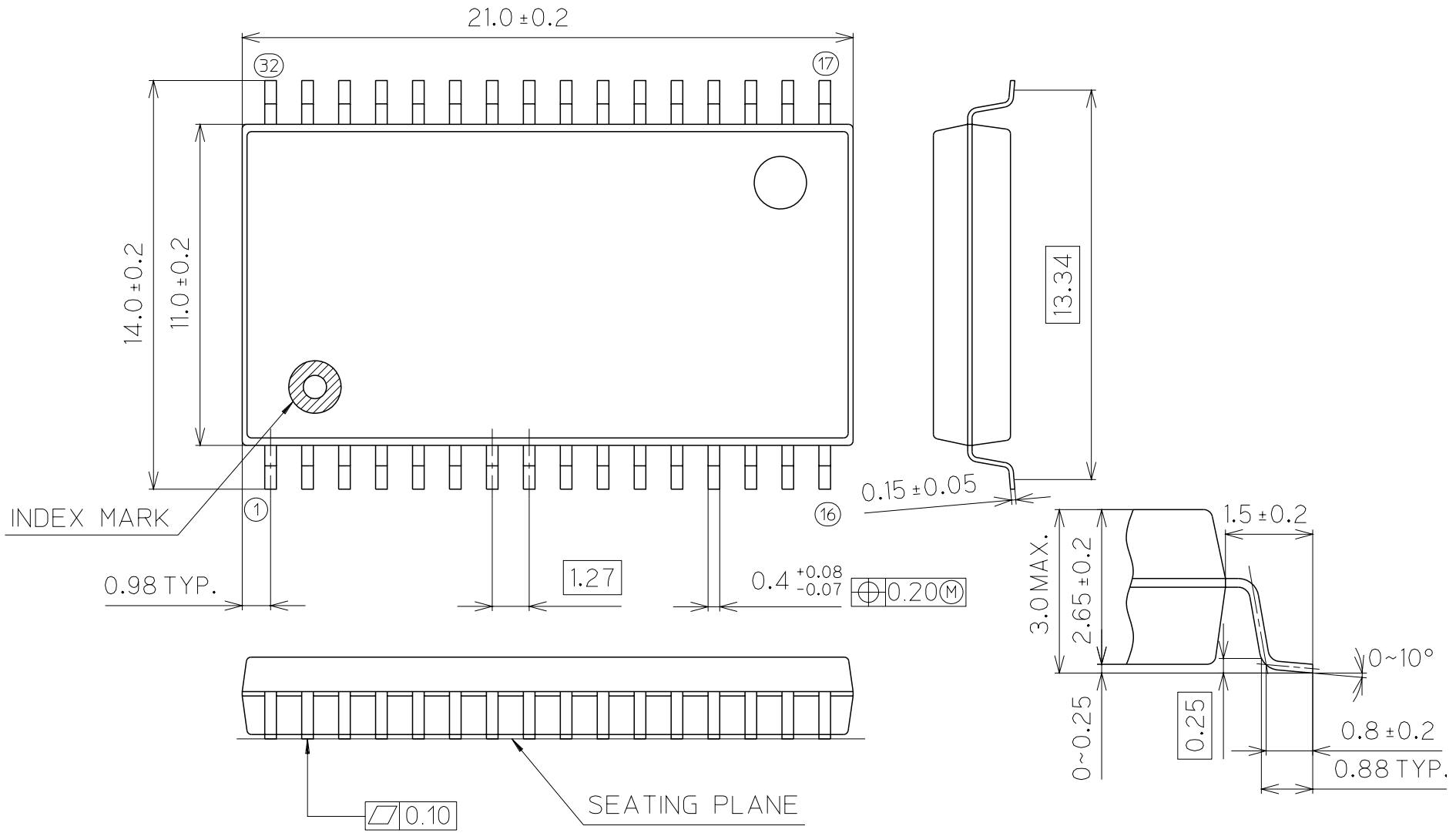


Please consult OKI for soldering, assembly and storage recommendations.

SOP32-P-525-1.27-K

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor

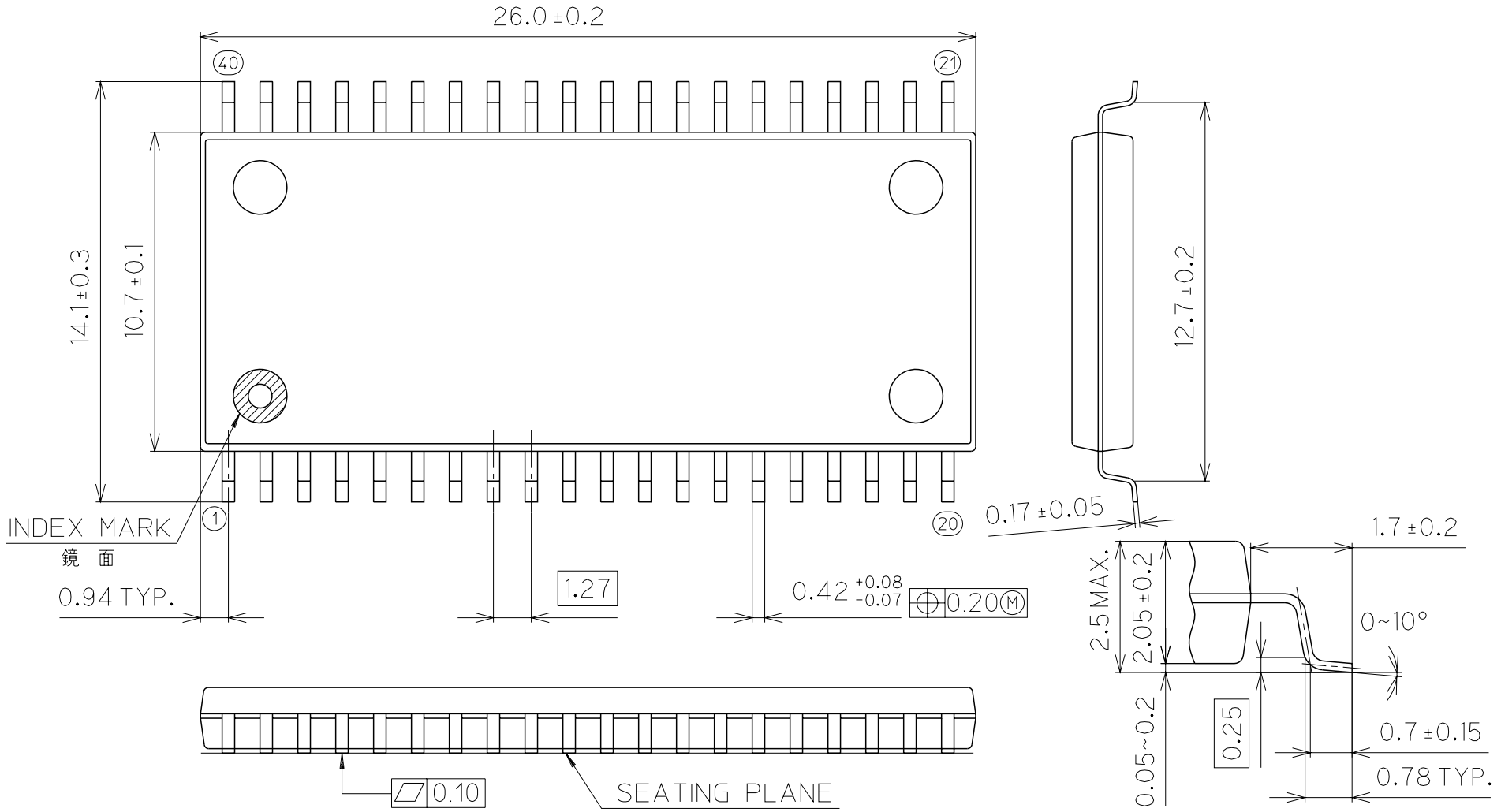


Please consult OKI for soldering, assembly and storage recommendations.

SOP40-P-525-1.27-K

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor

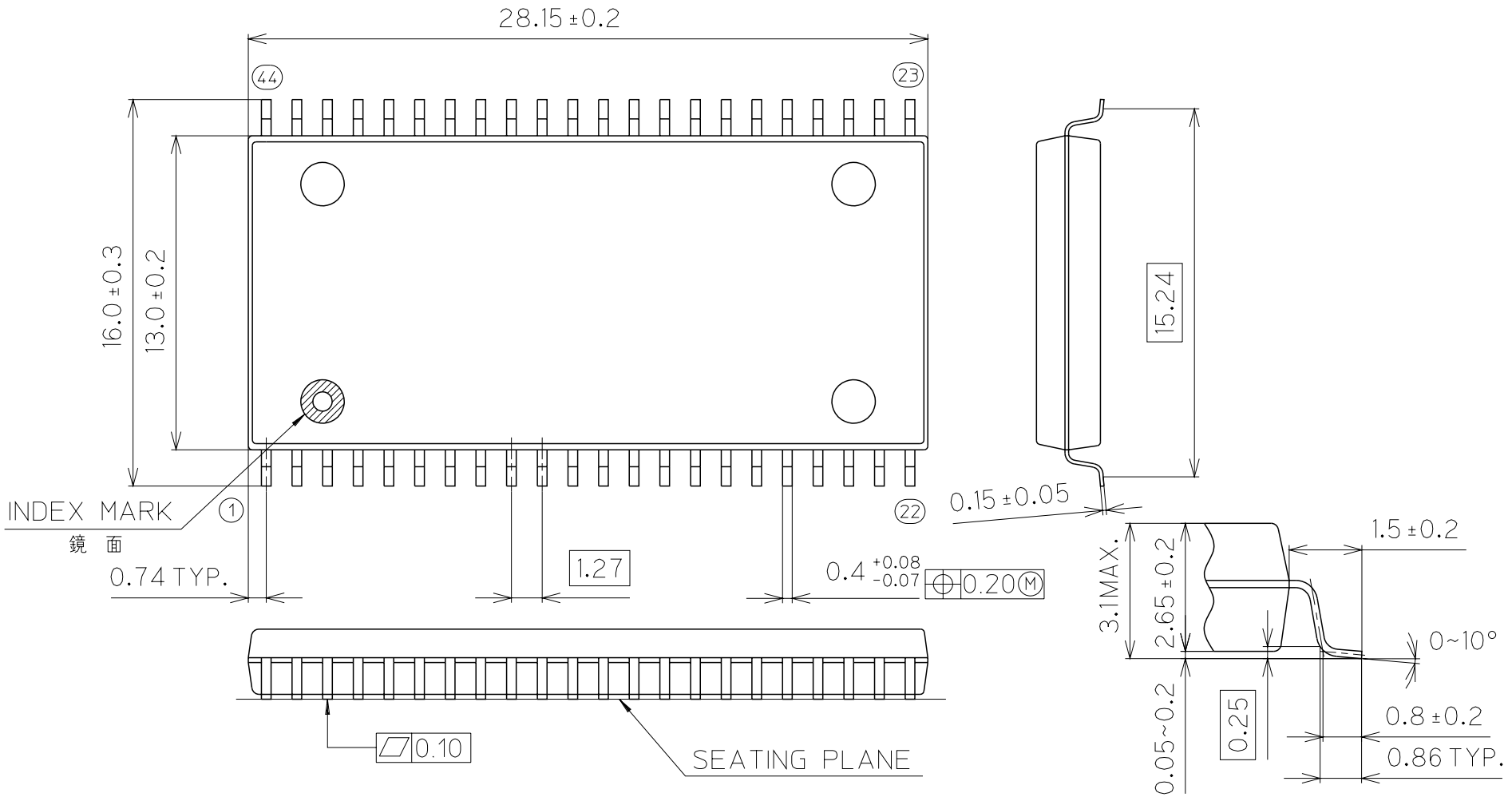


Please consult OKI for soldering, assembly and storage recommendations.

SOP44-P-600-1.27-K

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor

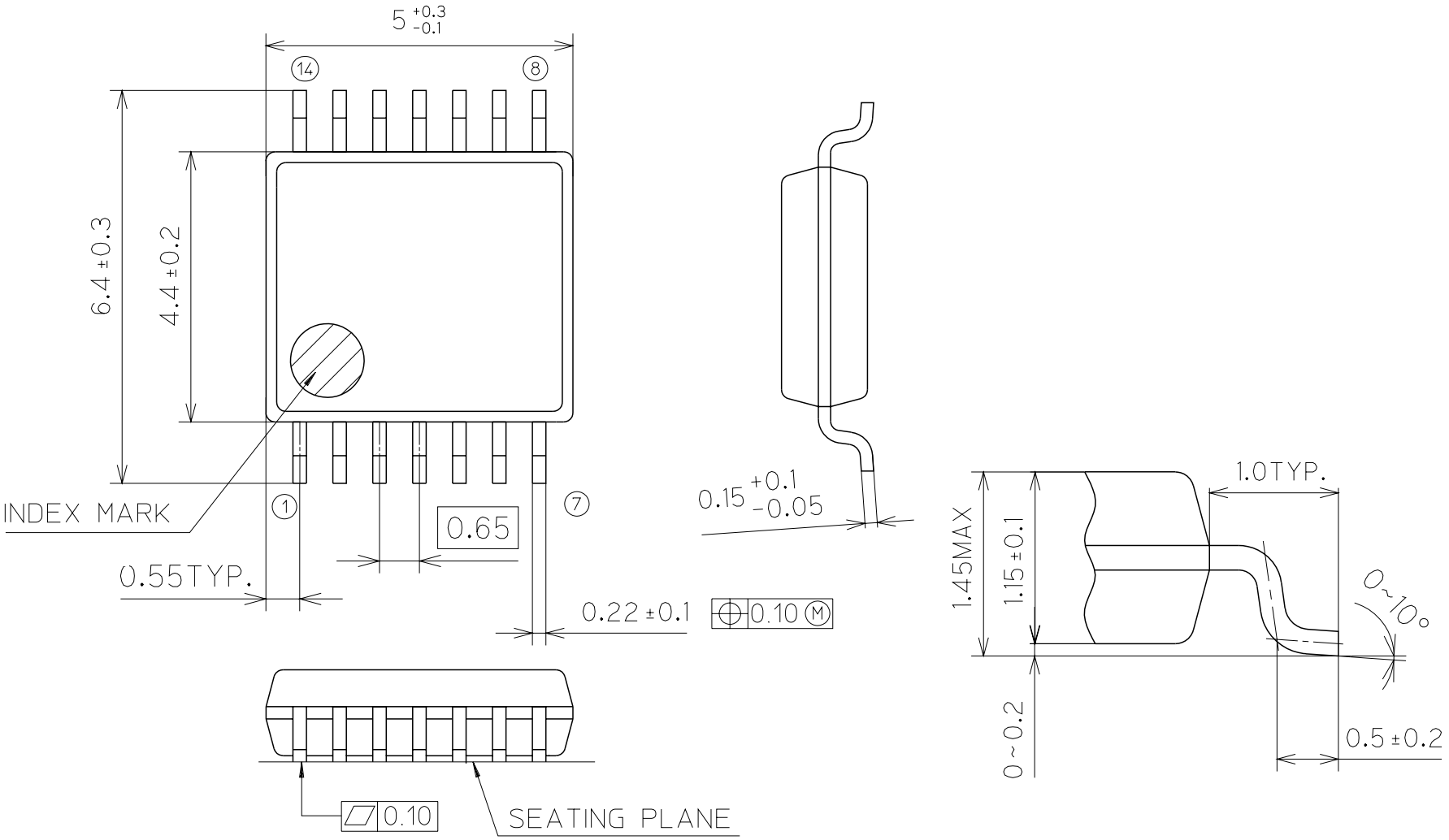


Please consult OKI for soldering, assembly and storage recommendations.

SSOP14-P-44-0.65-K

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor

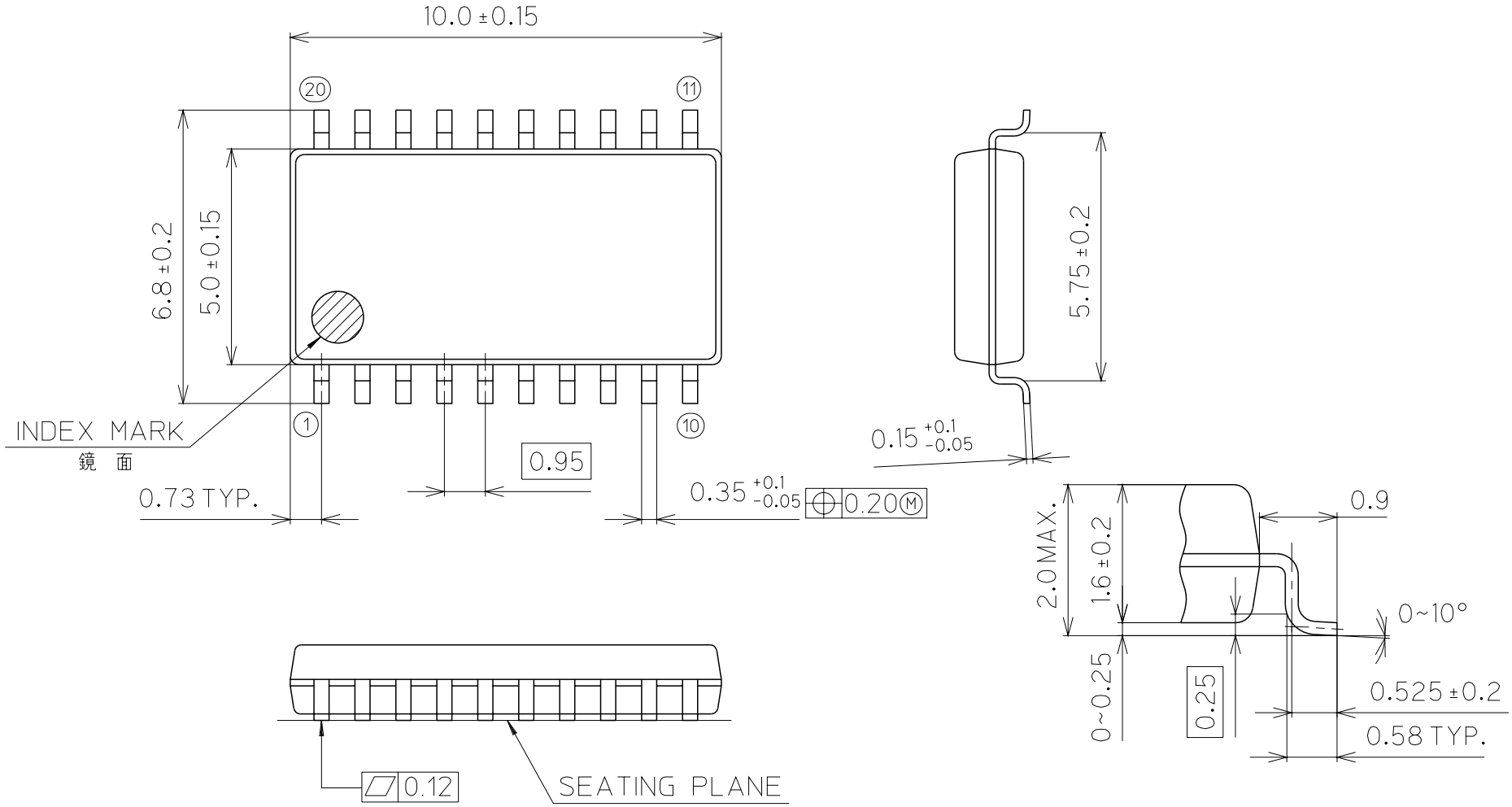


Please consult OKI for soldering, assembly and storage recommendations.

SSOP20-P-250-0.95-K

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor

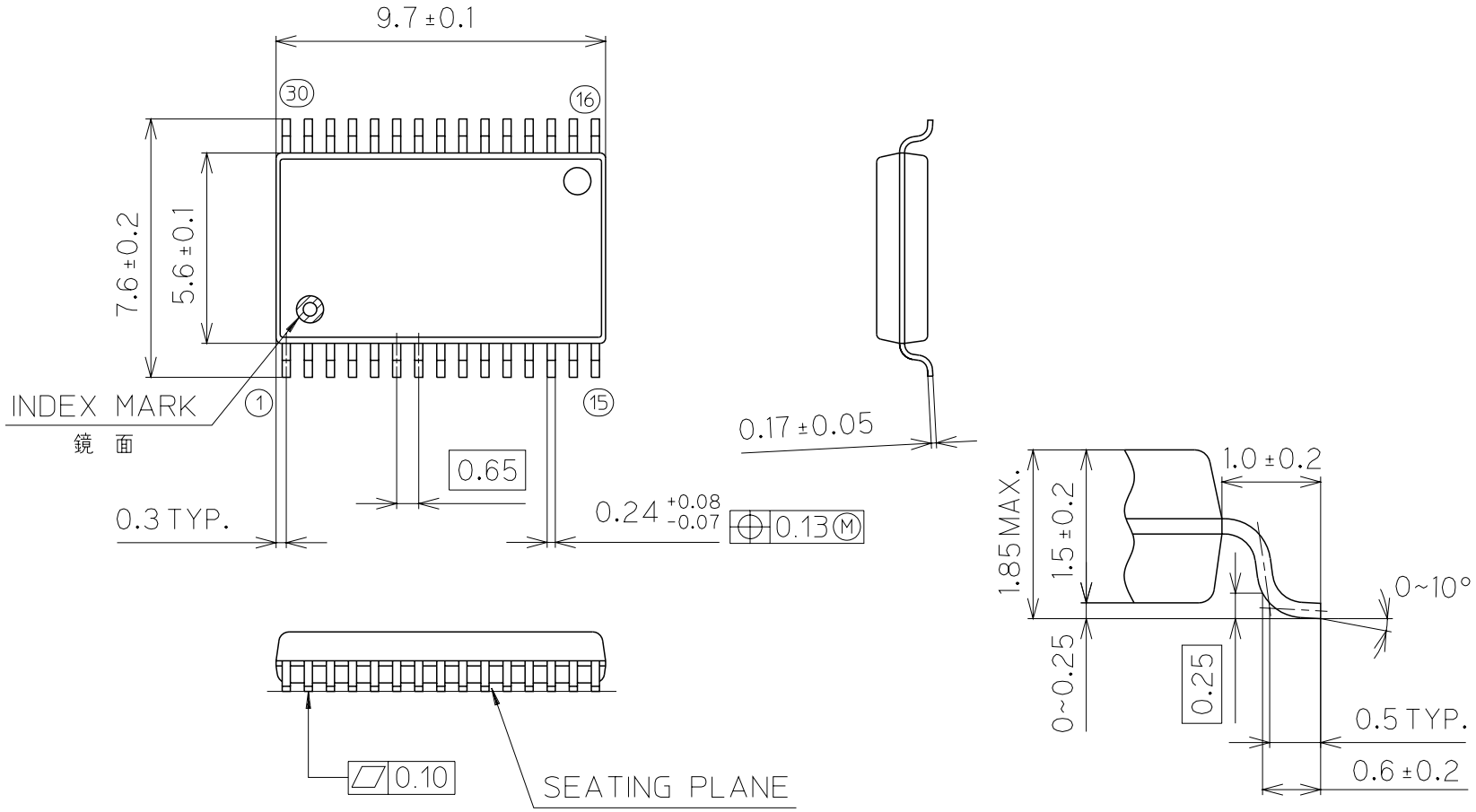


Please consult OKI for soldering, assembly and storage recommendations.

SSOP30-P-56-0.65-K

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor

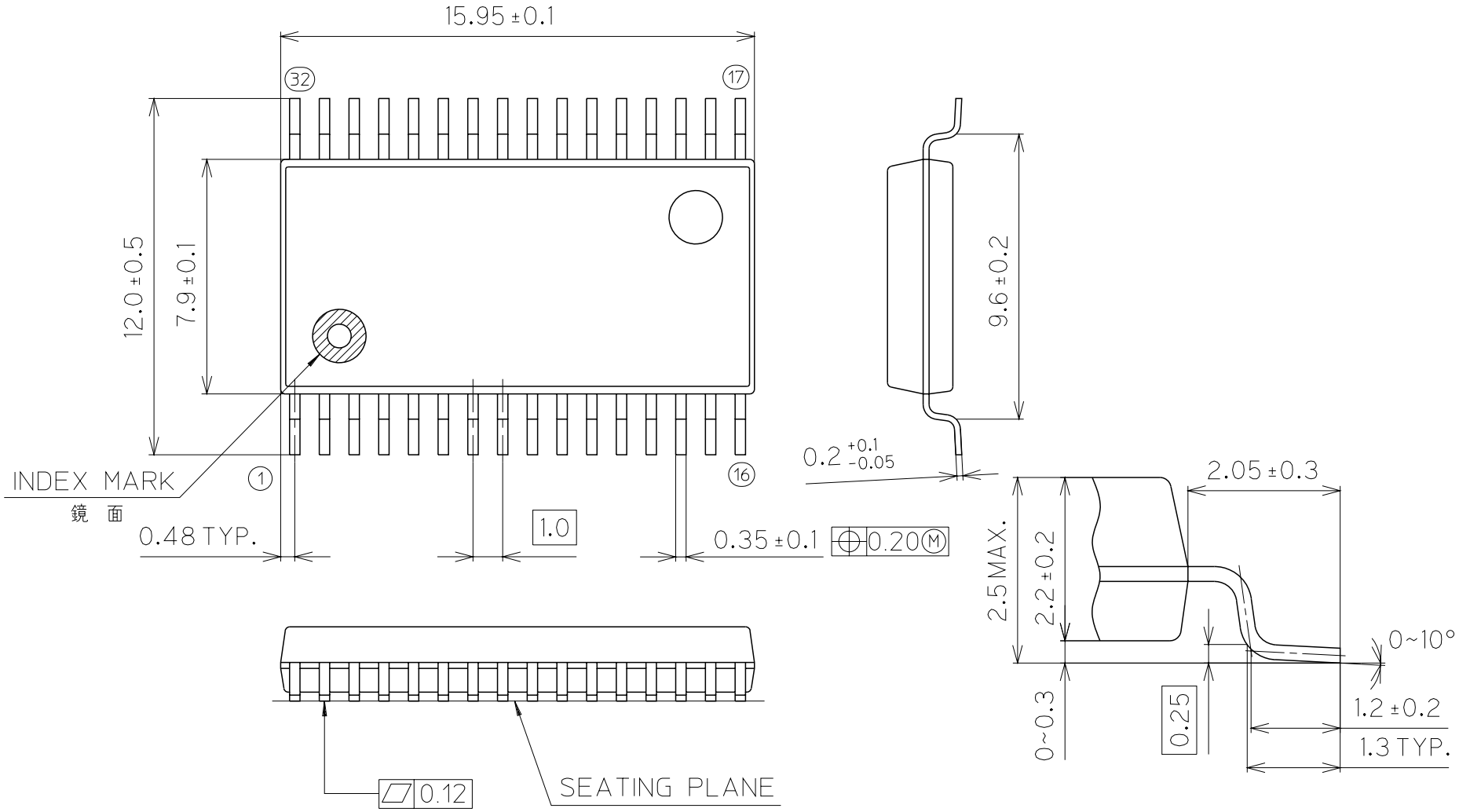


Please consult OKI for soldering, assembly and storage recommendations.

SSOP32-P-430-1.00-K

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor

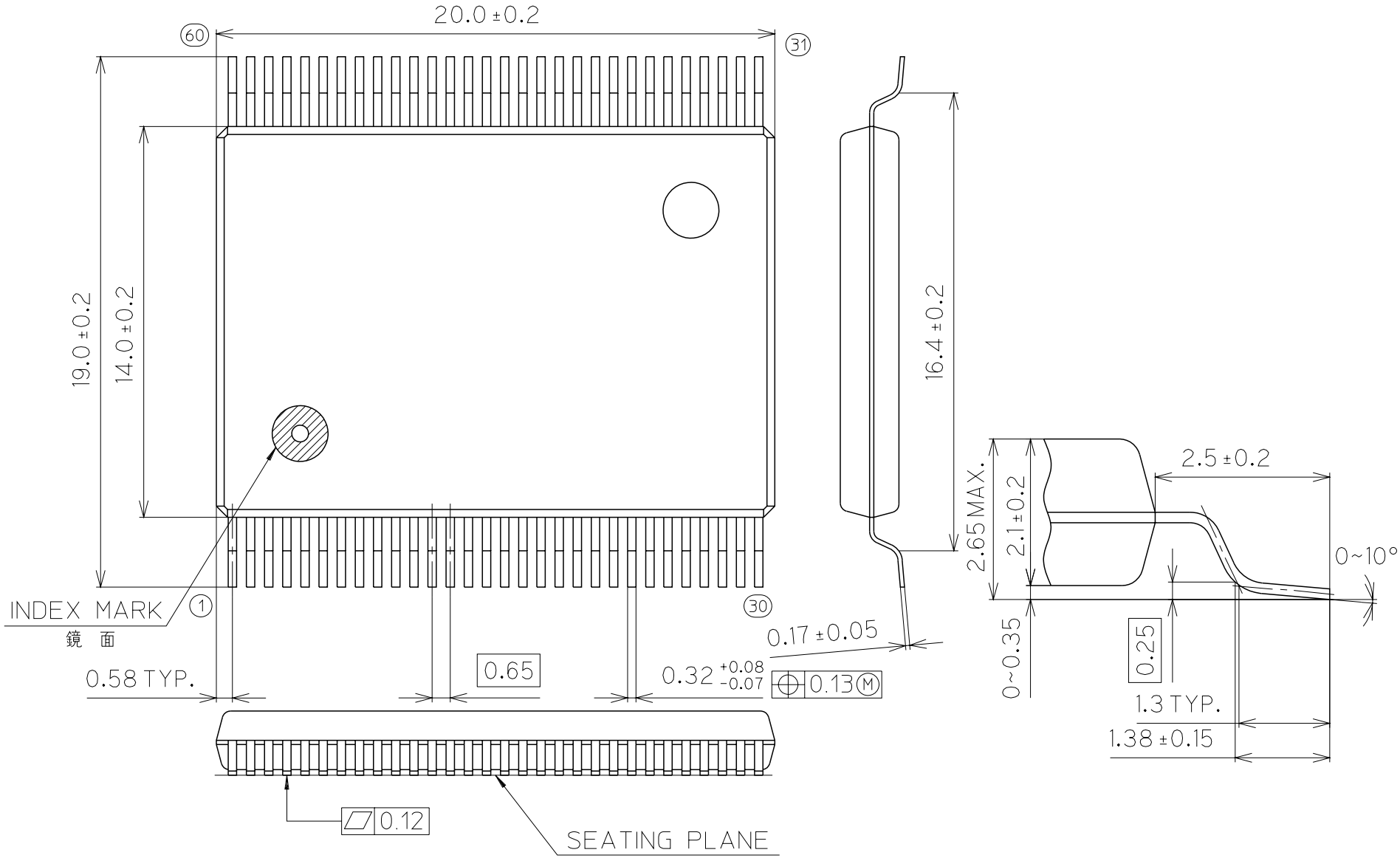


Please consult OKI for soldering, assembly and storage recommendations.

SSOP60-P-700-0.65-BK

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor

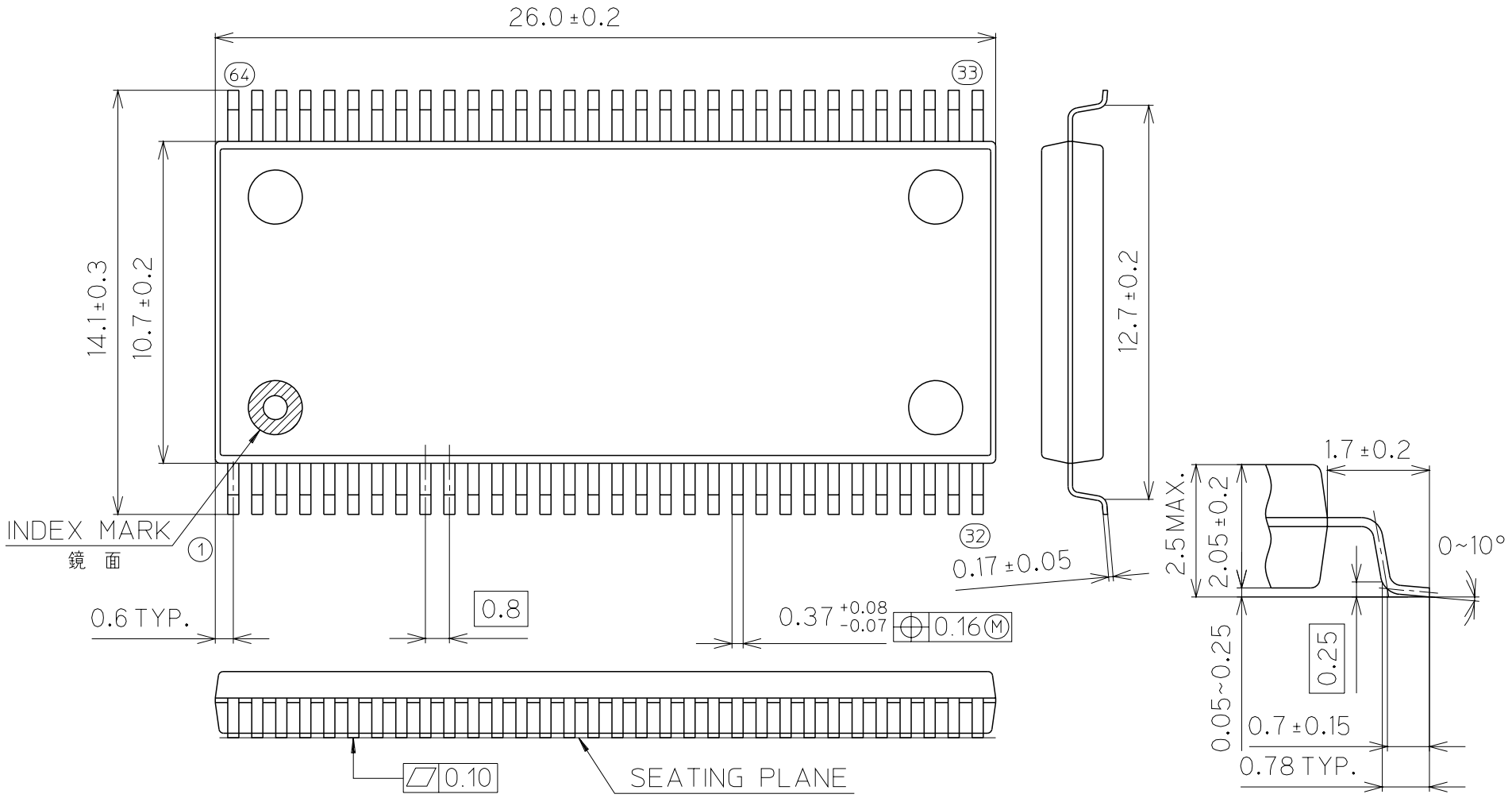


Please consult OKI for soldering, assembly and storage recommendations.

SSOP64-P-525-0.80-BK

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor

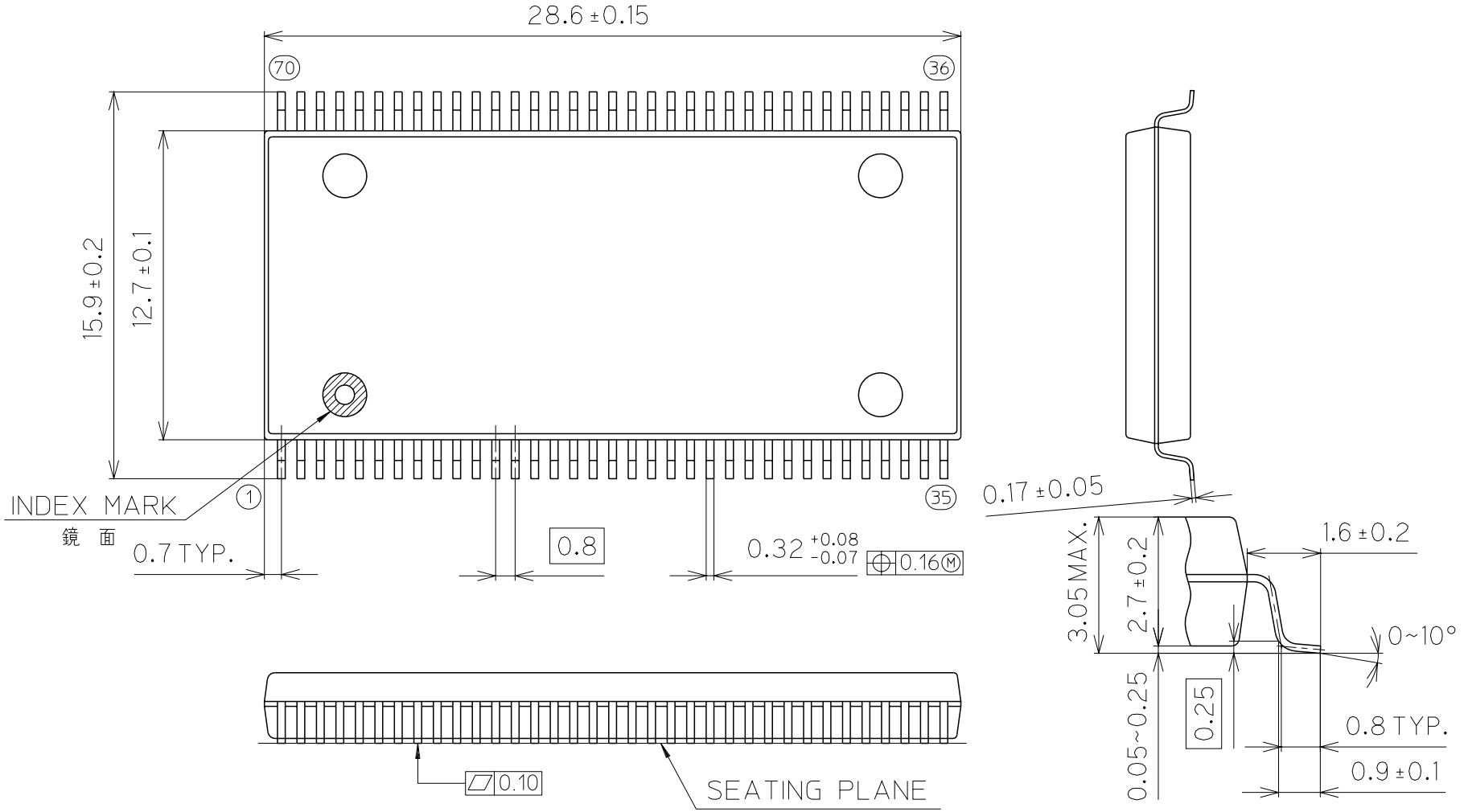


Please consult OKI for soldering, assembly and storage recommendations.

SSOP70-P-500-0.80-BK

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor

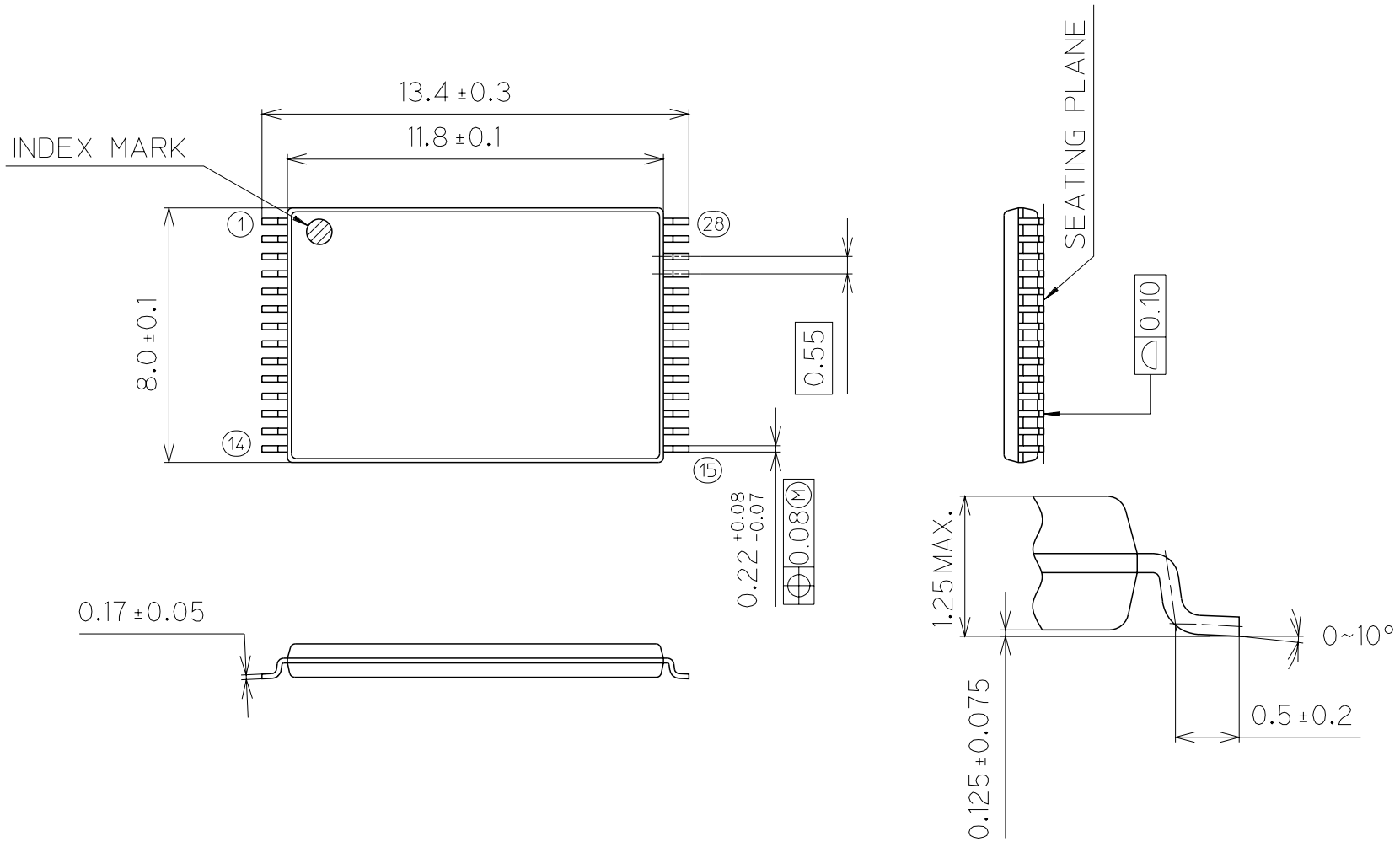


Please consult OKI for soldering, assembly and storage recommendations.

TSOPI28-P-813-0.55-K

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor

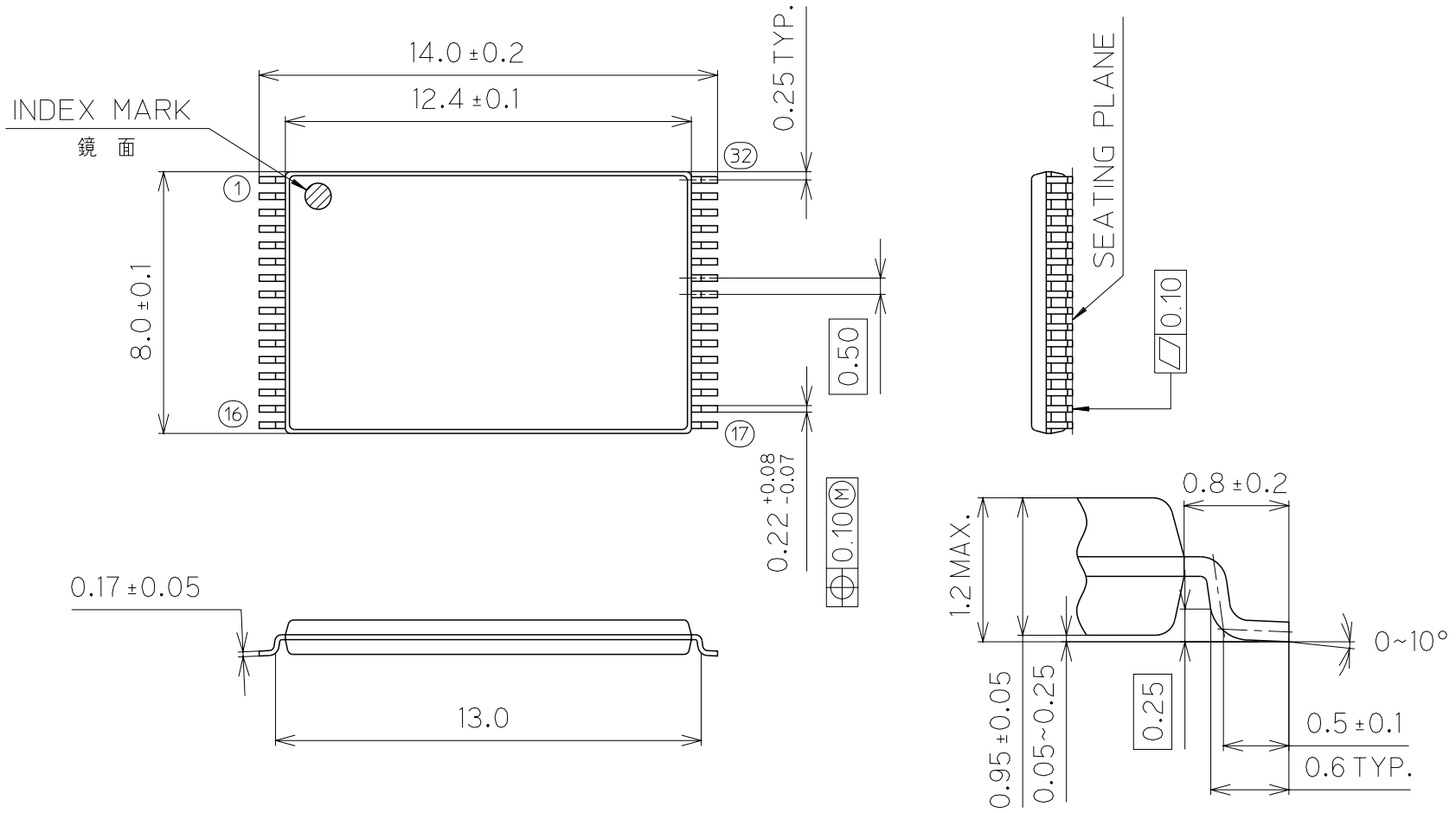


Please consult OKI for soldering, assembly and storage recommendations.

TSOPI32-P-814-0.50-1K

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor

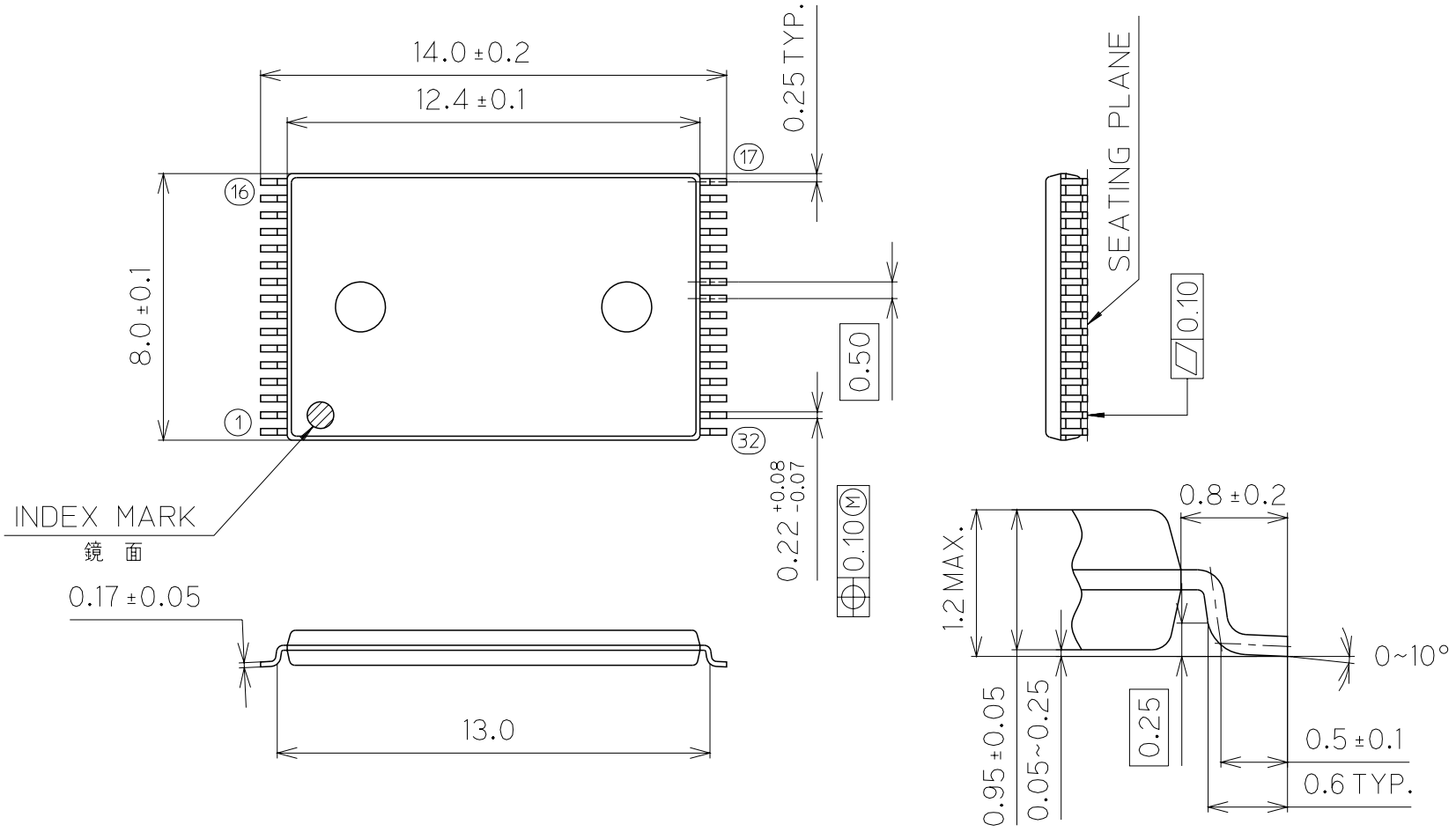


Please consult OKI for soldering, assembly and storage recommendations.

TSOPI32-P-814-0.50-1L

Unit in millimeters typ., unless otherwise specified.

Opposite bent leads

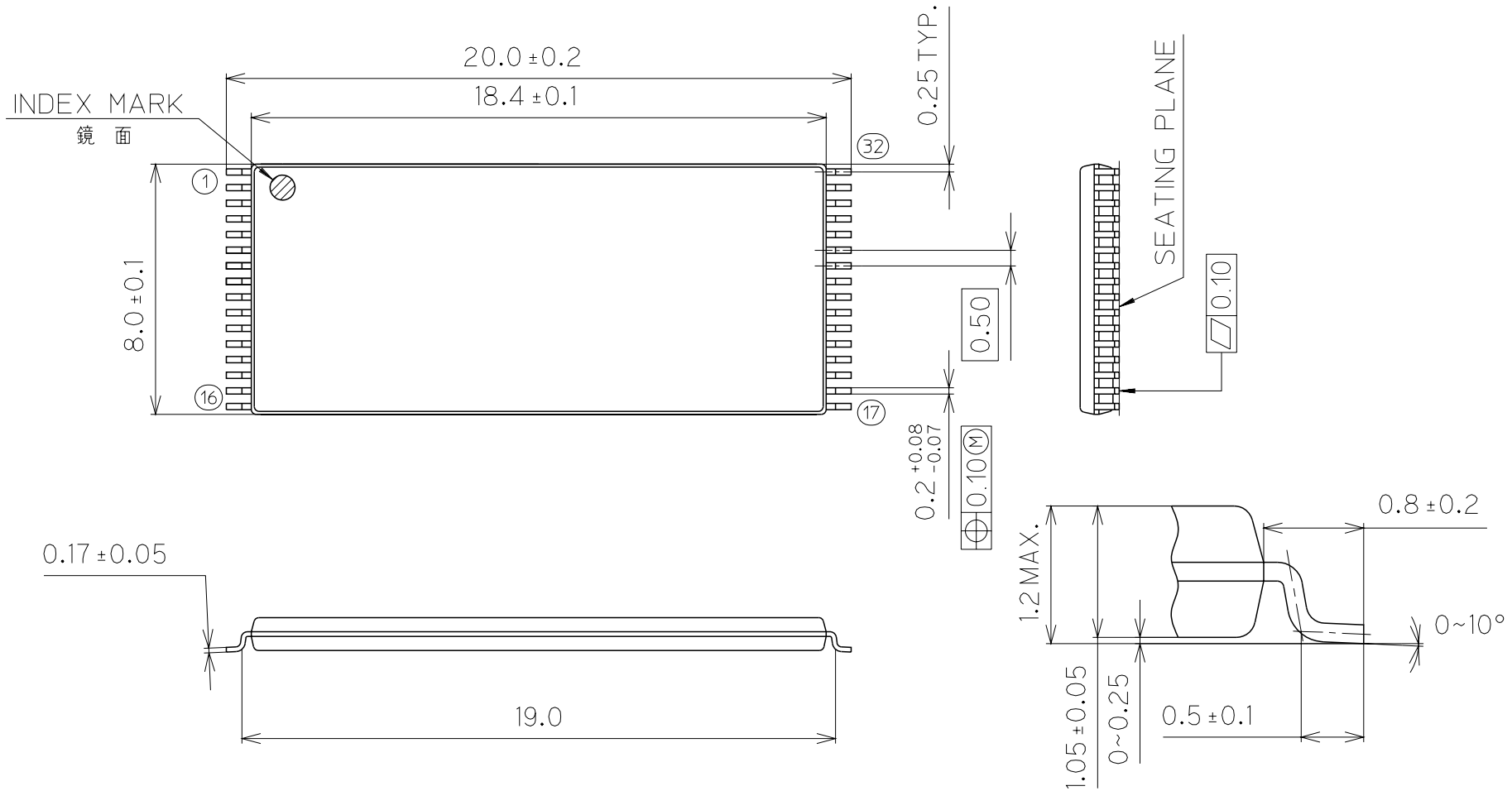


Please consult OKI for soldering, assembly and storage recommendations.

TSOPI32-P-820-0.50-K

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor

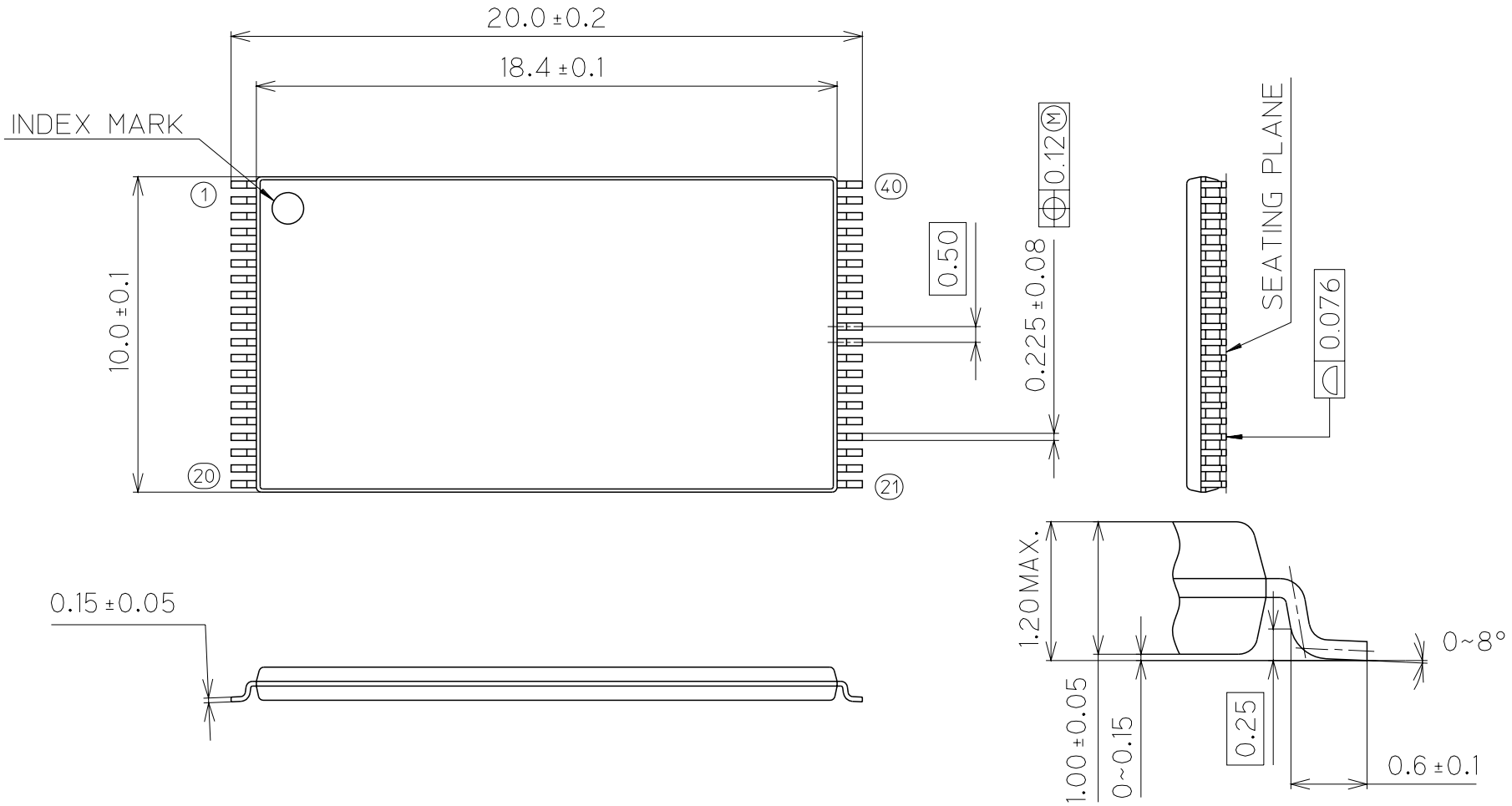


Please consult OKI for soldering, assembly and storage recommendations.

TSOPI40-P-1020-0.50-K

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor

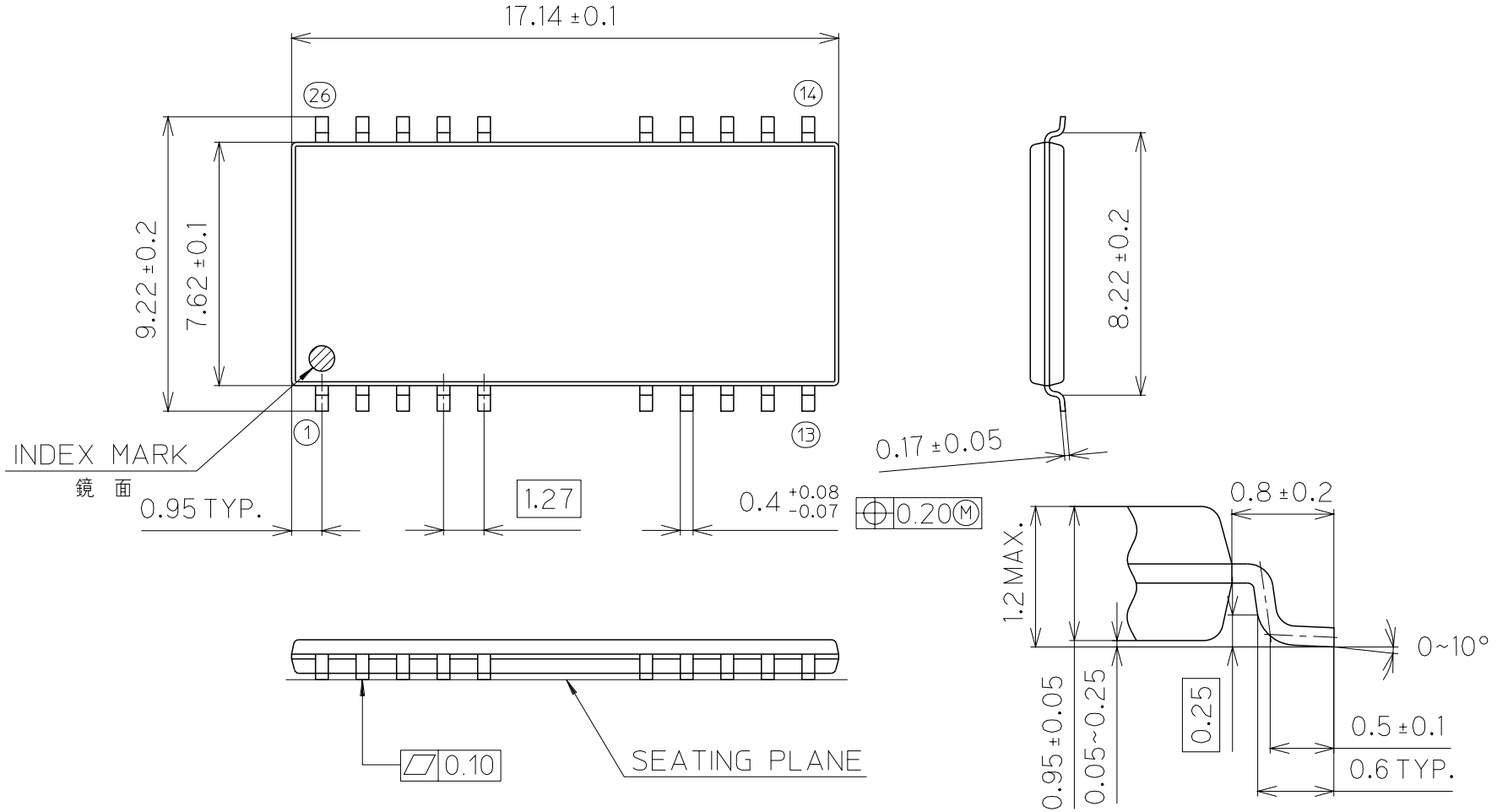


Please consult OKI for soldering, assembly and storage recommendations.

TSOPII26/20-P-300-1.27-K

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor

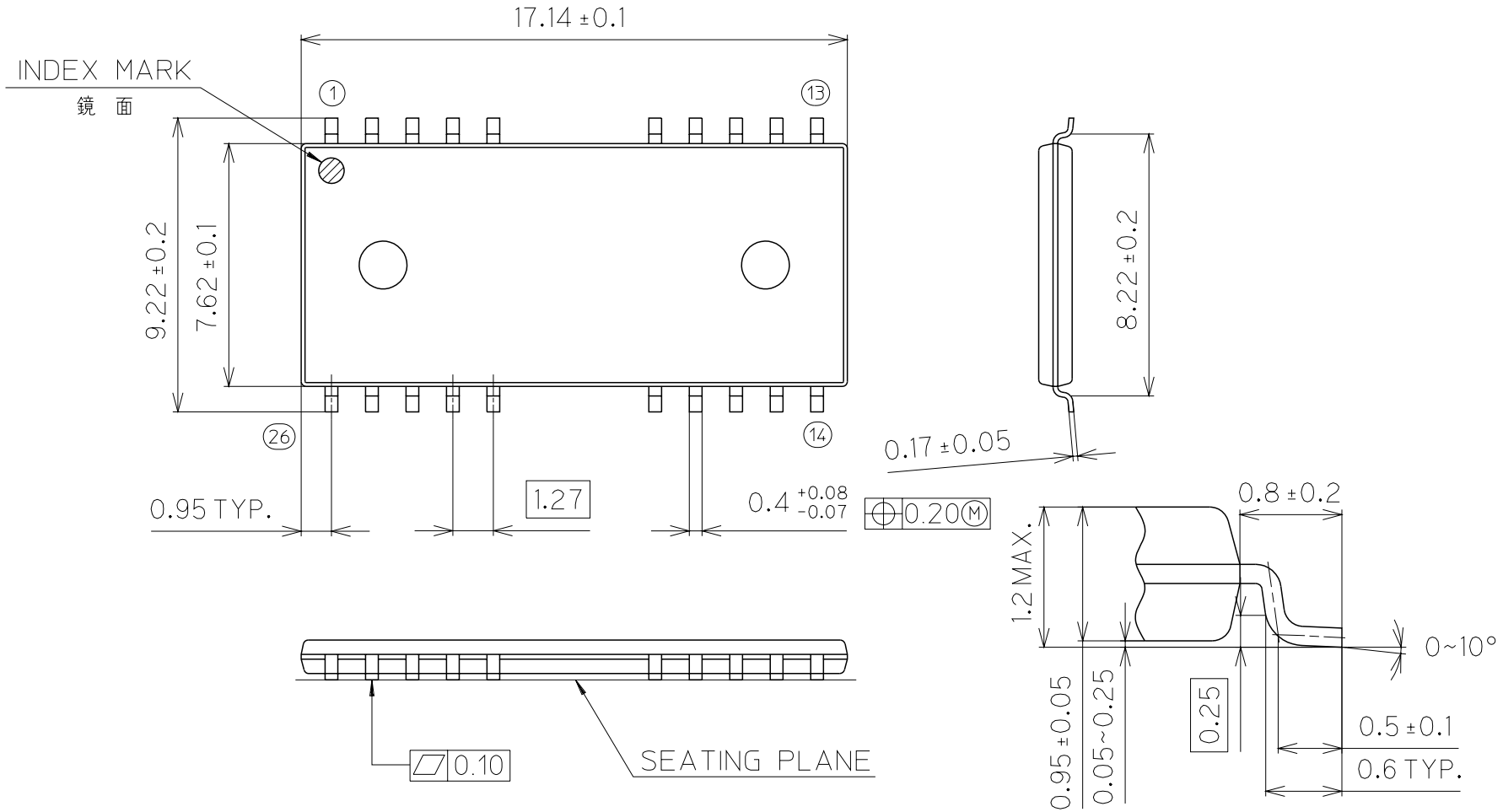


Please consult OKI for soldering, assembly and storage recommendations.

TSOPII26/20-P-300-1.27-L

Unit in millimeters typ., unless otherwise specified.

Opposite bent leads

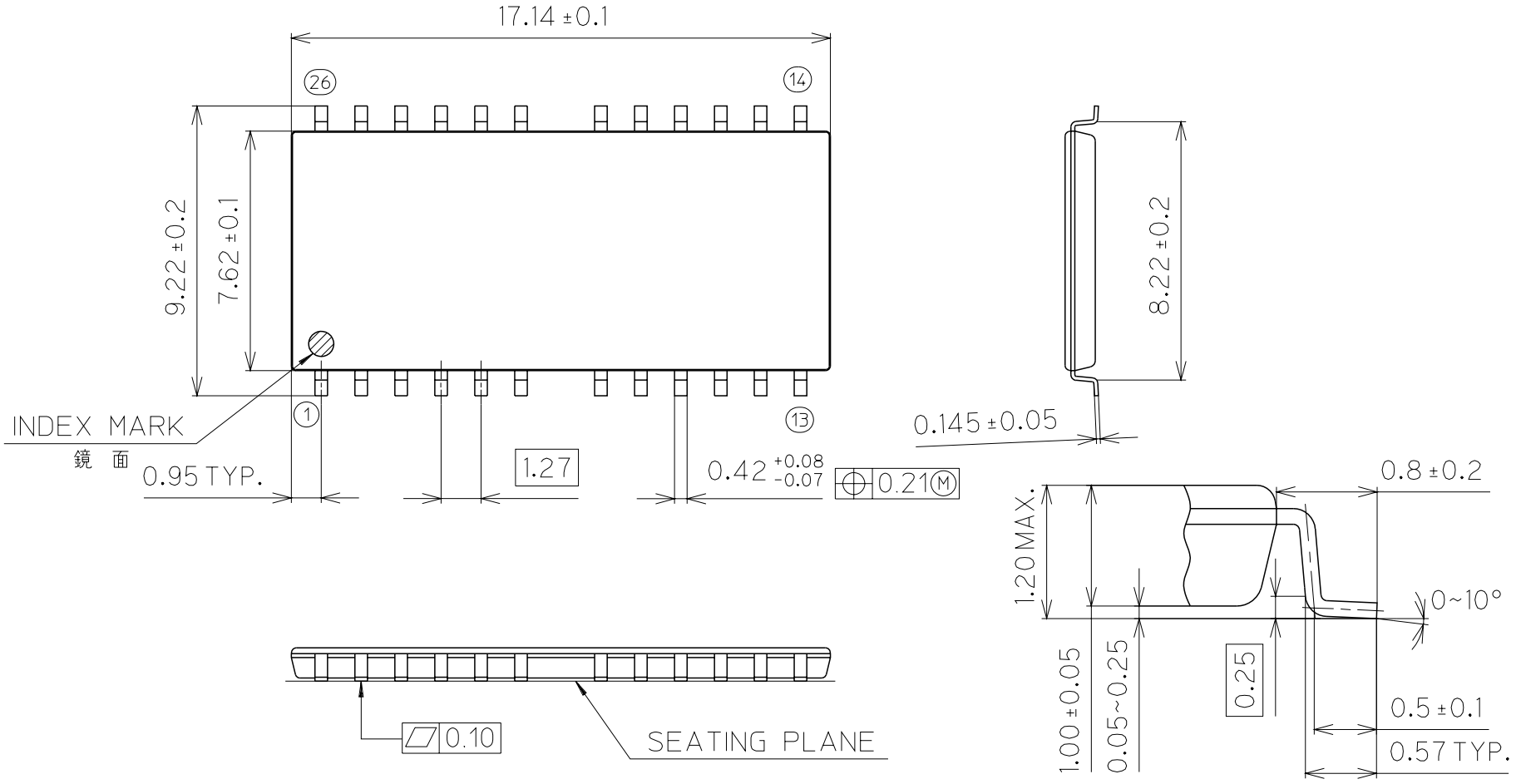


Please consult OKI for soldering, assembly and storage recommendations.

TSOPII26/24-P-300-1.27-K

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor

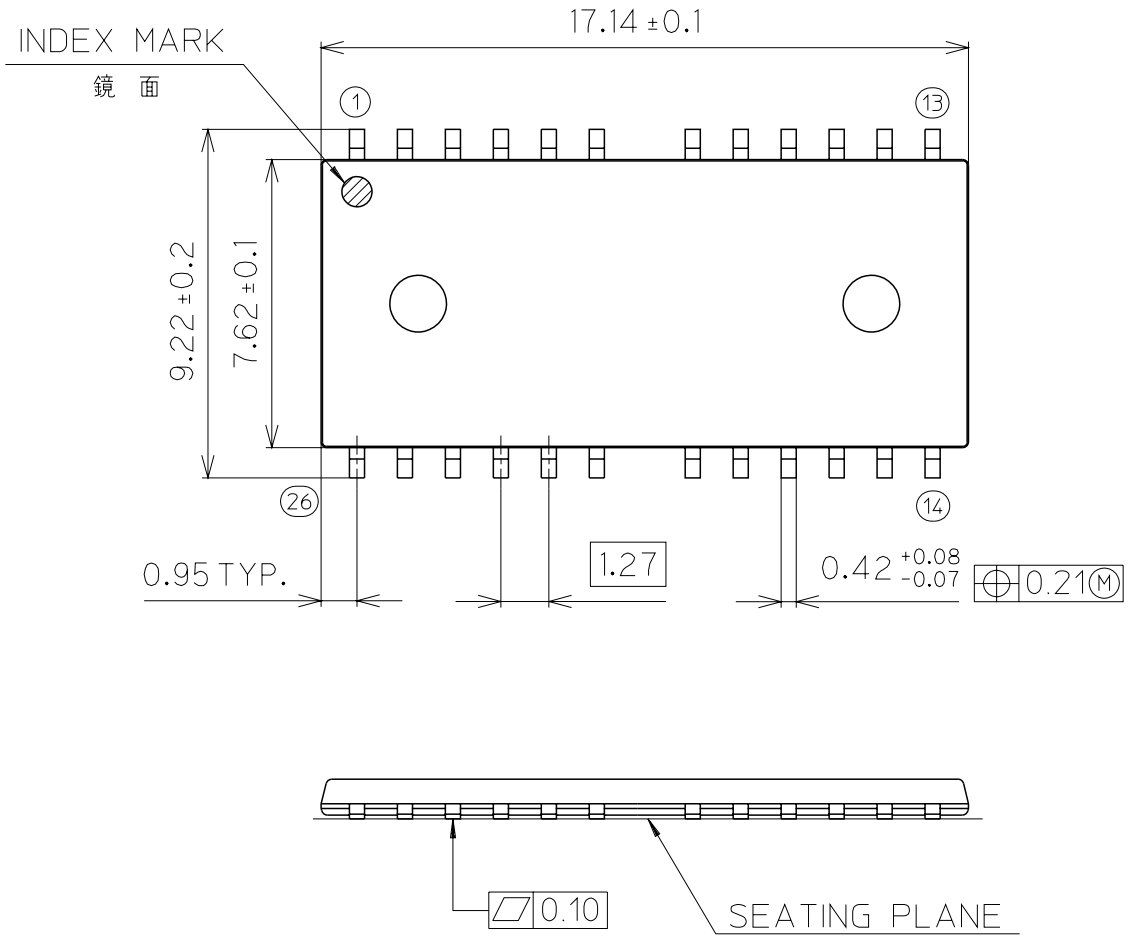


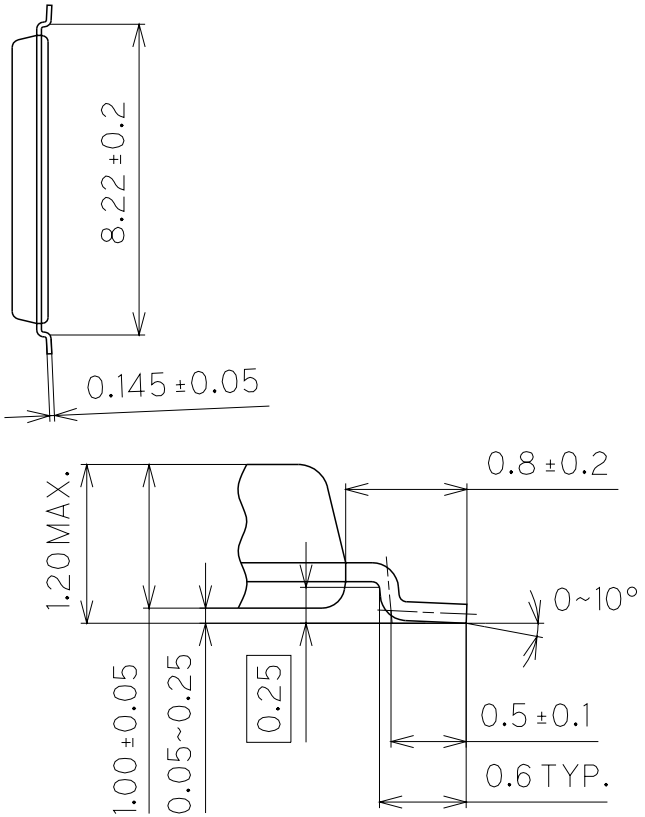
Please consult OKI for soldering, assembly and storage recommendations.

TSOPII26/24-P-300-1.27-L

Unit in millimeters typ., unless otherwise specified.

Opposite bent leads



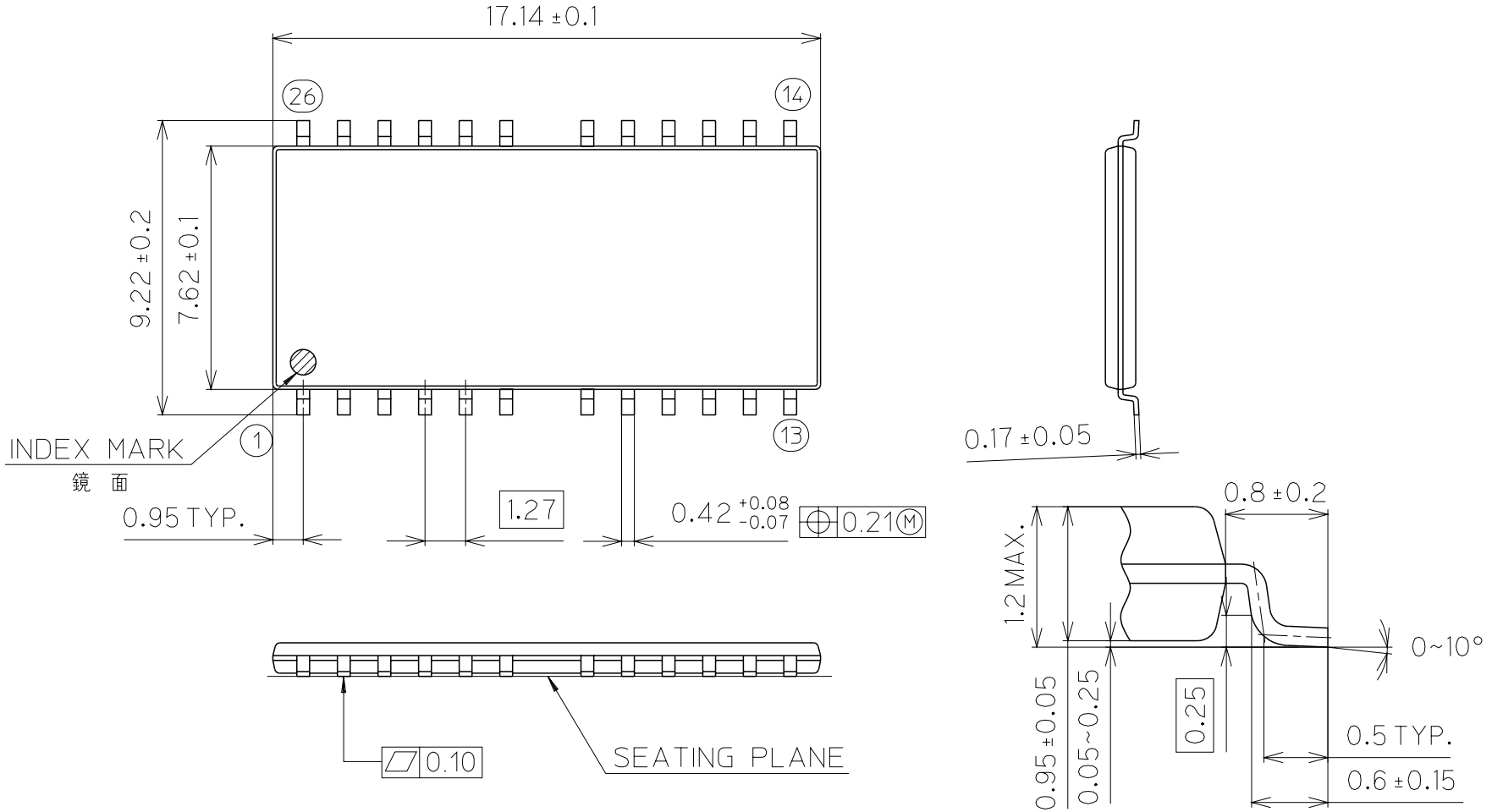


Please consult OKI for soldering, assembly and storage recommendations.

TSOPII26/24-P-300-1.27-3K

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor

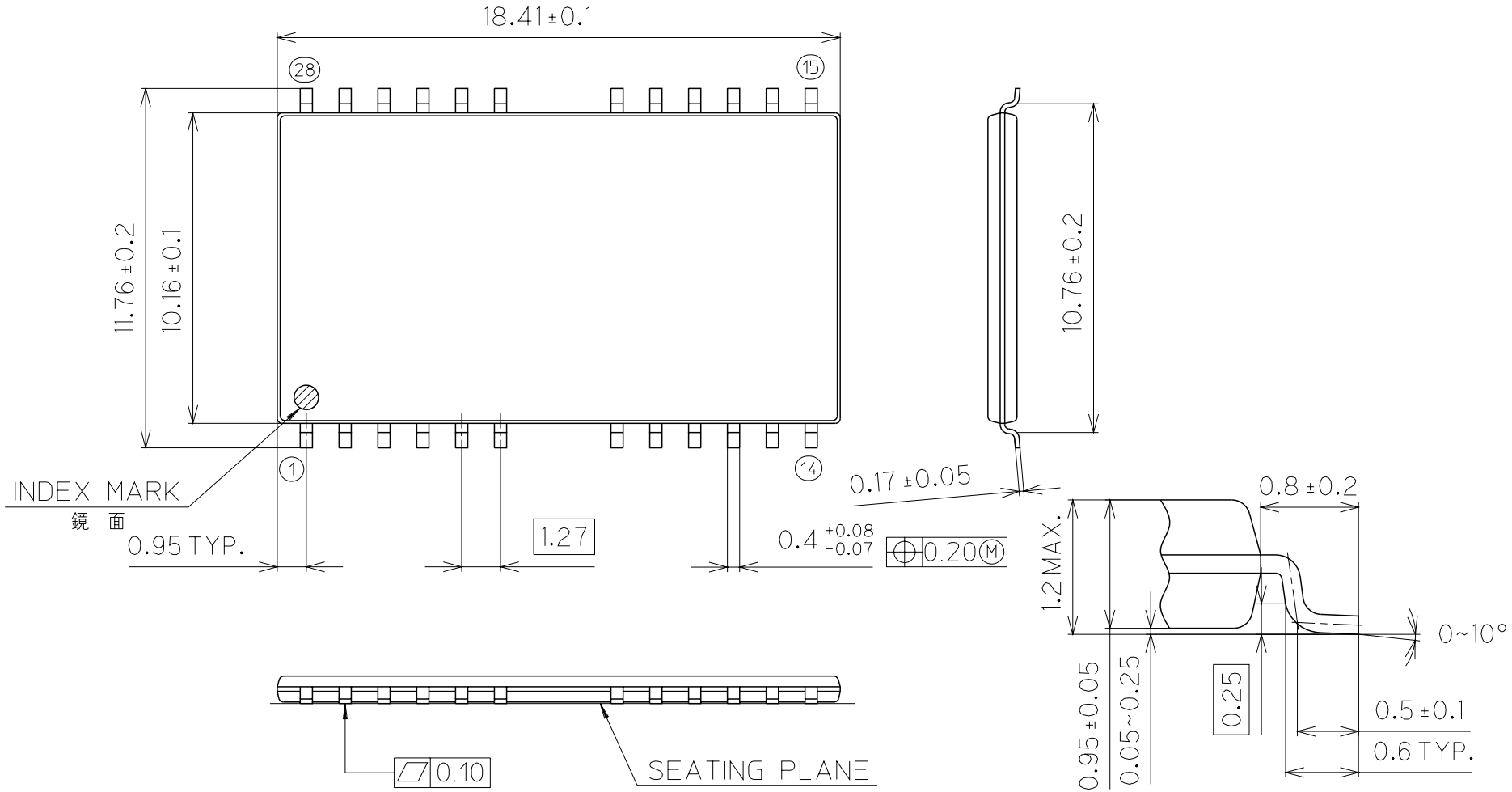


Please consult OKI for soldering, assembly and storage recommendations.

TSOPII28/24-P-400-1.27-K

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor

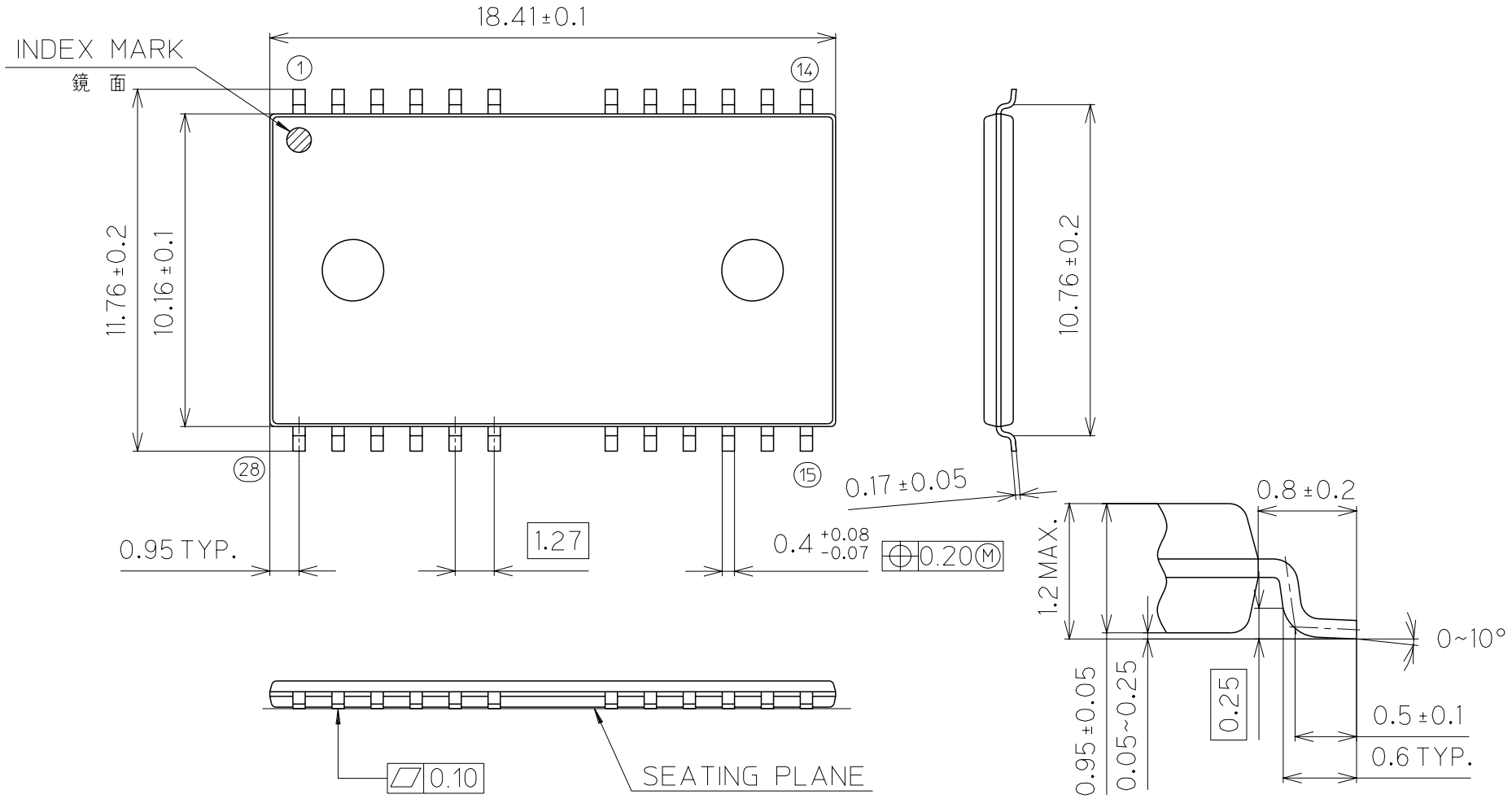


Please consult OKI for soldering, assembly and storage recommendations.

TSOPII28/24-P-400-1.27-L

Unit in millimeters typ., unless otherwise specified.

Opposite bent leads

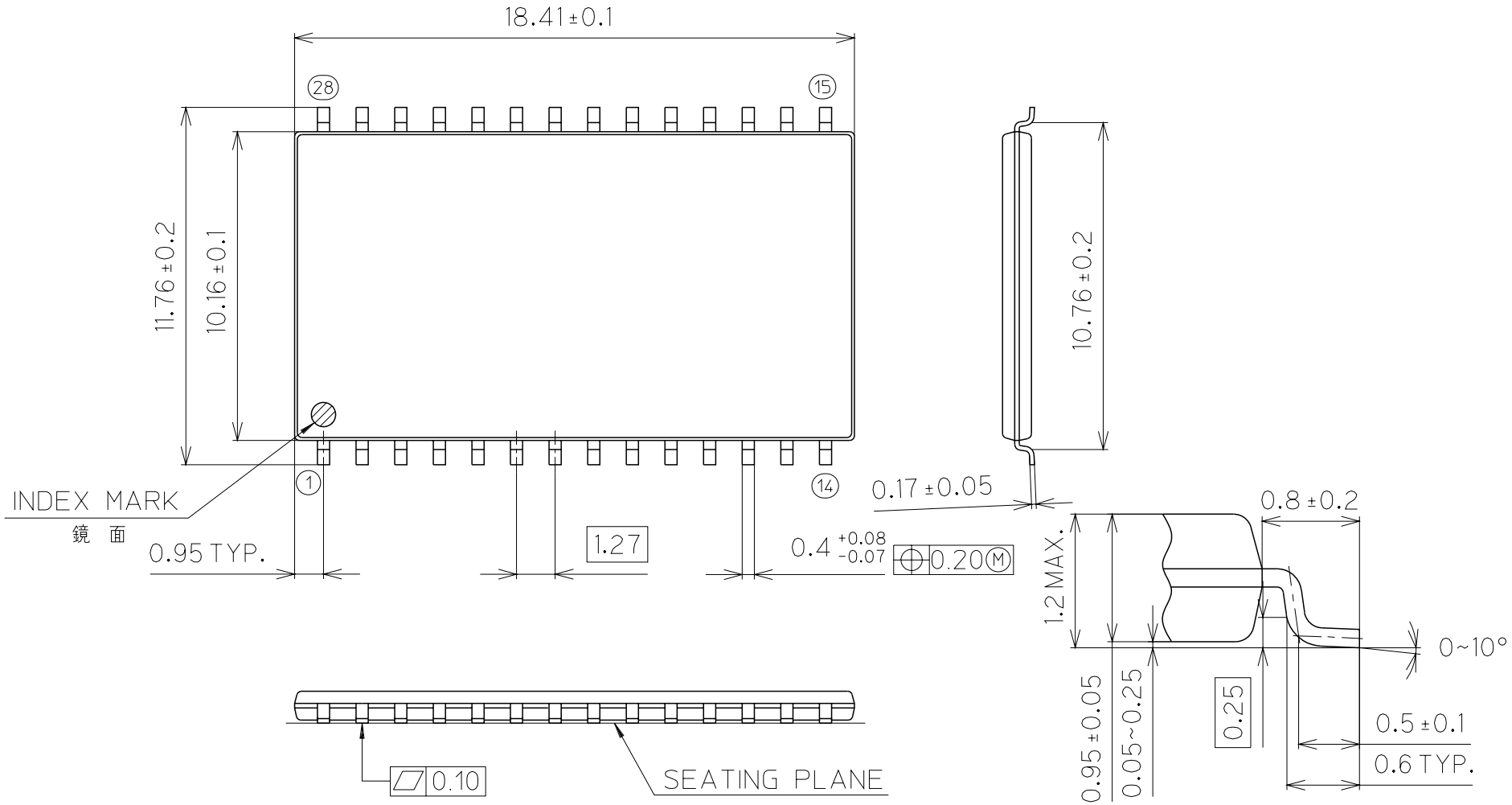


Please consult OKI for soldering, assembly and storage recommendations.

TSOPII28-P-400-1.27-K

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor

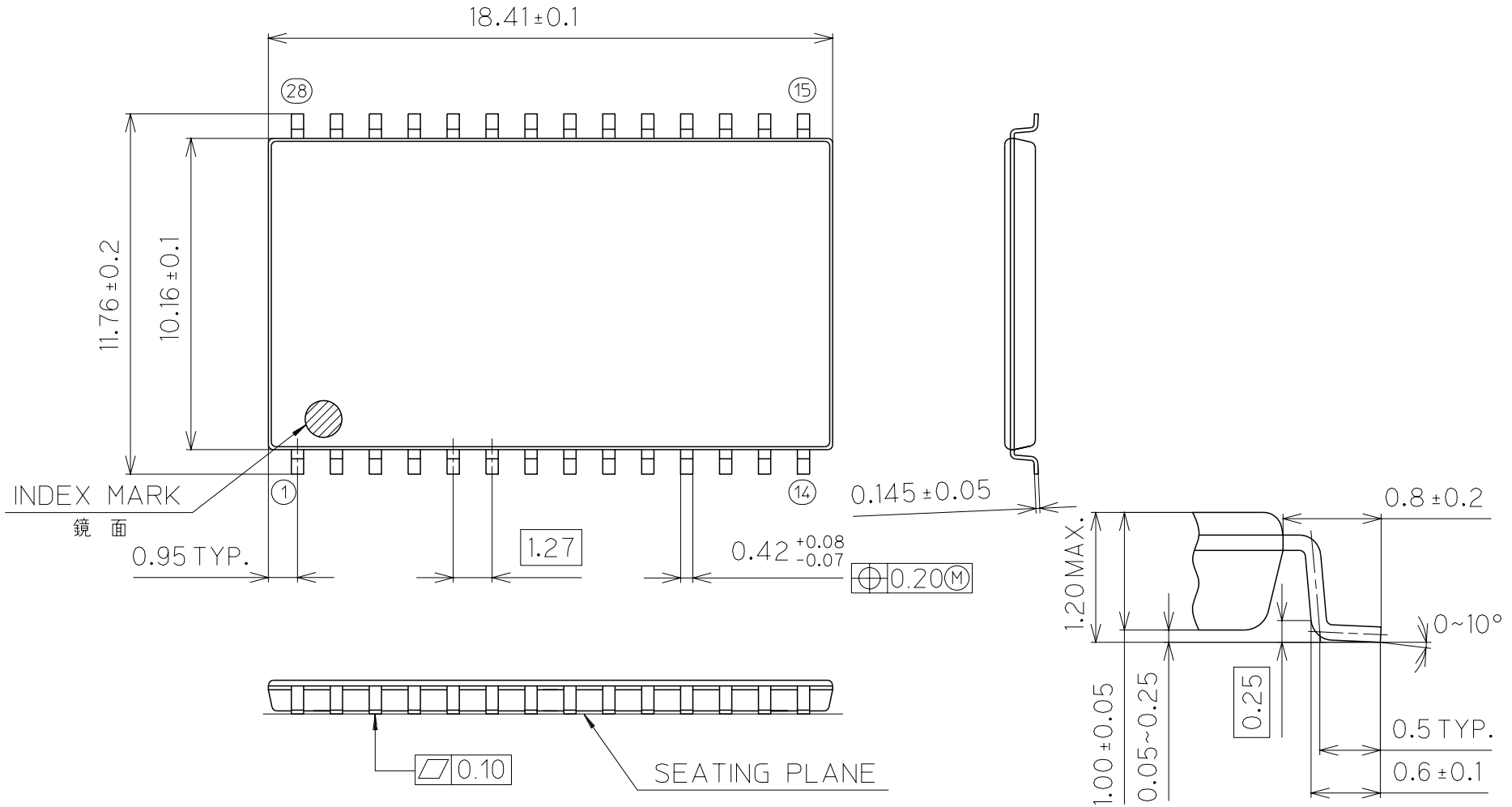


Please consult OKI for soldering, assembly and storage recommendations.

TSOPII28-P-400-1.27-1K

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor

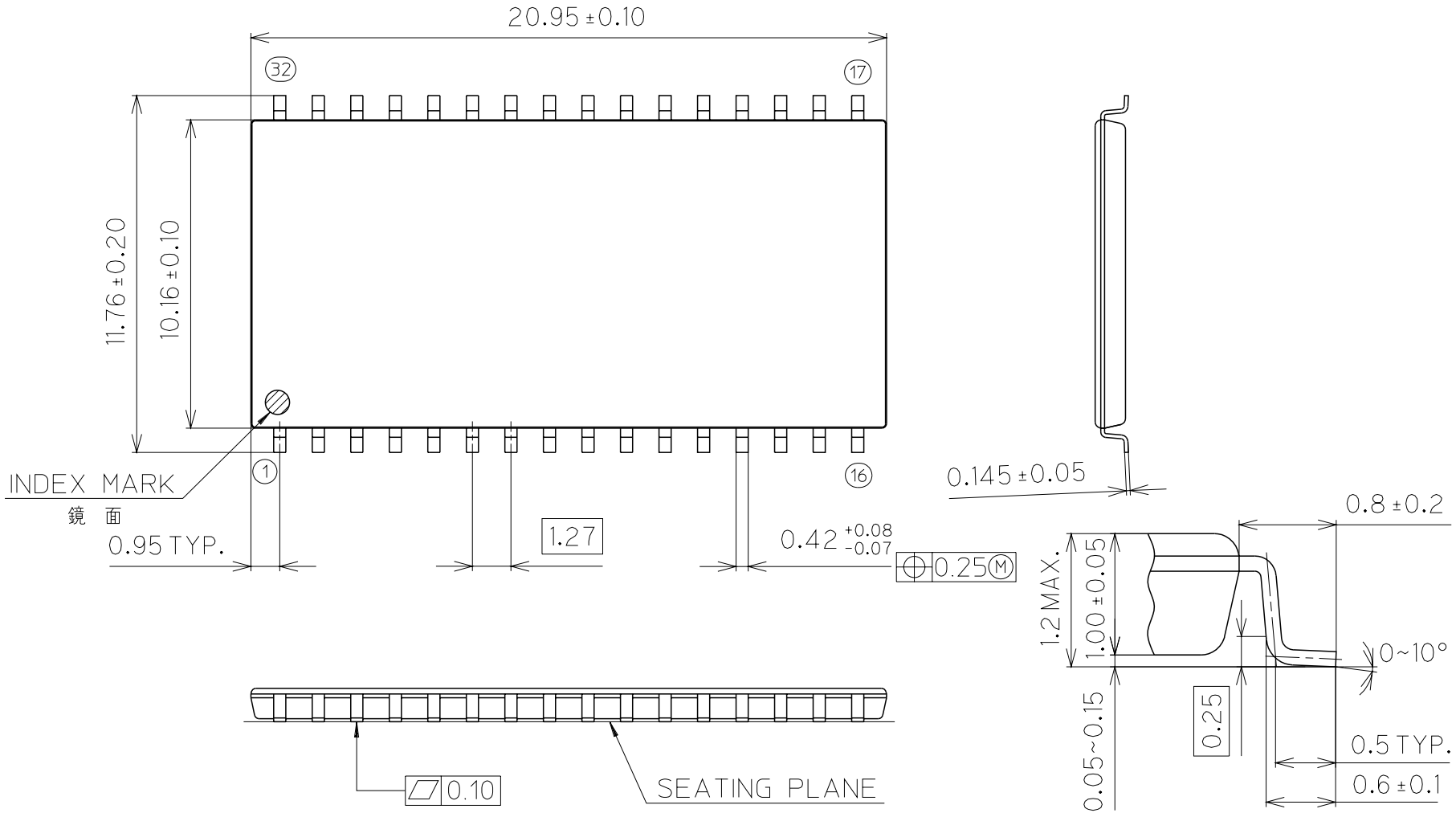


Please consult OKI for soldering, assembly and storage recommendations.

TSOPII32-P-400-1.27-K

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor

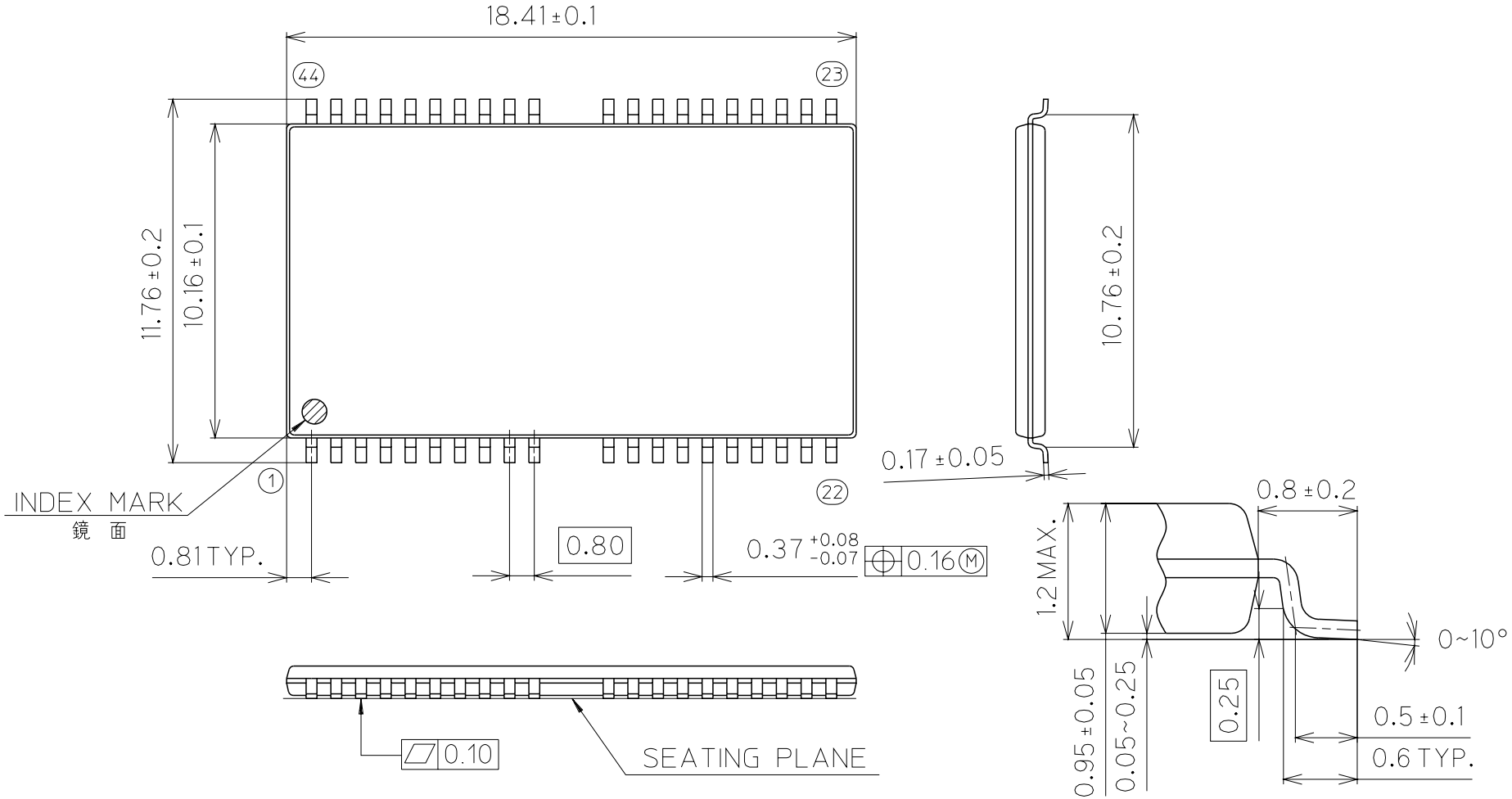


Please consult OKI for soldering, assembly and storage recommendations.

TSOPII44/40-P-400-0.80-K

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor

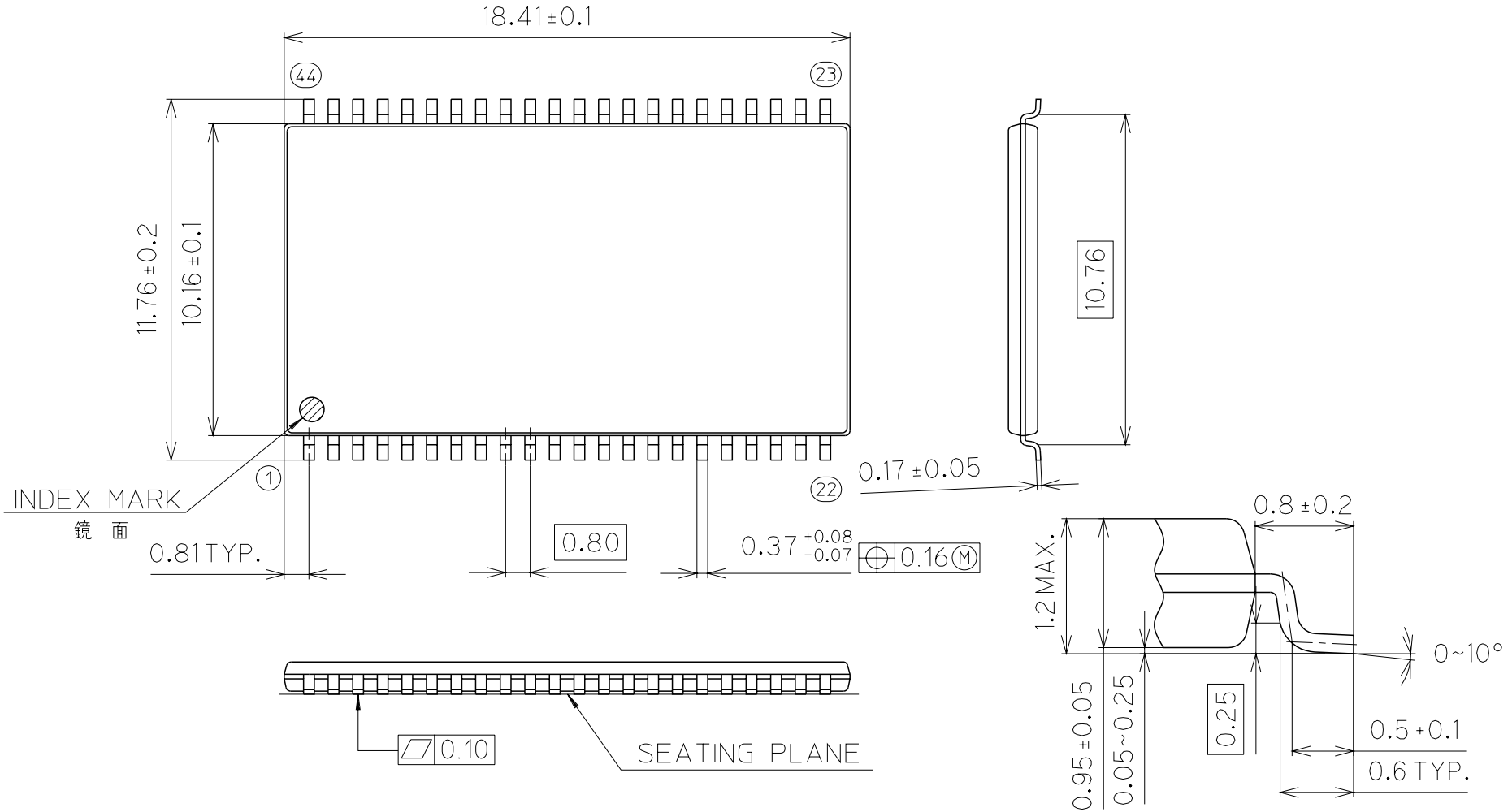


Please consult OKI for soldering, assembly and storage recommendations.

TSOPII44-P-400-0.80-K

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor

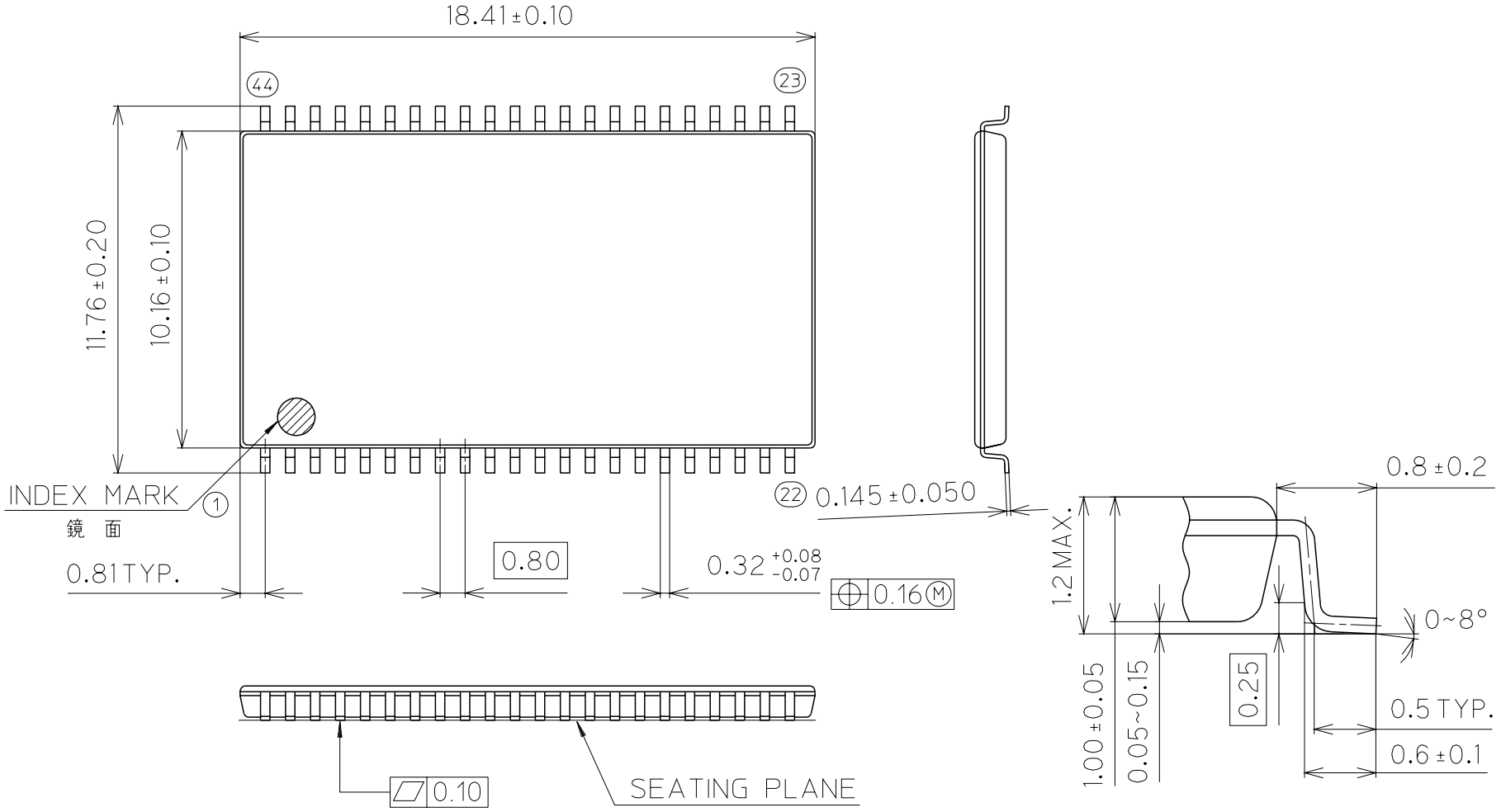


Please consult OKI for soldering, assembly and storage recommendations.

TSOPII44-P-400-0.80-1K

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor

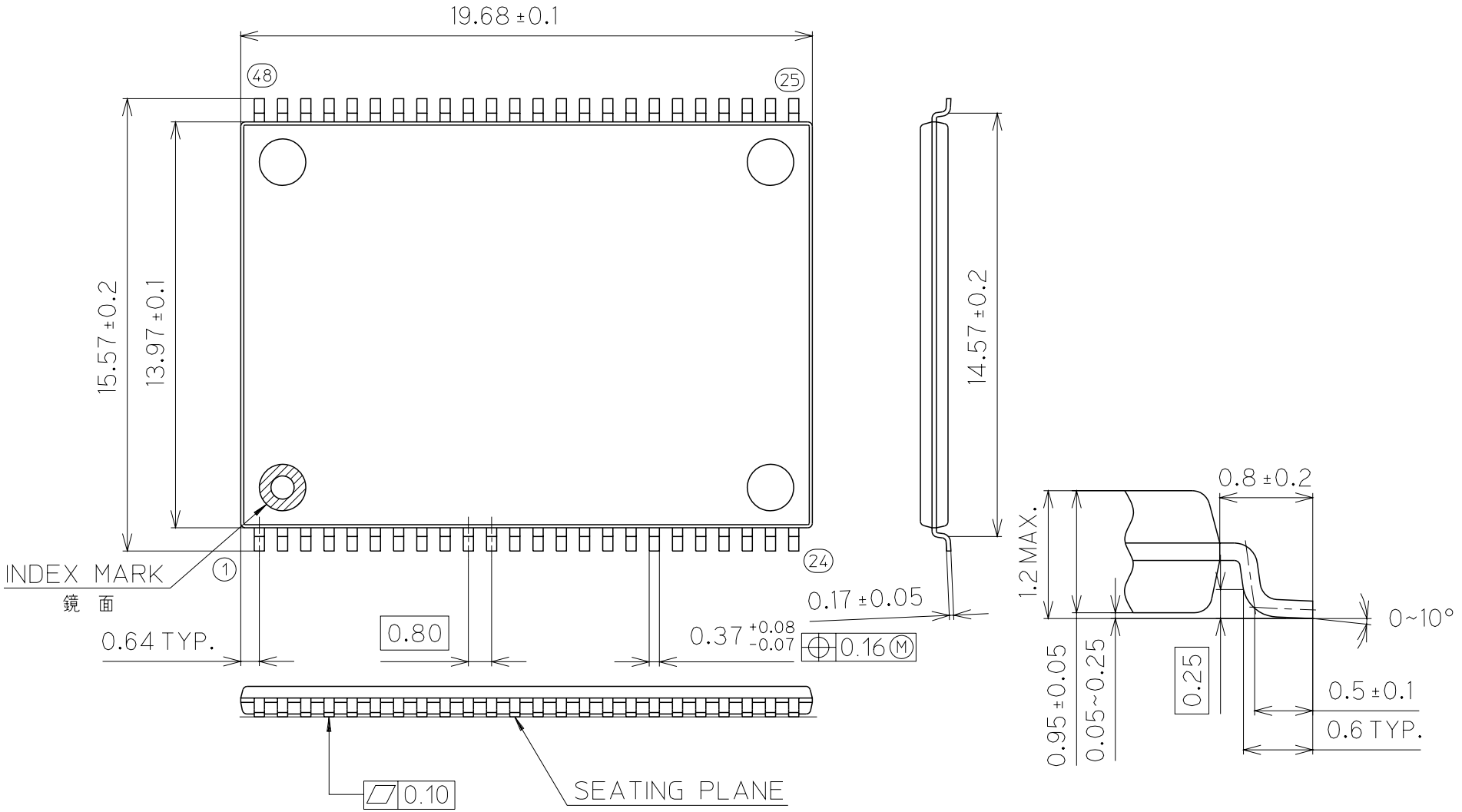


Please consult OKI for soldering, assembly and storage recommendations.

TSOPII48-P-550-0.80-K

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor

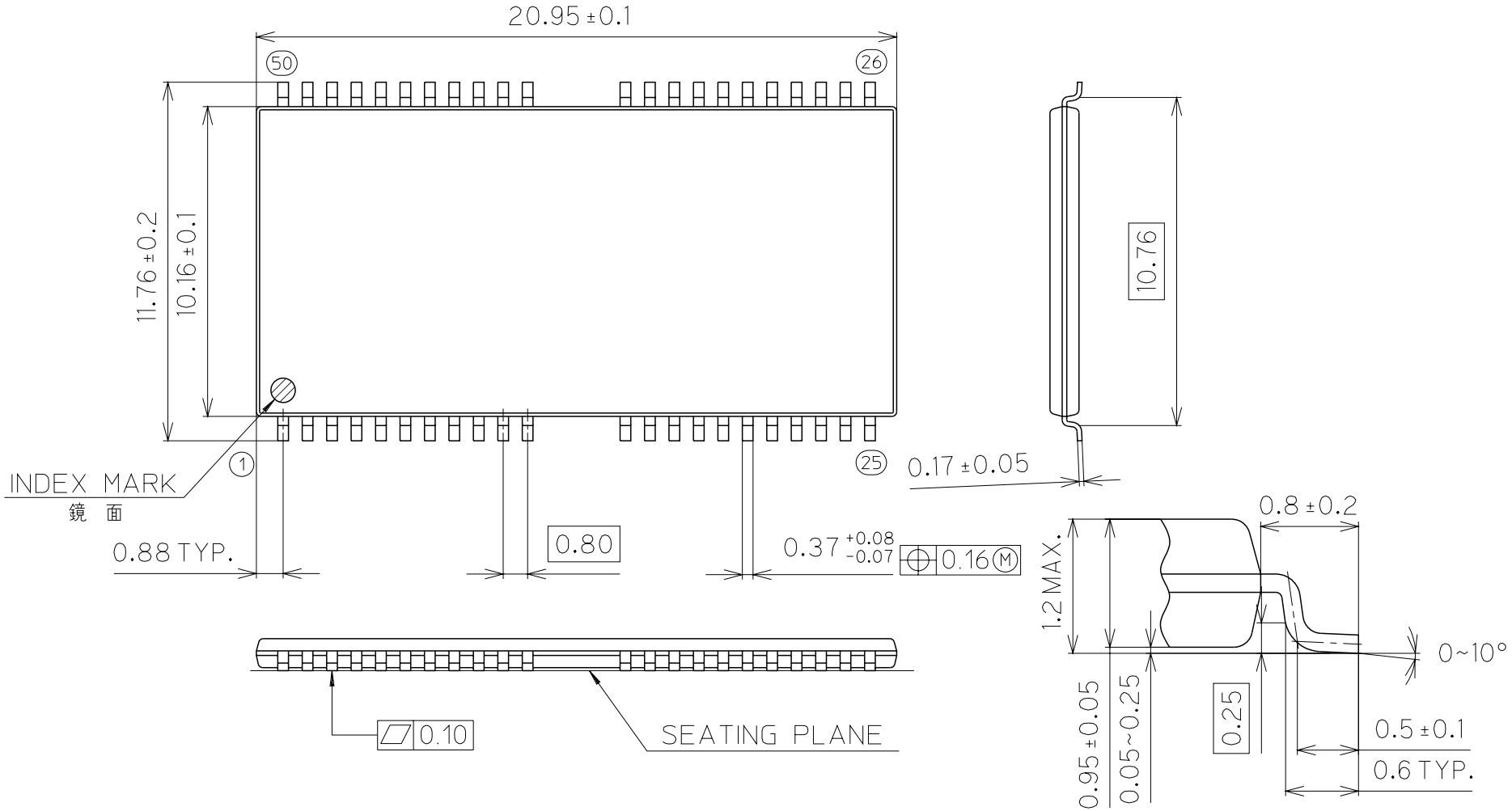


Please consult OKI for soldering, assembly and storage recommendations.

TSOPII50/44-P-400-0.80-K

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor

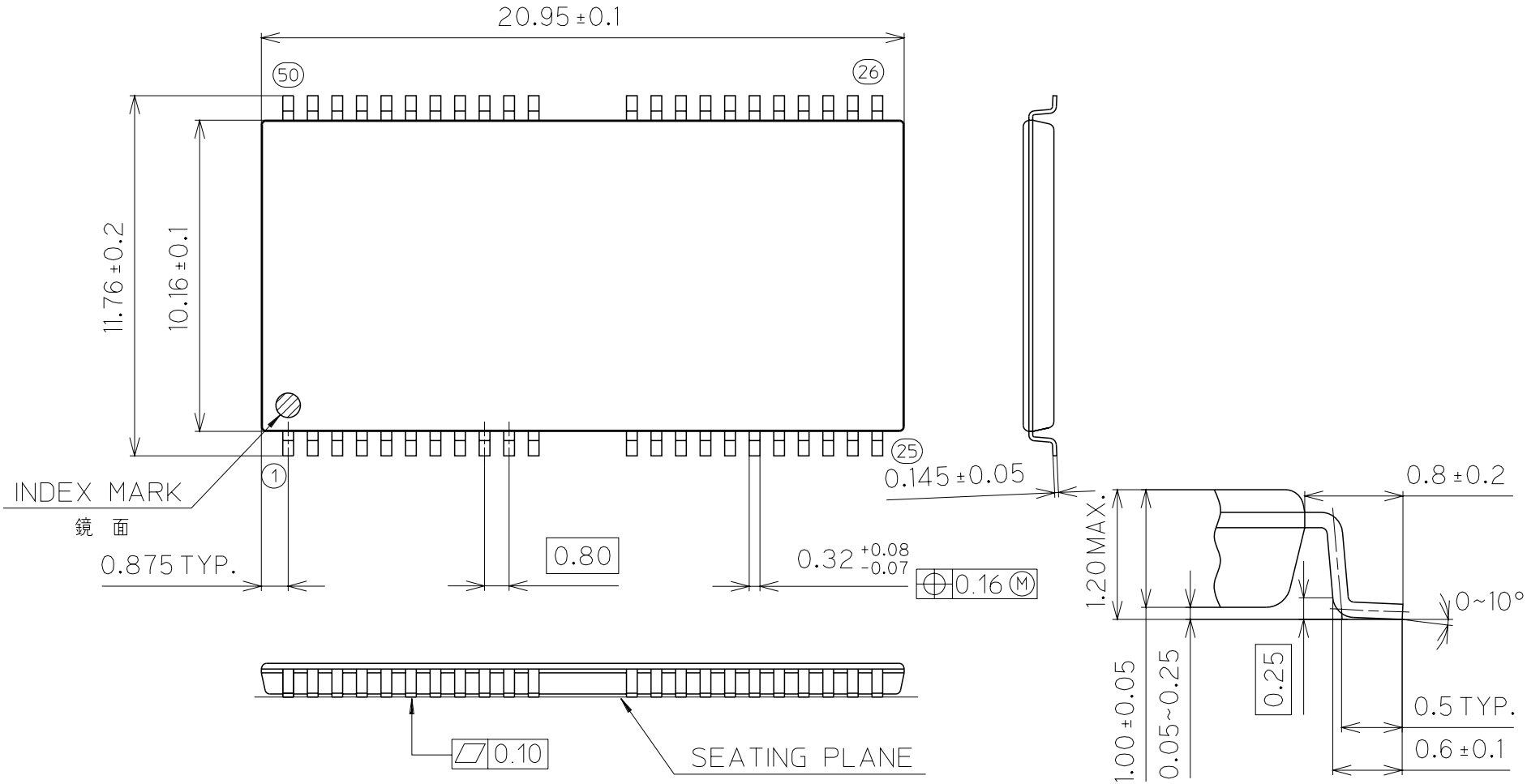


Please consult OKI for soldering, assembly and storage recommendations.

TSOPII50/44-P-400-0.80-1K

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor

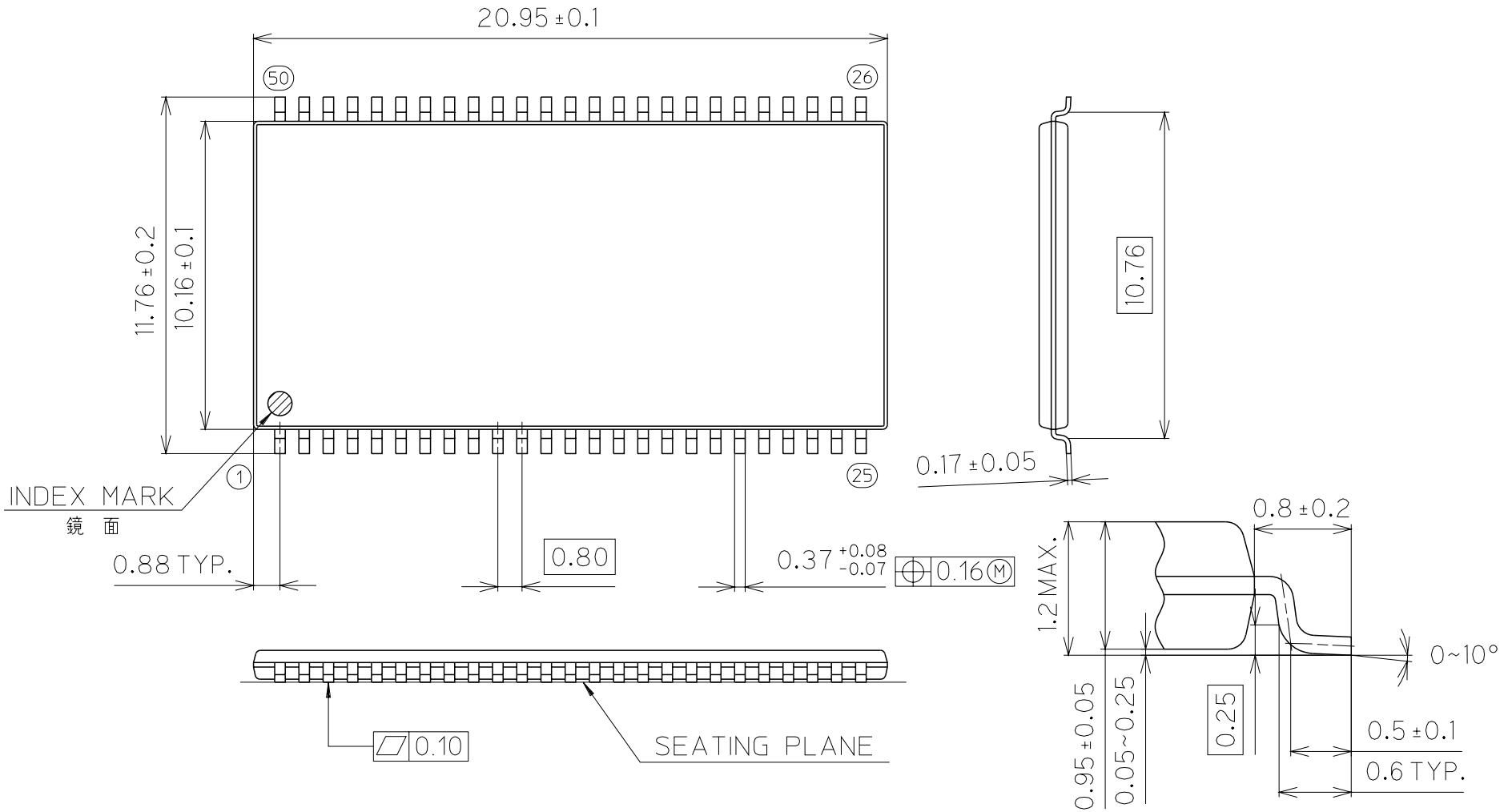


Please consult OKI for soldering, assembly and storage recommendations.

TSOPII50-P-400-0.80-K

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor

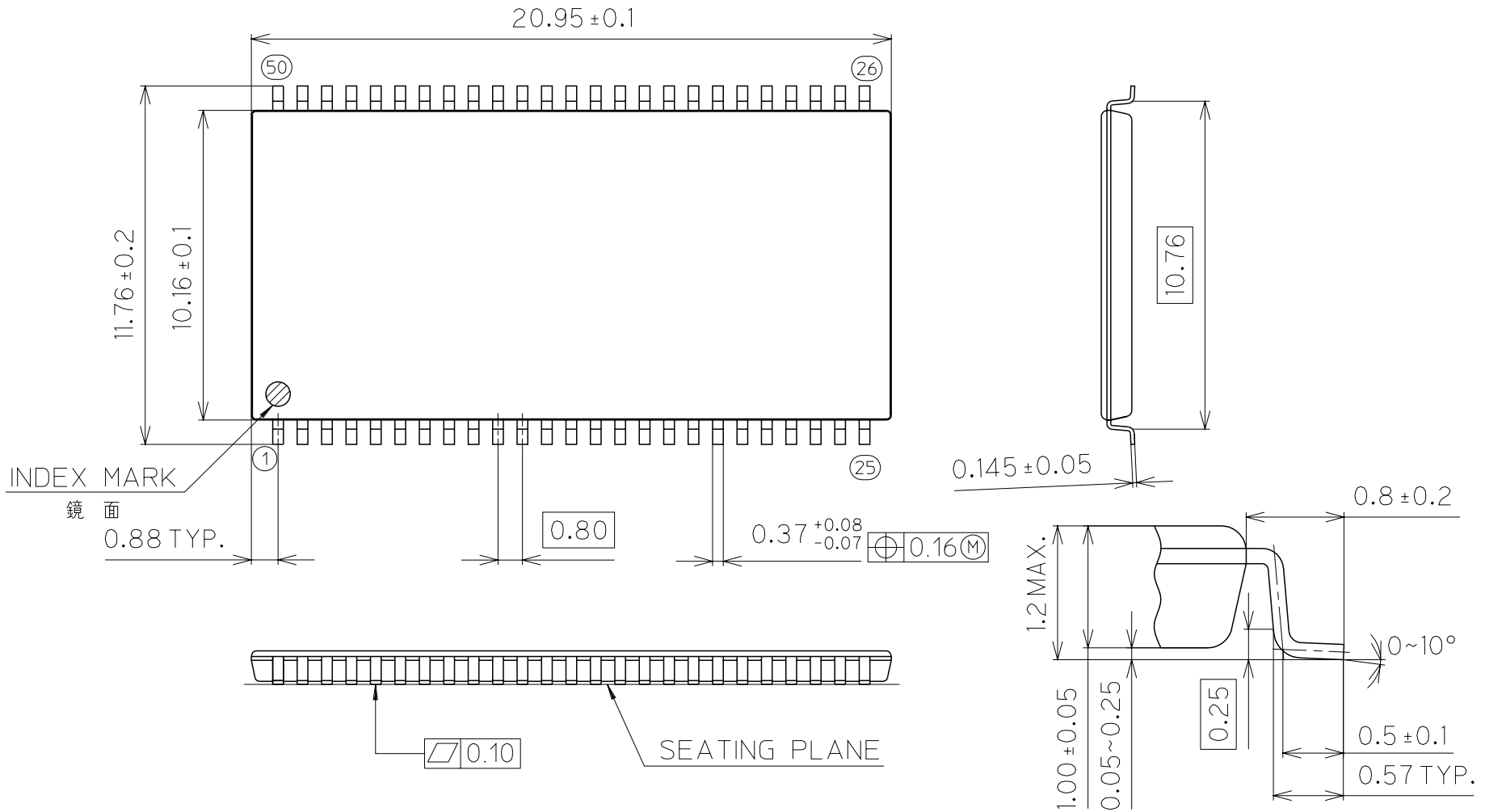


Please consult OKI for soldering, assembly and storage recommendations.

TSOPII50-P-400-0.80-1K

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor

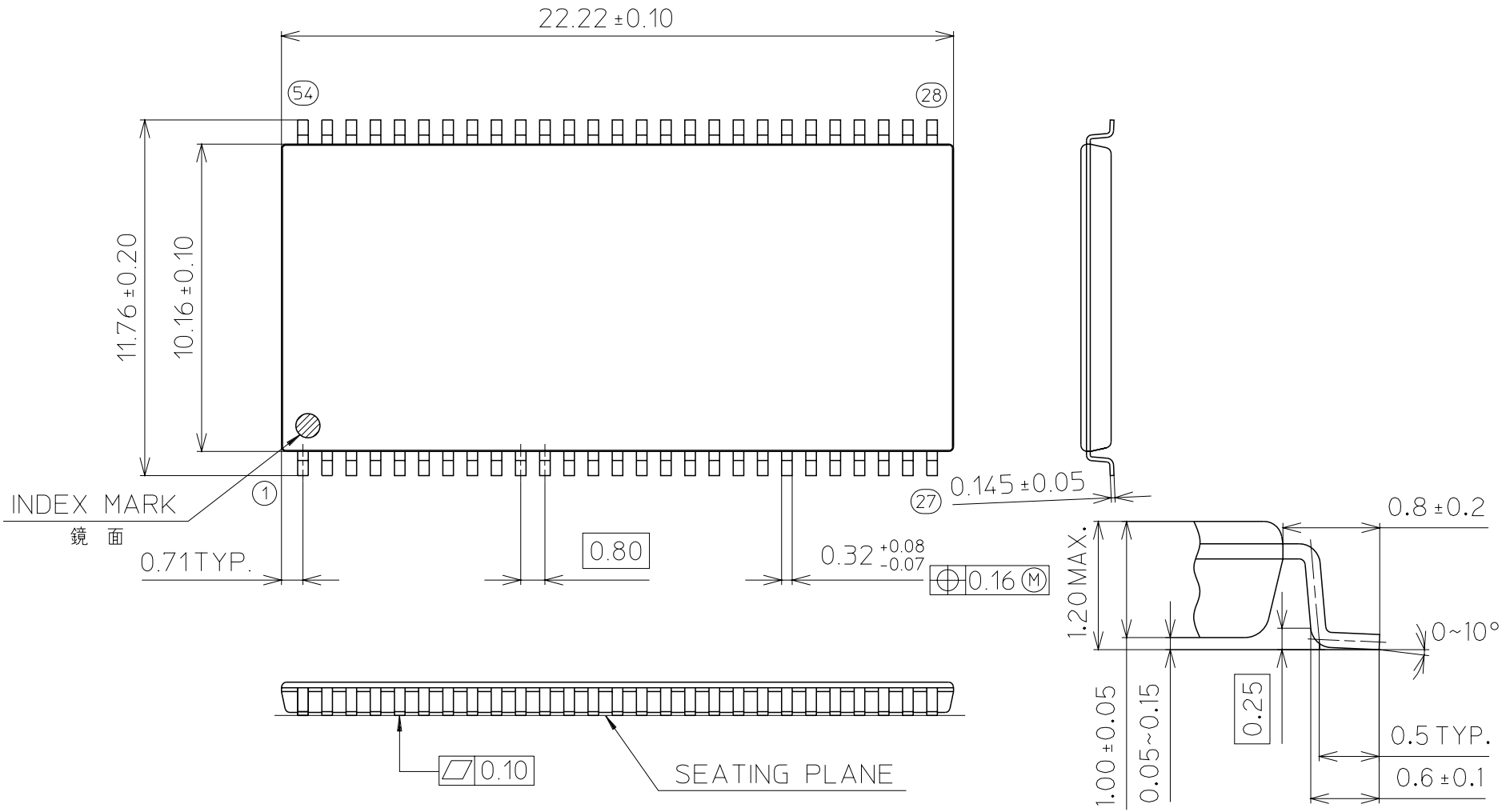


Please consult OKI for soldering, assembly and storage recommendations.

TSOPII54-P-400-0.80-K

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor

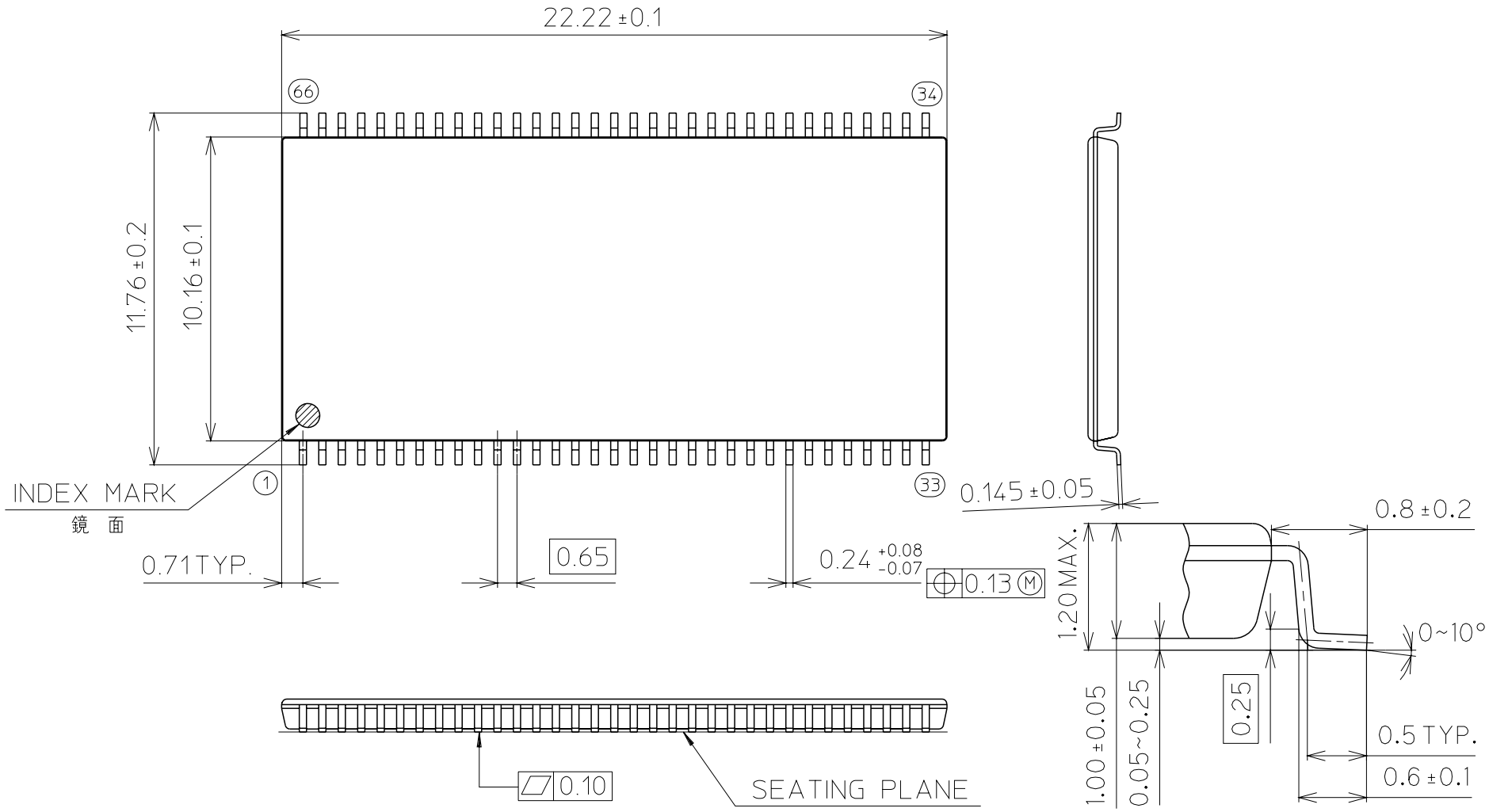


Please consult OKI for soldering, assembly and storage recommendations.

TSOPII66-P-400-0.65-K

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor

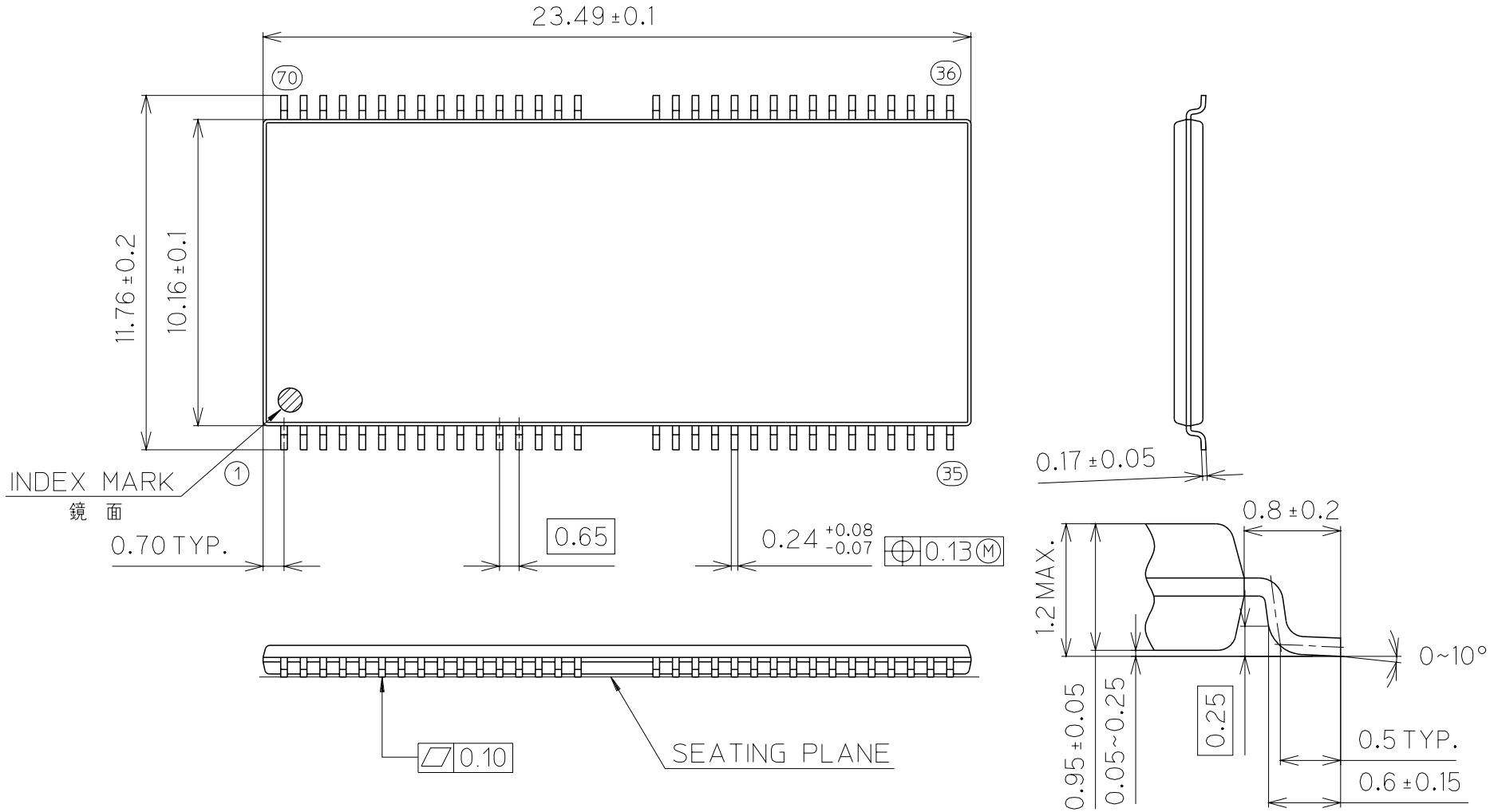


Please consult OKI for soldering, assembly and storage recommendations.

TSOPII70/64-P-400-0.65-K

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor

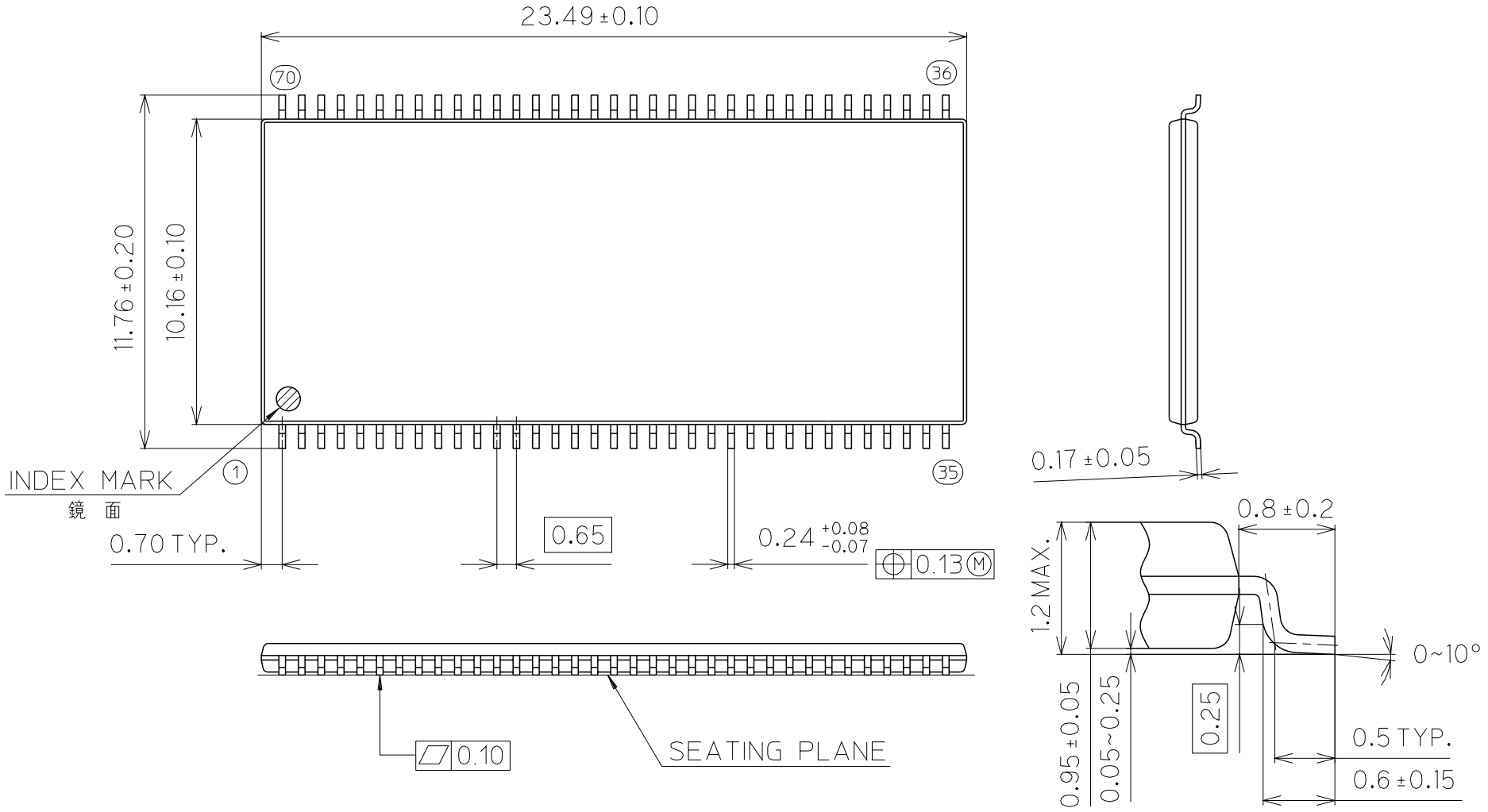


Please consult OKI for soldering, assembly and storage recommendations.

TSOPII70-P-400-0.65-K

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor

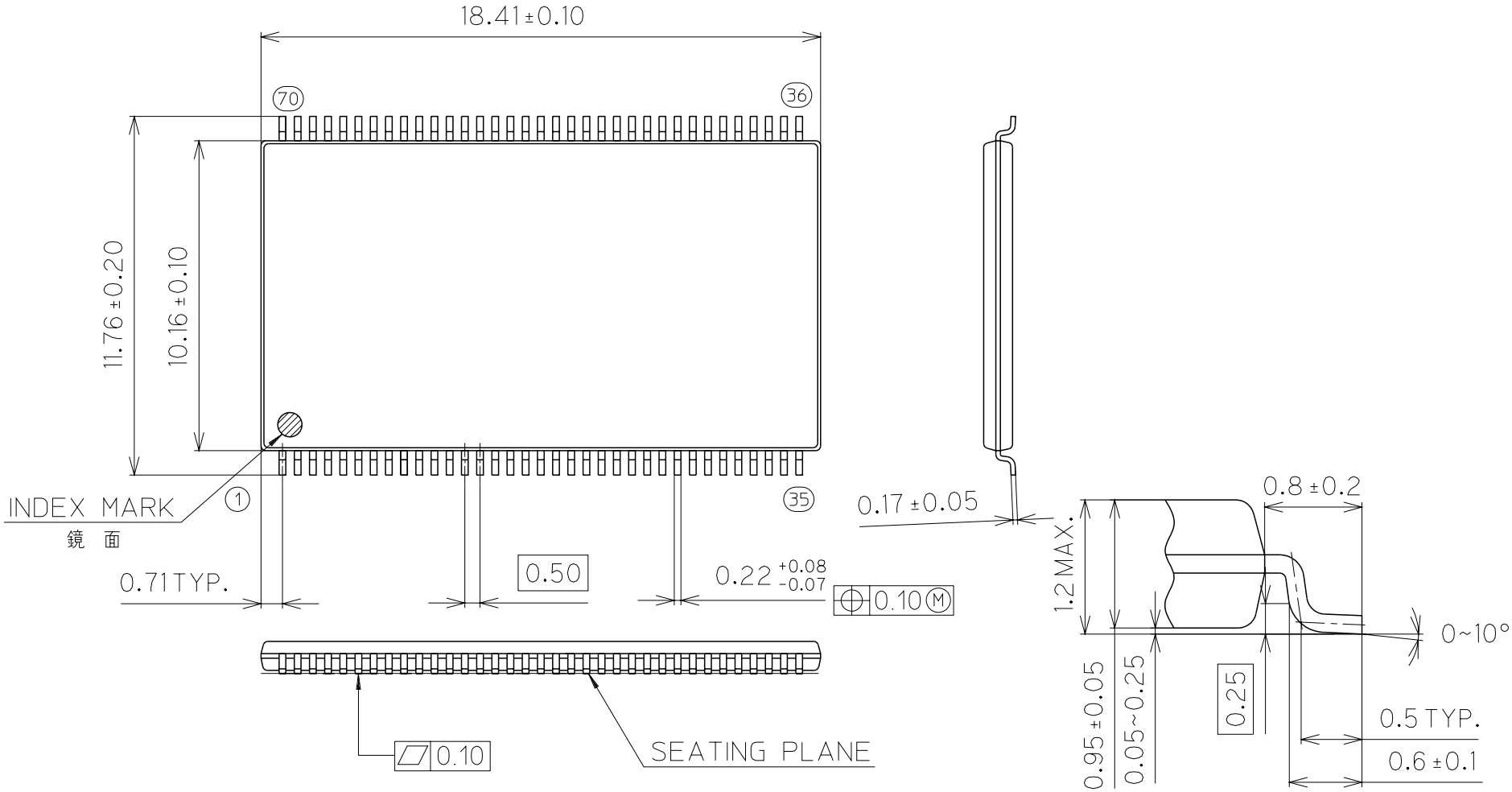


Please consult OKI for soldering, assembly and storage recommendations.

TSOPII70-P-400-0.50-K

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor

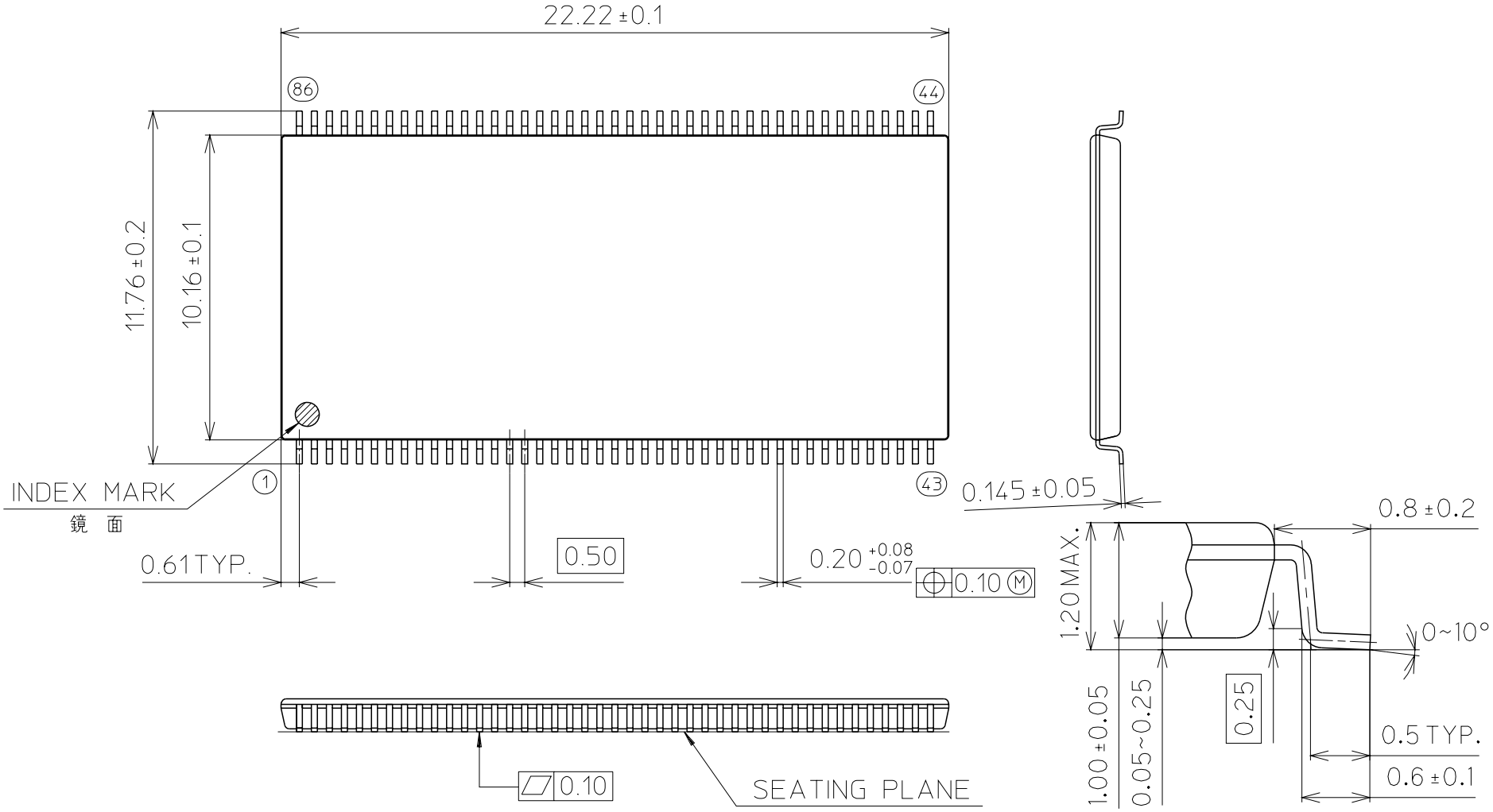


Please consult OKI for soldering, assembly and storage recommendations.

TSOPII86-P-400-0.50-K

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor

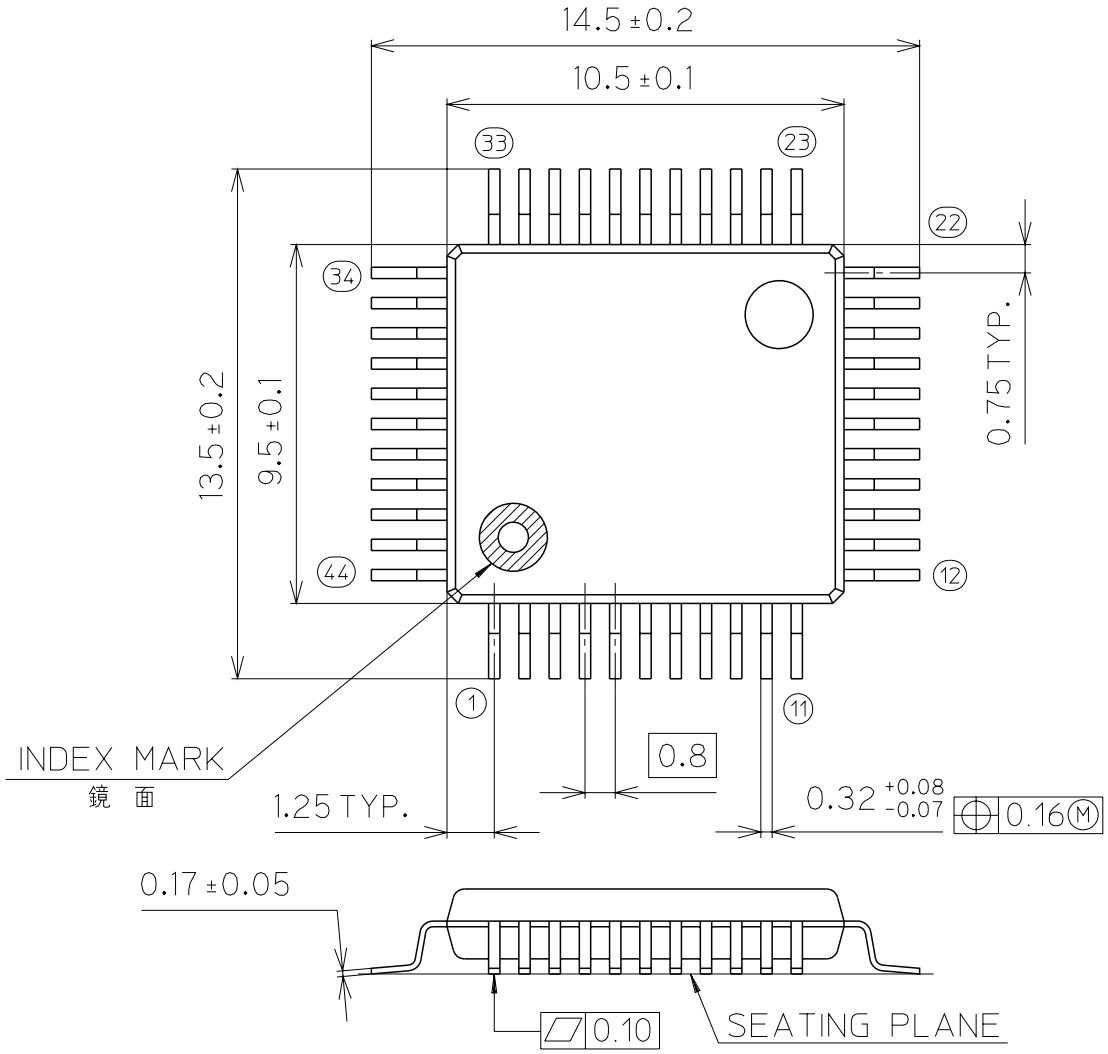


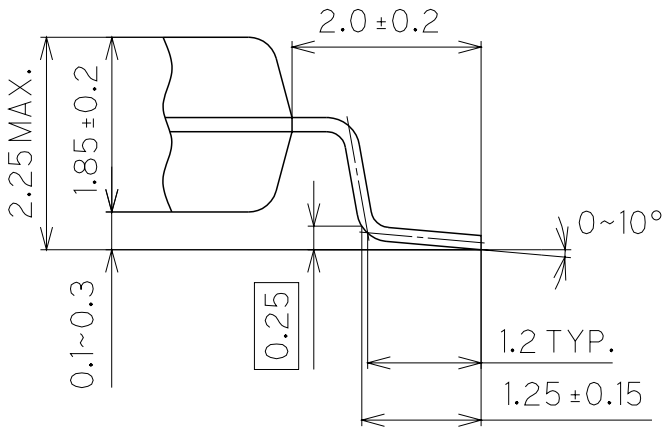
Please consult OKI for soldering, assembly and storage recommendations.

QFP44-P-910-0.80-2K

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor



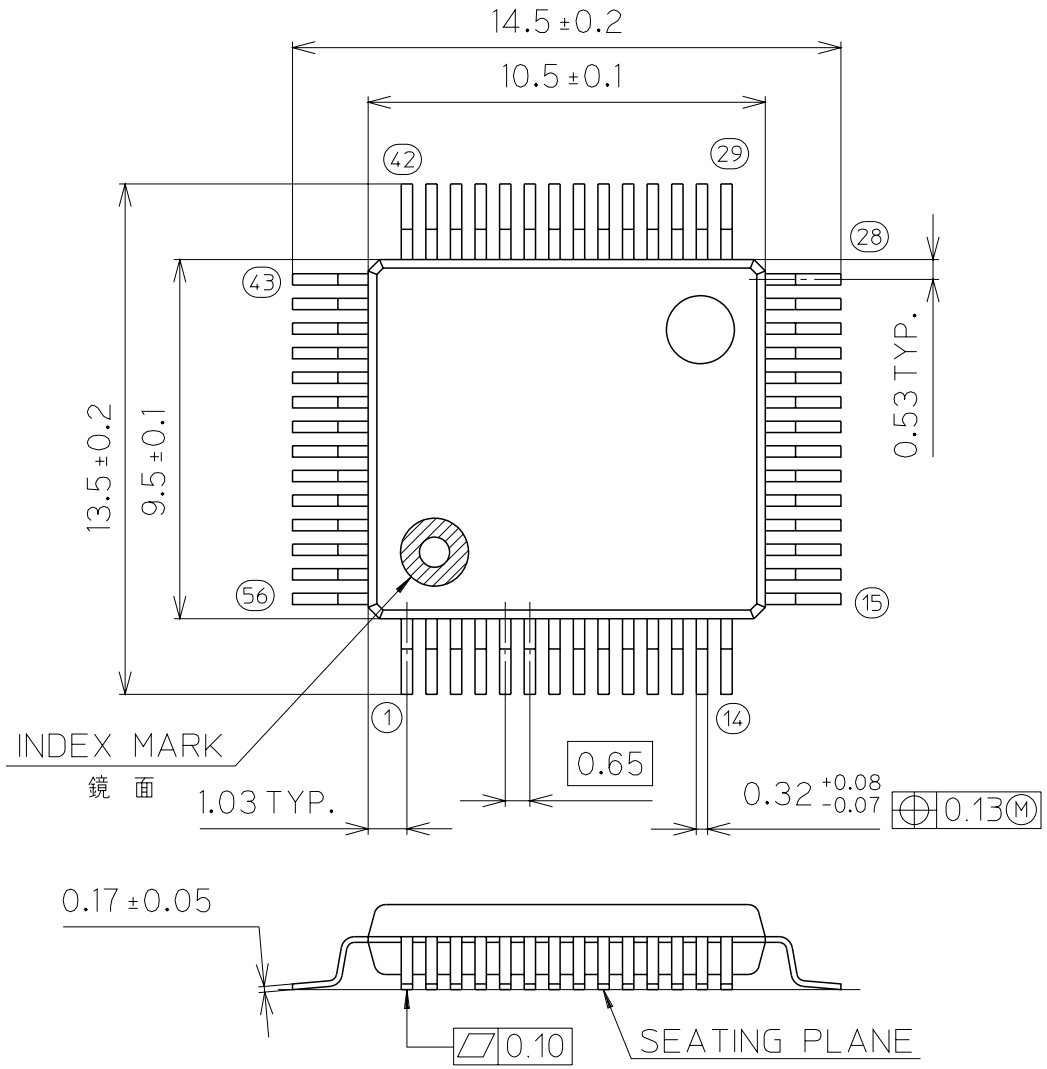


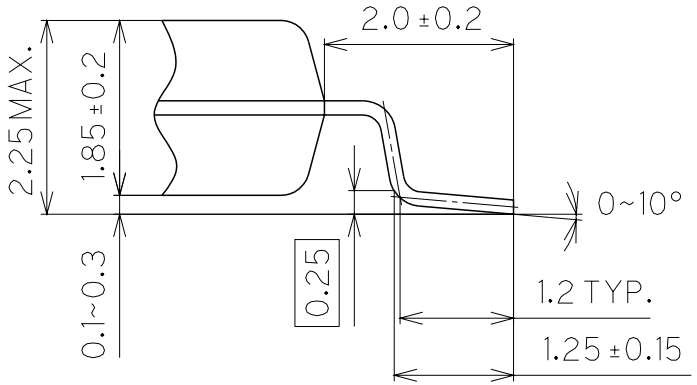
Please consult OKI for soldering, assembly and storage recommendations.

QFP56-P-910-0.65-2K

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor



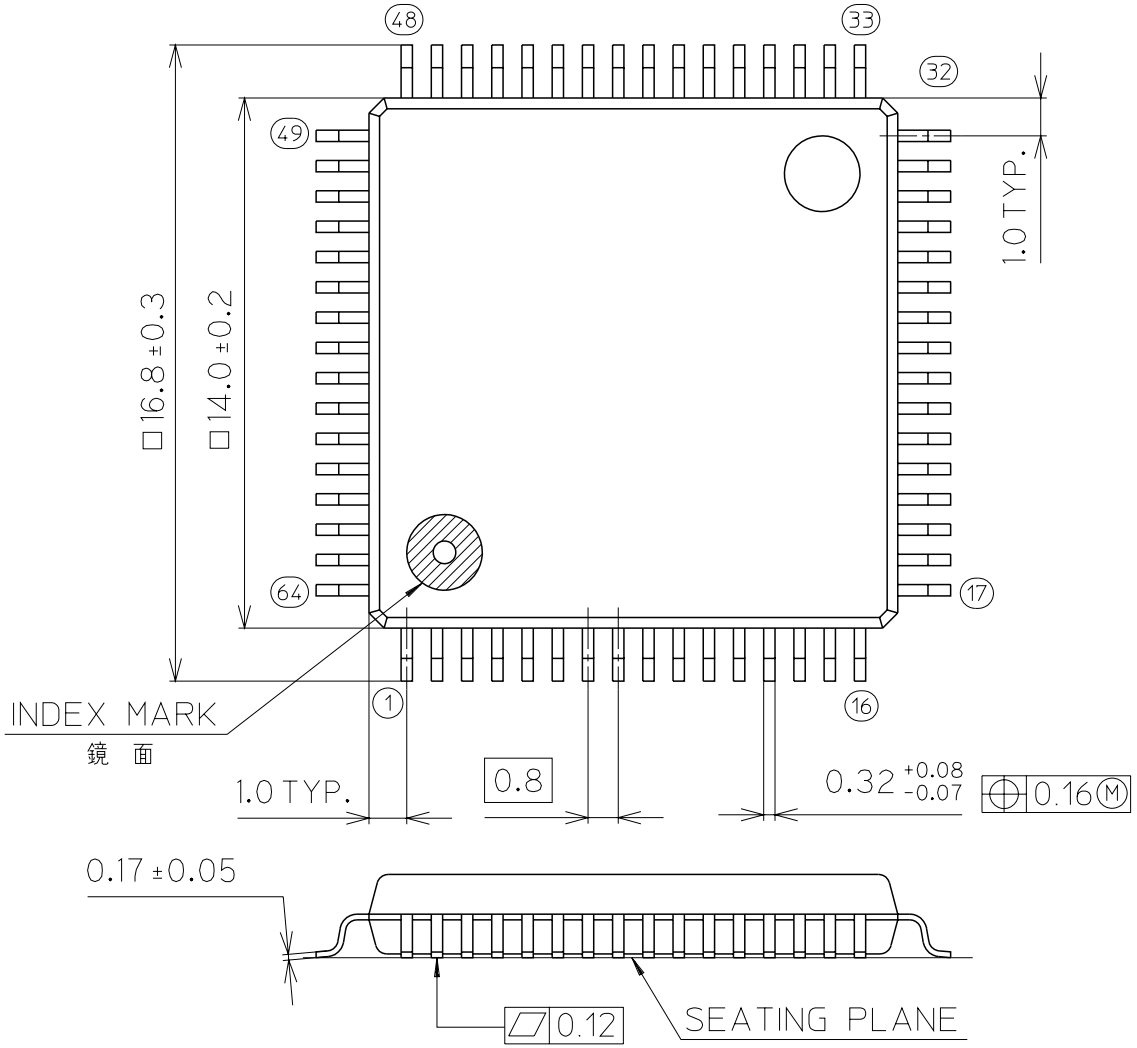


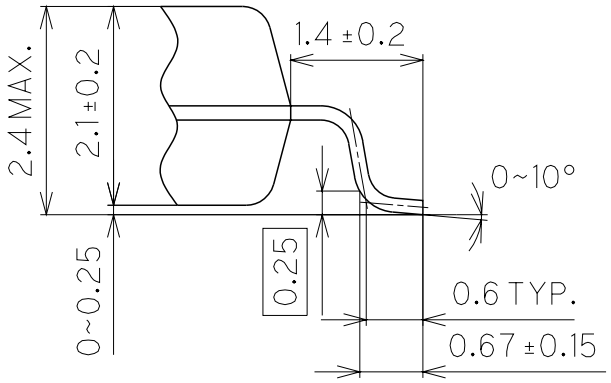
Please consult OKI for soldering, assembly and storage recommendations.

QFP64-P-1414-0.80-BK

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor



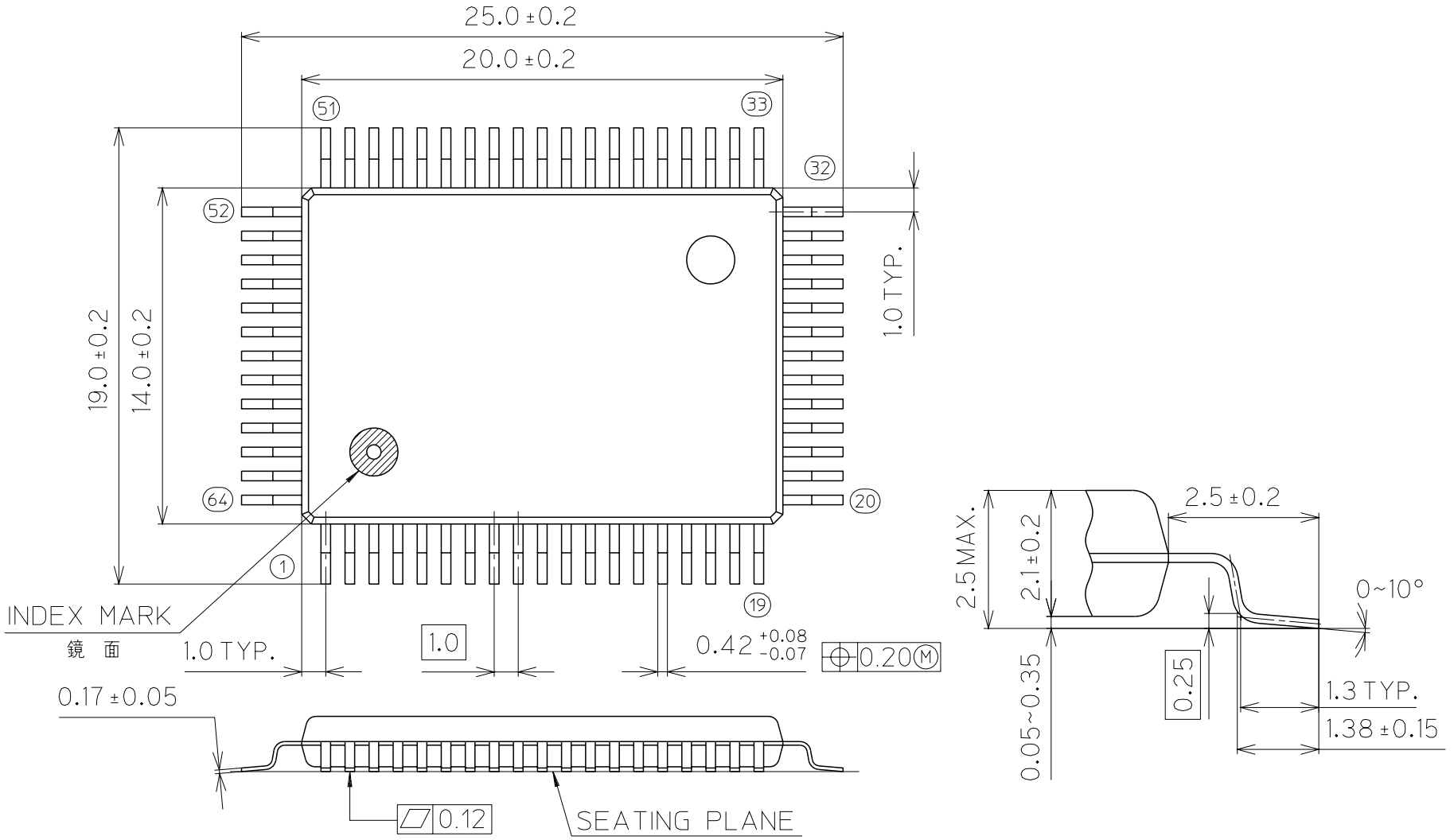


Please consult OKI for soldering, assembly and storage recommendations.

QFP64-P-1420-1.00-BK

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor

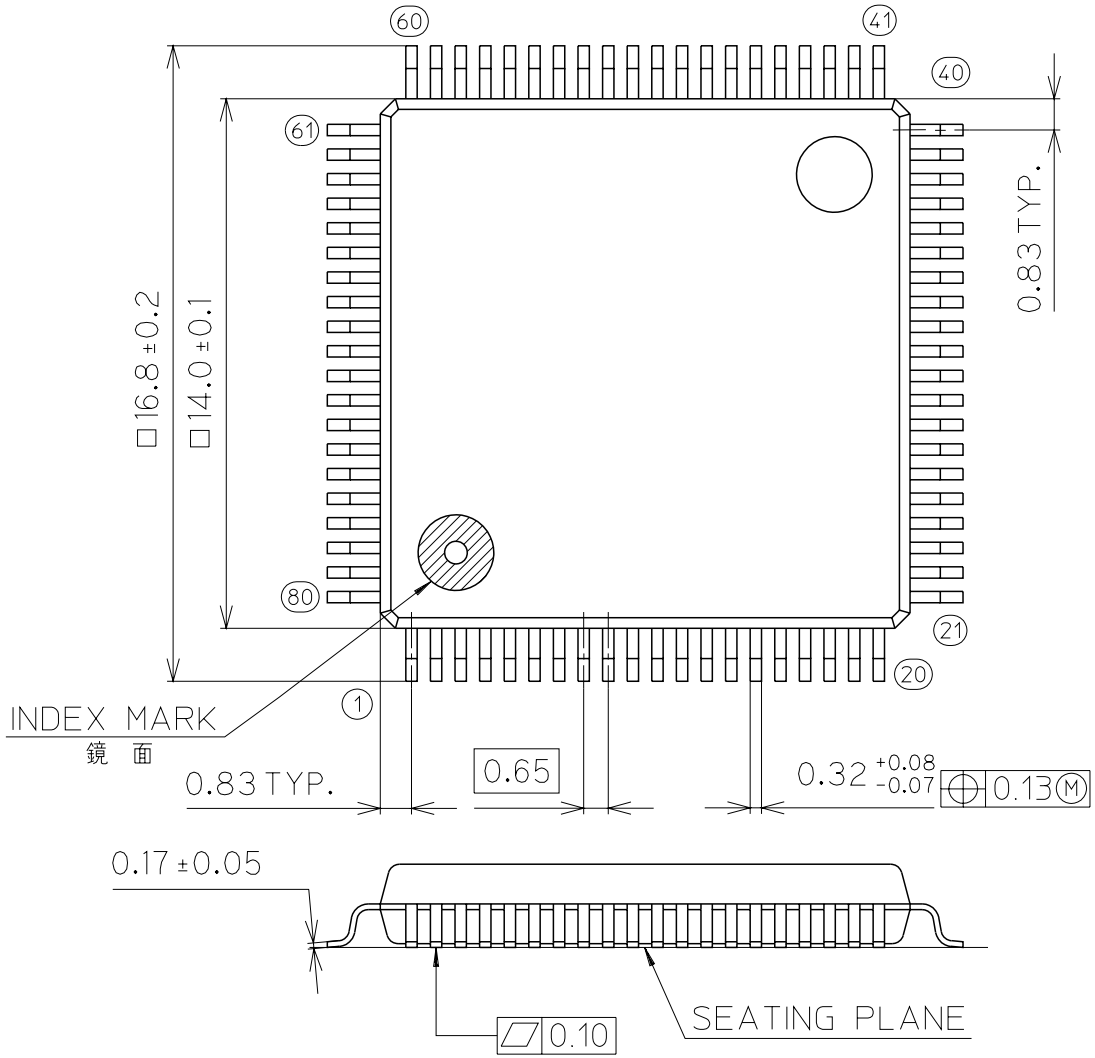


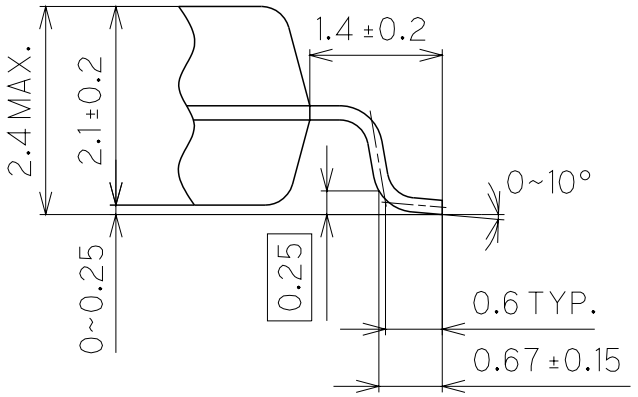
Please consult OKI for soldering, assembly and storage recommendations.

QFP80-P-1414-0.65-K

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor



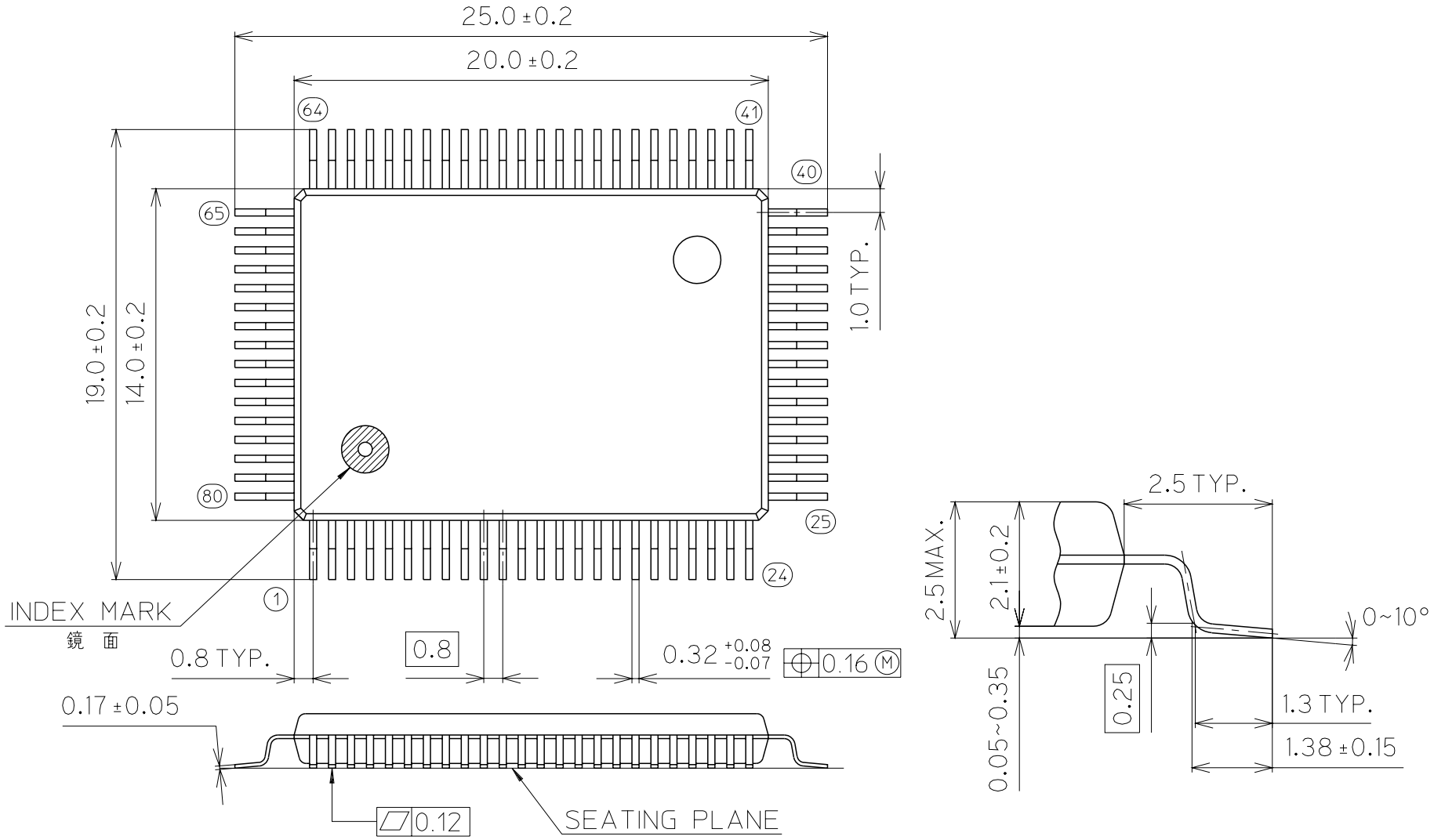


Please consult OKI for soldering, assembly and storage recommendations.

QFP80-P-1420-0.80-BK

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor

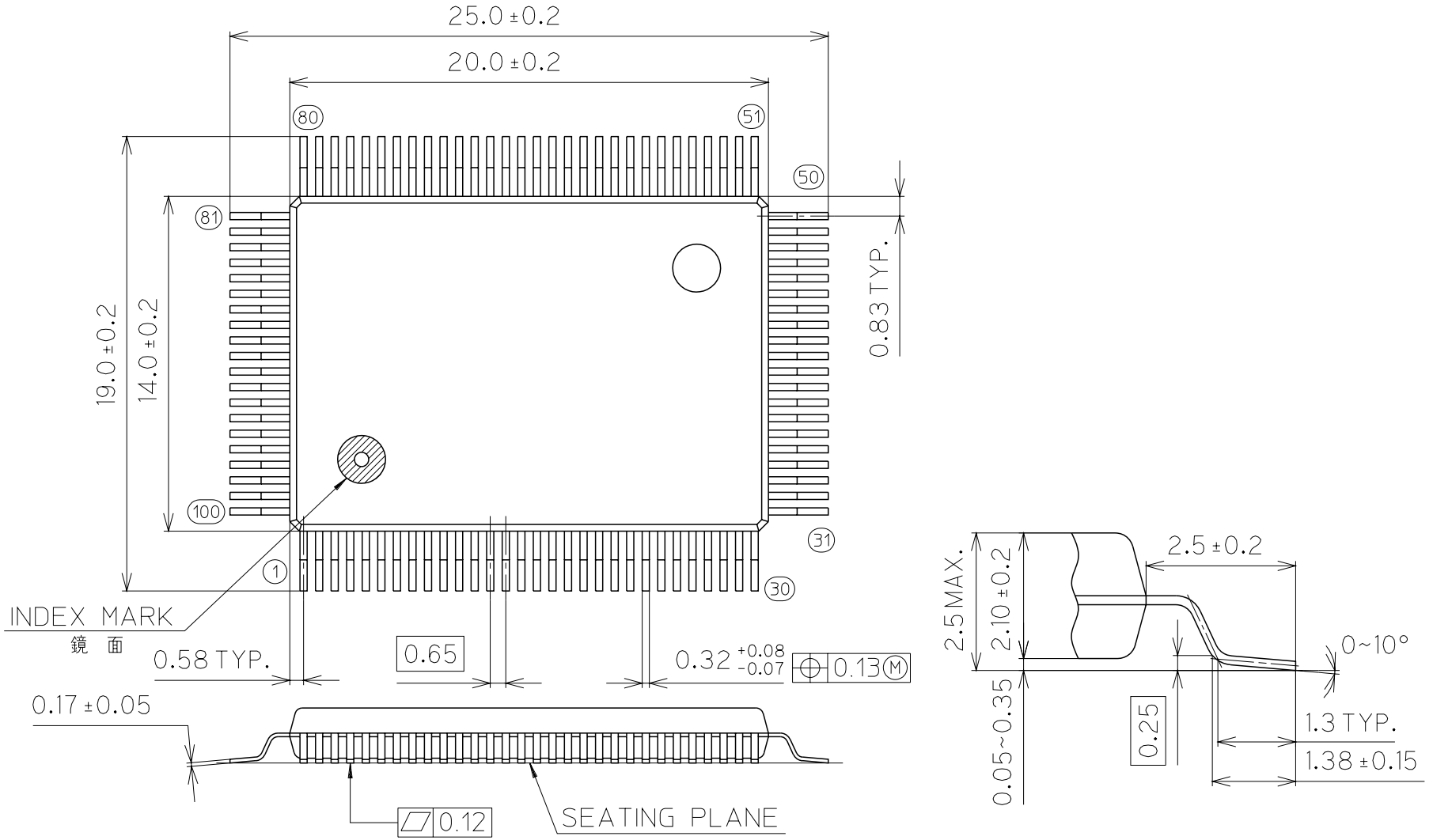


Please consult OKI for soldering, assembly and storage recommendations.

QFP100-P-1420-0.65-BK

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor

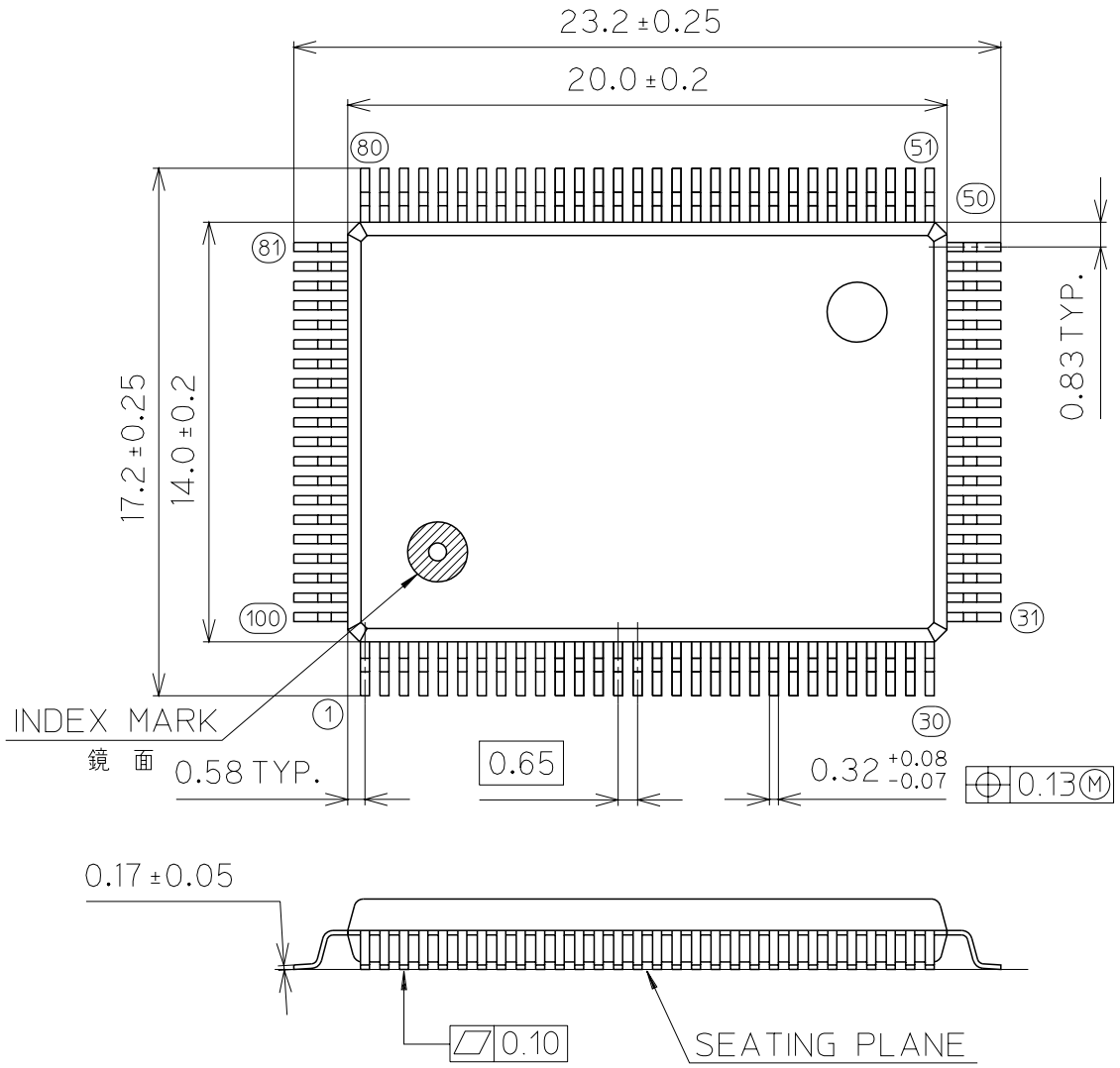


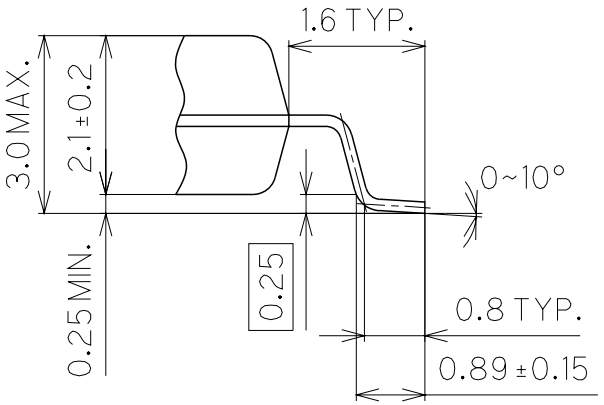
Please consult OKI for soldering, assembly and storage recommendations.

QFP100-P-1420-0.65-BK4

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor



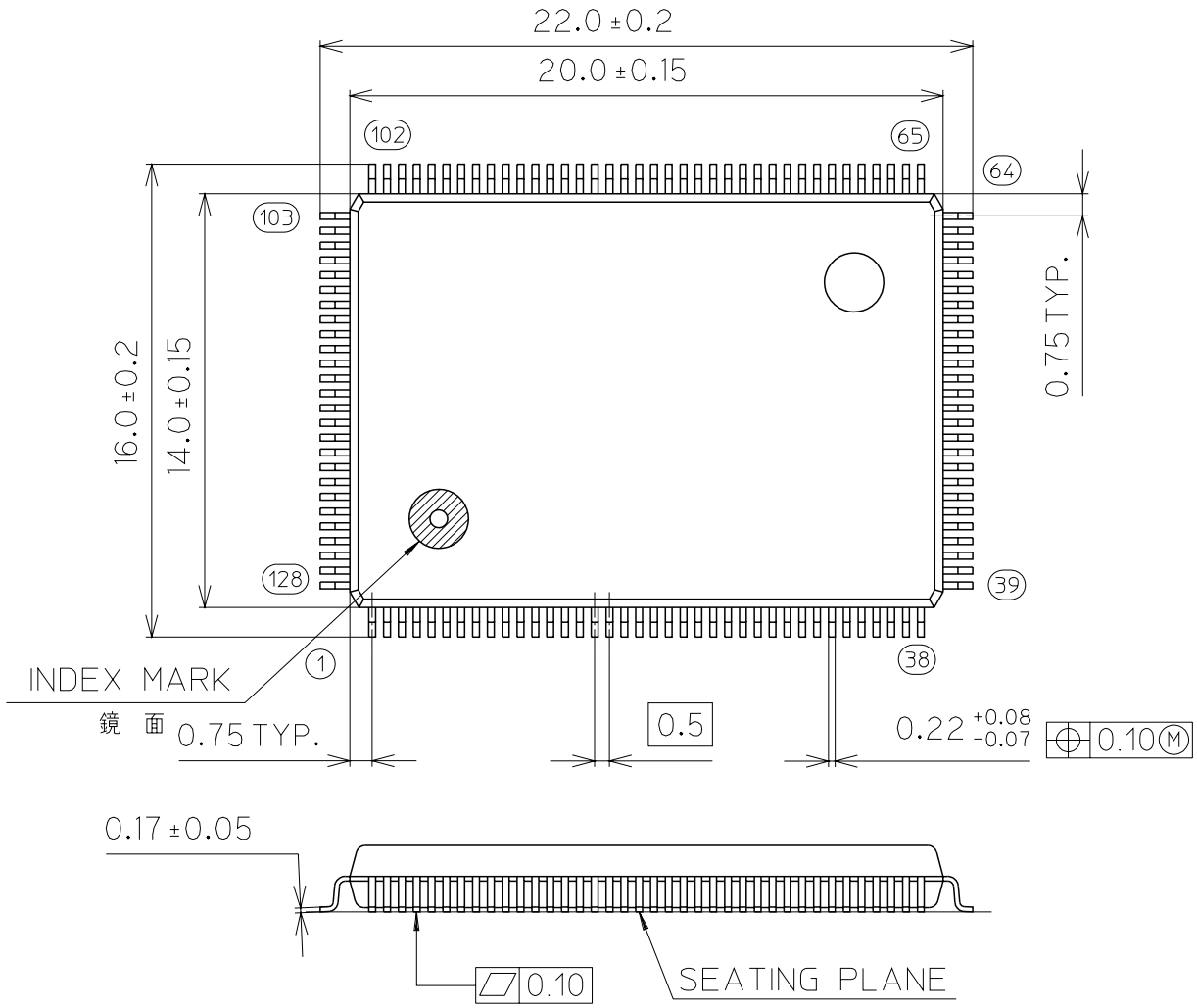


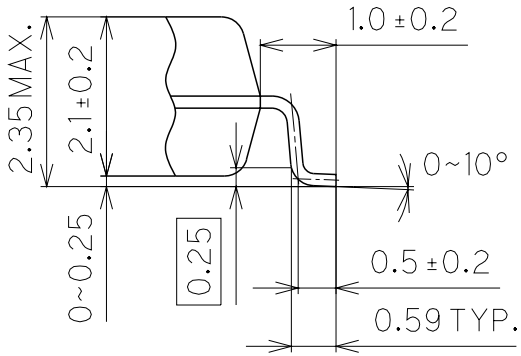
Please consult OKI for soldering, assembly and storage recommendations.

QFP128-P-1420-0.50-K

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor



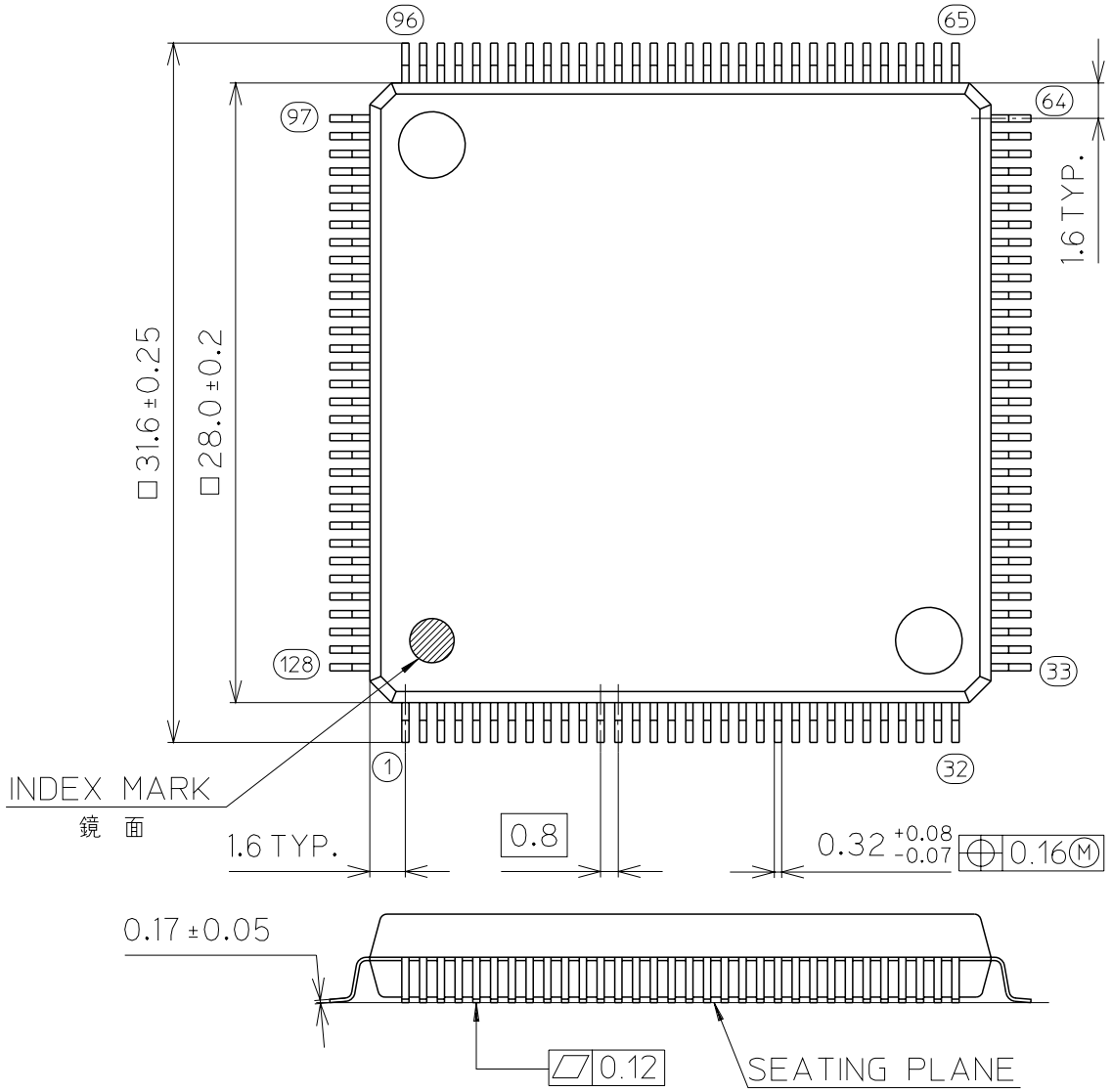


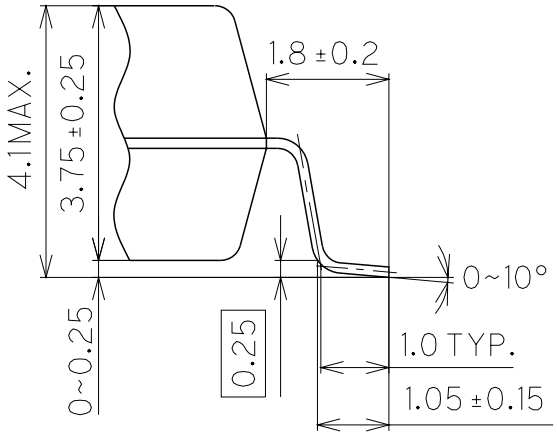
Please consult OKI for soldering, assembly and storage recommendations.

QFP128-P-2828-0.80-DK

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor



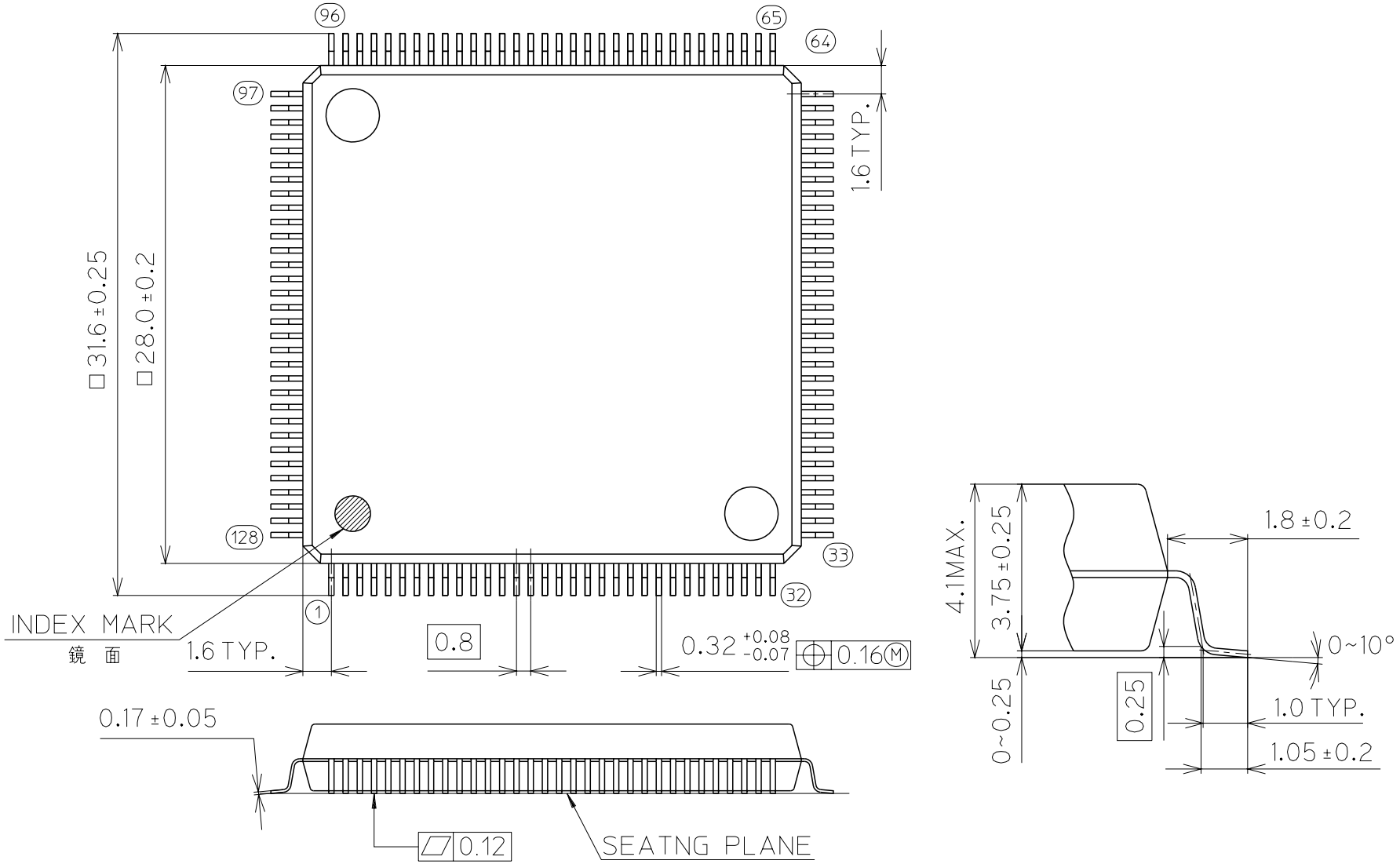


Please consult OKI for soldering, assembly and storage recommendations.

QFP128-P-2828-0.80-BK

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor

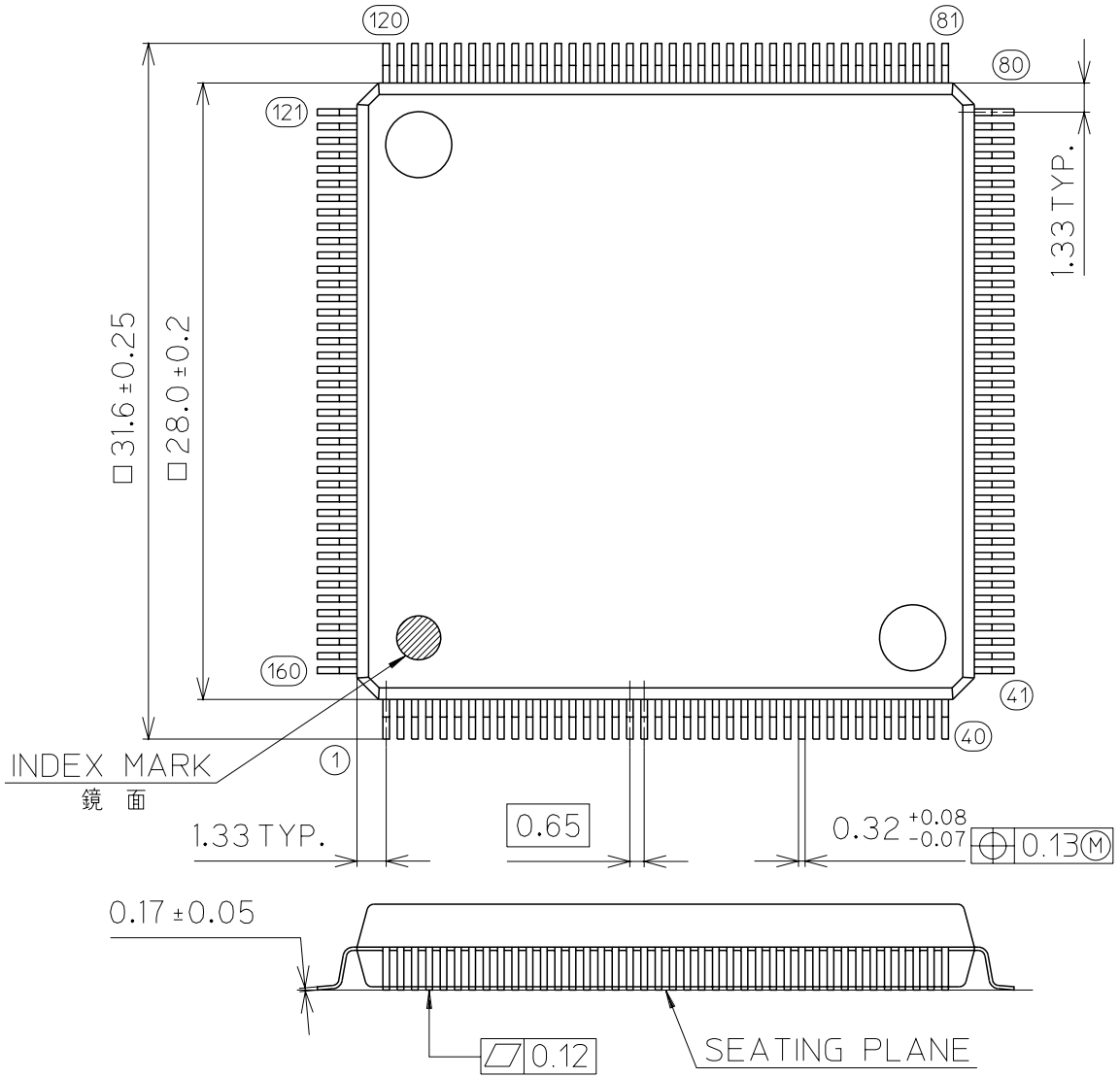


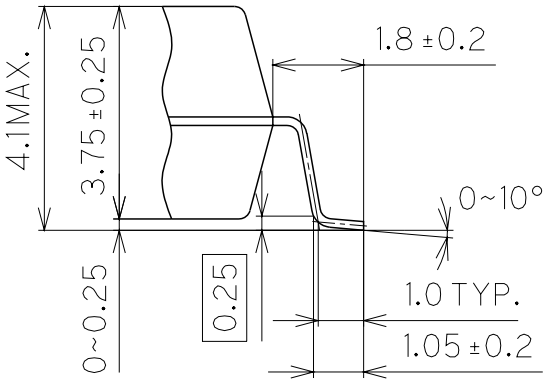
Please consult OKI for soldering, assembly and storage recommendations.

QFP160-P-2828-0.65-BK

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor



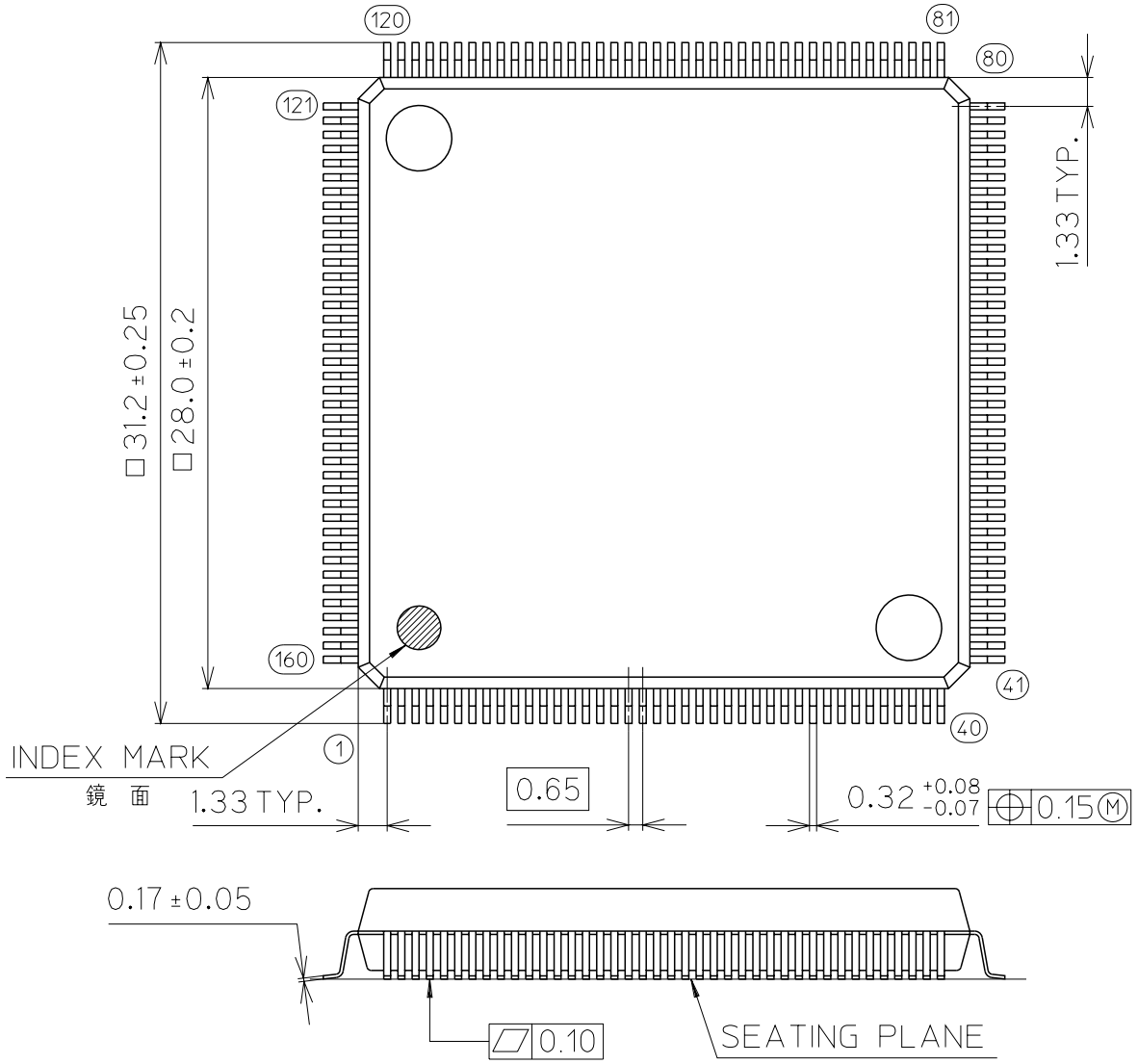


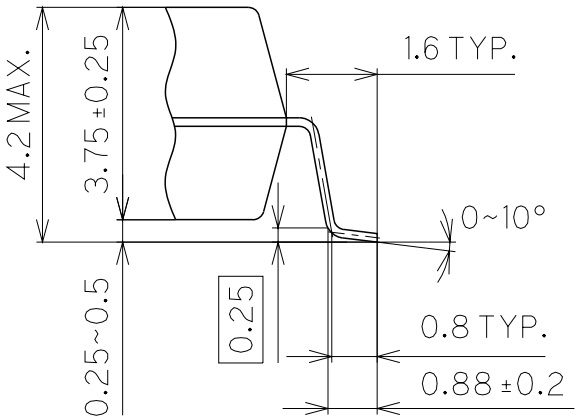
Please consult OKI for soldering, assembly and storage recommendations.

QFP160-P-2828-0.65-BK4

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor



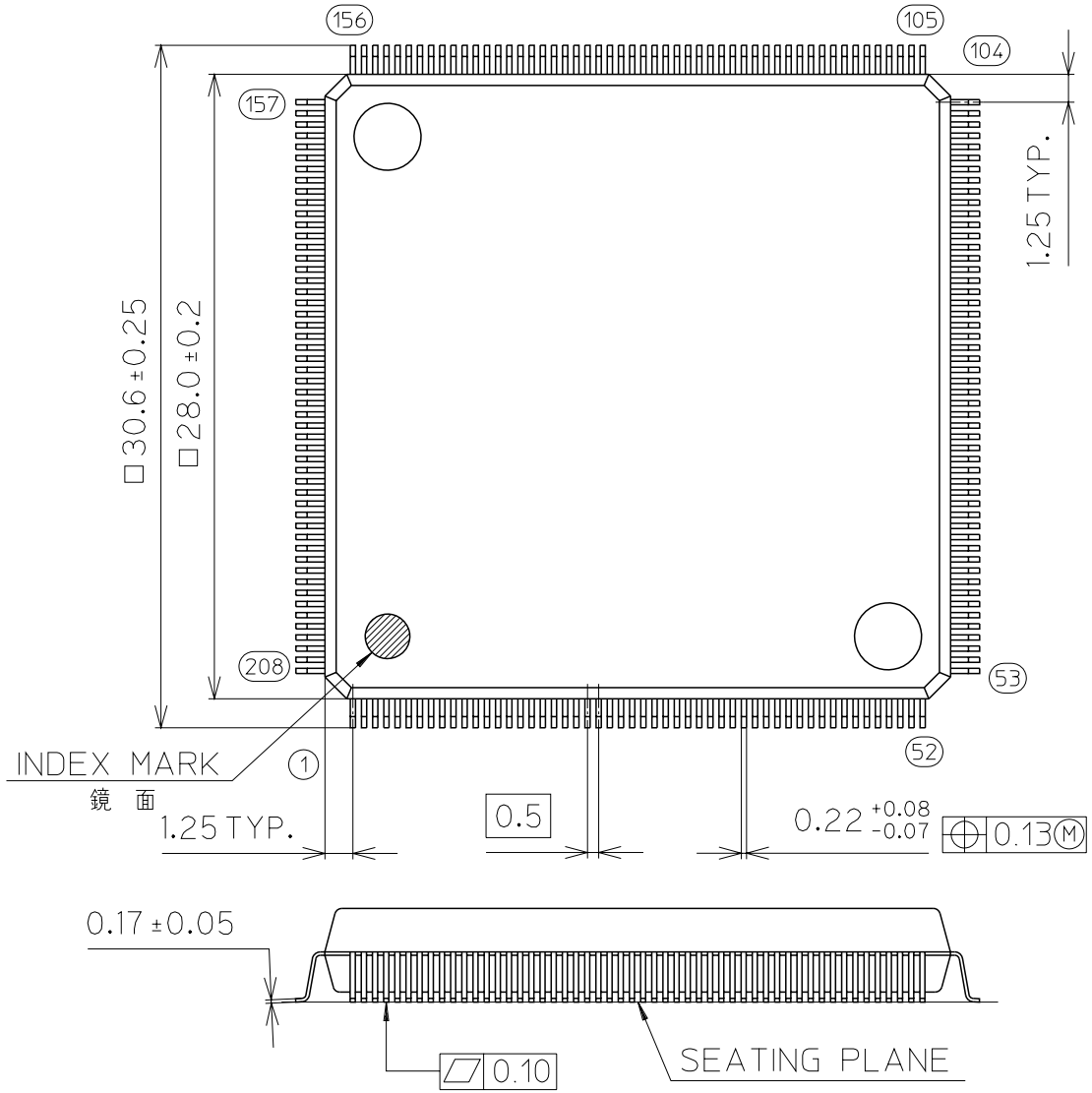


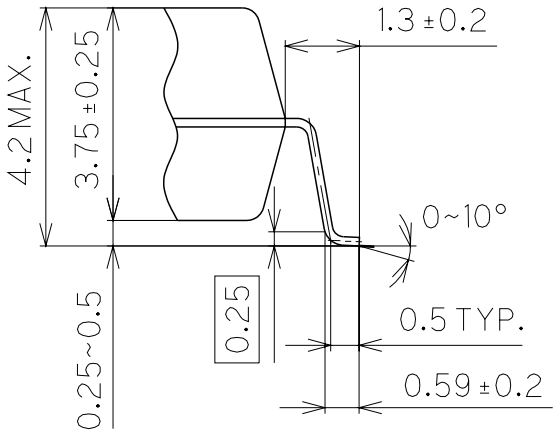
Please consult OKI for soldering, assembly and storage recommendations.

QFP208-P-2828-0.50-BK4

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor





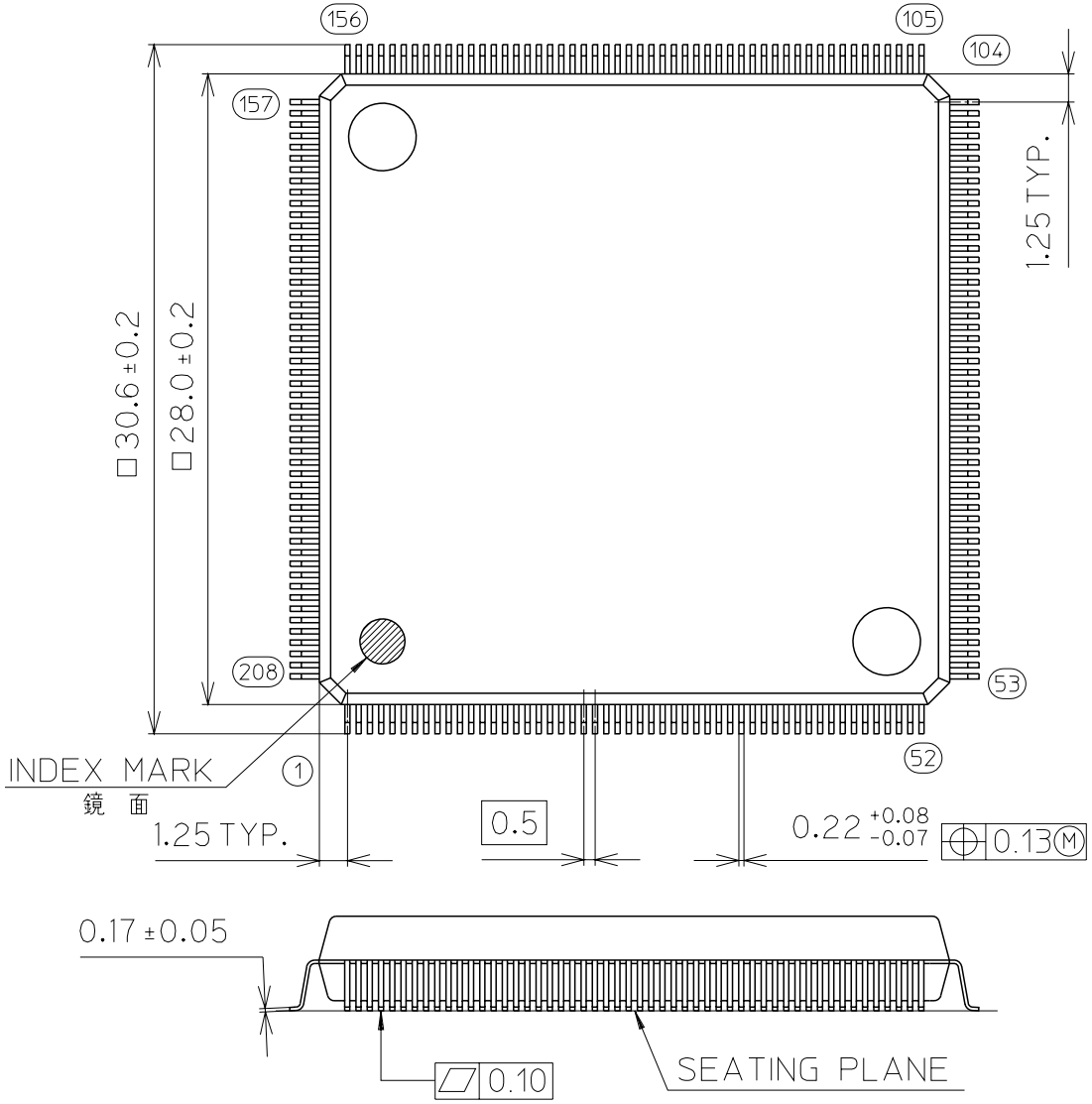
Please consult OKI for soldering, assembly and storage recommendations.

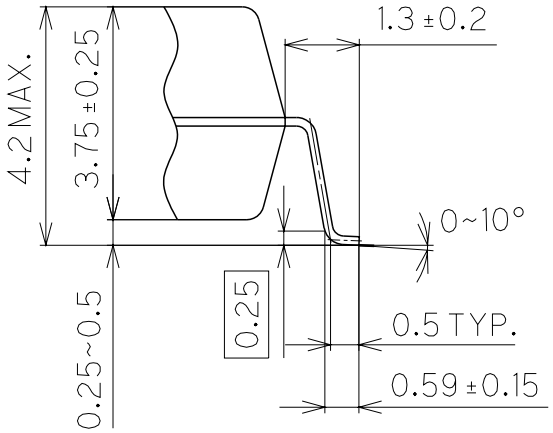
QFP208-P-2828-0.50-CK4

OKI Semiconductor

Unit in millimeters typ., unless otherwise specified.

Built-in heat spreader



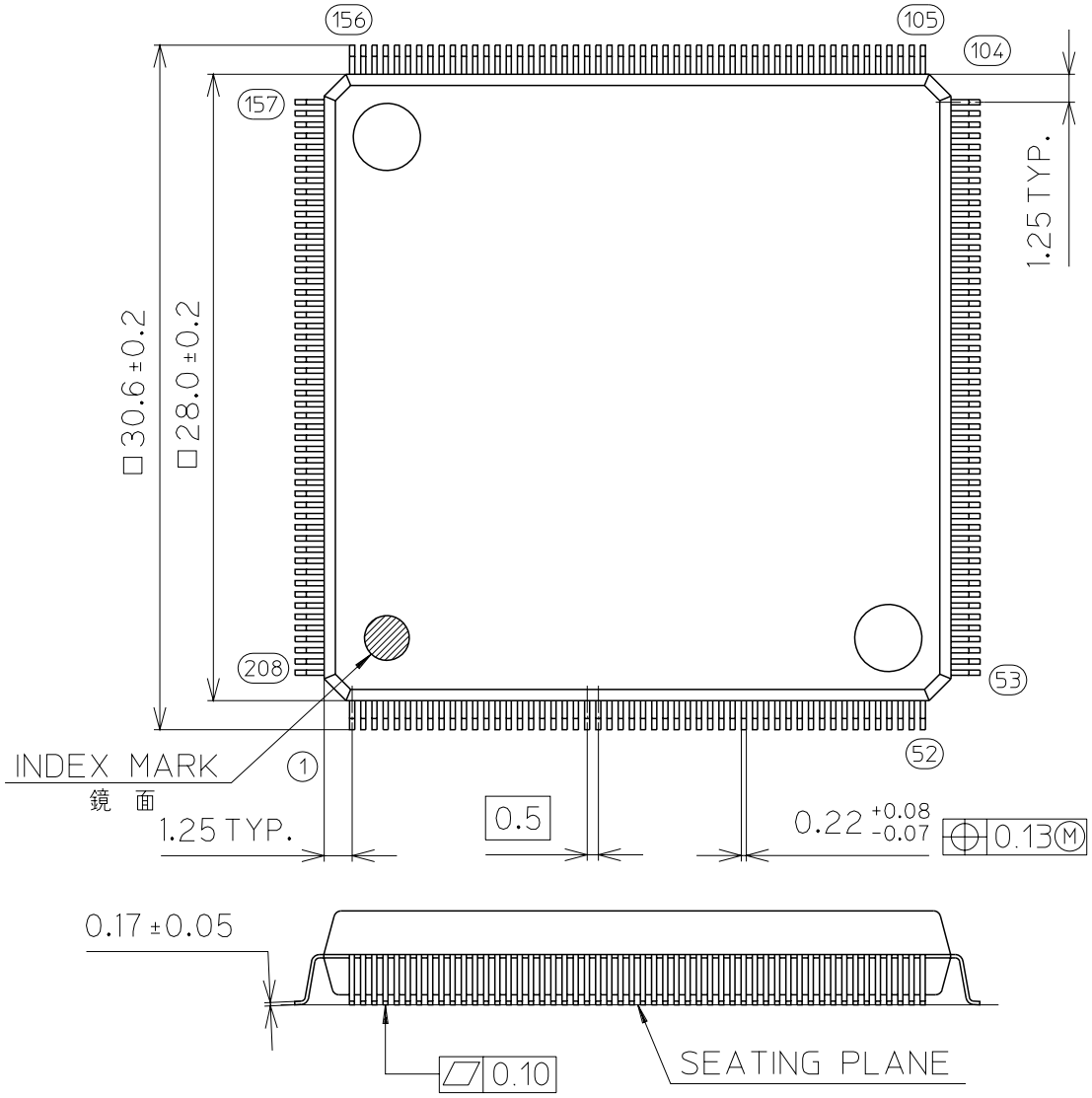


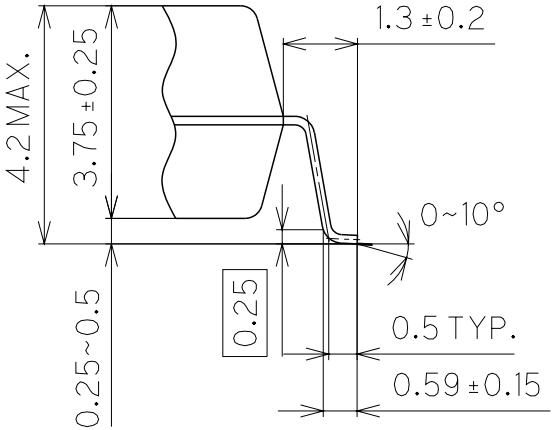
Please consult OKI for soldering, assembly and storage recommendations.

QFP208-P-2828-0.50-EK4

Unit in millimeters typ., unless otherwise specified.

Built-in PCB



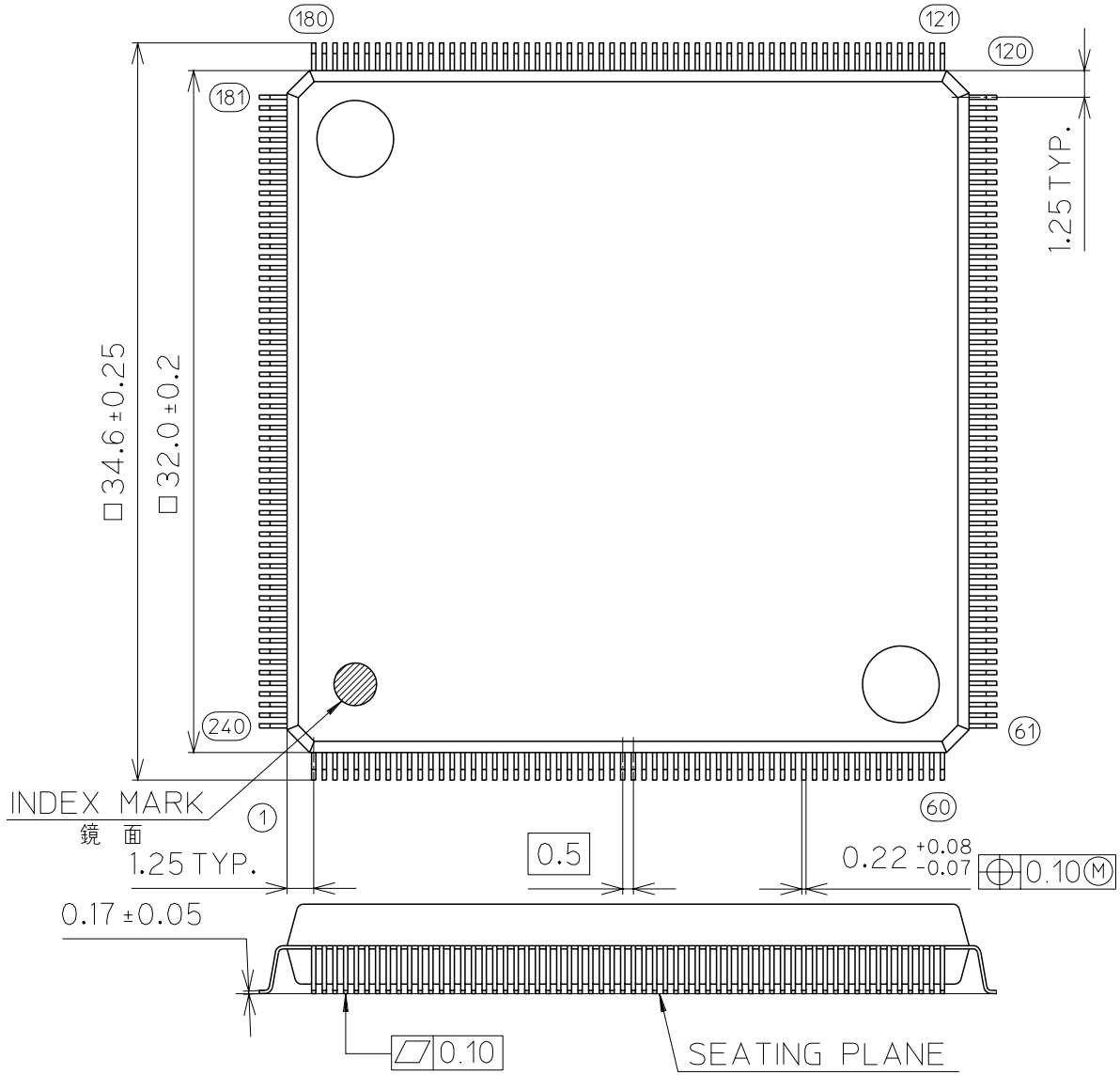


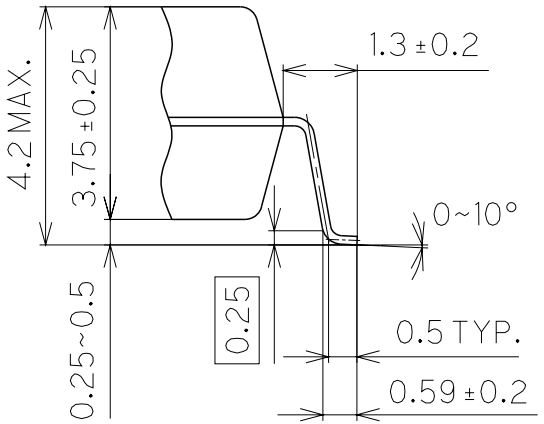
Please consult OKI for soldering, assembly and storage recommendations.

QFP240-P-3232-0.50-BK4

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor



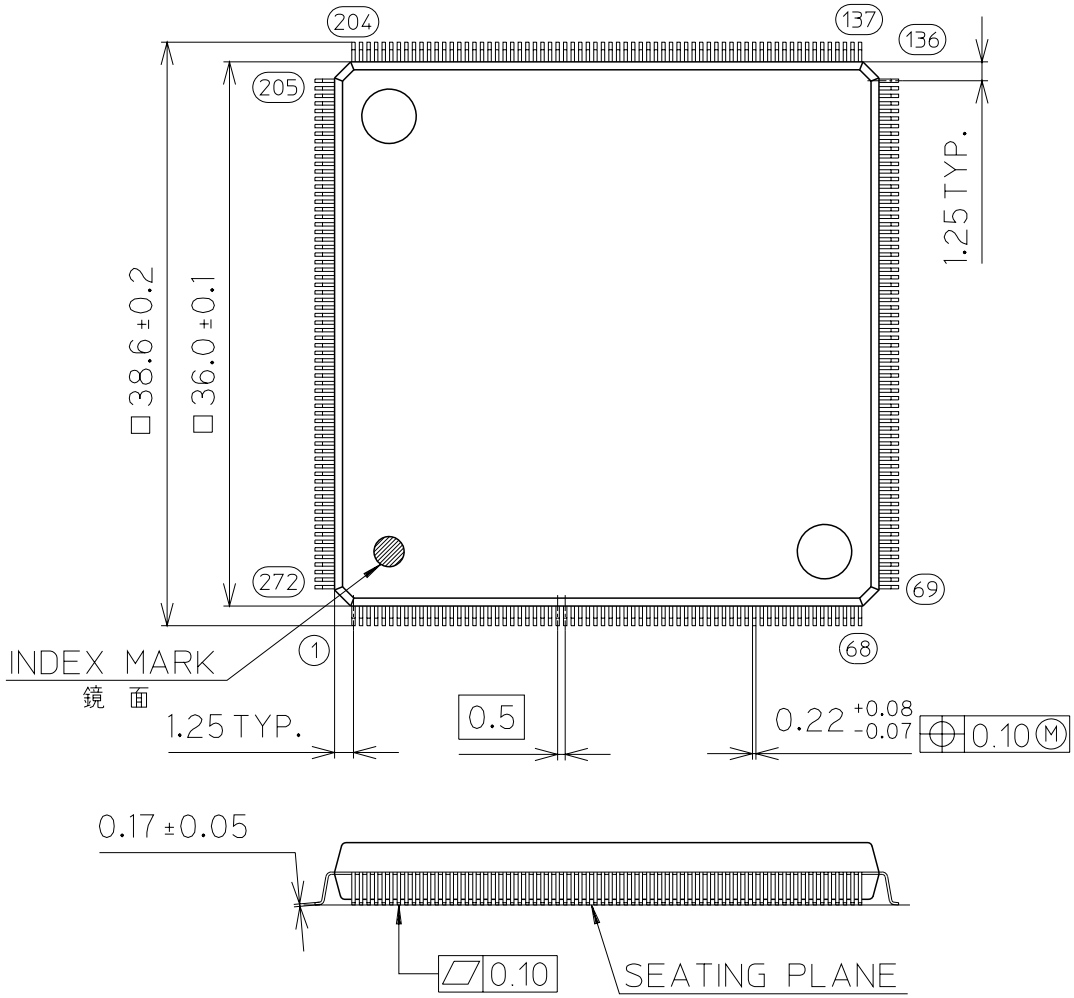


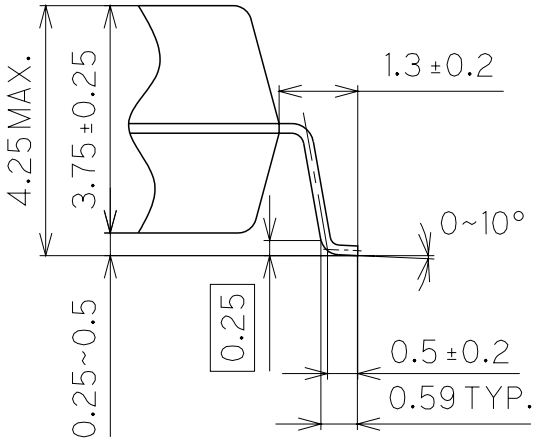
Please consult OKI for soldering, assembly and storage recommendations.

QFP272-P-3636-0.50-BK4

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor



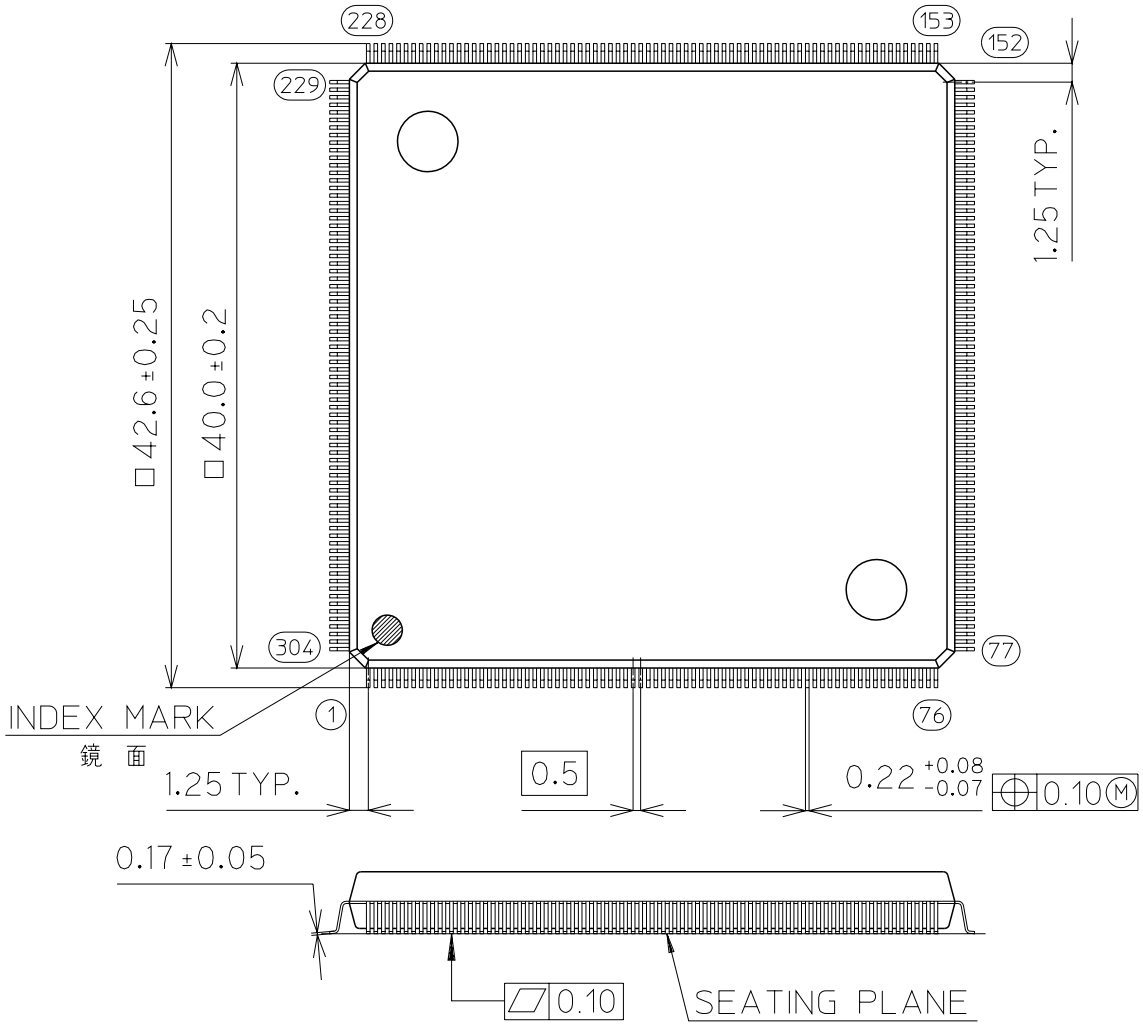


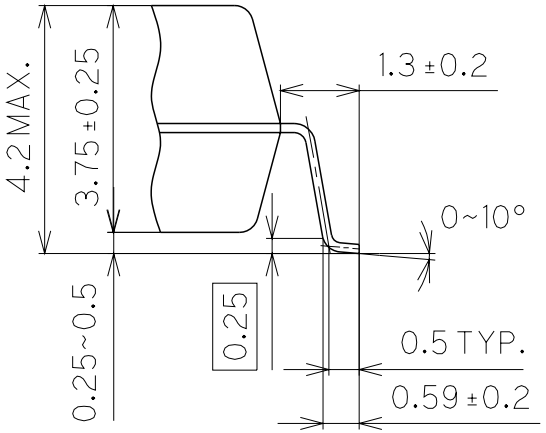
Please consult OKI for soldering, assembly and storage recommendations.

QFP304-P-4040-0.50-BK4

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor



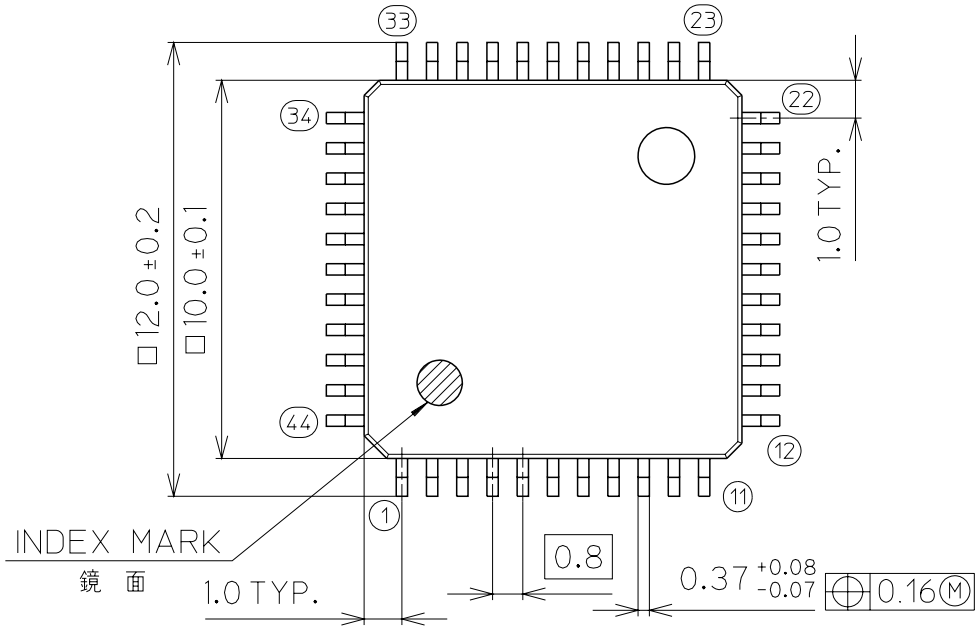


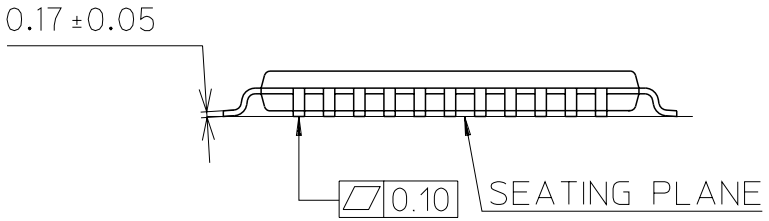
Please consult OKI for soldering, assembly and storage recommendations.

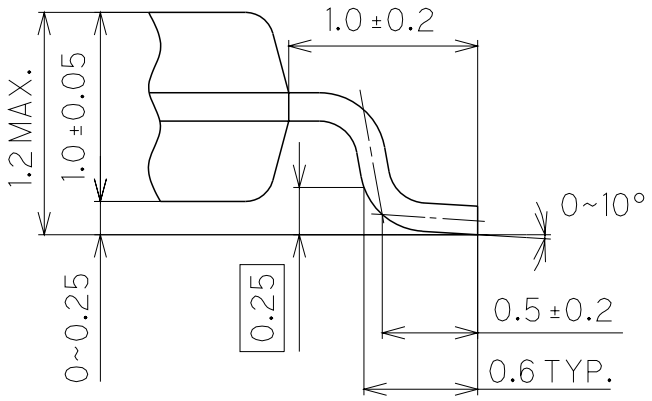
TQFP44-P-1010-0.80-K

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor





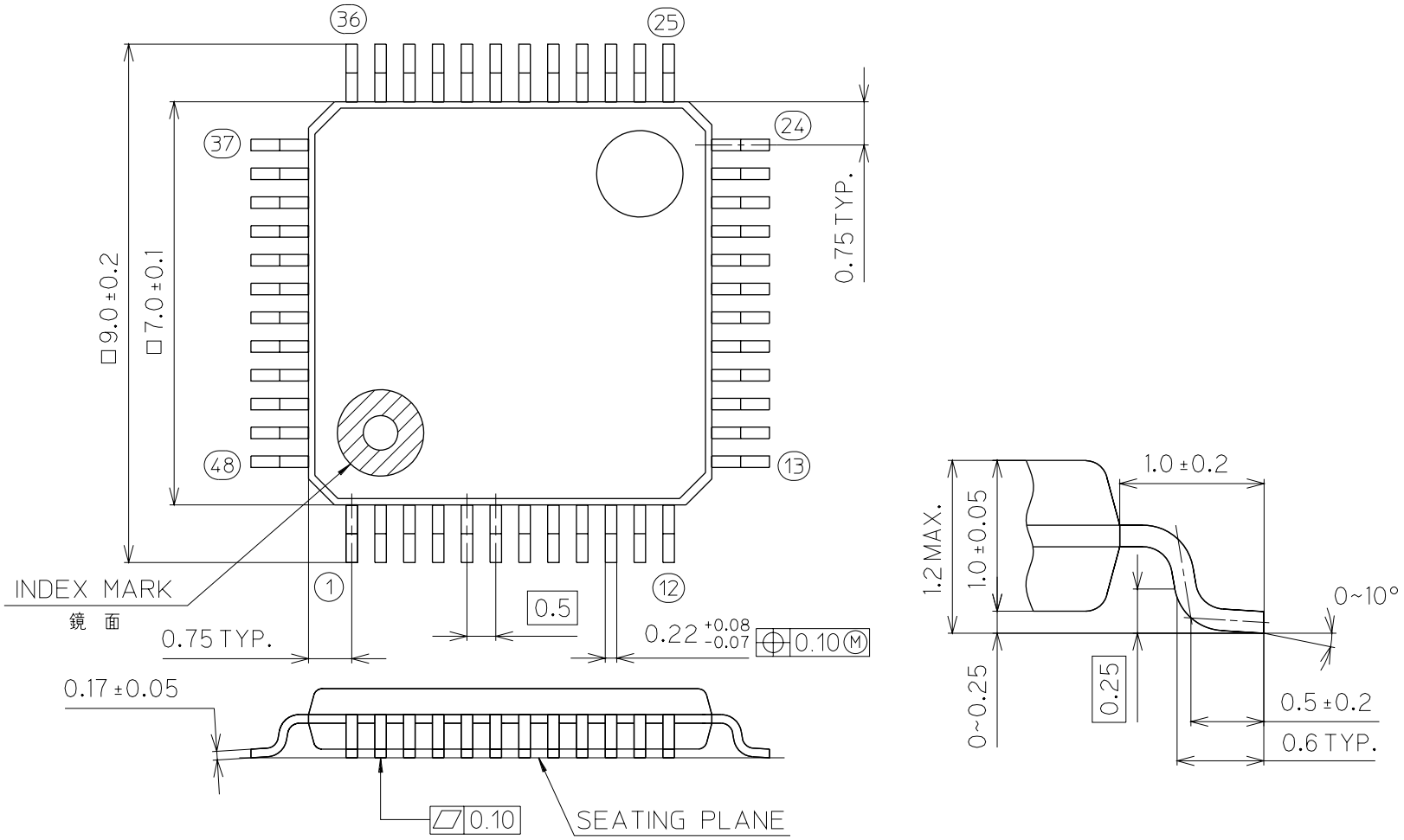


Please consult OKI for soldering, assembly and storage recommendations.

TQFP48-P-0707-0.50-K

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor

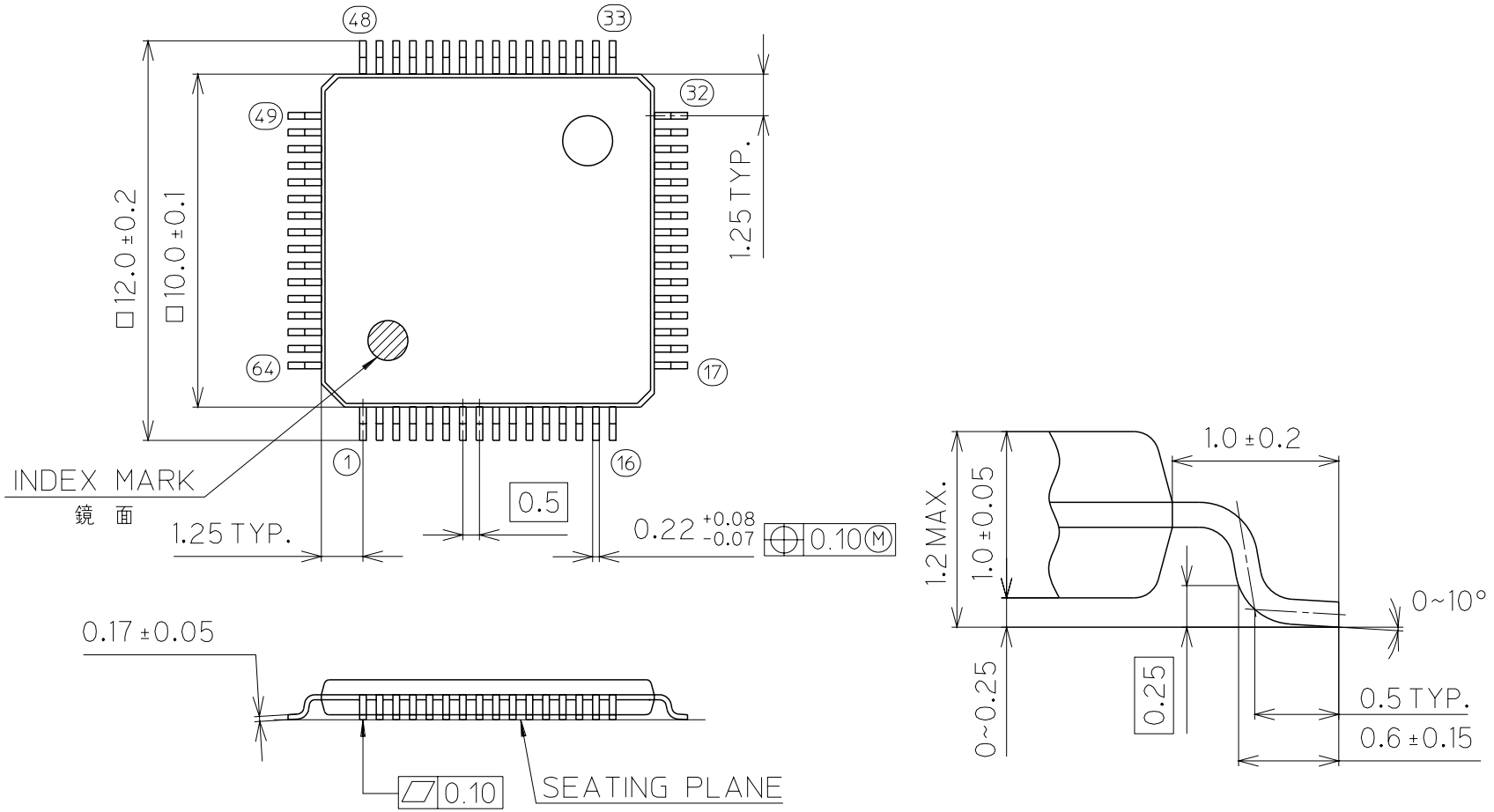


Please consult OKI for soldering, assembly and storage recommendations.

TQFP64-P-1010-0.50-K

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor

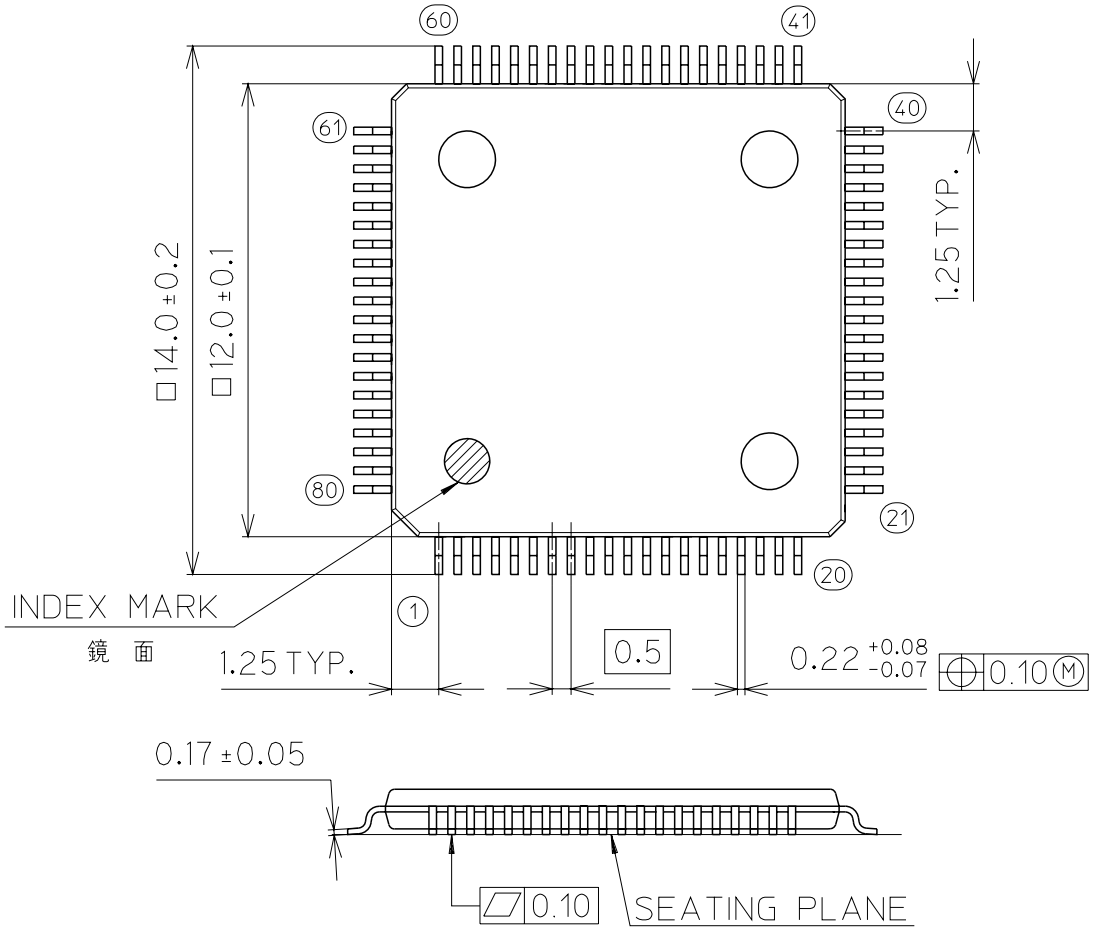


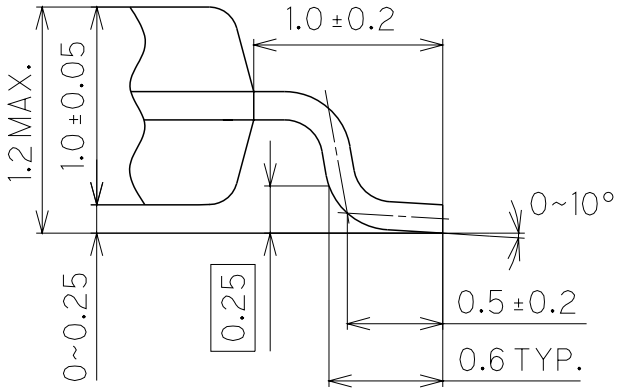
Please consult OKI for soldering, assembly and storage recommendations.

TQFP80-P-1212-0.50-K

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor



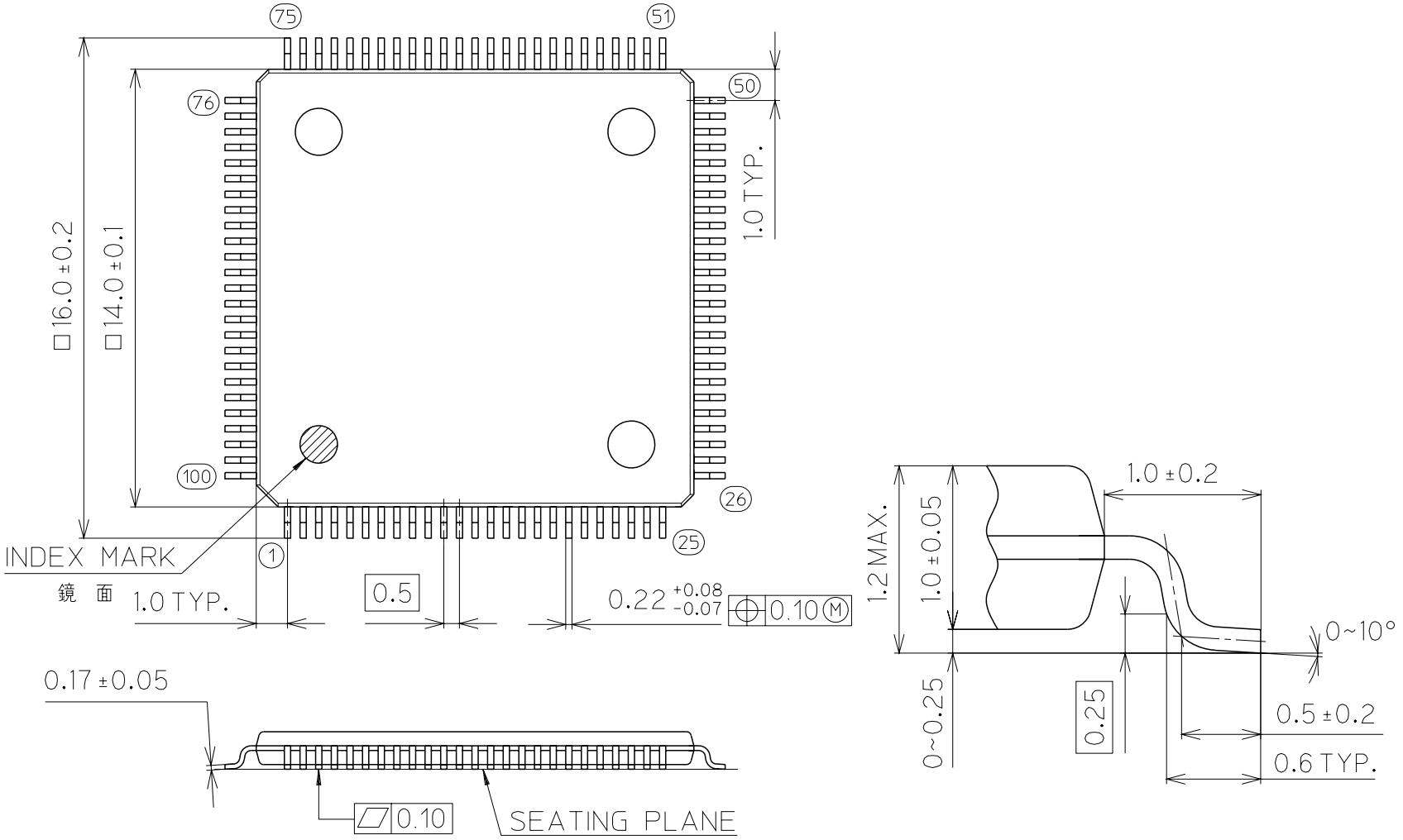


Please consult OKI for soldering, assembly and storage recommendations.

TQFP100-P-1414-0.50-K

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor

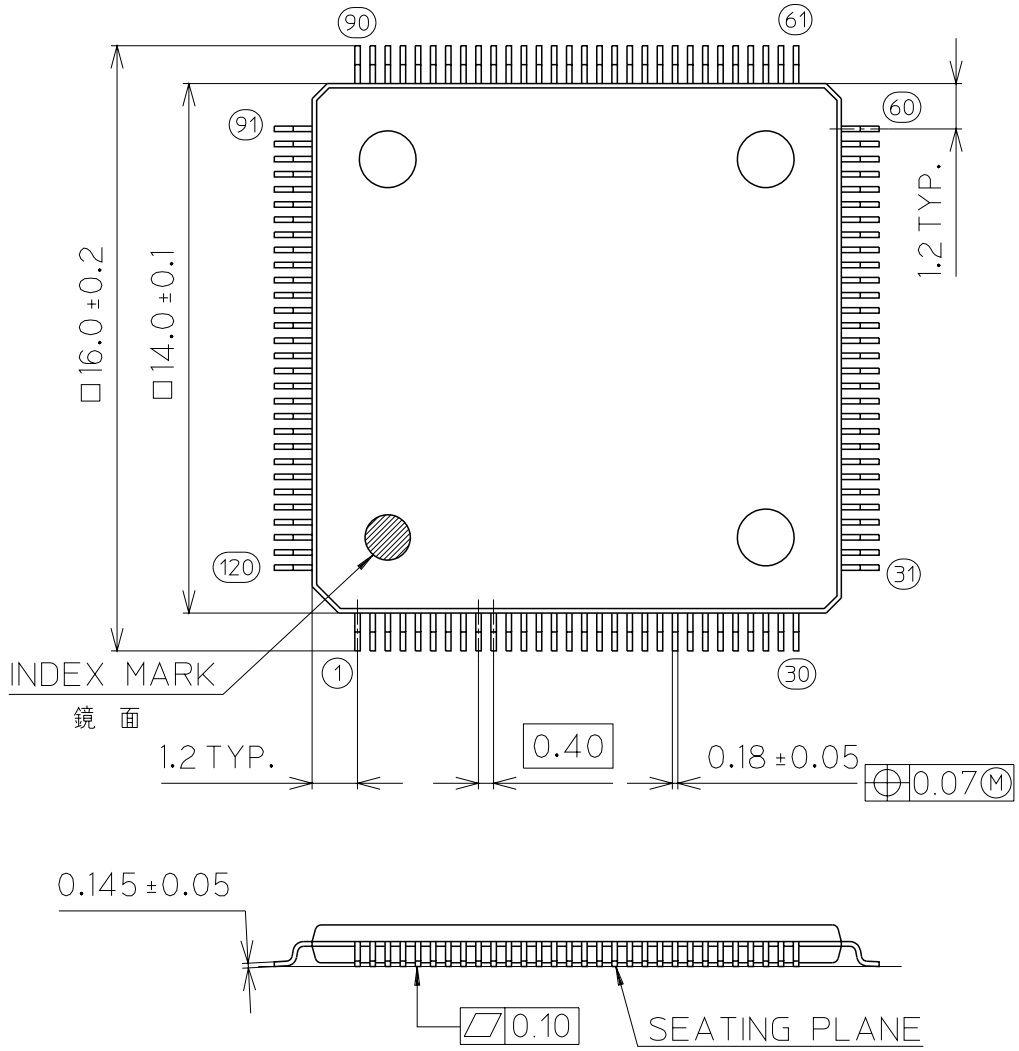


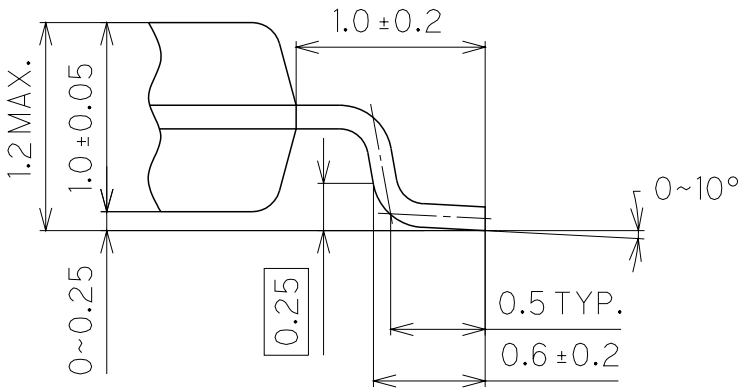
Please consult OKI for soldering, assembly and storage recommendations.

TQFP120-P-1414-0.40-K

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor



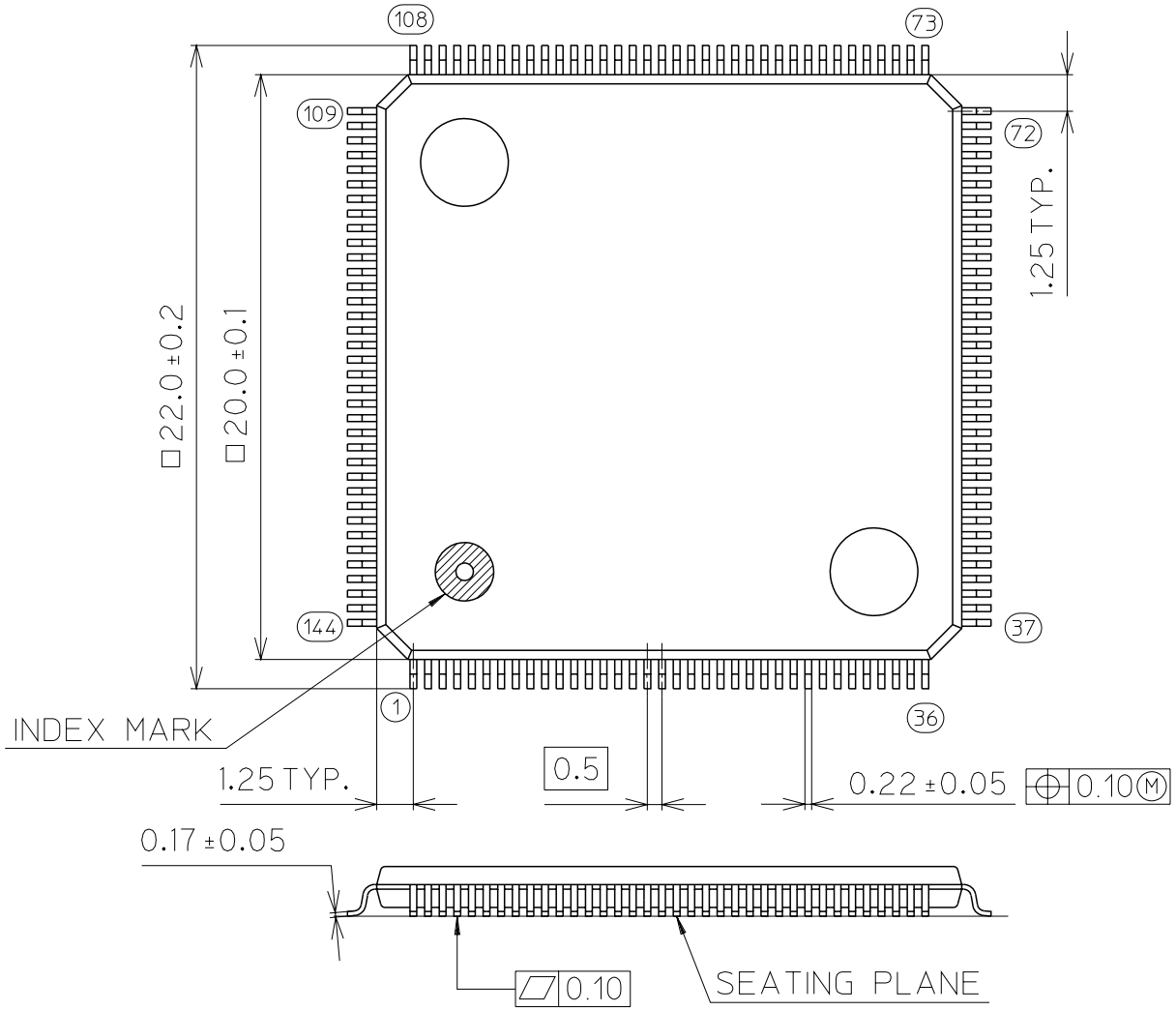


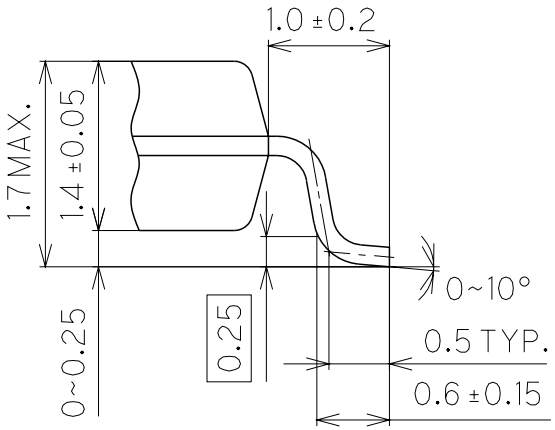
Please consult OKI for soldering, assembly and storage recommendations.

LQFP144-P-2020-0.50-K

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor



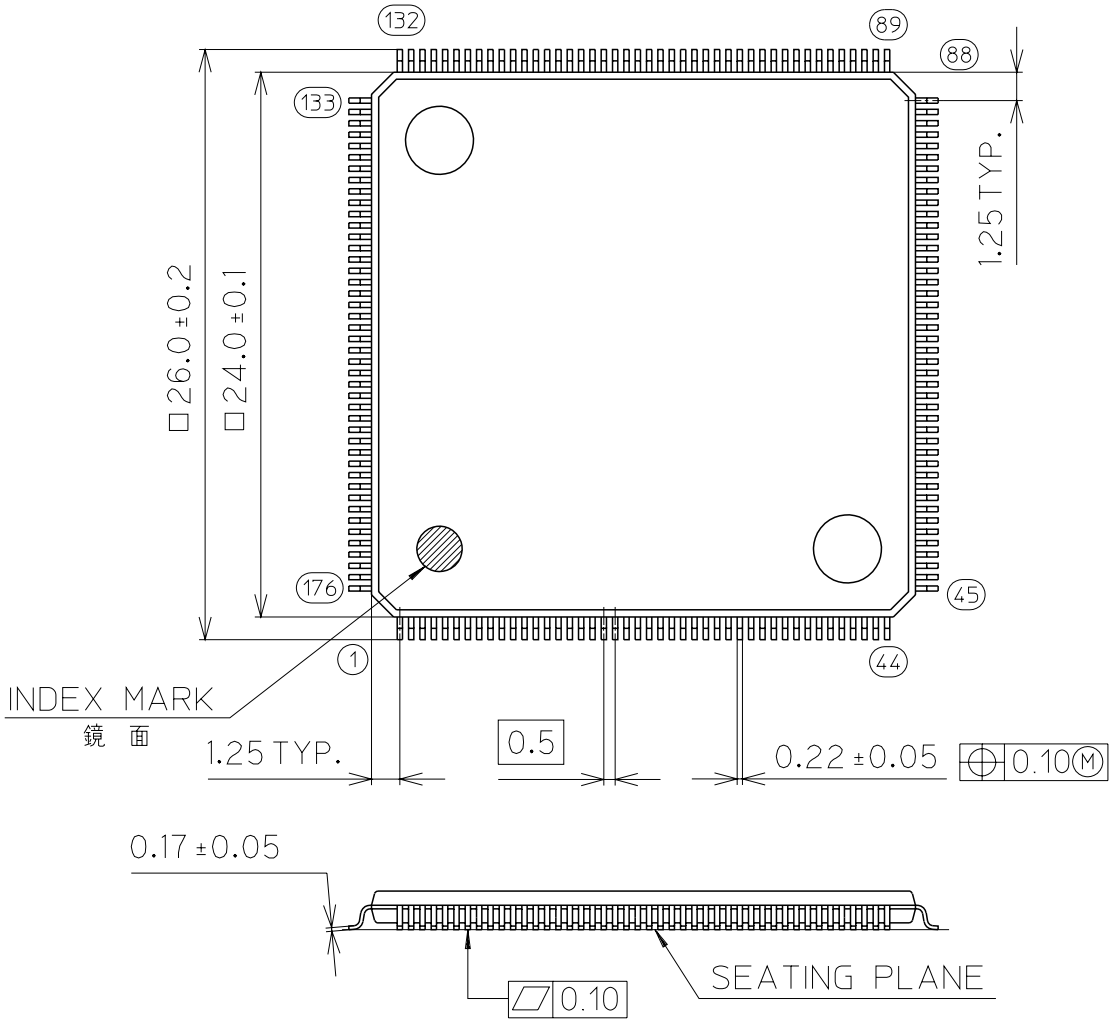


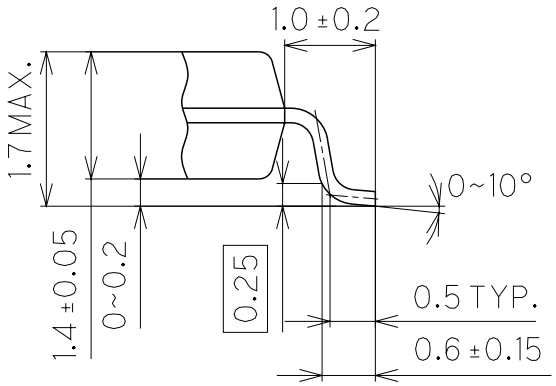
Please consult OKI for soldering, assembly and storage recommendations.

LQFP176-P-2424-0.50-BK

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor



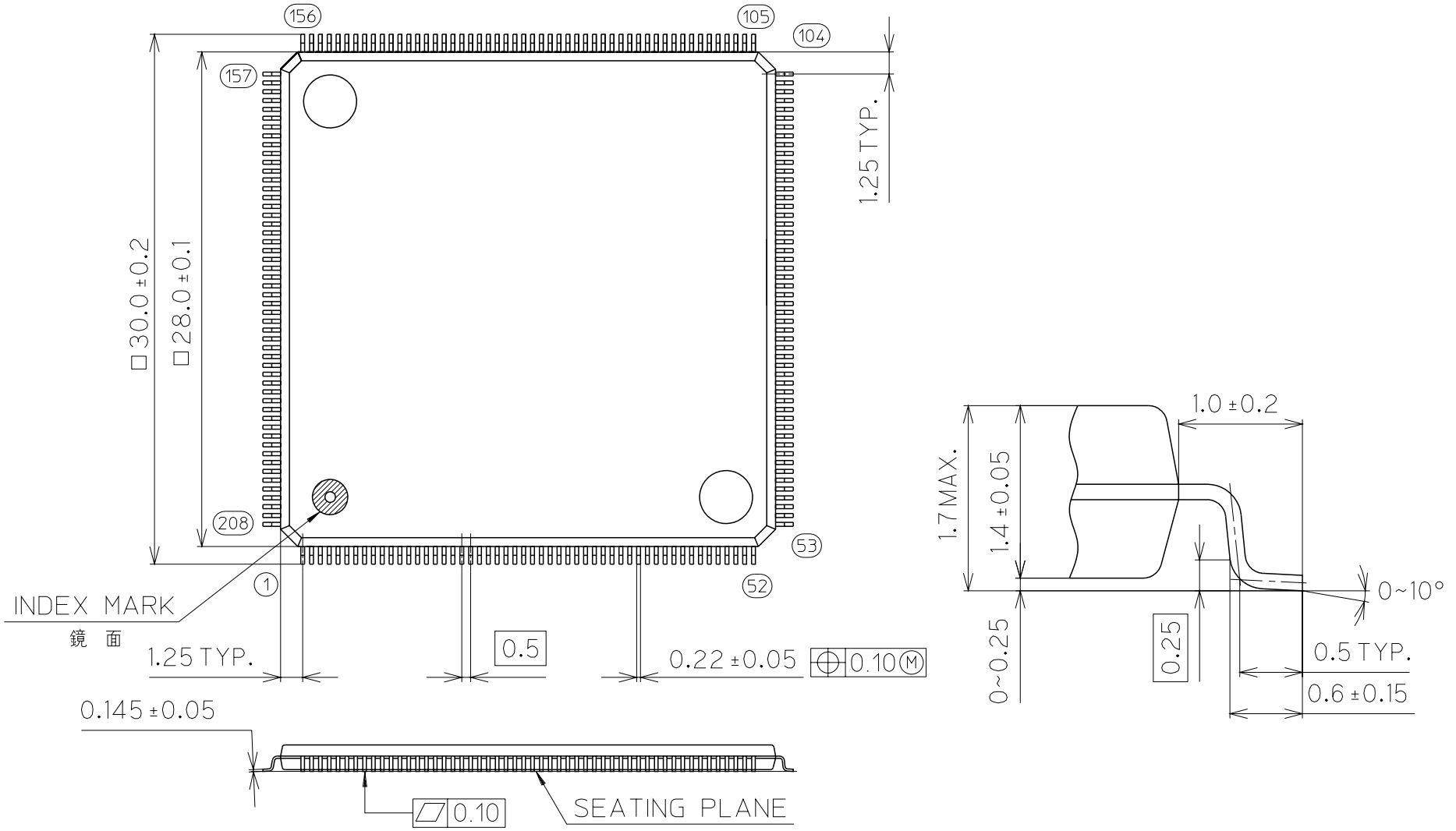


Please consult OKI for soldering, assembly and storage recommendations.

LQFP208-P-2828-0.50-K

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor

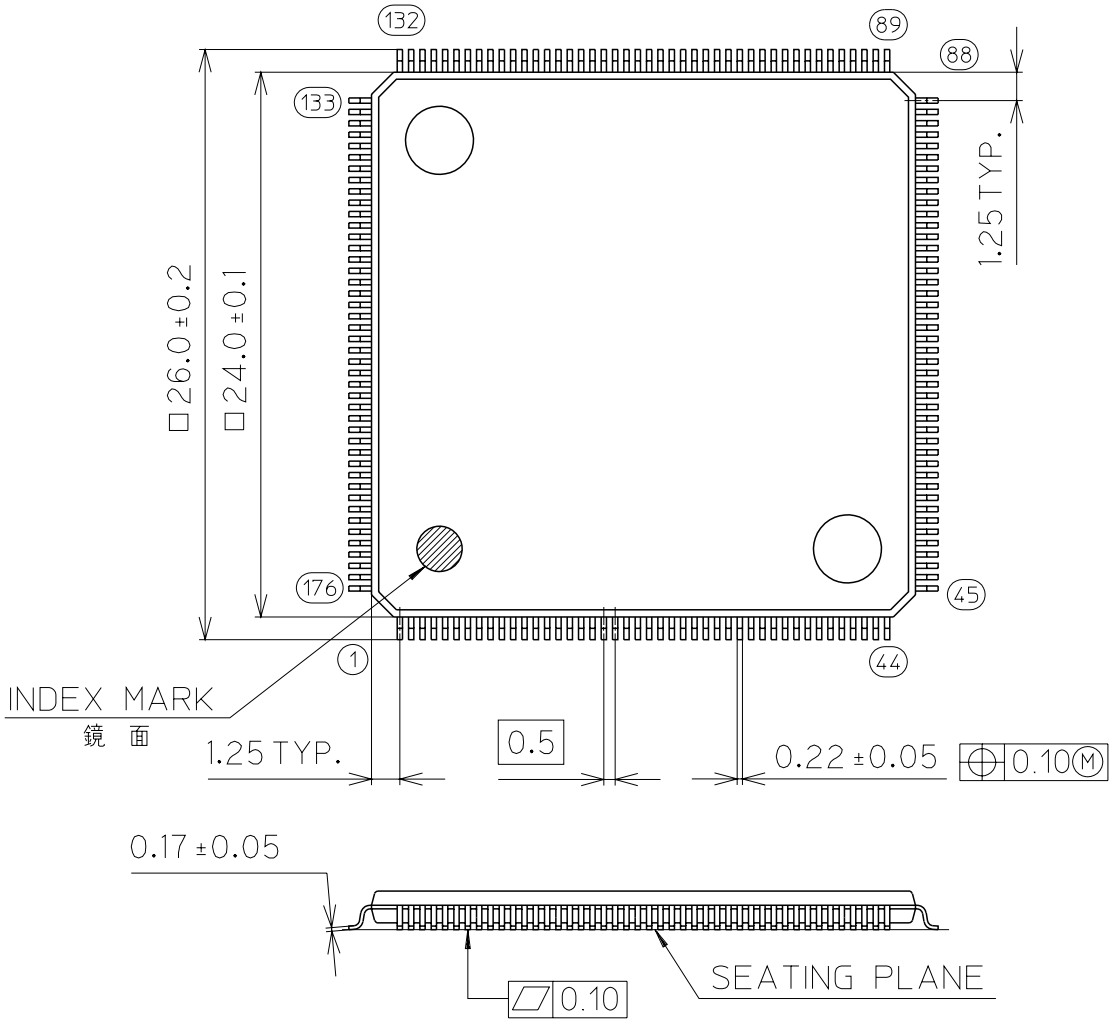


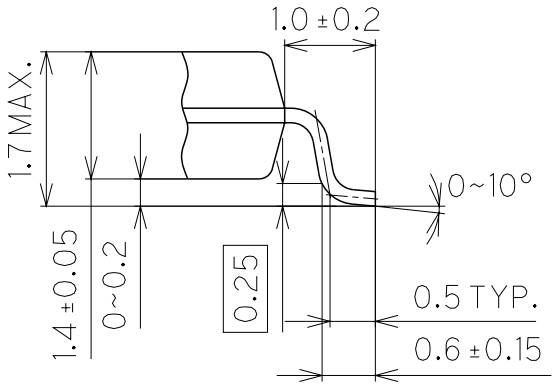
Please consult OKI for soldering, assembly and storage recommendations.

LQFP176-P-2424-0.50-BK

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor



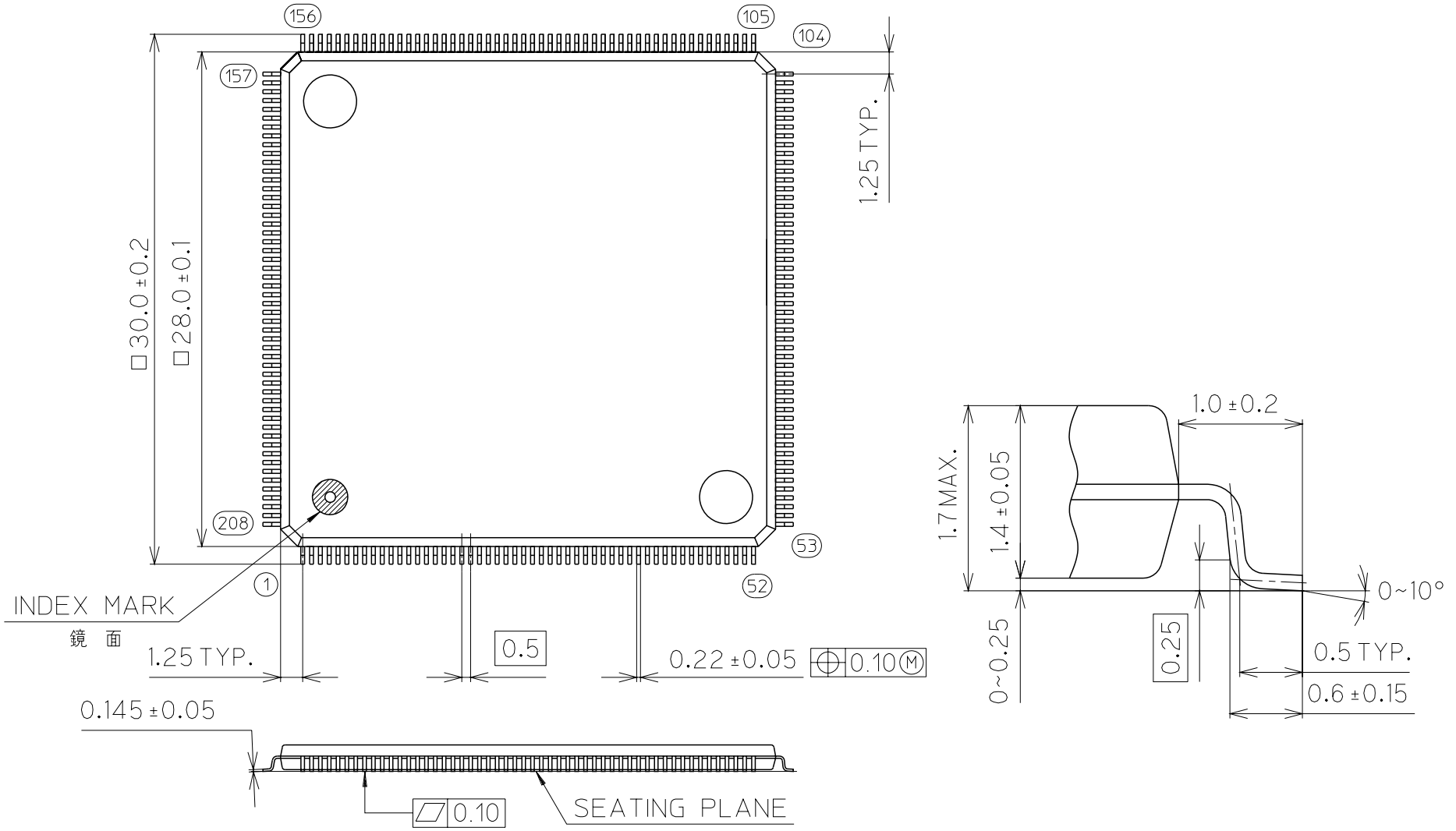


Please consult OKI for soldering, assembly and storage recommendations.

LQFP208-P-2828-0.50-K

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor

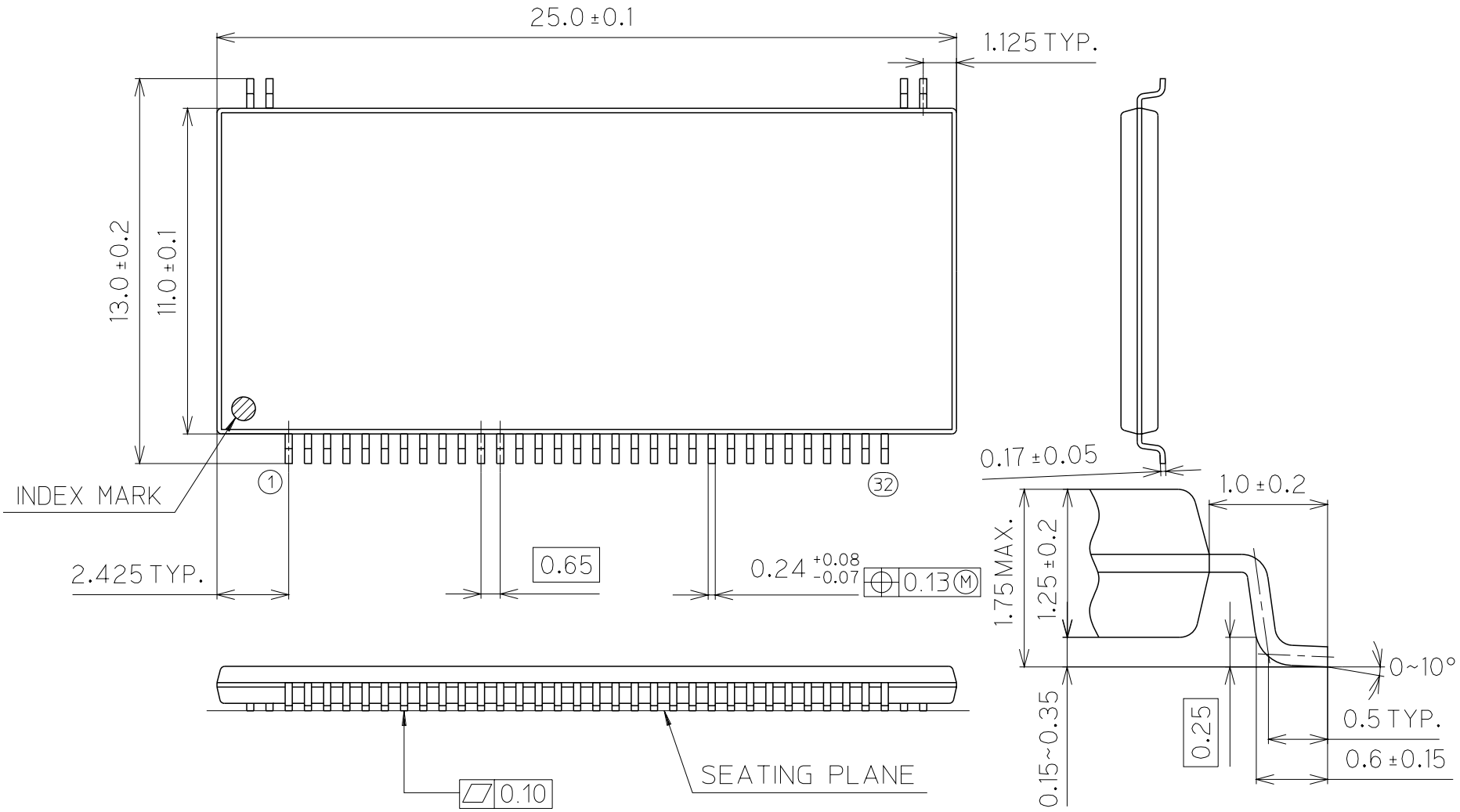


Please consult OKI for soldering, assembly and storage recommendations.

SHP32-P-1125-0.65-K

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor

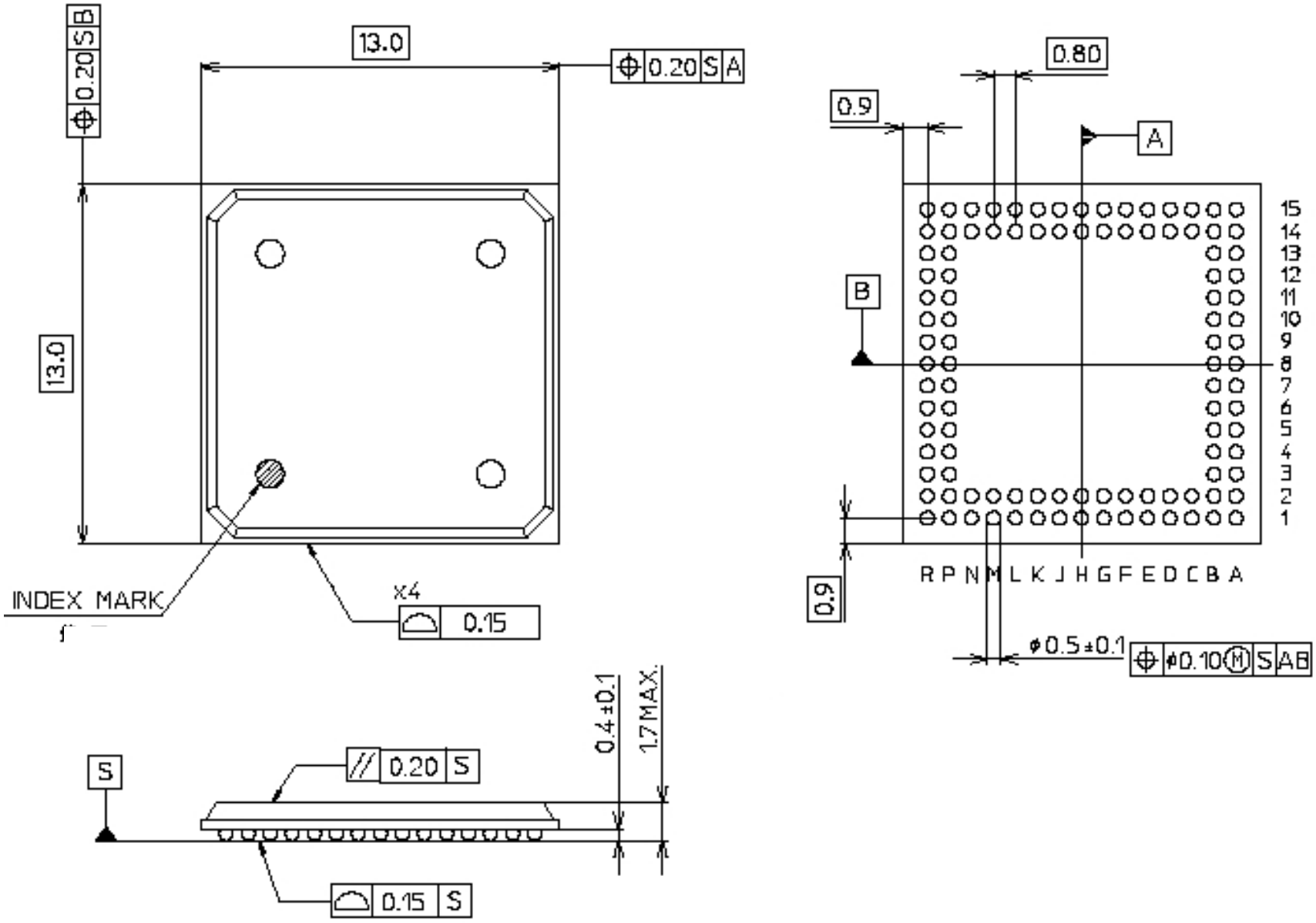


Please consult OKI for soldering, assembly and storage recommendations.

P-LFBGA104-1313-0.80

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor

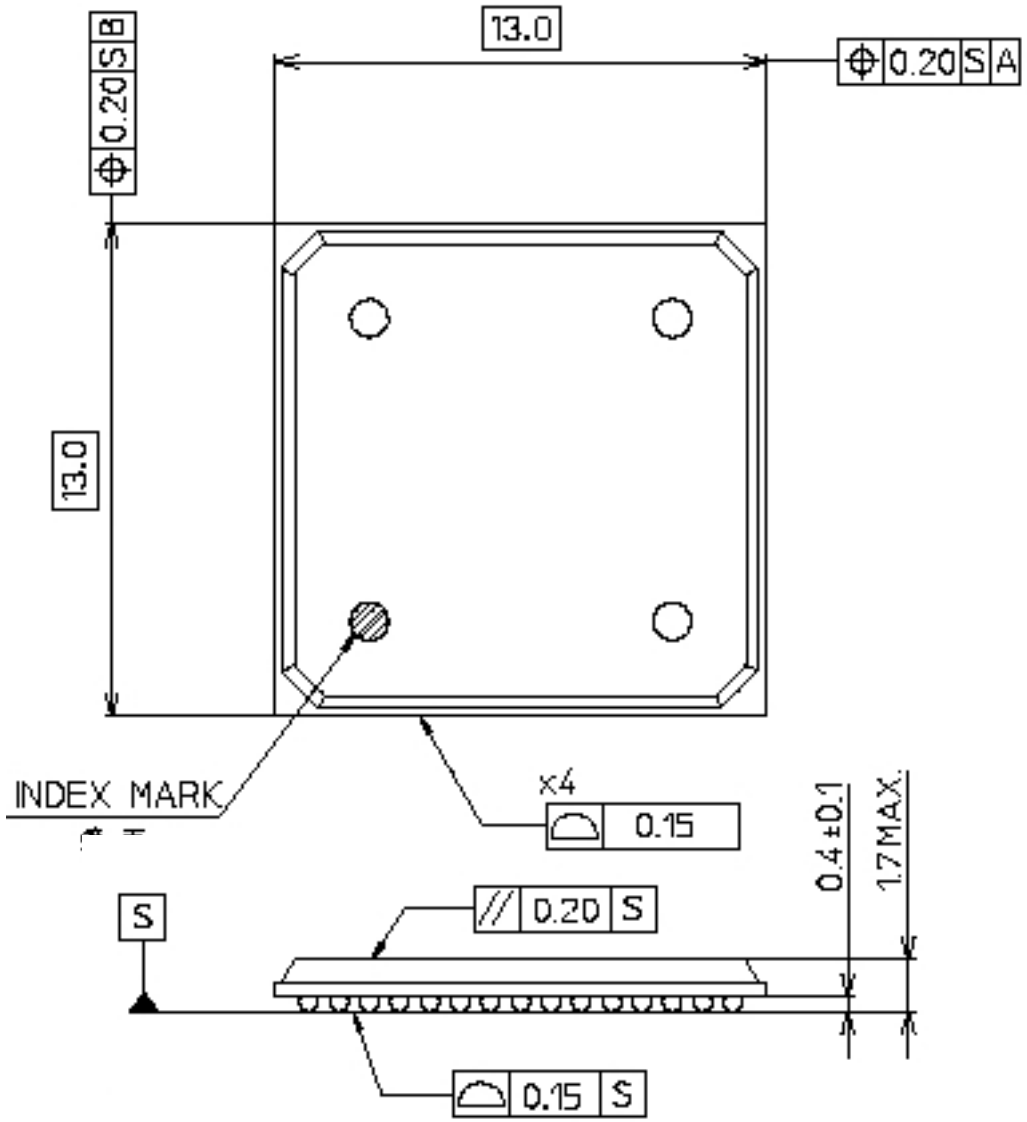


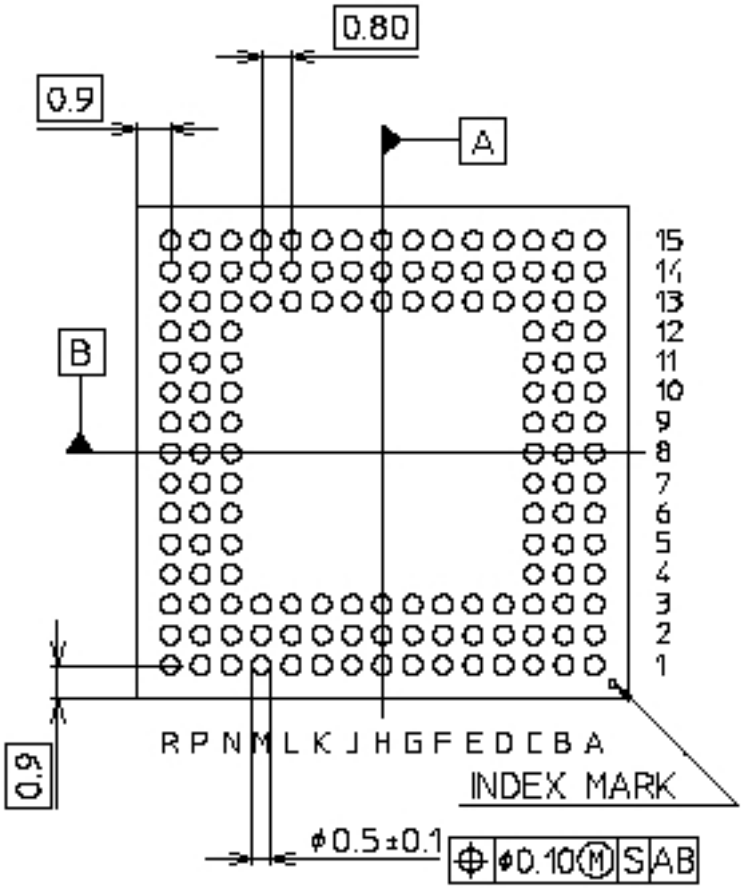
Please consult OKI for soldering, assembly and storage recommendations.

P-LFBGA144-1313-0.80

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor



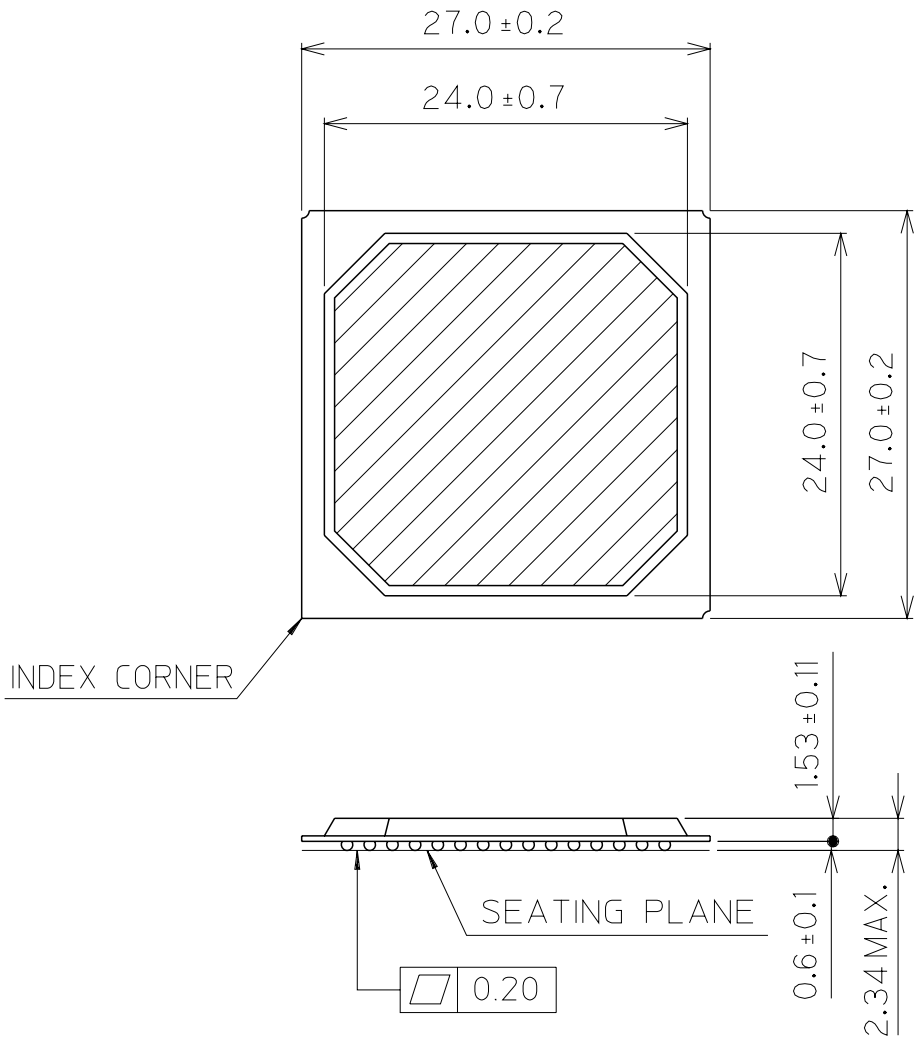


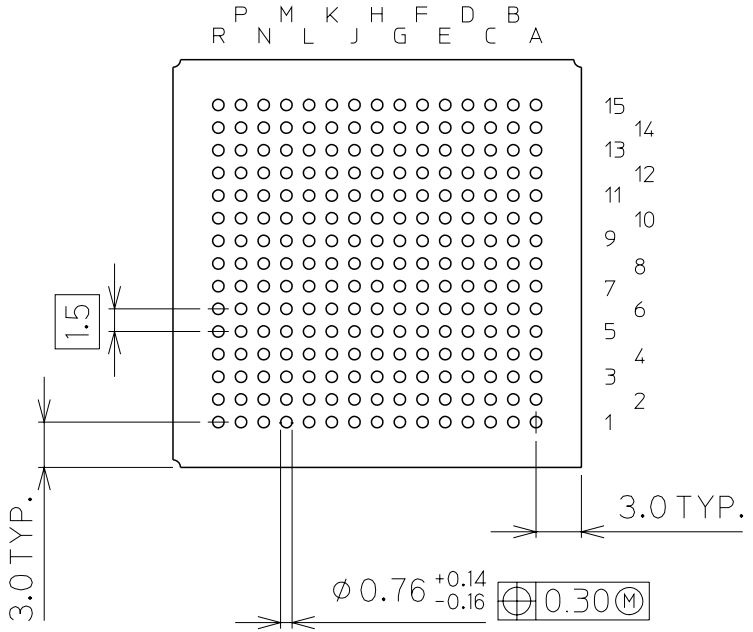
Please consult OKI for soldering, assembly and storage recommendations.

P-BGA225-2727-1.5

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor



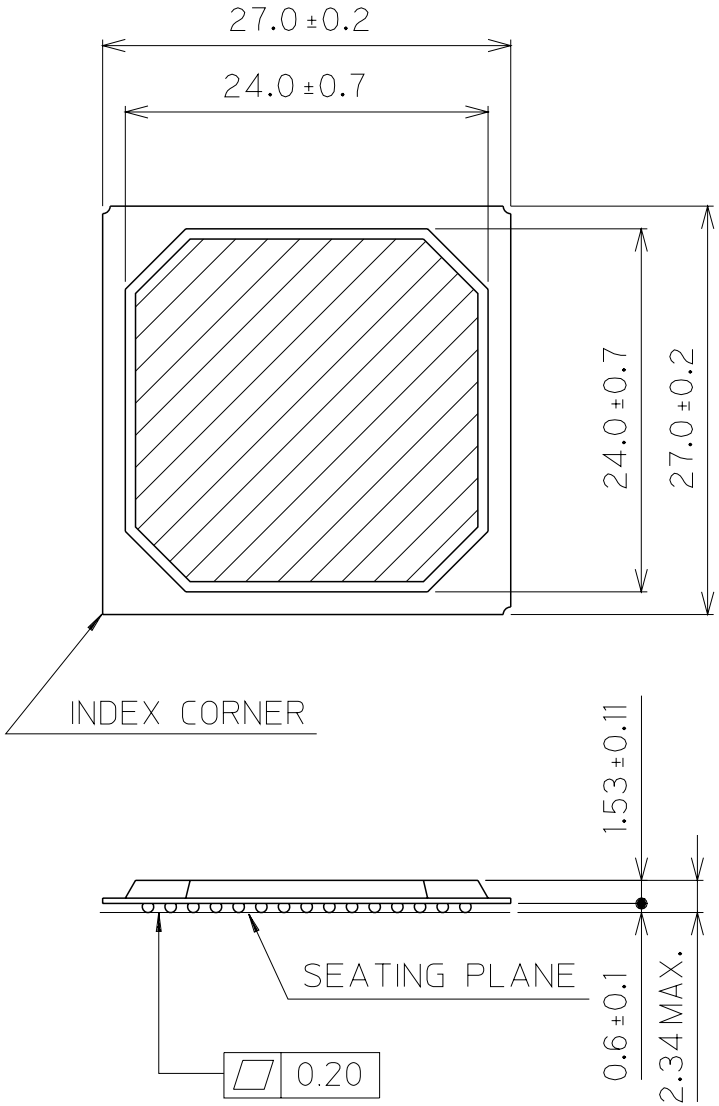


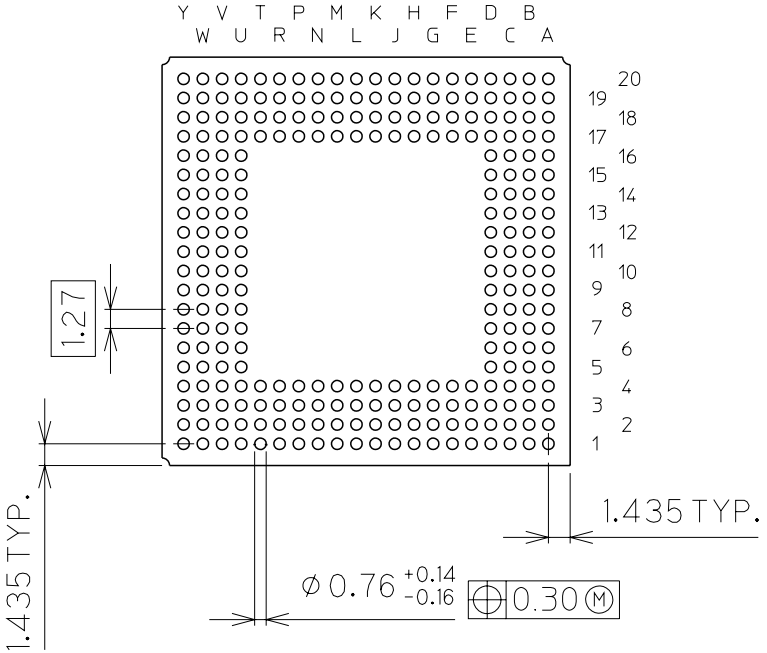
Please consult OKI for soldering, assembly and storage recommendations.

P-BGA256-2727-1.27

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor



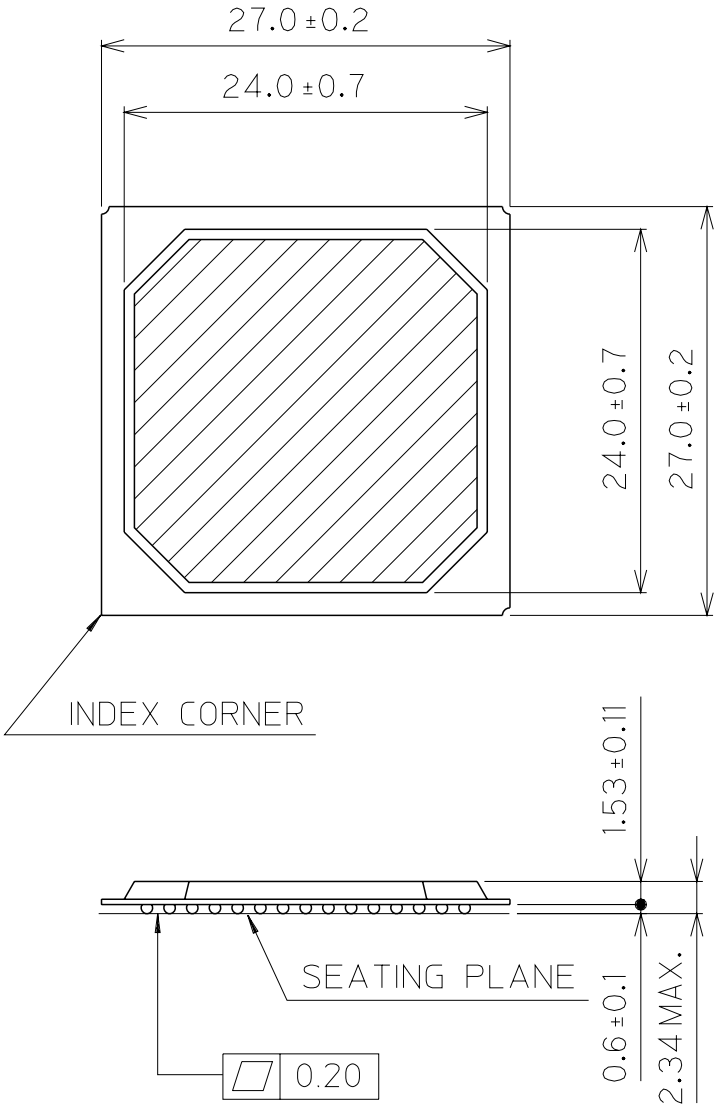


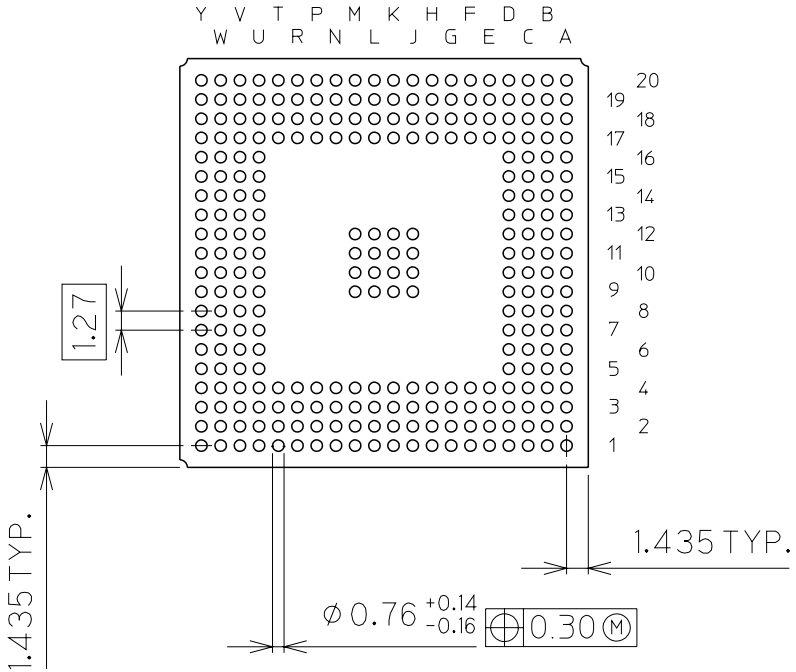
Please consult OKI for soldering, assembly and storage recommendations.

P-BGA272-2727-1.27

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor



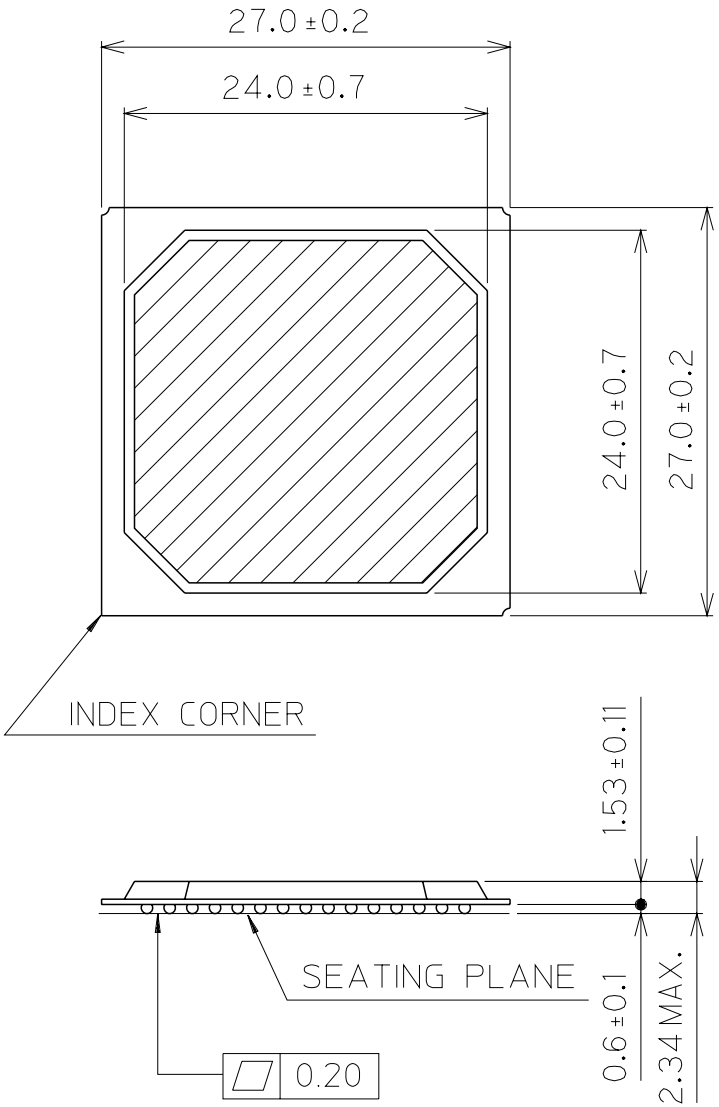


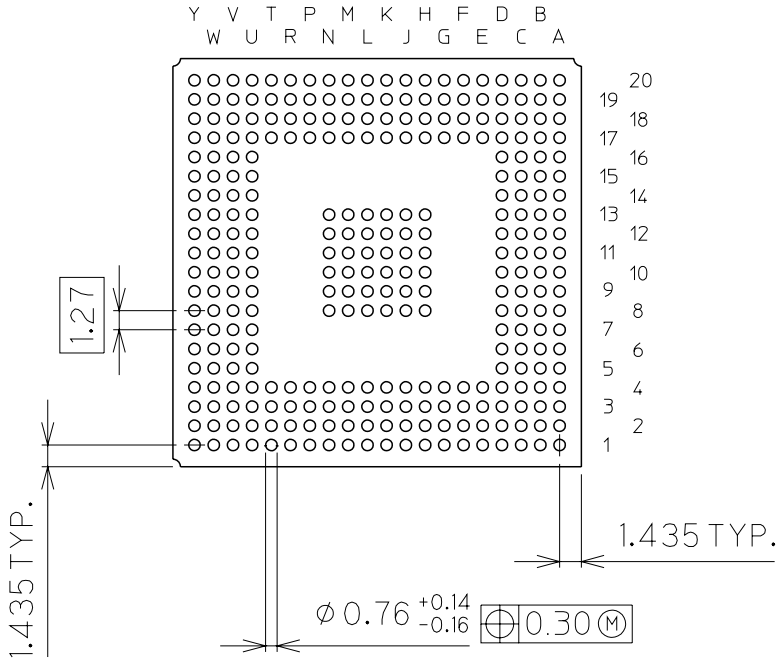
Please consult OKI for soldering, assembly and storage recommendations.

P-BGA292-2727-1.27

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor



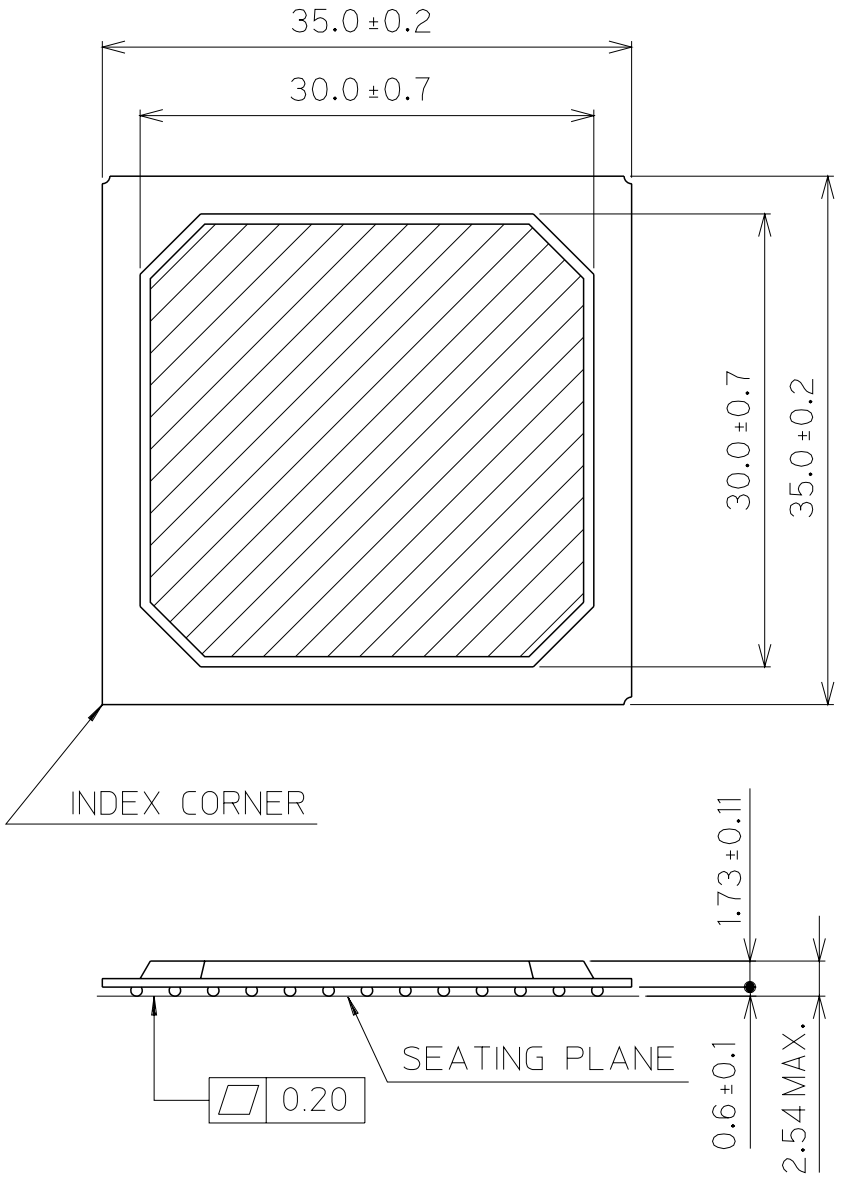


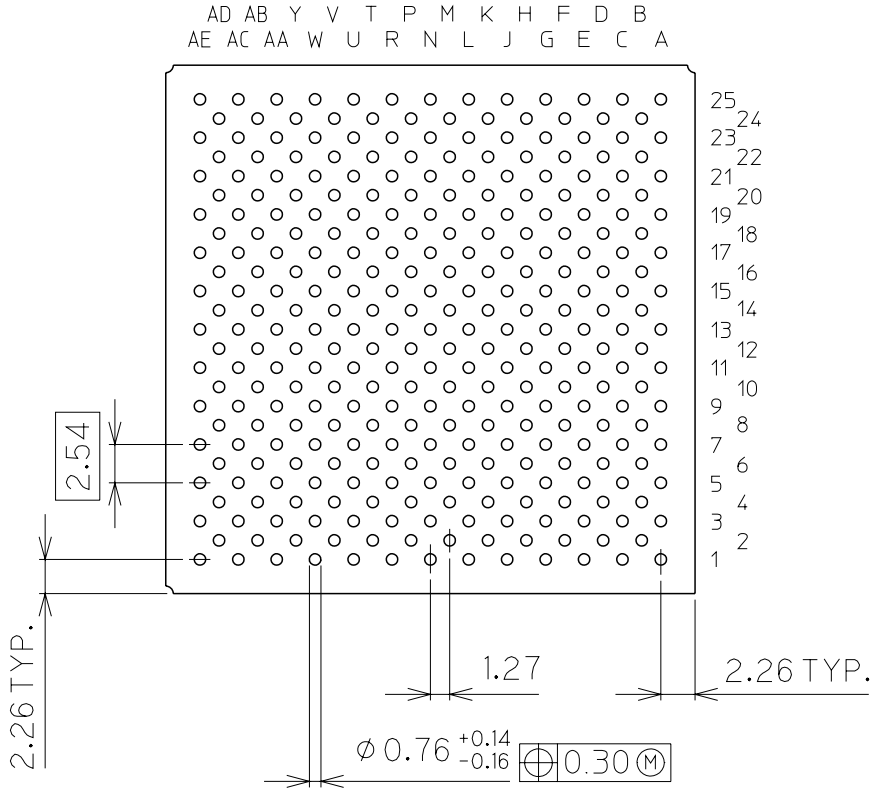
Please consult OKI for soldering, assembly and storage recommendations.

P-BGA313-3535-1.27

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor



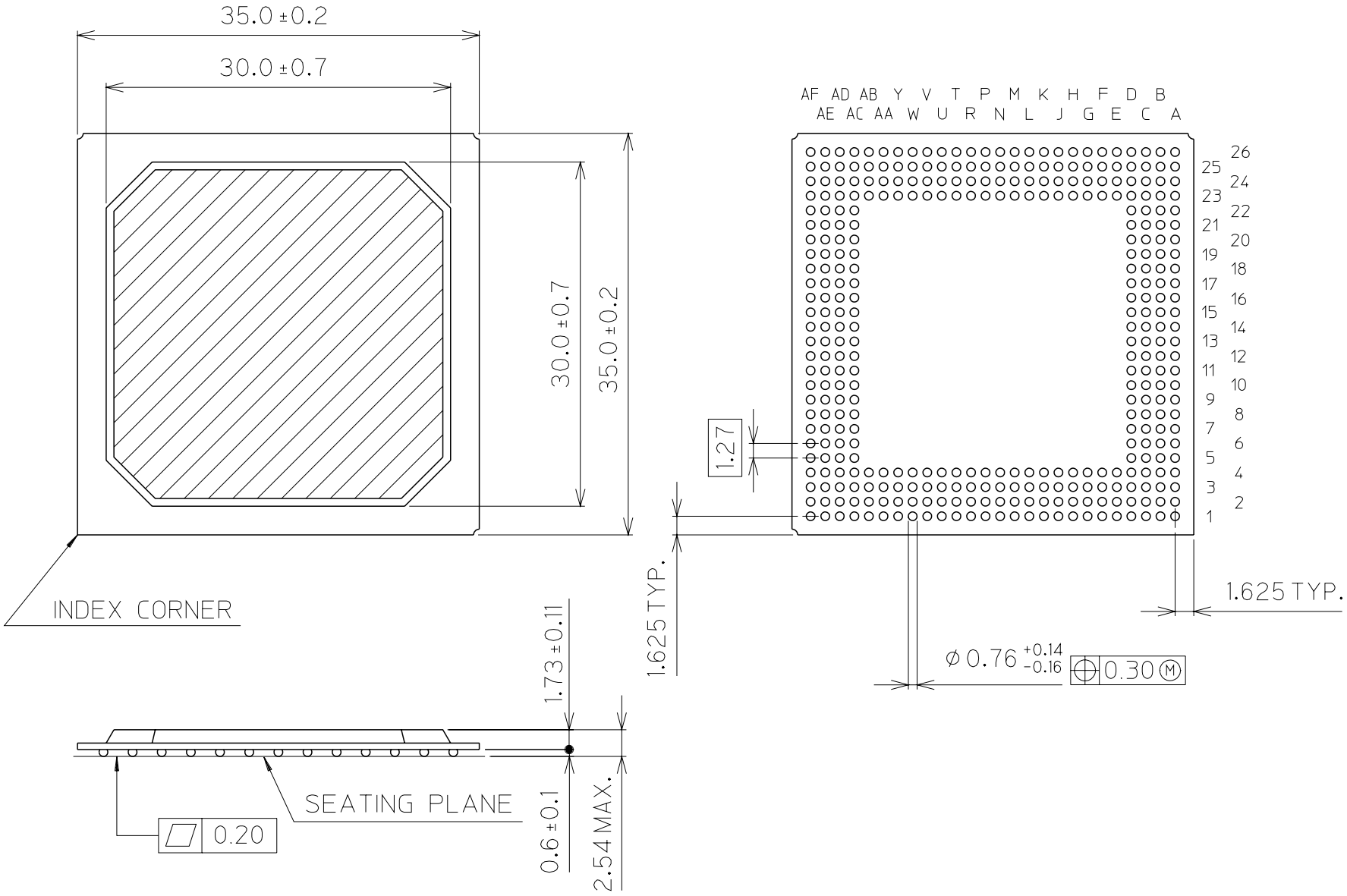


Please consult OKI for soldering, assembly and storage recommendations.

P-BGA352-3535-1.27

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor

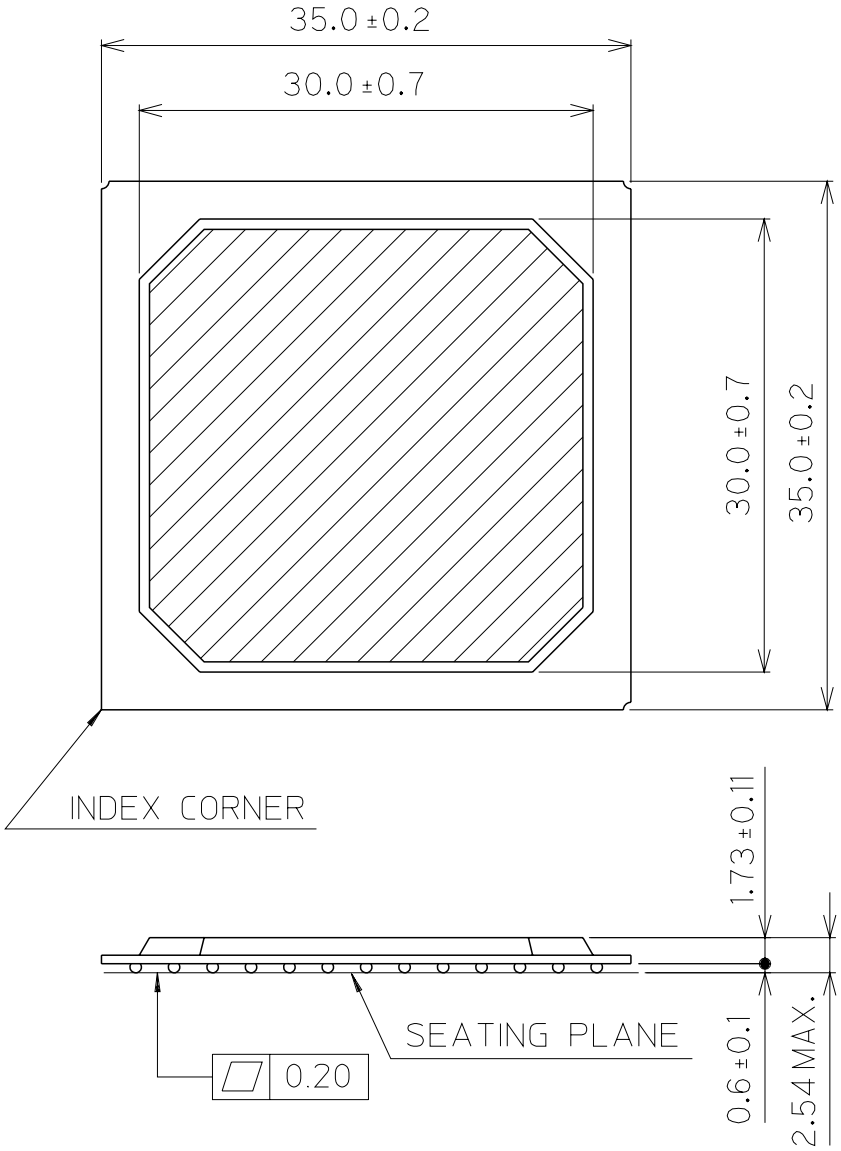


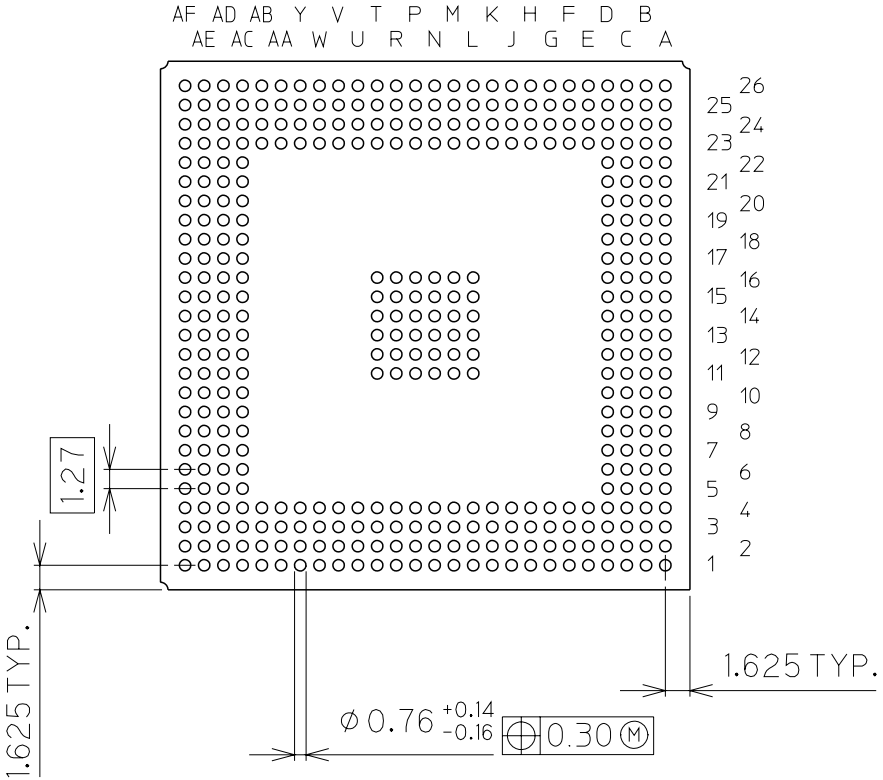
Please consult OKI for soldering, assembly and storage recommendations.

P-BGA388-3535-1.27

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor



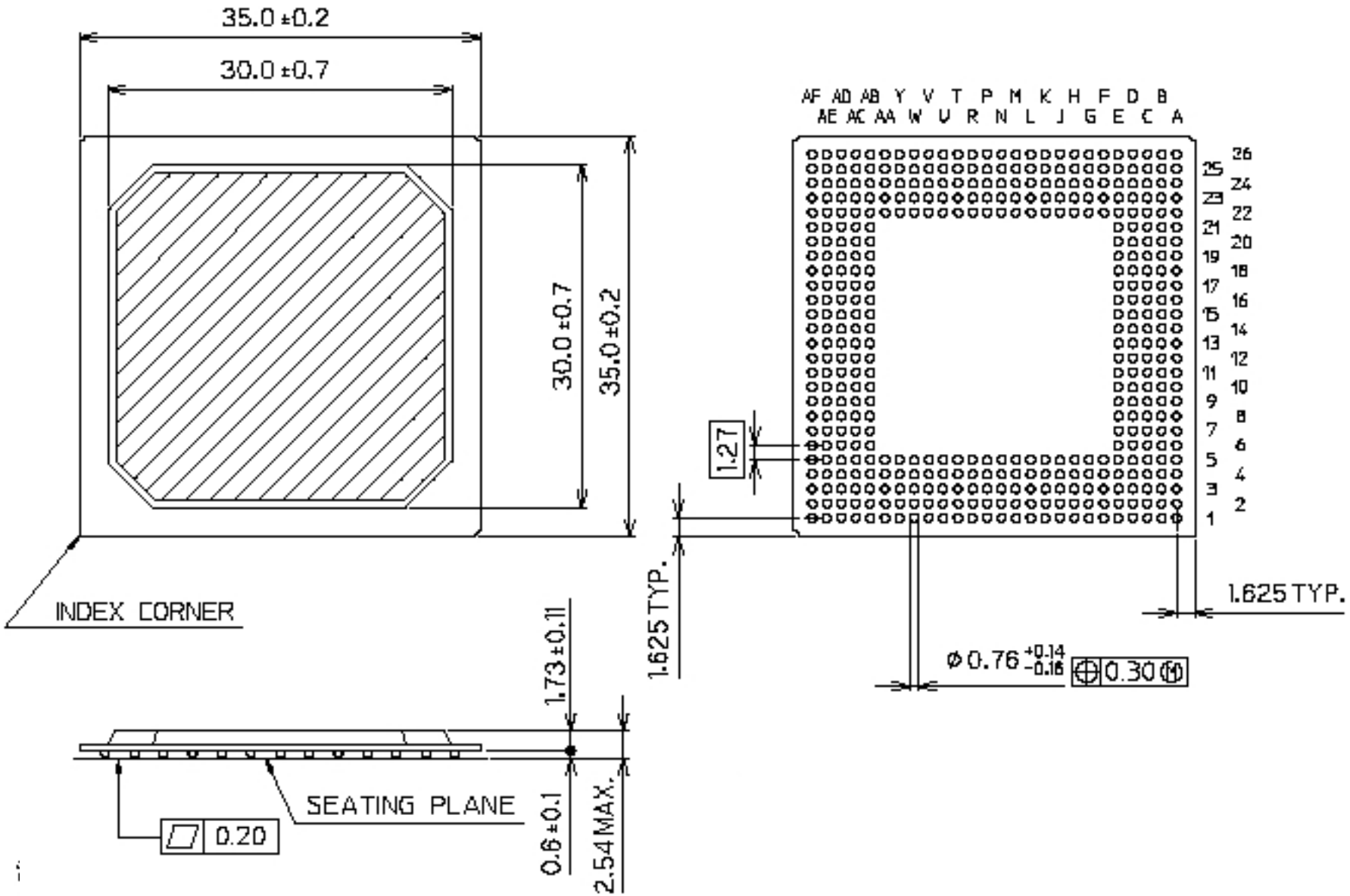


Please consult OKI for soldering, assembly and storage recommendations.

P-BGA420-3535-1.27

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor

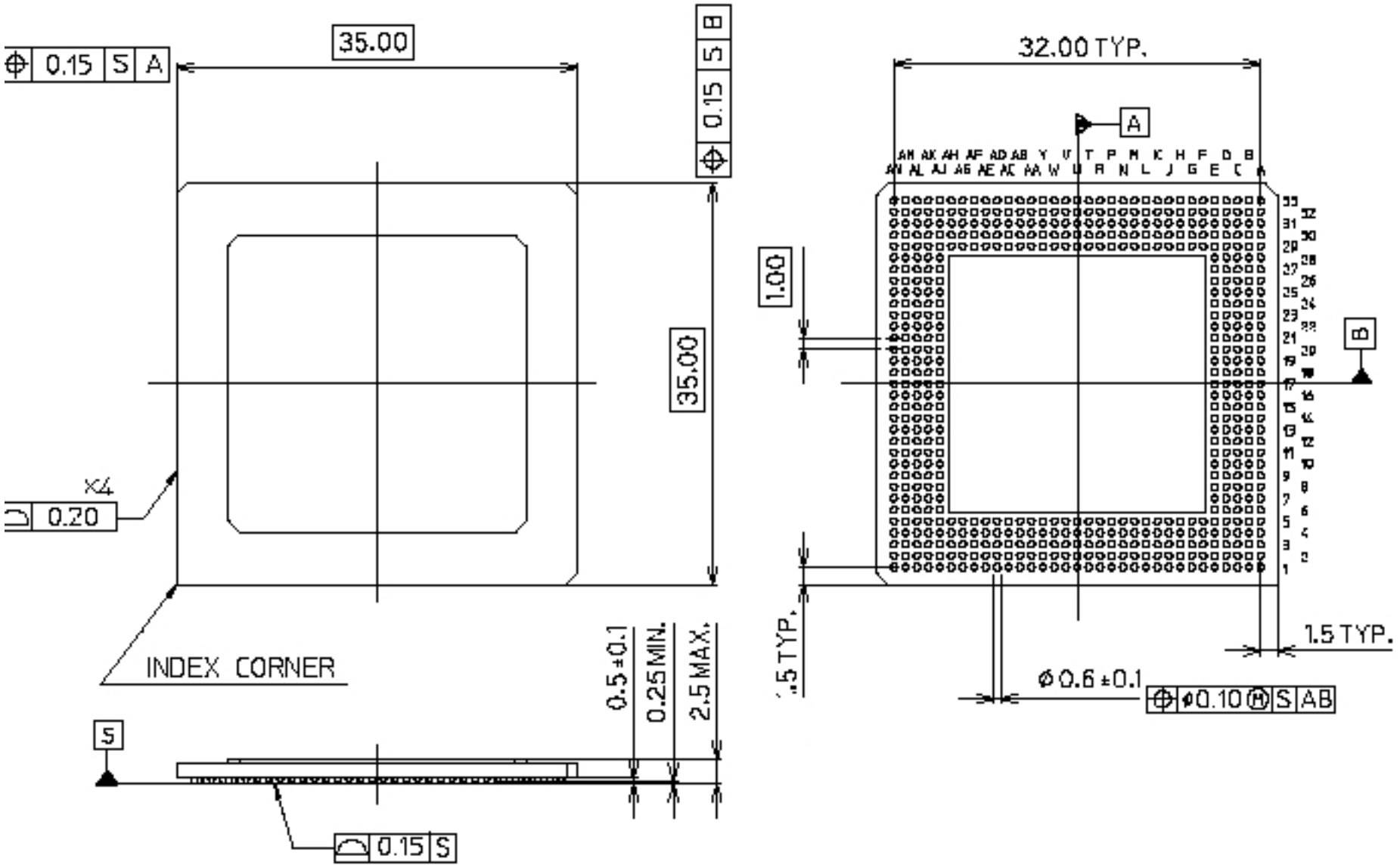


Please consult OKI for soldering, assembly and storage recommendations.

P-BGA560-3535-1.00

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor

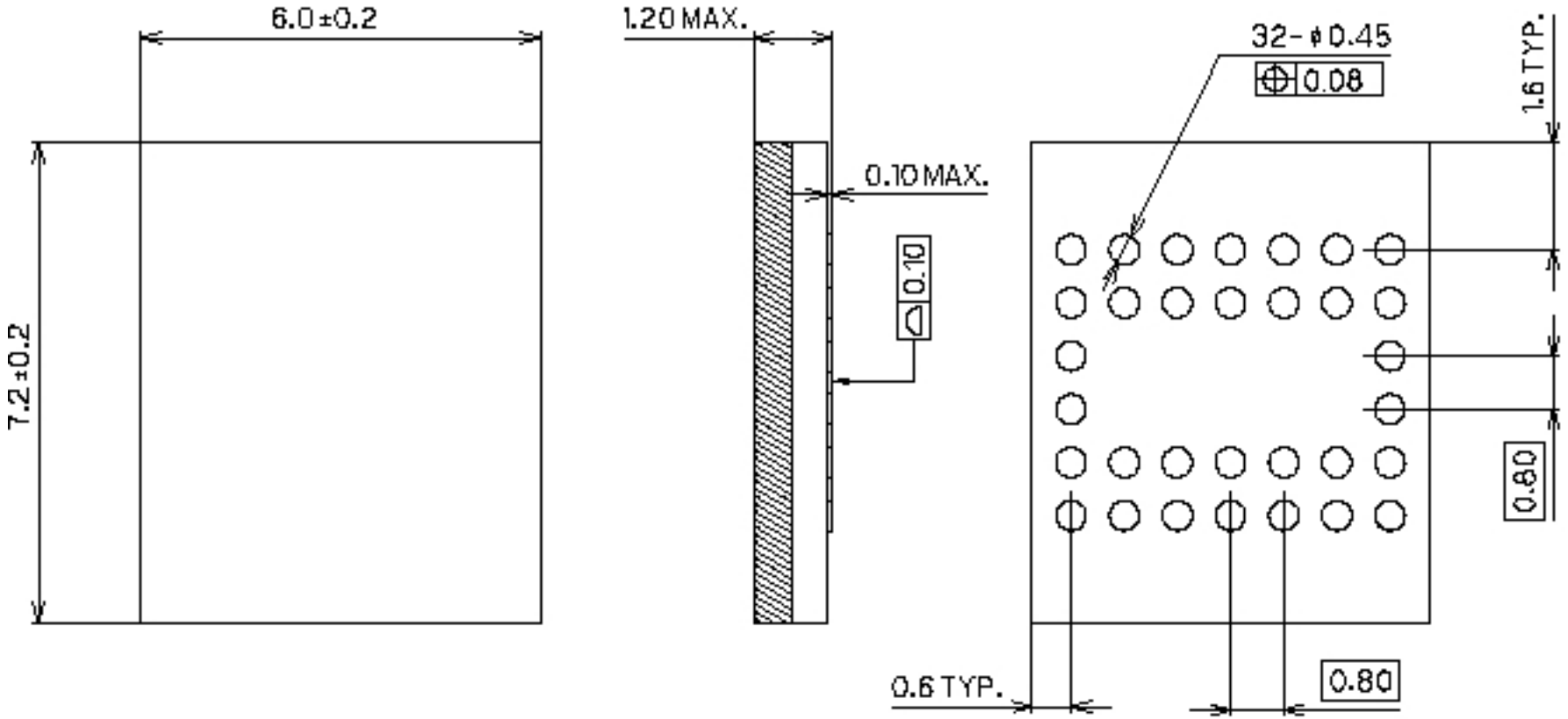


Please consult OKI for soldering, assembly and storage recommendations.

P-TFLGA32-0806-0.80

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor

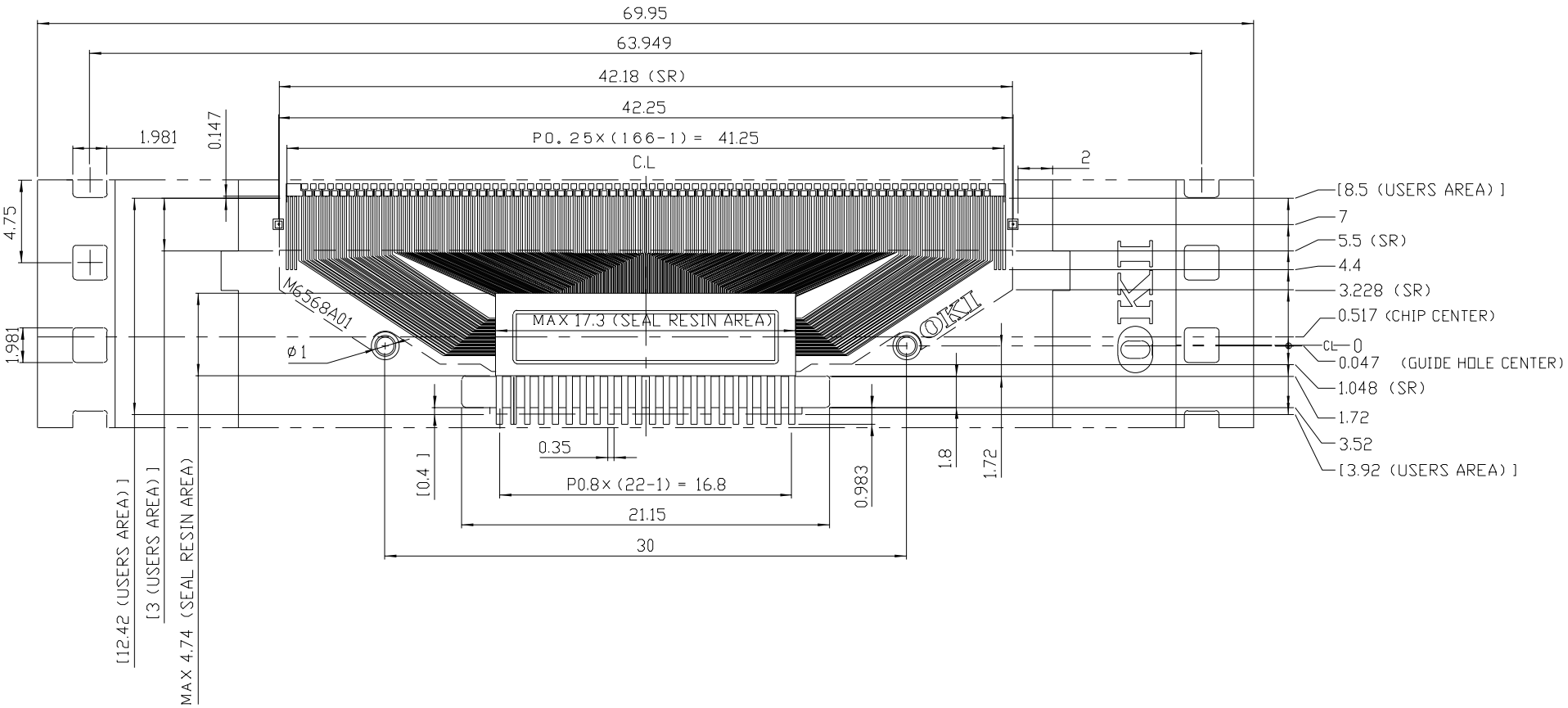


Please consult OKI for soldering, assembly and storage recommendations.

Tape Carrier Package (TCP)

for MSM6568AAV-Z--01, 160-Com LCD Driver

OKI Semiconductor

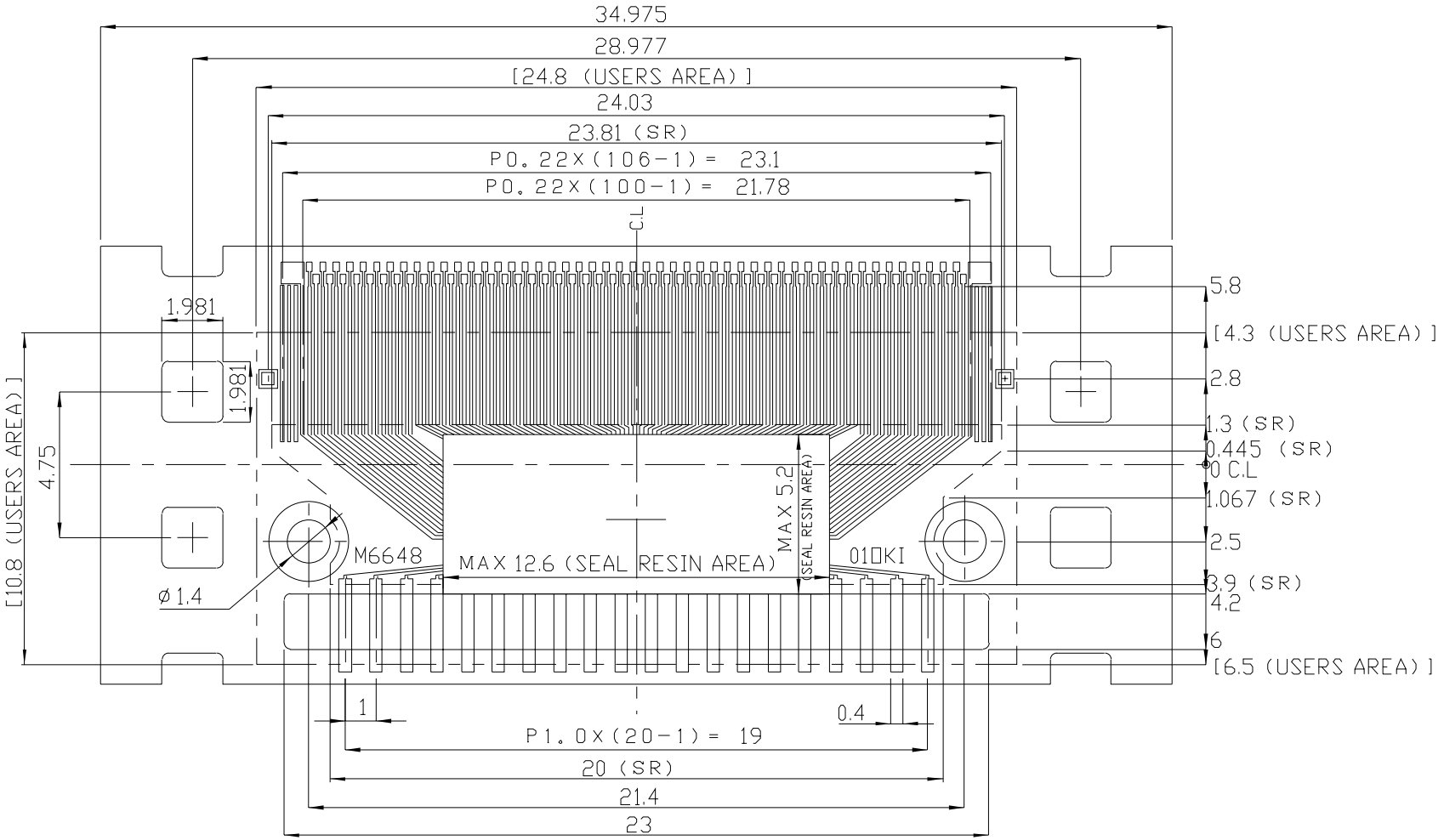


Unit in millimeters typ., unless otherwise specified. Specification are subject to change without notice.

Tape Carrier Package (TCP)

for MSM6648AV-Z-01, 100-Com LCD Driver

OKI Semiconductor

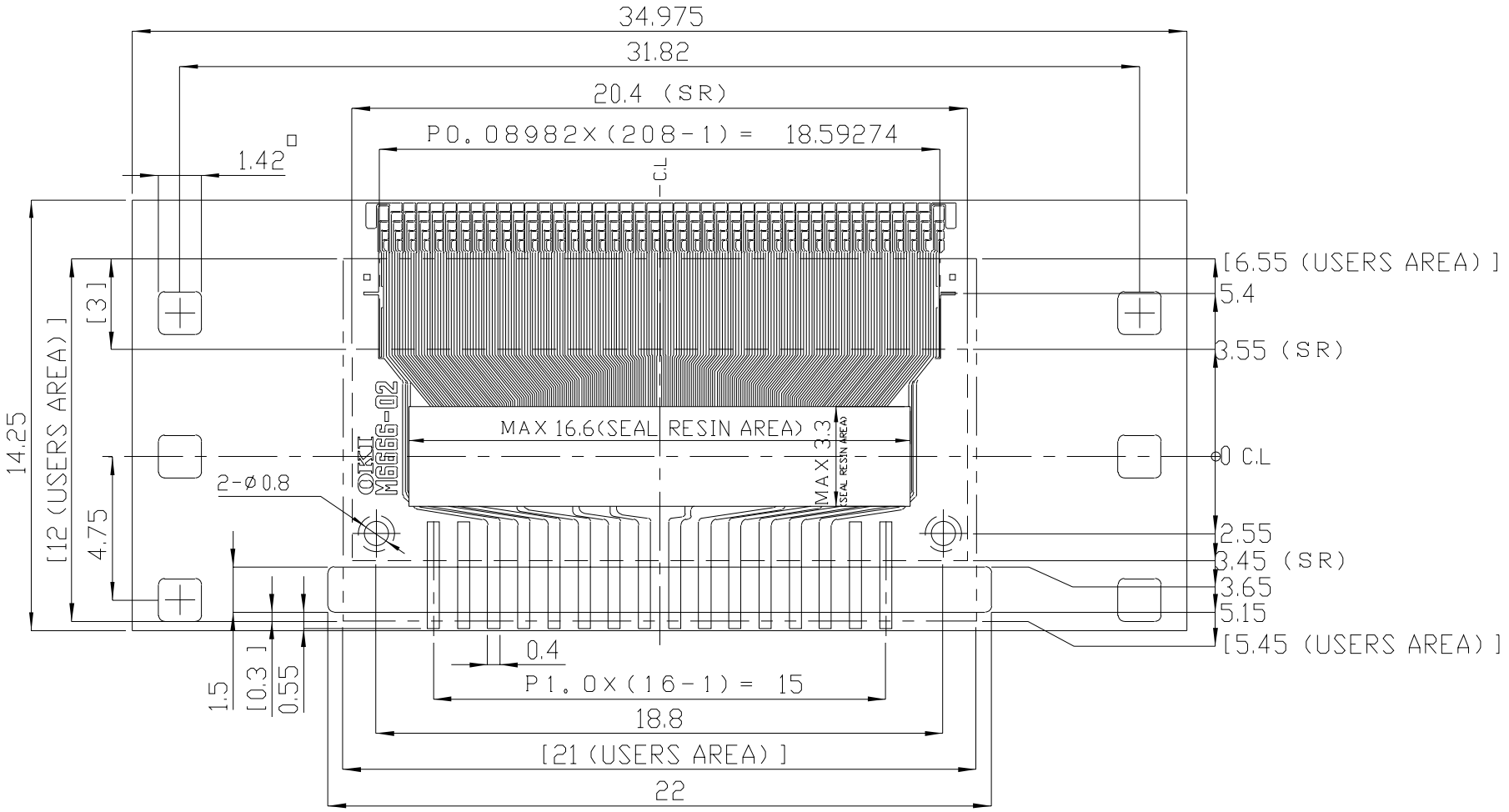


Unit in millimeters typ., unless otherwise specified. Specification are subject to change without notice.

Tape Carrier Package (TCP)

for MSM6666AV-Z-02, 192-Out TFT Gate Driver

OKI Semiconductor

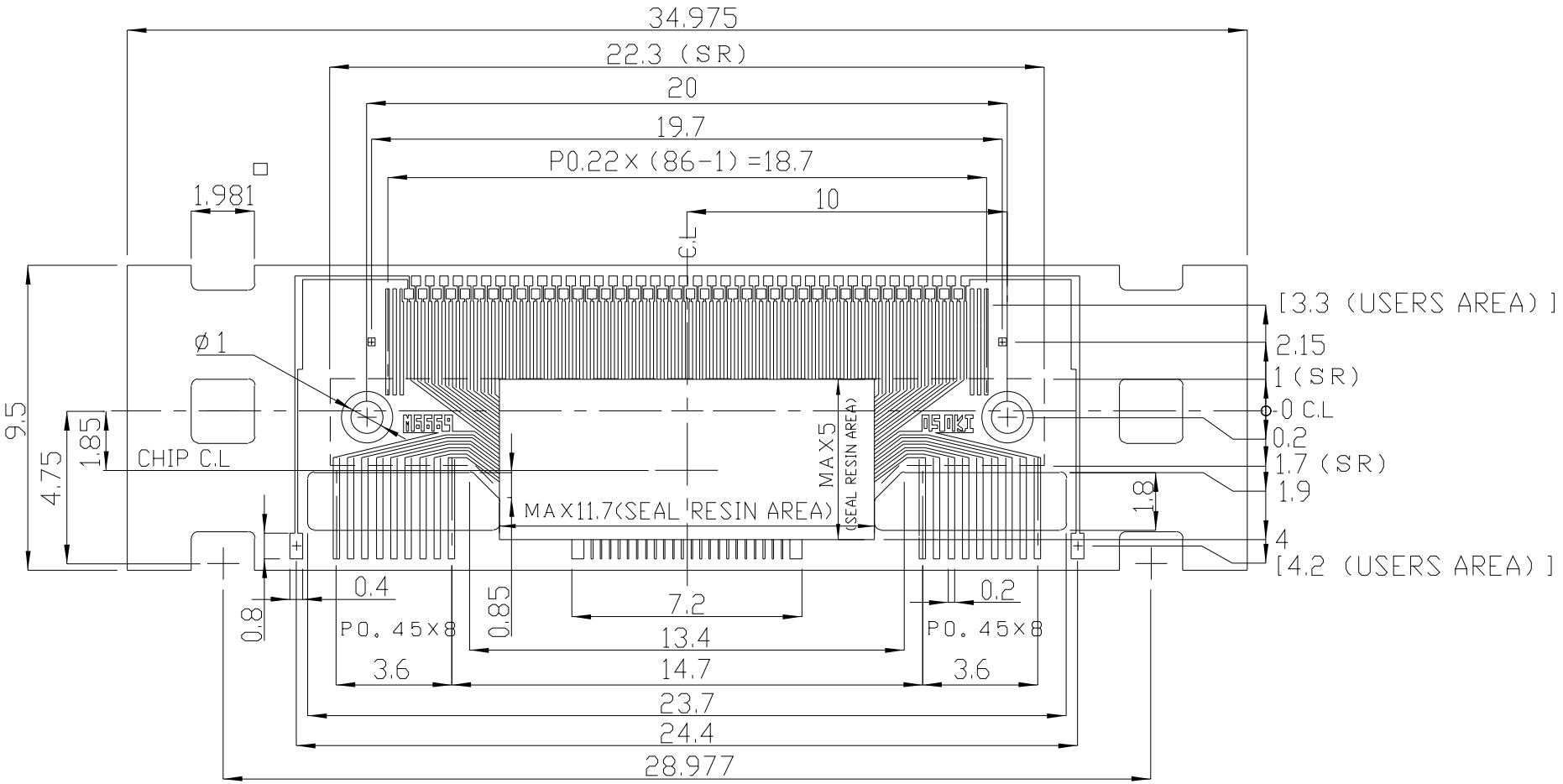


Unit in millimeters typ., unless otherwise specified. Specification are subject to change without notice.

Tape Carrier Package (TCP)

for MSM6669AV-Z-05, 80-Seg LCD Driver

OKI Semiconductor

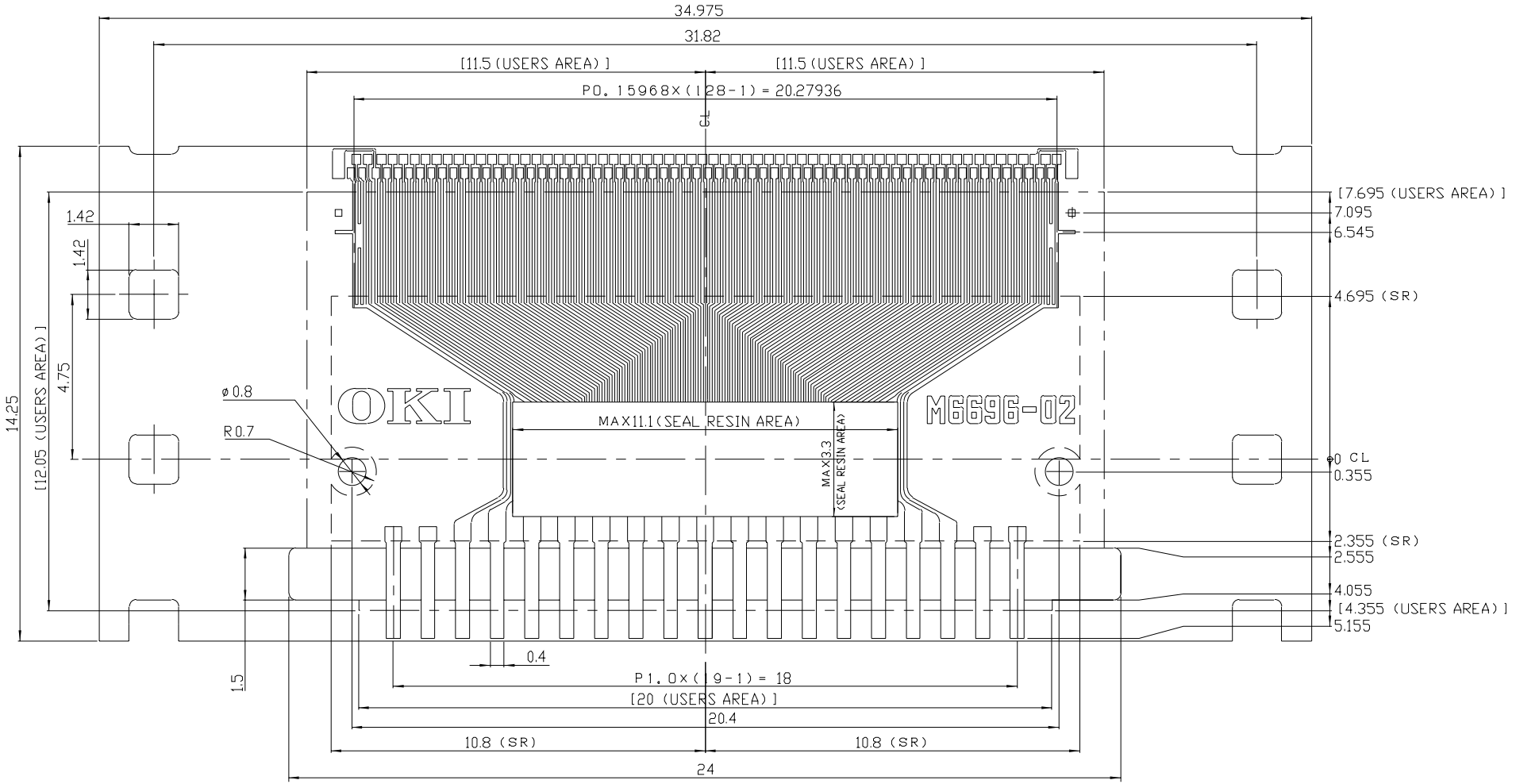


Unit in millimeters typ., unless otherwise specified. Specification are subject to change without notice.

Tape Carrier Package (TCP)

for MSM6696AV-Z-02, 120-Out TFT Gate Driver

OKI Semiconductor

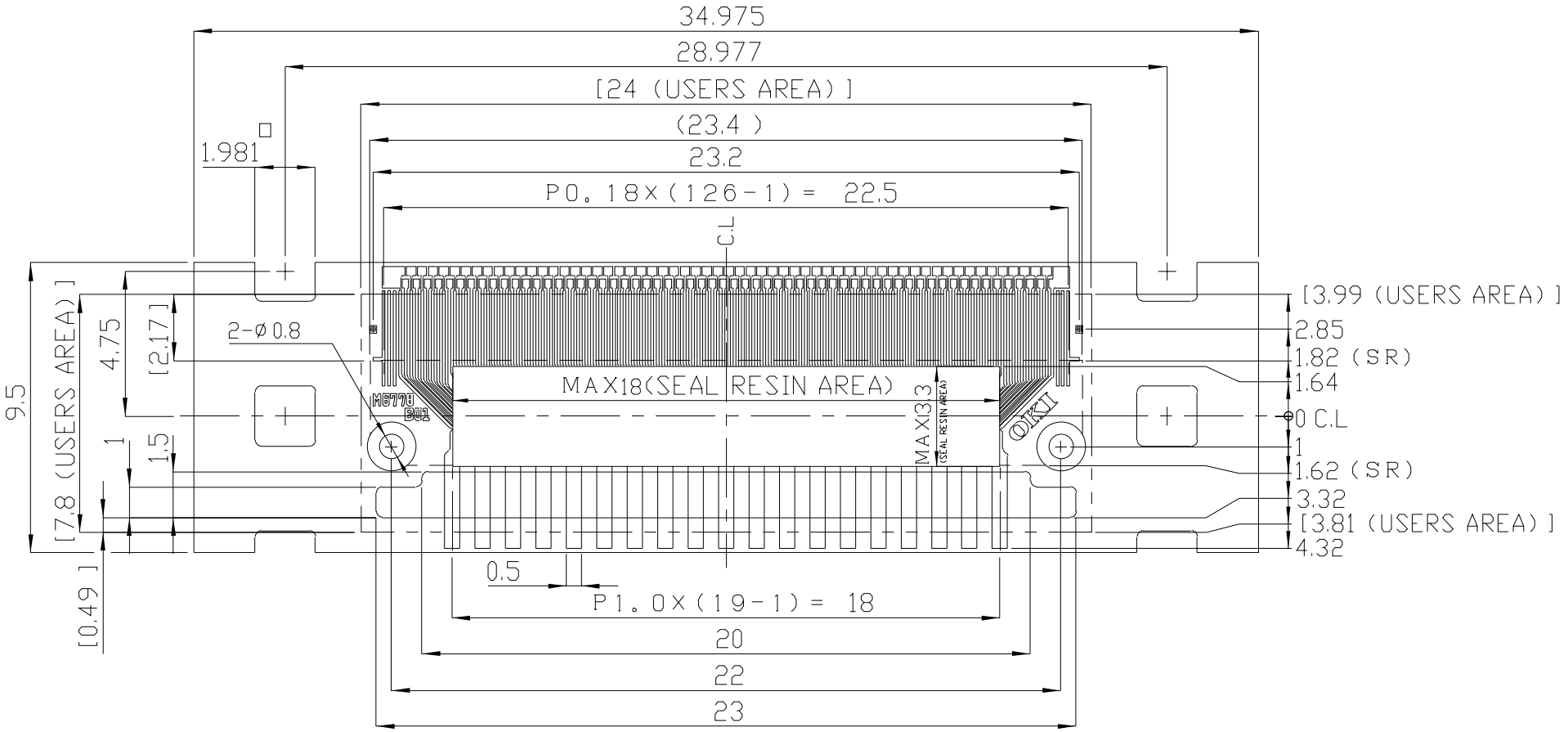


Unit in millimeters typ., unless otherwise specified. Specification are subject to change without notice.

Tape Carrier Package (TCP)

for MSM6778BAV-Z-01, 120-Com LCD Driver

OKI Semiconductor

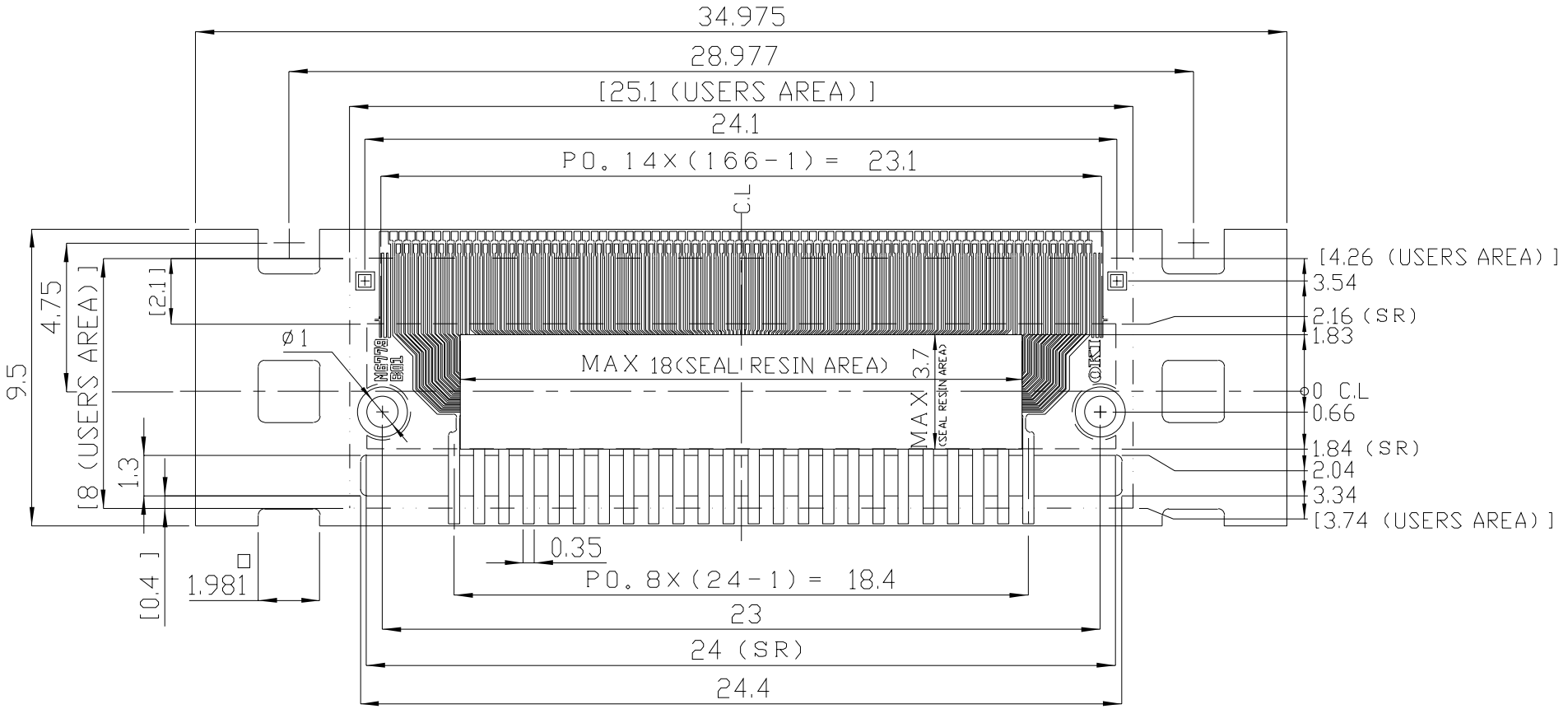


Unit in millimeters typ., unless otherwise specified. Specification are subject to change without notice.

Tape Carrier Package (TCP)

for MSM6779BAV-Z-01, 160-Seg LCD Driver

OKI Semiconductor

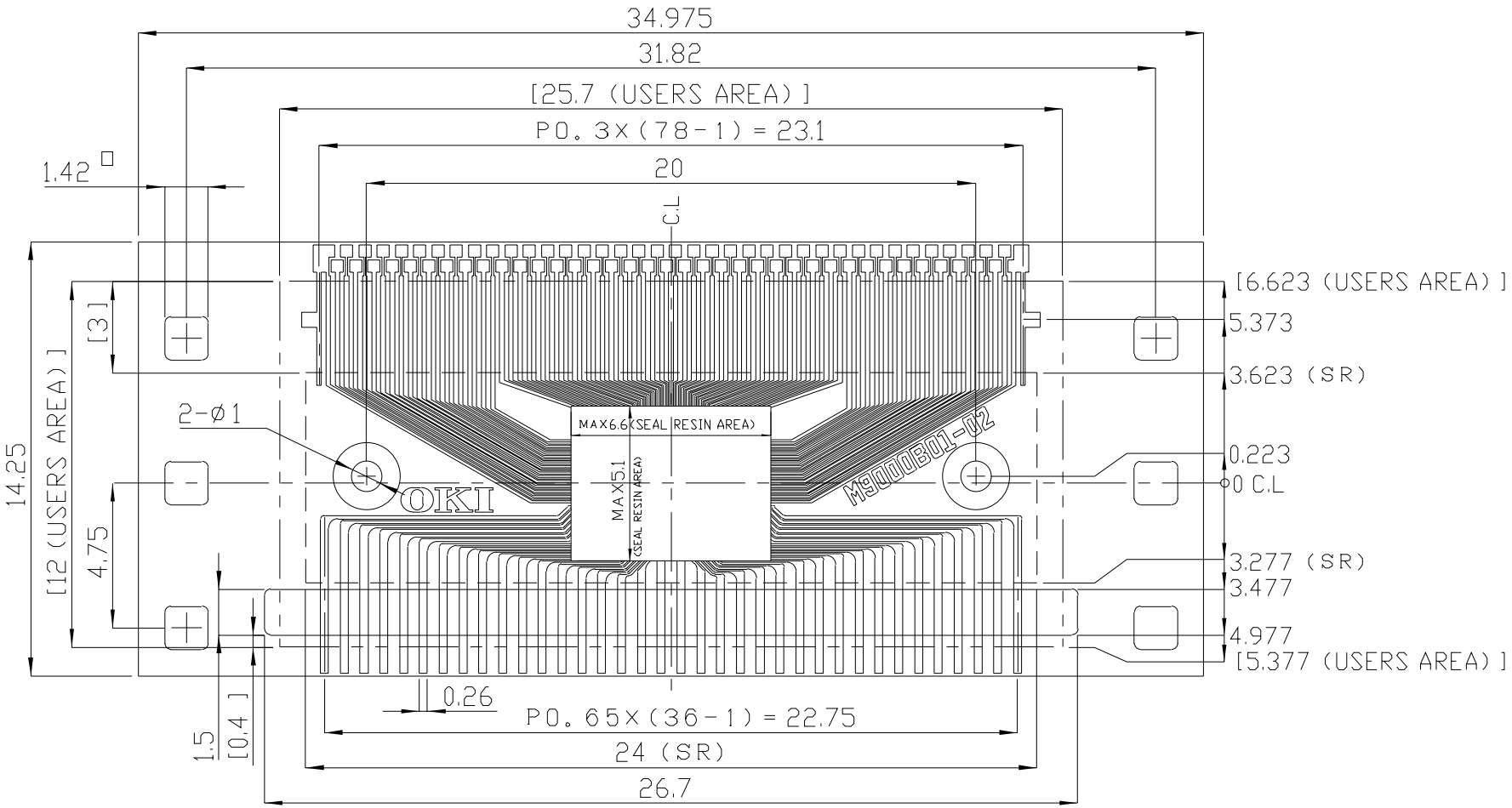


Unit in millimeters typ., unless otherwise specified. Specification are subject to change without notice.

Tape Carrier Package (TCP)

for MSM9000B-01AV-Z-02,
Character Controller with Drivers

OKI Semiconductor

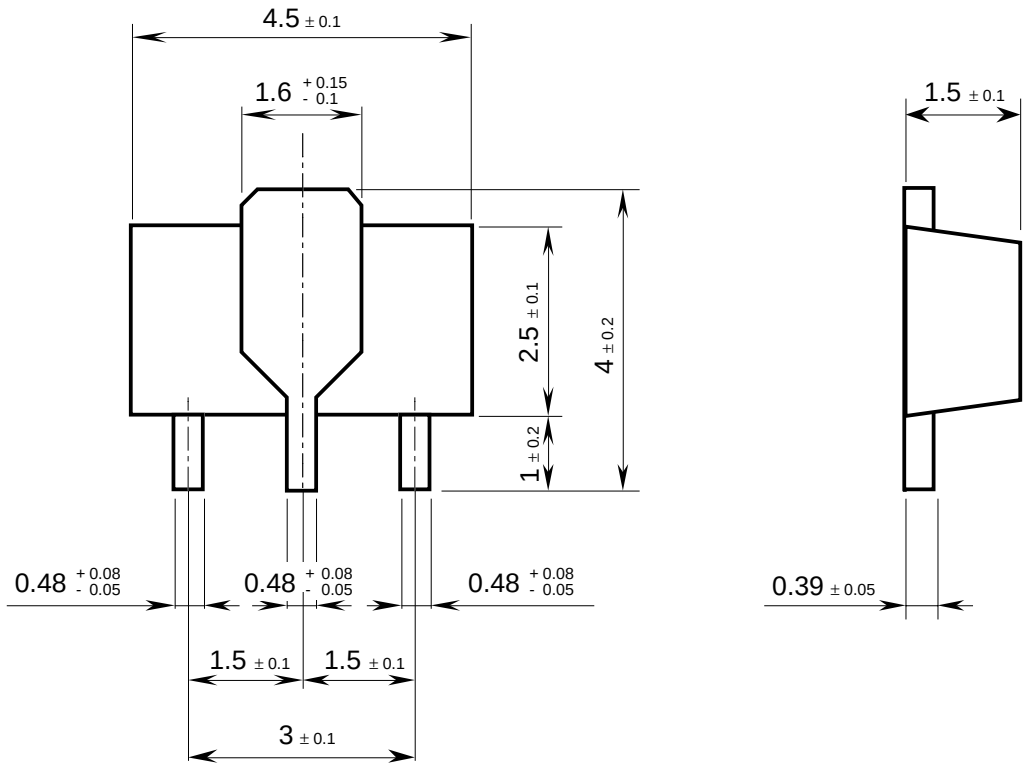


Unit in millimeters typ., unless otherwise specified. Specification are subject to change without notice.

3PMMP (GaAs Products)

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor

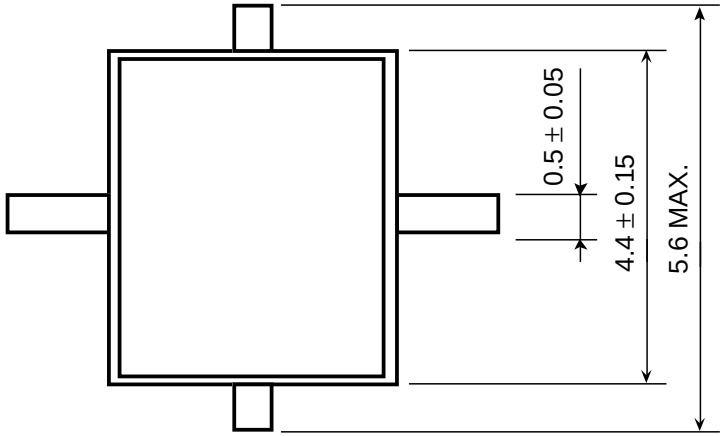


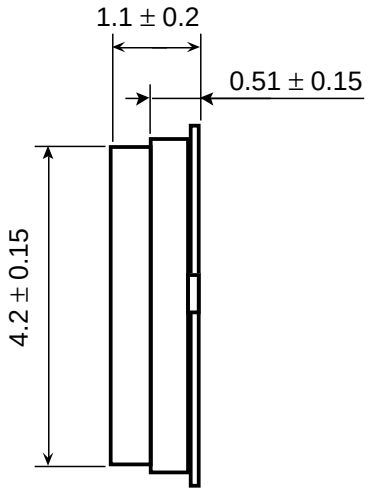
Please consult OKI for soldering, assembly and storage recommendations.

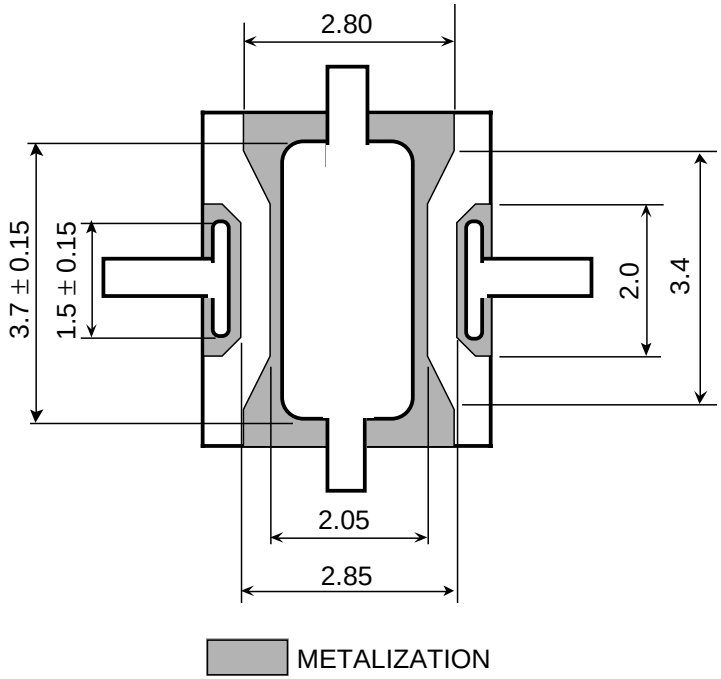
3PFP (GaAs Products)

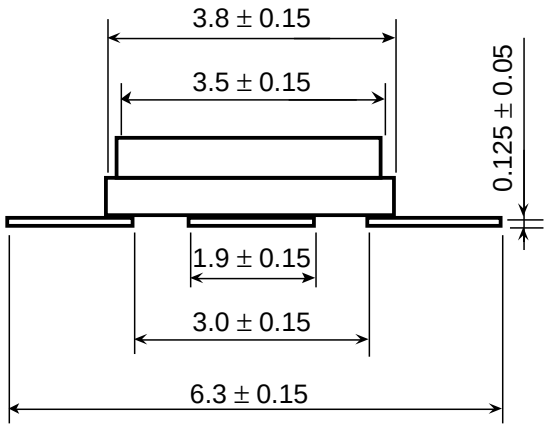
Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor







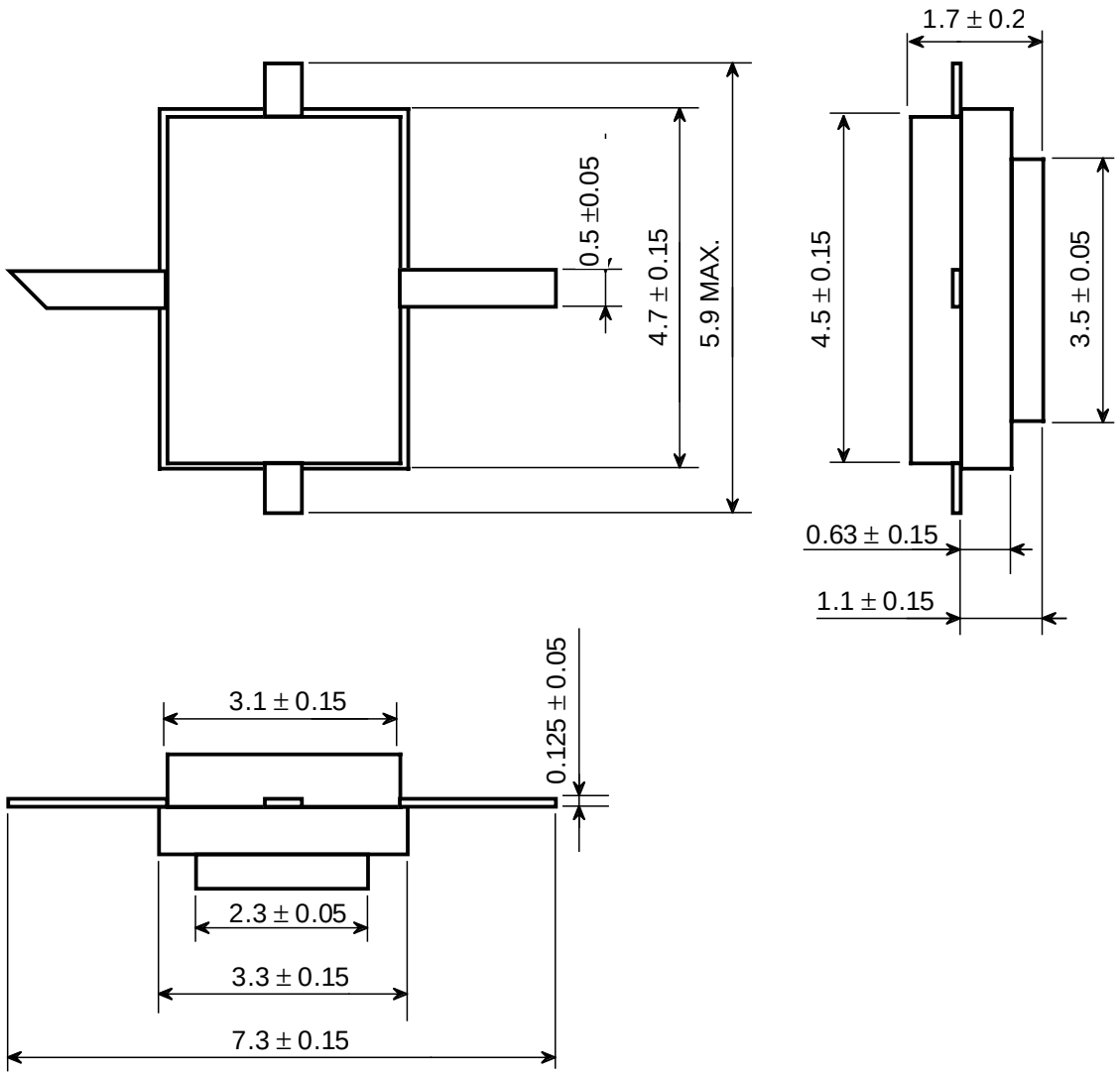


Please consult OKI for soldering, assembly and storage recommendations.

3PHTP (GaAs Products)

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor

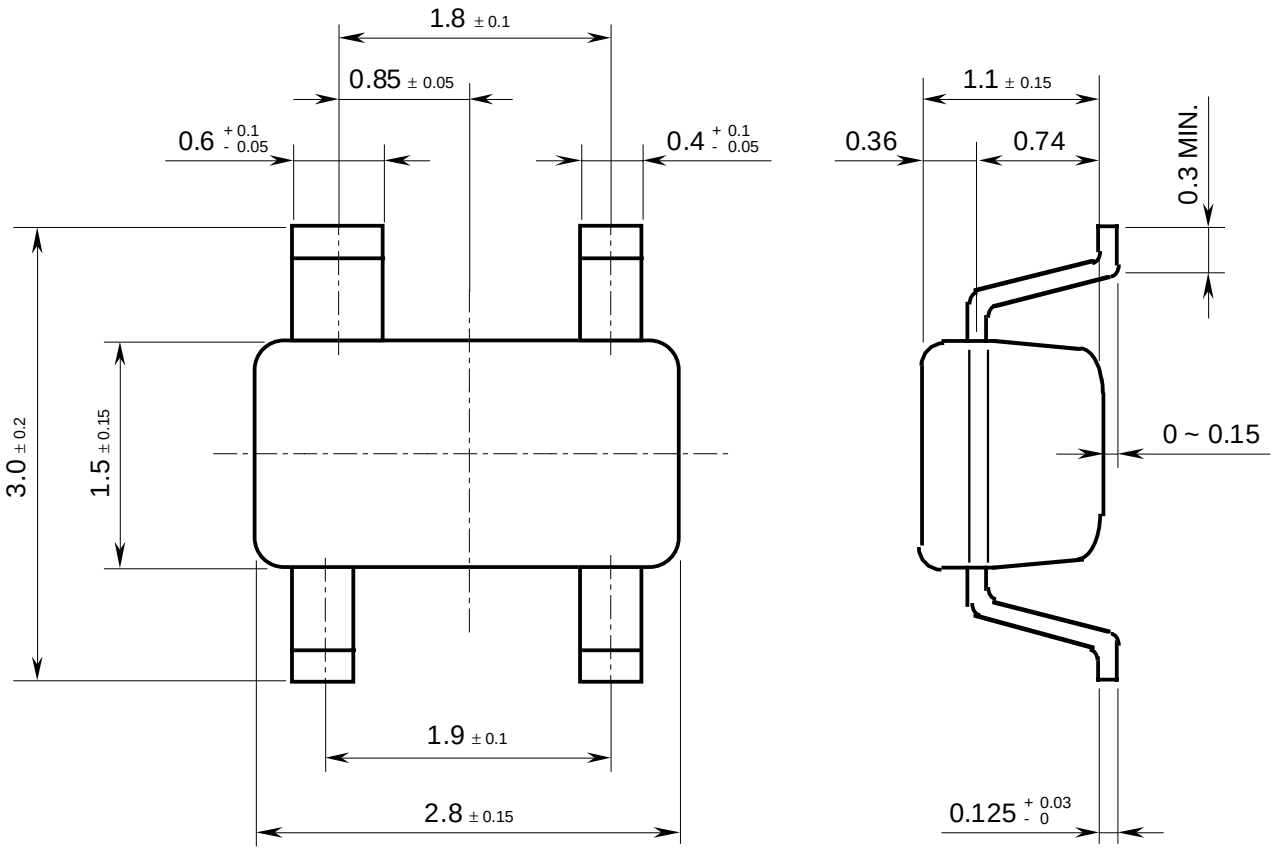


Please consult OKI for soldering, assembly and storage recommendations.

4PSOP (GaAs Products)

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor

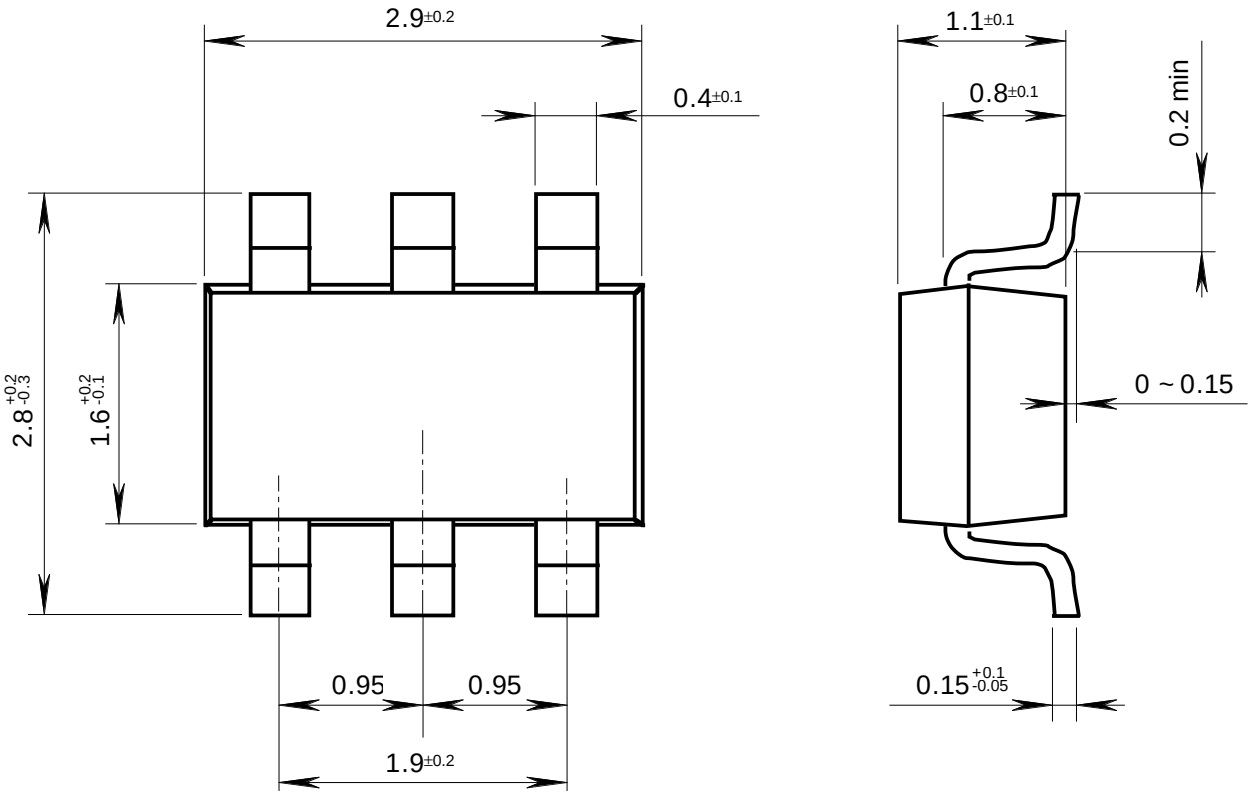


Please consult OKI for soldering, assembly and storage recommendations.

6PSOP (GaAs Products)

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor

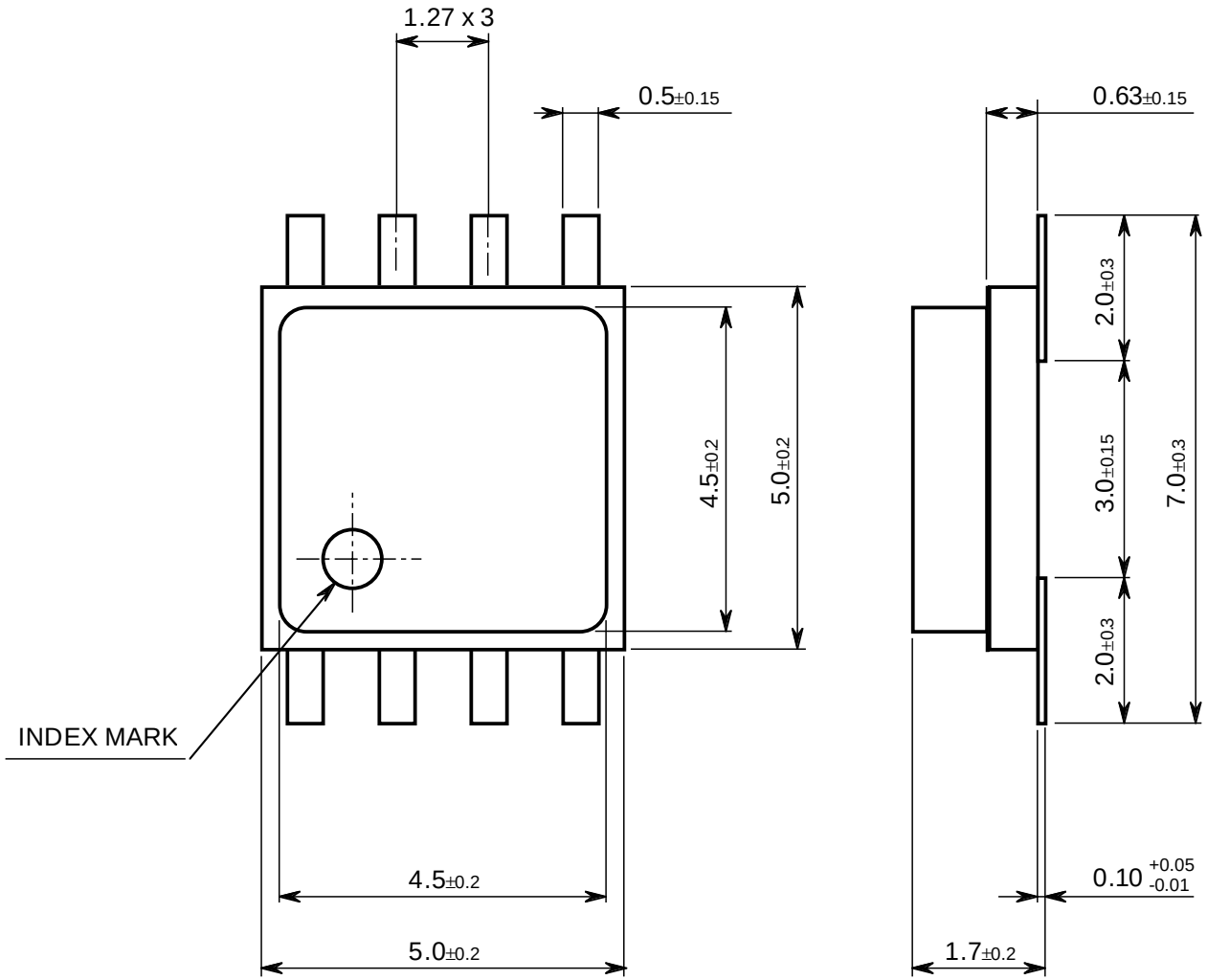


Please consult OKI for soldering, assembly and storage recommendations.

8PFP (GaAs Products)

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor

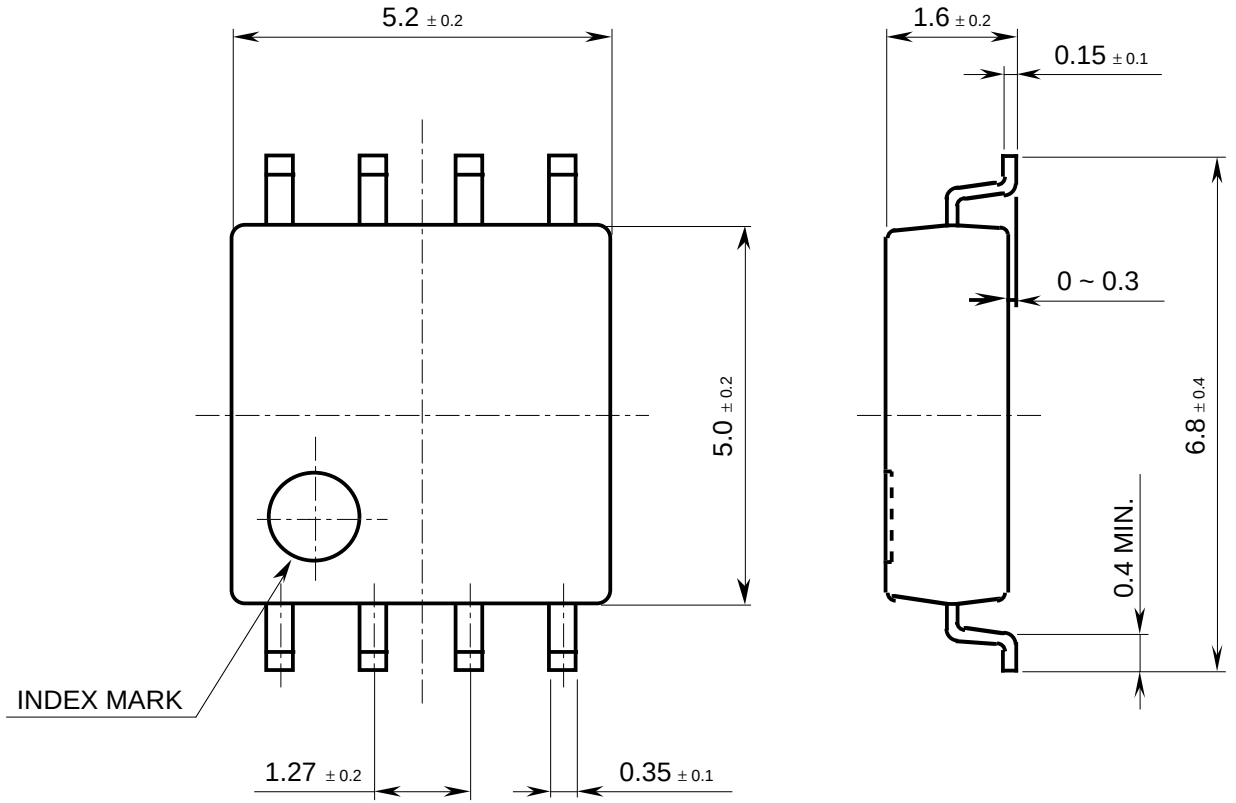


Please consult OKI for soldering, assembly and storage recommendations.

8PSOP (GaAs Products)

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor

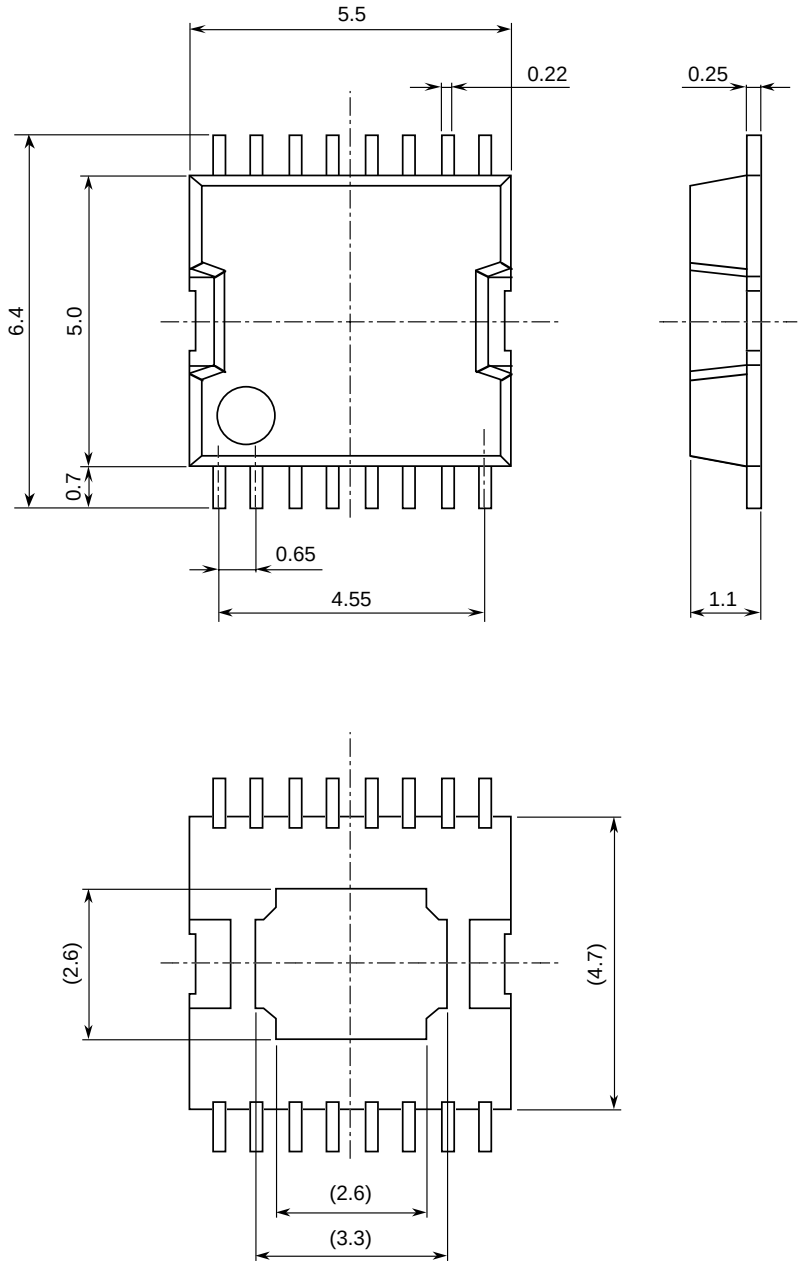


Please consult OKI for soldering, assembly and storage recommendations.

16PHSSOP (GaAs Products)

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor

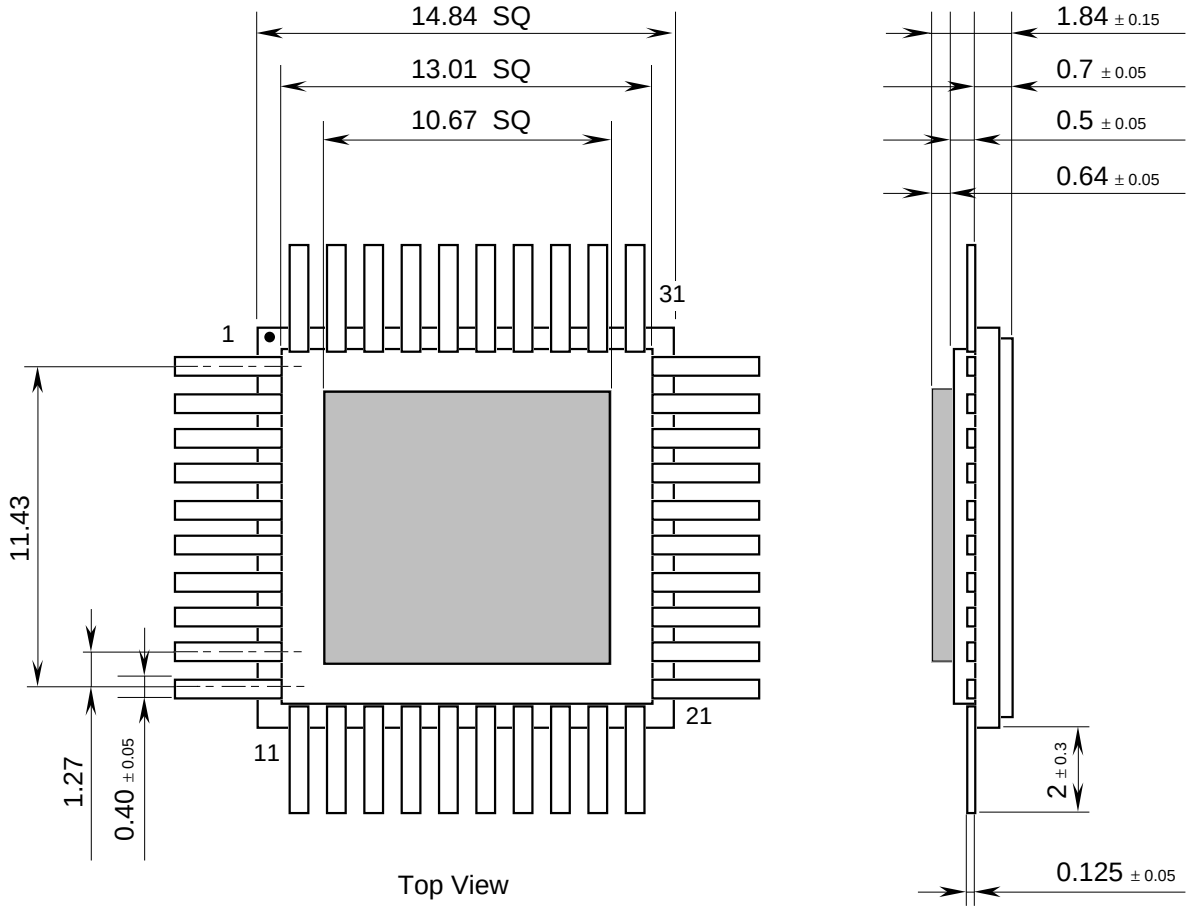


Please consult OKI for soldering, assembly and storage recommendations.

40PQFP (GaAs Products)

Unit in millimeters typ., unless otherwise specified.

OKI Semiconductor



Please consult OKI for soldering, assembly and storage recommendations.

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Analog Storage Speech Recorder
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Reduce external parts and increase speech memory economy by over 80%

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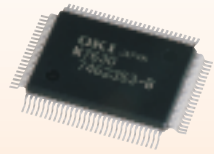
Applications: portable phones, telephone answering machines, pocket voice memos, pocket radios, walkman, games, toys...

Multilingual Text-to-Speech Processor
MSM7630



Natural sounding speech from text boosts performance

Oki's multilingual text-to-speech processor delivers natural sounding voice using the TD-PSOLA algorithm developed by Elan Informatique, France to replicate human voice in a natural fashion. In conjunction with dictionary middleware stored in ROM or downloaded into Flash, the MSM7630 translates ASCII text into highly intelligible speech in British and U.S. English, French, Spanish and German. Various parameters, such as volume, pitch, speed, male or female voice, etc., can be easily set via parallel or serial interfaces. MSM7630 comes in a low-profile 100-TQFP and operates at 3V.

Applications: car navigation, Internet & e-mail, FM multiplex information systems, phone voice mail, cash dispensers, messaging systems, handicap aids...

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10-3, Shibaura 4-chome, Minato-ku, Tokyo 108-8551, Japan Tel:+81-3-5445-6027 Fax: +81-3-5445-6058 **http://www.oki.co.jp/semi**

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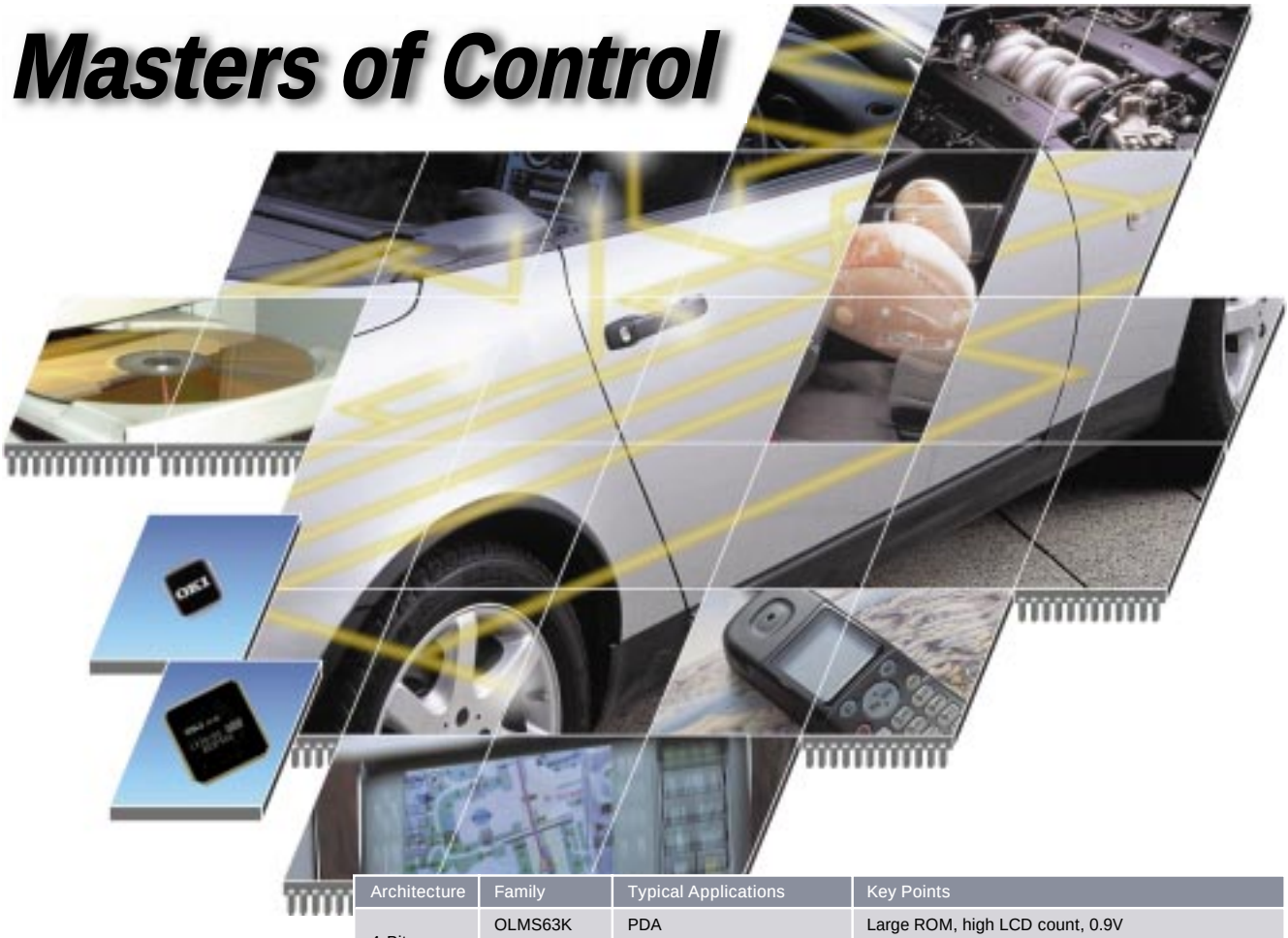

Architecture	Family	Typical Applications	Key Points
4-Bit	OLMS63K	PDA	Large ROM, high LCD count, 0.9V
	OLMS64K	Thermostats, Thermometers	CR oscillator, low power
8-Bit	OLMS65K	Appliances, AV	Cost-efficient solution
	83C154	Industrial Control	80C51-compatible 16k ROM, wide temperature range
16-Bit	OLMS66K	Automotive, AV	Fast performance, many extras
32-Bit	ARM7™ Core	Telecom, Networking	Fast, optimum MIPS/watt, small chip

Give your design a life of its own with the microcontrollers famous for their versatility and reliability. With families from 4-bits to 32 bits, Oki microcontrollers are at the heart of applications ranging from toys to demanding high-end systems.

Keeping customers' most challenging needs firmly in mind, Oki offers lower voltage, faster execution, more on-chip extras and larger memory sizes. Our partnership with ARM Ltd. enhances the wide selection, with 32-bit RISC controllers featuring excellent MIPS/watt performance and small chips, available as standard MCUs or ASIC MCUs with a rich choice of peripheral functions. To find out more, contact us or the website nearest you.

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