

## MSM6597A-xxx

### 3-Mbit Serial Voice ROM

#### GENERAL DESCRIPTION

The MSM6597A is a MSM6597 short TAT process version.

The MSM6597A is a serial voice ROM with a 1,048,576-word  $\times$  1-bit  $\times$  3-bank configuration.

The MSM6597A has a built-in internal address-generating circuit. A single, external clock input allows continuous, serial read operations. The internal addresses are automatically incremented by 1 by read operation. 1024 words in X direction and 1024 words in Y direction can be addressed by inputting external serial addresses. Banks are switched with  $\overline{CS1}$ ,  $\overline{CS2}$ , and  $\overline{CS3}$ .

A read and playback device with predetermined messages can easily be configured by storing voice data into the MSM6597A and by combining it with one of Oki's recording and playback ICs and with one of Oki's serial registers.

A serial register is required to drive the MSM6597A when used with the MSM6388 or MSM6588. (The MSM6597A does not operate without a serial register.)

The major differences between the MSM6597A and MSM6597 are shown below.

#### MSM6597A DC Characteristics

 $V_{DD} = 3.5 \text{ to } 5.5 \text{ V}, T_a = -40 \text{ to } +85^\circ\text{C}$ 

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit	
Current Consumption (1)	$I_{DD}$	$t_{RDC} = 2.5 \mu\text{s}$	—	9	20	mA	
Current Consumption (2)	$I_{DS}$	$\overline{CS1} = \overline{CS2} = \overline{CS3} = V_{DD} - 0.2 \text{ V}$	$T_a = -40$ to $+70^\circ\text{C}$	—	—	10	$\mu\text{A}$
			$T_a = -40$ to $+85^\circ\text{C}$	—	—	50	

#### MSM6597 DC Characteristics

 $V_{DD} = 3.5 \text{ to } 5.5 \text{ V}, T_a = -40 \text{ to } +85^\circ\text{C}$ 

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Current Consumption (1)	$I_{DD}$	$t_{RDC} = 2.5 \mu\text{s}$	—	—	15	mA
Current Consumption (2)	$I_{DS}$	$\overline{CS1} = \overline{CS2} = \overline{CS3} = V_{DD} - 0.2 \text{ V}$	—	—	10	$\mu\text{A}$

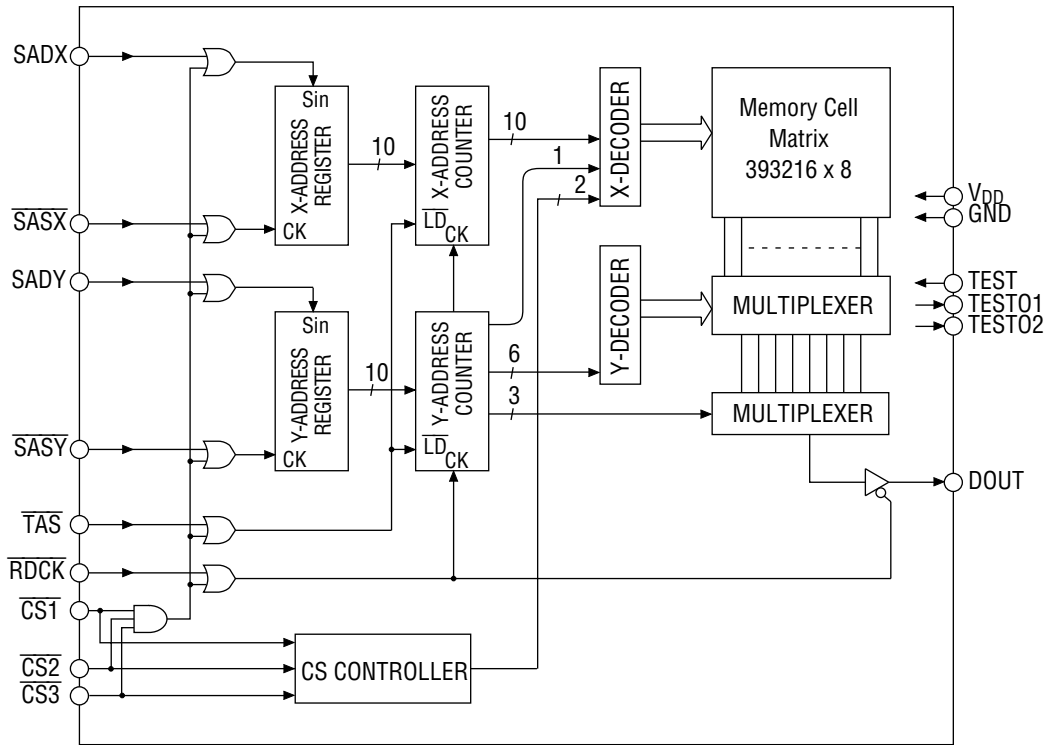
Typical values are at  $V_{DD} = 5.0 \text{ V}, T_a = 25^\circ\text{C}$

For other details, refer to individual sections in this data sheet.

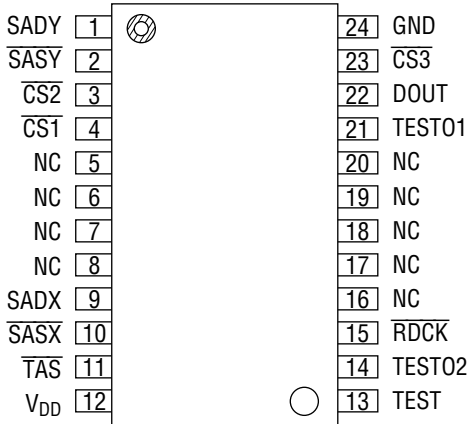
#### FEATURES

- Configuration : 1,048,576 words  $\times$  1 bit  $\times$  3 banks
- Serial access : Read cycle time of 2.5  $\mu\text{s}$
- Shorter-TAT processing
- Power-supply voltage : 5 V single supply
- Package options :
  - 24-pin plastic SOP (SOP24-P-430-1.27-K) (Product name : MSM6597A-xxxGS-K)
  - 30-pin plastic SSOP (SSOP30-P-56-0.65-K) (Product name : MSM6597A-xxxGS-AK)

**BLOCK DIAGRAM**

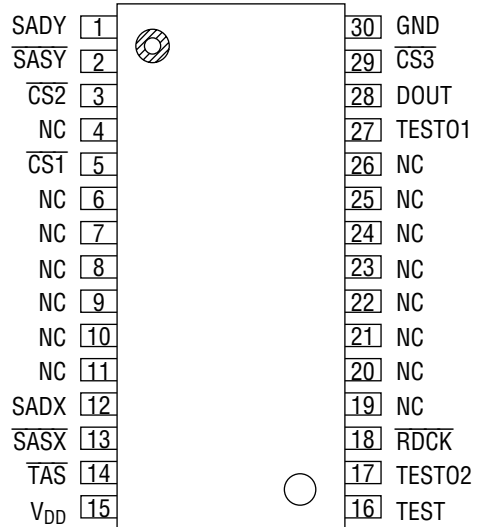


**PIN CONFIGURATION (TOP VIEW)**



NC : No connection

**24-Pin Plastic SOP**



NC : No connection

**30-Pin Plastic SSOP**

## PIN DESCRIPTIONS

Pin		Symbol	Type	Description
SOP	SSOP			
12	15	V <sub>DD</sub>	—	Power supply pin. Insert a bypass capacitor of 0.1 μF or more between this pin and the GND pin.
24	30	GND	—	Ground pin
9	12	SADX	I	(SERIAL ADDRESS) This pin inputs the starting X address of a read operation. Addressing in units of 1024 words is possible. The 1024-word address data can be input as 10-bit (AX0 - AX9) serial data via the SADX pin.
1	1	SADY	I	(SERIAL ADDRESS) This pin inputs the starting Y address of a read operation. Addressing in units of 1024 words is possible. The 1024-word address data can be input as 10-bit (AY0 - AY9) serial data via the SADY pin.
10	13	$\overline{\text{SASX}}$	I	(SERIAL ADDRESS STROBE) This is the clock input pin which is used to store the serial address data of the X address into the device's internal register.
2	2	$\overline{\text{SASY}}$	I	(SERIAL ADDRESS STROBE) This is the clock input pin which is used to store the serial address data of the Y address into the device's internal register.
11	14	$\overline{\text{TAS}}$	I	(ADDRESS TRANSFER STROBE) This is the input pin for loading the serial address data into the internal address counter. The X and Y addresses are stored at the falling edge of $\overline{\text{TAS}}$ .
15	18	$\overline{\text{RDCK}}$	I	(READ CLOCK) This is the clock input pin for reading information out of the data register. Internal operation starts at the falling edge of $\overline{\text{RDCK}}$ . The information in the data register is output on the DOUT pin. The internal address counter is automatically incremented by 1 at the falling edge of $\overline{\text{RDCK}}$ .
22	28	DOUT	O	(DATA OUT) The data output pin is always kept in a high-impedance state when $\overline{\text{CS1}}$ , $\overline{\text{CS2}}$ , and $\overline{\text{CS3}}$ are all kept "H" or when $\overline{\text{RDCK}}$ is kept "H". This pin reflects the "H" or "L" level data being read, and the current data is hold until $\overline{\text{RDCH}}$ is asserted High.
4	5	$\overline{\text{CS1}}$	I	(CHIP SELECT) When either $\overline{\text{CS1}}$ , $\overline{\text{CS2}}$ , or $\overline{\text{CS3}}$ is "L", bank 1, bank 2, or bank 3 is selected, respectively. Setting all three signals "H" disables all input and output pins. These pins enable parallel use of multiple serial voice ROMs by connecting the data output pins.
3	3	$\overline{\text{CS2}}$		
23	29	$\overline{\text{CS3}}$		
13	16	TEST	I	Pin for testing. Apply "L" level.
21	27	TEST01	O	Pins for testing. Leave these pins open.
14	17	TEST02		

## ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Condition	Rating	Unit
Power Supply Voltage	V <sub>DD</sub>	T <sub>a</sub> = 25°C	-0.3 to +7.0	V
Input Voltage	V <sub>IN</sub>	T <sub>a</sub> = 25°C	-0.3 to V <sub>DD</sub> +0.3	V
Storage Temperature	T <sub>STG</sub>	—	-55 to +150	°C

## RECOMMENDED OPERATING CONDITIONS

Parameter	Symbol	Condition	Range	Unit
Power Supply Voltage	$V_{DD}$	GND=0V	3.5 to 5.5	V
Operating Temperature	$T_{op}$	—	-40 to +85	°C

## ELECTRICAL CHARACTERISTICS

### DC Characteristics

$V_{DD} = 3.5$  to  $5.5$  V,  $T_a = -40$  to  $+85$ °C

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit	
"H" Level Input Voltage	$V_{IH}$	—	$0.8 \times V_{DD}$	—	—	V	
"L" Level Input Voltage	$V_{IL}$	—	—	—	0.8	V	
"H" Level Output Voltage	$V_{OH}$	$I_{OH} = -40 \mu A$	$V_{DD} - 0.3$	—	—	V	
"L" Level Output Voltage	$V_{OL}$	$I_{OL} = 2$ mA	—	—	0.45	V	
"H" Level Input Current	$I_{IH}$	$V_{IH} = V_{DD}$	—	—	10	$\mu A$	
"L" Level Input Current	$I_{IL}$	$V_{IL} = GND$	-10	—	—	$\mu A$	
Current Consumption (1)	$I_{DD}$	$t_{RDC} = 2.5 \mu s$	—	9	20	mA	
Current Consumption (2)	$I_{DS}$	$\overline{CS1} = \overline{CS2} = \overline{CS3} = V_{DD} - 0.2$ V	$T_a = -40$ to $+70$ °C	—	—	10	$\mu A$
			$T_a = -40$ to $+85$ °C	—	—	50	

Typical values are at  $V_{DD} = 5.0$  V,  $T_a = 25$ °C

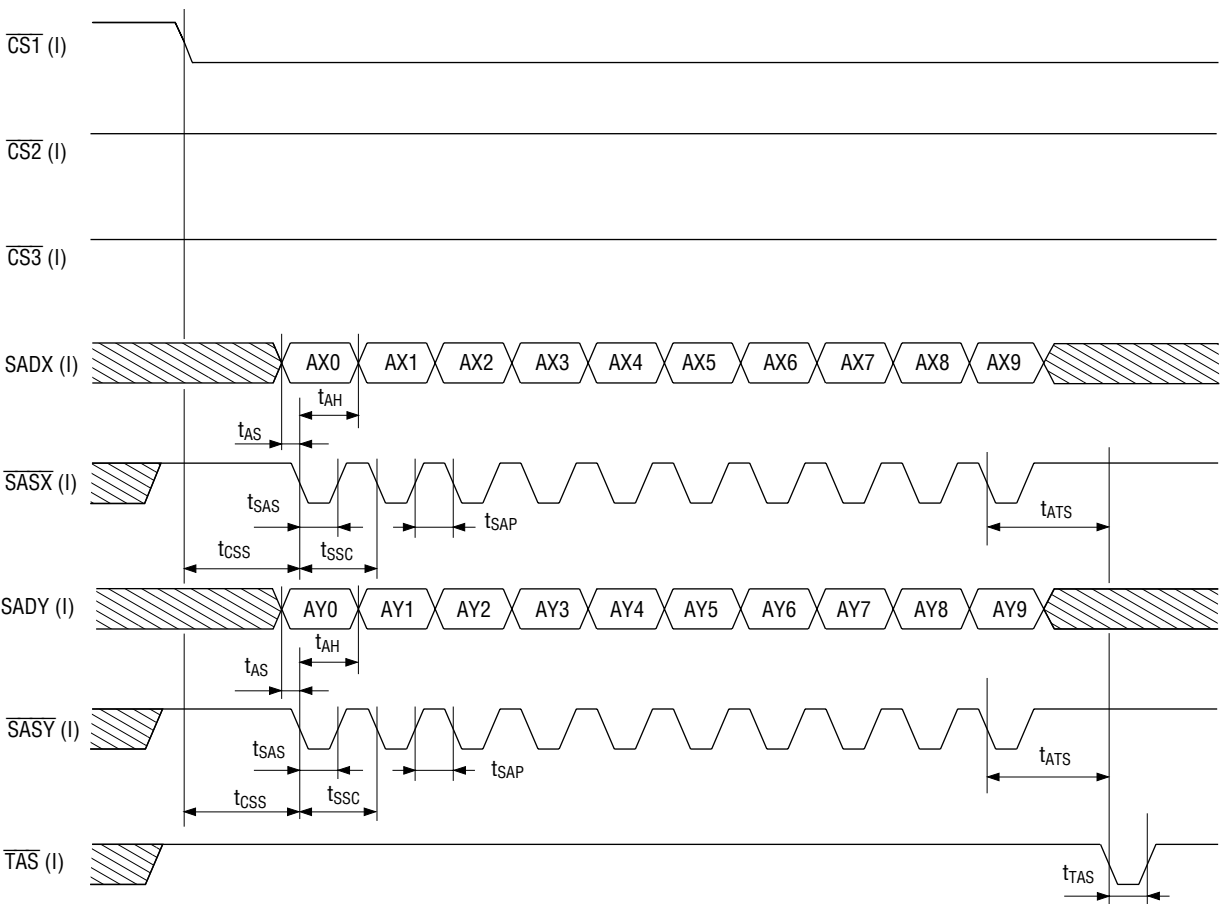
### AC Characteristics

$V_{DD} = 3.5$  to  $5.5$  V,  $T_a = -40$  to  $+85$ °C

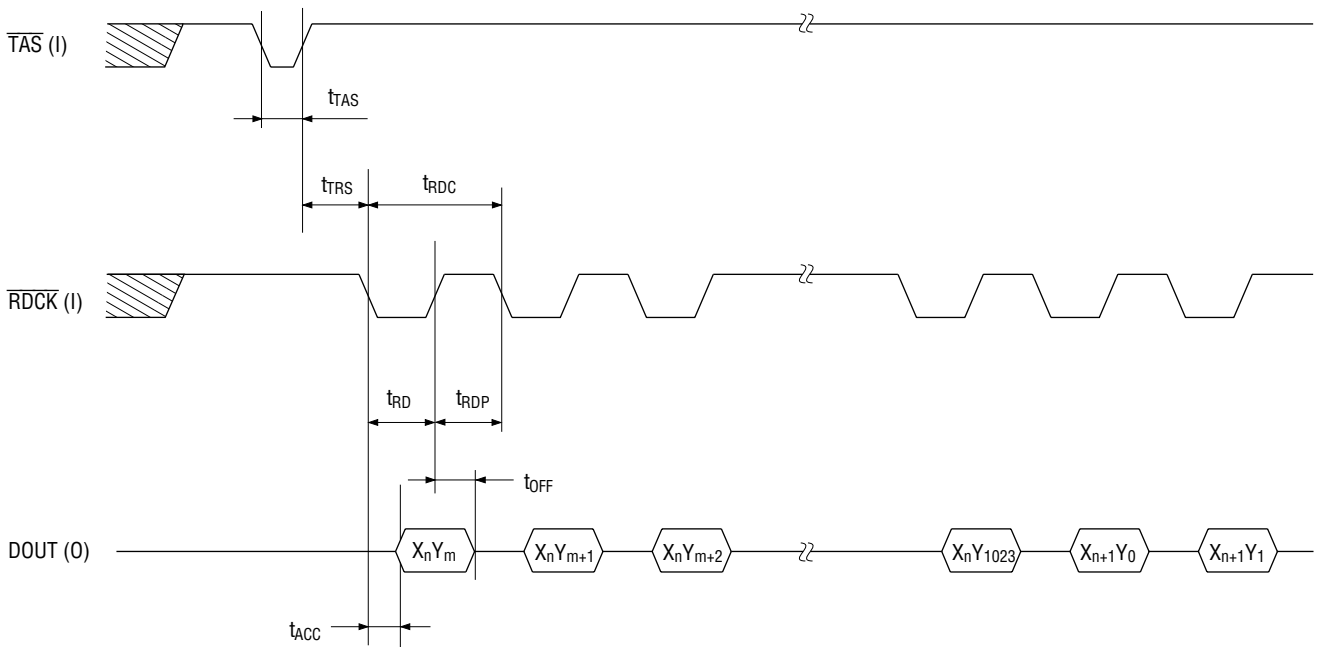
Parameter	Symbol	Min.	Max.	Unit
$\overline{CS}$ , $\overline{SAS}$ Setup Time	$t_{CSS}$	1000	—	ns
$\overline{SASX}$ , $\overline{SASY}$ Cycle Time	$t_{SSC}$	500	—	ns
$\overline{SASX}$ , $\overline{SASY}$ Precharge Time	$t_{SAP}$	250	—	ns
$\overline{SASX}$ , $\overline{SASY}$ Pulse Width	$t_{SAS}$	250	—	ns
Address Setup Time	$t_{AS}$	100	—	ns
Address Hold Time	$t_{AH}$	100	—	ns
$\overline{TAS}$ Setup Time	$t_{ATS}$	500	—	ns
$\overline{TAS}$ , $\overline{RDCK}$ Setup Time	$t_{TRS}$	500	—	ns
$\overline{TAS}$ Pulse Width	$t_{TAS}$	250	—	ns
Read Cycle Time	$t_{RDC}$	2500	—	ns
Access Time	$t_{ACC}$	—	1500	ns
Output Turn-off Delay Time	$t_{OFF}$	0	200	ns
$\overline{RDCK}$ Precharge Time	$t_{RDP}$	1000	—	ns
$\overline{RDCK}$ Pulse Width	$t_{RD}$	1500	—	ns

**TIMING DIAGRAMS**

**Serial Address Input Timing**

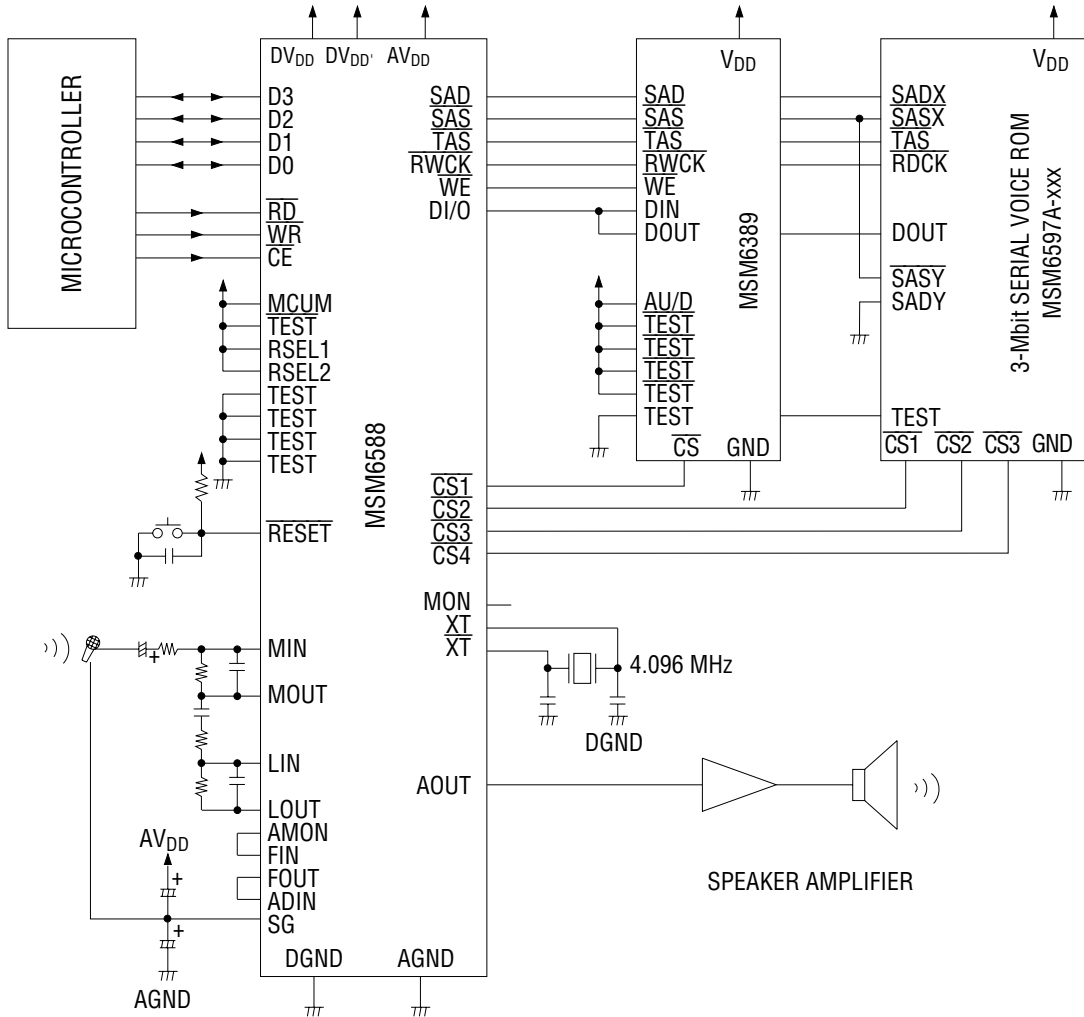


Read Access Timing



## APPLICATION CIRCUIT

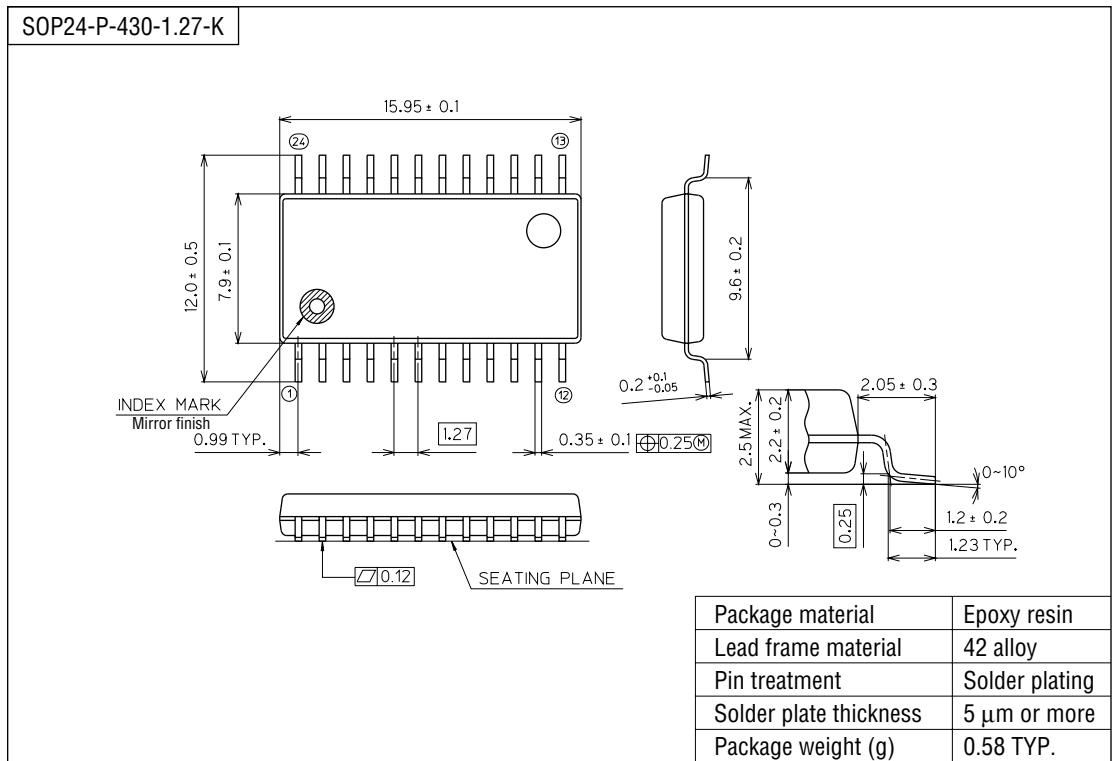
### MSM6588 Playback Storage Example



Note: When the MSM6597A is driven by the MSM6388 or MSM6588, a serial register is required. (The MSM6597A does not operate without it.)

**PACKAGE DIMENSIONS**

(Unit : mm)

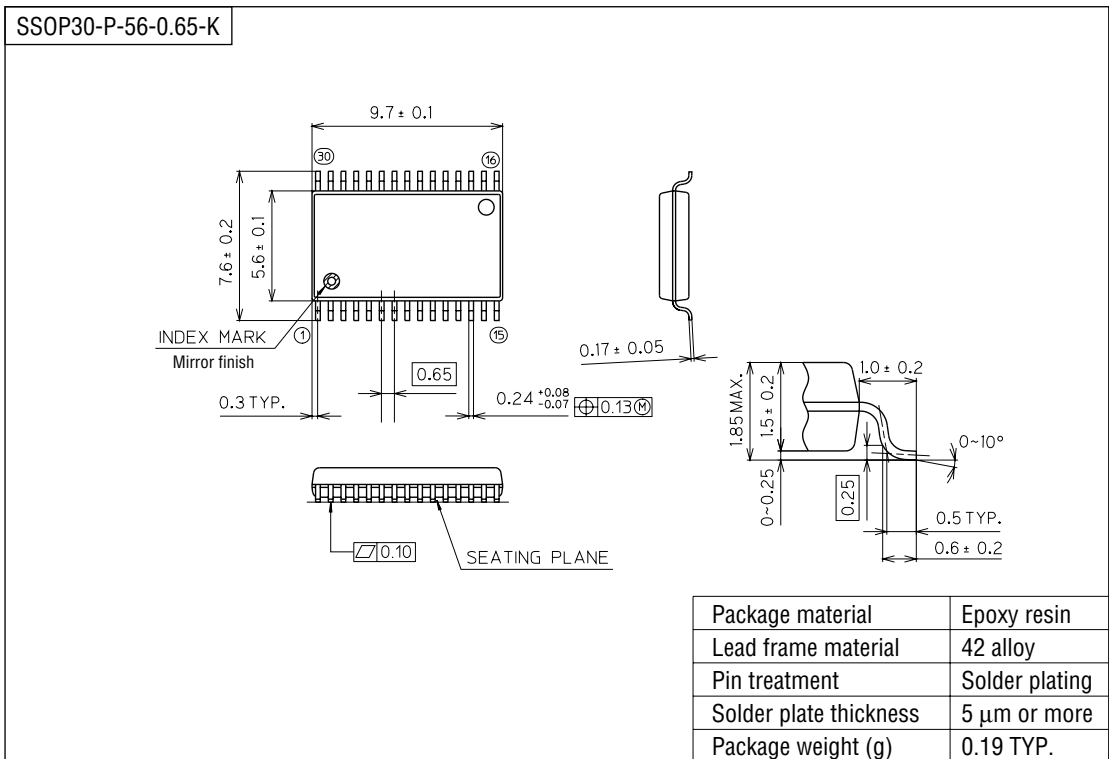


**Notes for Mounting the Surface Mount Type Package**

The SOP, QFP, TSOP, TQFP, LQFP, SOJ, QFJ (PLCC), SHP, and BGA are surface mount type packages, which are very susceptible to heat in reflow mounting and humidity absorbed in storage. Therefore, before you perform reflow mounting, contact Oki's responsible sales person on the product name, package name, pin number, package code and desired mounting conditions (reflow method, temperature and times).



(Unit : mm)



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