

OKI Semiconductor

FEDL6585-03

Issue Date: Aug. 25, 2004

MSM6585

ADPCM Voice Synthesis IC

GENERAL DESCRIPTION

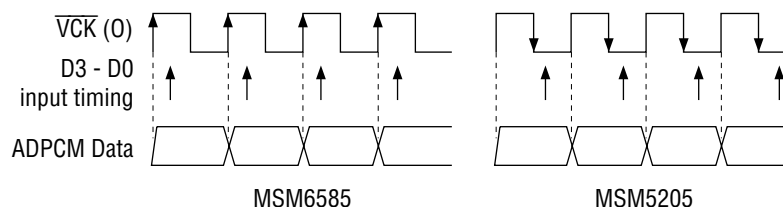
The MSM6585 is an version-up product of the MSM5205 voice synthesis IC. Mainly improved points are improvement for the precision of an internal DA converter, a built-in low-pass filter, and expansion on the sampling frequency. The MSM6585 does not include a control circuit to drive an external memory similar to the MSM5205. Therefore, the MSM6585 can be connected with not only semiconductor memories, but other memory media (CD-ROM, etc.) by the control of CPU.

FEATURES

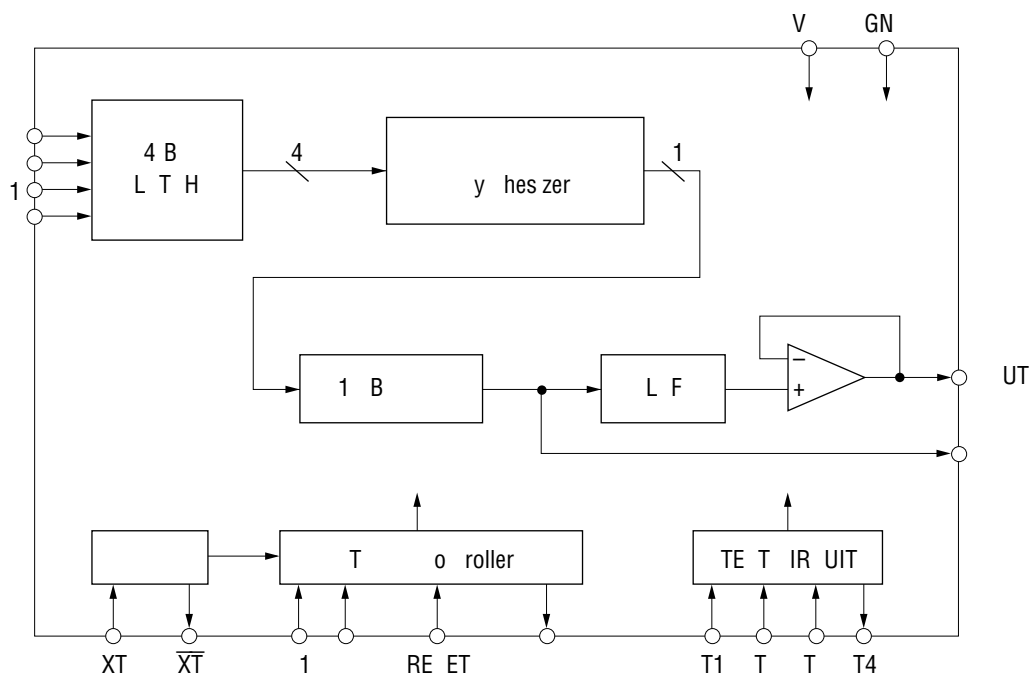
- 4-bit ADPCM method
- Built-in 12-bit DA converter
- Built-in low-pass filter (LPF) (−40dB/oct)
- Sampling frequencies: 4k/8k/16k/32kHz
- Master clock frequency (ceramic oscillator) : 640kHz
- Voice data synthesis: Supported by voice analysis editing tool AR207
- Package options:
18-pin plastic DIP (DIP18-P-300-2.54) (MSM6585RS)
24-pin plastic SOP (SOP24-P-430-1.27-K) (MSM6585MAZXXX)
30-pin plastic SSOP (SSOP30-P-56-0.65-K) (MSM6585MBZXXX)

DIFFERENCES BETWEEN MSM6585 AND MSM5205

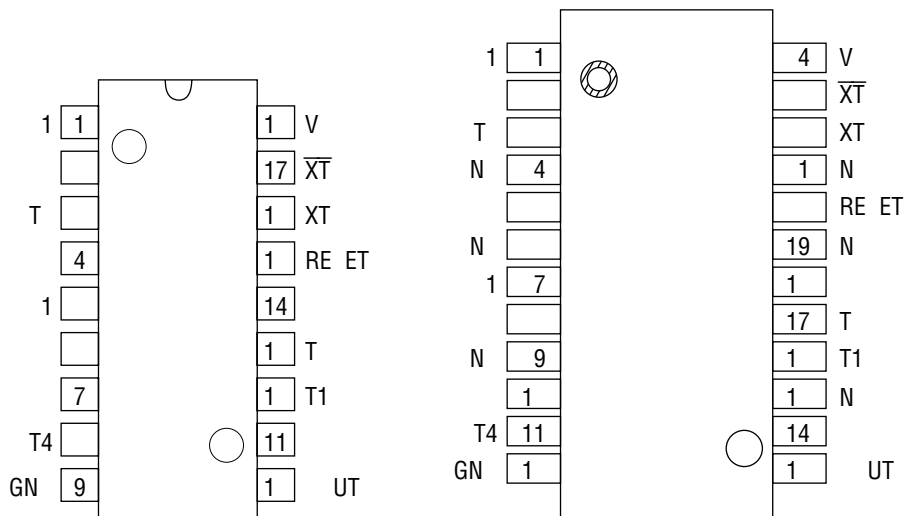
	MSM6585	MSM5205
• Master clock frequency:	640kHz	384kHz
• Sampling frequency:	4k/8k/16k/32kHz	4k/6k/8kHz
• ADPCM bit length:	4-bit	3-bit/4-bit
• DA Converter:	12-bit	10-bit
• Low-pass filter:	Included (−40dB/oct)	Not included
• Overflow preventing circuit:	Included	Not included
• Power supply voltage:	4.5 to 5.5V	3.0 to 6.0V
• Operating current consumption:	10mA	4mA
• Operating temperature:	−40 to +85°C	−30 to +70°C
• D3 to D0 input timing		



K



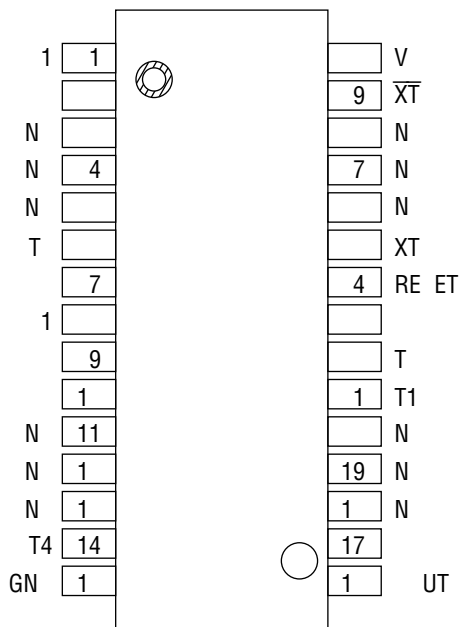
(V)



N : No connection

1 - in plastic

4- in plastic



N : No connection

3 - in plastic

in			symbol	type	description
1	1	1	1	I	<p>so de er e he s l freq e cy.</p> <p>The s l freq e ces of k, 1 k, k, d 4kHz c be selec ed by co b o s. ee he s l freq e ces FUN TI N L</p> <p>E RI TI No he selec o of co b o s.</p>
			T	I	<p>o es he er l cr c . e h s o h h level or ke o e</p> <p>bec se h s b l ll res s or.</p>
4 7	, 7, , 1	7 1		I	<p>l s for d .</p> <p>o es he er l cr c . ke h s o e .</p>
	11	14	T4		<p>o es he er l cr c . ke h s o e .</p>
9	1	1	GN	—	Gro d
1	1	1	UT		<p>o o he lo vo ce fro he low ss fl er. o ec . 1 μF</p> <p>c c or o h s . ee he UT co ec c rc FUN TI N L</p> <p>E RI TI No he co ec c rc .</p>
11	14	17			<p>o o he lo vo ce fro he co ver er.</p>
1	1	1	T1	I	<p>s o es he er l cr c . e hese s o low level or ke he</p>
1	17		T		<p>o e bec se ll dow res s ors re cl ded.</p>
14	1				<p>This o s he s l freq e cy selec ed by he co b o s of 1 d .</p> <p>The vo ce sy hes s s r s or s o s by sy chro z w h .</p>
1		4	RE ET	I	<p>Rese . The vo ce sy hes s c rc s l zed by sy chro z w h .</p> <p>If h s s se o h h level, he o d s red s bled by sy chro z w h . The UT d s o 1/ V d beco e he s e of o vo ce.</p>
1			XT	I	<p>o co ec osc ll or. Whe he ex er l clock s sed, fro h s .</p>
17		9	\overline{XT}		<p>o co ec osc ll or.</p> <p>Whe he ex er l clock s sed, ke h s o e .</p>
1	4		V	—	<p>ower s ly . l ser by ss c c or of .1 μF or ore be wee h s d he GN .</p>

X

$$GN = V$$

parameter	symbol	condition	rating	unit
power supply Voltage	V	$T = 0^{\circ}$	-0.07	V
Input Voltage	V _{IN}	$T = 0^{\circ}$	$-0.07 + 0.01$	V
Storage Temperature	T _{STG}	—	-0.01	$^{\circ}$

$$GN = V$$

parameter	symbol	condition	range	unit
Power Supply Voltage	V	—	4.00	V
Temperature	T ₀	—	-40.0	°
Series Resonant Frequency	f	oscillator circuit	4	kHz

H

characteristics

$$V = 4.0 \text{ V, } G_N = V, T = -4.0 + \text{ }^\circ$$

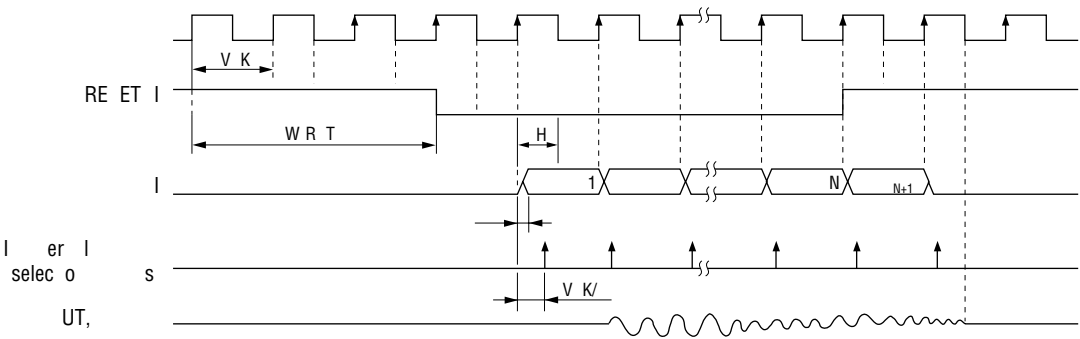
Parameter	Symbol	Condition	in.	yp.	ax.	unit
"H" I Vol e	V_{IH}	—	$\times V$	—	$V + .1$	V
"L" I Vol e	V_{IL}	—	$- .1$	—	$\times V$	V
"H" Vol e	V_H	V K: I H = -4μ	$V - .4$	—	—	V
"L" Vol e	V_L	V K: I L = 4μ	—	—	$.4$	V
"H" I rre	I_{IH1}	T1, T , RE ET: $V_{IH} = V$		1	4	μ
"H" I rre	I_{IH}	1, , , T : $V_{IH} = V$	—	—	1	μ
"H" I rre	I_{IH}	XT: $V_{IH} = V$	—	—		μ
"L" I rre	I_{IL1}	T : $V_{IL} = V$	-4	-1	-	μ
"L" I rre	I_{IL}	1, , , T1, T , RE ET: $V_{IL} = V$	-1	—	—	μ
"L" I rre	I_{IL}	XT= $V_{IL} = V$	-	—	—	μ
rre o s o	I	$f_{osc} = 4 \text{ kHz}$, No lo d	—		1	
Rel ve Error	$ V_E $	No lo d	—	—	4	V
I ed ce	R	—	1	—	4	$k\Omega$
L F Lo d Res s ce	R_{UT}	—		—	—	$k\Omega$

haracteristics

arameter	ymbol	ondition	in.	yp.	ax.	nit
r l sc ll o y ycle	f_{dy}	—	4			%
RE ET I lse W d h	W R T	$f = 4\text{kHz} \dots$ $= \text{kHz} \dots$ $= 1\text{kHz} \dots$ $= \text{kHz} \dots$	$\times V_K$	—	—	μs
e T e			—	—		μs
Hold T e	H		$V_K/$	—	—	μs

W

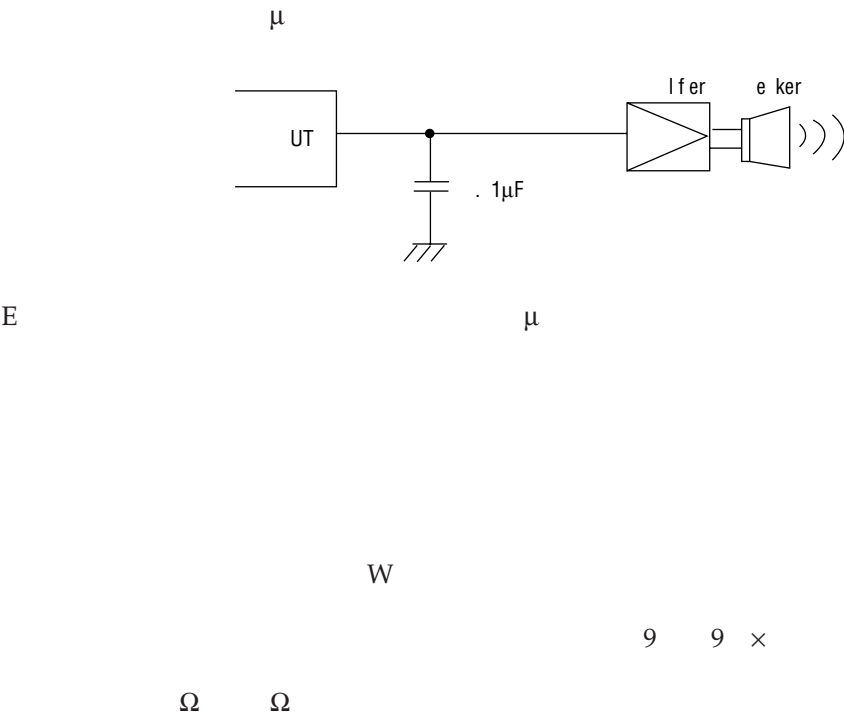
E E E E WEE

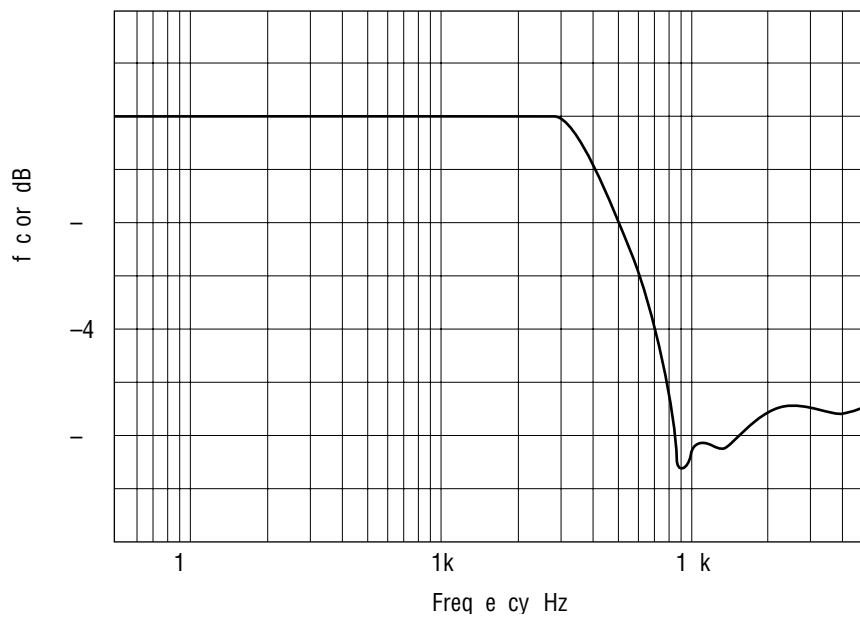


\overline{VCK}

E E E E WEE

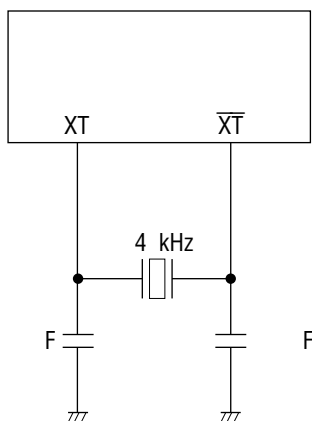
1		ampling frequency (f)	utoff frequency (f)
L	L	4 kHz	1. kHz
H	L	kHz	. kHz
L	H	1 kHz	.4 kHz
H	H	kHz	1 . kHz





K

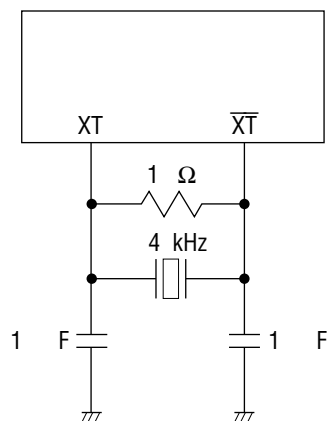
Kyocer or .
KBR 4 B sed



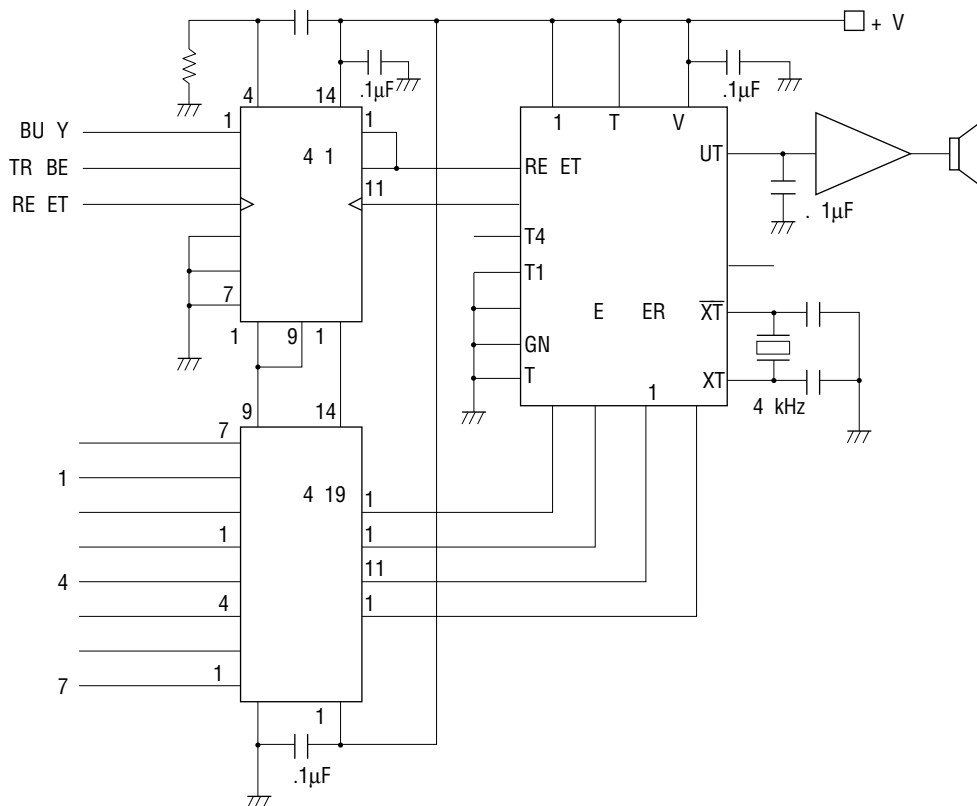
G

K

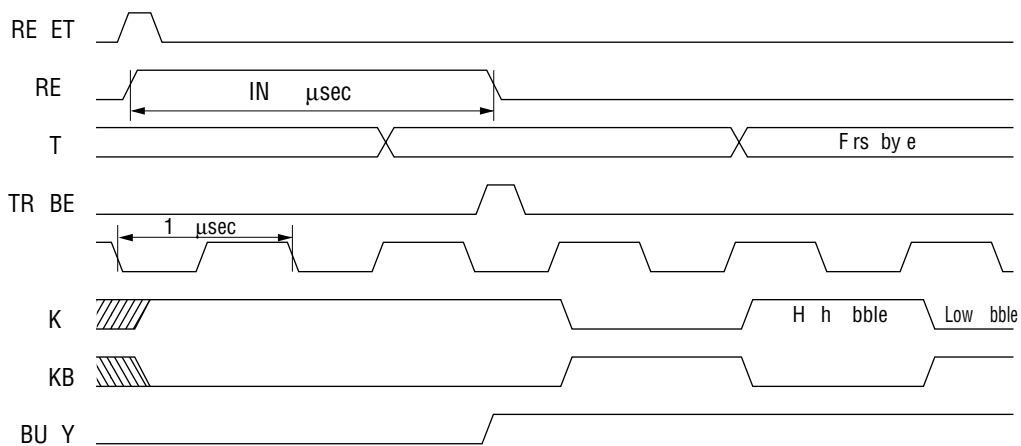
r FG. or .
B 4 sed



electronics interface circuit (sampling frequency : kHz)

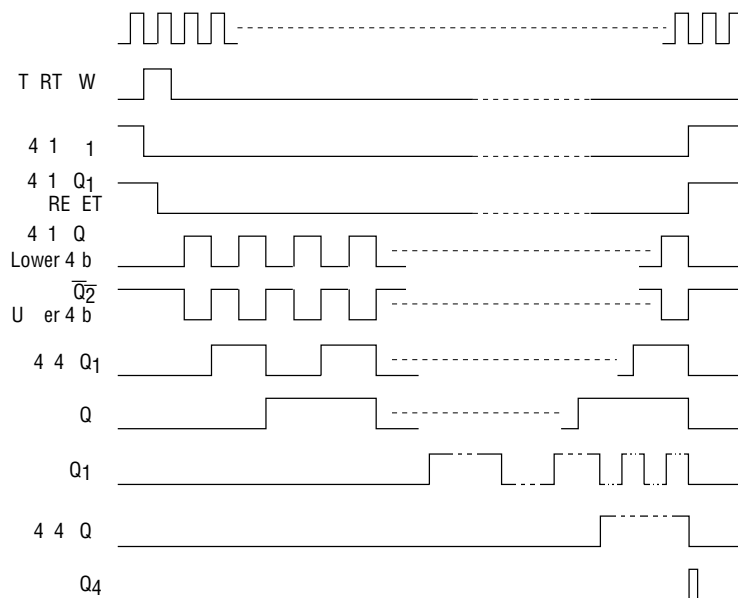
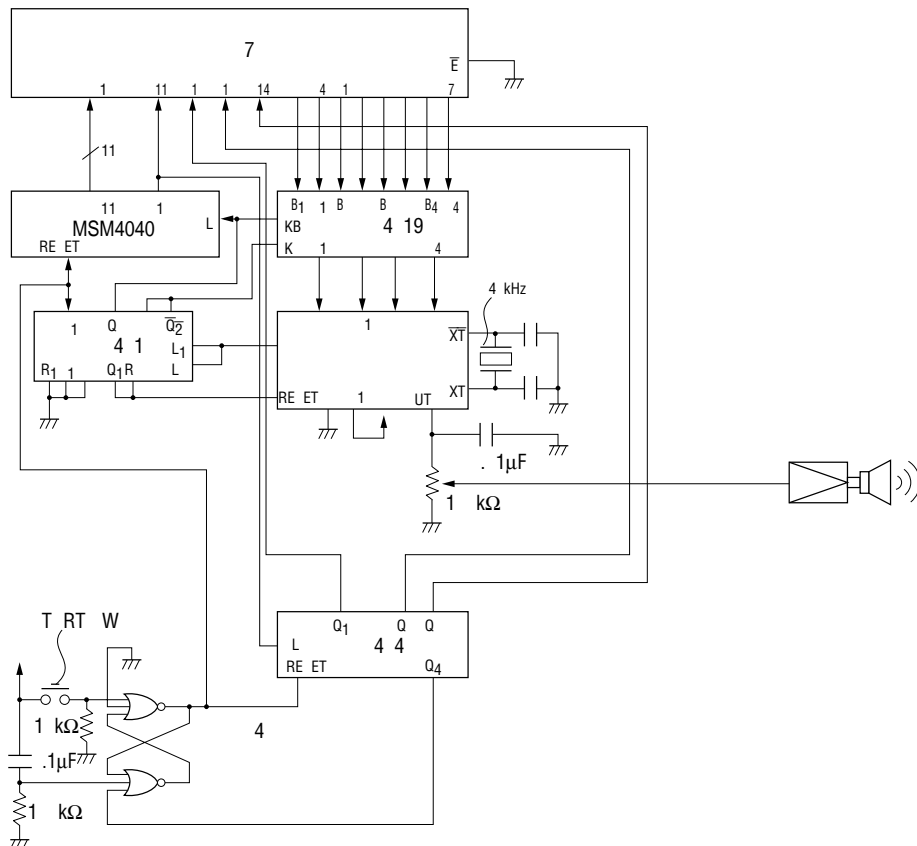


electronics timing chart

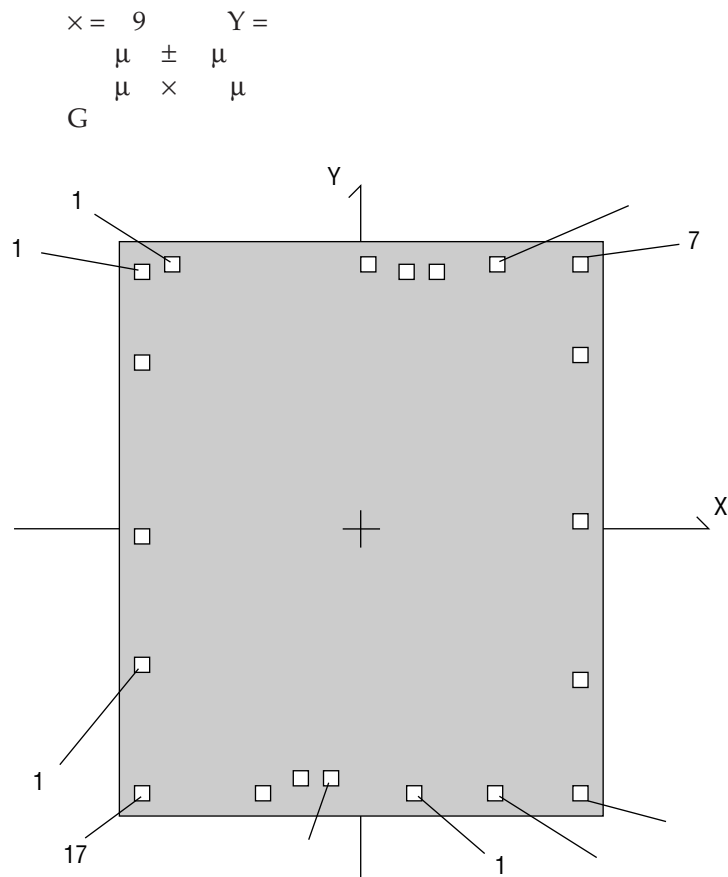


Example of interface circuit with K-bit

K E



ad ayout



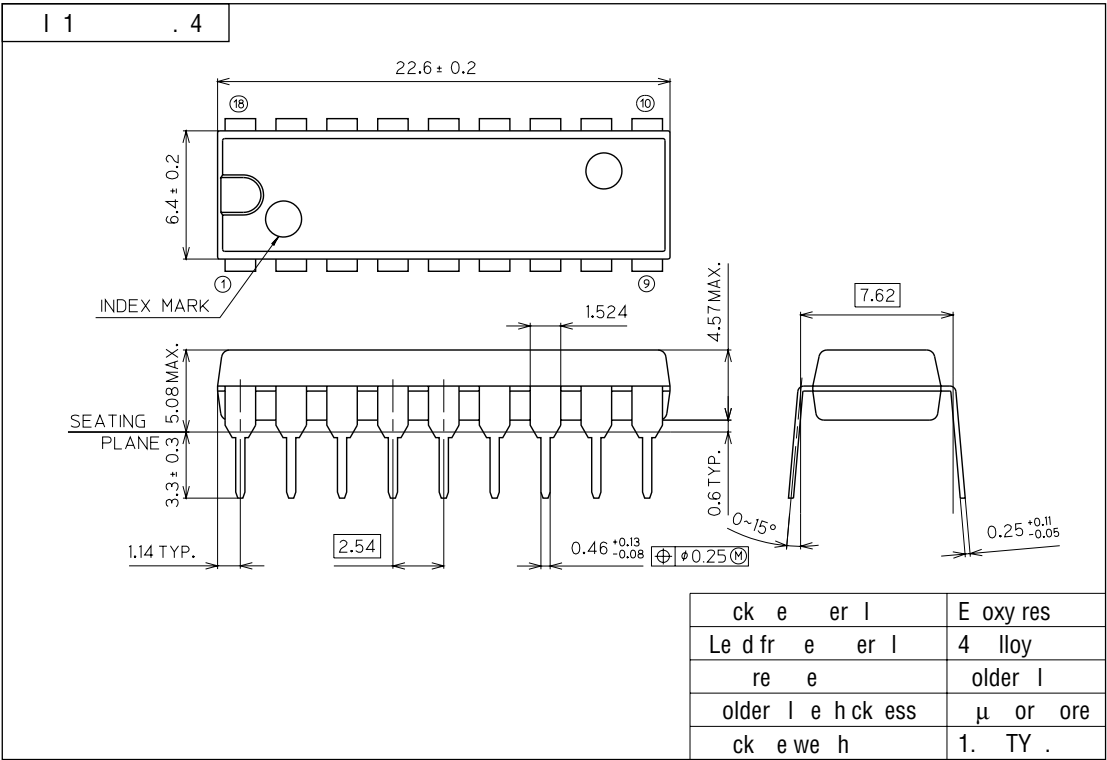
ad oordiantes

X= Y=

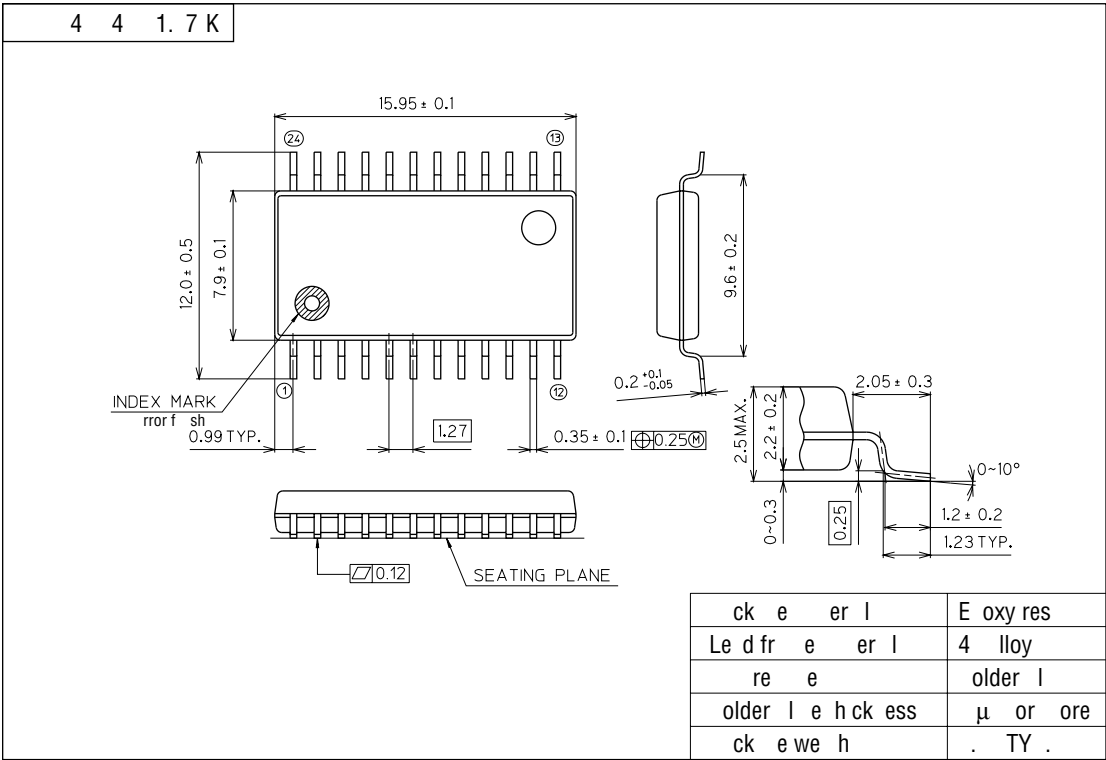
				U : μ			
o.	ame	X-axis	Y-axis	o.	ame	X-axis	Y-axis
1	1	77	-1	11	UT		1
		19	-1	1		-11	1
	T	1	-1	1	T1	-1	1 79
4		1	-94	14	T	-1	1 9
	1	1	44	1		-1	-
		1	1 9	1	RE ET	-1	- 1
7		1	1	17	XT	-1 1	-1
	T4		1	1	\overline{XT}	- 9	-1
9	V	447	1	19	V	- 99	-1 49
1	V	7	1		V	-119	-1 49

K

(Unit : mm)

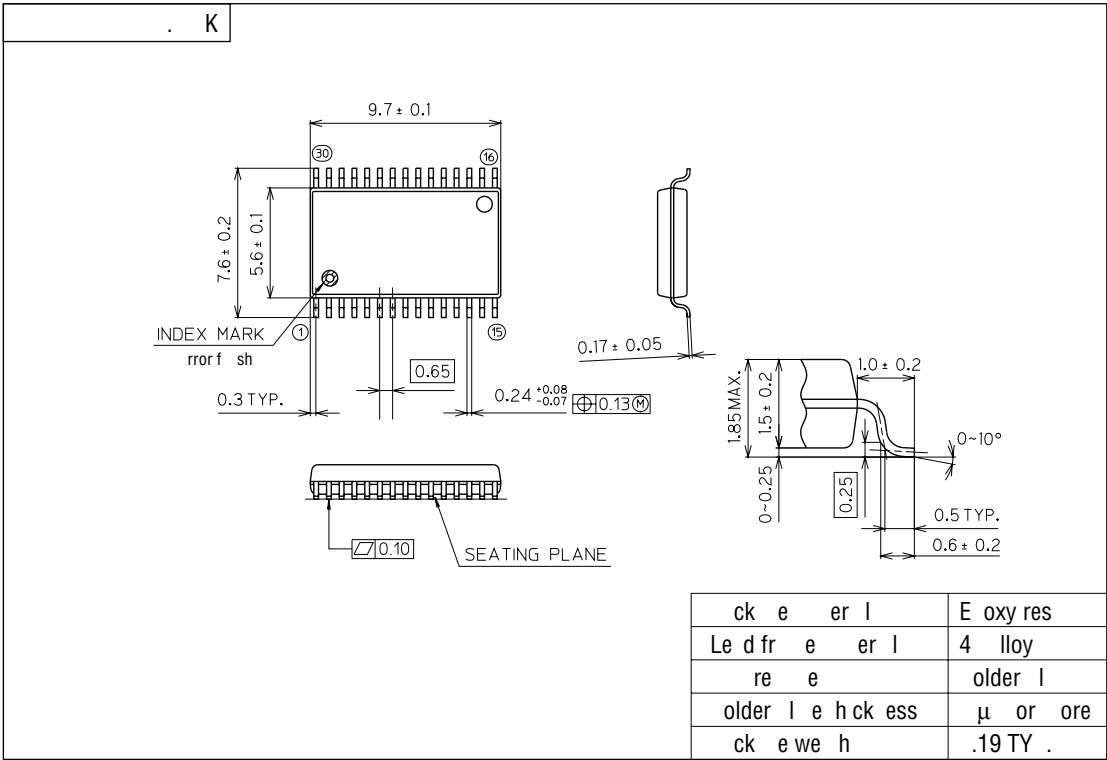


(Unit : mm)



Q Q Q J Q J G ,

(Unit : mm)



Q Q Q J Q J G

REVISION HISTORY

Document No.	Date	Page		Description
		Previous Edition	Current Edition	
E2D0011-39-91	Sep. 1999	—	—	Final edition 1
FEDL6585-02	Jun. 30, 2004	—	—	Final edition 2
		1	1	Changed the voice analysis editing tools from AR203 and AR204 to AR207.
		1	1	Changed the package product names from MSM6585GS-K and MSM6585GS-AK to MSM6585MAZXXX and MSM6585MBZXXX, respectively.
FEDL6585-03	Aug. 25, 2004	10	10	Changed the product name of the circuit block in the upper-left portion of the block diagram from MSM4013 to MSM4040.

NOTICE

1. The information contained herein can change without notice owing to product and/or technical improvements. Before using the product, please make sure that the information being referred to is up-to-date.
2. The outline of action and examples for application circuits described herein have been chosen as an explanation for the standard action and performance of the product. When planning to use the product, please ensure that the external conditions are reflected in the actual circuit, assembly, and program designs.
3. When designing your product, please use our product below the specified maximum ratings and within the specified operating ranges including, but not limited to, operating voltage, power dissipation, and operating temperature.
4. Oki assumes no responsibility or liability whatsoever for any failure or unusual or unexpected operation resulting from misuse, neglect, improper installation, repair, alteration or accident, improper handling, or unusual physical or electrical stress including, but not limited to, exposure to parameters beyond the specified maximum ratings or operation outside the specified operating range.
5. Neither indemnity against nor license of a third party's industrial and intellectual property right, etc. is granted by us in connection with the use of the product and/or the information and drawings contained herein. No responsibility is assumed by us for any infringement of a third party's right which may result from the use thereof.
6. The products listed in this document 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, unless specifically authorized by Oki, authorized 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.
7. Certain products in this document may need government approval before they can be exported to particular countries. The purchaser assumes the responsibility of determining the legality of export of these products and will take appropriate and necessary steps at their own expense for these.
8. No part of the contents contained herein may be reprinted or reproduced without our prior permission.

Copyright 2004 Oki Electric Industry Co., Ltd.