

**MSM6585**

**ADPCM Voice Synthesis IC**

**GENERAL DESCRIPTION**

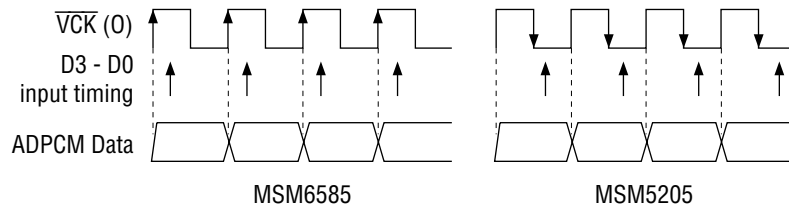
The MSM6585 is an version-up product of the MSM5205 voice synthesis IC. Mainly improved points are improvement for the precision of an internal DA converter, a built-in low-pass filter, and expansion on the sampling frequency. The MSM6585 does not include a control circuit to drive an external memory 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**

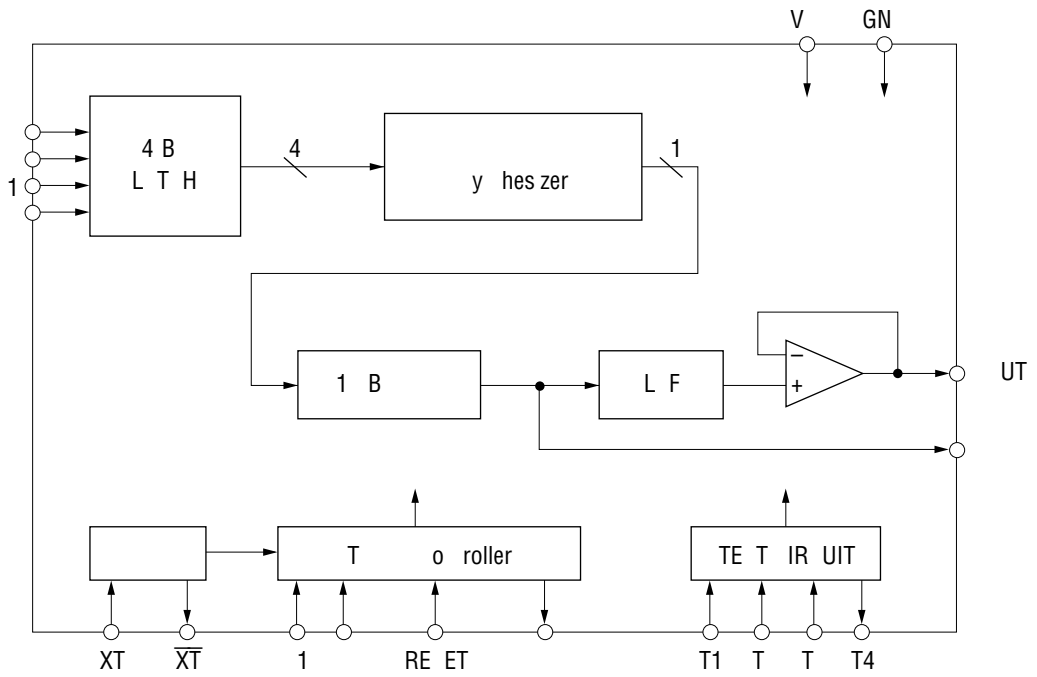
- 4-bit ADPCM method
- Built-in 12-bit DA converter
- Built-in low-pass filter (LPF) (−40dB/oct)
- Sampling frequencies: 4k/8k/16k/32kHz
- Master clock frequency (ceramic oscillator) : 640kHz
- Voice data synthesis: Supported by voice analysis editing tool AR207
- Package options:  
 18-pin plastic DIP (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**

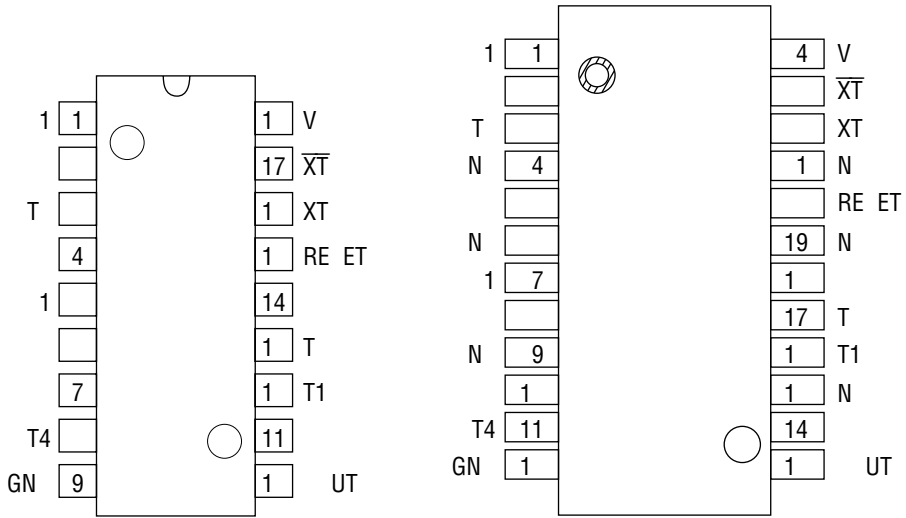
	MSM6585	MSM5205
• Master clock frequency:	640kHz	384kHz
• Sampling frequency:	4k/8k/16k/32kHz	4k/6k/8kHz
• ADPCM bit length:	4-bit	3-bit/4-bit
• DA Converter:	12-bit	10-bit
• Low-pass filter:	Included (−40dB/oct)	Not included
• Overflow preventing circuit:	Included	Not included
• Power supply voltage:	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



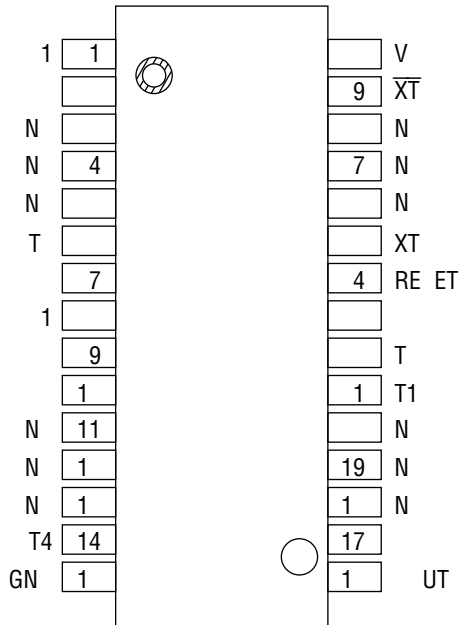
( V )



N : No connection

1 - in lastic

4- in lastic



N : No connection

3 - in lastic

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 E RI TI No he selec o of co b o s.</p>
			T	I	<p>o es he er l crc . e hs o h h level or ke o e 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 crc . ke hs o e .</p>
	11	14	T4		<p>o es he er l crc . ke hs o e .</p>
9	1	1	GN	—	<p>Gro d</p>
1	1	1	UT		<p>o o he lo vo ce fro he low ss fl er. o ec . 1 μF c c or o hs . ee he UT co ec crc FUN TI N L E RI TI No he co ec crc .</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 crc . e hese s o low level or ke he o e bec se ll dow res s ors re cl ded.</p>
1	17		T		
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 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 crc s l zed by sy chro z w h . If hs s se o h h level, he o d s red s bled by sy chro z w h . The UT d so 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 hs .</p>
17		9	$\overline{XT}$		<p>o co ec osc ll or.</p> <p>Whe he ex er l clock s sed, ke hs o e .</p>
1	4		V	—	<p>ower s ly . l ser by ss c c or of .1 μF or ore be wee hs d he GN .</p>

**X**

GN = V

Parameter	Symbol	Condition	Rating	Unit
Power Supply Voltage	V	T = °	- . 0 +7.	V
Input Voltage	V <sub>IN</sub>	T = °	- . 0 V + .	V
Operating Temperature	T <sub>TG</sub>	—	- 0 +1	°

GN = V

Parameter	Symbol	Condition	Range	Unit
Power Supply Voltage	V	—	4. 0 .	V
Operating Temperature	T <sub>0</sub>	—	-4 0 +	°
Series Lock Frequency	f	oscillator	4	kHz

**H**

**Characteristics**

V =4. 0 . V, GN = V, T =-4 0 + °

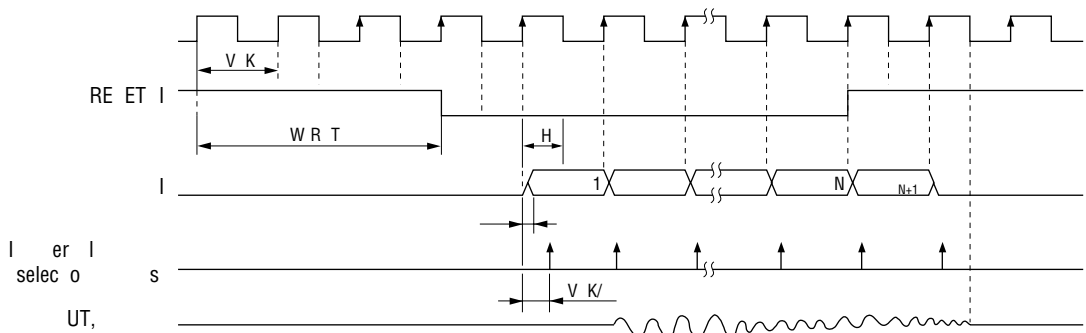
Parameter	Symbol	Condition	in.	yp.	ax.	Unit
"H" Input Voltage	V <sub>IH</sub>	—	. ×V	—	V + .1	V
"L" Input Voltage	V <sub>IL</sub>	—	- .1	—	. ×V	V
"H" Input Current	I <sub>IH</sub>	V <sub>K</sub> : I <sub>H</sub> = -4 μ	V - .4	—	—	V
"L" Input Current	I <sub>IL</sub>	V <sub>K</sub> : I <sub>L</sub> = 4 μ	—	—	.4	V
"H" Input Rise Time	t <sub>IH1</sub>	T1, T <sub>2</sub> , RE ET: V <sub>IH</sub> = V	—	1	4	μ
"H" Input Fall Time	t <sub>IH</sub>	1, , , T : V <sub>IH</sub> = V	—	—	1	μ
"H" Input Delay Time	t <sub>IH</sub>	XT: V <sub>IH</sub> = V	—	—	—	μ
"L" Input Rise Time	t <sub>IL1</sub>	T : V <sub>IL</sub> = V	-4	-1	-	μ
"L" Input Fall Time	t <sub>IL</sub>	1, , , T1, T <sub>2</sub> , RE ET: V <sub>IL</sub> = V	-1	—	—	μ
"L" Input Delay Time	t <sub>IL</sub>	XT: V <sub>IL</sub> = V	-	—	—	μ
Operating Frequency	f	f <sub>osc</sub> = 4 kHz, No load	—	—	1	
Relative Error	V <sub>E</sub>	No load	—	—	4	V
Load Resistance	R	—	1	—	4	kΩ
Load Resistance	R <sub>UT</sub>	—	—	—	—	kΩ

Characteristics

Parameter	Symbol	Condition	in.	yp.	ax.	Unit
Frequency	$f_d$	—	4			%
Reset Pulse Width	WR T	$f = 4\text{kHz} \dots$	$V_K = \mu\text{s}$	$\times V_K$	—	$\mu\text{s}$
Setup Time		$= \text{kHz} \dots$	$= 1 \mu\text{s}$	—	—	$\mu\text{s}$
Hold Time	H	$= 1 \text{kHz} \dots$	$= . \mu\text{s}$			$\mu\text{s}$
		$= \text{kHz} \dots$	$= 1. \mu\text{s}$	$V_K/$	—	$\mu\text{s}$

W

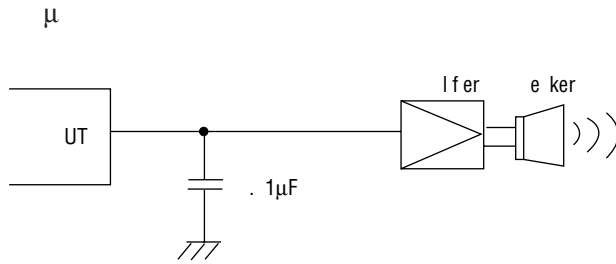
E E E E WEE



$\overline{VCK}$

E E E E WEE

1		amplifying 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



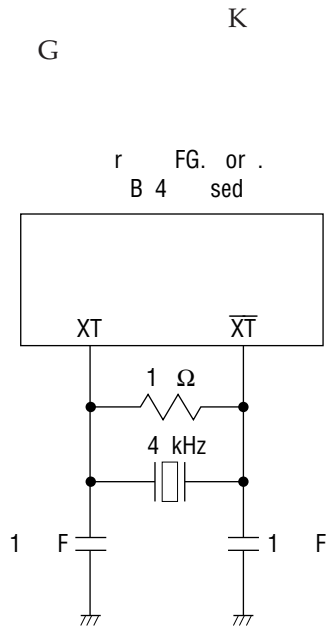
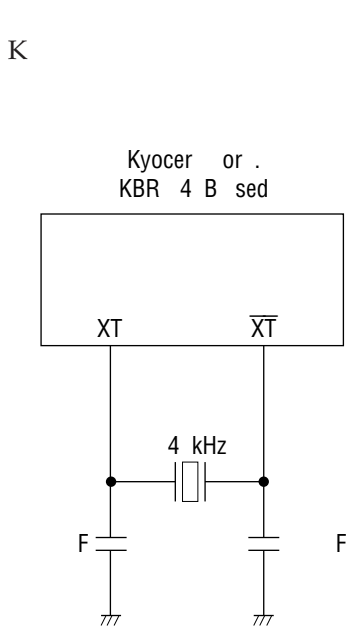
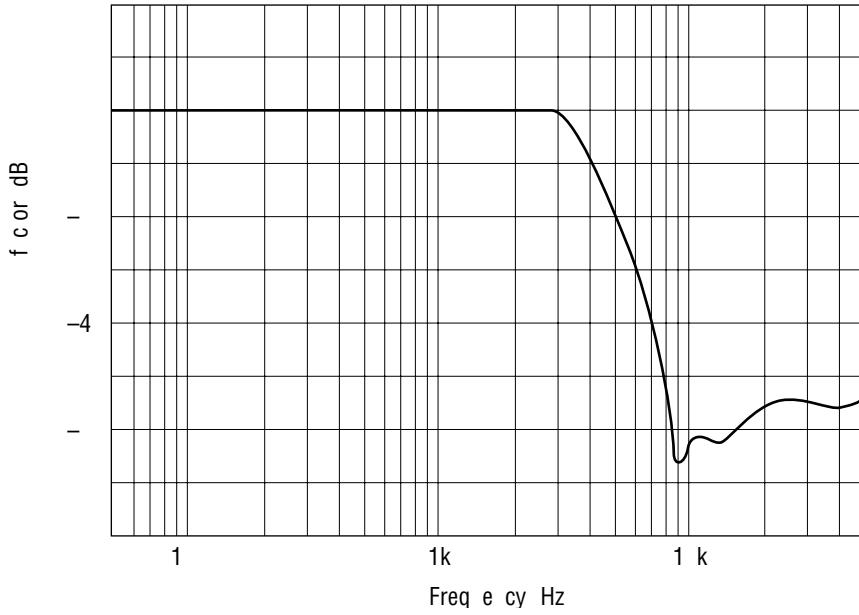
E

μ

W

9 9 ×

Ω Ω

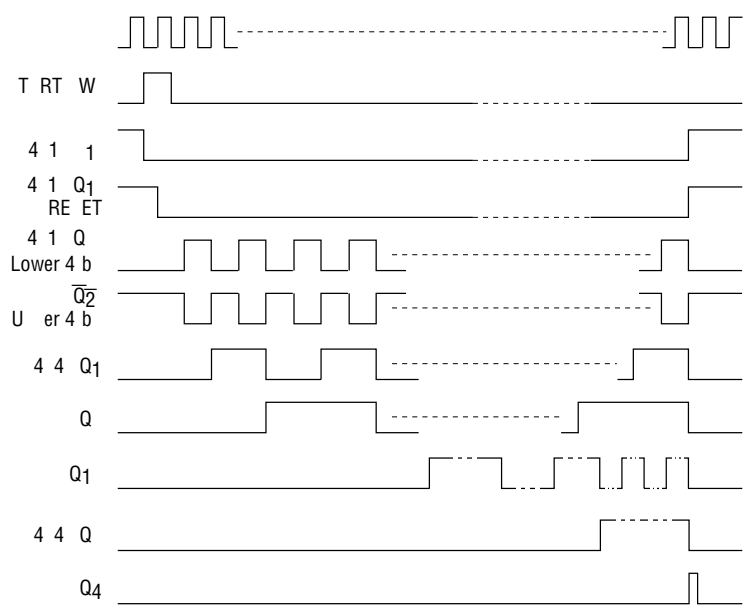
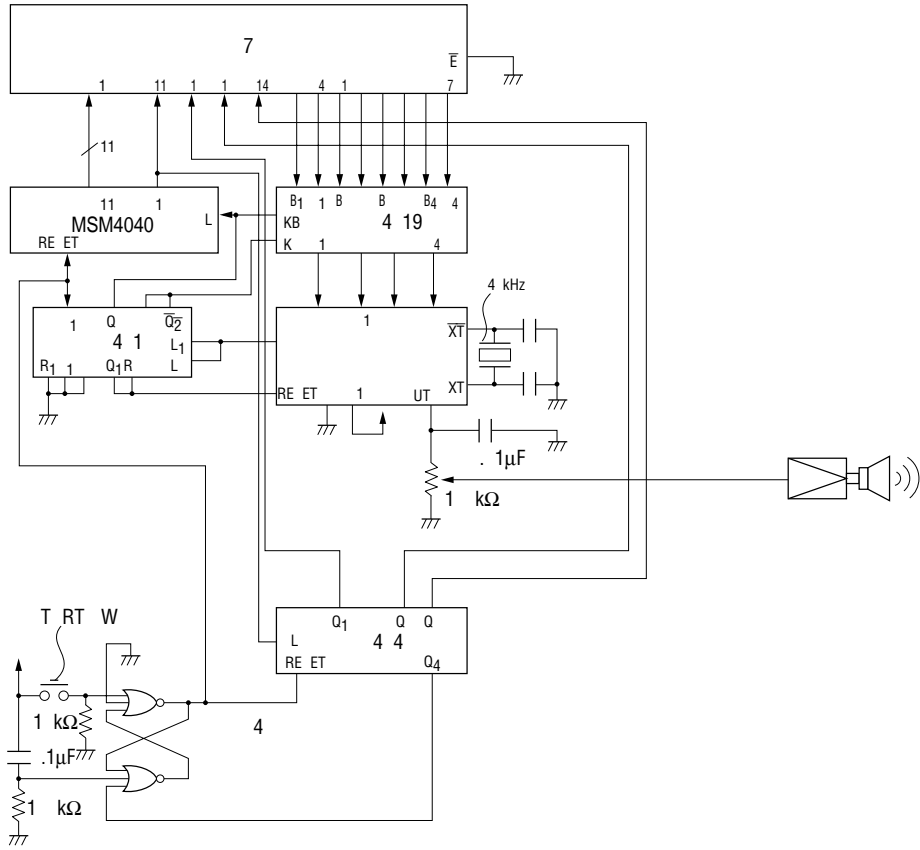




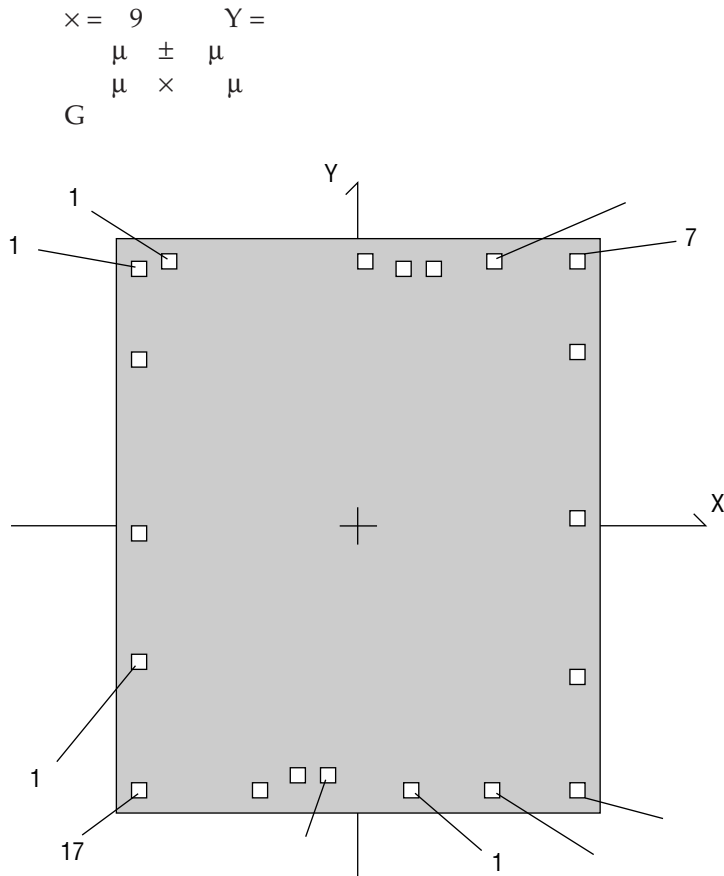


example of interface circuit with K-bit

K E



ad ayout



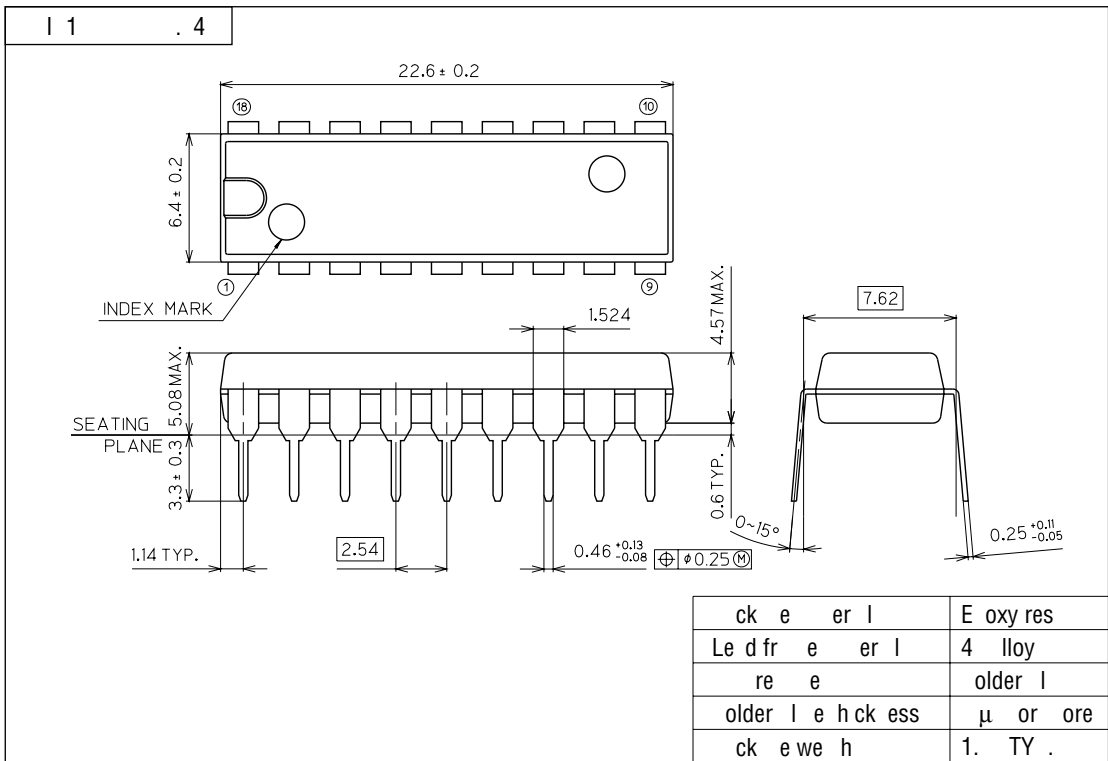
ad oordiantes

$X = Y =$

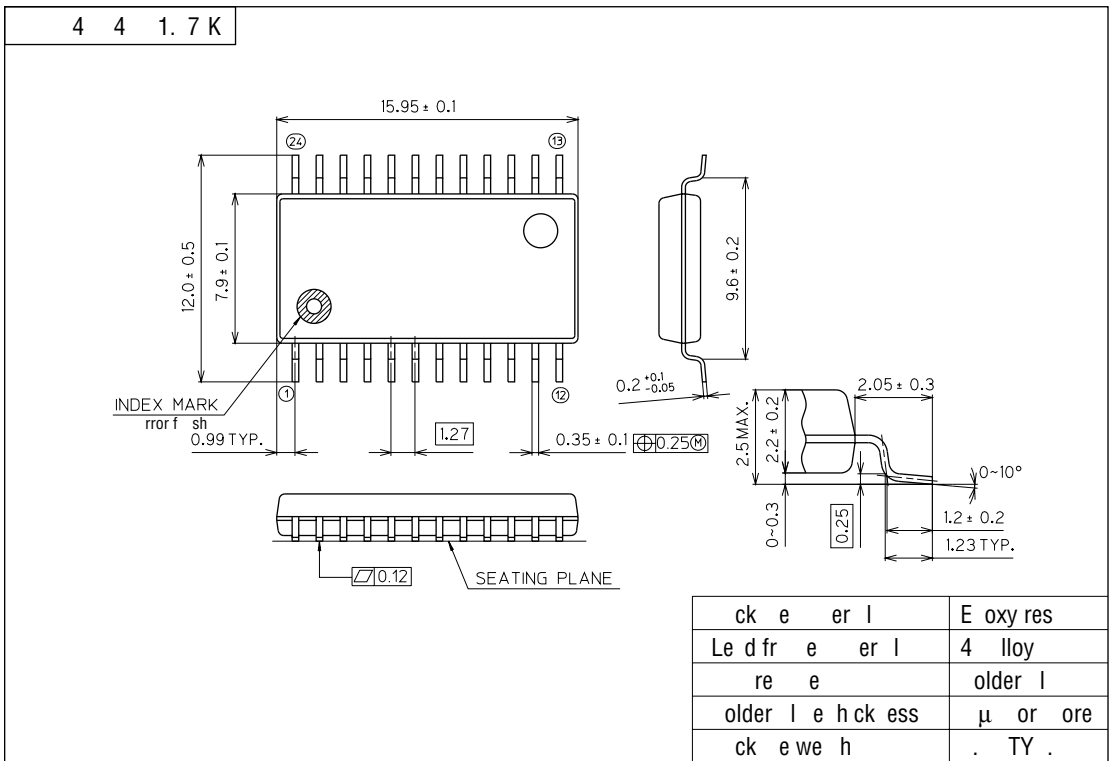
				U : $\mu$			
o.	ame	X-axis	Y-axis	o.	ame	X-axis	Y-axis
1	1	77	-1	11	UT		1
		19	-1	1		-11	1
	T	1	-1	1	T1	-1	1 79
4		1	-94	14	T	-1	1 9
	1	1	44	1		-1	-
		1	1 9	1	RE ET	-1	- 1
7		1	1	17	XT	-1 1	-1
	T4		1	1	$\overline{XT}$	- 9	-1
9	V	447	1	19	V	- 99	-1 49
1	V	7	1		V	-119	-1 49

K

(Unit : mm)



(Unit : mm)



Q

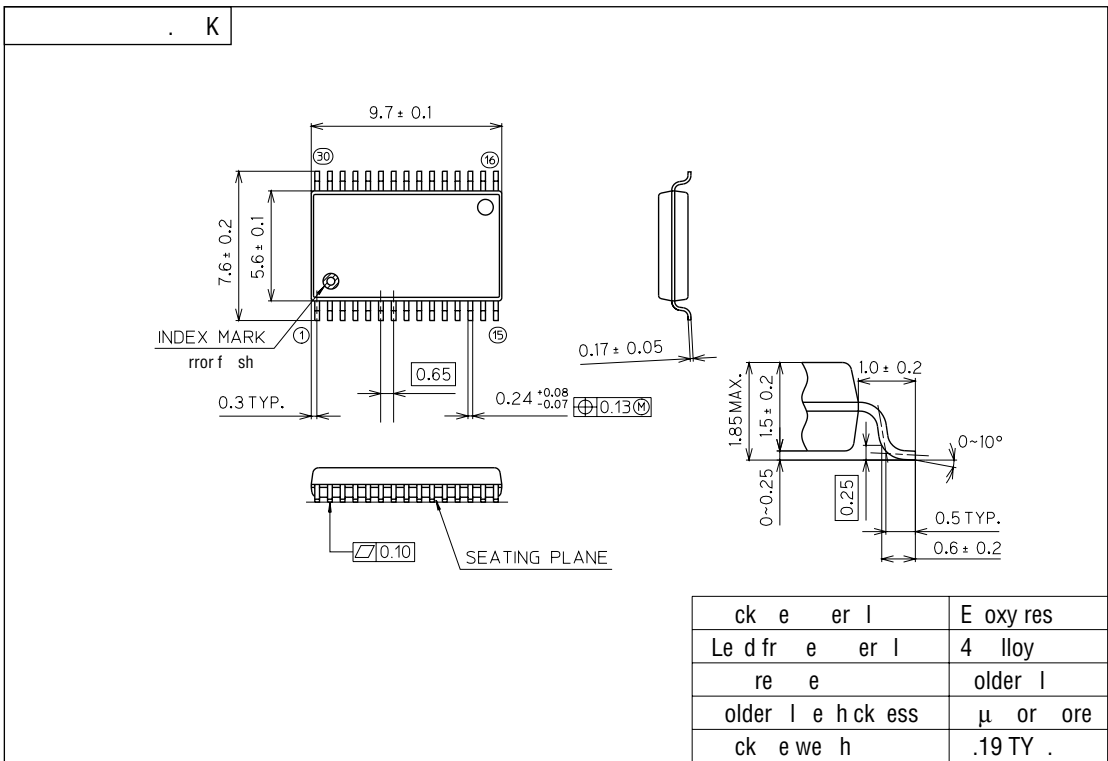
Q

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.

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