TSIPA: an IPA font for TEX

Version 1.1

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1 Introduction

TSIPA is a set of METAFONT sources and TEX macros which enables extensive use of phonetic symbols in various versions of TEX. TSIPA is compatible with the 1989 version of IPA(Internatinal Phonetic Alphabet).[1]

Although there have been already several attempts to create fonts for phonetic symbols by METAFONT[2], none of them seem to follow recent revisions of IPA. This is the main reason why we decided to newly create an IPA font for TEX.

2 Selection of symbols

IPA is the most widely used system of phonetic transcription. But there are in fact several other kinds or varieties of phonetic symbols which have been used according to the tradition or dicipline of each country. Therefore we decided to include not only IPA symbols but a few others in TSIPA.

Although we didn't want to be affected by the local tradition in the selection of symbols, the limitation on the number of symbols in a file forced us to select

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[1] The latest version of IPA is the one revised to 1992. But 1989 and 1992 versions differ only slightly and the present version of TSIPA has little difficulty (if any) in handling texts based on the 1992 version IPA.

[2] For example, WSUIPA (Washington State University), CSLI version (by Emma Pease).

those symbols that have necessity for us. As a result, a few non-IPA symbols that are mainly used in the phonetics of East Asian languages are included in TSIPA.

And it should be mentioned also that IPA itself has been revised several times, most recent revisions being made in 1989 and 1992 with many symbols newly adopted. And although TSIPA is based on the 1989 version of IPA, we tried to retain old IPA symbols as far as possible in order to have backward compatibility (Such symbols become necessary, for example, in writing a history of phonetics).

As for the style of fonts, this version of TSIPA contains only roman style font. Slanted and bold fonts will be supported in the next version.

2.1 Non-IPA symbols in TSIPA

Three groups of non-IPA symbols are included in TSIPA. The first group consists of symbols that are used in germanic linguistics.

Symbol name	**Macro name**	**Symbol**
Thorn	`\thorn`	þ
Wynn	`\wynn`	ƿ
H-V Ligature	`\hvligature`	ƕ

The second group consists of symbols that are used mainly in the phonetic description of East Asian languages.

Symbol name	**Macro name**	**Symbol**
Left-hooktop I	`\lhooktopi`	ɿ
Left-hooktop Long I	`\lhooktoplongi`	ʅ
Viby I	`\vibyi`	ʅ
Raised Viby I	`\raisevibyi`	ʅ
Viby Y	`\vibyy`	ʮ
Curly-tail D	`\curlytaild`	ȡ
Curly-tail N	`\curlytailn`	ȵ
Curly-tail T	`\curlytailt`	ȶ
Small Capital A	`\sca`	ᴀ
Small Capital Q	`\scq`	ꞯ

The last group, which consists of only one symbol, namely, `\italicschwa` came from a practical necessity that one of the authors needed it in typesetting English textbooks for high school students!

3 How to use TSIPA

3.1 Files

TSIPA package consists of the following files.

- METAFONT source files

`tsipa10.mf`	parameter file
`ipachar.mf`	program file (except for Small Capitals)
`ipasc.mf`	program file for Small Capitals[3]

- LaTeX style files

`tsipa.sty`	macro definition file
`ts10pt.sty`	font definition file for 10pt
`ts11pt.sty`	font definition file for 11pt
`ts12pt.sty`	font definition file for 12pt

Among the above mentioned style files, only `tsipa.sty` is used as a LaTeX style option; other files are automatically called by `tsipa.sty`.

3.2 How to make PK and TFM fonts

Because TSIPA is primarily distributed in the form of METAFONT source files, it is necessary to generate PK and TFM font files from the source files by running METAFONT program.[4]

One thing one must keep in mind is that not all the symbols used in TSIPA are included in TSIPA source files. Some of the symbols are made up by combining letters or symbols from `cmr`, `cmsy` together with `tsipa10`. `cmr` is used in many symbols that are realized as ligatures; symbols from `cmsy` are used in the following six cases: `\vertline` (|), `\doublevertline` (‖), `\downarrow` (↓), `\uparrow` (↑), `\globfall` (↘), `\globrise` (↗)

As for `cmsy`, the standard LaTeX font set already contains all the necessary `cmsy` fonts for TSIPA so don't worry about it. [5]

As for `cmr10`, the story is a little complicated. Since we don't have seperate `tsipa` fonts for various sizes, it is necessary to use `tsipa10` by scaling it for other sizes. And a scaled `tsipa10` font needs to be accompanied by a `cmr10` font scaled by the same magnification. And for some magnification values, scaled `cmr10` fonts are included in the standard LaTeX font set, and for others, not.

To sum up, the following fonts are necessary in addition to the standard LaTeX font set.

- `tsipa10`, `cmr10` scaled to the font size of the text.
- `tsipa10` scaled to the superscript size.

[3]Although Computer Modern font family has its own small capital font, i.e. `cmcsc`, `cmcsc`'s height is slightly taller than the *x_height* of `cmr`. In IPA, the height of small Capitals should be equal to *x_height*, and therefore we created new series of small capital letters.

[4]Pre-compiled PK and TFM font packages are also available. See the last section of this document.

[5]Except for 25pt font. If you want to use the above six symbols in 25pt, you need to generate PK font `cmsy10 scaled magstep5`.

The follwing table shows all the necessary point sizes of TSIPA fonts in a standard version of LaTeX.

	10pt		11pt		12pt	
	normal	superscript	normal	superscript	normal	superscript
`\tiny`	5pt	5pt	6pt	5pt	6pt	5pt
`\scriptsize`	7pt	5pt	8pt	6pt	8pt	6pt
`\footnotesize`	8pt	6pt	9pt	6pt	10pt	7pt
`\small`	9pt	6pt	10pt	7pt	11pt	8pt
`\normalsize`	10pt	7pt	11pt	8pt	12pt	8pt
`\large`	12pt	8pt	12pt	8pt	14pt	10pt
`\Large`	14pt	10pt	14pt	10pt	17pt	12pt
`\LARGE`	17pt	12pt	17pt	12pt	20pt	14pt
`\huge`	20pt	14pt	20pt	14pt	25pt	17pt
`\Huge`	25pt	17pt	25pt	17pt	25pt	17pt

The magnification parameters that are given to the METAFONT program for each point size are as follows:

5pt: `mag=0.5`	11pt: `mag=magstep0.5`
6pt: `mag=0.6`	12pt: `mag=magstep1`
7pt: `mag=0.7`	14pt: `mag=magstep2`
8pt: `mag=0.8`	17pt: `mag=magstep3`
9pt: `mag=0.9`	20pt: `mag=magstep4`
10pt: `mag=1`	25pt: `mag=magstep5`

For example, if you use TSIPA in `\normalsize` in a 10pt text, the following fonts are used.

`tsipa10` .... for normal text
`tsipa10 scaled 700` (`mag=0.7`) .... for superscript

In addition to this, if you use TSIPA in footnote in the same text, the following fonts are used. In this case, `cmr10 scaled 800` is necessary because it is not part of the normal LaTeX font set.

`tsipa10 scaled 800` .... for footnote text
`tsipa10 scaled 600` .... for footnote superscript
`cmr10 scaled 800` .... for footnote text

And if you use TSIPA in 12pt `\normalsize`, the following fonts are used.

`tsipa10 scaled magstep1` .... for normal text
`tsipa10 scaled 800` .... for superscript
`cmr10 scaled magstep1` .... for normal text

If possible, it is recommended to generate all sizes of fonts, i.e. from `mag=0.5` through `mag=magstep5` for `tsipa10`, and from `mag=0.5` through `mag=.9`, `mag=magstep1` and `mag=magstep3` for `cmr10`. This takes a little time but once this is done you can use TSIPA regardless of the default font size of the text.

The following list is an example of shell script for generating a complete set of TSIPA fonts. '`mode_name`' refers to an entry in the 'modes.mf'[6] file. This shell script (`makepk.sh`) is included in this package under the directory `tsipa-1.1/mf`.

```
#!/bin/sh

progname=`basename "$0"`

if [ $# = 0 ]; then
    echo "usage: $progname mode_name"
    echo "example: $progname CanonCX"
    exit 1
fi

MODE=$1

MAGS='.5 .6 .7 .8 .9 1 magstep.5 magstep1 magstep2 magstep3\
  magstep4 magstep5'

for mag in $MAGS
do
    mf "\mode=$MODE; mag=$mag; nonstopmode; input tsipa10"
done

MAGS='.5 .6 .7 .8 .9 magstep1 magstep3'

for mag in $MAGS
do
    mf "\mode=$MODE; mag=$mag; nonstopmode;input cmr10"
done

for file in *gf
do
    gftopk $file
done
```

---

[6]Sometimes 'local.mf' is used instead of 'modes.mf'.

3.3 Style option

The following style files for LaTeX are included in TSIPA.

- macro definition file: `tsipa.sty`
- font definition files: `ts10pt.sty`, `ts11pt.sty`, `ts12pt.sty`

All these files should be copied into the the directory where all the other TeX, LaTeX macros reside. Alternatively, you can place these files in a directory and set the environmental variable TEXINPUTS properly.

In order to use TSIPA in LaTeX, specify the style option `tsipa` at the preamble of the text.

```
\documentstyle[tsipa]{article}
```

If the font size of the text is other than the default 10pt, you can specify 11pt or 12pt in the LaTeX style option as is shown in the following example.

```
\documentstyle[tsipa,12pt]{article}
```

If you want to use TSIPA in LaTeX2e, use `\usepackage` to specify `tsipa` style.

```
\documentclass{article}
\usepackage{tsipa}
```

That's all for the style options.

3.4 TSIPA macros

All the macro names for phonetic symbols that can be used in TSIPA are listed in Appendix B.

3.4.1 Naming conventions

Macro names of TSIPA are in principle based on 1989 version of IPA and on the descriptive symbol names given by [1].

Also we added a few conventions to make long macro names brief without losing the descriptive nature of macro names.

- omit suffixes such as '-ive', '-ed'.
- abbreviate 'right', 'left' to `r`,`l` respectively.
- for 'small capital' letters, add prefix `sc`.
- for old version of an letter, add prefix `old`.
- make extremely long names as brief as possbile.
- some letters, such as greek 'beta', 'phi', have been already defines in TeX or LaTeX. In such cases, a prefix `ipa` is added.

Phonetic symbol name	Macro name	Symbol
Schwa	`\schwa`	ə
Cursive A	`\cursa`	ɑ
Right-tail D	`\rtaild`	ɖ
Small Capital G	`\scg`	ɢ
Old L-Yogh Digraph	`\oldlyoghdigraph`	ɮ
Glottal Stop	`\glotstop`	ʔ
Theta	`\ipatheta`	θ

In spite of all these conventions, some of the macro names are still very long. Therefore, if long macro names are used frequently in a text, it would be convinient to abbreviate them by TEX's macro command. In the case of the `\tcurlytailcdigraph`, for example, add something like the following in the preamble of the text.

```
\def\TC{\tcurlytailcdigraph}
```

3.4.2 Ordinary symbols

In the cases of ordinary phonetic symbols, simply write the macro name where it is necessary. Examples are:

Input:
```
cut␣[k\turnv␣t]
nuit␣[n\turnh␣i]
n\"{a}her␣[n\ipaepsilon\length\schwa]
```
Output:
cut [kʌt]
nuit [nɥi]
näher [nɛːə]

3.4.3 Superscript symbols

In order to typeset superscript symbols, use a macro called `\super` in the following ways.

Input:
```
top␣[t\super{h}\openo␣p]
Hawai'i␣[hawai\super{\glotstop}i]
```
Output:
top [t^{h}ɔp]
Hawai'i [hawai^{ʔ}i]

The parameter for the `\super` macro can be either a normal letter(e.g. `\super{h}`) or a TSIPA macro(e.g. `\super{\glotstop}`).

3.4.4 Diacritics

TSIPA provides a special macro for each diacritic mark. As a parameter of a diacritic macro, specify the character to which the diacritic mark is attached.

Input: `shutter␣[\esh\ipaacute{\turnv}t\schwa]`
`liaison␣[lj\ipaepsilon␣z\ipatilde{\openo}]`

Output: shutter [ʃʌ́tə]
liaison [ljɛzɔ̃]

In the cases of diacritics that are placed over a character, TEX's own macros such as `\'`,`` \` ``, `\^` cannot be used. For example, if one use `\'{\schwa}` to mean an acute accent placed over a schwa, it turns out to be '´ə'. Therefore, TSIPA offers a series of macros for such cases.

symbol	**TEX macro**	TSIPA **macro**
´	`\'`	`\ipaacute`
`	`` \` ``	`\ipagrave`
ˆ	`\^`	`\circum`
¨	`\"`	`\umlaut`
˜	`\~`	`\ipatilde`
¯	`\=`	`\overbar`
˙	`\.`	`\overdot`
˘	`\u`	`\ipabreve`
ˇ	`\v`	`\ipawedge`
˝	`\H`	`\doubleacute`
⁀	`\t`	`\toptiebar`

Among the above mentioned diacritics, the shape of `\toptiebar` differs from that of `\t` (i.e. `\toptiebar` = ⁀).

On the contrary to the cases of diacritics placed over a character, TEX macros such as `\c`, `\d`, `\b`) can be used in the cases of diacritics that are placed under a character. But TSIPA has its own macros for such cases too. The following examples show how to use these diacritic macros.

symbol	**TEX macro**	TSIPA **macro**
¸	`\c`	`\cedille`
.	`\d`	`\underdot`
_	`\b`	`\underbar`

Lastly, in the cases of `\corner`, `\rectangle`, `\rhook`, no parameter is required. Simply write the macro names as if they were an ordinary symbol.

Input: `mat␣[m\ae␣t\corner]`
`rat␣[r\ae␣t\rectangle]`
`butter␣[b\turnv␣t\schwa\rhook]`

Output: mat [mæt˺]
rat [ræt▫]
butter [bʌtə˞]

For a complete list of diacritics, see *Appendix B*.

4 Miscellaneus problems

4.1 Spacing between symbols

TSIPA uses combination of fonts such as `tsipa10`, `cmr`x, `cmsy`x, and switching of fonts may occur within a macro. Therefore, an automatic kerning by the ligtable of `TFM` file is impossible.

Because of this limitation, the distance between symbols can be sometimes inadequate.

For example, a symbol following a symbol like ʃ which has a hook protruded to the right comes too close to it.

Input: `[f\sci\esh]`
Output: [fɪʃ]

In this case, inserting *italic correction* gives proper spacing.

Input: `[f\sci\esh\/]`
Output: [fɪʃ]

On the contrary, in the next example, an ʃ comes too close to the preceding symbol.

Input: `[\esh\turnv␣t]`
Output: [ʃʌt]

In such a case, `\kern` should be given explicitly, and in TSIPA offers three kinds of kerning macros defined as follows:

```
\K(\kern.05em)
\KK(\kern.1em)
\KKK(\kern.2em)
```

By using these macros, the above example can be corrected as follows.

Input: `[\KK\esh\turnv␣t]`
Output: [ʃʌt]

4.2 Problems in composed symbols

Some of the TSIPA symbols are realized as a combination of symbols and diacritics at the TEX's macro level. Examples are:

`\hooktopc`	ƈ	(c + ̉)
`\hooktopscg`	ʛ	(ɢ + ̉)
`\lhookt`	ƫ	(t + ˈ + ̡)

And they are adjusted so as to look fine when a printer with a reasonably high resolution (such as photocomposer) is used.

Therefore, in the cases of popularly used low resolution devices (such as 300dpi Laser printers), sometimes a small gap between the combined parts might appear. There is no definite solution to this problem yet.

5 For further information

TSIPA can be obtained from a CTAN archive. The primary ftp site where the most up-to-date version is placed is:

```
ftp://tooyoo.l.u-tokyo.ac.jp:/pub/TeX/tsipa
```

This site also presents pre-compiled PK and TFM font files in the following directories.

```
/pub/TeX/tsipa/{pk,tfm}
```

If you have any questions, comments, send mail to:

```
fkr@tooyoo.l.u-tokyo.ac.jp
```

References

[1] Pullam, Geoffrey K. and William A. Ladusaw, *Phonetic Symbol Guide.* Chicago: The University of Chicago Press, 1986.

[2] Internatinal Phonetic Association, *The principles of International Phonetic Association.* 1949.

Appendix A TSIPA character code table

The following table shows character codes of TSIPA. Note that only those basic symbols that cannot be made up by combining other symbols appear in this table.

	´0	´1	´2	´3	´4	´5	´6	´7	
´00x	ɐ	ɑ	ɒ	ʌ	ɓ	ʙ	β	ɕ	″0x
´01x	ʗ	ɗ	ɖ	ʤ	ð	ə	ɚ	ɘ	
´02x	ɛ	ʚ	ɜ	ɞ	ɡ	ɠ	ɢ	ɣ	″1x
´03x	ɣ	ɤ	ɦ	ɧ	ɥ	ʜ	ɩ	ɪ	
´04x	ʝ	ɟ	ʄ	ƙ	ʞ	ɬ	ɭ	ʟ	″2x
´05x	ɮ	λ	ɱ	ɯ	ɰ	η	ɲ	ŋ	
´06x	ɳ	ɴ	ʘ	ɶ	ɔ	ɷ	β	ɸ	″3x
´07x	ʠ	ɾ	ɼ	ɺ	ɽ	ɹ	ɻ	ʀ	
´10x	ʁ	ʃ	ʆ	ƭ	ʈ	ʦ	ʇ	θ	″4x
´11x	ʊ	ʋ	ʍ	χ	ʎ	ʏ	ʑ	ʒ	
´12x	ʓ	ʔ	ʖ	ʕ	ʳ	˞	˜	⊓	″5x
´13x	⊔	▫	˒	˓	˖	ˣ	ˈ	⁀	
´14x	˞	˺	˜	˔	˕	⊣	⊢	ː	″6x
´15x	ˑ	‿	⁀	ʿ	ʷ	ˊ	ˋ	ʲ	
´16x	▫	˛	ȡ	ȵ	ȶ	ɿ	ʅ	ʅ	″7x
´17x	ʮ	ᴀ	Q	ᴜ	þ	p	hʊ	ə	
	″8	″9	″A	″B	″C	″D	″E	″F	

´000–´123	(″00–″53)	IPA symbols
´124–´125	(″54–″55)	Parts of IPA symbols
´126–´152	(″56–″6A)	IPA diacritics
´153–´157	(″6B–″6F)	old IPA diacritics
´160–´161	(″70–″71)	non-IPA diacritics
´162–´176	(″72–″7E)	non-IPA symbols

Appendix B List of TSIPA macro names

The following list shows the macro names for phonetic symbols that can be useed in TSIPA. (Notes for non linguistic users: Some ordinary letters appear in the list but they have specific meanings as a phonetic symbol. For example, 'a' (Lower-case A) is an 'open front unrounded vowel'.)

Vowels and Consonants

`a`	a	Lower-case A
`\turna`	ɐ	Turned A
`\cursa`	ɑ	Cursive A
`\turncursa`	ɒ	Turned Cursive A
`\ae`	æ	Ash Digraph
`\turnv`	ʌ	Turned V
`b`	b	Lower-case B
`\hooktopb`	ɓ	Hooktop B
`\scb`	ʙ	Small Capital B
`\ipabeta`	β	Beta
`c`	c	Lower-case C
`\hooktopc`	ƈ	Hooktop C
`\v{c}`	č	C Wedge
`\c{c}`	ç	C Cedilla
`\curlytailc`	ɕ	Curly-tail C
`\stretchc`	ʗ	Stretched C
`d`	d	Lower-case D
`\hooktopd`	ɗ	Hooktop D
`\rtaild`	ɖ	Right-tail D
`\dzdigraph`	ʣ	D-Z Digraph
`\dyoghdigraph`	ʤ	D-Yogh Digraph
`\dcurlytailzdigraph`	ʥ	D-Curly-tail-Z Digraph
`\eth`	ð	Eth
`e`	e	Lower-case E
`\schwa`	ə	Schwa
`\rhookschwa`	ɚ	Right-hook Schwa
`\reve`	ɘ	Reversed E
`\ipaepsilon`	ɛ	Epsilon
`\closeepsilon`	ʚ	Closed Epsilon
`\revepsilon`	ɜ	Reversed Epsilon
`\closerevepsilon`	ɞ	Closed Reversed Epsilon
`f`	f	Lower-case F
`\ipag`	ɡ	Lower-case G
`\hooktopg`	ɠ	Hooktop G
`g`	g	Cursive G

`\scg`	ɢ	Small Capital G
`\hooktopscg`	ʛ	Hooktop Small Capital G
`\ipagamma`	ɣ	Gamma
`\ramshorns`	ɤ	Ram's Horns
`h`	h	Lower-case H
`\crossh`	ħ	Crossed H
`\hooktoph`	ɦ	Hooktop H
`\hooktopheng`	ɧ	Hooktop Heng
`\turnh`	ɥ	Turned H
`\sch`	ʜ	Small Capital H
`i`	i	Lower-case I
`\i`	ı	Undotted I
`\bari`	ɨ	Barred I
`\ipaiota`	ɩ	Iota
`\sci`	ɪ	Small Capital I
`j`	j	Lower-case J
`\curlytailj`	ʝ	Curly-tail J
`\v{\j}`	ǰ	J Wedge
`\bardotlessj`	ɟ	Barred Dotless J
`\hooktopbardotlessj`	ʄ	Hooktop Barred Dotless J
`k`	k	Lower-case K
`\hooktopk`	ƙ	Hooktop K
`\turnk`	ʞ	Turned K
`l`	l	Lower-case L
`\ltilde`	ɫ	L with Tilde
`\beltl`	ɬ	Belted L
`\rtaill`	ɭ	Right-tail L
`\scl`	ʟ	Small Capital L
`\lyoghdigraph`	ɮ	L-Yogh Digraph
`\ipalambda`	λ	Lambda
`\crosslambda`	ƛ	Crossed Lambda
`m`	m	Lower-case M
`\ltailm`	ɱ	Left-tail M (at right)
`\turnm`	ɯ	Turned M
`\turnmrleg`	ɰ	Turned M, Right Leg
`n`	n	Lower-case N
`\nrleg`	ƞ	N, Right Leg
`\ltailn`	ɲ	Left-tail N (at left)
`\eng`	ŋ	Eng
`\rtailn`	ɳ	Right-tail N
`\scn`	ɴ	Small Capital N
`o`	o	Lower-case O
`\bullseye`	ʘ	Bull's Eye
`\baro`	ɵ	Barred O

\o	ø	Slashed O
\oe	œ	O-E Digraph
\scoedigraph	ɶ	Small Capital O-E Digraph
\openo	ɔ	Open O
\closeomega	ɷ	Closed Omega
p	p	Lower-case P
\hooktopp	ƥ	Hooktop P
\ipaphi	ɸ	Phi
q	q	Lower-case Q
\hooktopq	ʠ	Hooktop Q
r	r	Lower-case R
\fishhookr	ɾ	Fish-hook R
\longlegr	ɼ	Long-leg R
\turnlonglegr	ɺ	Turned Long-leg R
\rtailr	ɽ	Right-tail R
\turnr	ɹ	Turned R
\turnrrtail	ɻ	Turned R, Right Tail
\scr	ʀ	Small Capital R
\invscr	ʁ	Inverted Small Capital R
s	s	Lower-case S
\v{s}	š	S Wedge
\rtails	ʂ	Right-tail S (at left)
\esh	ʃ	Esh
\curlytailesh	ʆ	Curly-tail Esh
t	t	Lower-case T
\hooktopt	ƭ	Hooktop T
\lhookt	ƫ	Left-hook T
\rtailt	ʈ	Right-tail T
\tsdigraph	ʦ	T-S Digraph
\teshdigraph	ʧ	T-Esh Digraph
\tcurlytailcdigraph	ʨ	T-Curly-tail-C Digraph
\turnt	ʇ	Turned T
\ipatheta	θ	Theta
u	u	Lower-case U
\baru	ʉ	Barred U
\ipaupsilon	ʊ	Upsilon
v	v	Lower-case V
\cursv	ʋ	Cursive V
w	w	Lower-case W
\turnw	ʍ	Turned W
x	x	Lower-case X
\ipachi	χ	Chi
y	y	Lower-case Y

`\turny`	ʎ	Turned Y
`\scy`	ʏ	Small Capital Y
`z`	z	Lower-case Z
`\v{z}`	ž	Z Wedge
`\curlytailz`	ʑ	Curly-tail Z
`\rtailz`	ʐ	Right-tail Z
`\yogh`	ʒ	Yogh
`\curlytailyogh`	ʓ	Curly-tail Yogh
`\crosstwo`	ƻ	Crossed Two
`\glotstop`	ʔ	Glottal Stop
`\barglotstop`	ʡ	Barred Glottal Stop
`\invglotstop`	ʖ	Inverted Glottal Stop
`\revglotstop`	ʕ	Reversed Glottal Stop
`\barrevglotstop`	ʢ	Barred Reversed Glottal Stop
`\pipe`	ǀ	Pipe
`\doublebarpipe`	ǂ	Double-barred Pipe
`\doublepipe`	ǁ	Double Pipe
`!`	!	Exclamation Point

Old IPA, non-IPA symbols

`\babygamma`	ɤ	Baby Gamma
`\oldlyoghdigraph`	ɮ	Old L-Yogh Digraph
`\oldbardotlessj`	ɟ	Old Barred Dotless J
`\lhooktopi`	ɩ	Left-hooktop I
`\lhooktoplongi`	ɩ	Left-hooktop Long I
`\vibyi`	ʅ	Viby I
`\raisevibyi`	ʅ	Raised Viby I
`\vibyy`	ʯ	Viby Y
`\sca`	ᴀ	Small Capital A
`\scq`	ꞯ	Small Capital Q
`\curlytaild`	ȡ	Curly-tail D
`\curlytailn`	ȵ	Curly-tail N
`\curlytailt`	ȶ	Curly-tail T
`\thorn`	þ	Thorn
`\wynn`	ƿ	Wynn
`\hvligature`	ƕ	H-V Ligature
`\italicschwa`	ə	Italic Schwa

Suprasegmentals

`\primstress`	ˈ	Vertical Stroke (Superior)
`\secstress`	ˌ	Vertical Stroke (Inferior)
`e\length`	eː	Length Mark

`e\halflength`	eˑ	Half-length Mark
`\vertline`	$\vert$	Vertical Line
`\doublevertline`	$\Vert$	Double Vertical Line
`\bottomtiebar{ }`	‿	Bottom Tie Bar
`\globrise`	↗	Upward Diagonal Arrow
`\globfall`	↘	Downward Diagonal Arrow
`\downarrow`	↓	Down Arrow
`\uparrow`	↑	Up Arrow
`\exhtonebar`	˥	Extra-high Tone Bar
`\htonebar`	˦	High Tone Bar
`\mtonebar`	˧	Mid Tone Bar
`\ltonebar`	˨	Low Tone Bar
`\exltonebar`	˩	Extra-low Tone Bar

Diacritics

`\ipaacute{\cursa}`	ɑ́	Acute Accent (over)
`\ipagrave{\cursa}`	ɑ̀	Grave Accent (over)
`\varacute{\cursa}`	ɑ̗	Acute Accent (under)
`\vargrave{\cursa}`	ɑ̖	Grave Accent (under)
`\doubleacute{\cursa}`	ɑ̋	Double Acute Accent (over)
`\doublegrave{\cursa}`	ɑ̏	Double Grave Accent (over)
`\macron{\cursa}`	ɑ̄	Macron
`\underbar{\cursa}`	ɑ̱	Under-bar
`\overring{\eng}`	ŋ̊	Over-ring
`\underring{\eth}`	ð̥	Under-ring
`\ipawedge{\cursa}`	ɑ̌	Wedge
`\subwedge{\ipatheta}`	θ̬	Subscript Wedge
`\umlaut{\turnm}`	ɯ̈	Umlaut
`\subumlaut{\ipabeta}`	β̤	Subscript Umlaut
`\ipatilde{\ipaepsilon}`	ɛ̃	Superscript Tilde
`\subtilde{\ipabeta}`	β̰	Subscript Tilde
`\ipabreve{\schwa}`	ə̆	Breve
`\subarch{\schwa}`	ə̯	Subscript Arch
`\overdot{\cursa}`	ɑ̇	Over-dot
`\underdot{\schwa}`	ə̣	Under-dot
`\subbridge{\eth}`	ð̪	Subscript Bridge
`\invsubbridge{n}`	n̺	Inverted Subscript Bridge
`\subsquare{\eth}`	ð̻	Subscript Square
`\subrhalfring{\openo}`	ɔ̹	Subscript Right Half-ring
`\sublhalfring{\openo}`	ɔ̜	Subscript Left Half-ring
`\subplus{\openo}`	ɔ̟	Subscript Plus
`\underbar{\schwa}`	ə̱	Under-bar

`\overcross{\cursa}`	ɑ̽	Over-cross
`\raising{\turnr}`	ɹ̝	Raising Sign
`\lowering{\ipabeta}`	β̞	Lowering Sign
`\advancing{u}`	u̟	Advancing Sign
`\retracting{\schwa}`	ə̠	Retracting Sign
`\syllabic{\turnr}`	ɹ̩	Syllabicity Mark
`\circum{\cursa}`	ɑ̂	Circumflex
`\subw{\ipatheta}`	θ̫	Subscript W
`\superimposetilde{d}`	d̴	Superimposed Tilde
`\polhook{\ipaepsilon}`	ɛ̨	Polish Hook
`\cedille{\schwa}`	ə̧	Cedille
`\seagull{\ipatheta}`	θ̼	Seagull
`d\corner`	d˺	Corner
`d\rectangle`	d▫	Rectangle
`\schwa\rhook`	ə˞	Right Hook
`d\super{h}`	d^h	Superscript H
`d\super{j}`	d^j	Superscript J
`d\super{l}`	d^l	Superscript L
`d\super{n}`	d^n	Superscript N
`d\super{w}`	d^w	Superscript W
`d\super{y}`	d^y	Superscript Y
`\esh\super{s}`	ʃ^{s}	Superscript S
`\esh\super{x}`	ʃ^{x}	Superscript X
`d\super{\ipagamma}`	d^{ɣ}	Superscript Gamma
`t\super{\glotstop}`	t^{ʔ}	Superscript Glottal Stop
`d\super{\revglotstop}`	d^{ʕ}	Superscript Reversed Glottal Stop
`\toptiebar{\ipag b}`	ɡ͡b	Top Tie Bar
`'`	'	Apostrophe
`\revapostrophe`	ʻ	Reversed Apostrophe
`.`	.	Period
`,`	,	Comma
`\palhook`	̡	Palatalization Hook
`\longpalhook`	̡	Long Palatalization Hook
`\hooktop`	ʽ	Hooktop
`\oldrhook`	˞	Old Right-hook
`\longoldrhook`	˞	Long Old Right-hook
`$-$`	$-$	Minus Sign
`+`	+	Plus Sign