

6581/8580 Myths and facts

History

Robert “BOB” Yannes designer of SID and also part of Commodore 64

Yannes left Commodore soon after release of C64 and started to design competitor for C64.

After enormous success of Commodore 64, investors got cold feet on Yannes project and took away the funding.

Yannes and his team decided to go into synthesizers market instead and the rest is history, Ensoniq was born.

Production problems

First manufactured SID revision was R2

No revision markings

R2's manufactured late 1982

R3 replaced R2 soonish

Early R3 no markings, later 6581 R3 was printed on chip

R4 and R4AR

Revisions made little adjustments on silicon to produce better chip yields.

Theres no adjustments on filter!

6582 / 8580

HMOS version of SID, completely redesigned silicon.

6581 sound differences

What is going on?

Every single sid chip sounds different, some more and some less.

Main difference is analog filter part properties

Even chips from same plant and manufacturing week sounds different.

Why?

While digital chips works then there's 1 or 0 level of voltages, but analog side is way more accurate than that.

Commodore NMOS process was not very exact.

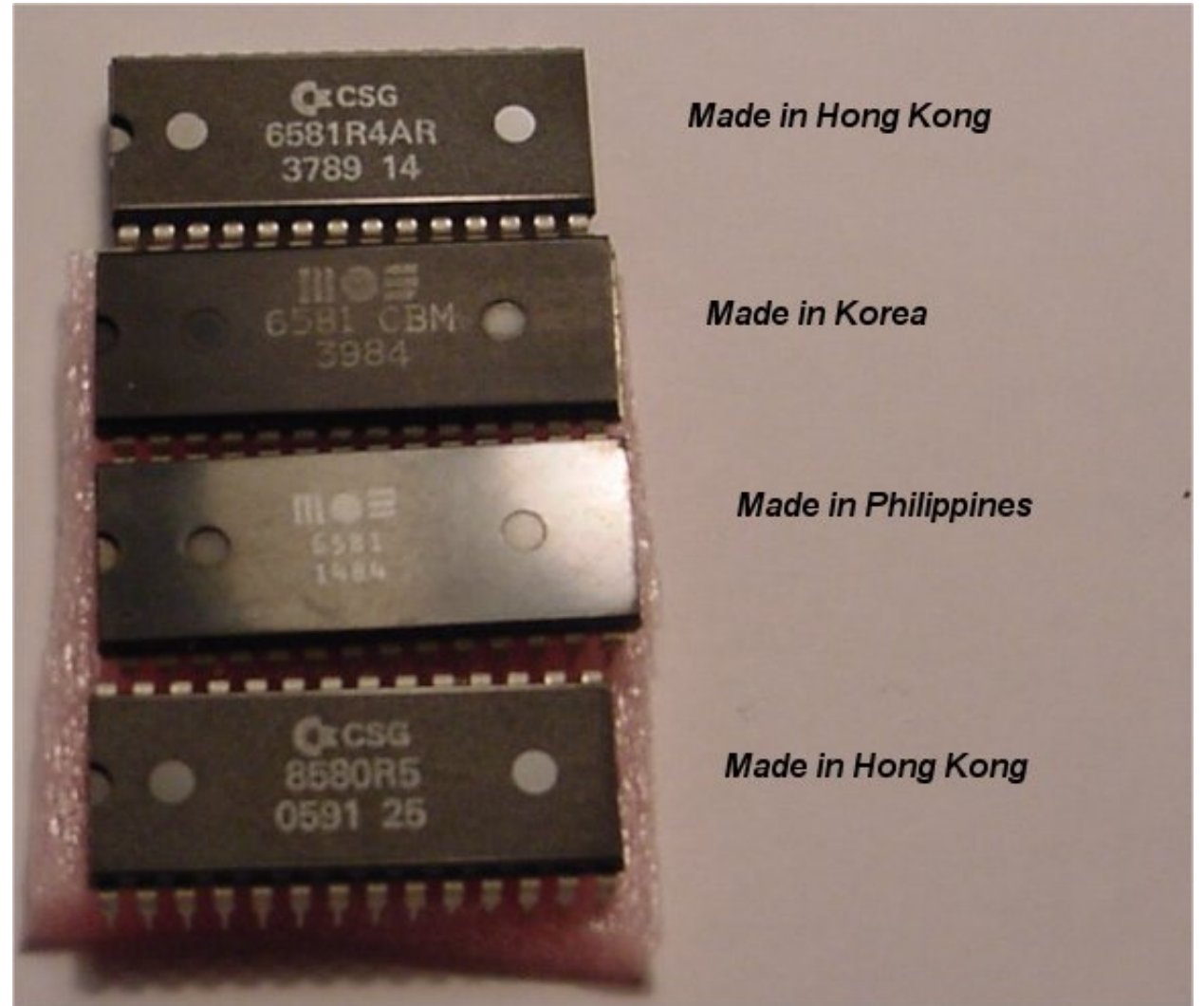
Different plants

Hong Kong

Korea

Philippines

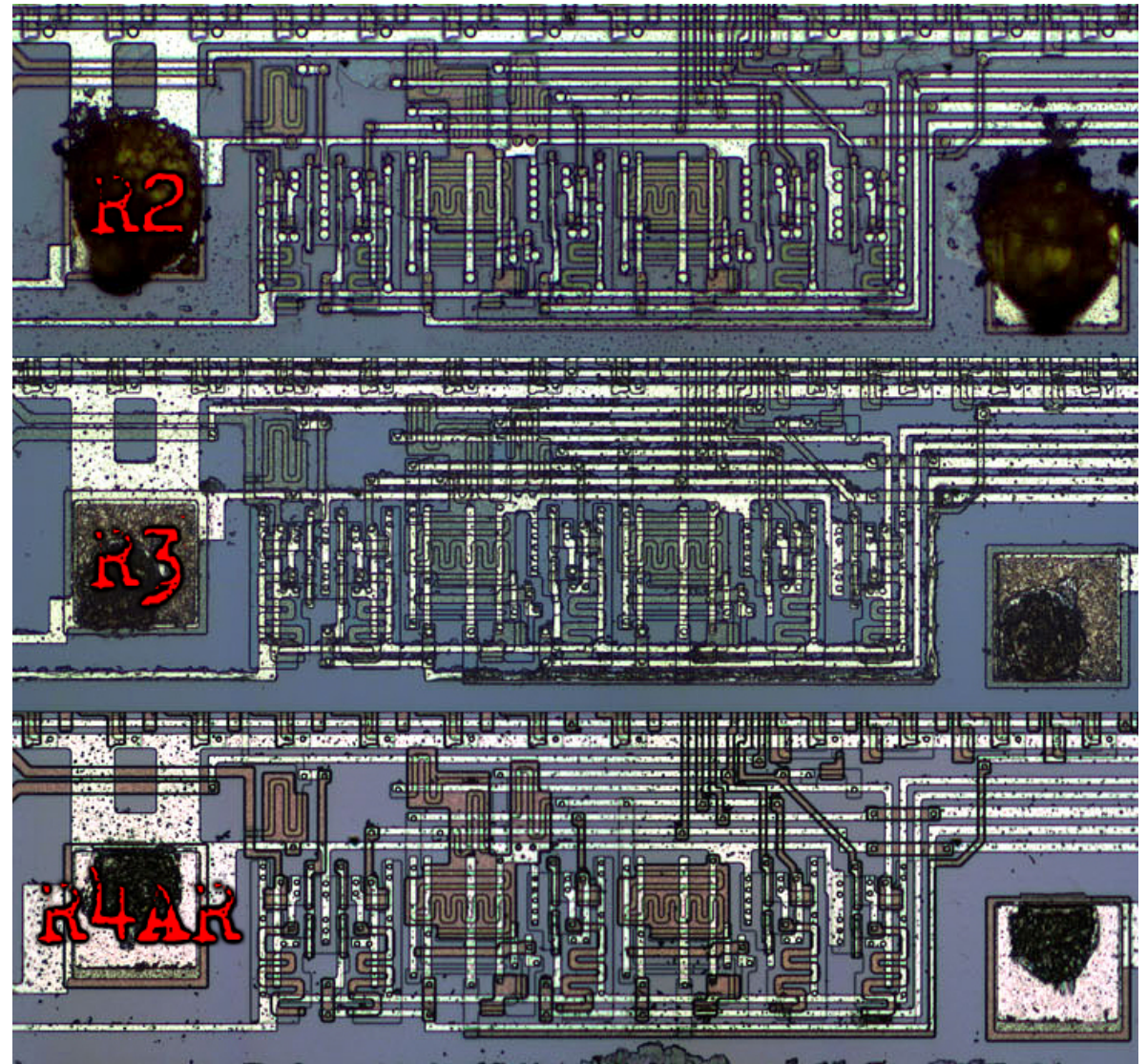
More?



Filter differences on silicon

No differences on circuit design

Possible chemical composition and
layer thickness differences



Noise problems

Why?

SID datasheet tells us that you should use separate voltage and ground lines for SID.

Commodore didn't care and used same lines for VIC-II and SID

That's why we can hear what's on the screen on audio output.

Well done Commodore!

What 6581 revision is the best?

The one you're used to listen to

Best revision of SID is the one you're used to.

I know exactly how certain favourite classic sid tunes should sound like. Just the way my old long time dead C64 used to play them back in 1985-88.

R4 has typically strong filter, but I have heard some with weak one also.

For some reason those made in philippines factory sound different from other, does anyone know why?

If you truly cannot hear any difference, consider yourself blessed, its a pain to find "good" sounding chips.

I personally like my R4 AR

What about 8580?

Samples

Digifix or not?

Differences?

Most 8580's sound very similar to each other

There are differences

Some of 8580's play even samples

Digifix doesn't make any sense, it causes more problems than solves.

More similar to emulation / emulation of 8580 is more accurate

Why I love 6581

I also love 8580

I tend to appreciate 6581's more

Filter distortion!

More variation on sound

Old classics are made for 6581

Why I love 8580 also

That UMPFH!

More uniform sound, easy to understand what
composer ment

On capable hands very powerful toy

Bit boring but you know what you will get

SID Replacements

Are they any good?

Some hardware SID replacements exists

I only see true potential in FPGASID

Others are just software emus on a hardware

Lots of different settings on FPGASID

I cannot make it sound like my R4 on my hardsid 😞

SID emulation software

RESID

RESID-fp

If you make tunes with emulation, stick to 8580

You have more changes that it sounds more like you intended on real hardware.

6581 seems to be tough to emulate properly

RESID-fp sounds way more like real 6581 to my ears than RESID

Many years later SID emulation is not just like it.

We may need more settings to tune than just filter curve.

How to train your ears for SID sound

Listen

Listen carefully

Try to concentrate on filtered sound, usually its the bass

3 types of filter

Lowpass = only low frequencies pass below cutoff

Bandpass = only narrow band of frequencies pass

Highpass = only high frequencies pass

Tunes to experiment with 6581

/MUSICIANS/0-9/20CC/van_Santen_Edwin/Spijkerhoek.sid	lead sound
/MUSICIANS/B/Brennan_Neil/Way_of_the_Exploding_Fist.sid	subtune 3
/MUSICIANS/B/Brennan_Neil/Hobbit.sid	subtune 1 – lead sound “colour”
/MUSICIANS/A/AMJ/Three_Minute_Wonder.sid	bass sound
/MUSICIANS/T/TBB/Meanwhile_the_Planet.sid	overall sound
/MUSICIANS/M/Mitch_and_Dane/Gloria.sid	intro filter distortion
/MUSICIANS/0-9/4-Mat/Filter.sid	intro filter distortion
/MUSICIANS/G/Galway_Martin/Green_Beret.sid	lead sound
/MUSICIANS/D/Dunn_David/Theatre_Europe.sid	overall
/MUSICIANS/J/Jeff/Hard_Track.sid	Noise sound at the start
/MUSICIANS/J/Jeff/Commodore_64.sid	Filter at 01:33

Tunes to experiment with 8580

/MUSICIANS/L/Linus/Fortress_of_Narzod.sid

/MUSICIANS/L/Linus/Cauldron_II_Remix.sid

/MUSICIANS/L/LMan/808_Love.sid

/MUSICIANS/L/LMan/Rastaline_Dub.sid

good for finding maximum volume level, also easy to distort
digifix destroys basses on this one, quite "easy" to hear