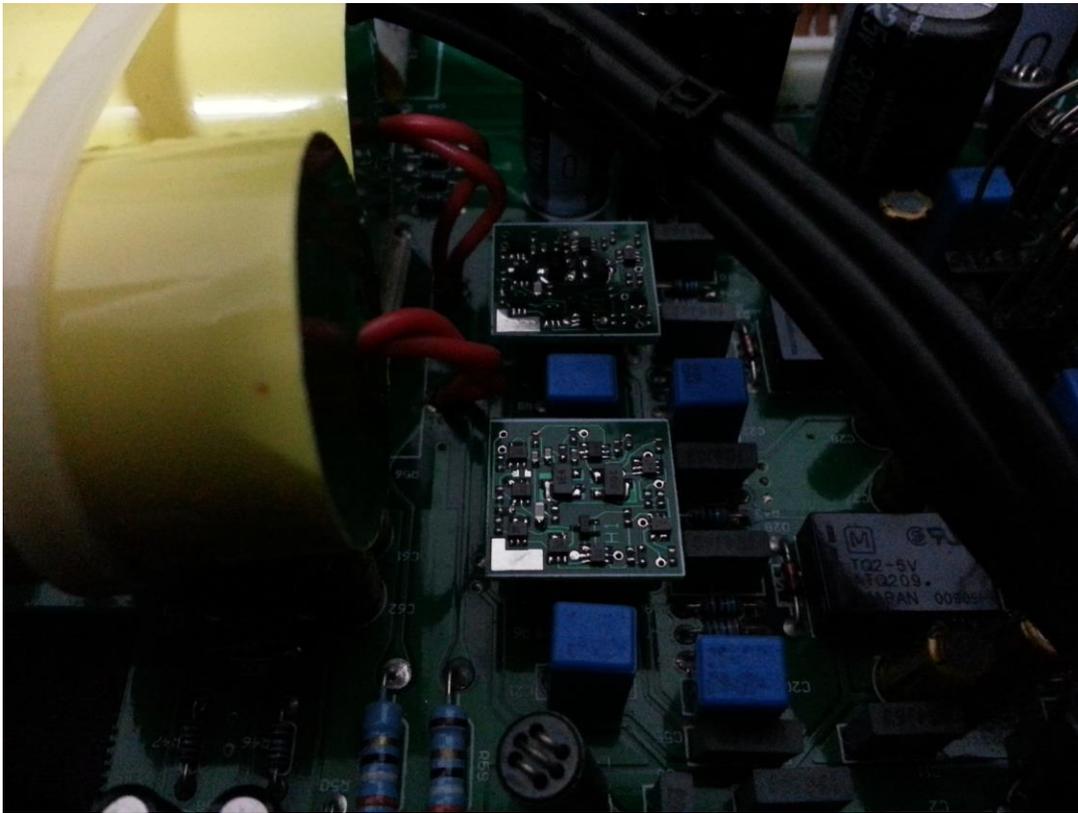


Sparkos Labs SS3601

Single Channel Discrete Masterpiece



Review by: E.T. (December 8, 2014)
Application: Eastern Electric MiniMax DAC

"I tot I taw an op amp there! I did! I did taw an op amp there!" – Tweety Bird's Audiophile Cousin

It's funny how most audio / music enthusiasts land a spanking new piece of audio gear only to open it up, marvel at the engineering behind it and then gaze disgustingly at the op-amps (Operational Amplifiers) that reside in the circuit of their new gear. Today, we have Mr. Knoe Aupemps (pronounced *No Op-Amps*) here with us, who is kind enough to relay his most recent op amp standoff.

Mr. Knoe who recently found himself caught in this exact position, had stared really hard at the DIP-8 chips that were socketed into the rail lines of his new DAC with disgust as tons of thoughts played through his mind. What were these cheapy nasties doing in my top-dollar DAC? Is my DAC working at its best with these? What other op-amps can I use that will better these less-than-premium / dated stock chips?

The never ending questions kept pouring in while the poor soul drove himself towards the brink of insanity as he typed away like a maniac on the keyboard, googling tons of sites about the many different op-amps and browsing through countless mod forums trying to see what *seasoned* modders thought of these eight-legged critters. Like most other people, he too craved that much sought after *seal-of-approval* from the general public. As he reads through the hundreds of pages about these *experts* toying around with different op-amps in their gears with varying opinions and results, he rounds up a few that he thinks are suited to his listening tastes and then quickly places an order for them.

After a couple days, the order arrives and Mr. Knoe gets busy swapping out the stock op-amps for the different ones he bought only to land himself in a separate headache. There were some things he liked about op-amp A, some with op-amp B and others with op-amp C. When he played with A, he would miss B and the back of his mind flashed intimate moments with C. When he went to B, he thought A was more fun but he starts craving for the intimacy with C. So he goes to C only to realize B probably did it better in general but now wants the wilder and more thrilling experience with A. And just so we're clear, we're discussing eight-legged DIP op-amps...not two-legged homo-sapiens! *Kama Sutra 101* is taught elsewhere.

And so the circle continues as Mr. Knoe goes back to Googling even more sites and mod forums in search of that elusive perfect *do-it-all* op-amp. He buys more op-amps and his dilemma deepens even further. Soon enough, he's stocked enough op-amps to run a store of his own. Most of which he used probably not more than once...with some still very much intact in their original packaging...impulsive purchase.

Weeks go by and then months before the golden question eventually pops up - Why isn't the damn circuit *discrete* to begin with? Sounds all too familiar? Well, we've all gone through that to some extent. Believe it or not, I was caught in the same predicament myself, just that unlike Mr. Knoe, I didn't splurge enough moolah down to earn the same "*Op-Amp store. Opens daily!*" tag as Mr. Knoe's.

This creed goes Discrete

It is, in general, safe to assume that in all things audio, a fully discrete engineering / design is the (very much) preferred way to go. Whether or not discretely are truly superior sonically over their DIP-8 monolithic counterpart is a separate thing. The general and widely accepted consensus is that the typical Audiophile always go out parading in his "*Discretely FTW!*" overalls and proudly at that, while at home, his stack of gears uniformly wears an Intel-inspired image that screams "*Discrete Inside!*" Nothing less will do. Whenever you find socketed op-amps residing in any given equipment, they eventually vacate their residences. Discrete families then move into the new neighborhood and live happily ever after...

Which brings us to the DAC I have grown so fondly of. My Eastern Electric MiniMax DAC, powered by the revered Sabre ES9018 Reference chip by ESS. Seasoned and new audiophiles alike are no strangers to how this legendary DAC took the digital realm by storm and staked claim as the new reference in 32-bit digital audio standards. To this day, it remains the favorite of many critics, largely for its sheer enjoyment factor and timeless musicality prowess.

And yes, even a legendary DAC like the MiniMax employs op-amps in its circuitry. Pop the lid and you'll find two NE5532 BJT duals sitting in two DIP-8 sockets driving the I/V stage, while two more NE5534 singles take their place in the solid state output stage. As great as the MiniMax is in its stock form, the typical Audiophile (or more appropriately, the Obsessive Compulsive Disorder) in me had been, for a long time, obsessed with swapping out the stock op-amps that came with the DAC. Long gone were the dual NE5532s in the I/V stage and in their place, are two very proud dual Burson Supreme Discretelys. To set the record straight, the Bursons were a small part of a slick mod package that I had purchased for the MiniMax.

Let's just say the listening experience post-mod is hair-raisingly surreal to the point I had a very tough time believing this was the exact same Eastern Electric MiniMax DAC I heard, fell in love with and bought. Although to be fair, the DAC had been extensively hot-rodded, supercharged, modified, what have you and there weren't many things about it that were still stock...especially not where it counted. To derail off course for a bit, the mod package alone had already account for more than the retail price tag of the MiniMax itself but it's no secret that in the audio world, most things are built to a certain cost point so you can end up having to pay an arm and a leg (sometimes two) for that elusive, last edge in refinement. Anyway, let's save the mod talk for a separate topic.

So op-amps, yes. Now that the Burson Discrete duals rule the I/V stage, the two other sockets in the solid state output stage still housed the stock NE5534 singles. While I didn't have any pet peeves with the BJT natured 5534s, over time, I couldn't avoid carbon-copying a part of Mr. Knoe's approach. Resistance is futile as I found myself replacing them with several other *premium* op-amps and with that, came a varying degree of different results with each change. While still nowhere as ambitious as Mr. Knoe, I did pick up a few that I listened to quite consistently and my experience did somewhat mostly mirror that of Mr. Knoe's. That unlike the infamous Lord of The

Rings trilogy, unfortunately, there was no *one-op-amp to-rule-them-all*. Citing one of the many encounters of Mr. Knoe's, there were some things I enjoyed with a given op-amp or two and some things with the others.

Despite being spoiled with options, the op-amps that found the most play hours in the DAC were often the OPA627BM and LME49710HA, coincidentally both metal-cans or as the more electronically inclined would have it, TO-99 packages. I found these two to be the *Yin and Yang* combination that works quite well in the MiniMax. Sure I have some commendable plastics like the stock NE5534s (these are actually quite good if you're not nitpicking) OPA627AP, OPA604, LME49990 and LME49710NA and as good as other people said they were, somehow, with my listening preferences, they don't stay very long in the DAC. Safe perhaps the NE5534. I won't deny the fact that this eight-legged BJT is doing some things right in the DAC and it is for that reason alone I find myself putting them back in every once in a while.

In the end, it was the two metal-cans that provided a good balance of things, with the OPA627BMs filling the presence with weight, body and the signature smooth Burr Brown character it is popularly known for, which will keep you warm and fuzzy for hours on end. The OPA627BMs, in this circuit, exhibited some very engaging presence. It provided the DAC with some good meat slabs on the notes, which was a leaner cut with the stock 5534s and even the LME. Voices and instrument effects like a key-strike on the piano, had that little bit more weight, which made them sound more lifelike. Except there was one problem – I discovered there really is such a thing as having too much protein (Atkins lied) to the extent that cymbals and percussion were a tad drowned out, sluggish and some vocals actually sounded a little artificial because they came across as too 'heavy' sounding. They were great with some artistes, not so much with others.

The LME49710HAs takes a different route with things. Armed with a shovel, it never stopped digging for minute details and it is *very good* at that. If something's there in the thick of things, you can bet the LME will dig it out. Granted it may not sound as smooth as the 627s but it makes up for the deficit with speed and transparency, which makes it a very likeable option for those with a preference that leans towards the PRAT (Pace Rhythm Attack Timing) *mumbo-jumbo-jiving* side of the fence.

Did I also say the LME had that wee bit more air too – in general, things don't sound as closed in as they do with the more intimate 627s, which is lovely if you listen to a good deal of ambient music. As great as the LME is with all these nitty-gritty focus on details and stuff, its shortfall is that it lacked...*soul*. I somehow just wasn't able to *connect* with it on an intimate level like I did with the 627s. Plus your 'garden' will be pretty darn holey after all that digging. I wouldn't exactly say the LME's are sterile sounding but it doesn't quite gel you with the music on an emotional level.

With the stock NE5534s, things sounded like, well, how any other stock MiniMax would. Let's not forget that most of us, myself included, bought the MiniMax because we liked what we heard from it in stock form. Good? *Very. Without a doubt*. Be-all-end-all-exceptional? *Er, not quite. Sorry*. Audiophiles being Audiophiles, they push things to the very edge. They all want the best possible sound from their rig,

regardless of how good they already are in stock form. If there remotely exists, just a teeny-weeny bit of a possibility that swapping out the stock hex-nuts on the case may yield better sound, hey, it's done. And the MiniMax is of no exception. Not the hex-nuts. The op-amps.

While there is nothing much to fault the NE5534s with in this circuit, I didn't find them to particularly excel at anything either. They had a nice even approach to everything I played but that was it. A befitting analogy of the 5534s would be the coffee beans you'd find sitting in a perfume store. At first, you don't care too much that they're there (you might even give them *that* look) but after a while, you reach out to them to bring you back to base when your scent senses become confused by the different perfume samples you sniffed. And like the LME, I found the 5534s to also cut the meat slabs a little thin sometimes. If these had more weight, more slam and more presence while retaining its balance and tonality, then they would almost certainly be in the running for the title of *THE* op-amp.

As good as each of the abovementioned op-amps were in their own right, I couldn't settle down with one and believe me, I tried. Hard. In fact, very hard. Yet, every other week or so, I find myself itching to swap a different op-amp into the circuit and before I know it, (*resistance...is...futile...yet again*), I was reaching for the hex key to get the job done. Wash, rinse and repeat. A vicious circle that never ends. I gradually became more obsessed with which op-amps were sitting in the sockets rather than enjoying the music as I rightfully should. The hex key had become my beer buddy and I hung out with it daily. *Pathetic!* I know. Then one fateful yet fine Sunday morning, I literally jumped out of bed, looked myself in the mirror with that spiky, messy, out-of-bed hair that was all over the place, flung the hex key out the window and said "*Eff em! I'm going discrettes!*"

The Journey Begins

Needless to say, that entire Sunday was spent in front of the laptop, Googling all sorts of discrete options that were available out there in the market. Friends who had pulled the same stunt (not necessarily researching discrettes) tell me this incessant Googling behavior usually ends with the other half mimicking a stalking predator that is silent, cold, brutal, vicious, Hannibalistic (is that even a proper word? But you get the idea). Inching closer to the unsuspecting prey with each passing minute, ready for the kill...and before the poor soul had any time at all to react, with amazing speed and precision, the merciless razor-sharp claws go *swish*...and all is quiet as the predator roars victoriously over the prey's carcass. And no, this isn't a *Animal Planet* scene from the *Discovery* channel.

I paused, took my hands off the keyboard, leaned back, closed my eyes, shook my head in disbelief and let out a sigh of relief as I thanked God and my lucky stars for a wonderful, supporting wife! She even offered to pay for whichever discrete option I was going to buy! Still flustered, I cannot help but wonder "*What the hell did my friends marry into????*"

So where were we? Yes, predators. No, sorry, discretets. Whichever option I decide to swing with at the end of the day, would once and for all, put an end to the misery I uncontrollably subject myself to, alternating op-amps fortnightly...sometimes even sooner. Already running the Burson duals, expectedly, my first option was Burson's very own single-channel discretets. Synergy. Consistency. Familiarity. House sound that works. Why the hell not?

BUT, yes there's a but, the only thing that kept me from closing the deal and clicking the *Buy Now* button was that the Burson package were rather tall in dimensions. There was no way I could lock the top lid of the DAC down with those sitting in the DIP-8 sockets. The duals that came with the mod package had bent leads so they sit on their sides. They were of course professionally bent and given my "skills" (or lack thereof) coupled with the patience threshold of a raging bull, there was no way in hell I would be able to do the same without *effing* them up. Did I also mention the Bursons run quite hot?

Then there were DEXAs NewClassD discretets. These were not as tall as the Bursons and when installed, the top lid of the case would likely just clear but I had some issues getting them shipped to me where I live. Let's just say the cost of courier was far from favorable and at the end of the day, they'd cost quite a bit more than the Bursons and the Bursons weren't exactly cheap to begin with. The DEXAs were also a bit of a mixed-bag experience with some listeners so adding all these up, at the end of the day, I relegated the DEXAs to an "*only-if-I-really-have-to*" last-resort option. Although the green LED lights on them were, as how today's generation would put it, "*Wicked!*"

Scrolling down Google's search results, I couldn't help but notice an abundance of other discrete op-amps from China but none of them had given me enough assurance that they wouldn't *eff* up my DAC. With the lack of concrete data and credibility, I skipped all of the Chinese offerings. That doesn't mean they're bad – I never said they were. I just didn't have it in me to want to put them into the MiniMax. I won't deny the Chinese do make some really good stuff and I have bought some amps that are excellent. But it's a whole new ball-game with op-amps and let's just say I wasn't ready to take that leap of faith.

Options were running out on me and I was getting ready to hit the *Back* button on the web browser several times to get back to DEXA's website until...wait a minute, what's this? Sparkos Labs. *Haven't seen that one before*. The wrist moved the mouse pointer over to the URL and the finger clicked on it as the eyes watched the page load with anticipation...the rest, as they say, is history.

Sparkos Labs' Discreet Discretets

My eyes were fixated on these discretets from the very moment they flashed up on Sparkos Labs' website and since then, they remained permanently locked in the crosshairs of both retinas. I was captivated by how small their footprint was, making them the perfect option for those wanting to fit discrete options into smaller

components with very limited space to spare and without worrying about shorting out the gear from bloodshed caused by tight sharp spaces and solder-cuts. I picked up the size measurements Andrew published for them, jotted the numbers down on an adjacent sticky note and quickly swung out my trusty ol' 12-incher metal ruler from the desk like how a deadly samurai would his katana. "*This cannot be!*" I remember saying as I was completely perplexed by how small they actually were!

And if I didn't already mention, Andrew designs and engineers these discreet discretetes. He's also the brainchild of Sparkos Labs for the more curious. Andrew, like other op-amp manufacturers, offers two base options – single and double channel discretetes, namely the SS3601 and SS3602. It appears that a lot of thought had been put into the design of these discretetes. With the SS3602, you get two stacked single channel discrete boards bonded into a single DIP-8 base. Beautifully done. What is even more amazing is how elegantly Andrew had put the components together on the dwarf-sized circuit boards. Tastefully finished.

But I'm not here to bore you with design and specification details. For the data driven individuals, Andrew makes all of these information readily available on his website (<http://sparkoslabs.com/>) for anyone to use. Does come across as a wonderful bathroom reading material (joking) but I don't give a *crap* (no pun intended). Seriously, they're some really extensive, useful information, especially for the electronically inclined. I'm just not one to snoop around portraying to possess an engineer's wisdom (which is something I honestly don't have) pretending I know what all these electrical values mean. The only things that matters to me are – They beautiful? Yes. They work? Yes. They affordable? *Oh yes*. They sound good? *Oh hell yes!* And out comes the credit card or PayPal credentials...whichever is preferred.

It took me precisely 30 minutes to seal the deal. Two minutes adoring the pictures. Five minutes reading selected reviews. Two more minutes exploring available options. One minute pulling up Andrew's contact / transaction information. And another twenty *freaking* minutes waiting for the Internet connection to come back up before I could hit the *Buy Now* button without the damn thing timing out on me. Them cursed service providers were being funny with me on a Sunday! Not funny *you moth...*(censored, censored and censored)! Sorry. We cool. So, really, it took only 10 minutes had it not been for the *son...*(censored, censored and censored)! Ok! Ok! Sorry! We're really cool now!...*Fu...*(censored)!

I vividly remember how pleasantly easy it was dealing with Andrew. I sent him a note asking if he was still looking for reviewers and that I was interested in buying two SS3601s. I wasn't expecting a response until the next day or so but surprise, surprise, his reply came virtually within the hour so yes, when Andrew says he gets back to you soon, he means like *really* soon (thumbs up buddy). Andrew expressed a keen interest in the review and I asked that he gave me time to put it together. The way I work is, I like to *really* get to know the changes a gear or a mod brings to the table and sometimes, it can take up to weeks. Andrew was supportive right from the get-go and only told me to take my time. I did take about a month and a half to complete this write up but never once did Andrew pull one of those all too familiar

kids liners on me – “*Are we there yet?*” “*Is it done yet?*” “*How much longerrrr?*” You get my drift.

And I also sent Andrew on a bit of a wild goose chase. Because of where I am located, I was willing to pay a bit more money for an express shipping option so Andrew had to go around sourcing a few viable ones, which he did without uttering a single “*But, but...*”. And yes, a large part of me for wanting to go the express route was that I caved in to my desires in wanting these discretets in my hands as quickly as possible. You got me (hands in the air). In the end, Andrew managed to pull off a sweet spot option with FedEx and PayPal took care of the rest. And just a little over 48 hours later, FedEx came honking at my door signaling the arrival of the SS3601s.

Moving in

I rushed down the stairs, quickly made my way to the end of the porch, took hold of the package, which was nicely (and securely) packed. Looks like Sparkos Labs and FedEx makes for a nice power combo. I thanked the FedEx guy for yet another flawless display of speedy delivery and hurriedly made my way back in. Armed with an all-Swiss *Victorinox*, the package was carefully sliced open. After making my way through what seemed like endless layers of bubble packs (I swore the package must have been bomb-proof), lo and behold modders and audiophiles, I proudly present to you, the SS3601s.

I marveled endlessly at the work that was done on this diminutive yet brilliant design. Andrew has somehow managed to magically, miraculously, what have you, put the components together pristinely and with such a small footprint to work on, I must say this guy has got some slick Samurai-precision skills himself. I dread to think what he can really do with a *katana*. Simply put, the discretets are *a work of art*. That was exactly what I told Andrew on that very same evening I sent him a note to tell him the SS3601s arrived.

Once past the admiration phase, it was time for these babies to move into their new home. I looked around frantically for my good ol’ beer buddy, Mr. Hex Key, but was nowhere to be found. Then out of the blue, it hit me...some 48 hours back, on that Sunday morning when I decided to walk the discrete path, I had actually flung it out the window! *Shit!*

I ran up to the same window, opened the panels wide, put my head out and assessed the conditions outside – sunny, clear, hot, distant clouds homing in from the far east (wets finger and stuck it out the window) slight breeze blowing to the north west. In a flash, I dispensed and carefully applied some U-15XT burn-resistive ultraviolet-protectant custom formula serum (apparently people call this *sunblock*) and put on the glare-defecting light-levelling Razrwire vision assisting device (also known as *polarized shades*) before rounding up H.A.2.3.L - the squad’s active precision scent analyzer and object tracer (our family poodle, Hazel). Armed and dangerous, we went round the back yard and in about 55 seconds flat, I single-handedly found the hex key! Hazel never made the mission – she got sidetracked by the enemy’s sudden and

unexpected presence (*Vader*, the black stray cat). Oh well...found the hex and defeated *Darth* both in just a shade under two minutes. Hell if that isn't mission accomplished, I don't know what is.

With the hex key, the top lid of the DAC was removed effortlessly and the two resident OPA627BM metal-can op-amps bade their farewells and promptly vacated their residences. I think they knew this day was coming. In their place, went the SS3601s, which were uncannily easy to fit. Even more so than your regular op-amps. Comfortably seated in their new homes, they also made the circuit look the deal. Somehow the presence of op-amps affects the overall aesthetics of the circuit. At least from a psychological standpoint. As I replaced the top lid of the DAC and put the hex screws back on, deep down I knew this would be the last time the lid came off for anything related to op-amp rolling. And while I could safely chuck the hex key out the window this time, I decided it still made more sense to stash it in the toolbox. Less I need to rely on the *oh-so-outstanding* family poodle again.

In went the Anaconda-sized AC cord as I hit the power button on the central power regulator to activate the devices in the chain. They all lighted up beautifully and the relay on the MiniMax kicked in after an approximate 30-second delay and...*wait for it*...no smoke. No electrical sizzle. No strange cutouts. No dead fuse. Everything looked perfectly normal. I was convinced as I connected the headphones and reached out for the remote control on the desk, gently pushing the play button in sheer anticipation. I fell back onto the lazy chair, closed my eyes, in an attempt to liberate the mind from its surroundings as the first tunes were projected from the diaphragms straight into the ear canals. Houston, we are live!

The Experience

If there was one word I could use to best describe the single biggest, most discernable improvement the discrettes brought to the MiniMax is *balance*. If you remember, I mentioned the stock NE5534 op-amps had very good balance but its Achilles Heel was its apparent lack of body and weight, making for a somewhat bland performance and in turn, an overall experience that is less than engaging. The balance brought by the SS3601s was even more convincing than the NE5534s, yet it was very capable of producing that exact weight, impact and emotional portrait the OPA627BM is renowned for. Probably even better.

But the discrettes do a lot more than just combine the best of two op-amps. They bring a certain level of authority to the music, a quality that I found severely lacking with all the op-amps I've tried / own, regardless of make and price. To my surprise, with the discrettes, the MiniMax became very capable of hitting convincingly hard when it needed to, most apparent when playing James Newton Howard's '*Matobo*' track from The Interpreter score. At other times, especially in the late evenings lazing around with jazzy pieces, it becomes as mellow and smooth as it can be without overdoing things, whether it is Rene Marie singing '*I only have eyes for you*' or Stacey Kent taking the stage live with '*The best is yet to come*'. You *feel* the music and you

let your mind immerse in the experience, almost alleviating you from the realm we call *Earth*. Perhaps this is meditation done right...the Audiophile's way.

Those who know me know I am an avid follower of Rebecca Pidgeon's music pieces and own all of her musical produces. She sings with a very captivating flair that makes you want to keep coming back for more. In '*Sweet Hand of Mercy*' from her album *Slingshot*, I picked up a very deep, low and faint rumble in the background, fading in and out between the 22 - 35 second mark. I had initially written that off as the sound made by my neighbor's Mercedes C-350 pulling into the driveway, considering it was equipped with a larger-than-life aftermarket muffler with circumference big enough for the regular cat to go curl up inside for a nap. But it soon became too much of a coincidence when the same note kept coming back every time I played the track...always during the 22 - 35 second mark of the song. It immediately became apparent that it hadn't been the customized German marque next door all along but actual bass notes from the track that I never noticed! Indeed, *WTF* was my instant reaction to that.

Listening further up the album, Rebecca sounded so palpably real on '*I Loved No One*'. You can literally discern minute details like the clearing of her throat and the "*clicking-type*" effects as you'd hear when a person's tongue touches and clears the ceiling of their gums. These subtle yet critical details demonstrates the kind of resolution a good playback system is capable of and in the case of the MiniMax armed with the SS3601s, everything just sounded subliminally engaging and precise. The best part about this is, all these details that are there, they are never overcooked or thrown in your face like how some piece of engineering tries so darn hard to get your attention to the point they become "*too loud*" and artificial. Instead, they are presented in such a way that they sound correct. Effortless. Balanced. You know it's right when goosebump sensations keep waving in and out of your body all the time.

Sidestepping the genre field a little, the high pitch key notes on the piano when listening to '*Corcovado*' from the *We Get Requests* album performed by The Oscar Peterson Trio were, time and again, accurately reproduced. One of the key shortfalls listening to this album (and the likes) with the OPA627BM was that, certain pitches and reverbs take a backseat so you don't really feel the key notes are as realistic or present as they should have been. With the LME49710HA, I have to say it excelled particularly well in this department but what turned its strength into nay is its inability to produce the weight effect that should accompany each key strike of the piano. Subtly put, a deal breaker. The SS3601s, on the other hand, painted a perfect picture here. Also the reverb effects that followed after each key strike were even more remarkable as they trailed nicely into the atmosphere without losing focus or taking too much of the center stage. Gobsmaekingly mesmerizing!

Over at one of Chesky's many masterpieces, the drum performance of Babatunde Olatunji cannot be missed. Each hit of the drum from the *Love Drum Talk* album had a very profound bite and body to it that none of the op-amps were capable of reproducing without either sounding anemic or thin or too thick. Every time the late Babatunde hits the bass drums, it would instantly be accompanied by a thick thud yet fast enough so the drum notes never sounded bloaty or fake. The trailing effect

of the beats extended not just into deep end of the stage but were also appropriately wide. There were so many things that were going inside my head at the time trying to comprehend how all these minute details were rendered across so accurately. I could easily hear each thud fading to black despite the lively front and that is saying a lot.

In Babatunde's other album, *Circle of Drums*, the track titled '*Stepping*' gives you a taste of how a good drum performance should sound like in a system with very good resolution. The focus of the play starts off from the far left of the stage and moves to the right in a perfect gradient flow, simulating Babatunde's performance using an array of different drums that are lined up in front of him. And each drum, as we know, has different weight, different beat thuds, different pitch, different reverb effects...each and every one of these qualities were perfectly rendered by the MiniMax. I played back this particular track three times in succession and each time in complete denial just how the DAC was able to gel the picture together in one fluidly surreal package. I lost count of the many times I listened to Babatunde that day but after each session, I actually felt a burning desire to want to hit / play the drums myself...and I know squat about drums. Talk about the power of influence derived from emotion.

And in case you didn't know, I'm also quite the movie score buff myself. I appreciate great soundtrack scores as they can swing very dynamically and reenact *the* moment from the movies. Big name composers like Desplat, Zimmer, Horner, Shore, Newton Howard, Jablonski, they never fail to thrill and their masterpieces always gets me into the groove / mood.

The '*Submarine Attack*' track from Alexandre Desplat's popular score, *The Curious Case of Benjamin Button* demonstrates how a system in synergy can recreate the raw emotion from the low hitting notes in tandem with a pacey, fast moving attack atmosphere while keeping its poised, confident composure, never losing grip despite the demanding swing in dynamics at the peak end of the track. I simply adore this piece because it is quite the challenge to get the whole package right and keep things engaging – the tonal balance, width, depth, air and different attack notes must compliment the delivery lines in harmony. With any given op-amp from my inventory, one or more of these qualities, depending on which op-amp was used, would dominate / drown out the others. This only made things edgy, veiled, confusing, equating a less than gratifying experience. Needless to say, the SS3601s ate this (and the op-amps) for breakfast!

One of the things I noticed that changed quite significantly since the SS3601s took over operations from the op-amps, is that the music were always presented in such a way as if they were coming from well outside the headphones to the extent that I frequently got caught in situations where I had to take a quick pause to do a reality check and made sure I was *actually* still listening to headphones. When I played James Newton Howard's *Salt* soundtrack score, the '*Prisoner Exchange*' track sounded like it was constantly coming from well beyond the diaphragms. All I needed to do was visualize a pair of speakers sitting at the front end of my 28-foot long work room, and I could literally "picture" the sound coming out from these "virtual

speakers". It was an absolutely amazing feat and may I say, a claustrophobic's dream come true. Not that I am one (far from it) but in the many years that I've been a religious Headphile, not once were my ears graced with this level of unforced binaural quality emanating from these head claspers of mine...and I am absolutely digging it BIG time!

I love that every single piece of music goodness, regardless of genre, was virtually fatigue free even when pushed very hard. With such astounding balance, I could drive the decibels up very high and instead of wincing, I would reach *eargasm*! I have never been so flabbergasted like I am now. In a car analogy, I'd like to think of it as Nissan's Godzilla GT-R, where flooring the pedal equates an *abso-effing-lute* thrill that sets your adrenaline pumping as the car propels from naught to 60 in just under 3 seconds. It never gets old and never fails to land a smile on your face! In fact, you just want to keep doing it all the time! Not if you want to watch your hearing and the high-trending gas refills for the GT-R.

Wrapping up

What I am still trying to wrap my head around (besides the flagship from Stax) is the secret-sauce, rocket-science, CIA-classified formula Andrew applied on the SS3601s. They brought with them one very welcome change – the MiniMax actually runs a notch cooler with the SS3601s than when sporting any of the regular monolithic op-amps I have in my inventory. This is true for all op-amps I've tried safe the stock NE5534. This may suggest the BJT roots in the MiniMax probably isn't as op-amp rolling friendly with FET alternatives as I thought it'd be. It could also have been that my choice of FETs weren't doing the circuit any favors. Rolling op-amps usually requires some form of tweaking to the other components in the circuit to get the op-amp of your choice working in a stable and harmonious manner with the others. I'm sure all of us are already aware that, more often than not, op-amp rolling isn't quite as *plug-and-play* as we've been led to believe. Get it wrong and it's *plug-and-pray*. So I have to commend Andrew for such a job well done – the operating temperatures on the DAC is extremely stable and consistent. It's probably in its best form yet!

Despite the very extensive modification work that was done on the MiniMax, not to mention how much moolah I had forked out for the job, there was still a certain something about it that prevented me from crowning it "*End-Game*". While it was great sounding and easily trumped any MiniMax in stock form, somehow it didn't feel *quite* complete. Perhaps I wasn't fully convinced the op-amps were able to extract the best out of the mods that were put in place. That or they were the bottleneck.

Then came the SS3601s and it changed everything. With it, the DAC finally earned that elusive title and more importantly, I finally had closure. It was just over the weekend when I sat down on the lazy chair in a pensive mood and started to reflect on things a little bit. I cannot say I fully comprehend a manufacturer's intent when it comes to gunning for the ultimate in sound because for a pair of SS3601s that can be had for just under \$80 (that is until Andrew comes to his senses and ups the price tag), it revolutionarily turned what is already a very good DAC into an exceptional

one and I cannot help but wonder how the MiniMax would sound like with a pair of Sparkos Labs duals in place of the Bursons in the I/V stage. Complete synergy perhaps? Intriguing thought indeed.

Like the SS3601s, Mr. Knoe and I both can assertively reassure you that if you're still rolling op-amps in your rig with the aim of getting the best sonics from your gears but haven't got closure (and you probably never will), you should stop right there, do yourself a favor and head over to (<http://sparkoslabs.com/>) to get Andrew's discrete offerings. You'll be saving yourself a lot of time, heartaches, anxiety and more importantly, money.

Because enjoying your music should be all about lazing on a comfy lazy chair with a warm, soothing yellow light in the back and holding a glass of fine *Pinot Noir* in your hand while enjoying Diana Krall do her thing with her accompanying band. Not pulling your hair, killing your ears or plugging-and-praying while holding a fire extinguisher. You can thank me later. And Mr. Knoe. And Andrew.

So, you can either join me on a nice, wonderful evening in Paris and experience Diana performing live while slowly downing fine wine, or happily stay where you are and have dinner with the plethora of op-amps in your inventory and quite likely the fire extinguisher too. What's it going to be? The *Red* pill? Or the *Blue* one?

EDITED: Just over the recent Thanksgiving week, I had the opportunity to try the DEXAs out in the MiniMax. They belonged to a friend who runs an Audio store, which he had purchased for his amp.

To be straight up honest, I wasn't able to immediately discern any differences, sonically at least, between the two. Although I could have sworn the depth of the stage was consistently deeper reaching with the SS3601s, most notably on a couple of Frederic Chiu's Prokofiev's piano solo pieces. With my eyes closed, I could virtually picture the reverb on Frederic's piano extending and fading naturally into the farthest end of the hall.

To be entirely fair to the DEXAs, I only had them for two days as they had to be returned to their rightful owner. He was graceful enough to loan them to me while he went out of town for work. My deduction is that both the DEXAs and SS3601s are equally exceptional performers. I can imagine where there may be instances when one would work better than the other, depending on the application. If I had to nitpick and only pack one in the bag, my vote would have to go to the SS3601s. Not just because I own them but rather they are more assertive and have a much smaller footprint so they will virtually fit anywhere. Plus they also have a better cost-to-performance ratio.

But dang, the green LED's on the DEXAs are still "*Wicked!*"