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STUDIO ELECTRONICS

Boomstar

BY MIKAEL JOHNSTON

THERE ARE A SELECT FEW COMPANIES OUT THERE WHO, FOR WHATEVER reason, seem to fly under the radar of the general public when, in fact, they make the secret weapons of some of the music industry's most elite producers. Take Studio Electronics. Those who use their analog synthesizers are a veritable who's who of the industry, yet you usually won't hear "Studio Electronics" on the lips of the average customer browsing in a big instrument store. With the new Boomstar line bringing the sound of discrete analog—in the form of a family of monophonic desktop synths—to the company's most affordable price yet, we hope that's going to change.

A Brief History

Founded in 1985 by Val St. Regis and Tim Caswell as an electronics repair business, Studio Electronics soon transitioned to rack-mounting vintage analog synthesizers (including Minimoogs, Prophets, and Oberheims) and fitting them with MIDI, with the help of Val's son Greg. To this day, their rack-mounted synths are still hot-ticket items when they show up on eBay.

In 1993 the prototype of their first in-house synthesizer was born, the three-oscillator SE-1. I was lucky enough to have one of these early prototypes living in my studio thanks to Darin Marshall, who was integrating the synth into

Snap Judgment

PROS Fully discrete analog signal path. Unparalleled sound quality. Tons of modulation and routing options. Available with different filters based on classic synth designs.

CONS No patch memory. Somewhat complicated to program. Monaural audio out.

Opcode's then-ubiquitous Open Music System. The SE-1's filter and oscillators were based on the Minimoog, which at this point Greg and Tim knew intimately well. What set it apart from the actual Mini was the addition of MIDI, patch memory, and a robust LED display. It was a beast of a synth that quickly became a favorite at my studio and among many well-known producers of the day.

The SE-1 was followed by their two-oscillator monophonic ATC-1 (Analog Tone Chameleon) in 1995, which had an interchangeable analog filter system via removable cartridges, something that no other synth manufacturer had done before. Available filter cartridges included Moog, SEM, ARP, and Roland TB-303 styles. In 1999 they released an eight-voice, discrete analog dream machine called the Omega 8. "Discrete" in this context refers to analog circuits made with individual components such as transistors and resistors, as opposed to integrated circuits. It's argued to sound more authentic and beefy given that this was how many coveted vintage synths were built, and to my ears, it does. The Omega also had a multi-filter system and to my knowledge is the only fully discrete analog multitimbral synthesizer still in production. The SE-1x and ATC-x followed in the early 2000s as updates to their predecessors, as did several flavors of the Omega 8.

Left to right: Monaural audio out, Overflow button for chaining multiple Boomstars polyphonically, MIDI I/O, Learn button for changing MIDI receive channel, and power supply jack.

Overview

The first thing you notice when unboxing the Boomstar is that it's built like a tank with an all-steel chassis. It's also similar in shape to the Oberheim SEM yet slightly smaller. The next thing is that it's brimming with knobs and toggle switches for complete hands-on control of all parameters and similar to the Moog Minitaur and Arturia MiniBrute, it has no patch memory. All patches have to be created by the user in real time and on the fly.

The Boomstar contains 100 percent discrete circuitry, except for the software LFO. The Boomstar is actually not a single synth but a new line of synths all based around various clones of classic analog filters. Sound familiar? Yes, this is a recurring theme they've used in both the ATC and Omega lines, but that's where the similarities stop.

The Boomstar currently comes in five flavors based on filter type: Oberheim SEM, ARP 2600 (4075), Roland TB-303, Yamaha CS80 (SE80) and Mini Moog (5089). They're also working on a Korg 700 version. While the filters certainly lend each model the essence of the synth it's replicating, the Boomstar has a presence and grit that goes far beyond being a mere replica of its vintage counterparts. In a nutshell, the Boomstar is what I call the perfect future-past synthesizer.

Whether you're making music that sounds like Daft Punk, Stevie Wonder, Pink Floyd, Deadmau5, or something never before heard, the Boomstar is likely to become one of your go-to-instruments due to the quality and versatility of its sound. It can replicate that classic analog sound because its architecture is just that. Then, with features like cross-modulation, overdrive, ring modulation, and feedback, you can get aggressive modern and otherworldly sounds when creating music that's meant to break barriers. So let's get into what makes this machine tick.

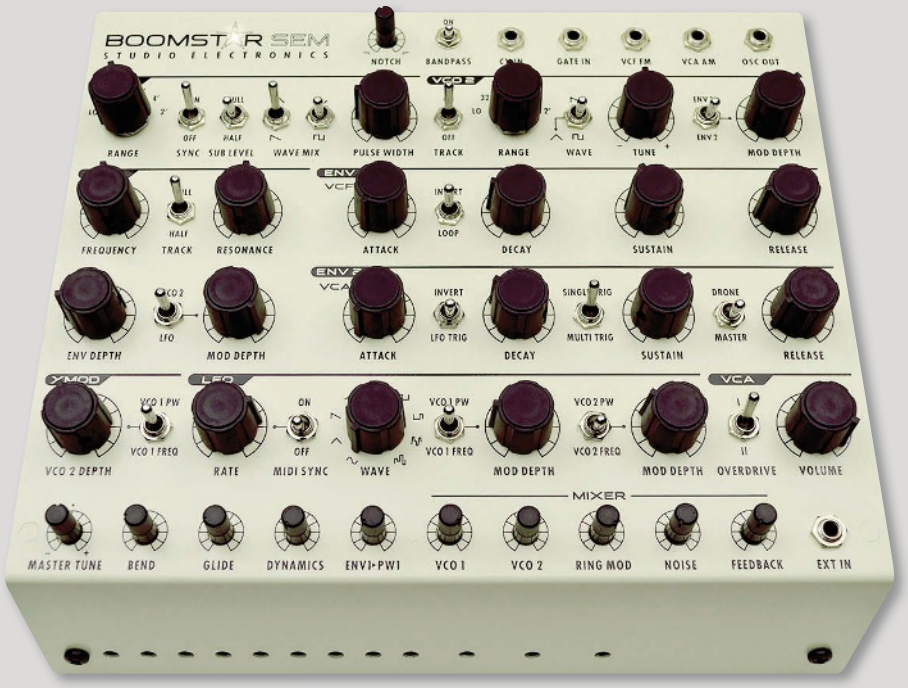
Architecture

The Boomstar's panel comprises 31 pots and 20 rotary and toggle switches to control its sound-shaping parameters. The majority of the toggle switches have three positions (center being off), allowing for dual functionality. Across the top, five 1/8" jacks give access to CV and gate input, filter modulation input, VCA modulation input, and pre-filter oscillator output.

Just below the jacks, controls start with the voltage-controlled oscillators. VCO1 has a rotary switch for range, a sync switch for syncing VCO2 to VCO1, a sub-level switch to add a sub oscillator an octave below VCO1, and two switches for waveforms, which can be mixed and matched. Triangle and saw are on the first switch, and sine and square on the second. A pot follows to control the square wave's pulse width. VCO2 starts with a switch to turn keyboard pitch tracking on and off, followed by the range switch. Both VCOs' range knobs have "Lo" settings for low-frequency operation, which is handy for when oscillator 2 acts as a modulator. A single VCO waveform switch selects saw, triangle or square wave with a fine-tuning pot for detuning VCO2. Lastly a switch to modulate VCO2 via envelope 1 or envelope 2 is paired with a pot to control the modulation depth.

The filter controls are a little different, depending which Boomstar you have. For instance, the SEM version has both a lowpass with a notched pot for sweeping to highpass mode, and a bandpass filter as you'd find on an original Oberheim SEM. In the case of the model 4075 you get a single lowpass filter. Standard controls for all models include frequency, resonance, tracking, and envelope depth. A toggle switch is paired with a modulation depth pot to modulate the filter via VCO2 or the LFO.

Envelope 1, which can be routed to the filter, pitch of oscillator 2, or the pulse width of oscillator 1's square wave, has ADSR (attack, decay, sustain, release) controls. A switch can be set to invert or loop the envelope. The loop function turns envelope 1 into a variable-shape LFO. Envelope 2 controls the ADSR for the VCA (voltage-controlled amplifier) and contains three toggle switches. The first lets you either invert the envelope or have its gate triggered by the timing of the LFO. The second lets you choose between single or multiple triggering (whether the envelope cycle begins anew with each note-on message). The third toggle offers a choice between



The SEM-flavored Boomstar is painted in a color that invokes the original, as are all the Boomstar models.

Drone and Master settings. Drone opens the VCA and produces a constant tone; Master brings the filter under the control of envelope 2. This allows the Boomstar to act as a single-envelope synth so that envelope 1 gets freed up to modulate oscillator 2's pitch and/or oscillator 1's pulse width.

The Xmod (cross-modulation) section causes the second oscillator to modulate the pulse width or frequency of the first. To the right of Xmod is the LFO. It has rate and depth controls and a switch for syncing the LFO to MIDI tempo. When synced, the rate pot sets the timing divisions: one, two, or four bars; then half-, quarter-, eighth-, and sixteenth-notes as well as triplets.

The LFO has nine different waveforms that are chosen by a smooth pot (rather than a clicking rotary switch) so you can move smoothly between the waveforms in real time. Though there's just one LFO, you get separate depth pots affecting VCO1 and 2 independently, plus a toggle next to each that decides whether you're modulating the pitch or pulse width of each.

The VCA has a master volume pot as well as an overdrive switch that, when engaged, adds a very warm yet aggressive distortion to the signal path.

Across the bottom is a row of smaller pots that adjust an array of functions as follows from left to right: master tuning, pitch-bend range, glide time (portamento), dynamics (the depth of MIDI velocity's affect on envelope 1), "Env1-PW1" (variable depth of envelope 1 modulating the pulse width of VCO1), and the mix levels for VCO1, VCO2, ring modulation, and Noise. Lastly, Feedback sends the post-filter signal back through the amplifier, for effects that can go from subtle to total madness.

A number of small recessed pots along the front edge (meant to be accessed with a small screwdriver) are for calibrating various "set it and forget it" parameters such as oscillator tuning, trim, and scaling. Specifics on calibration can be obtained by contacting Studio Electronics directly.

The Boomstar can be played from any MIDI controller or be driven by analog CV/gate. MIDI reception defaults to channel 1 but you can change it via the MIDI learn button. The MIDI output can be used in conjunction with an Overflow button to chain multiple Boomstars together, effectively creating a cascade mode for polyphonic playing.

The Sound

Studio Electronics sent me the model 4075 (ARP 2600-style filter) and SEM units for evaluation. On both, the low end is big and round and the high end has that vintage-yet-clean sizzle that discrete analog components can do like nothing else does. The number of options for modulating and cross-modulating parameters on this synth is mind-boggling. The envelopes are fast, the filters can be made to scream and when you combine that with features like overdrive, ring modulation, noise, and feedback the sounds and textures you can achieve range from the classic to the comical to the otherworldly. Plus, when you factor in the quality of the components and purity of the signal path the sound is simply classy. It has a size, presence, and strength that you'd normally only expect from a modular synth. I have always loved SE products but I have to admit I was nowhere near prepared for what I heard coming out of this little box. It's truly a leader in its class.

At the last minute I had the chance for a quick listen and tweak of a pre-production SE80 Boomstar (based on the Yamaha CS80 filter), which was due out in mid-May and should be available by the time you read this. It s very flexible multi-mode low- and highpass filter was impressive. It captures the boxy and bold CS80 filter sound quite well. Creating almost human-like tones and speaker-threatening subs required no effort to produce. This is a very strong addition to the Boomstar line.

Conclusions

Many manufacturers over the past several years have released low- to mid-cost analog synths, some without patch memory. You could say it's become all the rage. There's certainly value in forcing artists to program their own sounds from scratch, spawning creativity and discovery that is not possible when relying on presets. However, some of these synths are clearly products of their time, strictly aimed at a certain musical style or sector of the industry, and will undoubtedly fall in and out of vogue. The Boomstar, on the other hand, is a synth for *any* era, an instant classic. It's a balls-to-the-wall, high-quality, no-nonsense, professional piece of kit that's immediately useful in any genre of music. Investing in a Boomstar is like investing in any other high-end instrument, whether that be an American-made Fender guitar, DW drum kit, or perfectly restored vintage Hammond B-3. It's something you'll keep and use for life, and its uncompromising sound and build quality earns it our Key Buy award. ♪

Bottom Line

The gold standard of monophonic desktop analog synths.

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