NemFX SC Reverb
Single-Chip Spring Reverb

Features

- Very low cost and high performance Spring Reverb Chip
- Superior sound quality "Big tank sound at a small tank price"
- Mono input, mono output
- Amp designers of the world rejoice! Available in a thru-hole package! (Skinny PDIP) Also available in SOIC
- Requires only a +3.3V Power Supply
- RoHS Compliant, Pb-Free!

Applications

- Electric and Acoustic Guitar Amplifiers, Bass Amplifiers, Keyboard Amplifiers
- Portable PA Systems
- Mixing Consoles, Powered Audio Mixers, DJ Mixers
- Digital Pianos, Electric Pianos, Combo Organs
- Karaoke Systems

Description

Nemesis Technology, Inc. is proud to offer the SC ("Single-Chip") Reverb Version of our popular NemFX Series Digital Multi-Effects solutions. The NemFX SC Reverb is an extremely low cost unit that is designed for applications where price is a driving factor. Although it is ideally suited for entry-level products such as practice amplifiers, its sophisticated sound quality enables the NemFX SC Reverb to be used in higher applications. The NemFX SC Reverb features a high-quality, sweet-sounding Spring Reverb program.

Theory of Operation

The NemFX SC Reverb is a single chip Spring Reverb solution which can be installed on main boards in products such as guitar amplifiers and portable PA systems. Connection to the NemFX SC Reverb is simple. It has a differential analog audio input and a differential analog audio output for easy mono in and mono out operation.

Key Specifications*

Parameter	Typical
Differential Analog Audio Input Level	6.6 Vpp max
Differential Analog Audio Output Level	4.6 Vpp max
Power Supply	+3.3V, 60 mA

*since we are continuously improving our products, specifications are subject to change without notice

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Detailed Specifications

(Typical audio performance numbers at nominal supply voltages, 25ºC operating temperature, with suggested I/O circuitry, unless otherwise specified. All DC voltages relative to ground)

Audio Performance*

Parameter	Typical
Full Scale Differential Analog Audio Input Level	6.6 Vpp
Full Scale Differential Analog Audio Output Level	4.6 Vpp

Recommended Operating Conditions*

Parameter	Min	Typical	Max	Unit
Source Impedance	-	-	200	Ω
Load Impedance	1 k	10 k	-	Ω
Full Scale Differential Analog Audio Input Level	-	6.6	-	Vpp
Full Scale Differential Analog Audio Output Level	-	4.6	-	Vpp
Power Supply Voltage	3.0	3.3	3.6	V
Power Supply current	-	60	90	mA
Operating Ambient Temperature	-40	-	+85	ºC

Absolute Maximum Ratings*

Parameter	Min	Max	Unit
Voltage on VDD with respect to GND	-0.3	+4.0	V
Analog Voltage Input Level	-0.3	VDD + 0.3	V
Ambient Temperature	-40	+125	ºC

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Block Diagram

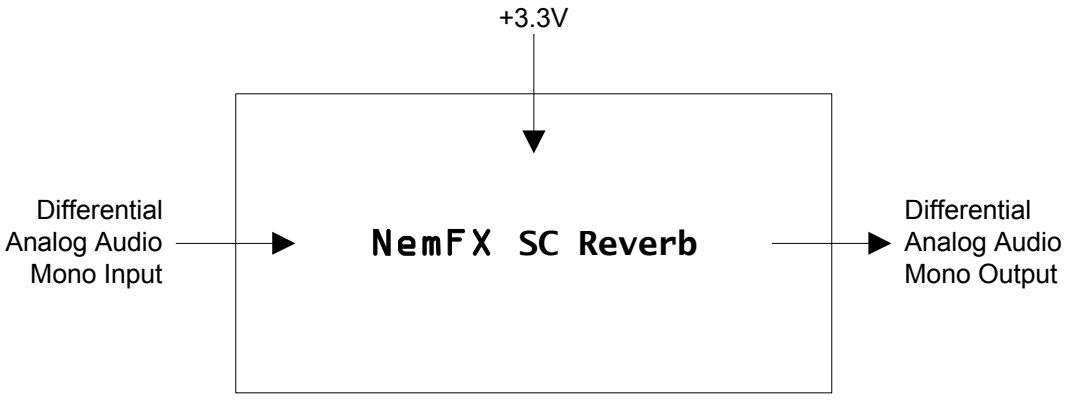

Figure 1: Block Diagram

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Pin Diagram

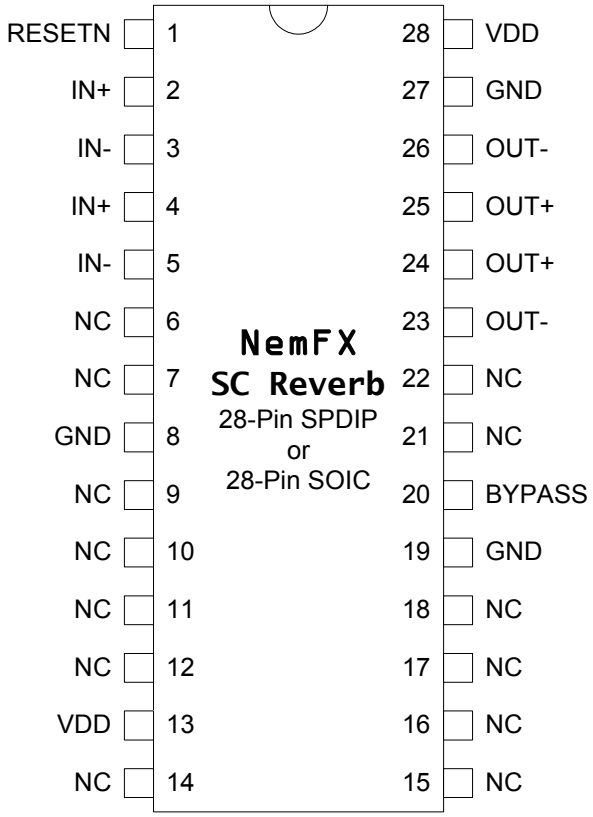

Figure 2: Pin Diagram

Pin Descriptions

Pin	Name	Type	Description
1	RESETN	Input	Reset Input (active-low)
2, 4	IN+	Input	Differential Analog Audio Input (non-inverting)
3, 5	IN-	Input	Differential Analog Audio Input (inverting)
6-7, 9-12, 14-18, 21-22	NC		No Connect (do not connect anything to these pins)
8, 19, 27	GND	Input	Ground
13, 28	VDD	Input	Power Supply (+3.3V)
20	BYPASS	Input	Bypass Filter Capacitor Connection
23, 26	OUT-	Output	Differential Analog Audio Output (inverting)
24-25	OUT+	Output	Differential Analog Audio Output (non-inverting)

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Typical Application Diagram

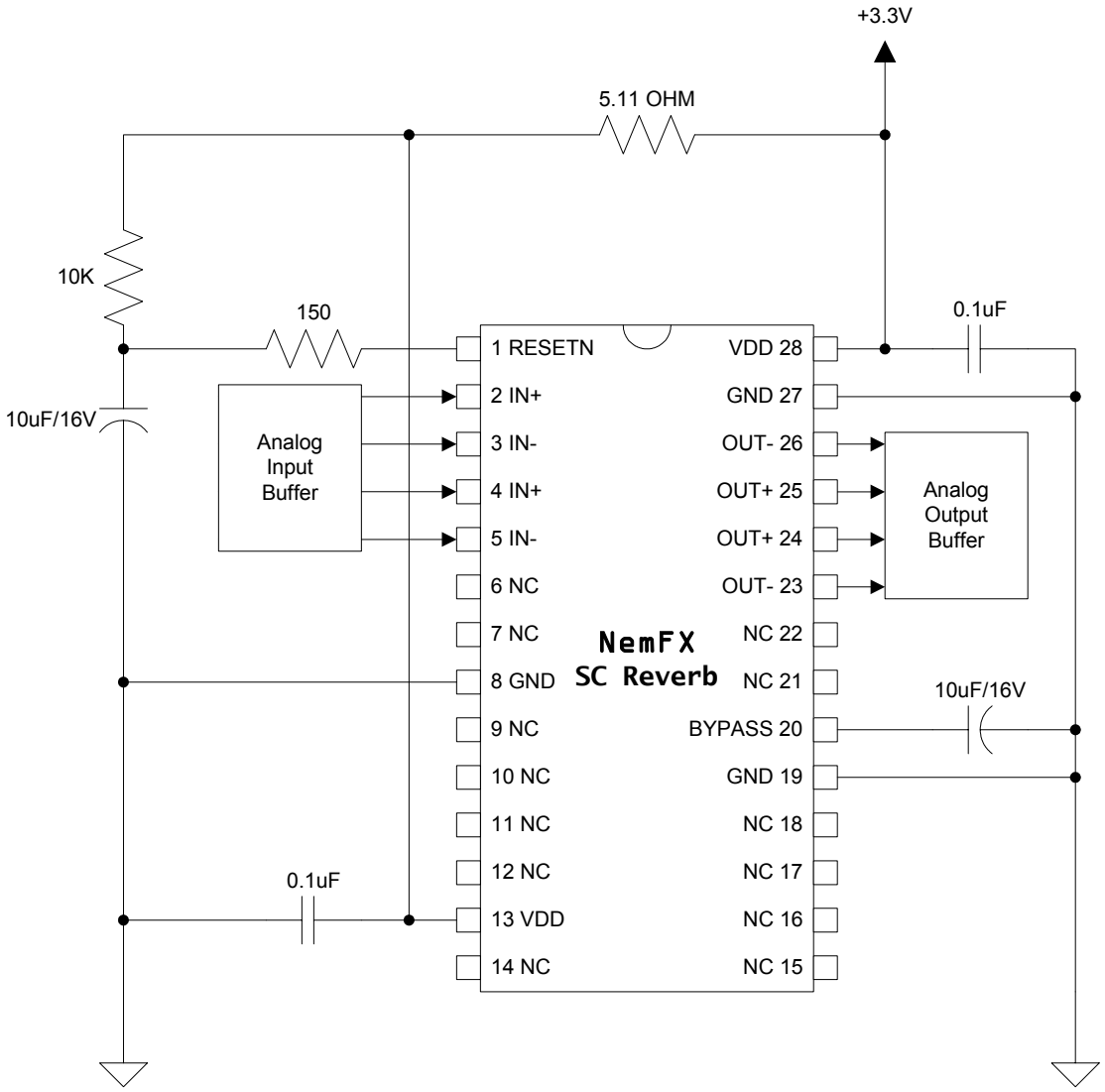

Figure 3: Application Diagram

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Application Information

Analog Audio Input Circuit

The analog audio input pins require a low impedance drive directly from the output of an op-amp. Any resistance on the input connection to the NemFX SC Reverb will cause distortion on the input signal. The signal at the input pins can be up to a maximum of 6.6 Vpp differential before clipping occurs. Analog input signals must stay within the voltage range listed under 'Absolute Maximum Ratings' in the specifications section of the datasheet; otherwise, damage to the NemFX SC Reverb can occur.

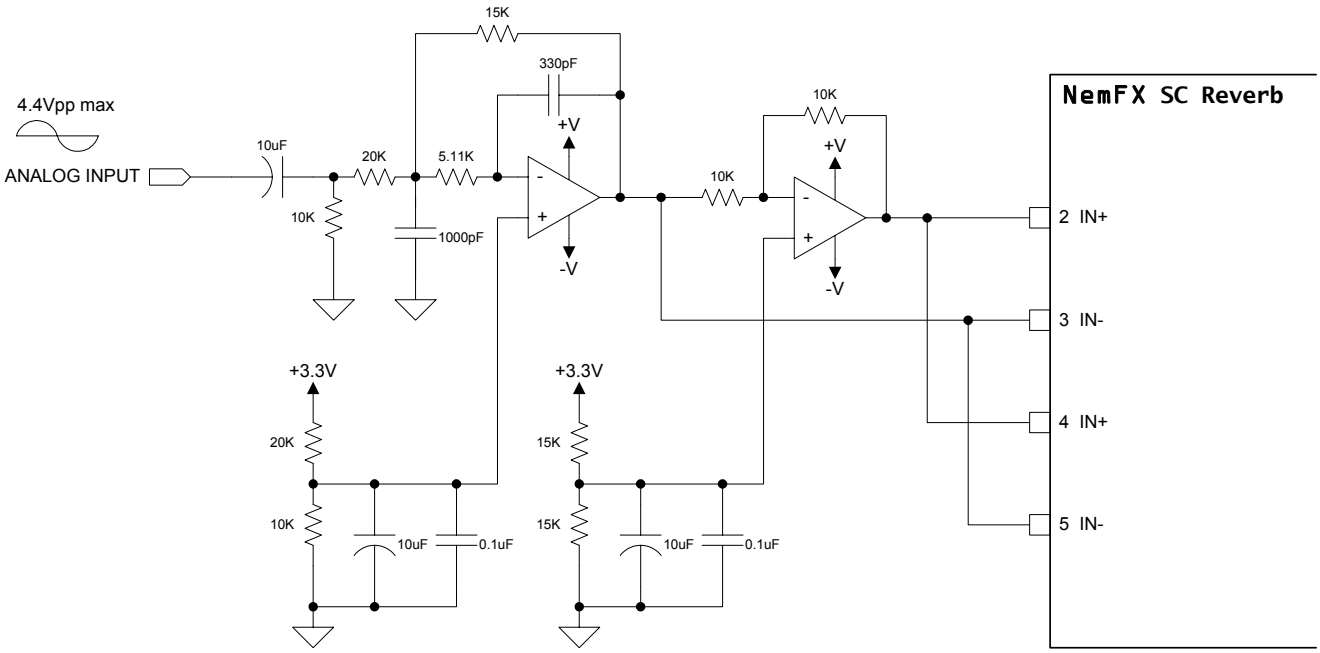
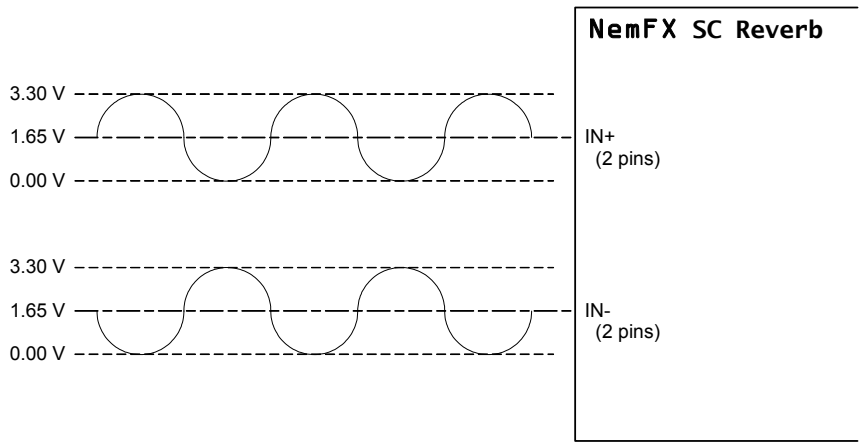


Figure 3: Recommended Analog Input Buffer



Full-Scale Input Level = (IN+) - (IN-) = 6.6 Vpp

Figure 4: Full-Scale Analog Audio Input

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Analog Audio Output Circuit

Interfacing to the analog audio output of the NemFX SC Reverb is also very simple. Each output pin must drive a load greater than 1 kΩ. NOTE: Additional filtering of signals above 60 kHz may be necessary on systems that are sensitive to high frequency noise.

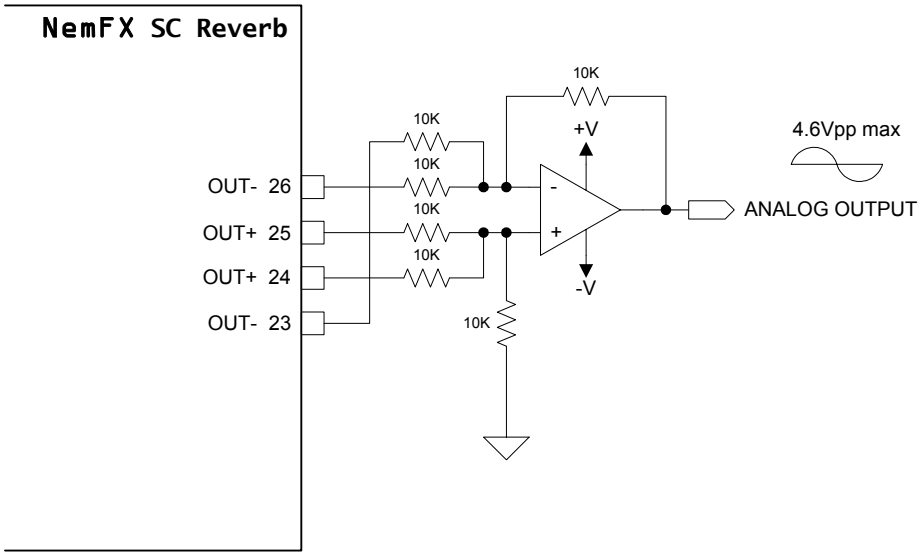
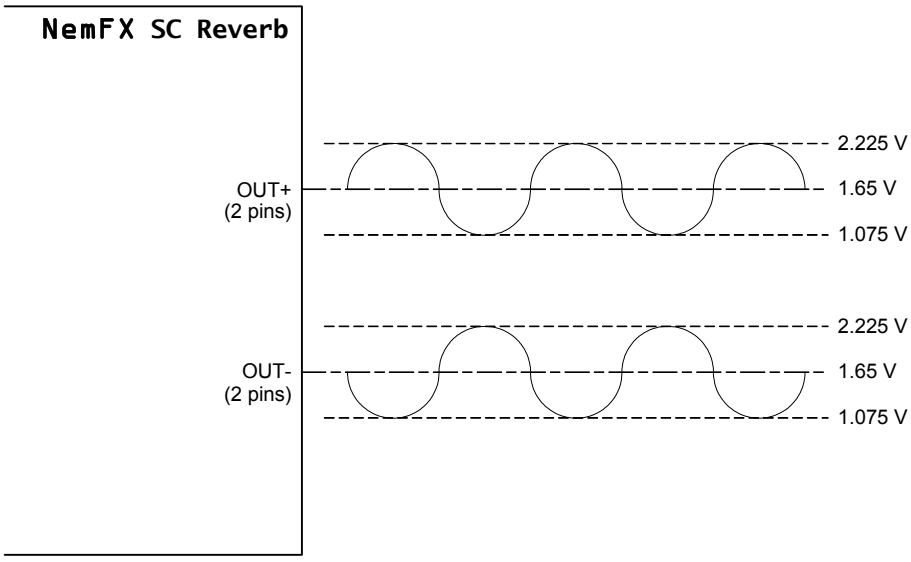


Figure 5: Recommended Analog Output Buffer

A full scale signal will drive the analog audio outputs to a maximum of 4.6 Vpp.



Full-Scale Output Level = 2 * ((OUT+) - (OUT-)) = 4.6 Vpp

Figure 6: Full-Scale Analog Audio Output

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Power Supply

The NemFX SC Reverb requires a clean, regulated +3.3V power supply to achieve rated performance. The NemFX SC Reverb draws about 60 mA typical during steady-state operation. During power-up, the current draw will be higher as the capacitors charge up.

Ordering Options

NemFXSC-Reverb- _

Package
- SP - Skinny Plastic Dual In-Line - 300 mil body (SPDIP)
- SO - Plastic Small Outline - Wide - 300 mil body (SOIC)

Contact Nemesis Technology, Inc. for more information.

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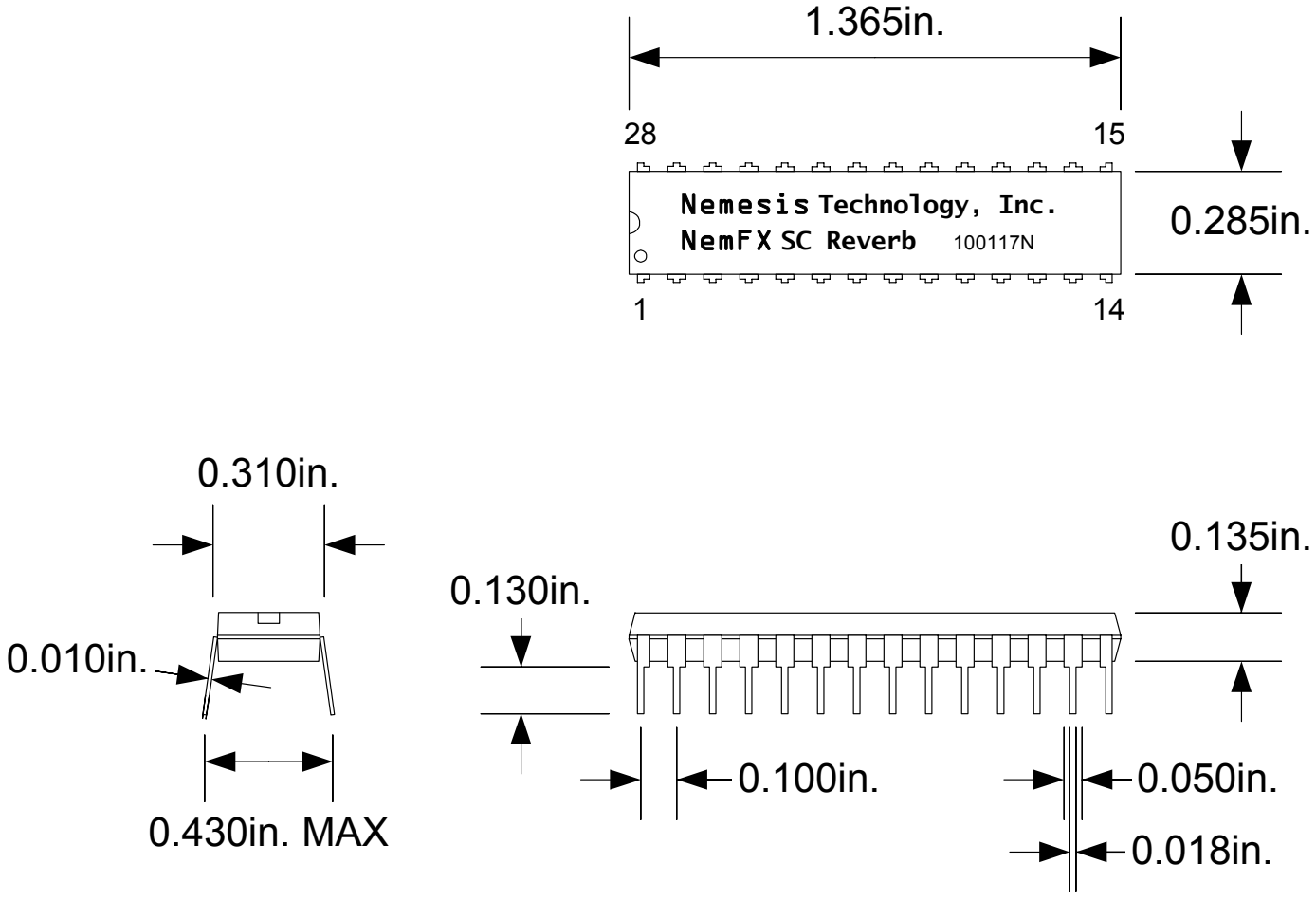
Package Details

28-Pin Skinny Plastic Dual In-Line - 300 mil Body (SPDIP)



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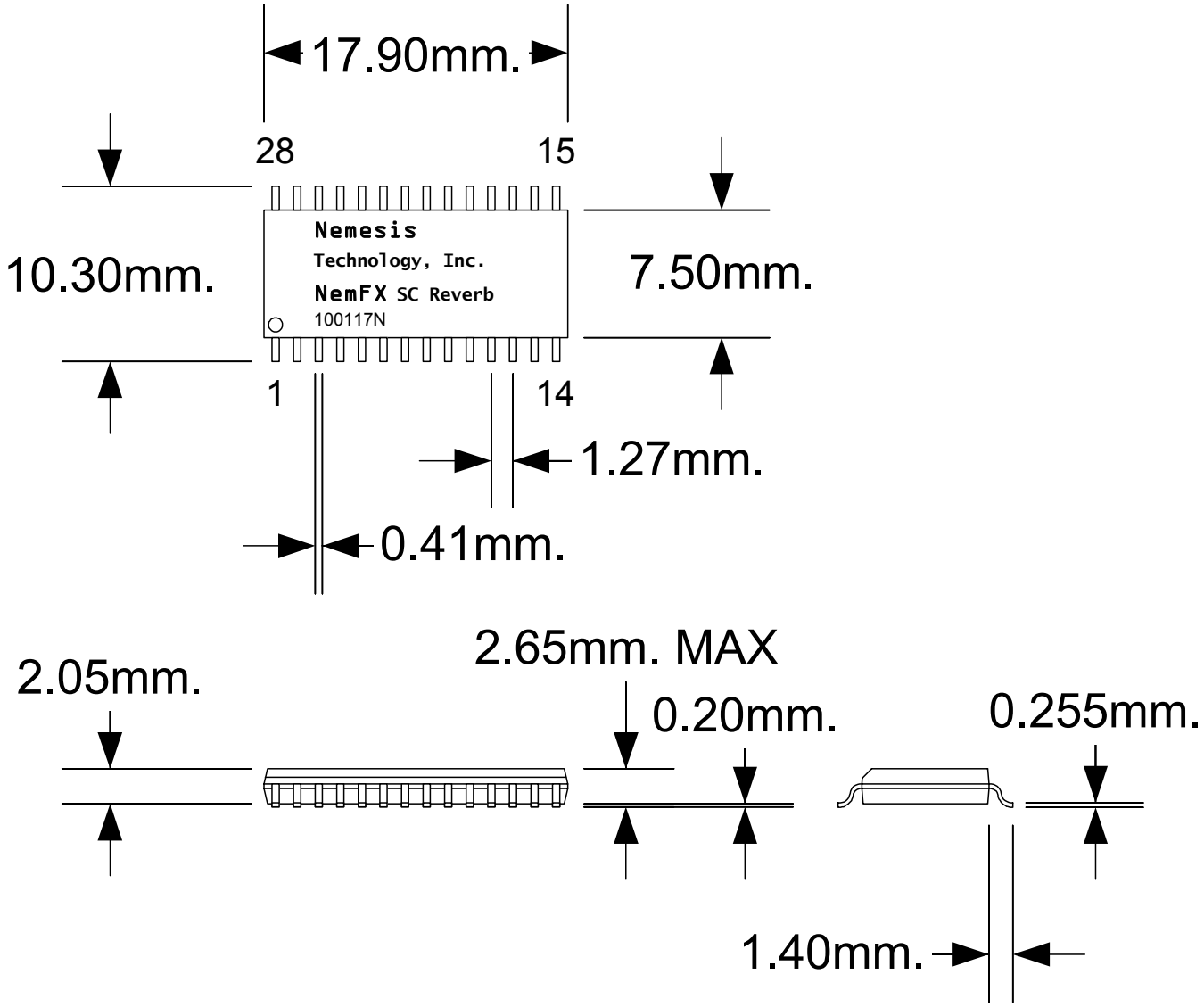
28-Pin Plastic Small Outline – Wide – 300 mil Body (SOIC)



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Important Information

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NemFX SC Reverb's are electronic devices and should be handled in static safe and otherwise appropriate manner. Nemesis Technology, Inc. will not be held responsible for any mishandling of NemFX SC Reverb's.

Nemesis Technology, Inc. will, however, accept responsibility for adding the sweet sounds of reverb and other effects to your audio products.

Contact Information

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