

1 General description

NAFE11388 is a highly configurable industrial grade multi-channel universal input Analog Front-End (AFE) that meets high-precision measurement requirements. The device integrates low-leakage high-voltage fast multiplexers, low offset and low drift PGA and buffers, a precision and high data rate 24-bit Delta Sigma ADC and a low-drift voltage reference. The analog high voltage (HV) input pins are diode-protected internally for EMC and wire misuse scenarios; NAFE11388 is equipped with diagnostic circuits for functional safety, condition monitoring and fault detection. Two precise voltage sources are made available for end-to-end system self-calibration and anomaly detection for predictive maintenance.

NAFE11388 is designed to be used in programmable logic controllers (PLC), I/O modules, data loggers, instrumentation, high precision sensors and data acquisition systems.

2 Features and benefits

- 8 configurable HV inputs
 - Single-ended or differential with ranges up to ± 25 V
 - Configurable for voltage, current, resistance, RTD, thermocouples
 - Overvoltage protection up to ± 36 V
- Fast data rates
 - 7.5 SPS to 288 kSPS
- Diagnostic system for fault detection and prediction
- CRC error detection
- Operating temperature range: -40 °C to $+125$ °C
- Package: 64 pin, 9 mm × 9 mm × 0.85 mm VQFN

3 Applications

- Data acquisition systems
- PLC, DCS I/O modules
- Industrial automation and process control



4 Ordering information

Table 1. Ordering information

Type number	Package		Version
	Name	Description	
NAFE11388	HVQFN64	thermal enhanced very thin quad flat package, no leads, dimple wettable flank; 64 terminals, 0.5 mm pitch, 9 mm x 9 mm x 0.85 mm body	SOT804-3

5 Block diagram

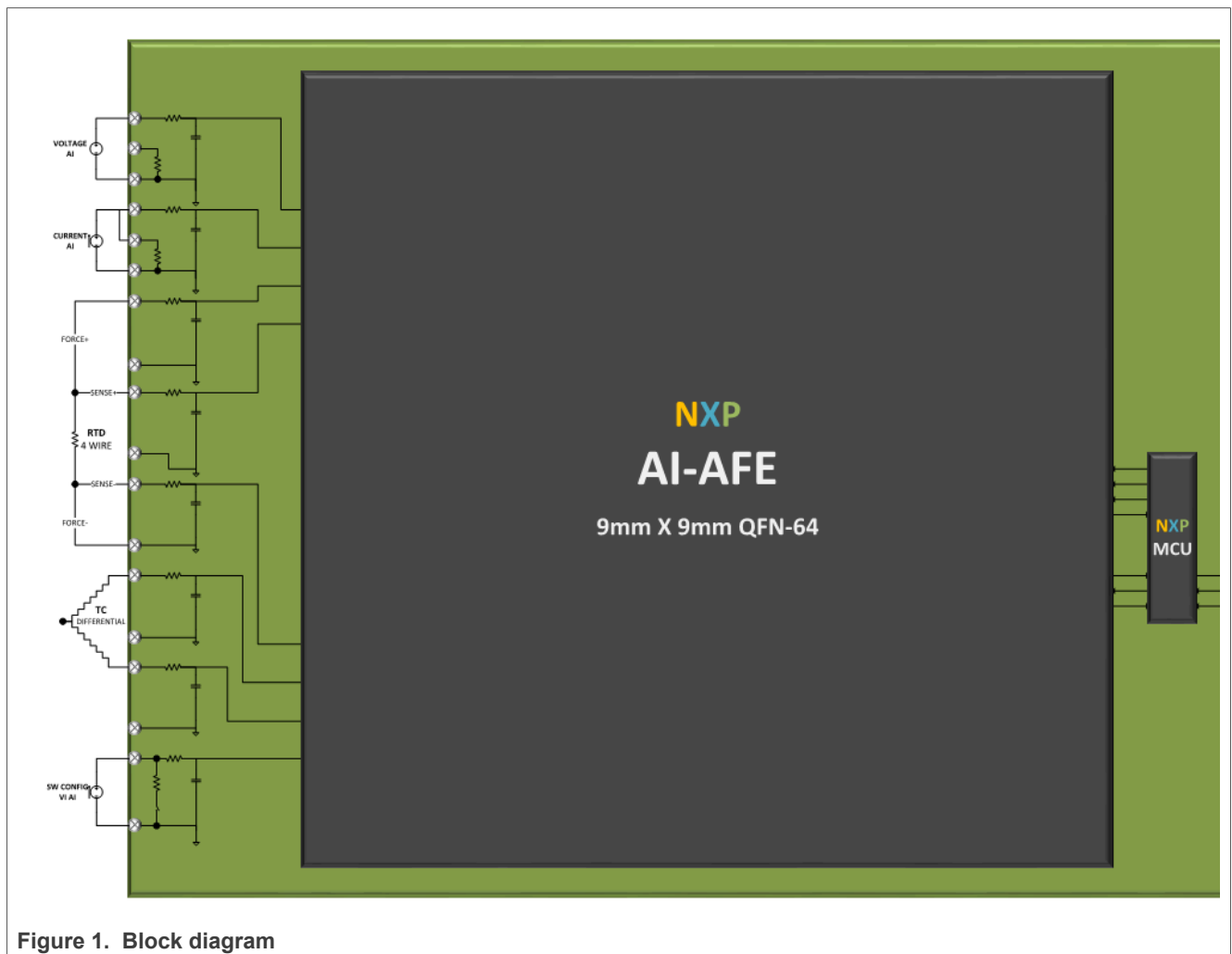


Figure 1. Block diagram

6 Package outline

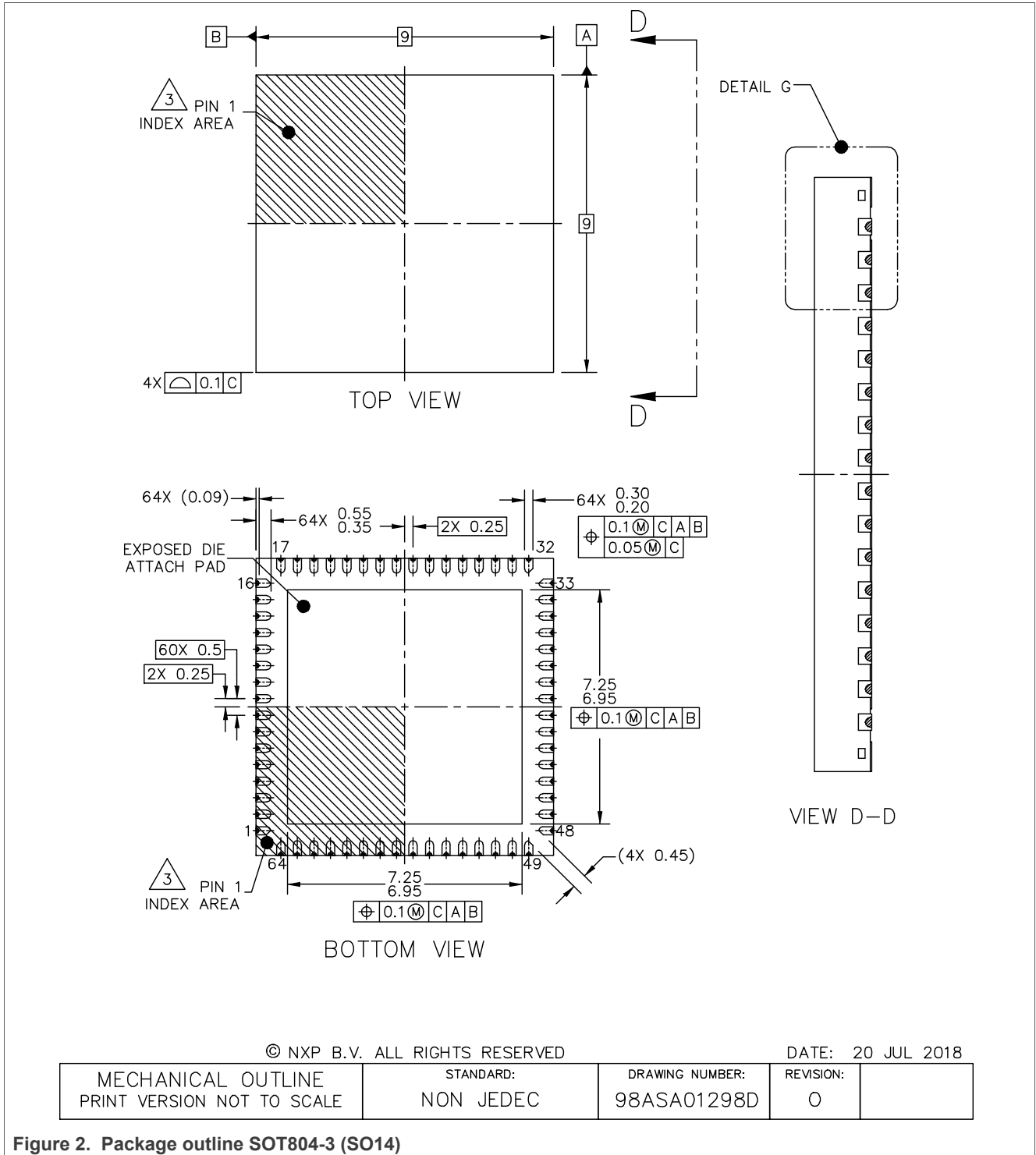
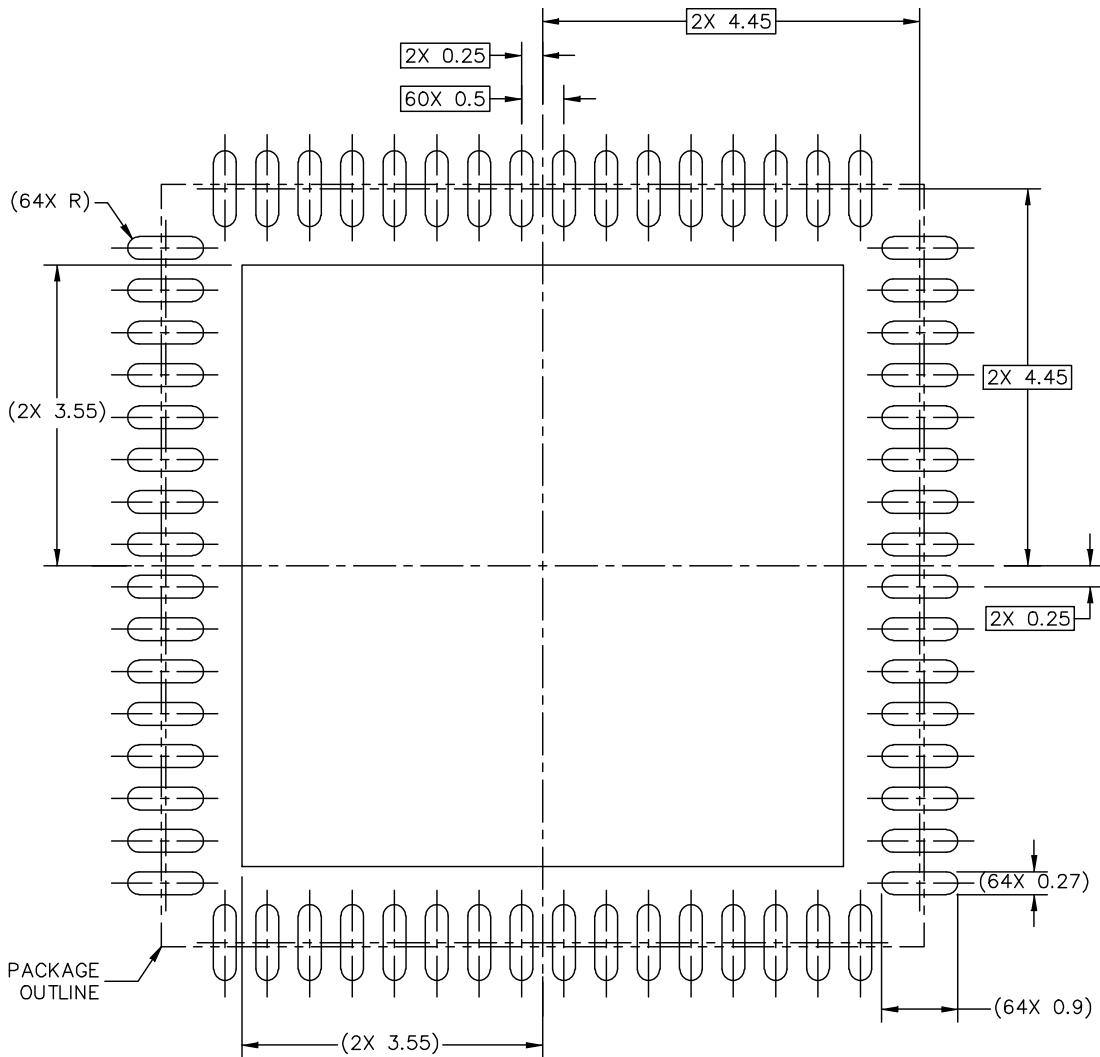


Figure 2. Package outline SOT804-3 (SO14)



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Figure 3. Footprint SOT804-3 (SO14)

7 Revision history

Table 2. Revision history

Document ID	Release date	Data sheet status	Change notice	Supersedes
NAFE11388 v.1.0	20211229	Objective short data sheet	-	-

8 Legal information

8.1 Data sheet status

Document status ^{[1][2]}	Product status ^[3]	Definition
Objective [short] data sheet	Development	This document contains data from the objective specification for product development.
Preliminary [short] data sheet	Qualification	This document contains data from the preliminary specification.
Product [short] data sheet	Production	This document contains the product specification.

[1] Please consult the most recently issued document before initiating or completing a design.

[2] The term 'short data sheet' is explained in section "Definitions".

[3] The product status of device(s) described in this document may have changed since this document was published and may differ in case of multiple devices. The latest product status information is available on the Internet at URL <http://www.nxp.com>.

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