



THE DATASHEET OF MFS2633AMDA0AD



FS26

Safety System Basis Chip with Low Power for ASIL D / ASIL B

Rev. 3 — 14 March 2023

Product brief



1 About this document

This Product brief is intended to provide overview/summary information for the purpose of evaluating a product for design suitability. It is intended for quick reference only and should not be relied upon to contain detailed and full information.

Some of the content in this product brief is extracted from the product's full data sheet. In case of any inconsistency or conflict, the full data sheet shall prevail.

For detailed and full information, see the relevant FS26 full data sheet, available via the [NXP Secure Files content interface](#).



2 General description

Devices in the FS26 automotive safety System Basis Chip (SBC) family are designed to support entry and mid-range safety microcontrollers, like those in the S32K3 series. FS26 devices have multiple power supplies and the flexibility to work with other microcontrollers targeting automotive electrification. Possible FS26 applications include power train, chassis, safety and low-end gateway technology.

This family of devices consist of several versions that are pin to pin and software compatible. These versions support a wide range of applications with Automotive Safety Integrity Levels (ASIL) B or D, offering choices in number of output rails, output voltage settings, operating frequencies, power up sequencing, and integrated system level features.

The FS26 features multiple switch mode regulators and low dropout (LDO) voltage regulators to supply the microcontroller, sensors, peripheral ICs and communication interfaces. It offers a high precision reference voltage supply for the system, and for two independent tracking regulators. The FS26 also offers various functionality for system control and diagnostics, including an analog multiplexer, General Purpose Input/Outputs (GPIOs), and selectable wakeup events from I/O, long duration timer or Serial-Peripheral Interface (SPI) communication.

The FS26 is developed in compliance with the ISO26262 standard, and includes enhanced safety features with multiple fail-safe outputs. It uses the latest on-demand latent fault monitoring, and can be part of a safety-oriented system partitioning scheme covering both ASIL B and ASIL D safety integrity levels.

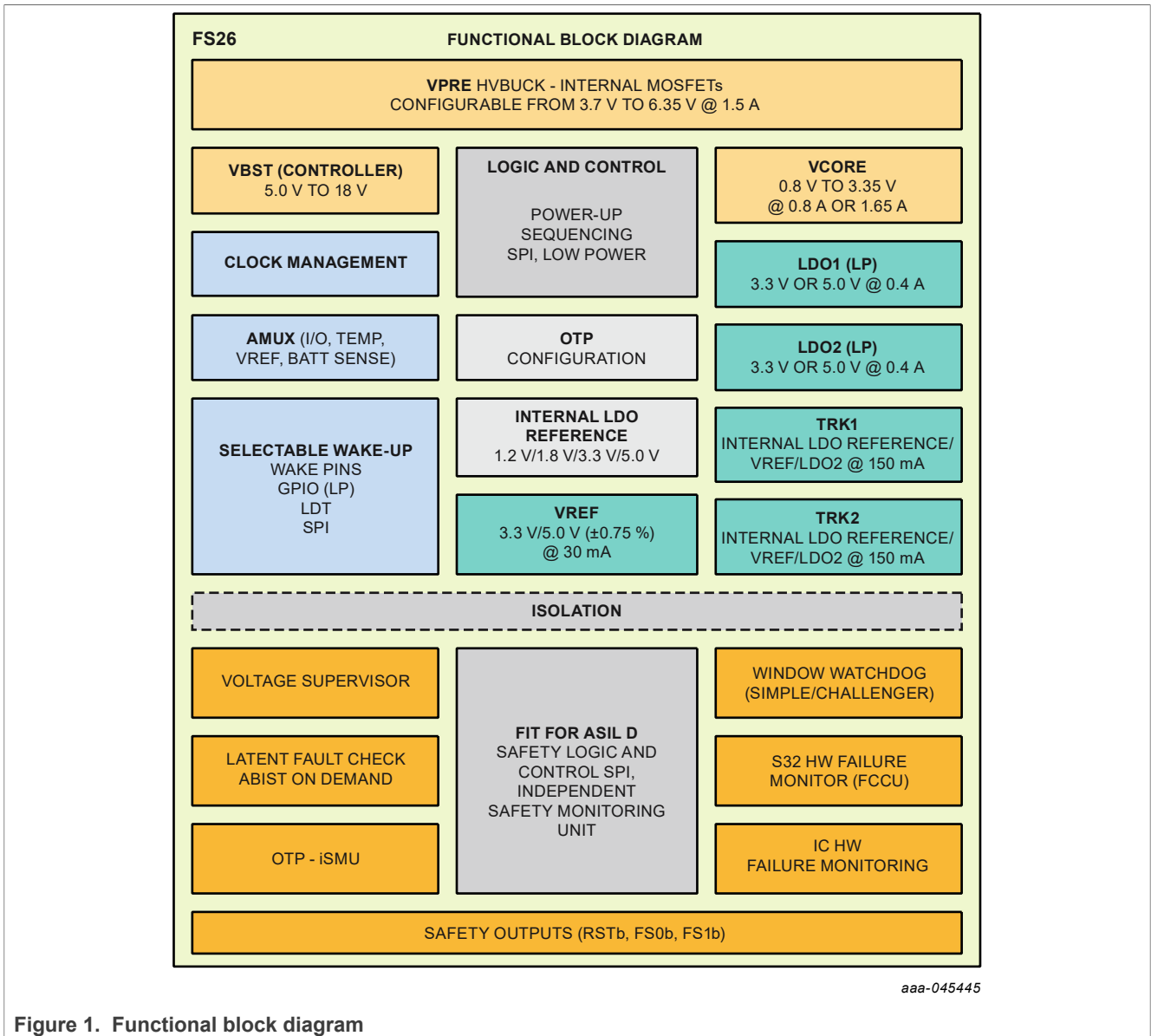


Figure 1. Functional block diagram

3 Features and benefits

Operating range

- 40 V DC maximum input voltage
- Support operating voltage range down to battery 3.2 V with VBST
- Support operating voltage range down to battery 6 V without VBST
- Low Power OFF mode with 30 μ A quiescent current
- Low Power Standby mode with 29 μ A quiescent current with VPRE active. LDO1 or LDO2 activation selectable via OTP configuration. GPIO1 or GPIO2 activation selectable via SPI communication.

Power supplies

- VPRE: Synchronous buck converter with integrated FETs. Configurable output voltage and switching frequency, output DC current capability up to 1.5 A and PFM mode for Low Power Standby mode operation.
- VCORE: Synchronous buck converter with integrated FETs. VCORE is dedicated for microcontroller core supply. Output DC current up to 0.8 A or 1.65 A (depending on part number), output voltage range setting from 0.8 V to 3.35 V.
- VBST: Asynchronous boost controller with external low-side switch, diode, and current sense resistor. VBST is configurable as front-end supply to withstand low voltage cranking profiles or in back-end supply with configurable output voltage and scalable output DC current capability.
- LDO1: LDO regulator for microcontroller I/O support with selectable output voltage between 3.3 V and 5.0 V and up to 400 mA current capability.
- LDO2: LDO regulator for system peripheral support with selectable output voltage between 3.3 V and 5.0 V and up to 400 mA current capability.
- VREF: High-precision reference voltage with 0.75 % accuracy for External ADC reference and internal tracking reference.
- TRK1 and TRK2: Voltage tracking regulators with selectable output voltage between VREF, LDO2, or Internal LDO reference. Support high-voltage protection for ECU off board operation. Each Tracker has a current capability up to 150 mA.

System support

- Two wake-up inputs with high-voltage support for system robustness
- Two programmable GPIO with wake-up capability or HS/LS driver
- Programmable long duration timer (LDT) for system shutdown and wake-up control
- Monitoring of system voltages (Including Battery voltage monitoring) through the analog multiplexer
- Selectable wake-up sources from: WAKE/GPIO pins, LDT, or SPI activity
- Device control via 32-bit SPI interface with cyclic redundancy checks (CRC)

Compliance

- Electromagnetic compatibility (EMC) optimization techniques for switching regulators, including spread spectrum, slew rate control, and manual frequency tuning.
- Electromagnetic interference (EMI) robustness supporting various automotive EMI test standards.

Functional safety

- Scalable portfolio from Automotive Safety Integrity Levels (ASIL) B to D
- Independent monitoring circuitry, dedicated interface for microcontroller monitoring, simple or challenger watchdog function
- Analog built-in self-test (ABIST) and Logical Built-In Self-Test (LBIST) at start up
- Analog built-in self-test (ABIST) on demand
- Safety outputs with latent fault detection mechanism (RSTB, FS0B, FS1B)

Configuration and enablement

- LQFP48 pins with exposed pad for optimized thermal management
- Permanent device customization via one time programmable (OTP) fuse memory
- OTP Emulation mode for hardware development and evaluation
- Debug mode for software development, MCU programming, and debugging

4 Applications

xEV and powertrain market

- Inverter
- Onboard charger (OBC), DCDC
- Battery management system (BMS)
- Belt starter generator (BSG)

Body market

- Gateway
- Zonal control
- Body controller
- Smart junction box

Safety and chassis

- Suspension
- Power steering

MCU attach

- NXP S32K3 family
- Infineon AURIX family (TC2xx and TC3xx)
- Renesas RH850 family
- Cypress Traveo family

5 Ordering information

This section describes the part numbers available for purchase, with their main differences. It also depicts how the part number reference is built.

5.1 Part number definition

Figure 2 shows how the FS26xyz part number is used to describe the available feature set of each device.

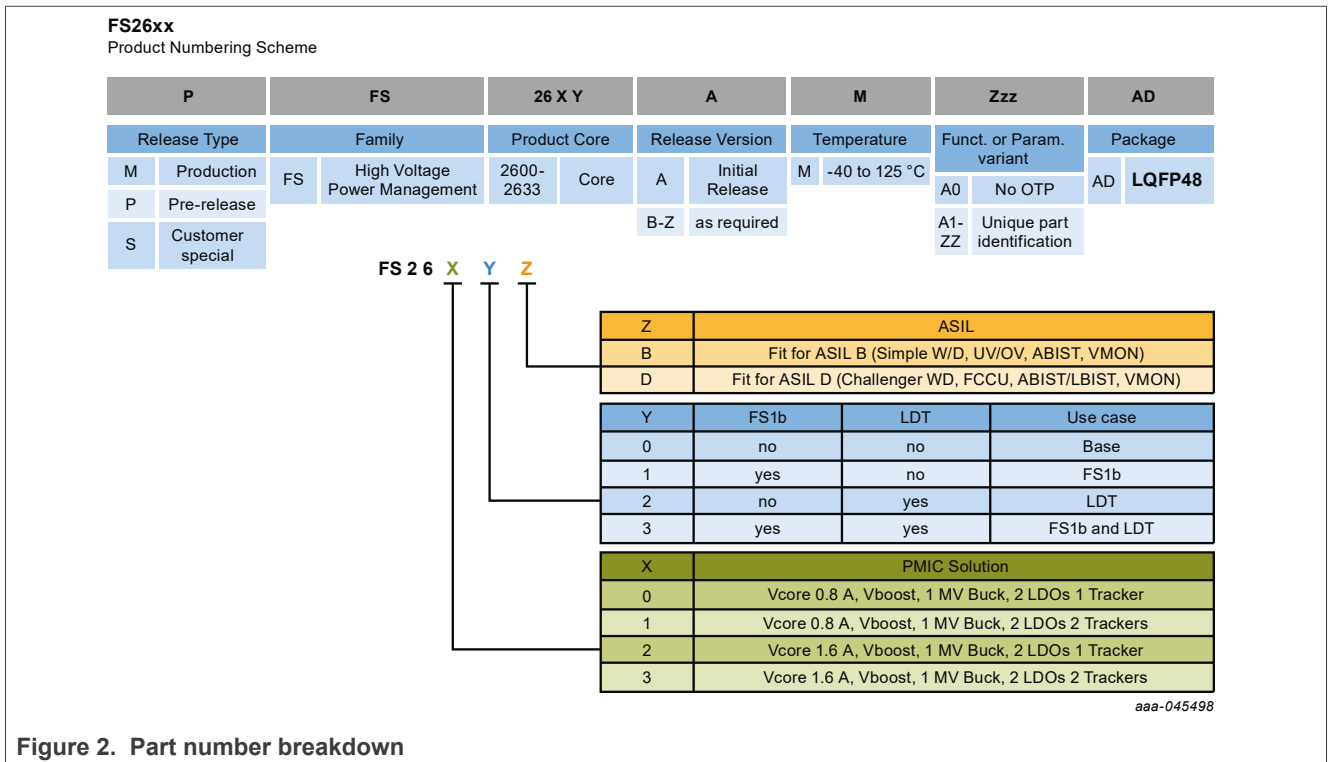


Figure 2. Part number breakdown

Figure 3 maps FS26 part numbers vs. product feature sets.

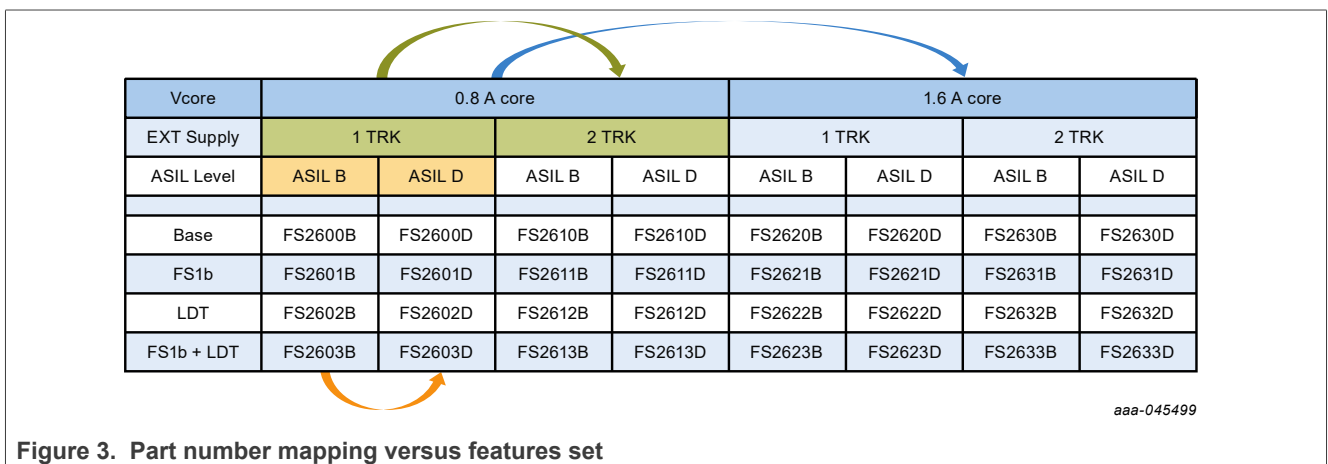


Figure 3. Part number mapping versus features set

5.2 Part number list

Table 1. Device segmentation

| Part Number | DEV_ID[5:0] | Tracker 2 | Core Current Capability | Long Duration Timer | Tracker 2 Monitoring | FS1B | ABIST on demand | Watchdog Type | Fault Recovery | FCCU Monitoring | LBIST |
|-------------|-------------|-----------|-------------------------|---------------------|----------------------|------|-----------------|---------------|----------------|-----------------|-------|
| FS2600B | 0x01 | NO | 0.8 A | NO | NO | NO | YES | Simple | NO | Optional | NO |
| FS2601B | 0x02 | NO | 0.8 A | NO | NO | YES | YES | Simple | NO | Optional | NO |
| FS2602B | 0x03 | NO | 0.8 A | YES | NO | NO | YES | Simple | NO | Optional | NO |
| FS2603B | 0x04 | NO | 0.8 A | YES | NO | YES | YES | Simple | NO | Optional | NO |
| FS2600D | 0x05 | NO | 0.8 A | NO | NO | NO | YES | Challenger | YES | YES | YES |
| FS2601D | 0x06 | NO | 0.8 A | NO | NO | YES | YES | Challenger | YES | YES | YES |
| FS2602D | 0x07 | NO | 0.8 A | YES | NO | NO | YES | Challenger | YES | YES | YES |
| FS2603D | 0x08 | NO | 0.8 A | YES | NO | YES | YES | Challenger | YES | YES | YES |
| FS2610B | 0x09 | YES | 0.8 A | NO | YES | NO | YES | Simple | NO | Optional | NO |
| FS2611B | 0x0A | YES | 0.8 A | NO | YES | YES | YES | Simple | NO | Optional | NO |
| FS2612B | 0x0B | YES | 0.8 A | YES | YES | NO | YES | Simple | NO | Optional | NO |
| FS2613B | 0x0C | YES | 0.8 A | YES | YES | YES | YES | Simple | NO | Optional | NO |
| FS2610D | 0x0D | YES | 0.8 A | NO | YES | NO | YES | Challenger | YES | YES | YES |
| FS2611D | 0x0E | YES | 0.8 A | NO | YES | YES | YES | Challenger | YES | YES | YES |
| FS2612D | 0x0F | YES | 0.8 A | YES | YES | NO | YES | Challenger | YES | YES | YES |
| FS2613D | 0x10 | YES | 0.8 A | YES | YES | YES | YES | Challenger | YES | YES | YES |
| FS2620B | 0x11 | NO | 1.65 A | NO | NO | NO | YES | Simple | NO | Optional | NO |
| FS2621B | 0x12 | NO | 1.65 A | NO | NO | YES | YES | Simple | NO | Optional | NO |
| FS2622B | 0x13 | NO | 1.65 A | YES | NO | NO | YES | Simple | NO | Optional | NO |
| FS2623B | 0x14 | NO | 1.65 A | YES | NO | YES | YES | Simple | NO | Optional | NO |
| FS2620D | 0x15 | NO | 1.65 A | NO | NO | NO | YES | Challenger | YES | YES | YES |
| FS2621D | 0x16 | NO | 1.65 A | NO | NO | YES | YES | Challenger | YES | YES | YES |
| FS2622D | 0x17 | NO | 1.65 A | YES | NO | NO | YES | Challenger | YES | YES | YES |
| FS2623D | 0x18 | NO | 1.65 A | YES | NO | YES | YES | Challenger | YES | YES | YES |
| FS2630B | 0x19 | YES | 1.65 A | NO | YES | NO | YES | Simple | NO | Optional | NO |
| FS2631B | 0x1A | YES | 1.65 A | NO | YES | YES | YES | Simple | NO | Optional | NO |
| FS2632B | 0x1B | YES | 1.65 A | YES | YES | NO | YES | Simple | NO | Optional | NO |
| FS2633B | 0x1C | YES | 1.65 A | YES | YES | YES | YES | Simple | NO | Optional | NO |
| FS2630D | 0x1D | YES | 1.65 A | NO | YES | NO | YES | Challenger | YES | YES | YES |
| FS2631D | 0x1E | YES | 1.65 A | NO | YES | YES | YES | Challenger | YES | YES | YES |
| FS2632D | 0x1F | YES | 1.65 A | YES | YES | NO | YES | Challenger | YES | YES | YES |
| FS2633D | 0x20 | YES | 1.65 A | YES | YES | YES | YES | Challenger | YES | YES | YES |

Additional part numbers will exist with different features and parametric settings. [Table 1](#) is an example of a part number list.

Table 2. Orderable part numbers

| Part number | Description | Package |
|-----------------------|------------------------------------------------------------|---------------|
| MFS2613AMDA2AD | S32K344+ FS26 EVB ASIL D S32K3X4EVB-x257 | LQPF48 |
| MFS2613AMDA3AD | S32K344 HVBMS Reference design | |
| MFS2613AMDA4AD | S32K344 Body Control Module Reference design (white board) | |
| MFS2613AMDA6AD | S32K344 48 V MC Development platform | |

Table 2. Orderable part numbers...continued

| Part number | Description | Package |
|-----------------------|-----------------------------------|---------|
| MFS2621AMDABAD | Aurix TC38, TC29 | |
| MFS2613AMDDCAD | S32K324 5G T-BOX + Gateway | |
| MFS2600AMBA0AD | Superset covering FS2600B devices | |
| MFS2600AMDA0AD | Superset covering FS2600D devices | |
| MFS2601AMBA0AD | Superset covering FS2601B devices | |
| MFS2601AMDA0AD | Superset covering FS2601D devices | |
| MFS2602AMBA0AD | Superset covering FS2602B devices | |
| MFS2602AMDA0AD | Superset covering FS2602D devices | |
| MFS2603AMBA0AD | Superset covering FS2603B devices | |
| MFS2603AMDA0AD | Superset covering FS2603D devices | |
| MFS2610AMBA0AD | Superset covering FS2610B devices | |
| MFS2610AMDA0AD | Superset covering FS2610D devices | |
| MFS2611AMBA0AD | Superset covering FS2611B devices | |
| MFS2611AMDA0AD | Superset covering FS2611D devices | |
| MFS2612AMBA0AD | Superset covering FS2612B devices | |
| MFS2612AMDA0AD | Superset covering FS2612D devices | |
| MFS2613AMBA0AD | Superset covering FS2613B devices | |
| MFS2613AMDA0AD | Superset covering FS2613D devices | |
| MFS2620AMBA0AD | Superset covering FS2620B devices | |
| MFS2620AMDA0AD | Superset covering FS2620D devices | |
| MFS2621AMBA0AD | Superset covering FS2621B devices | |
| MFS2621AMDA0AD | Superset covering FS2621D devices | |
| MFS2622AMBA0AD | Superset covering FS2622B devices | |
| MFS2622AMDA0AD | Superset covering FS2622D devices | |
| MFS2623AMBA0AD | Superset covering FS2623B devices | |
| MFS2623AMDA0AD | Superset covering FS2623D devices | |
| MFS2630AMDA0AD | Superset covering FS2630D devices | |
| MFS2630AMBA0AD | Superset covering FS2630B devices | |
| MFS2631AMBA0AD | Superset covering FS2631B devices | |
| MFS2631AMDA0AD | Superset covering FS2631D devices | |
| MFS2632AMBA0AD | Superset covering FS2632B devices | |
| MFS2632AMDA0AD | Superset covering FS2632D devices | |
| MFS2633AMBA0AD | Superset covering FS2633B devices | |
| MFS2633AMDA0AD | Superset covering FS2633D devices | |

Empty OTP samples can be ordered for engineering purposes using part number **PFS2630AMDA0AD**. Refer to the associated OTP configuration report in the website product page.

6 Simplified application diagram

Figure 4 shows a simplified block diagram for a typical system with an FS26, using the boost controller to support battery cold-crank events.

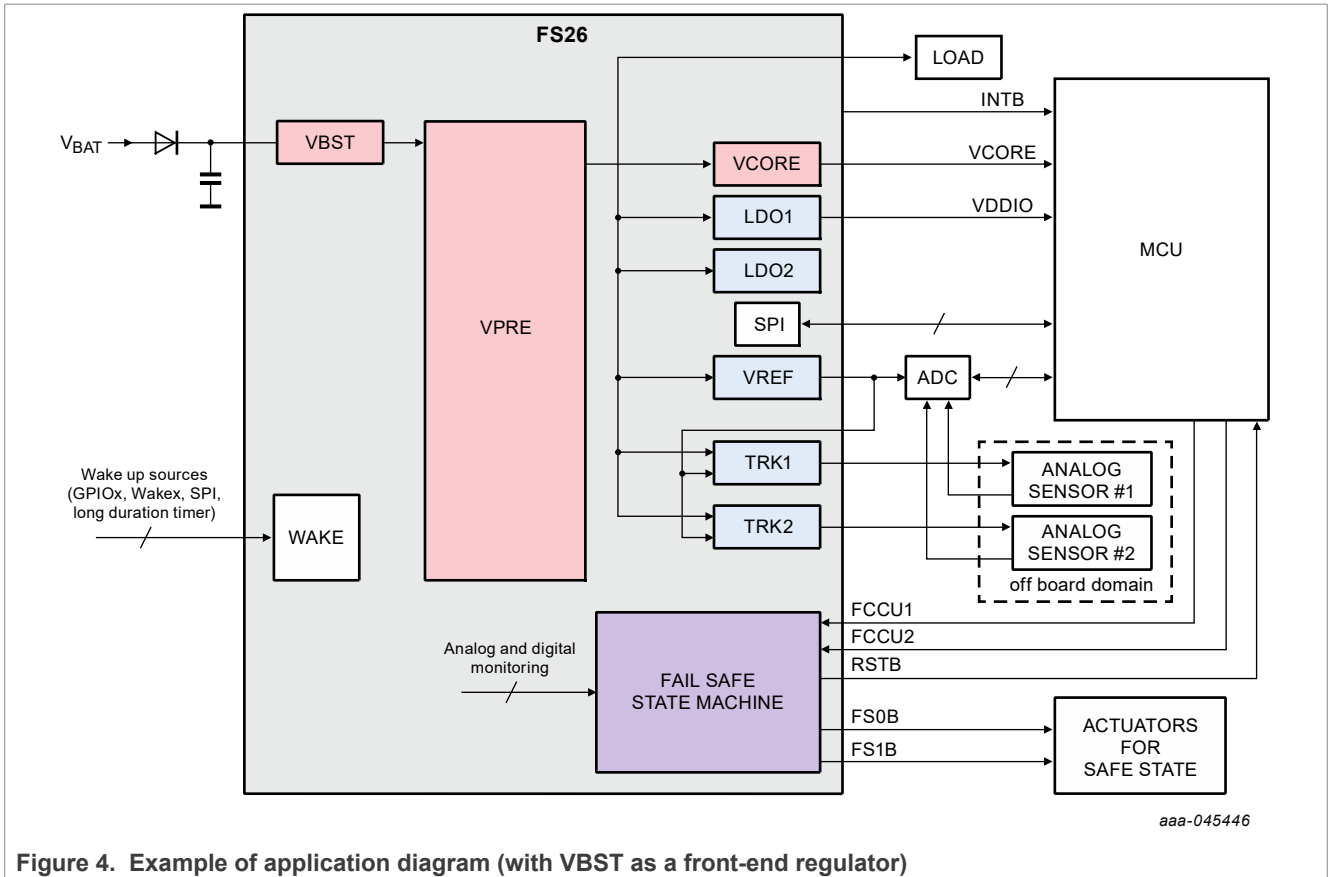


Figure 4. Example of application diagram (with VBST as a front-end regulator)

Figure 5 shows a simplified block diagram for a typical system with an FS26, using the boost controller to generate a voltage above the high-voltage buck output voltage.

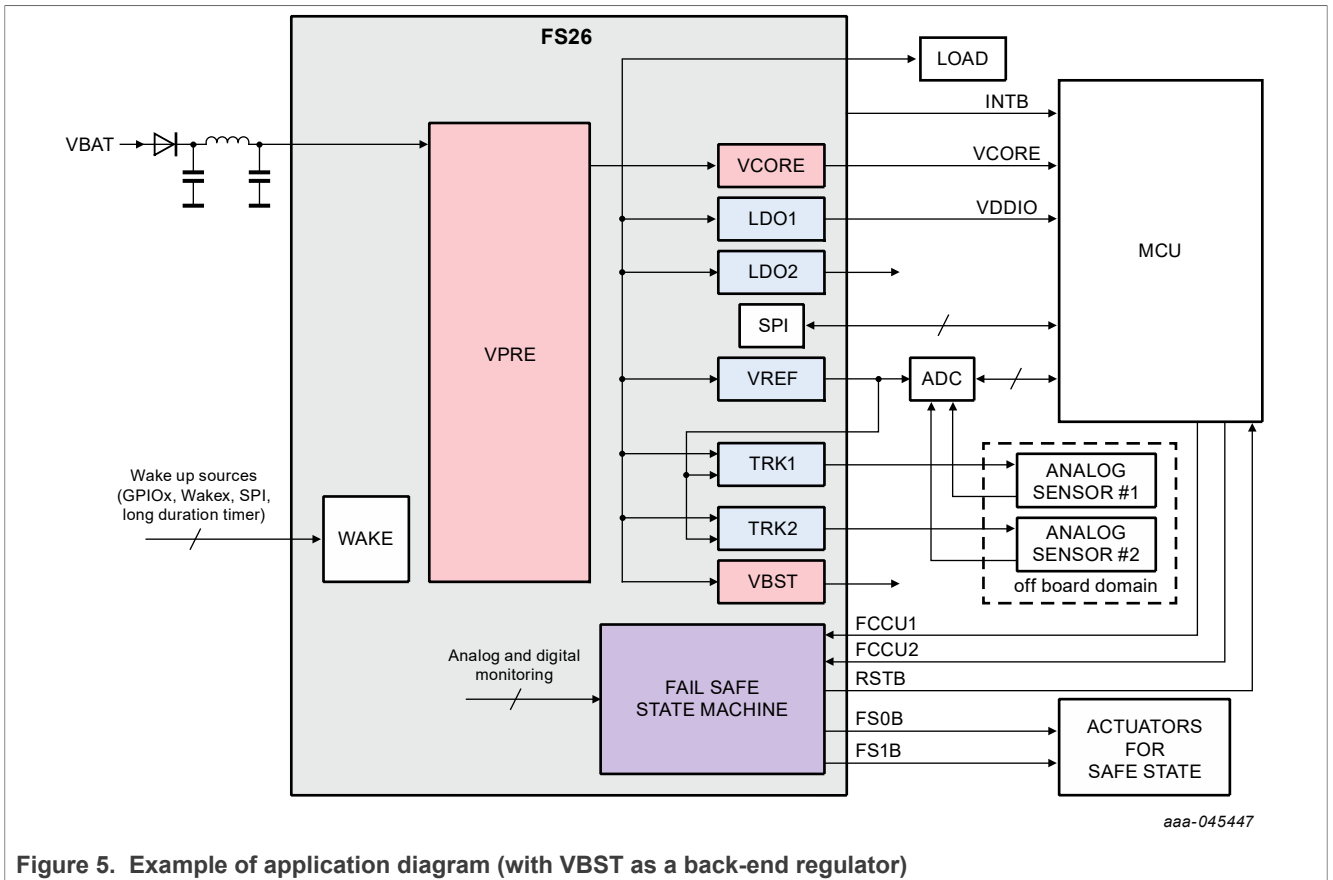


Figure 5. Example of application diagram (with VBST as a back-end regulator)

7 Block diagram

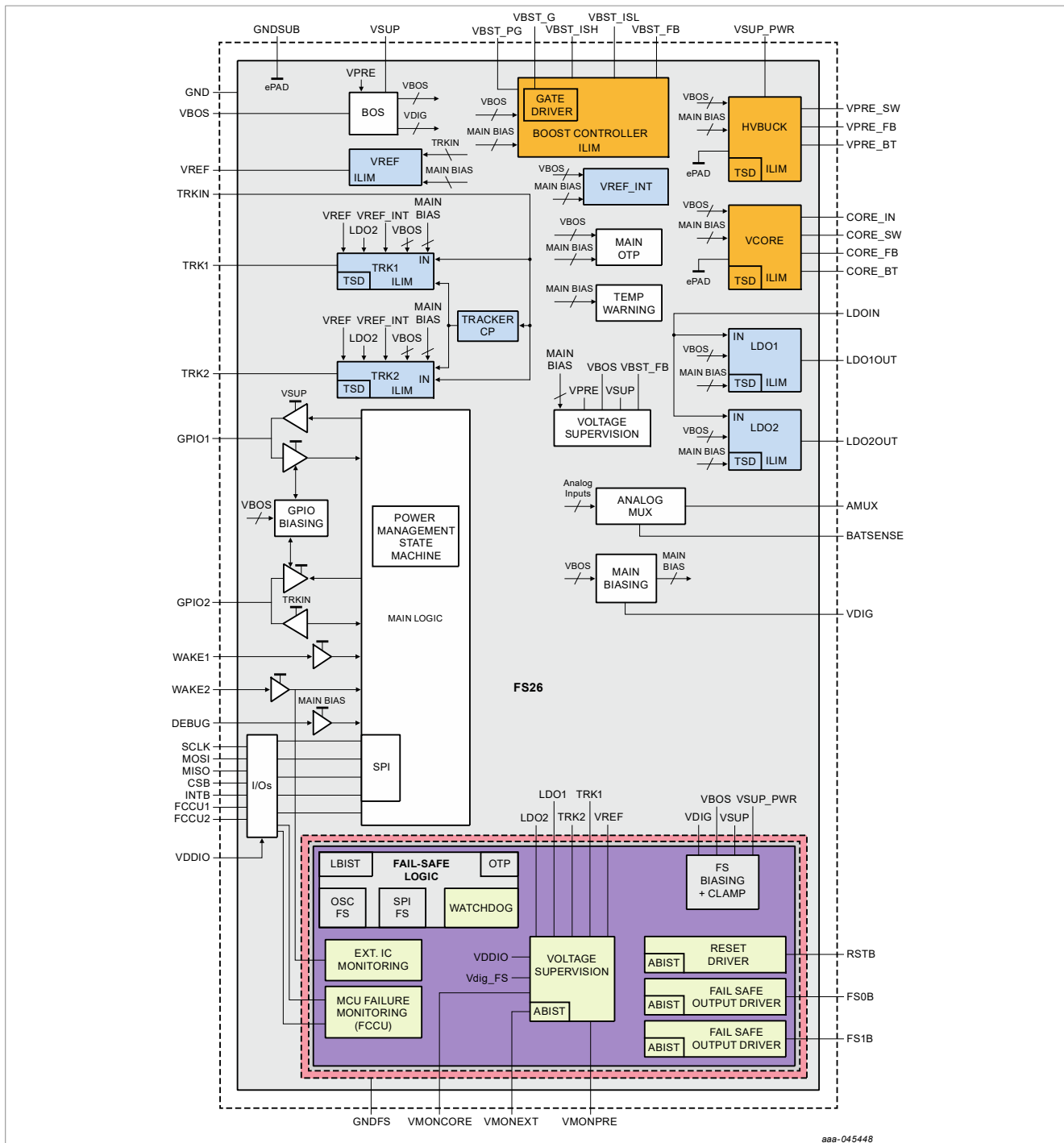
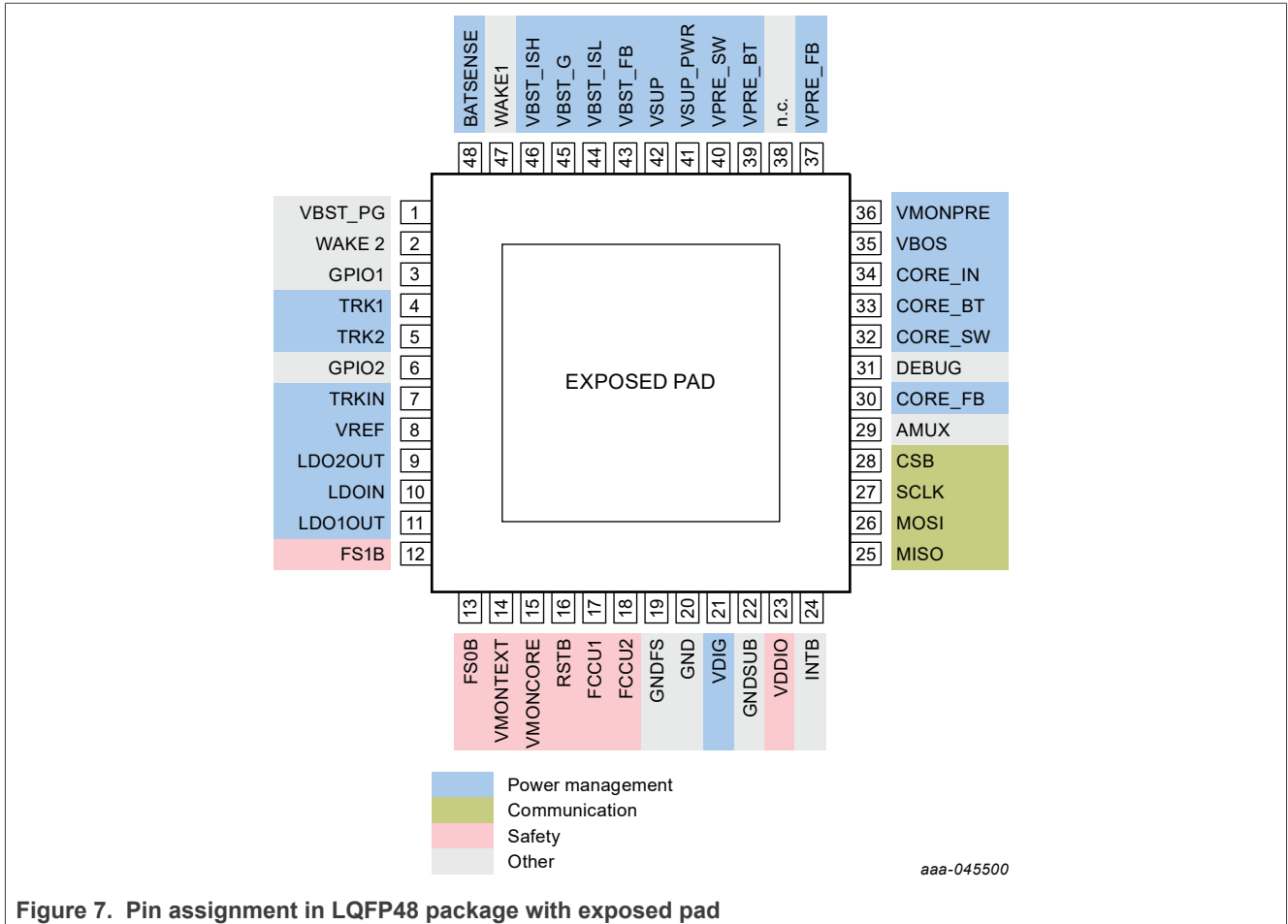


Figure 6. Block diagram of the FS26

8 Pinning Information

8.1 Pinning



8.2 Pin descriptions

Table 3. Pin descriptions

| Symbol | Pin Number | Type | Description |
|---------|------------|-------------------------------|-------------------------------------------|
| VBST_PG | 1 | Digital output | Power Good signal for boost controller |
| WAKE2 | 2 | Analog input | WAKE2 input pin or ERROR monitoring input |
| GPIO1 | 3 | Analog output / Digital Input | General Purpose I/O 1 |
| TRK1 | 4 | Analog output | TRK1 output |
| TRK2 | 5 | Analog output | TRK2 output |
| GPIO2 | 6 | Analog output / Digital Input | General Purpose I/O 2 |
| TRKIN | 7 | Analog input | Tracker Input |
| VREF | 8 | Analog output | Voltage reference output |
| LDO2OUT | 9 | Analog output | LDO2 output |
| LDOIN | 10 | Analog input | LDO input voltage supply |
| LDO1OUT | 11 | Analog output | LDO1 output |
| FS1B | 12 | Digital output | Safety output #1 |

Table 3. Pin descriptions...continued

| Symbol | Pin Number | Type | Description |
|----------|------------|----------------------|--------------------------------------|
| FS0B | 13 | Digital output | Safety output #0 |
| VMONEXT | 14 | Analog input | External voltage monitoring input |
| VMONCORE | 15 | Analog input | VCORE voltage monitoring input |
| RSTB | 16 | Digital input/output | Reset input/output |
| FCCU1 | 17 | Digital input | Fault Control Collection Unit 1 |
| FCCU2 | 18 | Digital input | Fault Control Collection Unit 2 |
| GNDIFS | 19 | Ground connection | GND for fail-safe circuitry |
| GND | 20 | Ground connection | GND for main circuitry |
| VDIG | 21 | Analog output | 1.6 V digital supply |
| GNDSUB | 22 | Ground connection | Substrate ground |
| VDDIO | 23 | Analog input | I/O input supply |
| INTB | 24 | Digital output | Interrupt output |
| MISO | 25 | Digital output | SPI Primary In Secondary out |
| MOSI | 26 | Digital input | SPI Primary Out Secondary input |
| SCLK | 27 | Digital input | SPI clock input |
| CSB | 28 | Digital input | SPI chip select |
| AMUX | 29 | Analog output | Analog Multiplexer output |
| CORE_FB | 30 | Analog input | VCORE feedback node |
| DEBUG | 31 | Digital input | DEBUG input pin |
| CORE_SW | 32 | Analog output | VCORE switching node |
| CORE_BT | 33 | Analog input | VCORE bootstrap supply |
| CORE_IN | 34 | Analog input | VCORE input supply |
| VBOS | 35 | Analog output | Best Of Supply decoupling output |
| VMONPRE | 36 | Analog input | VPRE monitoring pin |
| VPRE_FB | 37 | Analog input | VPRE feedback node |
| NC | 38 | Not connected pin | Not connected pin |
| VPRE_BT | 39 | Analog output | VPRE boot strap capacitor |
| VPRE_SW | 40 | Analog output | VPRE switching node |
| VSUP_PWR | 41 | Analog input | VPRE converter supply pin |
| VSUP | 42 | Analog input | Supply pin for internal biasing |
| VBST_FB | 43 | Analog input | VBST feedback node |
| VBST_ISL | 44 | Analog input | VBST current sense low |
| VBST_G | 45 | Analog output | VBST low-side gate drive |
| VBST_ISH | 46 | Analog input | VBST current sense high |
| WAKE1 | 47 | Analog input | WAKE1 input pin |
| BATSENSE | 48 | Analog input | Battery sense terminal |
| EP | 49 | Ground connection | Exposed pad (to be connected to GND) |

9 Maximum ratings

Table 4. Maximum ratings

All voltages are with respect to ground, unless otherwise noted. Exceeding these ratings may cause a malfunction or permanent damage to the device.

| Symbol | Description (Rating) | Min | Max | Unit |
|------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|-------|------|------|
| Voltage ratings | | | | |
| VPRE_BT | DC voltage at VPRE_BT pin | -0.3 | 45.5 | V |
| GPIO1, GPIO2, FS1B, FS0B, VMONEXT, VMONCORE, VMONPRE, WAKE1, WAKE2, VPRE_SW, VBST_FB | DC voltage at GPIO1, GPIO2, FS1B, FS0B, VMONEXT, VMONCORE, VMONPRE, WAKE1, WAKE2, VPRE_SW, VBST_FB pins | -0.3 | 40 | V |
| BATSENSE | DC voltage at BATSENSE pin with -10 mA maximum reverse current (recommended 5.1 kΩ serial resistor) | -18.0 | 40 | V |
| TRK1, TRK2, VSUP, VSUP_PWR | DC voltage at TRK1, TRK2, VSUP_PWR, VSUP pins | -1.2 | 40 | V |
| CORE_BT | DC voltage at CORE_BT pin | -0.3 | 12.5 | V |
| DEBUG | DC voltage at DEBUG pin | -0.3 | 10 | V |
| TRKIN, LDOIN, CORE_IN, VPRE_FB, CORE_SW | DC voltage at TRKIN, LDOIN, CORE_IN, VPRE_FB, CORE_SW pins | -0.3 | 8.5 | V |
| VBOS | DC voltage at VBOS pin | -0.3 | 5.6 | V |
| VREF, LDO2OUT, LDO1OUT, RSTB, FCCU1, FCCU2, VDDIO, INTB, MISO, MOSI, SCLK, CSB, AMUX, CORE_FB, VBST_ISH, VBST_ISL, VBST_G, VBST_PG | DC voltage at VREF, LDO2OUT, LDO1OUT, RSTB, FCCU1, FCCU2, VDDIO, INTB, MISO, MOSI, SCLK, CSB, AMUX, CORE_FB, VBST_ISH, VBST_ISL, VBST_G and VBST_PG pins | -0.3 | 5.5 | V |
| VDIG | DC voltage at VDIG pin | -0.3 | 2 | V |
| GNDFS, GND, GNDSUB, EP | DC voltage at GNDFS, GND, GNDSUB pins, and exposed pad (EP) | -0.3 | 0.3 | V |
| WAKE1, WAKE2, GPIO1, GPIO2 | DC maximum reverse current at WAKE1, WAKE2, GPIO1, GPIO2 pins | -5 | — | mA |

10 Electrostatic discharge

Table 5. ESD

Exceeding these ratings may cause a malfunction or permanent damage to the device.

| Symbol | Description (Rating) | Min | Max | Unit |
|----------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|-----|------|
| ESD ratings | | | | |
| Human body model: AEC-Q-100 Rev H. | | | | |
| V_{ESD_HBM} | All pins | -2.0 | 2.0 | kV |
| Charged device model: AEC-Q-100 Rev H | | | | |
| V_{ESD_CDM1} | All pins | -500 | 500 | V |
| V_{ESD_CDM2} | Corner pins | -750 | 750 | V |
| Gun Test | | | | |
| V_{ESD_CDT1} | ESD - GUN discharged contact test 330 Ω /150 pF unpowered according to IEC61000-4-2 Global pins (VSUP_PWR, VSUP, FS0B, FS1B, TRK1, TRK2, GPIO1, GPIO2, WAKE1, WAKE2) | -8 | 8 | kV |
| V_{ESD_CDT2} | ESD - GUN discharged contact test 2 k Ω /150 pF unpowered according to ISO10605.2008 Global pins (VSUP_PWR, VSUP, FS0B, FS1B, TRK1, TRK2, GPIO1, GPIO2, WAKE1, WAKE2) | -8 | 8 | kV |
| V_{ESD_CDT3} | ESD - GUN discharged contact test 2 k Ω /330 pF powered according to ISO10605.2008 Global pins (VSUP_PWR, VSUP, FS0B, FS1B, TRK1, TRK2, GPIO1, GPIO2, WAKE1, WAKE2) | -8 | 8 | kV |
| V_{ESD_CDT4} | ESD - GUN discharged contact test 330 Ω /150 pF powered according to ISO10605.2008 Global pins (VSUP_PWR, VSUP, FS0B, FS1B, TRK1, TRK2, GPIO1, GPIO2, WAKE1, WAKE2) | -8 | 8 | kV |
| V_{ESD_CDT5} | Operating ESD- GUN discharged contact test 330 Ω /150 pF powered according to ISO10605.2008 Global pins (GND, BATSENSE, FS0B, FS1B). Criteria: CLASS A | -8 | 8 | kV |

11 Thermal ratings

Table 6. Temperatures ranges

| Symbol | Description | Min | Typ | Max | Unit |
|-------------------|------------------------------------------------------------------|-----|-----|-----|------|
| T _A | Ambient temperature | -40 | — | 125 | °C |
| T _J | Junction temperature | -40 | — | 150 | °C |
| T _{STG} | Storage temperature | -55 | — | 150 | °C |
| T _{WARN} | Temperature warning threshold to set T _{WARN_S} SPI bit | 145 | 155 | 170 | °C |

Table 7. Thermal resistance (per JEDEC JESD51-2)

| Symbol | Description | Value | Unit |
|------------------------|---------------------------------------------------------------------------------------------------------------------|-------|------|
| R _{θJA} | Thermal resistance Junction to Ambient ^[1] | 25 | °C/W |
| R _{θJCBOTTOM} | Thermal resistance Junction to Case Bottom ^{[2][3]} (with uniform power dissipation on the silicon die) | 1.7 | °C/W |
| R _{θJCTOP} | Thermal resistance Junction to Case Top ^{[1][3]} | 13.5 | °C/W |
| Ψ _{JT} | Thermal characterization parameter Junction to Top ^[4] | 0.8 | °C/W |

- [1] Determined in accordance to JEDEC JESD51-2A natural convection environment. Thermal resistance data in this report is solely for a thermal performance comparison of one package to another in a standardized specified environment. It is not meant to predict the performance of a package in an application-specific environment.
- [2] Thermal resistance between the die and the printed circuit board. Board temperature is measured on the top surface of the board near the package.
- [3] For exposed pad packages where the pad would be expected to be soldered, junction to case thermal resistance is a simulated value from the junction to the exposed pad without contact resistance.
- [4] Thermal test board meets JEDEC specification for this package (JESD51-7).

12 Packaging

12.1 Package mechanical dimensions

Package dimensions are provided in package drawings. To find the most current package outline drawing, go to www.nxp.com and perform a keyword search for the drawing's document number.

Table 8. Package mechanical dimensions

| Package | Suffix | Package outline drawing number |
|------------------------------------------------------------------------------------|--------|--------------------------------|
| 7.0 × 7.0, 48-Pin LQFP exposed pad, with 0.5 mm pitch, and a 4.5 × 4.5 exposed pad | AE | 98ASA00945D |

12.2 Package outline

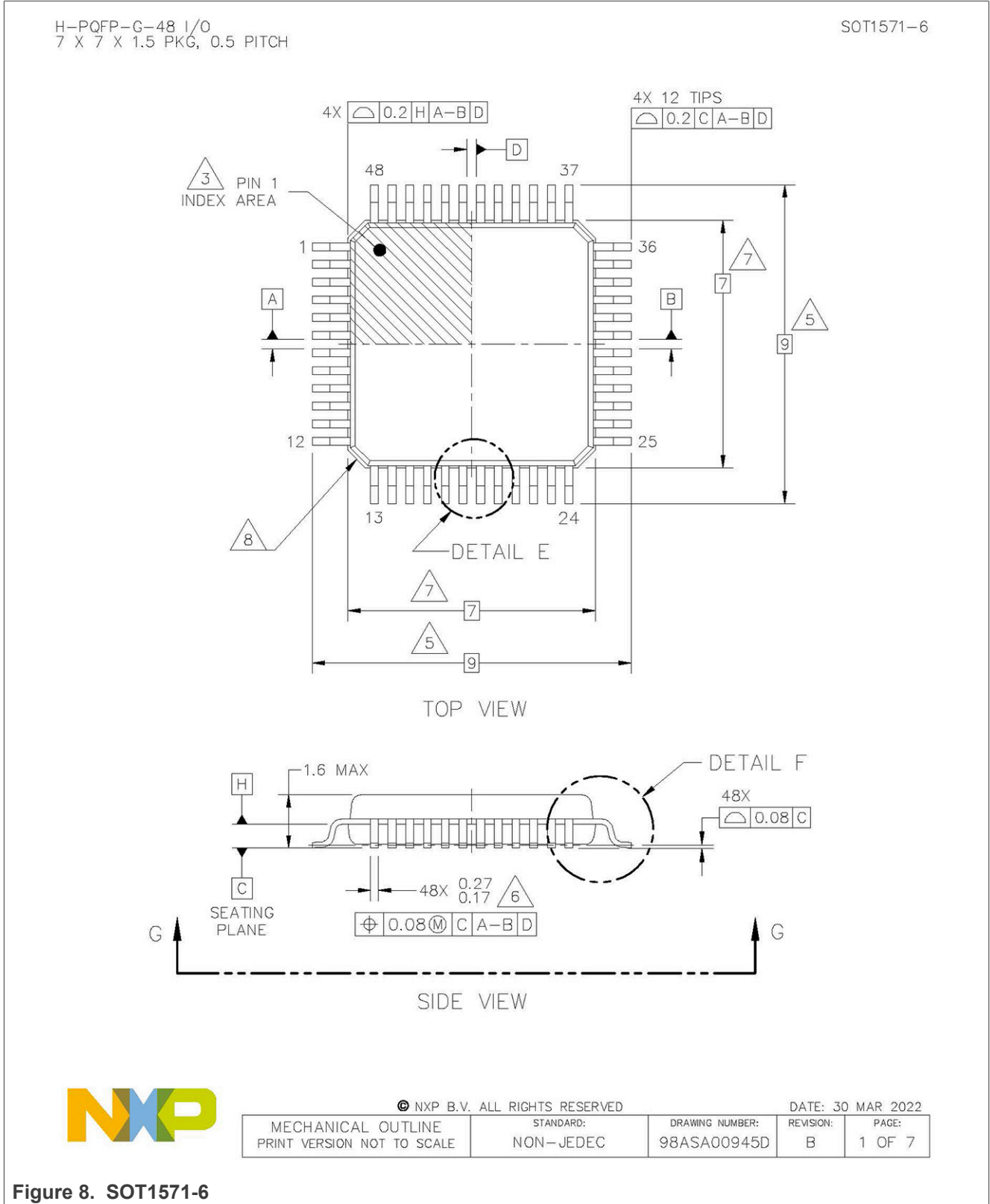


Figure 8. SOT1571-6

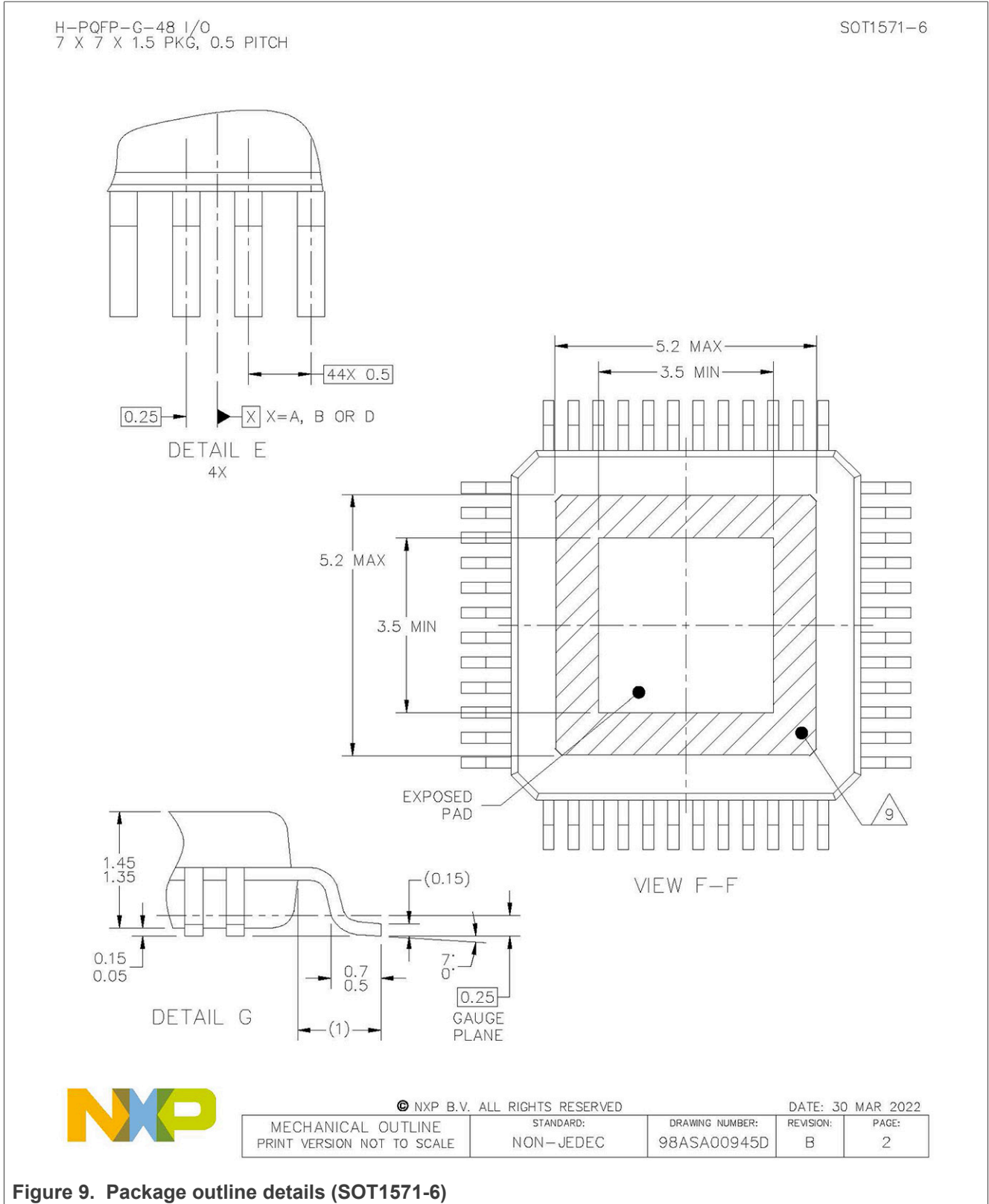


Figure 9. Package outline details (SOT1571-6)

H-PQFP-G-48 I/O
7 X 7 X 1.5 PKG, 0.5 PITCH

SOT1571-6

NOTES:

1. DIMENSIONS ARE IN MILLIMETERS.
2. DIMENSIONING AND TOLERANCING PER ASME Y14.5M-1994.
3. PIN 1 FEATURE SHAPE, SIZE AND LOCATION MAY VARY.
4. DATUMS A, B AND D TO BE DETERMINED AT DATUM PLANE H.
5. DIMENSION TO BE DETERMINED AT SEATING PLANE C.
6. THIS DIMENSION DOES NOT INCLUDE DAMBAR PROTRUSION. ALLOWABLE DAMBAR PROTRUSION SHALL NOT CAUSE THE LEAD WIDTH TO EXCEED THE UPPER LIMIT BY MORE THAN 0.08MM AT MAXIMUM MATERIAL CONDITION. DAMBAR CANNOT BE LOCATED ON THE LOWER RADIUS OR THE FOOT. MINIMUM SPACE BETWEEN PROTRUSION AND ADJACENT LEAD SHALL NOT BE LESS THAN 0.07MM.
7. THIS DIMENSION DOES NOT INCLUDE MOLD PROTRUSION. ALLOWABLE PROTRUSION IS 0.25MM PER SIDE. THIS DIMENSION IS MAXIMUM PLASTIC BODY SIZE DIMENSION INCLUDING MOLD MISMATCH.
8. EXACT SHAPE OF EACH CORNER IS OPTIONAL.
9. HATCHED AREA REPRESENTS POSSIBLE MOLD FLASH ON EXPOSED PAD.
10. KEEP OUT ZONE REPRESENTS AREA ON PCB THAT MUST NOT HAVE ANY EXPOSED METAL (TRACE/VIA) FOR PCB ROUTING DUE TO THE POSSIBILITY OF SHORTING TO TIE BAR/EXPOSED PAD.



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DATE: 30 MAR 2022

| | | | | |
|--------------------------------------------------|------------------------|--------------------------------|----------------|------------|
| MECHANICAL OUTLINE PRINT VERSION NOT TO SCALE | STANDARD: NON-JEDEC | DRAWING NUMBER: 98ASA00945D | REVISION: B | PAGE: 6 |
|--------------------------------------------------|------------------------|--------------------------------|----------------|------------|

Figure 10. Package outline notes (SOT1571-6)

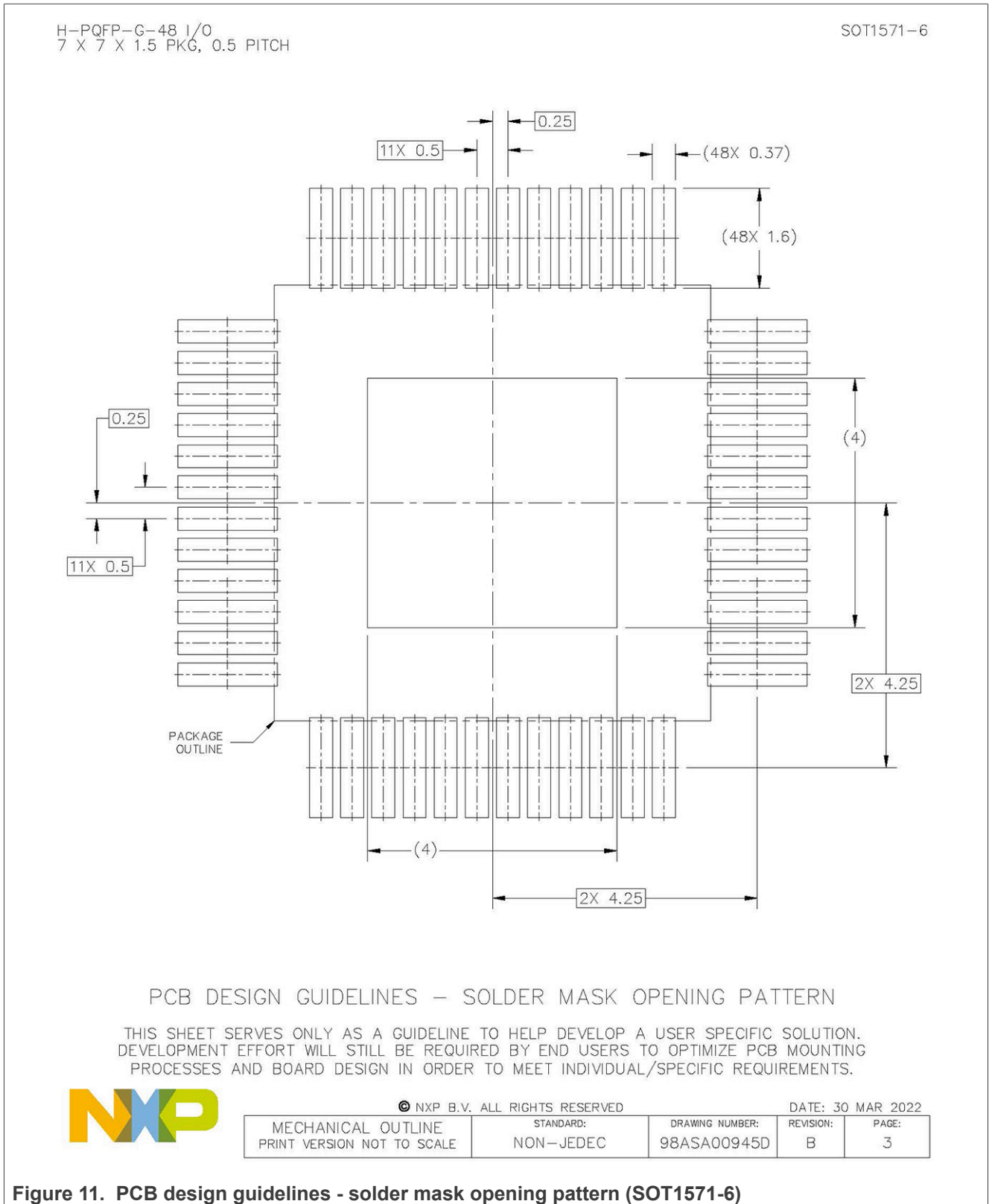


Figure 11. PCB design guidelines - solder mask opening pattern (SOT1571-6)

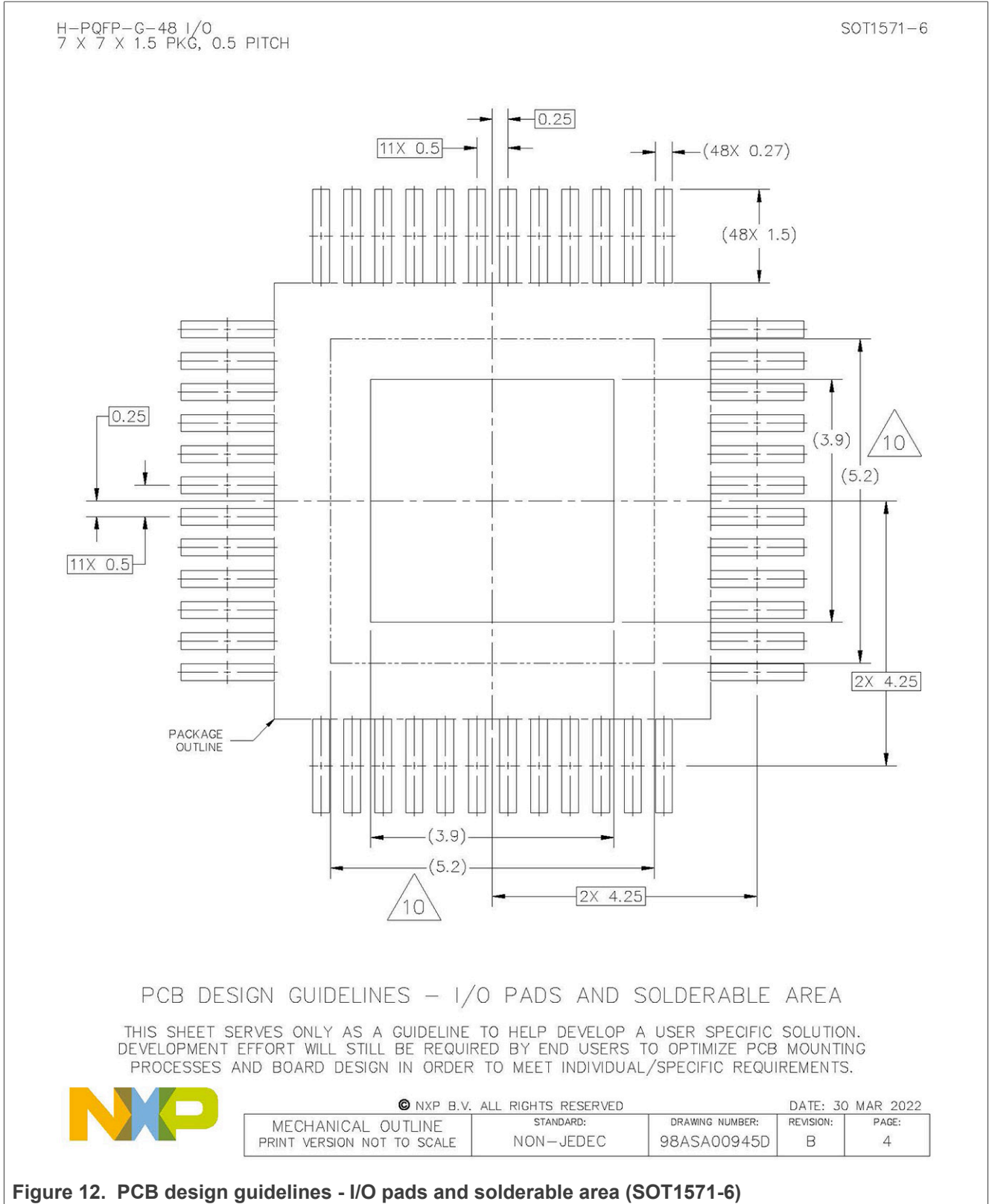


Figure 12. PCB design guidelines - I/O pads and solderable area (SOT1571-6)

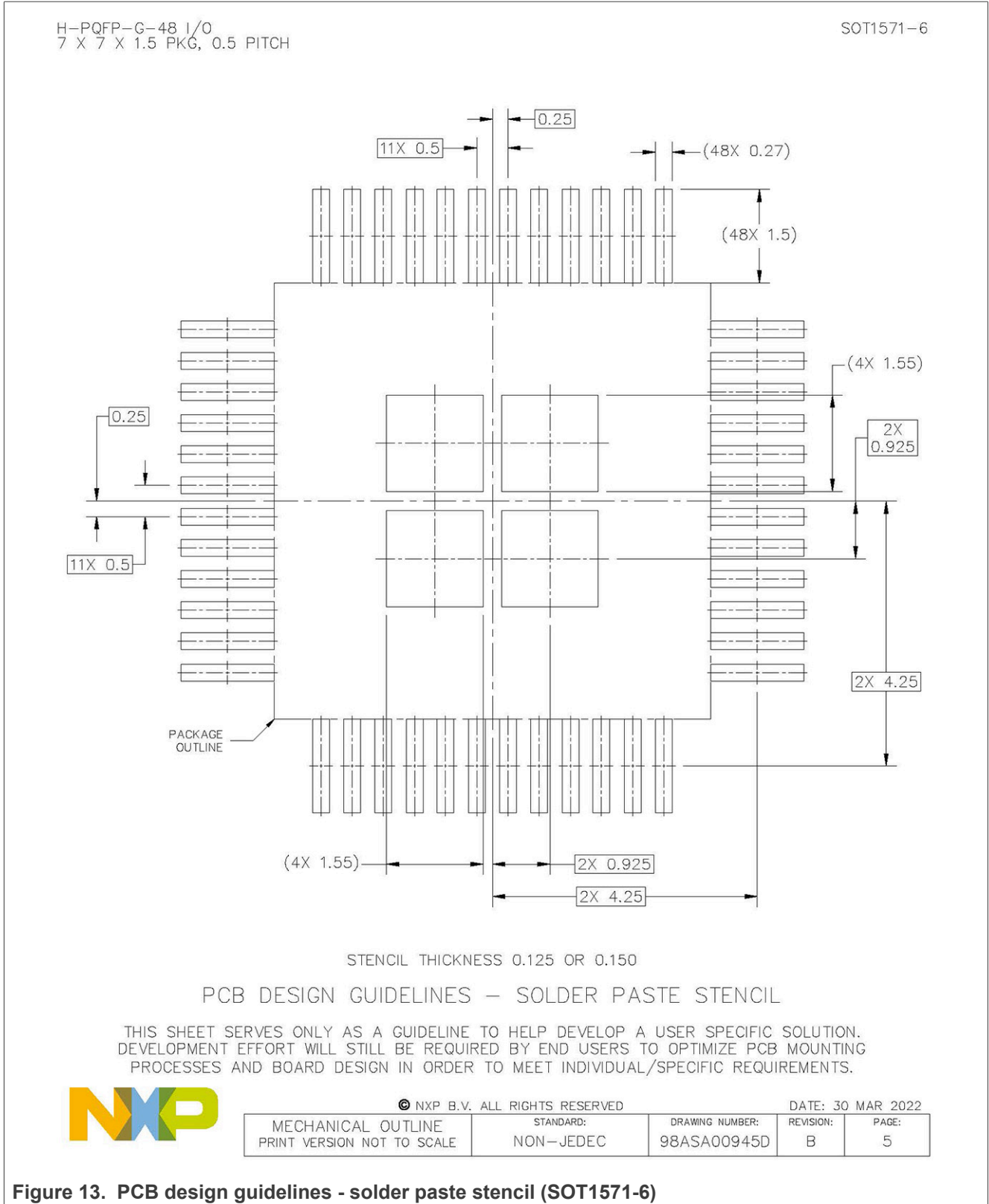


Figure 13. PCB design guidelines - solder paste stencil (SOT1571-6)

13 References

Table 9. References

| Documents, Tools, Enablement | URL |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| FS26 Functional Safety Manual | https://www.nxp.com/products/power-management/pmics-and-sbcs/safety-sbcs/safety-system-basis-chip-sbc-with-low-power-fit-for-asil-d:FS26 |
| FS26 Dynamic FMEDA | https://www.nxp.com/products/power-management/pmics-and-sbcs/safety-sbcs/safety-system-basis-chip-sbc-with-low-power-fit-for-asil-d:FS26 |
| AN12995 - FS26 Product Guidelines | https://www.nxp.com/products/power-management/pmics-and-sbcs/safety-sbcs/safety-system-basis-chip-sbc-with-low-power-fit-for-asil-d:FS26 |
| FS26_SMPS_Calculator.xls | https://www.nxp.com/products/power-management/pmics-and-sbcs/safety-sbcs/safety-system-basis-chip-sbc-with-low-power-fit-for-asil-d:FS26 |
| FS26 SMPS Simplis models | https://www.nxp.com/products/power-management/pmics-and-sbcs/safety-sbcs/safety-system-basis-chip-sbc-with-low-power-fit-for-asil-d:FS26 |
| FS26 Graphical User Interface <ul style="list-style-type: none"> • To calculate the power dissipation • To create an OTP configuration • To interface an EVB KIT with a computer | https://www.nxp.com/products/power-management/pmics-and-sbcs/safety-sbcs/safety-system-basis-chip-sbc-with-low-power-fit-for-asil-d:FS26 |
| FS26 Product Overview | https://www.nxp.com/products/power-management/pmics-and-sbcs/safety-sbcs/safety-system-basis-chip-sbc-with-low-power-fit-for-asil-d:FS26 |
| KITFS26AEEVM: FS26 Evaluation Board | https://www.nxp.com/products/power-management/pmics-and-sbcs/safety-sbcs/fs26-safety-sbc-evaluation-board:KITFS26AEEVM |
| KITFS26SKTEVM: FS26 Socket Board | https://www.nxp.com/products/power-management/pmics-and-sbcs/safety-sbcs/fs26-safety-sbc-programming-socket-board:KITFS26SKTEVM |

14 Revision history

| Revision | Date | Description of changes |
|----------|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 3 | 20220314 | <ul style="list-style-type: none"> • Revised Figure 1 • Revised Section 3 • Revised Section 4 • Revised Table 1 and Table 2 • Revised Section 6, including Figure 4 and Figure 5 • Revised Figure 6 • Revised Table 3 • Revised Table 4 • Revised Table 7 • Revised Table 9 • Revised Legal information |
| 2 | 20220601 | <ul style="list-style-type: none"> • Revised Section 1 • Revised Section 2 • Revised Section 3 • Revised Section 5, including adding subsections Section 5.1 and Section 5.2 • Revised Section 6 • Revised Section 7 • Revised Section 8.1 and Section 8.2 • Revised Section 9 • Revised Section 10 • Revised Section 11 • Revised Section 12.1 and Section 12.2 • Revised Section 13 • Revised Legal information |
| 1 | 20210913 | Initial version |

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