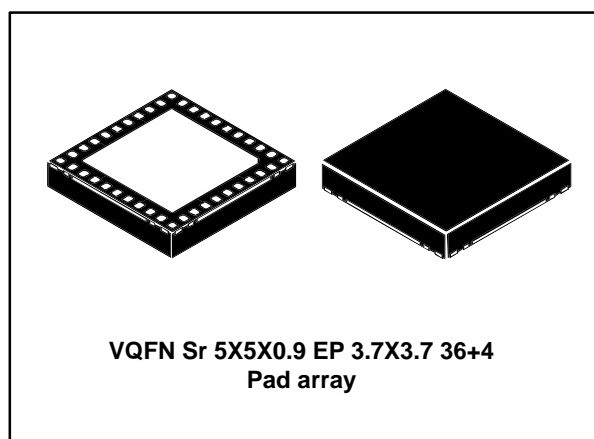


Power management IC: five buck regulator power management unit

Data brief



- Integrated voltage monitor with digital filters
- Thermal protection

Applications

- SSD (solid state drive)
- Mobile phone

Description

L7292 is a power management device designed for consumer applications. Five buck regulators provide voltages for μ Controller and Flash memory with efficiency up to 90% under light load conditions. The device communicates with the μ Controller via an I2C serial interface operating at clock speeds up to 3.4 Mbit/s. The regulators operate at 1.3 MHz switching frequency and enter PFM operation automatically to maintain high efficiency over the entire load current range. The device can be forced in PWM mode by writing a bit in the serial port register.

Low quiescent current (e.g. All SW Reg ON with no load $I_q = 175 \mu A$). The L7292 has a DSM mode to reduce the quiescent current at the minimum value (1 x SW Reg ON with no load $I_q = 60 \mu A$).

Table 1: Programmable bucks

Regulator	V_{out} range [V]	DC Iload [A]
Buck 1	0.9 – 1.6	1.0
Buck 2	1.5 – 2.1	0.8
Buck 3	0.7 – 1.3	0.5
Buck 4	0.7 – 1.3	1.0
Buck 5	0.7 – 1.3	1.6

Features

- Key specification
 - V_{IN} range from 2.7 V to 5.5 V
- Interface
 - Two-wire I2C serial interface supports 3.4 Mbit/s protocol (high-speed mode)
 - 8 bit register bank
 - Random and sequential read modes
 - Automatic address incrementing
- Programmable buck regulators
 - Regulators with programmable DC set point and soft start
 - Buck regulators include integrated PMOS and NMOS switching elements
 - Up to 90% efficiency
 - PWM and PFM modes
 - Two pins to select four sets of DC voltages
 - $\pm 1\%$ feedback voltage accuracy
 - All regulators with auto discharge function on reset
 - Programmable bucks
- Support functions
 - 128 bits EEPROM for: default V_{out} , power-up sequence, reset IC delay time, regulator enable

1 Pin description and package configuration

1.1 Pin description

Table 2: Pin description

Pin # QFN 36+4L	Pin name	Type	Description
D1	NC		
A1	SUPDR	P	Power Supply
A2	SUP3	P	Power Supply
A3	SW3	O	Buck3 Regulator switch node
A4	GND23	G	Buck2 and Buck3 Gnd
A5	SW2	O	Buck2 Regulator switch node
A6	SUP2	P	Buck2 Power Supply
A7	FB2	I	Buck2 Regulator feedback
A8	LDO INT	I	Supply voltage to internal circuits
A9	SUP	P	Power Supply
D2	NC		
A10	NC		
A11	VBUS	P	Serial port supply
A12	SDA	I/O	I2C Serial Data Line
A13	NC		
A14	NC		
A15	SCL	I	I2C Serial Clock Line
A16	GND	G	Analog and Digital gnd
A17	MODA	I	With MODB pin, SET A,B,C and D selection
A18	POR	O	Power on reset
D3	NC		
A19	FB1	I	Buck1 Regulator feedback
A20	NC		
A21	GND1	G	Ground
A22	SW1	O	Buck1 Regulator switch node
A23	SUP14	P	Buck1 and Buck4 Power Supply
A24	SW4	O	Buck4 Regulator switch node
A25	GND4	G	Buck4 Ground
A26	MODB	I	With MODA pin, SET A,B,C and D selection
A27	NC		
D4	NC		

Pin # QFN 36+4L	Pin name	Type	Description
A28	NC		
A29	SUBGND	G	Substrate Ground
A30	FB4	I	Buck4 Regulator feedback
A31	SUP5	P	Buck5 Power Supply
A32	FB5	I	Buck5 Regulator feedback
A33	SW5	O	Buck5 Regulator switch node
A34	GND5	G	Ground
A35	FB3	I	Buck3 Regulator feedback
A36	NC		

Where:

- P: power supply
- G: ground
- O: output
- I/O: input/output
- I: input

1.2 Package configuration

Figure 1: I2C external components

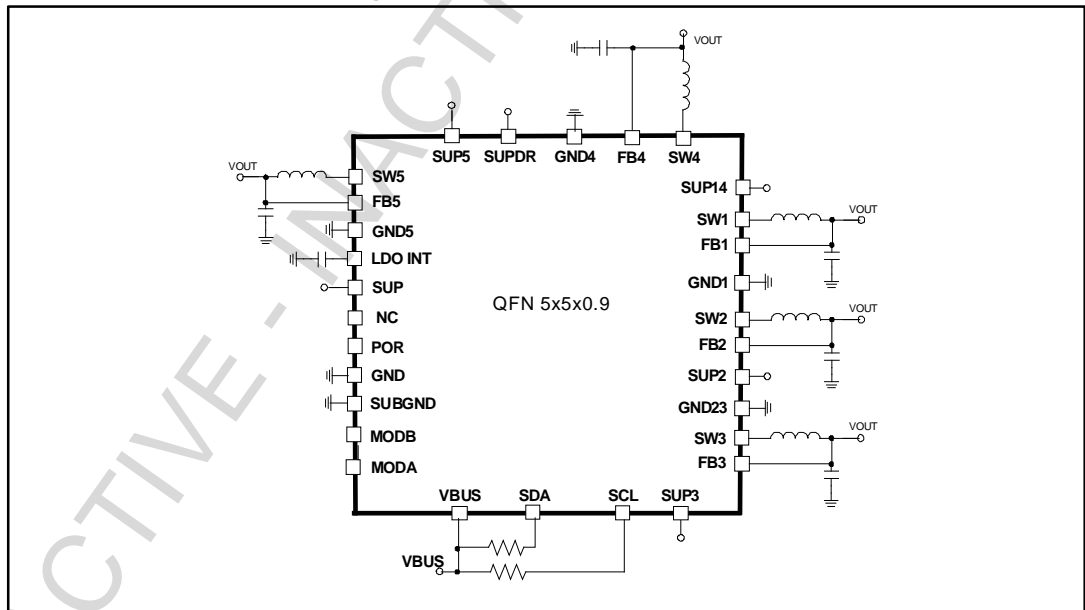
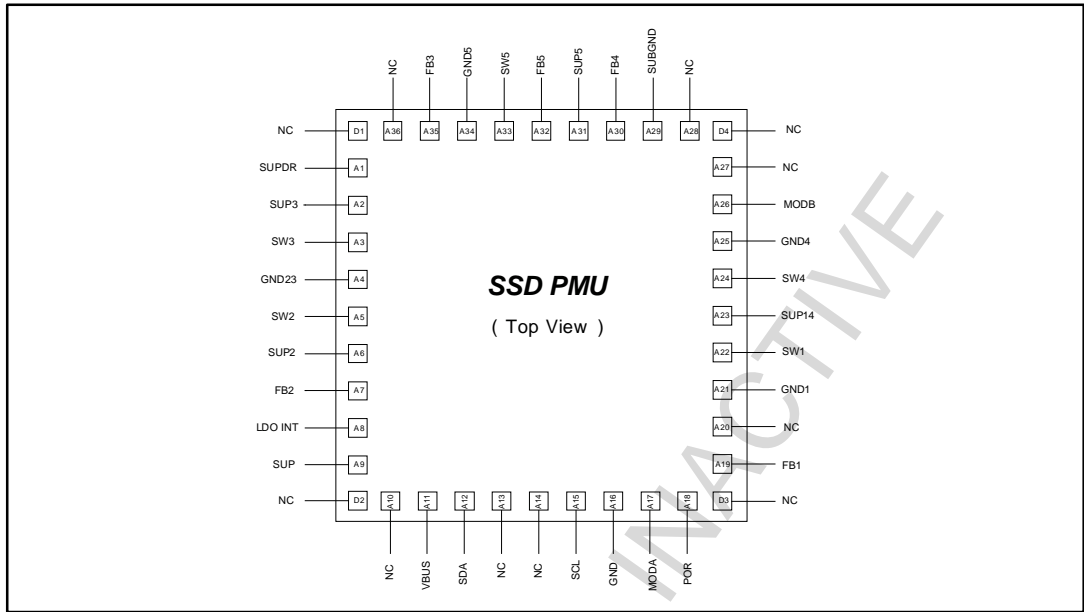


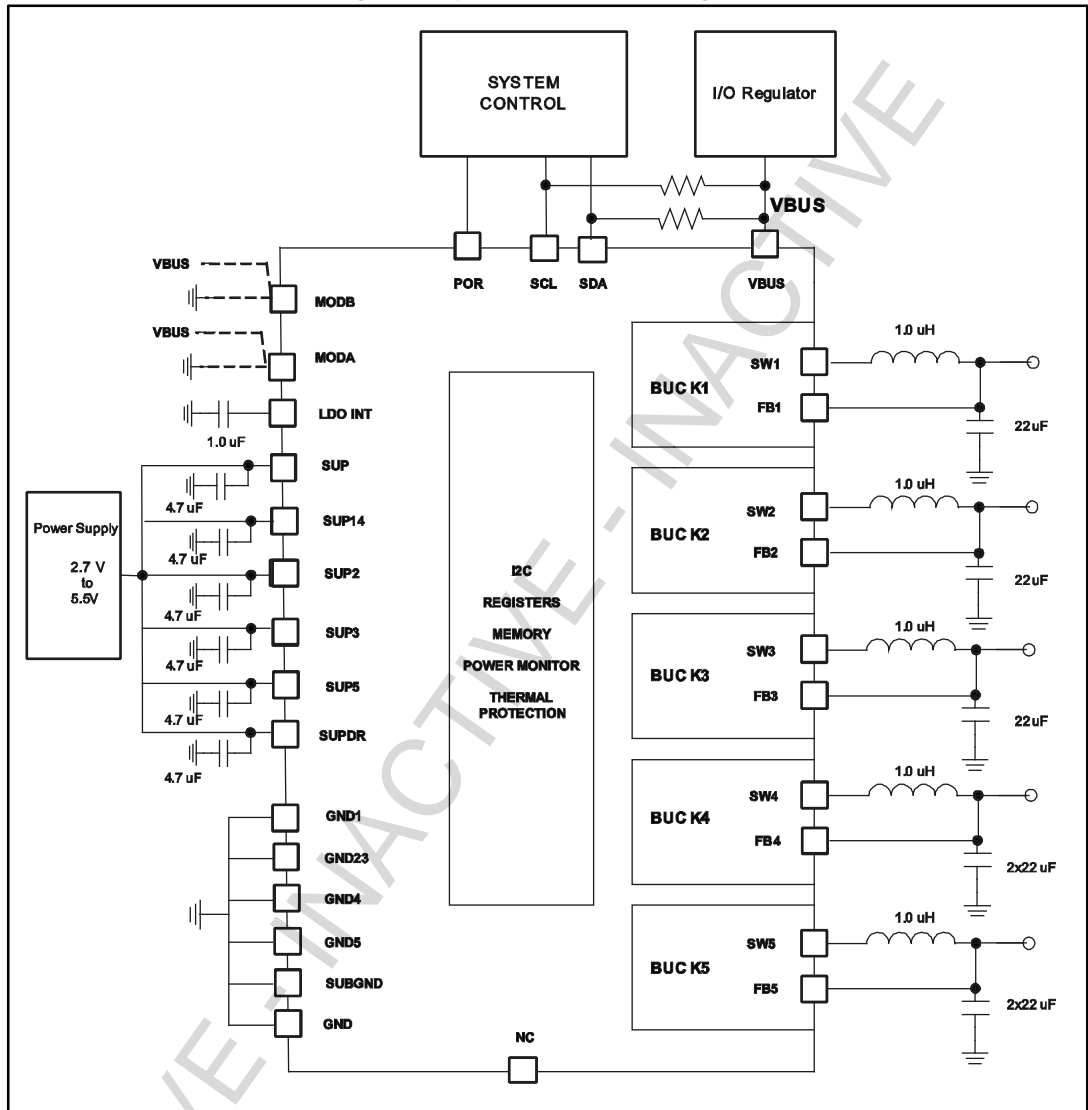
Figure 2: QFN 5x5x0.9 mm 40 L - top view



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2 Typical application

Figure 3: Typical application diagram



3 Package information

In order to meet environmental requirements, ST offers these devices in different grades of ECOPACK® packages, depending on their level of environmental compliance. ECOPACK® specifications, grade definitions and product status are available at: www.st.com. ECOPACK® is an ST trademark.

3.1 VQFN 5X5X0.9 ep 3.7X3.7 36+4 pad array package information

Figure 4: VQFN 5X5X0.9 ep 3.7X3.7 36+4 pad array package outline

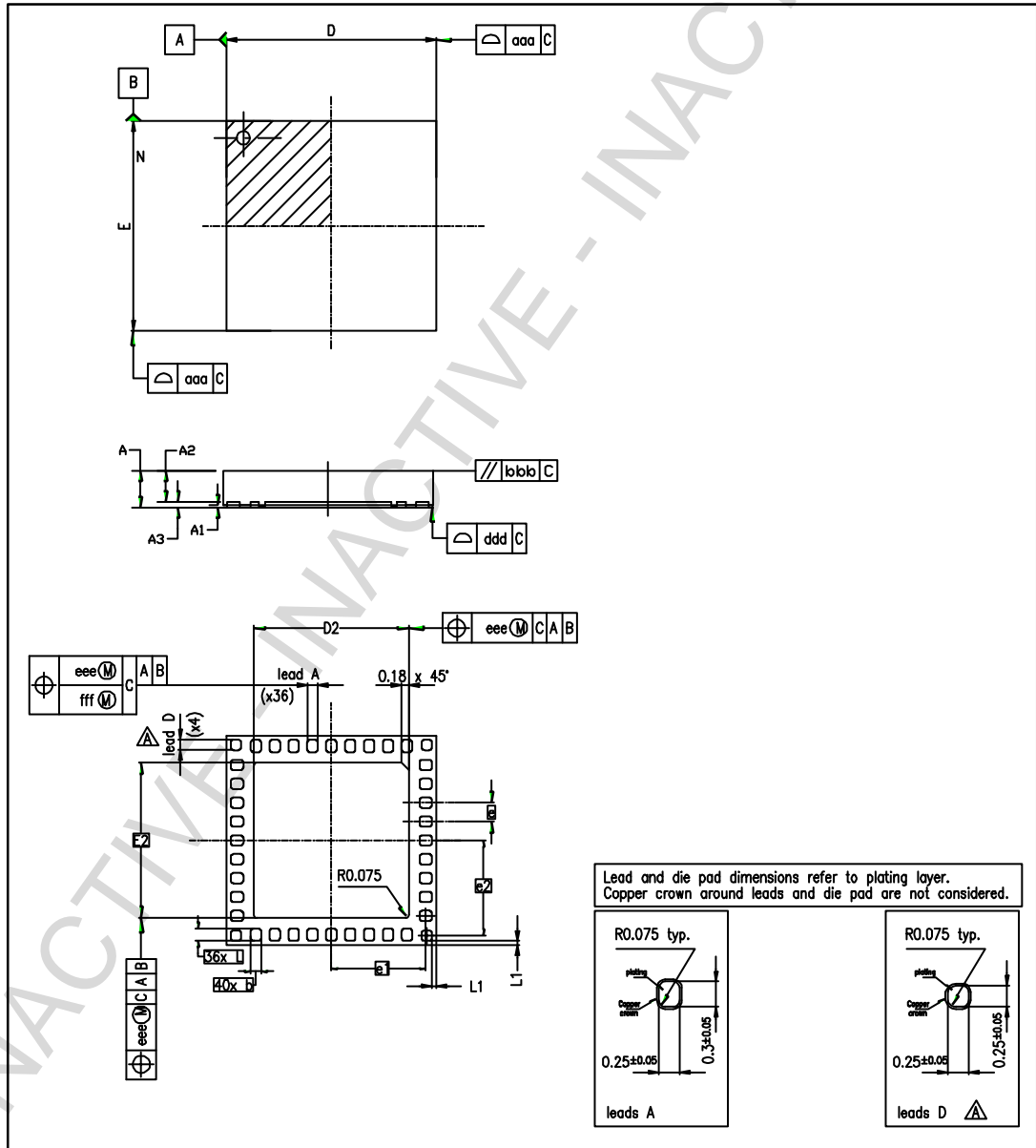


Table 3: VQFN 5X5X0.9 ep 3.7X3.7 36+4 pad array package mechanical data

Ref.	Dimensions		
	Min.	Typ.	Max.
A	0.80	0.90	1.00
A1	0	0.02	0.05
A2		0.75	
A3		0.13	
D		5.00	
D2	3.65	3.70	3.75
E		5.00	
E2	3.65	3.70	3.75
b	0.22	0.25	0.28
L	0.27	0.3	0.33
Lead D	0.22	0.25	0.28
e		0.45	
e1		2.25	
e2		2.275	
aaa			0.15
bbb			0.10
ddd			0.05
eee			0.10
fff			0.08

4 Revision history

Table 4: Document revision history

Date	Revision	Changes
30-Jun-2015	1	Initial release

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